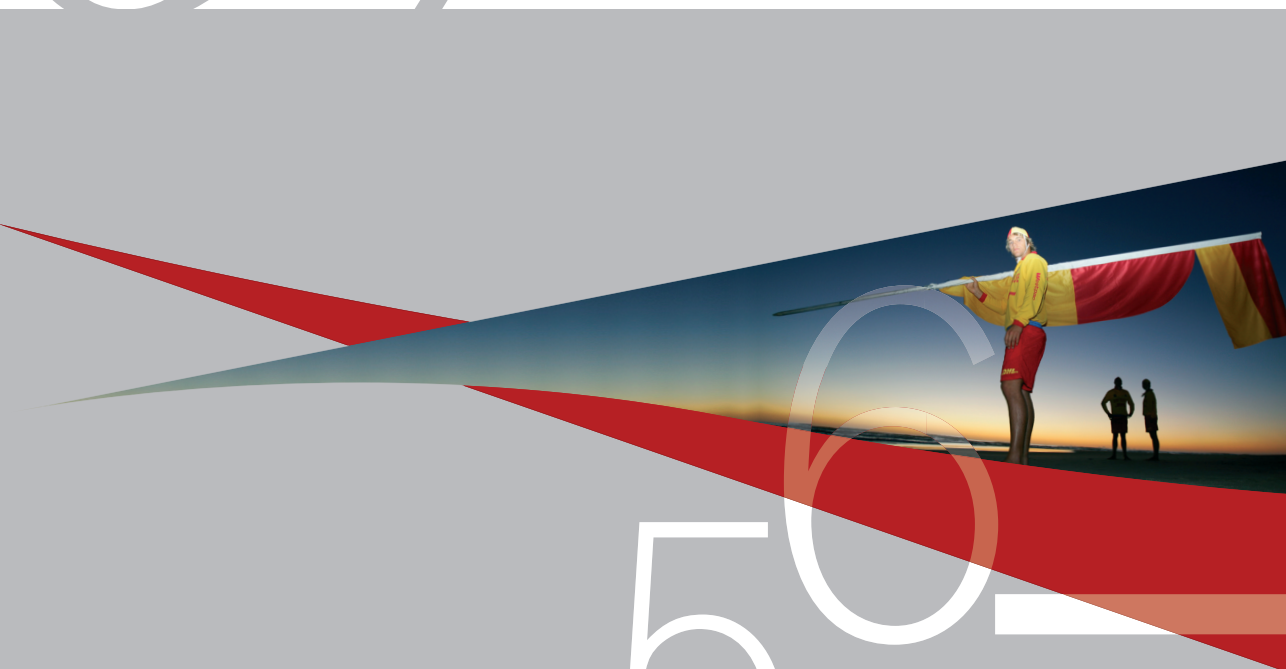


# 2007 Year Book Australia



A comprehensive source of information about Australia.





**2007**

**YEAR BOOK  
AUSTRALIA**





**2007**

**YEAR BOOK**  
**AUSTRALIA**

Dennis Trewin  
Australian Statistician

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Cover Almost one in two Australians swim in the surf at least once during summer. The volunteer surf lifesaving movement is celebrating 100 years of continuous service to the community by patrolling Australia's surf beaches and protecting the lives of those who use them. The Australian Government has recognised this contribution by declaring 2007 the Year of the Surf Lifesaver. *Image by John Veage/Harvie Allison Photography, provided by Surf Lifesaving Queensland.*

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# Preface

Year Book Australia is the principal reference work produced by the Australian Bureau of Statistics (ABS). It provides a comprehensive and detailed statistical overview of various aspects of the economy and social conditions in Australia. In addition, it contains descriptive matter dealing with Australia's geography and climate, the environment, government, international relations, defence, education, and the health and welfare systems.

The ABS and its predecessor, the Commonwealth Bureau of Census and Statistics, have been providing a statistical service to the Australian, state and territory governments and to the Australian community for more than 100 years.

The first Official Year Book of the Commonwealth was published in 1908, although individual Australian states and colonies had been producing year books for several decades previously.

As with previous issues, some feature articles are included. The volunteer surf lifesaving movement is celebrating 100 years of continuous service to the community by patrolling Australia's surf beaches and protecting the lives of those who use them. The Australian Government has recognised this contribution by declaring 2007 the Year of the Surf Lifesaver. Surf Life Saving Australia gladly accepted the ABS's invitation to contribute an article to feature in this edition of the Year Book.

The International Council for Science in conjunction with the World Meteorological Organisation established an International Polar Year (IPY) in 2007–2008. The ABS invited Professor Michael Stoddart, Australian Government Antarctic Division and Dr Tom Griffiths, Australian National University to contribute to a second feature article in this edition of the Year Book. The article looks at the prominent role Australia and Australians have played in Antarctica since the early exploration of the continent.

I am very grateful to these authors for their excellent contributions.

Statistics contained in this edition are the most recent available at the time of preparation. In many cases, the ABS web site <<http://www.abs.gov.au>> and the web sites of other organisations provide access to more recent data. You can browse tables, time series spreadsheets, datacubes, information papers, associated products and media releases that relate to topics covered in the Year Book, and download the information from the ABS web site at no cost.

Further information on the operations of government and non-government organisations referred to in this edition, including their administrative and legislative background, may be obtained from their individual web sites, the addresses of which are provided in the Year Book.

ABS products draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated.

Particular thanks are extended to those Australian Government and other organisations which have kindly supplied material for inclusion in this edition of the Year Book.

Thank you also to the many ABS staff who contributed to the preparation and production of *Year Book Australia 2007*.

Australian Bureau of Statistics  
Canberra  
December 2006

Dennis Trewin  
Australian Statistician



# Introduction

Year Book Australia provides a comprehensive overview of the economic and social conditions of contemporary Australia. It is a statistically-oriented publication with sufficient background information to establish a context for the statistics and to assist in understanding and interpreting them. It also contains descriptive matter dealing with Australia's geography and climate, the environment, government, international relations, defence, education, and the health and welfare systems.

The source of many of the statistics are censuses and surveys conducted by the Australian Bureau of Statistics (ABS), the national statistical agency which produces the Year Book. However, a great deal of information is contributed by other, predominantly Australian Government, organisations. The official nature of the contributors to the Year Book ensures a high degree of objectivity and reliability in the picture presented of contemporary Australia.

This edition, the 89th, is the latest in a long series of editions extending back to the first in 1908. They provide a valuable source of information on the state of Australia at any point during this period.

Statistics contained in this edition are the most recent available at the time of preparation. In many cases, the ABS web site <<http://www.abs.gov.au>> and the web sites of other organisations provide access to more recent data. You can browse tables, time series spreadsheets, datacubes, information papers, associated products and media releases that relate to topics covered in the Year Book, and download the information from the ABS web site at no cost.

## Finding information

The contents pages at the beginning of the Year Book provide a guide to the broad subjects contained in each chapter. The index assists in locating information on more specific subjects. A list of articles from the previous ten editions is located at the end of this edition. Selected articles appear on the ABS web site.

Tables and graphs in each chapter are numbered and the text is cross-referenced, as necessary, to the table or graph to which it relates.

## Further information

While the statistics and descriptive information contained in the Year Book provide a comprehensive overview of Australia, they represent only a relatively small part of the statistics and other information available. The Year Book is aimed primarily at providing a ready and convenient source of reference, both to those familiar and unfamiliar with a particular subject. In other words, because of the range of subjects, and limitations on the size of the Year Book, it aims at breadth rather than depth of information.

For those requiring information in greater depth, the Year Book serves as a directory to more detailed sources, with the source shown for each statistical table, graph and map. Where the ABS is the source, the title and catalogue number of the relevant product are quoted. For other sources, the name of the organisation is shown, and the product title where appropriate. Relevant ABS and other products together with a selection of web sites are listed at the end of each chapter.

As well as the information included in this Year Book, the ABS may have other relevant data available on request. Charges are generally made for such information. Inquiries should be made to the National Information and Referral Service on 1300 135 070.

Annual reports of government departments and agencies also provide a valuable source of more detailed information on subjects covered in the Year Book.

For a variety of reasons, it is not possible for all statistics in the Year Book to relate to the latest or same year. Readers wishing to obtain or clarify the latest available statistics should contact the relevant source or web site.

## Reference to the national government

Australia has a federal system of government comprising a national government, and the governments of the six states and two territories. In *Year Book Australia 2007* the national government is referred to as either 'the Australian Government' or 'the Commonwealth Government'. On occasions the shortened term 'the Commonwealth' or 'the Government' is used when referring to the national government.

## Symbols and abbreviations

The following symbols and abbreviations are shown in tables, graphs and diagrams:

'000	thousand
\$	dollar/s
\$'000	thousand dollars
\$m	million dollars
\$b	billion dollars
c	cent/s
%	percentage
—	nil or rounded to zero (including null cells)
..	not applicable
^	estimate has a relative standard error of between 10% and 25% and should be used with caution
*	estimate has a relative standard error of between 25% and 50% and should be used with caution
**	estimate has a relative standard error greater than 50% and is considered too unreliable for general use
°C	degrees Celsius
A\$	Australian dollar
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACE	adult and community education
ANZSIC	Australian and New Zealand Standard Industrial Classification
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
ASCO	Australian Standard Classification of Occupations
ASOC	Australian Standard Offence Classification
b	billion
bm <sup>3</sup>	billion cubic metres
c.f.	compared with
CO <sub>2</sub> -e	carbon dioxide equivalent
COFC	consumption of fixed capital
Cwlth	Commonwealth
EDR	economic demonstrated resources
e.g.	for example
etc.	etcetera
EU	European Union
excl.	excludes/excluding
f.o.b.	free-on-board
FTE	full-time equivalent



GDP	gross domestic product
Gg	gigagram
GJ	gigajoule
GL	gigalitre
GMI	gross mixed income
GOS	gross operating surplus
GST	Goods and Services Tax
Gt	gigatonne
GVA	gross value added
GWh	gigawatt hours
ha	hectare
HECS	Higher Education Contribution Scheme
ICD-10	International Classification of Diseases, 10th revision
i.e.	that is
incl.	includes/including
IPD	implicit price deflators
IVA	industry value added
kg	kilogram
km	kilometre
km <sup>3</sup>	cubic kilometre
km/h	kilometres per hour
kt	kilotonne
kWh	kilowatt hour
L	litre
LNG	liquefied natural gas
LPG	liquefied petroleum gas
m	metre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
MAR	mean annual run-off
MB	megabyte
Mc	million carats
mg	milligram
mill.	million
ML	megalitre
Mm <sup>3</sup>	million cubic metres
mm	millimetre
Mt	megatonne
NDP	net domestic product
NOS	net operating surplus
no.	number
n.a.	not available
n.e.c.	not elsewhere classified
n.e.i.	not elsewhere included
n.e.s.	not elsewhere specified
n.f.d.	not further defined
n.p.	not for publication/not separately published
n.y.a.	not yet available
OECD	Organisation for Economic Co-operation and Development
OPBT	operating profit before tax
PAYG	Pay As You Go
PJ	petajoule
PSI	principal source of income
R&D	research and development
SAR	special administrative region
SITC	Standard International Trade Classification

sq km	square kilometre
t	tonne
TAFE	technical and further education
TJ	terajoules
UN	United Nations
VET	vocational education and training

Abbreviations are used for the following countries, and Australian states and territories:

China	China (excludes SARs and Taiwan Prov.)
Hong Kong	Hong Kong (SAR of China)
NSW	New South Wales
Vic.	Victoria
Qld	Queensland
SA	South Australia
WA	Western Australia
Tas.	Tasmania
NT	Northern Territory
ACT	Australian Capital Territory
Aust.	Australia

Yearly periods shown, for example, as 2004, refer to the year ended 31 December 2004; those shown, for example, as 2004–05, refer to the year ended 30 June 2005. Other yearly periods are specifically indicated. The range of years shown in the table headings, for example, 1901 to 2004, indicates the period covered, but does not necessarily imply that each intervening year is included or that the yearly period has remained the same throughout the series.

Values are shown in Australian dollars (\$) or cents (c) unless another currency is specified.

Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

## Comments from readers

The ABS endeavours to keep the balance of the contents of the Year Book in line with the ever-changing nature of the nation. For this reason comments on the adequacy and balance of the contents of the Year Book are welcomed and should be directed to the attention of the Editor of the Year Book, Australian Bureau of Statistics, PO Box 10, Belconnen ACT 2616.

# Surf lifesaving – an Australian icon in transition

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*Caroline Ford, Chris Giles, Danya Hodgetts and Sean O'Connell*

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*Danya Hodgetts is a lecturer in Sport Management at Central Queensland University.*

*Sean O'Connell is National Communications Manager for SLSA where he is responsible for all internal and external communications.*

---



*This surf lifesaver adorned carnival programmes throughout the 1950s and 1960s.*

## An icon comes of age

Sunday, 6 February 1938, a day on which five people drowned and hundreds more were rescued at Sydney's Bondi Beach, has been recognised as one of the most deadly and dramatic days in the history of Australia's modern beach culture. It was also a day on which the importance of the Australian surf lifesaving movement became starkly evident, for without the presence of lifesavers on the beach, the death toll would likely have been much higher.

There had been rough seas throughout that day, with on-going warnings to bathers. Several minor rescues had occurred at Bondi, with many more at nearby Maroubra, and a drowning on Newcastle Beach.<sup>1</sup> At mid-afternoon, with close to 30,000 people at Bondi, a series of three or four large heavy waves swept towards the beach in quick succession, washing around 200 bathers off a destabilised sandbank and into the strong channel – what we today call a 'rip'.

Fortunately, there were many surf lifesavers on the beach at the time, who quickly began the considerable task of rescuing those in trouble. Using seven belt and reels (the most common form of rescue equipment from 1907 to the 1970s), alongside surf skis, rubber floats, or their own prowess in the surf, they responded immediately.<sup>1</sup> Witnesses recounted the way panic-stricken bathers hampered the rescue effort in the water, grabbing onto and overloading the beltmen. Panicked crowds who

were trying desperately to find their missing loved ones, or to help, added to the confusion, making the scene on the beach just as chaotic. A human chain had to be formed to hold back the crowds from those who were being resuscitated on the sand.

By all reports, the water was clear of bathers within about 15 minutes, but the resuscitation work on the beach continued for some time. While ambulances had been summoned, doctors who had been part of the crowd or who lived nearby were also called to assist. At the end of the day, dozens had been

successfully resuscitated, two were recovering in hospital, and four were known to be dead. A fifth body was later found in the surf.

A visiting American, Dr Marshall W. Dyer, who assisted on the beach, said:

'I have never seen, and I never expect to see again, such magnificent work as was done by those lifesavers. It is the most incredible work of love in the world. Just imagine those men all going into the water without a moment's hesitation, risking their lives and all for love. In America, all our lifesavers are paid....yesterday's rescue was the most amazing I have ever seen.'<sup>2</sup>



Collage from the Daily Telegraph, 7 February 1938.

Following the incident, the term 'Black Sunday' was coined by the Bondi Surf Bathers Life Saving Club (SBLSC) captain, Carl Jeppeson, in his initial statements following the incident, as published in *The Sydney Morning Herald*:

'It was our 'Black Sunday'. The club has been in existence for 30 years and these are the first deaths since we have had patrols on the beach.'<sup>2</sup>

On Black Sunday, one of the largest mass rescues in Australian beach history took place. But while it was unique in that a number of lives were lost, the actions of these surf lifesavers risking their lives to save others is not exceptional. In recognition of their courageous efforts, members of the Bondi SBLSC received a group Meritorious Award from the (then) Surf Life Saving Association of Australia (now known as Surf Life Saving Australia, or SLSA), yet this award is just one of over 350 which have been issued by SLSA since 1922.<sup>3</sup> In the 80 years since records have been kept, Australian surf lifesavers have rescued more than 500,000 people and for every rescue surf lifesavers perform there are many more 'preventative actions' warning people of potential dangers which also help to avert possible drownings.

Since 1990, when more accurate record-keeping began, the number of rescues by surf lifesavers has fluctuated between 8,000 to 10,000 each season. There are a number of reasons for these fluctuations, mainly relating to seasonal conditions. For example, if a period of unusually hot weather corresponds with rough seas, there will be more rescues. Lower temperatures and benign seas will generally lead to fewer rescues. Preventative actions have generally increased over that time, possibly due to better training of surf lifesavers and increased reporting (table S1).

## An essential community service

There is a sad irony in the fact that the tragedy of Black Sunday took place on Bondi Beach, for it was that very same location where, almost 31 years to the day, a group of men formed Bondi SBLSC, the first of many clubs which now make up the unique Australian humanitarian organisation known as SLSA. The story of how those clubs joined together with common purpose and evolved into an organisation with more than 110,000 members

across over 300 clubs who rescue more than 10,000 swimmers each year is a story of how Australians came to embrace the fact the country is indeed 'girt by sea'. But just as crucial as the role Australian surf lifesavers have played in making the beach a safe environment, is their contribution to the volunteer movement in Australia. Indeed, the history of SLSA exemplifies the way Australians have embraced the concept of volunteerism. Today, SLSA is a growing non-government organisation (NGO) with a small team of professional staff, and volunteers playing the key role in the governance of the organisation, in addition to patrolling the nation's beaches.

## S1 PREVENTATIVE ACTIONS AND RESCUES BY SURF LIFESAVERS

Year	Total rescues	Preventative actions	
	no.	no.	Rate(a)
1990-91	8 737	55 212	6.32
1991-92	10 283	47 952	4.66
1992-93	8 366	67 382	8.05
1993-94	9 918	105 418	10.63
1994-95	11 454	90 073	7.86
1995-96	12 295	140 578	11.43
1996-97	11 158	143 983	12.90
1997-98	11 136	151 408	13.60
1998-99	12 948	191 261	14.77
1999-00	10 226	253 385	24.78
2000-01	11 813	289 139	24.48
2001-02	11 837	200 327	16.92
2002-03	9 448	164 612	17.42
2003-04	9 044	171 428	18.95
2004-05	12 232	251 120	20.53
2005-06	10 775	295 055	27.38

(a) Number of preventative actions per rescue.

Source: Surf Life Saving Australia.

In 2005, an independent economic study conducted for SLSA found that if not for the presence of surf lifesavers on Australian beaches, 485 people would drown each year and 313 would be permanently incapacitated as a result of accidents in the surf. Such a figure would represent an unprecedented disaster, and lead to calls for immediate intervention, particularly as the actual coastal drowning rate is around 60 each year. The fact that this carnage is averted is one explanation for the iconic status of Australia's surf lifesavers – the volunteers in red and yellow who have kept beaches safe for 100 summers.



In recognition of the centenary of surf lifesaving in Australia, 2007 has been officially declared the Year of the Surf Lifesaver. This occasion will provide a platform to engage the broader community by telling the story of how this uniquely Australian movement has evolved from its modest origins on Sydney's beaches in the late-1890s and early-1900s to become the country's major water safety and rescue organisation, and an exporter of innovative lifesaving techniques around the world.

### **Origins – from a handful of Sydney beaches**

Australia's first surf lifesaving clubs appeared on Sydney's ocean beaches in 1907. By-laws which had banned bathing in daylight hours since the 1830s were repealed between 1902 and 1905, in response to the increasing popularity of surf-bathing, and a growing conviction that bathing in appropriate clothing was not an immoral act. The impact these changes had on local beach culture was swift – beachgoers entered the surf in rapidly escalating numbers. The surf was new to most surf-bathers, and many could not swim, so with its increasing popularity, came more drownings and consequent attempts at rescue.

By the summer of 1906–07, Sydney was obsessed with the question of the safety of the surf. Local councils provided lifelines on most beaches, but these were often in poor condition, or placed inappropriately on the beach. The councils, New South Wales State Government and media considered a range of suggestions to improve the safety of the beaches, including placing a wire across the beach for bathers to grab if they got into difficulty, or introducing floating buoys.<sup>4</sup>

It was in this environment that surf lifesaving clubs first emerged, their regular patrols a welcome relief to the concerns of the local authorities and nervous bathers alike. On 18 October 1907, representatives from these clubs, now numbering seven, together with members of other interested groups including the Amateur Swimming Association and the Royal Life Saving Society, met to form the Surf Bathing Association of New South Wales (SBANSW), the governing body for surf lifesaving clubs.<sup>5</sup> In 1923, SBANSW became a national body, changing its name to the Surf Life Saving Association of Australia, but it was not until 1947 that the association had affiliated clubs from all Australian states.<sup>6</sup>



*Diving board and bathers, Manly beach, c1908 – courtesy Manly Library.*

The sheer effectiveness of surf lifesaving clubs in reducing the high number of drownings on Sydney beaches meant that surf lifesavers enjoyed a hero's status from their first days in Australia. It was in the inter-war period of the 1920s and '30s that the surf lifesaver emerged as an Australian icon. The beach, a 'symbol of Australia at pleasure',<sup>7</sup> was not just protected by surf lifesavers; the 'sun-bronzed' figure came to personify the beach, his sacrifice and 'masculine bodily perfection' making him ideal to replace the digger and bushman as an urban representation of the 'national type'.<sup>8</sup> He was depicted in advertisements for everything from beer and cigarettes to soap, and even used to sell the nation, adorning Australian travel posters of the 1930s.

Central to the popular image of surf lifesaving was the carnival – colourful and dramatic events such as the 'rescue and resuscitation', march pasts, surf races and boat races entertained the crowds of onlookers and were hotly contested by competitors. The 1954 Royal Carnival at Bondi stands as one of the single most celebrated events in Australian surf lifesaving history. Here, surf lifesavers paraded before the young Queen Elizabeth II and Prince Philip, who were reputedly so impressed they stayed well beyond the scheduled time.<sup>9</sup> This carnival was the highlight of the post-war period, a fitting climax of the surf lifesaver as

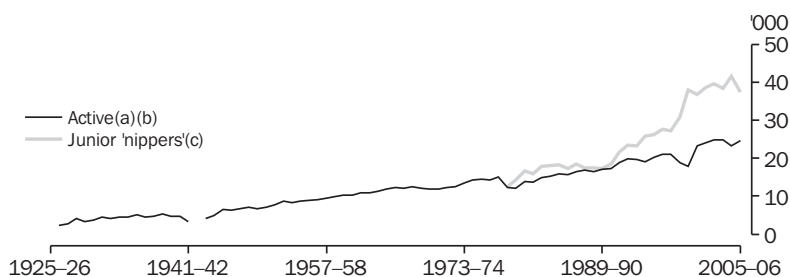
national icon, before the gradual decline of surf lifesaving within the Australian national consciousness.

Douglas Booth argues that SLISA 'sank to its lowest point' in the 1960s and '70s, in a cultural climate in which the beach became a site for individualised pleasure, epitomised not by the surf lifesaver but by the hedonistic surfboard rider.<sup>10</sup> Interestingly, this is not reflected in membership statistics, as active membership generally increased throughout these decades (graph S2). Rather, Booth contends, morale and enthusiasm declined within clubs.<sup>10</sup> There was a sense too, within the administration that without significant change, surf lifesaving would be left behind as Australia progressed.

## An 'old boys club' moves with the times

The 1970s saw a complete overhaul of the SLISA administration, as men who had been governing the association since the 1930s retired, to be replaced by a much younger generation keen on implementing change.<sup>11</sup> Considerable funding boosts by the Whitlam Government aided the organisation in developing and implementing new equipment which would transform surf lifesaving on the beach – by the end of the 1970s, the belt and reel had been supplanted by the far more efficient helicopters, jet rescue boats, and rescue boards and tubes.

**S2 SURF LIFE SAVING AUSTRALIA MEMBERSHIP**



(a) Membership figures were recorded in the SLISA Annual Report for the first time in 1926-27. (b) Categories such as 'Active Reserve', 'Cadet', 'Award' and 'General' (SA only) are also involved in beach patrols and are not represented here. (c) Membership figures commenced 1978-79.

Source: *Surf Life Saving Australia*.



*Port Kembla and Corrimal teams fighting out the boat race finish at Wollongong Beach, c1940.*

Between 1935–36 and 1977–78, board, ski and tube rescues were recorded as ‘other’ in SLSA’s annual returns. Of particular note is the decline in traditional rescue implements such as the surf reel, surf boat and surf ski. The Inflatable Rescue Boat (IRB, or ‘rubber duckie’) is now the most prevalent rescue method. Rescue Water Craft (RWCs or ‘waverunners’) are an increasingly popular rescue device for surf lifesavers or lifeguards on solo patrols (table S3).

The most crucial development of the 1970s, however, for both SLSA and its public image, was the debate over the role of females within surf lifesaving. Females had always been involved in surf lifesaving clubs around Australia, and from the 1970s girls were permitted to join ‘nipperettes’ groups, but women were a notable absence from the beach patrol, the public face of surf lifesaving.<sup>12</sup> In the late-1970s, under pressure in a social climate conscious of the women’s movement and issues of gender discrimination, SLSA truly considered allowing women to become full, active members of surf lifesaving clubs for the

first time. In 1980, the first women gained their surf lifesaving Bronze Medallions.<sup>13</sup> The influx of women into the ranks of surf lifesaving in Australia was a major shift in the culture of the movement, but despite teething problems within some clubs, female active membership rapidly increased. Today, women make up more than 40% of all active surf lifesavers.

The professionalisation of parts of the surf sports circuit in the 1980s and 90s thanks to lucrative sponsorship deals with companies such as Kellogg’s Australia and Uncle Toby’s meant ‘Ironmen’ including Grant Kenny, Guy Leech and Trevor Hendy became the public face of surf lifesaving. With a gradual reduction of corporate marketing and sponsorship budgets and the growth in other endurance and ‘extreme’ sports, the profile of surf sports has declined. In 2005 SLSA re-introduced the Coolangatta Gold, harking back to the famous 1984 film which sparked a resurgent fascination with the strength and endurance of Australian surf lifesavers.



### S3 RESCUES(a)

Year	No gear	Reel	Surf boat	Board	Ski	Tube	IRB(b)	JRB/ORB(c)	Helicopter	PWC/RWC(d)	Other	Total
1924–25	194	309	8	—	—	—	—	—	—	—	—	511
1929–30	756	875	46	24	—	—	—	—	—	—	—	1 701
1934–35	1 013	1 089	34	100	—	—	—	—	—	—	—	2 236
1939–40	1 126	1 540	57	—	—	—	—	—	—	—	108	2 831
1944–45	1 021	1 603	59	—	—	—	—	—	—	—	139	2 822
1949–50	1 310	1 421	157	—	—	—	—	—	—	—	253	3 141
1954–55	2 160	2 393	107	—	—	—	—	—	—	—	230	4 890
1959–60	1 930	1 760	116	—	—	—	—	—	—	—	322	4 128
1964–65	2 254	2 657	109	—	—	—	—	—	—	—	292	5 312
1969–70	3 114	2 639	188	—	—	—	—	—	—	—	701	6 642
1974–75	2 262	1 189	85	—	—	—	—	—	—	—	1 616	5 152
1979–80	2 750	674	38	1 575	243	787	1 059	288	50	—	—	7 464
1984–85	2 621	176	48	2 173	58	1 160	2 657	582	1 264	—	—	10 739
1989–90	2 087	26	19	2 411	106	1 216	3 706	351	1 975	—	—	11 897
1994–95	2 277	1	28	3 214	36	1 549	4 304	45	—	—	—	11 454
1999–00	1 841	—	8	2 881	9	1 860	2 662	329	15	—	621	10 226
2004–05	1 435	—	11	2 927	12	2 286	4 271	281	14	627	368	12 232
2005–06	1 467	—	18	3 042	25	2 368	2 554	206	16	736	309	(e)10 775

(a) Changing rescue methods used by surf lifesavers since 1924, when more detailed record-keeping first began.

(b) Inflatable Rescue Boat. (c) Jet Rescue Boat/Offshore Rescue Boat. (d) Personal Water Craft/Rescue Water Craft.

(e) Includes 19 rescues using Boogie Boards.

Source: Surf Life Saving Australia.

## Across the seas – lifesaving internationally

More than 400,000 people drown each year, making it the second leading cause of unintentional injury death globally after road traffic injuries.<sup>14</sup> The reduction of this drowning rate is, therefore, an imperative for governments and NGOs the world over. At the opening of the 21st century, SLSA plays a key role in the development of surf lifesaving in the Asia-Pacific region, continuing a legacy it began in the 1920s when several overseas organisations first expressed interest in the methods and equipment of Australian surf lifesavers. SLSA has had close links with surf

lifesaving bodies in South Africa, New Zealand, and the United States of America (including Hawaii) since its first overseas tours in the 1930s, but it was not until the formation of the International Life Saving Federation (ILS) in 1994 that SLSA became involved with an organisation which represents water safety bodies from around the globe. Australian delegates have played an important part in the administration and governance of this body, and Australian surf dominated lifesaving sports since its inception in the 1980s.<sup>15</sup>



Wollongong Ladies Surf Club march past team, summer of 1952–53 – Jean Duff (far left) team captain called directions such as 'reel down'.

## Surf lifesaving and volunteerism

While volunteerism is and always has been central to surf lifesaving in Australia, the body was not founded for purely altruistic reasons. Rather, the initial meeting of the association was called to discuss opposition to proposed ordinances which would force men to wear an additional pleated 'skirt' over their costumes. The founding members of the SBANSW hoped to use the association to increase and legitimise their lobbying powers relating to any aspects of beach governance, particularly important in a climate when surf-bathing was still threatened by moralists.<sup>16</sup> Hence the new body's main purpose was to 'regulate and promote matters relative to surf-bathing.'<sup>17</sup>

While the SBANSW governed surf lifesaving, and oversighted the activities of existing clubs and formation and affiliation of new ones, they were also involved in matters relating more generally to the governance of the beaches. They had representatives on both the Surf Bathing Committee of 1910–11, and Shark Menace Advisory Committee of 1935, both of which reported directly to the New South Wales Government. In addition, they lobbied the Government and local councils on other issues, and were instrumental in raising action in 1914 against the Sydney City Council's dumping of garbage at sea, resulting in rubbish washing up on the beaches.<sup>18</sup>

After 100 years of SLSA, the volunteer remains at the heart of the organisation, which now has a steadily increasing membership of more than 112,000 members, spread across 305 surf lifesaving clubs in every state and the Northern Territory. This is despite a strategic recognition of the need for SLSA to re-position itself with government and the community as the pre-eminent authority on aquatic safety in Australia. Such a re-positioning inevitably requires an increased level of professional management in order to be effective. SLSA's own full-time staff has almost doubled in the past ten years to almost 30 personnel, with others in the state centres, branches (in New South Wales and Queensland) and some of the larger clubs.

Demographic shifts dictate that in order for SLSA to retain and reinforce its relevance, it needs to be providing lifesaving and other services around the clock. This has led to SLSA

focussing on the provision of 'lifeguard' and 'support' services around the country. Although the terms 'lifesaver' and 'lifeguard' are sometimes used interchangeably, in Australia a surf 'lifesaver' is a trained volunteer who operates on weekends and public holidays during the 'beach season' (which varies across the country). A 'lifeguard' is either employed by, or contracted to, local government or other land managers and generally provide beach safety services at other times, depending on local requirements. SLSA currently provides around 70% of lifeguard services around the country. 'Support services' are rapid-response units who use motorised equipment such as rescue water craft (or 'waverunners'), jet rescue boats, offshore rescue boats and helicopter rescue services. Despite these significant strategic shifts towards professionalism, the volunteer surf lifesaver wearing his or her red and yellow quartered cap will continue to provide the heart and soul of the organisation.



*Queensland surf lifesavers undertaking CPR – courtesy Harvie Allison.*



*Waverunner used by surf lifesavers and lifeguards – courtesy Harvie Allison.*

## **Challenges ahead – remaining relevant to the Australian community**

The clash between locals and visitors which led to the 'Cronulla riots' of December 2005 was as much about 'ownership' of the beach as a clash of ethnicity.<sup>19</sup> Contests over beach space have been a constant in Australian beach history – the 19th century witnessed debates which pitted private interests against public access to the foreshores, and in the early-20th century beachgoers protested the placing of merry-go-rounds and other man-made structures on the beach, protests which were echoed 100 years later by those who opposed the volleyball stadium on Bondi Beach during the 2000 Sydney Olympics.<sup>20</sup>

Nevertheless, the Cronulla riots caused SLISA to re-examine its approach to remaining relevant to the sections of the Australian community who had been exposed to the beach and beach culture only relatively recently. Although increasing the ethnicity of its membership had been a strategic objective for the organisation since 2000, SLISA had been hampered by lack of data on cultural background for the simple

reason the information is not collected in any systematic way. Despite innovative programmes at a number of individual clubs, lack of financial resources had limited SLISA's ability to develop and fund sustainable initiatives. Following the riots, the Australian Government, along with SLISA and a number of other organisations, agreed on a strategic approach to this issue. The resulting programme – On The Same Wave – will see specialist managers work with culturally and ethnically diverse communities to improve harmony on the country's beaches in a variety of ways.

In much the same way as the organisation eventually welcomed females as full members, and has prospered as a result, surf lifesaving must seize the opportunity to break down the preconceptions that prevail about the movement. The truth is that anyone can become a surf lifesaver, irrespective of age, gender, cultural background and, interestingly, swimming ability. The fact that this will seem counter-intuitive to many Australians is a demonstration of how far the movement has yet to travel.

This issue, and the response, is symptomatic of SLSA's dilemma as it continues to evolve in the 21st century. Significant financial resources will be required in order for SLSA to attain and retain its desired position as the pre-eminent authority on aquatic safety in Australia. The organisation's current funding comes from a variety of sources including sponsorship, grants and fundraising. Over the past decade, much effort has been devoted to developing and diversifying SLSA's income. The organisation must continue to develop funding sources

which are less susceptible to external factors, as the work of saving lives in the water continues, regardless of the state of the economic cycle.

The Year of the Surf Lifesaver in 2007 provides all Australians with the opportunity to reflect on their relationship with the country's coastal areas, particularly the beaches and beach-side communities. For SLSA, it is an opportunity to celebrate 100 years of service to the community (table S4), but most importantly, to consolidate its position to ensure it can go on saving lives in the water for the next 100 years.

#### **S4 A CENTURY OF SURF LIFESAVING IN AUSTRALIA — KEY EVENTS**

First appearance of surf belt and reel on Sydney beaches.	24.3.1907
Surf Bathing Association of New South Wales founded – with seven clubs plus affiliated associations. This body later became Surf Life Saving Australia (SLSA).	18.10.1907
First surf Bronze Medallions issued.	2.1.1910
World War I – massive decline in membership numbers as surf lifesavers volunteered for service to their nation and Empire.	1914–1918
First Association Championships, Bondi Beach.	1915
First Meritorious Awards issued.	1922
Australian championships held on Bondi Beach to celebrate Sydney Harbour Bridge opening.	1932
Adrian Curlewis became President of Surf Life Saving Association of Australia (SLSAA). With the exception of four years when he was serving in World War II, Curlewis remained President of the Association until 1975, making him the longest serving President in SLSAA history.	1934
Red and yellow flags introduced, although the colours were divided diagonally, not horizontally.	1935
Black Sunday, Bondi Beach.	6.2.1938
Patrolling lifesavers ordered to wear red and yellow quartered caps.	1939
Australian Championships held in Southport, Queensland. This was the first time the 'Aussies' were ever held out of Sydney.	1947
Royal Carnival, Bondi held in honour of Queen Elizabeth II.	6.2.1954
International Carnival held at Torquay to coincide with Melbourne Olympics. International Council of Life Saving was formed.	1956
Expired air resuscitation, otherwise known as 'mouth-to-mouth', adopted.	1960
Iron man race held at Australian Championships for first time.	1966
World Life Saving (WLS) founded.	1971
National Junior Association of Surf Lifesaving formed.	1973
200,000th recorded surf rescue carried out.	1973–74
Introduction of helicopter rescue service in Sydney (with team of 28 surf lifesavers).	1973
Females became eligible to become full active patrolling members of SLSAA for first time.	1.7.1980
First 'Coolangatta Gold' event, won by Guy Leech.	1984
Inaugural Kellogg's Nutri-Grain Iron Man Grand Prix.	1986–87
WLS and Federation Internationale de Sauvetage merged to form the International Life Saving Federation. SLSA played key role in merger and in governing the new body.	1994
Year of the Surf Lifesaver is celebrated across the country.	2007

Source: Surf Life Saving Australia.





*Maroubra surf lifesavers undertaking resuscitation training – courtesy TVU.*



*Maroubra surf lifesavers at a recent carnival – courtesy TVU.*

## End notes

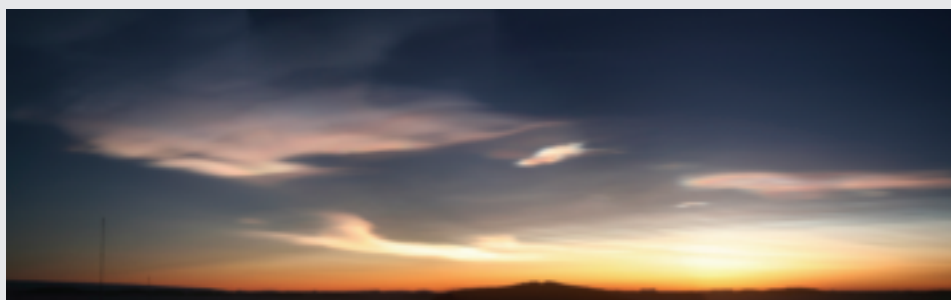
1. Newspapers – Sydney Morning Herald and Daily Telegraph, 7 February 1938.
2. Newspaper – Sydney Morning Herald, 7 February 1938.
3. For a full list of all meritorious awards issued by SLSA, see Chris Conrick, Meritorious Award Register, Ed Jaggard (ed.) *Between the Flags: One hundred summers of Australian surf lifesaving*, Sydney, UNSW Press, (2006), pp. 240–247.
4. Manly Council minutes, 12 September 1902, 17 November 1903; Randwick Council minutes, 5 February 1907; Waverley Council minutes, 9 January, 1906; Letter John C Hume to Minister for Lands, 1 February 1907, SRNSW: Miscellaneous Branch: CGS 8258, 07/2048.
5. The SBANSW foundation clubs were Bondi, Bronte, Coogee, Manly, Maroubra, North Bondi and Tamarama. The United Wanderers and Woollahra Swimming Clubs were also represented.
6. The Association changes its name to Surf Life Saving Australia in 1991.
7. Rickard, John, *Australia: A Cultural History*, London : New York : Longman, 1988, p. 192.
8. Saunders, Kay, 'Specimens of Superb Manhood', *Journal of Australian Studies*, March 1998 no. 56, p. 97; White, *Inventing Australia*, Sydney : George Allen & Unwin, 1981, p. 155; Cushing, Nancy & Huntsman, Leone, 'A National Icon: Surf Lifesaving And Australian Society And Culture' in Jaggard (ed.), *Between the Flags*, p. 10.
9. Ziegler, Oswald, (ed.), *The Royal visit to New South Wales, official record: the visit of Her Majesty the Queen and His Royal Highness the Duke of Edinburgh, February–March 1954* (popular edition) 1954.
10. Booth, Doug, 'Clubbies, managing pleasure and discipline' in Jaggard (ed.) *Between the Flags*, p. 77.
11. Jaggard, Ed, 'From Beach to boardroom' in Jaggard (ed.) *Between the Flags*, p. 65.
12. Jaggard, Ed, *Australian Surf Lifesaving and the 'Forgotten members'*, *Australian Historical Studies*, vol. 30, no. 112, April 1999.
13. The Bronze Medallion is the basic qualification for all active surf lifesavers. To be eligible for a Bronze Medallion, a candidate must be over 15 years, have a reasonable standard of physical fitness and be proficient in basic first aid, resuscitation as well as surf rescue practices. Active surf lifesavers must pass an annual proficiency test in order to continue patrolling.
14. World Health Organisation (WHO), Department of Injuries and Violence prevention, *Facts About Injuries: Drowning*.
15. Caroline Ford & Ed Jaggard 'Spreading the word: Surf lifesaving overseas' in Jaggard (ed.) *Between the Flags*.
16. Booth, Doug, *Australian Beach Cultures: The history of sun, sand and surf* (2001) Frank Cass, London.
17. Foundation Meeting SBANSW minutes, 18 October 1907, SLSA Archives.
18. Waverley Council minutes, 3 November 1914.
19. Sydney Morning Herald, 12 December 2005.
20. Caroline Ford, draft PhD dissertation, University of Sydney, Sydney, NSW.

# Australians in Antarctica

The International Council for Science in conjunction with the World Meteorological Organisation established an International Polar Year (IPY) in 2007–2008, the 125th anniversary of the first polar year and the 50th anniversary of the International Geophysical Year in 1957–58.

The polar regions are remote areas of the planet Earth that have profound significance for Earth's climate and ultimately environments, ecosystems and human society. There have been a number of major international science initiatives in polar regions since the first IPY in 1882–83. These initiatives have involved an intense period of interdisciplinary research, collecting a broad range of measurements that provide a snapshot in time of the state of polar regions. The last such initiative was the International Geophysical Year 1957–58, which involved nearly 30,000 scientists from 66 countries. The highly successful cooperative scientific enterprise was centred on Antarctica. Fifty years on, technological developments such as earth observation satellites, autonomous vehicles and molecular biology techniques offer opportunities for a quantum step upwards in understanding polar systems. IPY 2007–2008 will run from March 2007 to March 2009 to ensure that the anticipated 60,000 scientists that are expected to participate have the opportunity to work in both polar regions or work summer and winter, if they wish. Australia will be playing its part through the coordination of major international climate and marine biodiversity studies in Antarctica.

The Australian Bureau of Statistics invited Professor Michael Stoddart, Australian Government Antarctic Division and Dr Tom Griffiths, Australian National University, to contribute to a feature article in this edition of *Year Book Australia* marking the IPY 2007–2008. Dr Griffiths' essay discusses the major phases and trends in the history of Antarctica over two centuries. Professor Stoddart has provided a contemporary picture of life in Antarctica, including a description of what it is like to work in Antarctica and an outline of Australia's programme of scientific research. Shorter articles on specific aspects of Australia's involvement in Antarctica – administration, fishing, tourism, waste management – are contained in relevant chapters of the Year Book.



*Nacreous clouds showing iridescent colouring with the sun below the horizon – photography  
© Renae Baker, courtesy Australian Government Antarctic Division.*

# Discovering the continent of ice: Antarctica in world history

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Only in the last century have humans started to come to terms with the massive continental ice cap clinging to the southern pole of their planet. Having polar ice caps has been rare in Earth history and having two at once may be unique. In a period of human-induced global warming, it is easy to forget that we inhabit an Ice Age, or at least a relatively warm period of one called an interglacial. A temporary retreat of the ice introduced our interglacial just 10,000 years ago and the awesome ice of Antarctica that we marvel at today is the most impressive remnant of the continental glaciation which once overwhelmed land in warmer latitudes. Ice sheets four kilometres deep sit upon Antarctica, and deposits almost as thick envelop Greenland. But the southern ice cap is by far the most significant in terms of size and influence. Around 90% of the world's land ice and 70% of Earth's fresh water are locked up in that Great South Land. There is so much ice down there, gripping onto Earth, that it distorts the globe into a slight pear shape. It took people a long time to realise that Antarctica was much colder than the Arctic, and that it constantly affects the climate of the rest of the world.

## Great South Lands

Was there a Great South Land? That geographical question stimulated exploration of high southern latitudes for five hundred years, from the 1400s to the 1900s. From the earliest classical cartographies, belief in the existence of a *Terra Australis* was tenacious. Australia and Antarctica – once linked in deep geological time – were united in the European geographical imagination. But neither was to satisfy the northern hemisphere expectation of a vast, rich

continent spanning the Southern Ocean.

Captain James Cook voyaged adventurously through seas 'pestered with ice' in 1772–75 and circumnavigated Antarctica without ever quite being sure if it was there. From his vantage point as the first human to cross the Antarctic Circle, he gazed further south with both foreboding and intuition. He was convinced by the character of the ice that there was a nucleus of land at the pole. But if it was there, it held no promise: 'If any one go further south than I have been', declared Cook, 'I shall not envy him the honour of the discovery'.

In the mid-19th century, the desire to understand and map terrestrial magnetism brought voyagers face-to-face with great ramparts of ice. Following the location of the North Magnetic Pole by the British naval officer James Clark Ross in 1831, there was a competitive quest to locate the South Magnetic Pole in the years 1837–43. Three expeditions voyaged south, taking magnetic readings around the edge of Antarctica: they were led by Dumont d'Urville of France, Charles Wilkes of the American South Seas Exploring Expedition, and James Clark Ross in his British ships, the *Erebus* and *Terror*. Ross happened upon the huge embayment that came to bear his name (the Ross Sea) and was thus able to voyage furthest south. He discovered a mountain of ice and fire – the volcanic Mt Erebus – but he also encountered an awesome shelf of ice towering above the masthead which he called the 'Barrier', for it stood between him and his goal. He was reluctant to acknowledge that he was butting up against the floating edge of a vast continent for it would mean giving up on his dream to sail all the way to the South Magnetic Pole (Mawer, 2005).





*Map of the 1st and 3rd years' tracks of the Australasian Antarctic Expedition, 1911-1914 – slide from John George Hunter collection, courtesy National Library of Australia.*

Voyagers found it difficult to distinguish land from clouds, land from ice and land from islands. The visual phenomenon of 'looming' brought distant sights deceptively close, big black clouds 'looked like raised land', and discoloured icebergs were closely scrutinised. Sailors were 'dying to see' the blackish colour of earth. With picks and hammers they secured fragments of 'the mineral realm', loading their pockets with rocks and carrying off penguins as trophies. Rocks were of more than scientific interest; they were crucial geopolitical footholds. Explorers in southern seas hungered for land to claim. But the existence of a continent under the ice was not confirmed until the 1930s and the great depth of the ice cap was discovered only in the 1950s.

## Sealing and whaling

The first people to step ashore on Antarctic lands were probably sealers making a living at the edge of the known world. Sealing took off in the far south in the wake of James Cook's reports of island colonies of glistening creatures, and it was sealers who became the incidental (and sometimes secretive) discoverers and explorers of the Antarctic and sub-Antarctic coastlines. The history of sealing

and whaling in the Southern Ocean offers a stunning, repeated pattern of discovery, over-exploitation and rapid decline, as new islands or oceans were invaded and swiftly exhausted. Remarkably quickly and with ruthless efficiency, British and American sealing ships stripped the rocks and beaches bare of the animals, slaughtering fur seals for their pelts and elephant seals for their blubber oil. Up to 60 seals might be clubbed and skinned by an expert sealer in an hour, and it was usual for the whole of a colony to be exterminated in a raid. The thick, dark fur of the fur seals was in much demand for clothing, and as a result, many of the northern fur seal colonies had been hunted to extinction by the early-19th century. The elephant seals' pelts were considered worthless for clothing, but their blubber was as good as a whale's for the quality of oil it produced. The sealers' arithmetic was that a barrel of blubber made a barrel of oil, and it was this oil that lubricated the machinery and burned the lamps of civilisation.

The extension of commercial whaling into far southern seas in the late-19th century opened the heroic era of Antarctic exploration. By 1904 the famed Norwegian whaler and explorer, Carl Larsen, had established Grytviken, the first



*This photograph was taken by the light of the midnight sun, shows the bow of the "Discovery" wending a way through floes and brash ice off the coast of Kemp Land. Antarctica, 1929–31 – Frank Hurley, courtesy National Library of Australia.*

coastal whaling station on the island of South Georgia. Within ten years of Grytviken's foundation, the humpback whale population was commercially exhausted. In the 1920s, Larsen pioneered the use of factory ships big enough to process a whole whale on deck, and this invention (which freed a ship from the need for a shore station) opened up hunting in the unregulated and remote seas close to the Antarctic coast. The 1930–31 summer became the season of the greatest number of vessels ever operating in the Southern Ocean – 41 factory ships and 232 whale catchers manned by 11,000 men as well as uncounted transport vessels. In 1937–38, this phase of pelagic or deep-sea whaling resulted in the killing of 46,039 whales in the Southern Ocean, almost 90% of the worldwide total taken that year. Pursuing a familiar pattern, the peak was followed by a collapse in the industry due to massive over-exploitation (Martin, 2001).

## **The 'heroic era' of continental exploration**

The 'heroic age' of Antarctic exploration describes the two decades from the final years of the 19th century to World War I when Antarctica became the focus of intense private and patriotic endeavour. At the Sixth International Geographical Congress in London in 1895, scientists resolved that 'the exploration of the Antarctic regions is the greatest piece of geographical exploration still to be undertaken'. Expeditions sailed south from Argentina, Australia, Britain, Chile, France, Germany, Norway, Scotland, Sweden, and Uruguay, and there was a simultaneous quest for the northern pole. Funded more from private than government sources, these expeditions were nevertheless inspired by nationalism. The age was 'heroic' not only because it generated tales of extraordinary individual achievement and sacrifice, but also because the explorers raced one another not so much to secure territory as to establish national pride and personal honour on the world stage. When honour rather than territory was primarily at stake, then 'winning' could take unusual forms.

The two most famous 'heroic era' expeditions were strictly failures. Robert Falcon Scott and his four companions died in early-1912 after manhauling their sledges to the South Pole and most of the way back. The Norwegian Roald

Amundsen had beaten them to the Pole by five weeks. Scott's inspiring letters and diary entries, written from the tent that would become his tomb, have become the sacred texts of Antarctic history. In 1914–15, Ernest Shackleton's attempt to cross the Antarctic ice cap from the Weddell Sea to the Ross Sea never got started because his ship, the *Endurance*, was trapped and crushed in the ice of the Weddell Sea. The story of how Shackleton and his men rescued themselves – and then rescued the marooned party waiting for them on the other side of the continent – is a tale of tenacity and hardship. The central icon of that saga is a small whaling boat, the *James Caird*, which carried Shackleton and five men across 800 miles of the stormy Southern Ocean to the whaling communities of South Georgia.

The most adventurously scientific expedition of the heroic era, and one that put geographical exploration ahead of competitive nationalism, was an Australasian Antarctic Expedition led by Douglas Mawson in 1911–14. Since the 1880s, Australians had talked of their special responsibility to investigate the Antarctic coast to their south, and Australians had joined expeditions led by Carsten Borchgrevink (1898–1900), Scott (1901–04 and 1910–13) and Shackleton (1907–09). In 1911, Mawson established a base on the edge of the East Antarctic ice cap at Commonwealth Bay and launched a comprehensive scientific

programme in new territory. But the expedition also had its heroics. Mawson survived a traumatic sledging journey during which he lost both his companions, Belgrave Ninnis and Xavier Mertz. Ninnis was swallowed by a crevasse and disappeared with most of the food, forcing Mawson and Mertz to begin a desperate journey home. On that march Mertz died of malnutrition and Vitamin A poisoning from eating the livers of the sledge dogs, and Mawson nursed him to the last. Alone and with still more than 100 miles to go, Mawson battled on, falling down crevasses and hauling himself out again with a rope ladder that tied him to his sledge. On 8 February 1913 he picked his way down the final, steep slippery slope to the hut in time to glimpse his ship, the *Aurora*, steaming out of the Bay for another whole year. Six men had stayed behind in case their leader returned. Mawson staggered back to the hut just three days before the story of Scott's death broke upon the world.

## Territorial rivalry

In the 1920s a more pragmatic geopolitics quickened in Antarctica, and romantic, masculine heroics morphed into harder-edged territorial theatrics. There was, as the *Adelaide Advertiser* declared on 8 April 1929, 'A Scramble for Antarctica' that might echo the famous 'Scramble for Africa' among European powers in the late-19th century. Commercial



*The Aurora, Australasian Antarctic Expedition 1911–1914 – Frank Hurley, courtesy National Library of Australia.*

whaling was intensifying along the edges of the ice. Britain had established the Falkland Island Dependencies in 1908 and the Ross Sea Dependency (from New Zealand) in 1923 in order to regulate, and profit from, whaling in those sectors. In 1924 the French responded by claiming Adélie Land on the basis of Dumont d'Urville's sighting of that part of the continent in 1840. Adélie Land was in the middle of what Australians had come to consider their quadrant of Antarctica and so it suddenly became urgent to formalise that understanding. Mawson urged the Australian Prime Minister, Stanley Melbourne Bruce, to challenge the French claim and act with Britain to secure Australian administration of its Antarctic lands.

In 1929, therefore, Robert Falcon Scott's old ship, the *Discovery*, was fitted out again to go south, and it was captained by John King Davis and led by Sir Douglas Mawson. This was the British, Australian and New Zealand Antarctic Research Expedition (or BANZARE). The 1926 Imperial Conference had agreed to assert Britain's dominion over all of Antarctica – to paint the whole continent red, as one British

official confidentially put it in 1928. The two BANZARE voyages of 1929–31 inverted the priorities of Mawson's first (AAE) expedition of 1911–14, for they were 'firstly, political; secondly, economic and commercial; thirdly, scientific'. Mawson's secret instructions from the Australian Prime Minister were to 'plant the British flag wherever you find it practicable to do so'.

Mawson's discomfort with the primarily political goals of his latest expedition – however much he believed in its aims – was palpable, and claiming something as slippery as ice was fraught with frustration. Like those earlier ships, the *Discovery* found it hard to locate continental rock. But on 13 January 1930, Mawson and a party of men landed on a small rocky island (which they named 'Proclamation Island') off Eastern Antarctica, climbed to its summit, built a cairn, erected a flagpole, raised the Union Jack, and read an official Proclamation at noon that vested all territories between longitudes 73 degrees (73°) east and 47° east, and south of latitude 65° in His Majesty King George the Fifth His Heirs



*Cheering the flag... A scene on the heights overlooking Proclamation Harbour, Enderby Land, where the Union Jack was raised by Sir Douglas Mawson and his colleagues. At the foot of the flagstaff, official records were buried in a sealed receptacle. The Discovery can be seen at right of picture, 1929–31 – Frank Hurley, courtesy National Library of Australia.*

and Successors for ever. Three years later, the *Australian Antarctic Territory Acceptance Act (1933)* (Cwlth) formalised the transfer from Britain to Australia of sovereignty over all this ice (Collis, 2004).

If Norwegians ruled the Antarctic seas in the interwar period, it was the Americans who colonised the continent. Americans were less traumatised by World War I than Europeans, and led the return to Antarctica. Richard Byrd became the dominant Antarctic figure of the late-1920s and the 1930s. He was a handsome, charismatic Virginian who had established his fame as an adventurous airman, and he aimed to implant a society in Antarctica, not just a lone hut in the wilderness, but a 'city', a mini-civilisation. His three chief instruments of exploration were the radio, the aeroplane and the aerial-mapping camera. In 1928, he took 82 men south and established what he called a 'colony' of half-buried huts on the Ross Ice Shelf and named it 'Little America'. The centrepiece of Byrd's expedition was a flight to the South Pole, which he achieved on 29 November 1929. The Australian Hubert Wilkins had made the first Antarctic flights from Deception Island in November–December 1928.

Claims of Antarctic territory continued to escalate. In early-1939 an expedition from Adolf Hitler's Germany bombed Antarctic ice with hundreds of cast-iron swastikas, each carefully counterbalanced so that it stood upright on the surface. This rain of metal spears was reinforced by the landing of a shore party which planted the flag 'to secure for Germany her share in the approaching division of the Antarctic among world powers'. In the early-1940s, Britain and Argentina battled over the possession of the Antarctic Peninsula and nearby islands. Stamps, post offices, maps and films were weapons of war in a region which, depending on your nationality, was known as Tiera O'Higgins, Tiera San Martin, Palmer Land or Graham Land. In February 1952, Argentinian soldiers fired machine-guns over the heads of a British geological party trying to land at Hope Bay on the Antarctic Peninsula. The following summer, in retaliation, British authorities deported two Argentinians from the South Shetlands and ordered troops to dismantle Argentinian and Chilean buildings on the

islands. Immediately after World War II, in 1946–47, America's Richard Byrd led the largest ever expedition south (his third), called 'Operation Highjump'. The 'operation' involved 4,000 personnel, a dozen icebreakers and an aircraft carrier. An official Navy directive of 1946 identified the expedition as a means for 'consolidating and extending United States of America (USA) potential sovereignty over the largest practicable area of the Antarctic continent'. In 1950, the Union of Soviet Socialist Republics (USSR or Soviet Union) announced its renewed interest in Antarctic exploration, occupation and sovereignty. The Cold War and other conflicts had found their way to the coldest part of the planet.

Since before the War, Douglas Mawson had been lobbying the Australian Government to consolidate its Antarctic claims and to continue the job that his BANZARE voyages had begun. So, the Australian National Antarctic Research Expedition (ANARE) was founded in 1947. Bases were established on Heard and Macquarie Islands and, in 1954, Australia's first continental station was inaugurated. At 5:00 pm on 13 February 1954, the Director of the Australian Antarctic Division, Phillip Law, gathered his men on the small sloping area of granitic rock on Horseshoe Harbour and officially named the station 'Mawson'. Today it remains as the oldest permanent station on the continent.

## The International Geophysical Year and the Antarctic Treaty

The launching of the Russian spaceship, *Sputnik*, on 4 October 1957 seemed to many in the West a threatening symbol of escalating Cold War rivalry. But in Antarctic skies it was welcomed as the culmination of a huge, cooperative human endeavour. *Sputnik* was the most visible efflorescence of the International Geophysical Year of 1957–1958 (known as IGY). IGY was the single biggest cooperative scientific enterprise ever undertaken on Earth, a hugely successful intervention of science into politics, and it was centred on Antarctica. It cut through the increasing cacophony of post-war territorial rivalries down south.



International Polar Years had previously been declared by the scientific community in 1882–83 and 1932–33, but they had focused almost entirely on the Arctic. In the 1950s, the idea emerged that there should be a third polar year, at a time of an expected peak in sunspot activity, and the plan quickly grew to include coordinated scientific observation of the whole globe – an International Geophysical Year. It was agreed that Antarctica would become the priority, as well as those other regions now made newly accessible by technology – outer space and the ocean floor. Nearly 30,000 scientists from 66 nations took part at locations across the globe. In Antarctica, twelve countries were involved: Argentina, Australia, Belgium, Chile, France, Great Britain, Japan, New Zealand, Norway, South Africa, USA and USSR. During IGY, the number of stations rose from 20 to 48, and the wintering population increased from 179 to 912. The summer population in Antarctica reached almost 5,000. Free exchange of data between nations was part of the agreement, and there was a constantly expressed intention to put science before politics. For 50 years the main motives for Antarctic work had been national honour and territorial conquest and scientific work was, in general, of secondary importance. As Phillip Law said, ‘The IGY changed all this.’ (Law, 1962).

Scientifically, the greatest advances were made in glaciology through increased understanding of the size and stability of the Antarctic ice sheet. Another example of the long-term benefits of the global scientific assault on Antarctica during IGY was the beginning of an investigation of the ozone layer – the thin skin of ozone in the Earth’s upper atmosphere – from the British base in Halley Bay on the Weddell Sea. Because of these studies in the 1950s, scientists in the 1980s were able to measure the dangerous thinning of the layer, which normally filters the Sun’s ultra-violet rays. Politically, IGY was such a resounding success that it cried out to be continued and institutionalised. The Soviet Union scientists needed IGY, or something like it, to give their science status at home and themselves some freedom abroad. Although the USA had initially sought the internationalisation of Antarctica with the aim of excluding the Soviet Union, it was now clear that any political solution had to include the USSR (Moore, 2004).

Intensive diplomatic activity following IGY culminated in a draft for an Antarctic Treaty, the main object of which was to promote the peaceful use of Antarctica and particularly to facilitate scientific research in the area. It incorporated a compromise first proposed by Chile – that territorial claims should be frozen for the period of the Treaty but that nothing in the Treaty should be interpreted as depriving any party of a claim or, on the other hand, as recognition of a claim. Military activity and testing of any kind of weapons were to be prohibited within Antarctica. Information was to be shared and inspections of other nation’s bases allowed at any time. The Australian Minister for External Affairs, Richard Casey, helped to persuade the Soviet Union to accept the crucial provision about the freezing of claims (Hall, 2001). A conference was held in Washington, DC, USA in October–November 1959, and the Antarctic Treaty was signed by the twelve nations that had participated in IGY. The IGY had indeed achieved the unexpected. Science as an international social system had never before revealed itself to be so powerful.

## Antarctic society

There is a famous story of Phillip Law arriving at Macquarie Island in 1950 to relieve a wintering party and finding everyone speaking to one another with theatrical 19th century gentility. The men had survived the winter by repeatedly working through their small film collection, and the group’s favourite was *Pride and Prejudice*. Once they tired of watching it, they turned down the volume and acted out the voices themselves. This ventriloquism easily tipped over into daily relations, and soon men were bowing and holding doors open for one another, and addressing their colleagues with sweet and elaborate civility.

Following IGY, many scientific stations remained as permanent Antarctic bases, and wintering became a routine and challenging part of Antarctic life. The Antarctic winter night is more than two thousand hours long and has been described as ‘the hardest personality test on earth’. Since 1993 Australian Antarctic men and women have participated in research for the USA’s National Aeronautics and Space Administration because the Australian stations, not yet accessed by regular aircraft, experience

some of the longest and most isolated winters. Antarctic wintering is an ideal analogue for long-term space exploration.

Antarctica was the 20th century's prime site for boys' own adventures, and they were very much their own. The ice was a masculine place, to be defended, where women might be imagined and missed but never seen or held. There was resistance to women visiting Antarctica at all, and then to women wintering, and then to women working in the Antarctic interior. The media reported the arrival of women on the ice as 'invasions' and 'incursions'. But a list of firsts gradually accumulated – first woman on the continent (Caroline Mikkelsen, wife of a Norwegian whaling captain, 1935); first women to winter (Jackie Ronne and Jennie Darlington, 1946–47); first women at the South Pole (six Americans jumped hand-in-hand from the ramp of a transport plane, 1969). But the real challenge was to have women accepted as normal members of expedition parties. By the end of the century it had become commonplace for women of many nations to be station leaders.

## Mining Antarctica?

Discovering and using Antarctic resources – especially minerals and marine animals – had always been one of the spurs to exploration, and Douglas Mawson and Phillip Law both found no contradiction between conservation and regulated industry. The Antarctic Treaty did not explicitly deal with resource politics, and from the mid-1970s this began to seem a fundamental and possibly fatal flaw. In 1973 the Organisation of Petroleum Exporting Countries restricted production and oil and natural gas prices sky-rocketed. In 1975 Antarctic Treaty nations agreed to an informal moratorium on possible mineral development in preparation for a more formal approach to the question. Knowledge of possible offshore oil and natural gas reserves in Antarctica was growing and by 1980, experts believed that exploratory drilling for these resources was only a decade away. The terms of the Antarctic Treaty dictated that a review of its operations was possible after 30 years. A new political regime was brewing in Antarctica, and from the late 1970s, the number of states acceding to the Treaty increased significantly.



*In an Antarctic Fairyland... A dazzling glimpse of Berg and Floe off the coast of the Kemp Land. The Discovery passed through some hundreds of miles of similar scenery, 1929–31 – Frank Hurley, courtesy National Library of Australia.*

In December 1983, partly due to the escalating resource politics, the United Nations (UN) became officially involved in Antarctica for the first time, although there had been earlier attempts to make UN control of the continent possible. The UN General Assembly adopted a draft resolution on 'The Question of Antarctica' as a result of arguments by Asian and third world nations that the continent should be managed as the common heritage of humanity. The Malaysian Prime Minister, Dr Mahathir, led the campaign, arguing that the Antarctic Treaty was a relic of colonialism and seeking greater democratisation of decision-making. The treaty powers, led by the Australian Ambassador to the UN, Richard Woolcott, responded with defensive unanimity, for this was an issue that brought together even the USA and the Soviet Union, and Britain and Argentina. Woolcott pointed out that Malaysia had only to accede to the Treaty if it wished to participate more actively in Antarctic affairs.

In 1982 Treaty nations initiated negotiations over a Minerals Convention, the purpose of which was not to initiate mining in Antarctica but to set down rules should it ever happen. Many environmentalists believed it was better to have a regime than no regime. After six years of drafting and debate, all Treaty nations agreed to adopt a Convention for the Regulation of Antarctic Mineral Resource Activities (CRAMRA) in Wellington, New Zealand, in June 1988.

## Green crusaders

Meanwhile, an alternative vision of the future of the ice had been gathering political momentum. Antarctica was envisaged by many not only as a realm of peace and science, as established by the Treaty, but also as a 'nature reserve' or a 'world park'. The earliest international agreement in the Antarctic had concerned conservation. In 1935 the League of Nations brought into force an International Convention for the Regulation of Whaling, although it was to prove ineffective. Following the signing of the Antarctic Treaty, several landmark conservation measures were negotiated: the Agreed Measures for the Conservation of Antarctic Flora and Fauna in 1964, the Convention for the Conservation of Antarctic Seals (London, 1972) and the Convention for the Conservation of Antarctic Marine Living Resources (Canberra, 1980).

In January 1987 the international pressure group that united the ecology and disarmament movements, Greenpeace, established a station on Ross Island in Antarctica, called 'World Park base'. It was the first long-term non-governmental base to be established in Antarctica, and its practical purpose was to document and expose the environmental effects of humans on the ice, and to provide a focus for the campaign to have Antarctica declared a world park. Their photos of the giant rubbish dump at the USA station, McMurdo, swiftly led to a revolution in waste management practices and strengthened international pressure for an environmental protocol.

In 1988, after Treaty nations had agreed to adopt the Minerals Convention, the Australian government invited community debate on the issue. Thousands of citizens wrote letters of protest, Greenpeace and other non-government environmental organisations intensified their public campaign for the environmental protection of Antarctica, and political support in the Australian Parliament began to swing behind exploring alternatives. On 22 May 1989, Prime Minister Bob Hawke committed his government to what he called 'Mission Impossible': to reject CRAMRA and argue for the protection of Antarctica as a nature reserve and province of science.

This was a huge political gamble. Management of the Treaty is by consensus, and so a single dissenting nation is enough to derail an agreement. By refusing to sign, Australia was committing itself to an international diplomatic mission. Other Treaty nations responded to Australia's stance initially with disbelief and then with bitter opposition. But, over a period of 18 months, the Australian Government won support first from France, and then Italy and Belgium, and gradually built a new consensus against mining and in support of a new environmental regime. The dramatic oil spills of the *Exxon Valdez* in the Arctic and the *Babia Paraiso* in the Antarctic in 1989, with their dramatic images of slicked polar seas and suffering wildlife, strengthened the hand of the environmental campaigners. On 4 October 1991 a Protocol on Environmental Protection was signed by the Treaty nations in Madrid, Spain. It declared a 50-year ban on mining in Antarctica and put into place comprehensive and legally binding measures to protect the Antarctic environment.



The negotiation of the Madrid Protocol, which was ratified by all parties by 1998, was a successful test of the robustness of the Antarctic Treaty and represented a dramatic shift from a resources view to an environmental view of the continent. A constant challenge for post-War endeavours down south was to build the significance of science in Antarctic culture. The Madrid Protocol greatly empowered science, not just as a currency of prestige but as an urgent and practical requirement. It ensured that research was no longer 'a side issue', although it certainly remained subject to political, strategic and bureaucratic pressures.

In the second half of the 20th century, a geographically marginal continent became intellectually and environmentally central to the world. The challenge of the post-War period for Antarctic research was no longer simply to find out what was down there, but rather, to integrate sustained Antarctic science into the mainstream of global research. Antarctic science made itself fundamental to world concerns about climate change, ocean processes, marine biodiversity and human environmental behaviour. Antarctica had emerged as a sensitive barometer of global health. 'In the old era of Antarctic research,' reflected scientists, 'people used their knowledge of the rest of the world to find out what was in Antarctica. In the new technological era, we use our knowledge of Antarctica to learn about the rest of the world' (McCracken, Young & Bird, 2002).

## Tourism

Thousands of tourists now visit Antarctica every summer. Who was the first Antarctic tourist? Was it Carsten Borchgrevink who paid for his

berth on the whaling ship, *Antarctica*, and claimed to have bustled ashore first at Cape Adare in 1895, ensuring that the first person to set foot on Eastern Antarctica was a tourist? Or perhaps it was Captain Oates who paid £1,000 for a place on Scott's last expedition? It is generally accepted that Antarctic tourism officially began in 1966 when the Swedish entrepreneur, Lars Eric Lindblad, took fare-paying passengers on a ship to the Antarctic Peninsula, thereby establishing the pattern that has prevailed ever since. Up to the end of the 1970s, about 17,000 people had visited Antarctica by cruise ship, overwhelmingly to the Antarctic Peninsula. In the 1980s, almost that number again of ship-based tourists visited. By the early-21st century, that many people were visiting Antarctica by ship in a single summer. Still more tourists flew over Antarctica or visited by plane. By 2004, the leader of *Aurora Expeditions*, the renowned Australian mountaineer Greg Mortimer, could say that he had travelled to Antarctica 'about 100 times' (Mortimer, 2004). He believed that the increasing number of visitors so far posed little threat to the Antarctic environment and that the chief challenge for tourism management was the protection of the wilderness experience itself. In a sense, everyone in Antarctica is a tourist. Scientists and tradespeople as much as tourists are attracted to Antarctica by its purity, silence and otherworldliness. Although humans have now encompassed the great ice cap, drilled into its preserved history of climate and staked it out with permanent bases, Antarctica remains a continent where nature is humbling and humans are always just visitors.

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# Antarctica – in from the cold

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*A blizzard, 1913 – Frank Hurley, courtesy National Library of Australia.*

*'We stumble and struggle through the Stygian gloom; the merciless blast – an incubus of vengeance – stabs, buffets and freezes; the stinging drift blinds and chokes.'*

*(The Home of the Blizzard – Douglas Mawson 1915).*

With these graphic words Sir Douglas Mawson described his sojourn at Commonwealth Bay during his epic 1911–14 expedition. His heroic efforts marked the start of a long and proud history of Australian-led scientific exploration of the southern continent. Over the years Australia's reasons for maintaining its Antarctic presence have changed from exploration and sovereignty to understanding the physical and biological characteristics of Antarctica. Drawing its success from the blending of the spirit of those who crave to confront their own incubi with scientific and engineering ingenuity, Australia's Antarctic programme is acknowledged as one of the world's best. Our knowledge of the environment and the vagaries of the weather are far better known, and we have access today to materials and

support systems which were unknown to Sir Douglas and which would have saved him from much travail. Our stations are comfortable and our operations safe. Our food is of a high standard, our vehicles designed to withstand the harsh Antarctic terrain, and our medical facilities on a par with those in many an Australian country town. As we enter the International Polar Year (IPY) 2007–2008 – a year when the eyes of the world will be upon the Earth's Polar regions – it is timely to reflect upon Antarctica and its mysteries, and on the lives of the men and women who bring life to Australia's Antarctic programme.

Australia owns and operates three stations on the continent of Antarctica, at Casey (66 degrees 17 minutes (66°17') south; 110°32' east) and 3,422 kilometres (km) from

Hobart, Tasmania; Davis (68°35' south; 77°58' east) 4,810 km and Mawson (67°36' south; 62°52' east) 5,444 km – though the latter is about 3,200 km, as a crow might fly, from where Sir Douglas built his huts. In addition, Australia operates a sub-Antarctic station on Macquarie Island (54°30' south; 158°57' east), 1,542 km south south-east from Hobart. All stations are open for business twelve months a year. From time to time, and as research needs dictate, temporary field camps and bases are established in other locations, operating from one to many field seasons. They can be on the coast, or deep inland on the ice cap. In all, Australia's Antarctic Territory covers 5.9 million square kilometres (sq km) – 42% of Antarctica; equivalent to nearly 80% of the size of Australia itself. This is a huge swathe of the Earth's surface and a big management responsibility for a small nation. What is this place like, which plays such a role in Australia's psyche?

## What is Antarctica like?

Antarctica's defining feature is the cold, but it was not always so. Until about 130 million years ago Antarctica was nestled in the embrace of the southern continents – Africa, South America, India, Australia and New Zealand – and vegetation flourished. Relatives of Huon and celery-top pine, man fern, the handsome *Richea*, and the southern beech flourished in its temperate climate. But the demise of the great southern continent, Gondwana, put an end to such luxuriance. As the continents started their northerly journeys Antarctica stayed roughly where it was, gyrating around the south pole. Gradually a sizeable sea passage opened up all around and a mighty current became established. Flowing from west to east with a flow equal to 20 times the volume of Sydney harbour every minute, the Antarctic Circumpolar Current isolated the continent and snow began to lie year round. Antarctica started to become cold. By about 37 million years ago all but the hardiest form of vegetation had vanished and ice covered all the land. The white colour of the ice and snow reflected heat back into the atmosphere and it became colder and colder. The coldest air temperature ever recorded on Earth is –89.2 degrees Celsius (°C) at Vostok station in July 1983.

Today Antarctica's ice sheet measures, on average, 2,500 metres (m) thick, depressing the Earth's crust sometimes to well-below sea level. Its maximum thickness is about 4,800 m. It is estimated that almost 75% of the Earth's fresh water is bound up in it. Sea ice in the vast embayments of the Weddell and Ross Seas does not melt during summer, and neither do the glacier tongues which push their way out to sea. So complete is the continent's ice cover that only about 1% of its coastline, and precious little of its interior, is ice-free. Some countries build their stations on ice shelves or on the ice cap in the interior with the consequence that they move with the slow flow of the ice, but Casey, Davis and Mawson are built on bare rock.

Every winter the sea around Antarctica freezes, increasing from about 3 million sq km in February to about 19 million sq km in September. It is constantly on the move, jostling and moving and throwing up huge piles of rafted slabs making it hard for all but powerful icebreakers to penetrate. Measuring a meter or more thick its interstices are riddled with a labyrinth of brine channels; tiny tubes in which live a myriad of microscopic animals and plants. Weddell seals make breathing holes in it, wearing out their teeth in the process. Antarctic krill feed on the rich blooms of algae which inhabit its underside and interior. Emperor penguins shuffle and slide their way across tens of kilometres of it on their way to the water's edge, and a well-earned feed. In summer the sea ice is mostly all gone and the surface waters are richer with microscopic life than most places on Earth. But the summer is short and the animals and plants which have adapted to live in partnership with the ice have specialised life-styles.

Animals and plants which live in Antarctica and in its surrounding waters must be able to survive in conditions in which the air temperature is significantly below zero all year round. Marine organisms fare a little better with sea water temperatures of –1.8°C under the ice. Biodiversity is low. On land there are between 200 and 300 species of lichens and about 80 species of moss, several hundred species of non-marine algae, and many fungi and bacteria. There are no flowering plants. The mosses provide homes to a very small number of invertebrates. The marine environment is different for although it is driven by the cycle of sea ice it is, nevertheless, somewhat buffered

from the worst extremes of the weather. Mammals and birds are equipped with thick layers of feathers and/or blubber to keep out the cold and fish have a kind of anti-freeze in their blood. Sea-stars and other invertebrates have adopted brooding as a way of giving their young the best possible start in life. Other species are long-lived and grow to a large body size storing as much energy for future lean times. But some animal groups are remarkably abundant in Antarctic waters. No-one knows why but over one-half of all known species of sea-spiders occur in Antarctica, and certain types of fishes are found only in the south of the Southern Ocean. True crabs, of the kind which occur on sea-shores around Australia, are missing from Antarctica.

Adaptation is seen also in life history strategies of terrestrial animals. Some life-history adaptations are bizarre and among the most is that of the emperor penguin. This large bird – an adult male can weigh over 40 kilograms (kg) – lays its eggs before the onset of the Antarctic winter. It is up to the males to incubate the egg on the tops of their feet for the worst months of the year until spring, when the females return and take over the care of the newly hatched chicks. During the winter they lose 50% of their body weight and are desperate for food. To reach the sea they must trek many

kilometres. But when they reach the ocean edge, the teeming food stocks makes the long journey worthwhile.

Little is known about Antarctica's geology because we can study only the tips of the mountain ranges which project above the ice cap. Only an area less than half the size of Tasmania is visible. Most of the rocks lie some kilometres below the surface, protected from the eroding influences of wind, rain and sun. The Trans-Antarctic mountains which snake northwards and westwards along the Antarctic Peninsula from the south pole to the Andes of South America and the Rockies of North America, and northwards and eastwards to the edge of the Ross Sea are part of the ancient mountain chain which also includes Tasmania's mountains and the Great Dividing Range. In Antarctica we can find glimpses of the early structure of our land, before our harsh climate took its toll and our surface eroded away. Rocks of almost four billion years old are known in Antarctica allowing examination of some of the oldest rocks on Earth. Few minerals have been discovered though iron ore and coal are in great abundance in the Prince Charles Mountains in the Australian Antarctic Territory, and manganese nodules are abundant in the waters off shore. Of oil and gold, we know little. Oil comes from relatively young rocks and Antarctica is essentially an ancient continent.



Weddell seal, photograph © Michael Stoddart.



Antarctica's cold and severe weather can have wider global significance. One example is how strong offshore winds and sea ice formation affect the world's ocean circulation. As the cold wind screams northwards down from the high Antarctic plateau and out to sea it freezes the surface of the water. The ice so formed is immediately scoured off by the wind and can be blown 40 km in a day. New ice forms immediately behind it and is itself blown away, and so the cycle continues. In this manner the surface of the water is kept ice-free but as ice is made only from fresh water the water left behind is extremely salty and very dense. Falling to the bottom of the ocean this cold, dense water gradually flows northwards. Some of it travels great distances into the northern hemisphere before rising to bring nutrients and oxygen to the upper waters. The circulation of the earth's oceans owe much to the temperature and salinity of the waters surrounding the Antarctic and the Arctic but as the climate of the Arctic is changing so fast, and the extent of Arctic ice is reducing (by 2.6% per decade as measured by satellite over the past 25 years), the northern part of the ocean conveyor belt pump is showing signs of failing. The warm currents which bathe the western part of Europe keep it largely ice free and if the currents should falter the ports of Rotterdam, Harwich and Hamburg could again become ice-bound for much of the year, as palaeo-climatologists have shown has happened in the past.

As far as we can tell, Antarctica is not warming up in the same way as is the Arctic. There is one ocean 'hotspot' lying to the west of the

Antarctic Peninsula which caused the collapse of the Larsen B ice-shelf in February 2003, and is affecting other ice-shelves on the Peninsula, but the best evidence is that eastern Antarctica remains largely unchanged. Although ice-shelves are floating bodies and do not contribute to any rise in sea level should they melt, the same is not true for the ice sitting on the continent. Should it melt, the ice covering Antarctica would bring about a rise in global sea level of more than 60 m, annihilating most of the world's big cities.

## Antarctica – the workplace

What's it like to live and work in Antarctica? Unlike in Sir Douglas' time, living at an Australian station in Antarctica is now very comfortable. During winter the maintenance staff, and the few hardy scientists who operate instruments and take measurements, live in well-appointed living quarters. Each person has a single room with a bed, desk, storage space, a telephone and an Internet connection. Each two or three rooms share a bathroom, but water remains a problem. Despite being surrounded by 70% of the Earth's freshwater, there is no liquid water available in Antarctica for human use. We must melt ice, or use a reverse osmosis process to turn salty water into fresh and then pump liquid drinking water into huge tanks kept in warm buildings. The flow to bathrooms and kitchens must be kept ice-free through heated pipes, and water must be used most sparingly.



*Camp site with rocky edge in background, Australasian Antarctic Expedition, 1911–14, photograph from Sir Douglas Mawson collection, courtesy National Library of Australia (left). Field camp – photography by Frederique Olivier, Australian Government Antarctic Division © Commonwealth of Australia 2006 (right).*

Stations are heated with electricity generated by diesel generators. At Mawson station the Australian Government Antarctic Division recently installed two 300 mega watt wind turbines, driven by the predictable and strong katabatic winds. Their use trims the fuel use by about 30%, and the excess electricity they generate is being used to make hydrogen gas by hydrolysis of water, for use in vehicles and for powering field camps.

The kitchens of our stations are most important places, for much interest is shown in their products during the long dark days of winter. Hydroponic units at each station produce over 100kg annually of lettuce, rocket, tomatoes and cucumbers, providing welcome relief from a diet of frozen, tinned and dried food. Chefs on station are creative people whose skills are deeply valued by all who spend time there. They get one day off each week, when an element of uncertainty creeps into the menu for the day!

While the kitchens cater for the inner person, the outer person is looked after with a range of activities on station from gymnasias, to artificial climbing walls, to makeshift volleyball courts. Depending on what main station activities are occurring the opportunity exists for most staff to get off the station from time to time. Such trips are the stuff of memories as they put people closer to meeting their personal challenges than when they are on station. Such recreational activities do not take place if the weather forecast is poor, and will only occur if all members of the party have received adequate training in field-craft and survival skills. Properly kitted out, and with Global Positioning System skills and good maps, enough food and water plus some previous experience in the party, most expeditioners experience Antarctica in a rather special way. Situated in the hinterland behind our stations, and sometimes many kilometres distant from them, are field huts to where such recreational trips usually go. Here they will find four or six bunks with down sleeping bags, a gas heater, stove, emergency dried food and a radio for maintaining contact with the station – and views to die for! The comments left behind in the visitors' books attest to the role these short trips away from station play in helping people through the long months of separation from loved ones.

In the event of medical emergencies each station has a well-equipped surgery and a doctor trained in emergency surgery and dentistry. Should an operation involving anaesthesia be necessary, and they are at the rate of about one every second year, station staff are pressed into service as lay surgical assistants to assist the Antarctic medical practitioner in his or her work. They are trained for these roles before they travel south, just as others are trained as firemen, postmasters, electoral returning officers, special constables, hairdressers, boating officers, rescue squads, deputy coroners and other roles. Should an emergency strike the station all the services we take for granted in our cities and towns must be delivered by the 15–20 people who live there. Recognising that emergencies do occur, regardless of whatever precautions have been taken, emergency power units, stores of food able to last for twelve months, clothing stores, communications equipment, stores of tents and stocks of a myriad other things which may be needed, are maintained in containers situated some distance from the station buildings. All on station are trained in what they should do if an evacuation of the station were necessary.

During summer the population of Australia's three stations rises dramatically as the first voyages of the season bring in groups of tradespeople who will work on special building or maintenance tasks, others who work on environmental and heritage projects, specialised technicians in a range of fields, aircraft engineers, dive masters, field craft specialists and the scientists they support. About 200 scientists and research assistants travel south each year to Australia's Antarctic stations and Macquarie Island. The research they conduct must support Australia's strategic requirements for its Antarctic programme and has been rigorously screened and vetted by committees of their peers for scientific merit. Not all work for the Australian Government Antarctic Division in Kingston (Tasmania) for about a half work for universities and research organisations. Several come from overseas. Many graduate students take part in the programme and a substantial proportion acquire a taste for research in Antarctica which remains with them throughout their research lives. When they need specialist assistance, such as in the use of a boat, a tracked vehicle, a skidoo, a quad bike, or helicopter to reach distant places, experienced field guides (and

pilots!) are available to train them to use the equipment themselves or to accompany them into the field. Small field camps can be established in remote locations, should their research require it. One thing is very clear; without close teamwork the conduct of science in Antarctica is simply not possible.

## Australia's programme of scientific research

Australia's programme of research in Antarctica and the Southern Ocean is tightly focused on fields of study which are of strategic importance to the work of the Government department of which it is a part – the Department of the Environment and Heritage. Broadly speaking these are environmental protection, marine ecosystem sustainability, and understanding the role of Antarctica in the Earth's climate system. The broader context for scientific research in Antarctica is that the continent, by international agreement, is set aside for scientific research and is not to be used for mining, the storage of radioactive waste materials, or any military activity. The preamble to the Antarctic Treaty, to which Australia acceded in 1959, recognises that Antarctica 'shall not become the scene or

object of international discord' and that cooperative scientific research, coupled with a sharing of scientific data, is to be promoted. As a result, scientific research in Antarctica is characterised by scientists working together and pooling their intellectual and often their logistical resources.

Australia's scientific programme consists of about 130 projects each year covering fields as diverse as glaciology, atmospheric physics, marine and terrestrial biology, and genetics and all contributing to strategically important objectives. There are scientists examining the nature of the middle and upper atmosphere; the structure and movement of ice on land and sea including the processes of iceberg calving; the habitats and biology of seals, penguins and other animals; the responses of marine and terrestrial organisms to increasing ultra-violet light; the movement of the Earth's crust underneath the ice; the effects of pollution run-off from long-abandoned waste tips on the marine environment, and much more. Medical research includes the psychological and physiological effects of isolation. Not all Australia's Antarctic research is conducted in the field for the databases accumulated over the years are a mother lode for climate and ecosystem modellers.



*Adelie penguins, photograph by Doug Thost, Australian Government Antarctic Division © Commonwealth of Australia 2006.*



Much of our research goes towards providing scientific advice to a number of international agreements to which Australia is signatory, including the Antarctic Treaty itself and associated instruments – the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), the International Whaling Commission and the Agreement on the Conservation of Albatrosses and Petrels – as well as to Australia's growing climate change agenda. While many data are collected at sea we are increasingly putting together data from land-based studies with marine to help us predict what Antarctica and the Southern Ocean will be like in the future.



Mawson station, photograph by  
Frederique Olivier, Australian Government  
Antarctic Division © Commonwealth of  
Australia 2006.

## The future

And what of the future? Antarctica is facing change today as never before in human history – though we now know that it is no stranger to climate and other change on a longer scale. Climate change is being felt more keenly in

polar regions than in other parts of the Earth and this is causing some change in the amount of ice on the Antarctic Peninsula. Most ice-shelves fringing the Antarctic Peninsula are showing some signs of decline. Overall this is quite a small proportion of Antarctica's total ice mass but the trend is worrying. At the same time an increasing number of tourists want to visit Antarctica and have the financial means so to do. In 2006–07 it is estimated that 30,000 tourists will visit Antarctica – mainly to the Antarctic Peninsula – in ships which are sometimes not designed to withstand ice-laden waters (see the article *Antarctic tourism* in the *Tourism* chapter). What will happen if there is an accident? Who will come to the rescue? Who will pay for the environmental clean-up necessitated by an oil spill? How can we ensure that tourists and expeditioners alike keep alien organisms out of Antarctica? Illegal fishers relentlessly pursue the dwindling stocks of fish in the waters around the continent, despite international condemnation from the parties to CCAMLR, and the fisheries protection activities of the Australian Government (see the article *Fishing in Australia's Antarctic waters* in the *Forestry and fishing* chapter). It is likely that increasing attention will be focused on harvesting Antarctic krill in the future as the world looks for new sources of animal protein for feeding a burgeoning aquaculture industry, and we must not fail to protect this creature which sits at the heart of Antarctica's marine ecosystem. Finally, the high level of carbon dioxide in the atmosphere is causing the ocean to become less alkaline resulting in significant shell deformations in the tiny organisms which draw calcium carbonate out of the water, and are the starting point in the ocean's food web. Without them, the ocean withers.

The global importance of Antarctic research will increase as the future unfolds, and as we come to understand that Antarctica is no longer a far distant curiosity at the end of the Earth but is a powerful driver of global ocean circulation and heat exchange and as we realise that these things have much to do with the quality of our lives at home. If it changes, so too will our lives.

But Antarctica will forever retain its ability to bemuse and bedazzle, screaming and tearing at you one moment, seductively wooing you the next. As Dr Ingrid McGaughey aptly put it in 2001 in an account of her year in Antarctica:

'Nothing quite prepares you for her savage beauty – the relentless buffeting and swirling grey of blizzards, sunshine sparkling through on hard-scalloped ice as far as the eye can see, huge sculpted windscours, disguised crevices (sic) of rich blues, purples and finally inky-black waiting to trap the unwary, slashes of vibrant blues through the white of ice cliffs or the rich hues in Colbeck bergs. More hidden is her whimsical side – delicate patterns in the forming sea ice, the inquisitiveness of the Emperor penguins, trails of bubbles captured deep in the frozen meltlakes, the magical sounds of seals singing under the ice, vivid green auroras prancing across the sky, the delicate blush of lengthy twilights around midwinter. These are precious memories.' (*Ingrid on Ice. My year in Antarctica*, p.186).

In a figurative sense Sir Douglas' '*stygian gloom*' has been dispelled. With knowledge about Antarctica has come understanding and we now know the part it plays in helping maintain the planet Earth as a suitable place for human existence. But the crust of knowledge remains very thin. The International Council for Science and the World Meteorological Organisation, the co-sponsors of the IPY, hope that there will be a new burst of knowledge

about the Earth's polar regions, just as there was 50 years ago with the International Geophysical Year, and that this new understanding will underpin research activities for decades to come. The Parties to the Antarctic Treaty, meeting in Edinburgh in June 2006, passed a Declaration on the IPY supporting the work of the 60,000 scientists who are expected to participate. Australia will be playing its part through coordination of major international climate and marine biodiversity studies in Antarctica.

In 2007 Australia will inaugurate a jet-aircraft link between Hobart and Casey to transport people quickly and comfortably to Antarctica. The journey will take five hours compared with the present minimum of eight or nine days by sea. We have recently started using small fixed-wing aircraft to transport people from one station to another, and into the deep field for research, lifting Australia's Antarctic programme into the 21st century. Sir Douglas would hardly recognise today's programme, but we think he would be proud of the skills and ingenuity of his many successors who, working together, have crafted a programme of which all Australians can be proud.

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# 1

## GEOGRAPHY AND CLIMATE

*This chapter was contributed by the Australian Bureau of Meteorology (August 2006).*

Australia is the smallest, flattest and, apart from Antarctica, the driest of the continents. The first part of this chapter describes Australia's landforms and their history in terms of how they were formed. The second part discusses Australia's wide range of climate conditions.

The island continent of Australia features a wide range of climatic zones, from the tropical regions of the north, through the arid expanses of the interior, to the temperate regions of the south. Australia experiences many of nature's more extreme phenomena; including droughts, floods, tropical cyclones, severe storms, bushfires, and the occasional tornado. Each of these phenomena is discussed in this chapter.

Temperatures in Australia were relatively stable from 1910 to 1950. Since then both minimum and maximum temperatures have shown an increasing trend, with an overall increase from 1910 to 2004 of approximately 0.7 degrees Celsius. The acceleration in the warming trend that occurred in the late-20th century has been largely attributed to the enhanced greenhouse effect.

The chapter contains two articles, *2005 – Australia's warmest year on record* and *Average periods in climate*.

# Geography of Australia

## Position and area

Australia comprises a land area of almost 7.7 million square kilometres (sq km) (table 1.1). The bulk of the Australian land mass lies between latitudes 10 degrees 41 minutes (10°41′) south (Cape York, Queensland) and 43°38′ south (South East Cape, Tasmania), and between longitudes 113°09′ east (Steep Point, Western Australia) and 153°38′ east (Cape Byron, New South Wales). The most southerly point on the mainland is South Point (Wilsons Promontory, Victoria) at 39°08′ south. The latitudinal distance from Cape York to South Point is about 3,180 kilometres (km), and to South East Cape 3,680 km, while the longitudinal distance between Steep Point and Cape Byron is about 4,000 km.

In a jurisdictional and economic sense, Australia extends well beyond the mainland continent and Tasmania, including about 12,000 islands. There are many near-coastal islands which are parts of states or the Northern Territory, the largest being Melville Island (Northern Territory) at 5,786 sq km. Other major near-coastal islands include Kangaroo Island (South Australia), King and Flinders Islands (Tasmania), Bathurst Island and Groote Eylandt (Northern Territory) and the Torres Strait Islands (Queensland).

Australia also has jurisdiction over a large number of islands remote from the coast. Some of these, such as Macquarie Island (Tasmania) and Lord

Howe Island (New South Wales) are legally parts of states, but many are included in separate territories such as the Cocos Islands, Heard Island and McDonald Islands, Norfolk Island, Christmas Island, the Coral Sea Islands and Ashmore and Cartier Islands. Australia also administers a portion of Antarctica, the Australian Antarctic Territory. While most of these islands are small, the United Nations Convention on the Law of the Sea allows Australia jurisdiction over large tracts of the ocean and sea floor that surround them (see the *Forestry and fishing* chapter).

Australia has an Exclusive Economic Zone (EEZ) that is 200 nautical miles (370.4 km) wide, and also incorporates areas of the continental shelf outside the 200-mile boundary. This is measured from the lowest astronomical tide, defined as the lowest level that sea level can be predicted to fall to under normal meteorological conditions. Where the boundary overlaps with potential boundaries of other countries (such as Papua New Guinea, Indonesia, East Timor and some French island territories), a boundary has to be negotiated. The EEZ gives Australia jurisdiction over a marine area of some ten million sq km.

The land area of Australia is almost as great as that of the continental United States of America (excluding Alaska and Hawaii), about twice the size of the European Union, and 32 times greater than that of the United Kingdom. Tables 1.2 and 1.3 show the area of Australia relative to that of other continents and selected countries.

### 1.1 AREA, COASTLINE, TROPICAL AND TEMPERATE ZONES

	Estimated area		Length of coastline(a) km	Proportion of total area	
	Total sq km	Total area %		Tropical zone %	Temperate zone %
New South Wales	800 642	10.4	2 137	..	100
Victoria	227 416	3.0	2 512	..	100
Queensland	1 730 648	22.5	13 347	54	46
South Australia	983 482	12.7	5 067	..	100
Western Australia	2 529 875	33.0	20 781	37	63
Tasmania	68 401	0.9	4 882	..	100
Northern Territory	1 349 129	17.5	10 953	81	19
Australian Capital Territory	2 358	(b)	..	..	100
Jervis Bay Territory	73	(b)	57	..	100
<b>Australia</b>	<b>7 692 024</b>	<b>100.0</b>	<b>59 736</b>	<b>39</b>	<b>61</b>

(a) Includes islands. (b) Less than 0.1%.

Source: Australian Bureau of Meteorology; Geoscience Australia, last viewed August 2006, <<http://www.ga.gov.au>>.

## 1.2 SIZE OF CONTINENTS

	'000 sq km
Asia	44 614
Africa	30 218
North America	24 230
South America	17 814
Antarctica	14 245
Europe	10 505
Oceania (including Australia)	8 503

Source: *Encyclopedia Britannica*.

## 1.3 SIZE OF SELECTED COUNTRIES

	'000 sq km
COUNTRIES (SEVEN LARGEST)	
Russia	17 075
Canada	9 971
United States of America	9 809
China	9 556
Brazil	8 512
Australia	7 692
India	3 204
SELECTED OTHER COUNTRIES	
East Timor	14
France	547
Germany	357
Indonesia	1 904
Japan	377
Malaysia	330
Papua New Guinea	462
New Zealand	268
Philippines	299
United Kingdom	242

Source: *Encyclopedia Britannica*.

## Australia's topography

Australia is the lowest, flattest and, apart from Antarctica, the driest of the continents. Unlike Europe and North America, where some landscapes date back to only around 10–20,000 years ago, when great ice sheets retreated, the age of landforms in Australia is generally measured in many millions of years. This gives Australia a very distinctive physical geography.

Map 1.4 shows the elevation of the Australian continent. Most of the continent is at a relatively low elevation, with less than 1% of the country above 1,000 metres elevation. Elevations exceeding 2,000 metres are found only in the Snowy Mountains of New South Wales, with the highest peak being Mt. Kosciuszko (2,228 metres). Higher peaks are found in some external territories, with Mawson Peak on Heard Island reaching 2,745 metres, and much of the Antarctic plateau is above 3,000 metres.

The mainland continent can be divided into three large areas:

- the Western Plateau
- the Central Lowlands
- the Eastern Highlands.

The areas have no defined boundaries. However, an indication of the location and size of each of the regions can be obtained from the following description of each of the areas with reference to map 1.4.

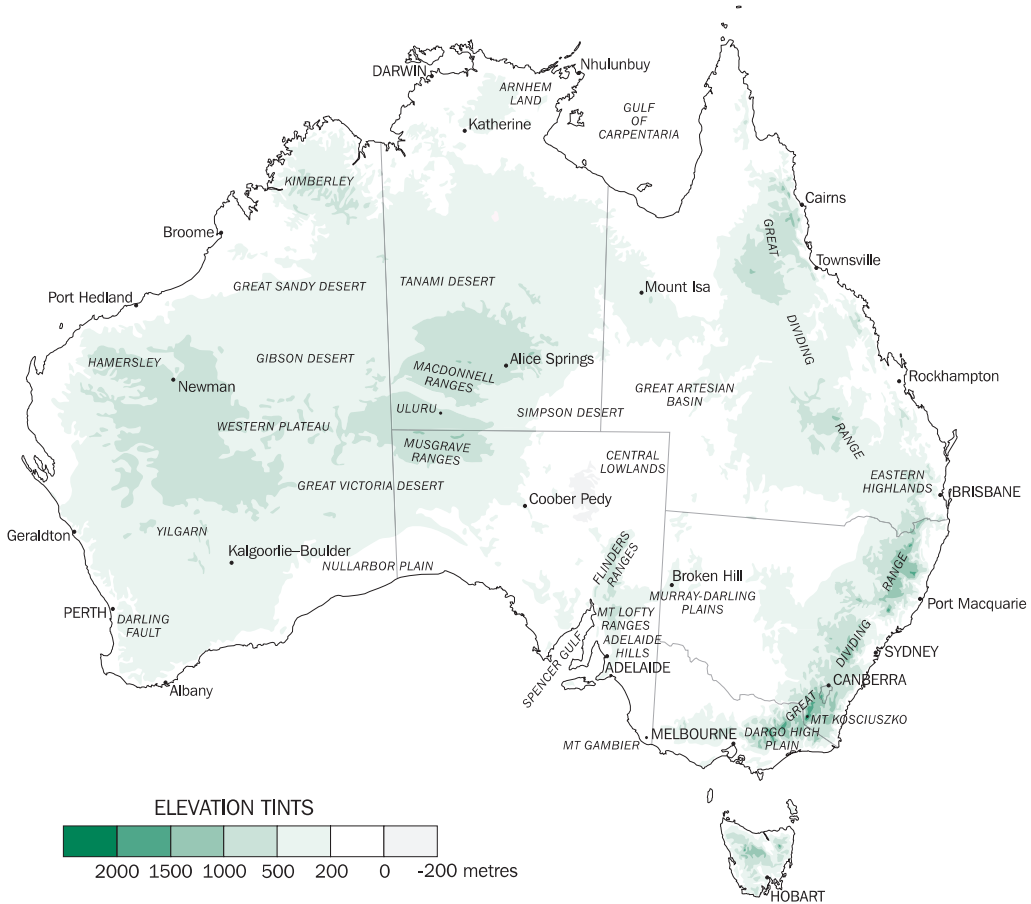
Much of the Western Plateau is relatively flat. There are, however, numerous more rugged areas near the coastal boundaries of the Plateau, including the Kimberley region and Hamersley Ranges in Western Australia, as well as a number of relatively isolated ranges in central Australia (such as the Macdonnell and Musgrave Ranges) and individual mountains, of which Uluru (Ayers Rock) is probably the best known.

The Central Lowlands stretch from the Gulf of Carpentaria through the Great Artesian Basin to the Murray-Darling Plains. Most of this area is flat and low-lying. The main exception occurs in South Australia, where relatively recent faulting has occurred, and the area takes the form of a number of blocks which have been moved up to form a series of ranges (e.g. the Flinders Ranges and Adelaide Hills), with the down-faulted blocks in between forming plains, some of them submerged (e.g. Spencer Gulf). Much of the Central Lowlands is occupied by the Great Artesian Basin, which consists of sedimentary rocks which hold water that enters in the wetter Eastern Highlands.

The Eastern Highlands, stretching along most of the length of the east coast, are characterised over much of their length by a steep escarpment on the coastal side, a series of high plateaus, and then more gentle sloping towards the inland. While the highest elevations (over 1,800 metres) are found in the Snowy Mountains and Victorian Alps, many of the plateaus further north in New South Wales exceed 1,000 metres elevation. In Queensland, however, 1,000 metres is only reached in a few locations and the highlands are generally less pronounced.

The coastal escarpment is particularly marked along much of the New South Wales and southern Queensland coast, as well as more isolated ranges further north, such as those around Cairns. Australia's highest waterfalls (Wollombi on the

## 1.4 ELEVATION



Source: Australian Surveying and Land Information Group, 1996.

Macleay, Wallaman Falls on a tributary of the Herbert, Barron Falls near Cairns, and Wentworth Falls in the Blue Mountains) occur where rivers flow over this escarpment. In the Victorian part of the highlands, the old plateau has been eroded into separate ranges and high plains, and is relatively steep on both the coastal and inland sides. Between the escarpment and the coast lies a coastal strip, sometimes flat but quite hilly in many places, and rarely more than 100 km wide.

As a result of the plateau-like nature of much of the Eastern Highlands, the Great Dividing Range, which separates rivers flowing to central Australia or the Murray-Darling Basin from those flowing to the Pacific Ocean or Bass Strait, is not very pronounced in most locations. In some places, such as the northern Snowy Mountains and

Brindabella Ranges, the highest ranges do not coincide with the Great Dividing Range (which in that area is east of Canberra).

The article *Landforms and their history* in *Year Book Australia 1988* provides a more detailed description of Australia's landforms.

### History of Australia's landforms

As noted earlier, much of the Australian landscape is many millions of years old. The Western Plateau is especially old, and includes some of the oldest rocks on earth, more than 3,500 million (mill.) years old. Most of this region has existed as a landmass for over 500 mill. years.



The present topography results from a long landscape history which can be considered as starting about 290 mill. years ago, the last time Australia was subjected to large-scale glaciation. Once the ice melted, parts of the continent subsided and were covered with sediment to form sedimentary basins such as the Great Artesian Basin. By early-Cretaceous times, about 140 mill. years ago, Australia was already so flat and low that a major rise in sea level divided it into three landmasses as the shallow Cretaceous sea spread over the land. The main separation of Australia from Antarctica took place between 100 and 80 mill. years ago.

In the following Tertiary times, Australia can be regarded as a landscape of broad swells varied by a number of sedimentary basins (Murray, Gippsland, Eucla, Carpentaria, Lake Eyre and others). These slowly filled up and some are now sources of coal or oil. Most of the Eastern Highlands were uplifted at about this time, although a few parts were still experiencing uplift as recently as a million years ago. The central Australian region was also uplifted, and then eroded, leaving remnant mountains and individual peaks such as Uluru (Ayers Rock), which was exposed about 65 mill. years ago. Another feature of this era is the Nullarbor Plain, an uplifted limestone sea floor dating to about 25 mill. years ago.

Throughout the Tertiary, volcanoes erupted in eastern Australia. Some individual volcanoes were the size of modern Vesuvius, and huge lava plains covered large areas. Volcanic activity continued up until a few thousand years ago in Victoria, south-east South Australia and Queensland, and a resumption at some time in the next few thousand years cannot be ruled out. Australia's youngest volcano is Mt. Gambier in South Australia, about 4,600 years old.

Between 55 and 10 mill. years ago, Australia drifted across the surface of the Earth as a plate, moving north from a position once adjacent to Antarctica. During much of this period the Earth was much warmer and wetter than it is today, with little or no ice cover even at the poles, and hence Australia retained a warm, relatively moist climate through most of this period despite its latitudinal shift. It was probably under this climate that the deep weathered, iron-rich profiles that characterise much of Australia were formed. Aridity only seems to have set in after Australia reached near its present latitude range about 5 mill. years ago, with no known landforms (such as dunes or salt lakes) associated with aridity that are more than 1 mill. years old, and the northern part was probably never arid.

Today a large part of Australia is arid or semi-arid (see the article *Australia's deserts* in *Year Book Australia 2006*). Large parts of the arid zone are covered with sand dunes, which are typically aligned longitudinally according to prevailing wind directions (south-east to east in the north, north-west to west in the south). These dunes were formerly mobile but are now mostly fixed. Plains covered with small stones (stony deserts or gibber plains) are found in areas without a sand cover. Salt lakes are found in many low positions, in places following lines of ancient drainage. They are often associated with lunettes (dunes formed on the downwind side of lakes), which have been the location of many important finds of Aboriginal prehistory. In addition to the present arid zone, some of these landforms are found in areas which were formerly arid but have become wetter, such as parts of western Victoria and south-eastern South Australia.

On a global scale, the last few million years were notable for the Quaternary ice age. There were many glacial and interglacial periods (over 20) during this time, with the last ending about 12,000 years ago. As in the rest of the world, Australia's climate during this time was much cooler (and probably generally drier) than it is today, but only small parts of the continent were glaciated – the Central Plateau of Tasmania and an area of about 25 sq km around the summit of Mount Kosciuszko, above 1,800 metres elevation. These ice sheets disappeared about 20,000 years ago. A more significant impact of glacial periods on Australian landforms was through its impact on sea level; during peak glacial periods the sea level was more than 100 metres lower than it is now, Tasmania and New Guinea were joined to the Australian continent, and in some areas, such as the east coast of Queensland, the coastline was several hundred kilometres away from its present location.

River erosion has been important in carving the detail of much of the Australian landscape. Those rivers which flow directly to the sea have dissected a broad near-coast region into plateaus, hills and valleys. Other rivers drain inland, and while they may be eroding the valleys near their highland sources, their lower courses are filling up with alluvium. Most rivers of the Murray-Darling Basin reach the sea, but many elsewhere either end in salt lakes which are dry for most of the time (such as Lake Eyre), or terminate on the plains of the Central Lowlands (such as the Paroo). Many of the features of the drainage patterns of Australia have a very long history, and some individual valleys have maintained their position for hundreds of

millions of years. The salt lakes of the Yilgarn Plateau in Western Australia are the remnants of a drainage pattern that was active before continental drift separated Australia from Antarctica.

During glacial periods of low sea level, coastal rivers tended to cut down to that level, especially towards the sea. When sea levels rose again, some of these valleys were drowned (such as Sydney Harbour), while others filled with alluvium as the sea rose, creating flat lowland valleys.

Coastal geomorphology is also largely the result of the accumulation of sediment in drowned coasts. In some areas, such as Ninety Mile Beach (Victoria) or the Coorong (South Australia), there are long beaches made simply from this accumulation. Further north along the east coast, many parts of the coastline consist of alternating long beaches and rocky headlands, with the beaches backed by plains filled with river and marine sediments.

The offshore shape of Australia, revealed in isobath contours, results mainly from the pattern of break-up of the super-continent of which Australia was once a part. The continental shelf around Australia varies greatly in width; in some areas it is several hundred kilometres wide, while in other areas, such as off far south-eastern New South Wales and much of Tasmania, it is less than 40 km in width. In South Australia, the continental shelf is cut by submarine canyons up to 4,600 metres deep offshore from the mouth of the Murray River. The Queensland coast is bounded by a broad plateau which has been exposed during the various glacial periods. Coral reefs have grown on this plateau at various times during the last 700,000 years when it has been submerged, although the present Great Barrier Reef, which did not start to form until after the last glaciation, is only a few thousand years old.

The Australian landforms of today are thus seen to result from long continued processes in a unique setting, giving rise to typical Australian landscapes, which in turn provide the physical basis for the distribution and nature of biological and human activity in Australia.

## Rivers and lakes

As described earlier, the rivers of Australia may be divided into two major classes; those of the coastal margins with moderate rates of fall, and those of the central plains with very slight fall. Australia's longest river system, the

Murray-Darling, drains part of Queensland, most of New South Wales and northern Victoria, and a section of South Australia, finally flowing into the arm of the sea known as Lake Alexandrina, on the South Australian coast. The length of the Murray is about 2,520 km, while the longest branch of the combined Murray-Darling system, with its headwaters in the Culgoa catchment, is about 3,370 km long.

Most of the east coastal rivers are short, the exceptions being those rivers which penetrate the coastal escarpment, such as the Burdekin and Fitzroy in Queensland, and the Hunter in New South Wales. The south-west of Western Australia also has a number of short coastal rivers.

In addition to those rivers which form part of the Murray-Darling Basin, western Queensland has a number of inland-flowing rivers, such as the Paroo, Bulloo, Diamantina and Cooper Creek. These rivers do not reach the sea, but drain into Lake Eyre or dissipate without reaching any other river system.

A number of river systems reach the tropical or sub-tropical coast. Many of these are of considerable length, such as the Mitchell, Gregory and Leichhardt in northern Queensland, the Daly and Victoria in the Northern Territory, and the Ord, Fitzroy, Ashburton, Fortescue and Gascoyne in Western Australia. All of these rivers have extremely large variations in flow between wet and dry seasons, arising from the great seasonal rainfall variations typical of this region, and some only flow intermittently. The Mitchell, whose annual discharge of about 12 cubic kilometres (cubic km) rivals the Murray-Darling as Australia's largest river system in terms of volume, has discharges in February and March about 100 times those of July.

Australian river discharges are very small compared with those of many rivers elsewhere, reflecting the very low runoff from the Australian continent. By way of comparison, the annual discharge from the Amazon basin in South America is approximately 7,000 cubic km.

There are many lake types in Australia. The largest are salt lakes which are, or were, drainage sumps from internal rivers. For most of the time these lakes are beds of salt and dry mud. Lake Eyre, which has only filled three times in the last century, is the largest of these (9,500 sq km), while other large salt lakes include Lake Torrens (5,745 sq km) and Lake Gairdner (4,351 sq km).



Other natural lake types include coastal lakes formed by damming of valleys by marine sediments, fault angle lakes (such as Lake George near Canberra), volcanic lakes (mostly in Victoria, south-eastern South Australia and Queensland), and glacial lakes (most common in Tasmania, but also found in the Snowy Mountains). Many of these lakes are permanent, but some, such as Lake George, dry out during drought periods, and all are small compared with the inland salt lakes – Australia has no natural, unmodified, permanent freshwater lake larger than 100 sq km. Many artificial lakes, or lakes expanded by artificial means, also exist in all states and territories. The combined Lakes Gordon and Pedder in south-western Tasmania are the largest of these, both in surface area (513 sq km) and volume (11,320 megalitres (ML)), while other very large artificial lakes include Lake Argyle on the Ord in northern Western Australia (5,720 ML) and Lake Eucumbene in the Snowy Mountains Scheme (4,870 ML).

## Australia's climate

The island continent of Australia features a wide range of climatic zones, from the tropical regions of the north, through the arid expanses of the interior, to the temperate regions of the south. Australia is the world's second-driest continent (after Antarctica), with average (mean) annual rainfall below 600 millimetres (mm) per year over 80% of the continent, and below 300 mm over 50%. Summers are hot through most of the country, with average January maximum temperatures exceeding 30 degrees Celsius (°C) over most of the mainland except for the southern coastal fringe between Perth and Brisbane, and areas at high elevations. Winters are warm in the north and cooler in the south, with overnight frosts common in inland areas south of the Tropic of Capricorn; only at higher elevations do wintertime temperatures approach those found in much of northern Europe or North America.

Seasonal fluctuations in both rainfall and temperature can be large in parts of the country. In northern Australia, temperatures are warm throughout the year, with a 'wet' season from approximately November through April, when almost all the rainfall occurs, and a 'dry' season from May through October. Further south, temperature becomes more important in defining seasonal differences and rainfall is more evenly distributed through the year, reaching a marked winter peak in the south-west and along parts of the southern fringe.

Australia experiences many of nature's more extreme phenomena, including: droughts; floods; tropical cyclones; severe storms; bushfires; and the occasional tornado.

## Climatic controls

Australia's climate is largely determined by its latitude, with the mainland lying between 10° south and 39° south and Tasmania extending south to 44° south. This places much of Australia under the influence of the sub-tropical high pressure belt (or ridge), which is a major influence on climate near, and poleward of, the tropics in both hemispheres. The aridity of much of Australia is largely a consequence of the subsiding air associated with this ridge of high pressure.

The sub-tropical ridge consists of areas of high pressure (anticyclones) which pass from west to east across the continent. Individual anticyclones, which can be up to 4,000 km across, can remain near-stationary for several days, bringing clear skies and fine conditions to large parts of the continent, before moving on. The latitude of the sub-tropical ridge varies seasonally. During winter, the ridge is normally centred between latitudes 30° and 35°S, whereas in summer it moves south to between latitudes 35° and 40°S (although individual systems can form significantly further north or south than these characteristic latitudes).

Winds circulate counter-clockwise around anticyclones in the Southern Hemisphere, and hence the flow on the southern side of the sub-tropical ridge tends to be westerly. This zone of westerly flow is generally strongest south of Australia (the so-called 'Roaring Forties'), but the northern part of the zone can affect southern Australia, particularly in winter and spring. Extensive depressions (lows) over the Southern Ocean have associated frontal systems embedded in the westerlies, which bring periods of rain and showers to southern parts of the country. Tasmania is under the influence of westerly flow for much of the year.

North of the sub-tropical ridge the flow is generally easterly. In winter this easterly to south-easterly flow is especially persistent over the northern half of the continent, bringing dry conditions to most locations, except along the east coast. In summer, hot air rising over northern Australia causes an area of low pressure, drawing moist oceanic air from north and west of the continent. Where this air collides with the air coming from the south and east it generates what is known as the intertropical convergence zone,

otherwise known as the monsoon trough. This zone progressively moves southwards over northern Australia (the exact timing and location vary from year to year), allowing warm, moist monsoonal air from the north-west to penetrate into the northern reaches of the continent. Elsewhere, moist easterly flow from the Pacific Ocean and Tasman Sea brings summer rain to most of the east coast.

Australia's generally low relief (map 1.4) means that topography has less impact on atmospheric systems that control the climate than is the case in other more mountainous continents. This lack of topographic obstruction, and the absence of cool ocean currents off the west coast (as are found at similar latitudes off Africa and the Americas) as a stabilising influence, allows the occasional penetration of tropical moisture deep into the continent. As a result, the Australian desert, while relatively dry, does not match the extreme aridity of deserts such as the Sahara where vast areas have average annual rainfalls below 25mm (see the article *Australia's deserts* in *Year Book Australia 2006*). There are also no barriers to occasional bands of moisture and cloud extending from the warm waters of the Indian Ocean off north-western Australia right across the continent to the southern states. These 'north-west cloud bands', which are most common in late autumn and early winter, can produce good rainfall in their own right, sometimes in significant amounts, but their major influence is to provide an additional in-feed of moisture into frontal systems traversing southern Australia, enhancing the rainfall produced by those systems.

One area where topography does have a major influence on rainfall is in Tasmania. Westerly winds are intercepted by the island's mountains, causing heavy rainfall on the western (windward) side, and leaving eastern and central Tasmania in a much drier so-called 'rain-shadow'. The interaction of topography with westerly winds in winter also plays a role in locally enhancing rainfall in regions such as the Australian Alps and the Adelaide Hills. The Great Dividing Range and associated ranges in eastern Australia enhance rainfall over the east coast hinterland during periods of easterly flow, and partially block moisture from penetrating further inland.

## Episodic weather events

Tropical cyclones are the most dramatic episodic weather events to affect Australia. Tropical cyclones are strong, well-organised low pressure systems that form poleward of about 5° of the

Equator, over water that is warmer than approximately 26°C. (The weak Coriolis force near the Equator, which is important in inducing the rotation required for the development of a tropical cyclone, accounts for the lack of cyclones in that region.) Tropical cyclones can vary significantly in size, and once formed are classified as category 1 (weakest) to 5 (strongest) according to their intensity at any given time. Category 4 and 5 cyclones have wind gusts exceeding 225 kilometres/hour (km/h) and can be exceptionally damaging, as in the near-total destruction of Darwin by Tropical Cyclone Tracy on 25 December 1974. The strongest wind gust instrumentally measured in a tropical cyclone on the Australian mainland is 267 km/h, at Learmonth (Western Australia) during Tropical Cyclone Vance on 22 March 1999, but it is believed that gusts in excess of 320 km/h have occurred away from instruments. The zone of most destructive winds associated with tropical cyclones is normally quite narrow, only about 50 km wide in the case of Tracy, and rarely more than 300 km.

Tropical cyclones bring heavy rain as well as strong winds, and are the cause of most of Australia's highest-recorded daily rainfalls (table 1.8). Warm water acts as the cyclone's energy source, and hence is required to maintain the strength of the winds. As a result, tropical cyclones rapidly lose their intensity on moving over land, although the rainfall with former cyclones often persists well after the destructive winds have eased, occasionally bringing heavy rains deep into the inland and causing widespread flooding. (Such flooding can also occur from tropical depressions that never reach sufficient intensity to be classified as cyclones.) Parts of inland Western Australia receive 30–40% of their average annual rainfall from these systems, and it is not unheard of for places to receive their average annual rainfall within a one or two-day period as a tropical cyclone (or ex-cyclone) passes by.

On average, about three tropical cyclones directly approach the Queensland coast during the season between November and May, and three affect the north and north-west coasts, but the number and location of cyclones vary greatly from year to year. The most susceptible areas are north of Carnarvon on the west coast and north of Rockhampton on the east, but on occasions tropical cyclones have reached as far south as Perth and northern New South Wales. The most intense cyclones (categories 4 and 5) are most common off the north-west coast, but can also occur off the northern and eastern coasts. Tropical Cyclone

Monica, in April 2006, was the most intense cyclone ever recorded off the Northern Territory coast, while Larry, in March 2006, was the most intense cyclone to make landfall in Queensland since 1918.

Away from the tropics, 'heatwaves' can occur over many parts of Australia. In southern Australia, they are normally associated with slow-moving anticyclones. A large anti-cyclone remaining stationary ('blocking') over the Tasman Sea will result in northerly or north-westerly flow on its western flank, bringing hot air from the centre of the continent over the south-east coastal regions (and sometimes to Tasmania). In south-western Australia, summer heatwaves are more commonly associated with the characteristic north-south trough of low pressure along the west coast moving offshore, suppressing sea breezes and causing hot north-easterly winds to blow from the interior to the coast.

'Cold outbreaks' can occur over southern Australia when intense south to south-west flow associated with strong cold fronts or large depressions directs cold air from the Southern Ocean over the continent. These outbreaks are most common in the south-east of the country and can result in low temperatures and snow falling to low elevations. While principally a winter and early spring phenomenon, cold outbreaks can occur at other times of year, and the fact that the air originates over the Southern Ocean (where there is only about a 4°C change in temperature from winter to summer) means that they can also bring cold air and 'unseasonable' snowfalls at high elevations at any other time of year.

Intense low pressure systems can also form outside the tropics, most commonly off the east coast where they are known as 'east coast lows'. These systems can bring very strong winds and heavy rain, particularly where they direct moist easterly winds on their southern flank onto the coastal ranges of southern Queensland, New South Wales, eastern Victoria and north-eastern Tasmania. Examples of systems of this type include two, a fortnight apart, in June 1967 off southern Queensland which caused major flooding and severe beach erosion in the Gold Coast region, and an intense low in Bass Strait that sank or damaged many yachts in the 1998 Sydney-Hobart race.

### **Interannual and interdecadal variability**

The major driver of interannual climate variability in Australia, particularly eastern Australia, is the El Niño-Southern Oscillation phenomenon. El Niño is an anomalous large warming of the central and eastern tropical Pacific Ocean, while La Niña, the reverse phase of the system, is an anomalous cooling. The Southern Oscillation refers to a see-sawing of atmospheric pressure between the northern Australian-Indonesian region and the central Pacific Ocean. El Niño events are strongly associated with abnormally high pressures in the northern Australian-Indonesian region and abnormally low pressures over the central Pacific, while the reverse is true during La Niña events.

## **2005 – Australia's warmest year on record**

2005 was the warmest year on record for Australia. The national average of 1.06°C above the 1961–90 mean broke the previous record, set in 1998, by 0.26°C.

All twelve months of 2005 were warmer than normal, but April was particularly exceptional. It was the warmest April on record over about two-thirds of the continent. In terms of the departure from normal, April 2005 was the warmest month ever recorded in Australia – 2.58°C above its 1961–90 mean.

It was a warm year over virtually the entire continent. While most locations have had at least one hotter year in the past, the extent of the above-average temperatures was unprecedented. The only region which was cooler than normal in 2005 was a narrow strip along the coast of Western Australia between Carnarvon and Bunbury.

2005 was also a very warm year globally, ranking with 1998 as one of the two warmest years on record for the world.

The Southern Oscillation Index (SOI) is an index of the pressure differences between Darwin and Tahiti and has traditionally been used as an indicator of El Niño events (which are very often, but not always, associated with a strongly negative SOI). However, with modern satellite and floating buoy observations developed over the last 30 years, ocean temperature anomalies, both at and below the surface, can be monitored directly and hence proxy measurements, such as the SOI, are less important than they once were.

El Niño events characteristically develop during the southern autumn, and continue for about 9–12 months until the following autumn. The most recent El Niño followed this pattern, developing in May–June 2002 and dissipating in February–March 2003. On occasions El Niño events are followed immediately by La Niña events (or vice versa), but it is more common for them to be followed by near-normal (neutral) ocean conditions. Events lasting for more than a year are rare, but not unknown. There are typically two to three El Niño events per decade, but there is large variation from decade to decade in their frequency and the balance of El Niño and La Niña events; since 1980, El Niño events have been predominant, whereas La Niña events were frequent in the 1950's and 1970's.

El Niño events are generally associated with a reduction in winter and spring rainfall across much of eastern, northern and southern Australia. This can lead to widespread and severe drought, particularly in eastern Australia, as well as

increased daytime temperatures and bushfire risk. Conversely, La Niña events are generally associated with wetter-than-normal conditions and have contributed to many of Australia's most notable floods. There is considerable variation, however, in the way each El Niño and La Niña event affects rainfall patterns from the time of onset through its developmental stages to eventual decay.

Temperatures in the tropical Indian Ocean also have an influence on Australia's climate, particularly in the south-west of Western Australia, where the influences of El Niño and La Niña events are more limited. Indian Ocean conditions also have a bearing on winter rainfall in south-eastern Australia through their effects on the frequency of north-west cloud bands (see earlier section).

Many parts of Australia also have a high level of rainfall variability on decadal timescales. The drivers for this are unclear, although at least some of the variability is linked with variations on decadal timescales in the relative frequency of El Niño and La Niña events. Interdecadal variability is particularly high in the more arid areas of Australia. As an example, the 11-year average annual rainfall at Marree (South Australia) has fluctuated from around 100 mm in the 1960s to 250 mm in the 1970s.

The wide range of rainfall variability in Australia has had many consequences. Perhaps the most famous occurred on the southern fringe of the South Australian desert, in the Flinders Ranges

## Averaging periods in climate

The appropriate averaging period to use for climate data has long been an area of discussion, as the dual needs of having sufficient data for a stable average while being reasonably current in a changing climate are taken into account. The issue is complicated by the fact that climate averages effectively serve two purposes – one as an implicit prediction of the most likely conditions to occur in a location in the near future, the other as a benchmark against which current (or past) conditions are referenced.

The World Meteorological Organization currently defines the 'standard normal' period as covering the 30 years from 1961 to 1990. While the

warming trend globally means that 1961–90 averages for temperature are no longer representative of the most likely values to be experienced in 2007, they still provide a suitable reference benchmark, and are used as the base for the Australian temperature data set (table 1.5).

Averages for shorter, or more recent, periods are useful in monitoring current conditions, or in allowing averages to be calculated at stations which do not have data available for the full 1961–90 period. Table 1.7 uses 1971–2000 averages for this reason.

region, in the 1870s. In 1865, a boundary ('Goyder's Line'), based on surveys of native vegetation, had been defined by the Surveyor-General, G.W. Goyder, as the northern limit of the region where cropping was feasible. The years immediately following were particularly wet and many farms were established north of Goyder's Line. They prospered for a few years, but when rainfall returned to more normal levels, the farms became unviable and were largely abandoned. Many of the ruined homesteads are still visible today.

The article *Climate variability and El Niño* in the *Geography and climate* chapter of *Year Book Australia 1998* provides further details.

Climate change

Temperatures in Australia were relatively stable from 1910 until 1950, and since then have followed an increasing trend, with an overall increase during the period 1910–2005 of approximately 0.7°C. Overnight minimum temperatures have warmed more quickly than daytime maximum temperatures, but both have increased over almost the entire continent, with the largest increases occurring in north-eastern Australia. In conjunction with this trend, the frequencies of frosts and other extreme low temperatures have decreased, while the frequency of extreme high temperatures has increased, although at a slower rate. Over Australia the observed warming has accelerated in recent years, and the late-20th century warming has been largely attributed to the enhanced greenhouse effect.

Over the continent as a whole, rainfall has increased over the period 1900–2005, with the largest increases occurring over northern and north-western Australia. Since 1960, however, there have been substantial decreases in rainfall over three relatively small, but economically and agriculturally important, regions: south-western Western Australia; Victoria (particularly southern Victoria), and the eastern coastal fringe (particularly south-eastern Queensland).

Table 1.5 shows temperatures and rainfall averaged over Australia since the commencement of comprehensive national records. The article *A hundred years of science and service – Australian meteorology through the twentieth century* in *Year Book Australia 2001* provides further details, including maps of temperature and rainfall trends to 1999.

While some temperature and rainfall data exist prior to the starting dates used in table 1.5, they have not been used in analyses of climate change. This is because large parts of the Australian continent had no observations before that time. In the case of temperatures, most pre-1910 data is also not comparable with post-1910 data, because the louvred, white-painted screen (the 'Stevenson screen') which is used for sheltering thermometers from direct solar radiation was only introduced as a national standard around that time. Many pre-1910 temperatures were measured in locations such as underneath tin verandahs or even indoors, and cannot be validly compared with more recent data (see the article *Temperature measurement and the Stevenson screen* in *Year Book Australia 2005* for further details).

1.5 MEAN TEMPERATURES(a) AND RAINFALL		
Period(b)	Temperature deviation °C	Rainfall mm
10-YEAR PERIODS — ANNUAL AVERAGE		
1900–09	n.a.	425
1910–19	–0.33	449
1920–29	–0.40	430
1930–39	–0.28	418
1940–49	–0.41	436
1950–59	–0.27	468
1960–69	–0.22	431
1970–79	–0.12	527
1980–89	0.23	463
1990–99	0.39	485
YEARS		
1990	0.50	418
1991	0.68	469
1992	0.15	452
1993	0.30	499
1994	0.25	341
1995	0.18	523
1996	0.60	470
1997	0.23	527
1998	0.84	565
1999	0.21	584
2000	–0.21	727
2001	–0.10	559
2002	0.63	341
2003	0.62	487
2004	0.45	512
2005	1.06	406

(a) Temperatures are shown as anomalies (or deviations) from 1961–90 base period. (b) The full annual time series since 1900 (rainfall) and 1910 (temperature) are available via <<http://www.bom.gov.au/climate/change>>.

Source: Australian Bureau of Meteorology.



# Rainfall and other precipitation

## Annual

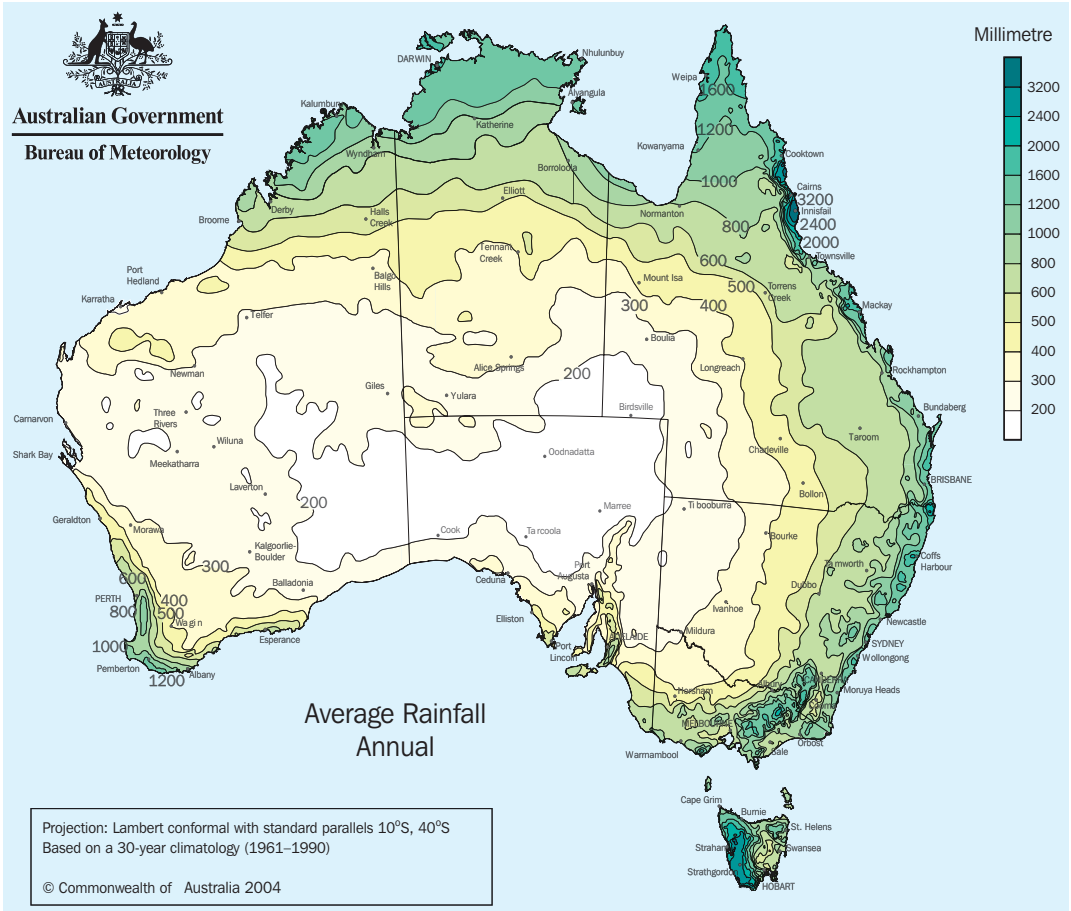
Map 1.6 shows average annual rainfall over the Australian continent.

The driest section of Australia, with an average of less than 200 mm per year, extends over a large area from the west coast near Shark Bay, across the interior of Western Australia and northern South Australia into south-western Queensland and north-western New South Wales. The driest part of this region is in the vicinity of Lake Eyre in South Australia, where average annual rainfall is below 150 mm. This region is not normally

exposed to moist air masses and rainfall is irregular, averaging rain on only around 20 days per year.

Very occasionally, favourable synoptic situations (usually, but not always, disturbances of tropical origin) can bring heavy rains to many parts of this normally arid to semi-arid region, with falls of up to 400 mm over a few days being recorded in the most extreme cases. Such heavy rainfalls often lead to widespread flooding and a subsequent short-lived 'blooming' of the desert regions. While such rain events are uncommon, the environment in Australia (both the lack of topographic barriers to moist air moving southwards from the tropics, and the presence of warm, rather than cold,

1.6 AVERAGE ANNUAL RAINFALL – 1961 to 1990



Source: Australian Bureau of Meteorology.

waters as a potential source of moist air off the west coast) is more favourable to their occurrence than it is in some other arid zones. Rainfall in Australia's deserts is consequently higher than in some other deserts; the Atacama Desert on the west coast of South America has locations where no rain has fallen for centuries, while large parts of the Sahara and Arabian deserts, and parts of central Asia, have average annual rainfall of 25 mm or lower. There is only one recorded instance, at Mulyie (about 100 km east of Port Hedland, Western Australia) in 1924, of an Australian station being rainless for a complete calendar year.

The region with the highest average annual rainfall is the east coast of Queensland between Cairns and Cardwell, where mountains are very close to the tropical coast. The summit of Bellenden Ker has an average of 8,020 mm over 33 years of records, while at lower elevations, Topaz has an average of 4,374 mm over 26 years, and Babinda 4,242 mm over 95 years. The mountainous region of western Tasmania also has a high annual rainfall, with Lake Margaret having an average of 2,955 mm over 60 years, and short-term records suggest that other parts of the region have an average near 3,500 mm.

The Snowy Mountains area in New South Wales also has a particularly high rainfall. While there are no official rain gauges in the wettest areas on the western slopes above 1,800 metres elevation, runoff data suggests that the average annual rainfall in parts of this region exceeds 3,000 mm. Small pockets with averages exceeding 2,500 mm also occur in the north-east Victorian highlands and some parts of the east coastal slopes.

## Seasonal

Australia's rainfall pattern is strongly seasonal in character, with a winter rainfall regime in parts of the south, a summer regime in the north and generally more uniform or erratic throughout the year elsewhere. Major rainfall zones include:

- The marked wet summer and dry winter of northern and north-western Australia. In this region winters are almost completely dry (e.g. Darwin in table 1.7), except near exposed eastern coastlines.
- The wet summer and relatively (but not completely) dry winter of south-eastern Queensland and north-eastern New South Wales (e.g. Brisbane in table 1.7).
- Fairly uniform rainfall in south-eastern Australia, including most of New South Wales, parts of Victoria and eastern Tasmania. The exact seasonal distribution can be influenced by local topography; for example, winter is the wettest season at Albury on the windward side of the Snowy Mountains, but the driest season at Cooma on the leeward side (e.g. Sydney, Melbourne, Canberra and Hobart in table 1.7).
- A marked wet winter and dry summer (sometimes called a 'Mediterranean' climate). This climate is most prominent in south-western Western Australia and southern South Australia, but there is also a winter rainfall maximum in some other parts of the south-east, particularly those areas exposed to westerly or south-westerly winds, such as western Tasmania and south-western Victoria (e.g. Adelaide, Perth in table 1.7).
- Low and erratic rainfall through much of the western and central inland. Rainfall events are irregular and can occur in most seasons, but are most common in summer (e.g. Alice Springs in table 1.7).

### 1.7 AVERAGE MONTHLY RAINFALL AND TEMPERATURES(a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
AVERAGE DAILY MAXIMUM TEMPERATURE (°C)													
Sydney	26.1	26.4	25.2	23.1	20.4	17.7	17.2	18.5	20.7	22.4	23.6	25.6	22.3
Melbourne	25.8	26.5	24.0	20.5	17.3	14.4	13.9	15.3	17.3	19.7	21.8	24.2	20.1
Brisbane	29.2	28.8	28.0	26.1	23.5	21.1	20.6	21.6	23.9	25.5	27.1	28.6	25.3
Adelaide	28.7	29.3	26.1	22.2	18.8	16.0	15.2	16.5	18.7	21.7	24.7	26.8	22.1
Perth	31.9	32.2	29.8	25.9	21.8	18.9	17.9	18.4	20.2	22.5	25.8	29.2	24.5
Hobart	21.8	22.0	20.2	17.9	15.1	12.3	12.2	13.4	15.3	17.2	18.6	20.3	17.2
Darwin	31.8	31.4	31.8	32.8	32.2	30.7	30.7	31.5	32.7	33.3	33.3	32.6	32.1
Canberra	27.7	27.3	24.5	20.0	15.9	12.3	11.5	13.2	16.2	19.4	22.6	26.3	19.7
Alice Springs	36.4	35.1	32.8	27.8	23.2	19.7	20.0	23.0	27.5	30.9	33.9	35.8	28.8
AVERAGE DAILY MINIMUM TEMPERATURE (°C)													
Sydney	19.4	19.6	18.1	15.2	12.5	9.6	8.6	9.5	11.7	14.2	16.0	18.3	14.4
Melbourne	15.4	15.8	14.3	11.7	9.8	7.6	6.8	7.6	9.0	10.5	12.2	13.9	11.2
Brisbane	21.2	20.9	19.5	16.8	14.2	10.8	9.5	9.9	12.4	15.5	18.0	19.9	15.7
Adelaide	16.8	17.1	15.2	12.1	10.2	8.1	7.4	8.2	9.6	11.5	13.8	15.5	12.1
Perth	17.2	17.8	16.3	13.4	10.8	9.1	8.4	8.5	9.3	10.5	13.0	15.2	12.5
Hobart	12.5	12.7	11.4	9.6	7.6	5.2	4.7	5.5	6.9	8.3	9.8	11.3	8.8
Darwin	24.8	24.9	24.6	24.2	22.4	20.1	19.4	20.9	23.4	25.1	25.6	25.5	23.4
Canberra	13.3	13.3	10.9	6.7	3.7	0.8	-0.1	1.0	3.6	6.3	8.9	11.6	6.7
Alice Springs	21.3	20.7	17.4	12.3	8.2	4.8	3.8	6.2	10.4	14.6	17.9	20.2	13.2
AVERAGE RAINFALL (mm)													
Sydney	136.3	130.9	151.2	127.7	110.0	126.8	69.6	92.0	68.8	88.1	101.7	73.4	1 276.5
Melbourne	52.4	49.0	40.0	52.1	58.8	48.6	45.1	54.6	59.2	69.5	64.2	61.1	654.4
Brisbane	158.6	174.3	125.3	108.7	115.7	53.1	60.1	37.2	34.8	96.8	106.0	119.6	1 194.0
Adelaide	19.4	12.7	26.6	42.0	61.2	79.7	79.9	68.0	62.2	347.5	29.7	27.8	563.0
Perth	12.7	18.2	15.9	36.5	92.8	145.5	154.1	117.3	76.7	44.2	26.5	7.2	745.3
Hobart	47.3	40.0	41.9	44.2	38.6	37.5	53.7	59.2	48.7	48.3	50.6	56.5	576.4
Darwin	499.8	336.2	376.3	104.4	23.2	1.6	0.5	8.0	15.5	76.6	134.0	270.9	1 847.1
Canberra	66.3	52.7	50.3	49.3	44.6	38.4	46.4	49.2	56.7	60.9	67.4	47.8	630.0
Alice Springs	41.3	48.5	47.9	24.1	20.6	15.2	14.3	9.2	11.3	23.2	29.8	40.1	325.6

(a) Averages are for the period (1971–2000) except for Adelaide (1977–2000). Brisbane, Perth, Darwin, Canberra and Alice Springs averages are for observations taken at airports, others are at locations in or near the central city.

Source: Australian Bureau of Meteorology.

### Rain days and extreme rainfalls

The frequency of rain days (defined as days when 0.2 mm or more of rainfall is recorded in a 24-hour period) is greatest near the southern Australian coast, exceeding 150 per year in much of Tasmania, southern Victoria and the far south-west of Western Australia, peaking at over 250 per year in western Tasmania. Values exceeding 150 per year also occur along parts of the north Queensland coast. At the other extreme, a large part of inland western and central Australia has fewer than 25 rain days per year, and most of the continent away from the coasts has fewer than 50 per year. In the high rainfall areas of northern Australia away from the east coast the number of rain days is typically about 80–120 per year, but rainfall events are typically heavier in this region than in southern Australia.

The highest daily rainfalls have occurred in the northern half of Australia and along the east coast, most of them arising from tropical cyclones, or further south-east coast lows, near the coast in mountainous areas. Daily falls in excess of 500 mm have occurred at scattered locations near the east coast as far south as the Illawarra, south of Sydney, and falls exceeding 300 mm have occurred in north-eastern Tasmania and the Otway Ranges of southern Victoria. Most locations in temperate Australia away from the east coast have highest recorded daily rainfalls in the 75–150 mm range, although some locations have exceeded 200 mm. In these regions, extreme daily rainfalls are often associated with thunderstorms, for which rainfall recordings can vary dramatically over short distances.



The highest daily and annual rainfalls for each state and territory are listed in tables 1.8 and 1.9.

1.8 HIGHEST DAILY RAINFALLS(a)		
Station	Date	mm
New South Wales		
Dorrigo (Myrtle Street)	21.2.1954	809
Cordeaux River	14.2.1898	573
Victoria		
Tanybryn	22.3.1983	375
Rotamah Island	27.11.1988	300
Queensland(b)		
Beerwah (Crohamhurst)	3.2.1893	907
Finch Hatton PO	18.2.1958	878
South Australia		
Motpena	14.3.1989	273
Nilpena	14.3.1989	247
Western Australia		
Roebourne (Whim Creek)	3.4.1898	747
Fortescue	3.5.1890	593
Tasmania		
Cullenswood	22.3.1974	352
Mathinna	5.4.1929	337
Northern Territory		
Roper Valley Station	15.4.1963	545
Angurugu (Groote Eylandt)	28.3.1953	513
Australian Capital Territory		
Lambrigg	27.5.1925	182

(a) The standard daily rainfall period is 9 am to 9 am.  
 (b) Bellenden Ker (Top Station) has recorded a 48-hour total of 1,947 mm on 4–5 January 1979, including 960 mm from 3 pm on the 3rd to 3 pm on the 4th. No observation was made at 9 am on the 4th.

Source: Australian Bureau of Meteorology.

1.9 HIGHEST ANNUAL RAINFALLS		
Station	Year	mm
New South Wales		
Tallowood Point	1950	4 540
Victoria		
Falls Creek SEC(a)	1956	3 739
Queensland		
Bellenden Ker (Top Station)	2000	12 461
South Australia		
Aldgate State School	1917	1 853
Western Australia		
Kimberley Coastal Camp	2000	2 334
Tasmania		
Lake Margaret	1948	4 504
Northern Territory		
Darwin Botanic Gardens	1998	2 906
Australian Capital Territory		
Bendora Dam	1974	1 831

(a) State Electricity Commission.

Source: Australian Bureau of Meteorology.

## Floods

Heavy rainfall conducive to widespread flooding can occur anywhere in Australia, but is most common in the north and in the eastern coastal areas. There are three main flood types:

- Flash floods, which are generally localised and often emanate from severe thunderstorms (see *Thunderstorms, hail and tornadoes*).
- Short-lived floods lasting a few days that occur in shorter coastal streams, and inundate the natural or modified flood plain. These are the most economically damaging floods, affecting the relatively densely-populated coastal river valleys of New South Wales and Queensland (e.g. the Burdekin, Brisbane, Tweed, Richmond, Clarence, Macleay, Hunter and Nepean-Hawkesbury valleys), and the major river valleys of the tropics. While these floods are chiefly caused by summer rains, they can occur in any season. Floods of similar duration also occur in Tasmania, Victoria (particularly rivers draining the north-east ranges) and the Adelaide Hills, although in these latter regions they are more common in winter and spring.
- Long-lived floods of the major inland basins. These floods usually arise from heavy summer rains in inland Queensland and New South Wales, and move slowly downstream, some ultimately draining into the lower Murray-Darling system or towards Lake Eyre. Floods of this type can take several months to move from the upper catchments to the lower Darling or to Lake Eyre. They often cover an extensive area and gradually disappear through a combination of seepage into the sandy soils and evaporation; it is only occasionally that floodwaters of Queensland origin actually reach Lake Eyre. Floodwaters can also cover large areas in situ when heavy rains occur in a region of uncoordinated drainage such as much of western and central Australia. (There is no evidence that Lake Eyre flooding leads to increased rainfall in eastern Australia, with recent research indicating that any observed linkage is an artefact of the tendency of Lake Eyre floods to occur during La Niña years).

## Droughts

Drought, in general terms, refers to an acute deficit of water supply to meet a specified demand. The best single measure of water availability in Australia is rainfall, although factors such as evaporation and soil moisture are also significant and can be dominant in some situations. Demands for water are very diverse, and droughts therefore can be considered on a variety of timescales. Rainfall in a single year is important for unirrigated crop and pasture growth, while for large water storages and irrigation variations, on a multi-year timescale are more important. A succession of relatively dry years that are not exceptional individually can cause severe water shortages when aggregated over an extended period.

While droughts can occur in all parts of Australia, they are most economically damaging in south-eastern Australia (southern Queensland, New South Wales, Victoria, Tasmania and the settled parts of South Australia), an area encompassing about 75% of Australia's population and much of its agriculture. In south-western Western Australia, another economically and agriculturally significant area, interannual variability of rainfall is smaller than it is in the south-east and severe widespread droughts in individual years are a less important issue, although, in recent decades, this area has experienced a general decline in rainfall (see *Climate change*).

In terms of rainfall deficits over a one to two year period, the most severe droughts on record for eastern Australia have been those of 1901–02, 1982–83, 1994–95 and 2002–03, all of which were associated with El Niño. Occasionally, severe droughts are embedded within more extensive dry periods; the 1901–02 drought was contained within a persistently dry period from 1895–1903 (the so-called 'Federation Drought'). The 2002–03 drought, while not quite as dry over most of eastern Australia as those of 1901–02 or 1982–83, was particularly severe in its impacts for two reasons. First, it was accompanied by record high average maximum temperatures and, consequently, increased evaporation in many areas. Secondly, it affected virtually the entire continent. During earlier droughts the effects over Western Australia were more limited or non-existent. The direct effect of the 2002–03 drought on agricultural production is that it had a downward impact on gross domestic product growth of almost one percentage point between 2001–02 and 2002–03 (see the article in the

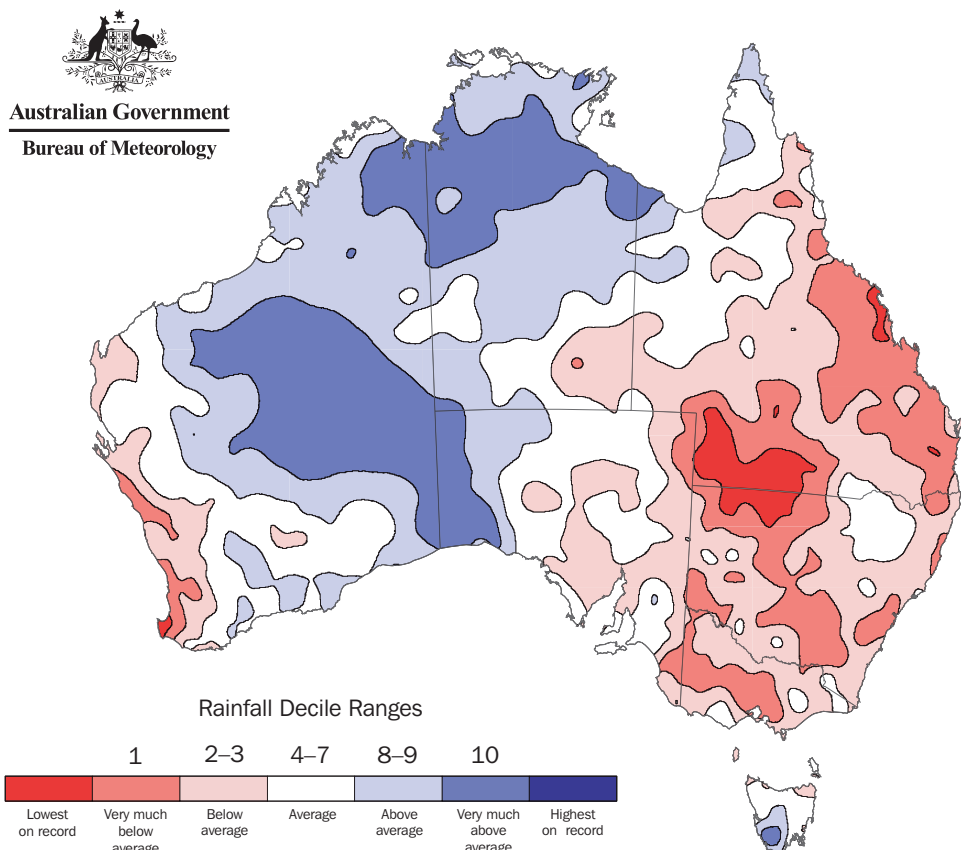
*National Accounts* chapter in *Year Book Australia 2005*). Other notable droughts on the one to two year timescale include those of 1888, 1914, 1919–20, 1940–41, 1944, 1946, 1965, 1967 and 1972.

Longer-term periods of persistent below-average rainfall are also often loosely referred to as 'droughts', and apart from that of 1895–1903, have generally been more regional in nature. A typical example of such a long-term drought has occurred over large parts of eastern Australia since 2001, and in some areas, such as southern Victoria (including Melbourne), since 1997. The Sydney region and eastern Queensland have been affected since 2000. The south-west of Western Australia has also experienced a marked downturn in rainfall since 1970. Other extended dry periods of this type affected much of inland Australia from 1958–68, the south-east from 1937–45, and Queensland from 1991–95.

Typically, these multi-year dry episodes are not ones of continuous below-normal rainfall, but rather periods of near-normal rainfall over several months, alternating with drier periods, and few, if any, times of sustained above-normal rainfall to offset the dry periods. Large water storages are particularly susceptible to such events, as they typically rely on a relatively small number of wet years to offset losses during drier periods. The Sydney water supply catchments provide an example of this, with about 40% of the total inflows into the Warragamba catchment since 1910 occurring in the wettest 10% of years.

The period since 2001 has been the driest on record over parts of eastern Australia (see map 1.10), meaning that many large water storages have not recovered from the 2002–03 drought. While rainfall returned to near-normal levels in the second half of 2003 following the severe drought of 2002–03, there have been no periods of sustained above-average rainfall in most of the region since early 2001. For eastern Australia as a whole (defined as the combined areas of Queensland, New South Wales, Victoria and Tasmania), the four-year period June 2001–May 2005 was the driest June–May four-year period on record. For Australia's cropping regions only the period 1911–15 was drier. While a relatively wet winter and spring in 2005 resulted in a slight improvement in the situation, acute water shortages persist in many areas. Conditions in the period 2001–06 are comparable to those of the lengthy drought of the 1940s, although (to date) they have not persisted for as long.

## 1.10 AUSTRALIAN RAINFALL DECILES(a) – 1 June 2001 to 30 June 2006



(a) Distribution based on gridded data Product of the National Climate Centre.  
Source: Australian Bureau of Meteorology.

Adding to the impact of recent dry conditions has been the accompanying increase in temperature. The period from the start of the 2002–03 El Niño event (March 2002) to June 2006 was clearly the warmest such period on record for eastern Australia. Maximum temperatures averaged over Australia were 1.12°C above the 1961–90 normal. In contrast, temperatures averaged through the driest periods of the 1940s were near the 1961–90 normal.

Drought definitions, and the area of coverage and length of droughts to that time, together with related information, may be obtained from the article *Drought in Australia* in *Year Book Australia 1988*.

### Thunderstorms, hail and tornadoes

Thunderstorms are most frequent over northern Australia. Thunder is heard at least once on 80 days or more per year near Darwin, largely as a result of convective processes during the summer wet season. High frequencies (30–50 per year) also occur over the eastern uplands of New South Wales as a result of orographic uplift of moist air streams. Some parts of southern Australia receive fewer than ten thunderstorms per year, with eastern Tasmania receiving fewer than five. Through most of Australia thunderstorms are more common during the warmer half of the year, but along the southern fringe they also occur in winter as a result of low-level instability in cold air masses of Southern Ocean origin.

Thunderstorms are also relatively common over many parts of inland Australia, with most of the arid zone having at least 15 thunder days per year, and parts of interior Western Australia having 40 or more. These storms are often 'dry' with most or all rain evaporating before it reaches the ground – indeed, in a few locations there are more days of thunder per year than there are days of rain.

Some thunderstorms can become severe, with flash flooding, large hail and damaging winds. These storms can be very destructive. The Sydney hailstorm of 14 April 1999, in which hailstones up to nine centimetres (cm) in diameter were observed, was Australia's most costly natural disaster, with losses estimated at \$1.7 billion. Flash flooding associated with severe thunderstorms has caused loss of life, notably when seven deaths occurred in Canberra on 26 January 1971, and thunderstorms have also been implicated in numerous air crashes, such as when a plane crashed into Botany Bay on 30 November 1961 with the loss of 15 lives. Wind gusts exceeding 170 km/h have been measured during severe thunderstorms, with one notable reading being 185 km/h at Brisbane Airport on 18 January 1985.

While thunderstorms in general are most common in northern Australia, the most damaging thunderstorms, in terms of hail and wind gusts, occur in the eastern halves of New South Wales and southern Queensland. Smaller hail (less than 1 centimetre in diameter) commonly occurs in southern coastal Australia in cold unstable air in the wake of cold frontal passages.

Tornadoes are also associated with severe thunderstorms, although they do not occur with the same frequency or severity as can occur in the United States of America. As tornado paths are narrow it is rare, but not unknown, for them to strike major population centres, with notable examples occurring in Brighton (Melbourne) in February 1918, the southern suburbs of Brisbane in November 1973, and several Perth suburbs in May 2005.

## Snow

During most years, snow covers much of the Australian Alps above 1,500 metres for varying periods from late autumn to early spring. Similarly, in Tasmania, the mountains are covered fairly frequently above 1,000 metres in those seasons. The area, depth and duration of snow cover are highly variable from year to year. These areas can experience light snowfalls at any time of year. Small patches of snow can occasionally persist through summer in sheltered areas near the highest peaks, but there are no permanent snowfields.

Snowfalls at lower elevations are more irregular, although areas above 600 metres in Victoria and Tasmania, and above 1,000 metres in the New South Wales highlands, receive snow at least once in most winters, as do the highest peaks of Western Australia's Stirling Ranges. In most cases snow cover is light and short-lived. In extreme cases, snow has fallen to sea level in Tasmania and parts of Victoria, and to 200 metres in other parts of southern Australia, but this is extremely rare. The only major Australian cities to have received a significant snow cover at any time in the last century are Canberra and Hobart, although Melbourne experienced a heavy snowfall in 1849, and there are anecdotal reports of snowflakes in Sydney in 1836.

The heaviest snowfall in Australian history outside the alpine areas was that of 4–5 July 1900, when 50–100 cm fell around Bathurst and in the Blue Mountains, and 25 cm as far west as Forbes (only 240 metres above sea level). Other major widespread low-elevation snow events occurred in July 1901, July 1949 and July 1984. In August 2005, the heaviest low-level snowfalls since 1951 occurred in parts of southern Victoria, with snow falling to sea level in parts of south Gippsland and accumulations of 5–20 cm at elevations above 150 metres in the Strzelecki Ranges and Latrobe Valley.

# Temperature

## Average temperatures

Average annual air temperatures range from 28°C along the Kimberley coast in the extreme north of Western Australia to 4°C in the alpine areas of south-eastern Australia. Although annual temperatures can be used for broad comparisons, monthly temperatures are required for detailed analyses.

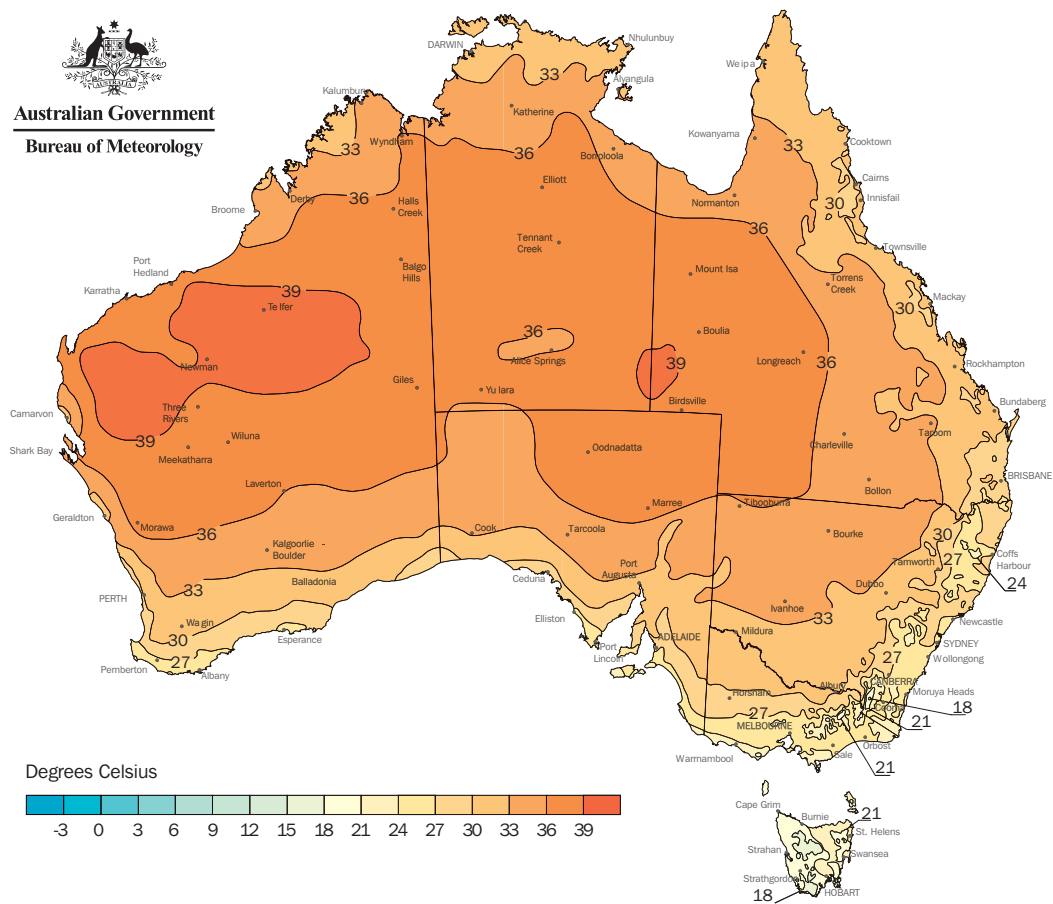
July is the month with the lowest average temperature in all parts of the continent. In the south, the months with the highest average temperature are January or February. Due to the

increase in cloudiness during the wet season, the month of highest average temperature in the north of the continent is December or, in the extreme north and north-west, November.

Temperature differences between winter and summer are least in tropical Australia. They are greatest in the southern inland, with seasonal differences along the coast being moderated by the ocean's proximity.

Maps 1.11 to 1.14 show average monthly maximum and minimum temperatures for January and July.

1.11 AVERAGE MAXIMUM TEMPERATURE(a) – January



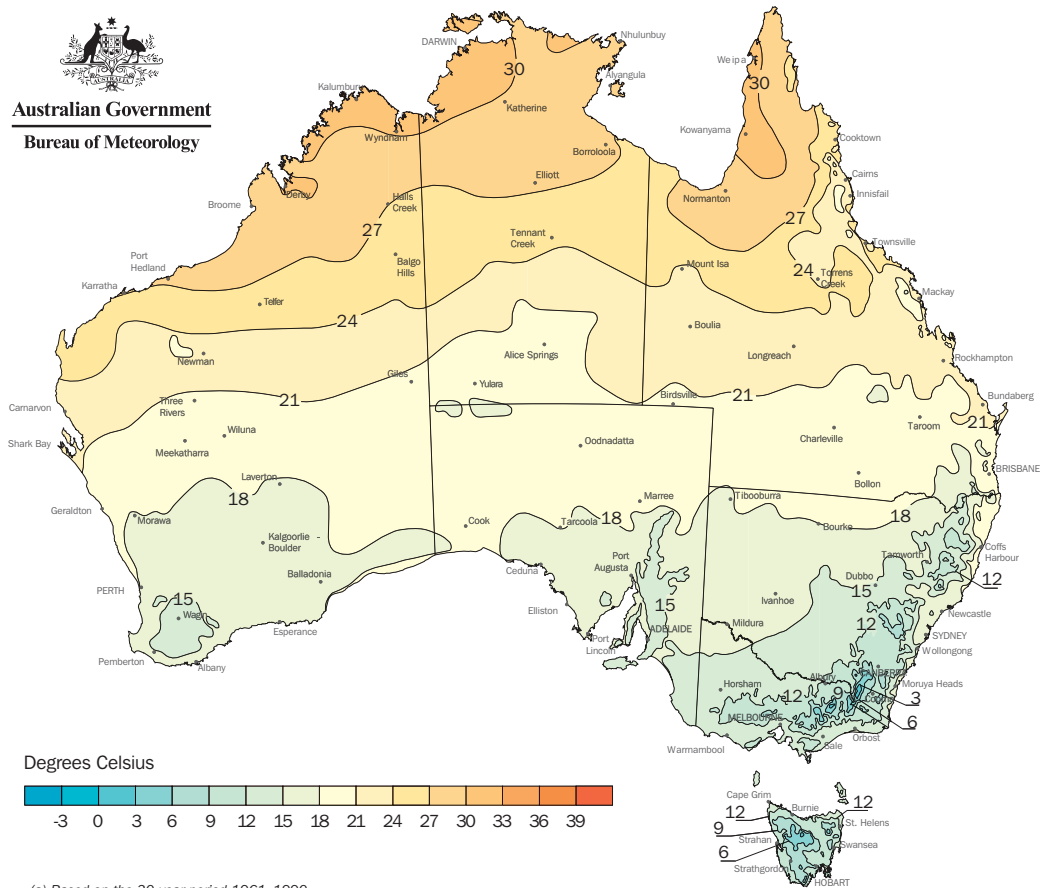
### Average monthly maxima

In January, average maximum temperatures exceed 35°C over a vast area of the interior and exceed 40°C over parts of the north-west. The highest summer maxima occur in the Pilbara and Gascoyne regions of north-western Western Australia, where average January maxima are around 41°C; in some years daily maxima exceed 40°C for several weeks at a time. Marble Bar experienced 160 consecutive days above 37.8°C (100° Fahrenheit) in 1923–24, and Nyang had an

average maximum of 44.8°C for the months of February 1998 and January 2005, an Australian record. At the other extreme, average January maxima are near 15°C on the highest peaks of the south-east ranges and near 20°C in much of Tasmania.

In July, a more regular latitudinal distribution of average maxima is evident, ranging from 30°C near the north coast to below 3°C in the alpine areas of the south-east.

1.12 AVERAGE MAXIMUM TEMPERATURE(a) – July



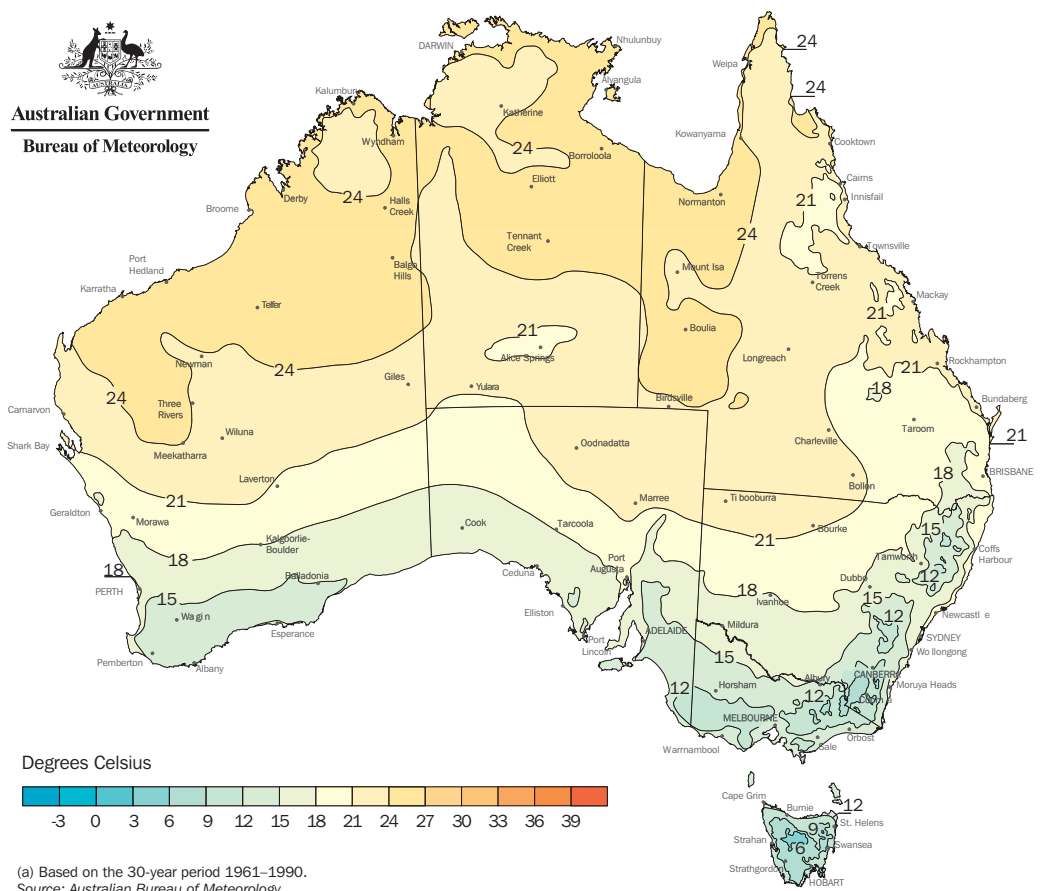


**Average monthly minima**

Average minimum temperatures in all seasons are highest in northern Australia and near the coasts, and are lowest in the mountainous areas of the south-east. The highest average January minimum temperatures (near 27°C) are found near the north-west coast, while in winter they exceed 20°C at some coastal locations in northern Australia and on the Torres Strait and Tiwi Islands.

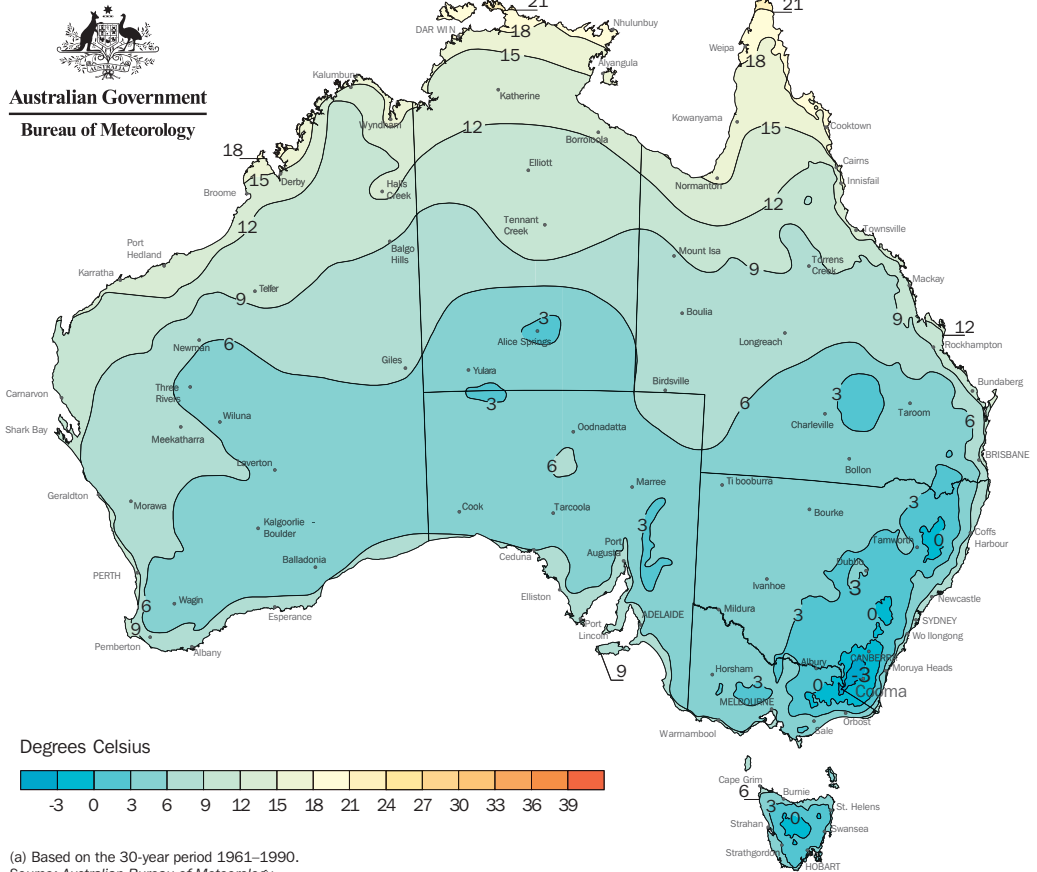
Low minimum temperatures are highly sensitive to local topography, with the lowest minimum temperatures occurring in high-elevation valleys, as cold air drains from hills to valleys overnight, making hilltops and ridges warmer overnight, even in areas with local relief of only a few tens of metres. In the most favoured locations in the mountains of New South Wales average minimum temperatures are below 5°C in January and –5°C in July, while most inland areas south of the tropics have average July minima between 0° and 6°C.

**1.13 AVERAGE MINIMUM TEMPERATURE(a) – January**





## 1.14 AVERAGE MINIMUM TEMPERATURE(a) – July



### Extreme maxima

The highest extreme maxima in Australia are recorded in two regions – the Pilbara and Gascoyne regions of north-western Western Australia, and a broad belt extending from south-western Queensland across South Australia into south-eastern Western Australia. Many locations in this region have recorded temperatures exceeding 48°C. Extreme temperatures in this southern belt are higher than those further north, due to the long trajectory over land of hot north-west winds from northern Australia, the lower moisture levels in summer compared with northern Australia, and the generally lower elevation (when compared with areas such as the southern Northern Territory and east-central Western Australia, both of which are largely more than 500 metres above sea level).

Most other locations in mainland Australia, except those near parts of the Queensland and Northern Territory coasts or above 500 metres elevation, have extreme maxima between 43° and 48°C. Most Tasmanian sites away from the north coast have extreme maxima between 35° and 40°C. The lowest extreme maxima are found along the north coast of Tasmania (e.g. 29.5°C at Low Head) and at high elevations (e.g. 27.0°C at Thredbo (Top Station)).

While extreme high temperatures are more common inland than they are near the coast, the highest temperatures recorded differ little between the two, except in Queensland, the Northern Territory and northern Tasmania. Notable extreme maxima observed near the coast include 50.5°C at Mardie and 49.1°C at Roebourne in Western Australia, and 49.4°C at Whyalla and 47.9°C at Ceduna in South Australia.

Extreme maximum temperatures recorded at selected locations, including the highest recorded in each state/territory, are shown in table 1.15.

Prolonged heat waves, with a number of successive days over 40°C, are relatively common in summer over much of inland Australia, as well as parts of the north-west coast. Many inland locations have recorded ten or more successive days of such conditions, increasing to 20 or more days in parts of western Queensland and northern South Australia, and 50 or more days in north-western Western Australia. These heat waves can be accompanied by oppressively warm nights, with Oodnadatta (South Australia) recording an Australian record nine successive nights above 30°C in February 2004.

Such prolonged heatwaves are rare in coastal regions, except in Western Australia. The record number of consecutive days in Melbourne over 40°C, for example, is five, with Brisbane and Sydney each registering two.

The coastal areas, though, can be affected by extreme heat over a period of one or two days. The most extreme heatwave in the recorded history of south-eastern Australia occurred in January 1939. Adelaide (46.1°C on the 12th), Melbourne (45.6°C on the 13th) and Sydney (45.3°C on the 14th) all set record high temperatures during this period, as did many other centres in New South Wales, Victoria and South Australia. This extreme heat contributed to the 'Black Friday' bushfires, in which almost 2 mill. hectares were burnt and 71 lives lost (see the *Bushfires* section of the *Environment* chapter in *Year Book Australia 2004*).

Extreme minima

The lowest recorded temperatures in Australia have been in the Snowy Mountains of New South Wales, where Charlotte Pass recorded –23.0°C on 28 June 1994 (table 1.16), with a number of other locations recording temperatures below –15°C. It is likely that comparably low temperatures occur in similarly sheltered locations in the Victorian highlands, but no observing stations away from the exposed peaks exist in this area.

1.15 EXTREME MAXIMUM TEMPERATURES		
Station	Date	°C
New South Wales		
Wilcannia	11.1.1939	50.0
Victoria		
Swan Hill(a)	18.1.1908	49.4
Boort	13.1.1939	48.3
Queensland		
Cloncurry(a)	16.1.1889	53.1
Birdsville	24.12.1972	49.5
South Australia		
Oodnadatta	2.1.1960	50.7
Western Australia		
Mardie	20.2.1998	50.5
Tasmania		
Bushy Park(a)	26.12.1945	40.8
Hobart	4.1.1976	40.8
Northern Territory		
Finke	1 & 2.1.1960	48.3
Australian Capital Territory		
Canberra (Acton)	11.1.1939	42.8

(a) Temperatures known not to have been measured in a Stevenson screen.  
Source: Australian Bureau of Meteorology.

Away from the Snowy Mountains, the lowest extreme minima in Australia are found above 500 metres elevation on the tablelands and ranges of New South Wales, eastern Victoria and southern Queensland, as well as in central Tasmania. Many locations in this region have recorded –10°C or lower, including Gudgenby, Australian Capital Territory (–14.6°C) and Woolbrook, New South Wales (–14.5°C). At lower elevations, most inland places south of the tropics have extreme minima between –3°C and –7°C, and such low temperatures have also occurred in favoured locations within a few kilometres of southern and eastern coasts, such as Sale, Victoria (–5.6°C), Bega, New South Wales (–8.1°C), Grove, Tasmania (–7.5°C) and Taree, New South Wales (–5.0°C).

In the tropics, extreme minima near or below 0°C have occurred at many places away from the coast, as far north as Herberton, Queensland (–5.0°C). Some locations near tropical coasts, such as Mackay (–0.8°C), Townsville (0.1°C) and Kalumburu, Western Australia (0.3°C) have also recorded temperatures near 0°C. In contrast, some exposed near-coastal locations, such as Darwin, have never fallen below 10°C, and Thursday Island, in the Torres Strait, has an extreme minimum of 16.1°C.

The parts of Australia with the lowest extreme minimum temperatures are also the most subject to frost. The eastern uplands from southern Queensland to eastern Victoria experience ten or more frosts per month in each month from May to September, as do Tasmania's Central Plateau and a few susceptible locations in south-western Western Australia and the Flinders Ranges region of South Australia. At lower elevations frost is less frequent and the season is shorter, although only the immediate coastal margins and the far north can be considered totally frost-free.

Frosts can occur at any time of year over most of Tasmania, much of inland Victoria and south-eastern South Australia, and the higher parts of the tablelands of New South Wales. In these regions the median frost period generally exceeds 200 days, extending out to 300 days in central Tasmania.

1.16 EXTREME MINIMUM TEMPERATURES

Station	Date	°C
New South Wales		
Charlotte Pass	28.6.1994	-23.0
Victoria		
Mount Hotham	30.7.1931	-12.8
Queensland		
Stanthorpe	4.7.1895	-11.0
South Australia		
Yongala	20.7.1976	-8.2
Western Australia		
Booylgoo Springs	12.7.1969	-6.7
Tasmania		
Shannon	30.6.1983	-13.0
Butlers Gorge	30.6.1983	-13.0
Tarraleah	30.6.1983	-13.0
Northern Territory		
Alice Springs	12.7.1976	-7.5
Australian Capital Territory		
Gudgenby	11.7.1971	-14.6

Source: Australian Bureau of Meteorology.

Other aspects of climate

Humidity

In terms of the average water vapour content or humidity of the air, Australia is a dry continent. The amount of moisture in the atmosphere can be expressed in several ways, the most common being relative humidity. This measure can be thought of as the relative evaporating power of the air. When humidity is low, moisture on an exposed wet surface, like our skin, can evaporate freely. When it is high, evaporation is retarded. If

the temperature is also high, people will feel discomfort or even stress as the body's ability to cool through the evaporation of perspiration is diminished. The combination of high temperature and high humidity is potentially dangerous for people who are not adapted or acclimatised to such conditions.

The main features of the relative humidity pattern are:

- Over the interior of the continent there is a marked dryness during most of the year, which extends towards the northern coast in the dry season (May–October).
- The coastal fringes are comparatively moist, although this is less so along the north-west coast of Western Australia where airflow is predominantly off the continent.
- In northern Australia, the highest values of humidity occur during the summer wet season (December–February) and the lowest during the winter dry season (June–August).
- In most of southern Australia the highest values are experienced in the winter rainy season (June–August) and the lowest in summer (December–February).

By way of historical note, it is interesting that, as late as 1927, Griffith Taylor, from the Department of Physical Geography, University of Sydney, was asserting that tropical Australia was an unhealthy place to live, at least for women, because of its climate. However in recent decades the introduction of air conditioning, more appropriate building design, and improved health measures such as proper sanitation, have greatly increased the comfort levels of those living in the tropics.

Global radiation

Incoming global radiation includes radiant energy reaching the ground directly from the sun and radiation received indirectly from the sky that is reflected and scattered downwards by clouds, dust and other airborne particles.

While there is a high correlation between daily global radiation and daily hours of sunshine, the latter is more dependent on variations in cloud coverage. Daily global radiation is at its strongest, all other things being equal, when the sun is closest to overhead south of the tropics (21–22 December), or directly overhead in the tropics. On the north-west coast around Port Hedland, Western Australia, where average daily global radiation is the highest for Australia

(22–24 megajoules per square metre), average daily sunshine is also highest, being approximately ten hours. By way of contrast, in Darwin the global radiation values for the dry month of July and cloudy month of January are comparable, yet the number of sunshine hours for July approaches twice that for January.

## Sunshine

Sunshine here refers to bright or direct sunshine. Australia receives relatively large amounts of sunshine although seasonal cloud formations affect spatial and temporal distribution. Cloud cover reduces both incoming solar radiation and outgoing radiation from the Earth's surface, and thus affects sunshine, air temperature and other measures of climate.

Most of the continent receives more than 3,000 hours of sunshine a year, or nearly 70% of the total possible. In central Australia and the mid-west coast of Western Australia, totals slightly in excess of 3,500 hours occur. Totals of less than 1,750 hours occur on the west coast and highlands of Tasmania, which is the equivalent of only 40% of the total possible per year.

In southern Australia, the duration of sunshine is greatest about December when the sun is at its highest elevation, and lowest in June when the sun is lowest. In northern Australia, sunshine is generally greatest over the period August to October prior to the wet season, and least over the period January to March during the wet season.

## Evaporation

Average annual pan evaporation exceeds rainfall over most of Australia. It is highest in the north of Western Australia, reaching around 3,400 mm around Wyndham, and exceeds 3,000 mm over most of tropical Western Australia and the central Northern Territory. It is lower in tropical areas with higher rainfall and cloud cover, such as the Top End of the Northern Territory and eastern Queensland.

At the other end of the scale, Australia's lowest pan evaporation occurs in Tasmania, ranging from 800 mm per year in the west to 1,200 mm in the east. Over the mainland it is below 1,400 mm over southern Victoria and adjacent parts of South Australia and New South Wales, and around 1,500 mm in the far south of Western Australia.

Over most of Australia evaporation is greatest in summer and least in winter, due to higher temperatures and solar radiation. In the far north, in contrast, the seasonal cycle is dominated by the effect of increased cloud cover during the tropical wet season. In this region evaporation peaks in spring, with a secondary peak in autumn in some places, and is lowest in late summer.

## Cloud

Seasonal distribution of cloudiness varies predominantly in line with seasonal variations in rainfall. In the southern parts of the continent, particularly in the coastal and low-lying areas, the winter months are generally cloudier than the summer months. This is due to the formation of extensive areas of stratiform cloud and fog during the colder months, when the structure of the lower layers of the atmosphere and higher levels of humidity favour the formation of this type of cloud. Particularly strong seasonal variability of cloud cover exists in northern Australia where skies are clouded during the summer wet season and mainly cloudless during the winter dry season. Cloud cover is greater near coasts and on the windward slopes of the eastern uplands of Australia and less over the dry interior.

## Fog

The formation of radiation fogs, in which air near the ground is cooled by overnight radiation from the ground, is determined by the occurrence of a favourable blend of temperature, humidity, wind and overlying cloud cover. The nature of the local terrain can also be important for the development of fog, and there is a tendency for it to be particularly prevalent and persistent in valleys and hollows. The incidence of such fogs can vary significantly over short distances. Other types of fogs occur when low cloud covers high ground ('hill fog'), particularly where highlands are close to the coast, and more rarely, near some coastlines when warm moist air moves over relatively cool waters near the shore ('sea fog').

Fog in Australia tends to be more common in the south than the north, although parts of the east coastal areas are relatively fog-prone even in the tropics. Fog is more likely to occur in the colder months, particularly in the eastern uplands. Radiation fogs normally develop overnight and dissipate during the morning or early afternoon, although on rare occasions they persist through the day, particularly in inland Tasmania. The highest fog incidence at a capital city is at Canberra which has an average of 47 days per year on which fog occurs, 29 of which are between

May and August. Brisbane averages 20 days of fog per year. Darwin averages only two days per year, mostly in July and August.

## Winds

The mid-latitude anticyclone belt is the chief determinant of Australia's two main prevailing wind streams. These streams tend to be easterly to the north of this belt and westerly to the south. The cycles of development, motion and decay of low-pressure systems that form to the north and south of the anticyclone belt and also intersperse between individual anticyclones result in a great diversity of wind flow patterns. Wind variations are greatest around the coasts where diurnal land and sea-breeze effects also come into play. Sea breezes play a prominent role in modifying coastal climates in many parts of Australia, particularly along the west coast of Western Australia where they are a major feature of the summer climate. In Perth the sea breeze is known as the 'Fremantle Doctor'.

Orography affects the prevailing wind pattern in various ways, such as the channelling of winds through valleys, deflection by mountains and cold air drainage from highland areas. The high frequency of north-west winds at Hobart, for example, is caused by the north-west to south-east orientation of the Derwent River valley, while wave effects on the lee side of the Adelaide Hills can lead to very strong local winds ('gully winds') in the eastern suburbs of Adelaide during periods of general easterly flow.

Perth is the windiest capital with an average wind speed of 15.6 km/h; Canberra is the least windy with an average wind speed of 5.4 km/h.

The highest wind speeds and wind gusts measured in Australia have been associated with tropical cyclones. The highest recorded gust was 267 km/h at Learmonth (Western Australia) on 22 March 1999 (with Tropical Cyclone Vance), while gusts reaching 200 km/h have been recorded on several occasions in northern Australia with cyclone visitations. The highest gusts recorded at Australian capitals have been 217 km/h at Darwin (during Tropical Cyclone Tracy), 185 km/h at Brisbane Airport and 156 km/h at Perth.

## Dust storms

Dust storms are a regular occurrence on windy days in many of the arid zones of Australia. During drought years, they can extend to the more densely settled areas of the south-east, particularly when strong north- to north-westerly winds occur in advance of an approaching cold front. Well-known examples include those of February 1983, which plunged central Melbourne into darkness, and October 2002, which covered a vast area of eastern Queensland and New South Wales, including Brisbane and Sydney. These occurred in the later part of the severe El Niño-related droughts of 1982–83 and 2002–03 respectively.

## Fire weather

While bushfires are not strictly a climatic phenomenon, both weather and climate are strong determinants in their occurrence and intensity. Provided vegetation is sufficiently abundant and dry, the spread of bushfires is most rapid in windy conditions with low humidity. In southern Australia such conditions are also normally associated with high temperatures. A Fire Danger Index, which combines expected wind speed, humidity, temperature and a measure of pre-existing dryness, is frequently used to assess the risk of rapid fire spread on any given day.

The most favoured season for bushfires varies in different parts of Australia. In south-eastern Australia (including Tasmania) the most favoured season is summer and early autumn; in coastal New South Wales and southern Queensland it is spring and early summer; and in much of northern Australia it is winter and spring (or the later part of the 'dry' season). In the arid zones of Australia large fires most commonly occur in the months following an abnormally wet season, when there is enough vegetation to provide fuel.

The south-east Australian bushfires which occurred at the end of 2002 and the beginning of 2003 were among the most protracted and extensive of the last century. The 2002–03 bushfire season and its impact is discussed in the *Bushfire* section of the *Environment* chapter in *Year Book Australia 2004*.

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# 2

## GOVERNMENT

*This chapter was contributed by the Politics and Public Administration Section of the Library of the Commonwealth Parliament (September 2006).*

Australia has a federal system of government within which there are four divisions: Commonwealth, state, territory and local.

This chapter outlines the basic features of the Australian system of government, including:

- constitutional basis of government
- the Sovereign
- the Governor-General
- Commonwealth Parliament
- Australian Government
- Australian Public Service
- Commonwealth elections
- state government
- territory government – self-governing
- territory government – non-self governing
- local government
- political parties.

It also provides details of the Commonwealth ministry, and of the state and territory government leaders.

## Constitutional basis of government

Australia is a constitutional democracy based on a federal division of powers. The constitutional basis of government consists of:

- the Commonwealth Constitution, including amendments
- state and territory constitutions, including amendments
- legislation passed by the Commonwealth Parliament and the state and territory parliaments
- High Court judgments
- significant conventions of responsible government adopted from the British system of government that are in use at the Commonwealth, state and territory levels of government.

## Commonwealth constitution

The national Constitution is found in the *Commonwealth of Australia Constitution Act 1900* (Cwlth), a British Act that became law in July 1900 and came into force on 1 January 1901.

Any proposed law for the alteration of the Commonwealth Constitution must be passed by an absolute majority of each house of the Commonwealth Parliament (except in circumstances specified in section 128 of the Constitution which permits a referendum to proceed if passed by only one chamber). It must also be submitted to a referendum of the electors in each state and territory. An amendment must be approved by a majority of the voters in a majority of the states and by a majority of all voters.

Since 1901, 44 proposed amendments have been submitted to referenda. The consent of the electors has been given in regard to eight matters:

1906 – election of senators  
1910 – state debts  
1928 – state debts  
1946 – social services  
1967 – Aboriginal people  
1977 – Senate casual vacancies  
1977 – retirement age for federal judges  
1977 – the right of territory electors to vote in constitutional referenda.

Each state and territory has its own constitution found in legislation. Where a law of a state is inconsistent with a law of the Commonwealth, the latter law prevails and the former law is, to the extent of the inconsistency, invalid.

## The Sovereign

Since 7 February 1952, the Australian Sovereign has been Her Majesty Queen Elizabeth II.

On 6 November 1999 a vote to establish Australia as a republic was put to a national referendum. The proposal was defeated, with 54.9% of electors voting against it.

## The Governor-General

The Governor-General is the representative of the Sovereign, appointed by the Sovereign on the advice of the Australian Prime Minister.

His Excellency Major General Michael Jeffery AC, CVO, MC (Retd) has been Governor-General since 11 August 2003.

## Powers and functions

The Governor-General exercises the executive power of the Commonwealth of Australia on the advice of the Prime Minister. Certain other powers and functions conferred by the Constitution include the powers to:

- appoint times for holding the sessions of the Parliament
- prorogue Parliament
- dissolve the House of Representatives
- dissolve the House of Representatives and the Senate in the event of a double dissolution
- cause writs to be issued for general elections of members of the House of Representatives
- assent in the Queen's name to a proposed law passed by both Houses of the Parliament
- appoint and summon executive councillors
- appoint ministers of state for the Commonwealth of Australia.

In addition, the Governor-General, as the Queen's representative, is Commander-in-Chief of the Defence Forces. Many Acts of the Commonwealth Parliament provide that the Governor-General may make Regulations to give effect to such Acts. The Governor-General may also be authorised by

statute to issue proclamations, for example, to declare an Act in force. The Governor-General has been given power by statute to legislate for certain Australian territories.

In all such matters the Governor-General acts on the advice of the Prime Minister.

The Governor-General also possesses what are referred to as 'reserve powers'. These may be used without the advice of the Prime Minister, but are used only in times of political uncertainty.

The Queen may appoint an Administrator of the Commonwealth when the Governor-General is out of the country, ill or when the position of Governor-General is vacant. By convention, the longest-serving state governor is appointed as Administrator.

## Previous Governors-General

Those persons who have held the office of Governor-General from the inception of the Commonwealth of Australia until 1988 are pictured in *Year Book Australia 1988*. Pictures of all holders of the office can be found in the *Government* section on the ABS web site <<http://www.abs.gov.au>>.

## Commonwealth Parliament

Commonwealth legislative power is vested in the Commonwealth Parliament, comprising the House of Representatives and the Senate. There are currently 226 members of the Parliament (MPs) – 150 members of the House of Representatives and 76 Senators.

## Powers of Parliament

Apart from the constitutional requirement that all financial legislation must originate in the House of Representatives, and that the Senate cannot amend such legislation, the two houses have similar powers. The fact that the Senate can reject financial legislation makes it potentially one of the most powerful upper houses in the world.

As Australia has a federal system of government, the formal powers of the Commonwealth Parliament are limited to areas of national importance such as trade and commerce, taxation, postal services, foreign relations, defence, immigration, naturalisation, quarantine, currency and coinage, weights and measures, copyright, patents and trade marks. High Court decisions, Commonwealth-state agreements and use by the Commonwealth of the constitutional power to

make grants to the states and territories have seen the Commonwealth gain influence in regard to various other matters including industrial relations, financial regulation, companies and securities, health and welfare, and education.

## Functions of parliament

Parliament has five primary functions:

- to provide for the formation of a government
- to make the law
- to provide a forum for popular representation
- to scrutinise the actions of government
- to provide a forum for the alternative government.

The *formation of a government* is the most important outcome of a general election. Either the government is returned by virtue of retaining a majority of seats in the House of Representatives, or the opposition party or a coalition of parties wins a majority of seats, resulting in the formation of a new government. A new government could also be formed on any occasion between elections if the majority party changes its leader, or loses its majority (e.g. as a result of a by-election), or is defeated in an important vote in the House of Representatives. The last occurrence of government changing hands between elections occurred in October 1941.

The Hon. JW Howard MP (Liberal Party of Australia) has been Prime Minister since 11 March 1996.

More than half of Parliament's time is taken up with the *consideration of proposed legislation*. Between 150 and 250 Bills are passed each year. Most Bills are not contentious, either being 'machinery' legislation necessary for the orderly processes of government, or Bills that propose alterations to existing legislation. Most of the Bills are government Bills; legislation sponsored by private members is rare.

The *representation of the people* is an important role of members of the House of Representatives and Senators. Working for their constituents occupies a great deal of their time. The relative importance of this role may be judged by the high proportion of time spent by MPs in their electorates and away from Parliament. Since the beginning of 2000, Parliament has averaged 65 sitting days per year.

The *scrutiny* function is seen most obviously in the formal periods of Question Time, in both houses, that are a part of each day's sitting. Question Time is the best-known part of parliamentary proceedings, and is attended by many of the visiting public. Less well-known is the activity of a range of parliamentary committees which are established in order that Parliament's legislative, representation and scrutiny functions can be carried out more thoroughly and with the benefit of expert advice. These committees undertake the scrutiny of government operations as well as frequent inquiries into a range of current issues.

In Westminster-derived governments, such as Australia's, the Opposition has a recognised and formal status, being recognised in the Standing Orders of the Parliament and in legislation. The Opposition is seen as the *alternative government* and typically forms a 'shadow Cabinet' of MPs who prepare themselves to take on the reins of government. The Opposition also has the role of acting as the main critic of the government and of offering to the community an alternative set of policies.

The Hon. KC Beazley MP (Australian Labor Party) has been Leader of the Opposition since 28 January 2005.

## Australian Government

### Prime Minister

The office of Prime Minister is not recognised by the Constitution, being a conventional part of the governmental arrangements. It is also a matter of convention that the Prime Minister is always a member of the House of Representatives.

After an election, the Governor-General sends for the leader of the party, or coalition, which has secured a majority in the House of Representatives, and commissions that person to assume the office of Prime Minister and to form a government.

The Prime Minister has the following powers:

- advising the Sovereign on the appointment of the Governor-General

- acting as the sole source of formal advice for the Governor-General
- advising the Governor-General as to when Parliament should be dissolved
- setting the date for House of Representatives elections
- allocating positions in the Cabinet
- chairing Cabinet meetings.

### Ministers

The Prime Minister nominates members of his or her parliamentary party or coalition to serve as ministers, responsible for administering government departments such as the Treasury, the Department of Foreign Affairs and Trade or the Department of Defence. The Constitution requires that all ministers be either a member of the House of Representatives or a Senator. If a new minister is not an MP, it is obligatory for that minister to become an MP within three months of his/her appointment. Ministers may be appointed or replaced at any time between elections.

From time to time certain members of the Commonwealth Parliament have been appointed by governments to assist ministers in their work. Such persons have been known by a variety of designations, including parliamentary under-secretary and assistant minister; the current term is parliamentary secretary.

The ministries since Federation are listed in table 2.1.

### Cabinet

Senior ministers are members of the Cabinet, the meetings of which are chaired by the Prime Minister. Cabinet is not a body that is recognised by the Constitution, being a conventional part of the governmental arrangements. Despite this, Cabinet effectively controls not only a government's legislative program, but also government departments of state. In effect, therefore, Cabinet is the dominant political and administrative element in Australia's national government. The Governor-General does not attend Cabinet meetings.

## 2.1 MINISTRIES SINCE 1901

Number of ministry	Ministry	Period of office	Party
1	Barton	1 January 1901 to 24 September 1903	Protectionist
2	Deakin	24 September 1903 to 27 April 1904	Protectionist
3	Watson	27 April 1904 to 17 August 1904	Australian Labor Party
4	Reid-McLean	18 August 1904 to 5 July 1905	Free Trade-Protectionist
5	Deakin	5 July 1905 to 13 November 1908	Protectionist
6	Fisher	13 November 1908 to 2 June 1909	Australian Labor Party
7	Deakin	2 June 1909 to 29 April 1910	Protectionist-Free Trade-Tariff Reform
8	Fisher	29 April 1910 to 24 June 1913	Australian Labor Party
9	Cook	24 June 1913 to 17 September 1914	Liberal
10	Fisher	17 September 1914 to 27 October 1915	Australian Labor Party
11	Hughes	27 October 1915 to 14 November 1916	Australian Labor Party
12	Hughes	14 November 1916 to 17 February 1917	Nationalist Labour
13–14	Hughes	17 February 1917 to 9 February 1923	Nationalist
15	Bruce-Page	9 February 1923 to 22 October 1929	Nationalist-Country Party
16	Scullin	22 October 1929 to 6 January 1932	Australian Labor Party
17–18	Lyons	6 January 1932 to 7 April 1939	United Australia Party
19	Page	7 April 1939 to 26 April 1939	Country Party-United Australia Party
20	Menzies	26 April 1939 to 14 March 1940	United Australia Party
21–22	Menzies	14 March 1940 to 29 August 1941	United Australia Party-Country Party
23	Fadden	29 August 1941 to 7 October 1941	Country Party-United Australia Party
24–25	Curtin	7 October 1941 to 6 July 1945	Australian Labor Party
26	Forde	6 July 1945 to 13 July 1945	Australian Labor Party
27–28	Chifley	13 July 1945 to 19 December 1949	Australian Labor Party
29–33	Menzies	19 December 1949 to 26 January 1966	Liberal-Country Party
34–35	Holt	26 January 1966 to 19 December 1967	Liberal-Country Party
36	McEwen	19 December 1967 to 10 January 1968	Liberal-Country Party
37–39	Gorton	10 January 1968 to 10 March 1971	Liberal-Country Party
40	McMahon	10 March 1971 to 5 December 1972	Liberal-Country Party
41–43	Whitlam	5 December 1972 to 11 November 1975	Australian Labor Party
44–48	Fraser	11 November 1975 to 11 March 1983	Liberal-National Country Party
49–52	Hawke	11 March 1983 to 20 December 1991	Australian Labor Party
53–55	Keating	20 December 1991 to 11 March 1996	Australian Labor Party
56–59	Howard	11 March 1996	Liberal-Nationals

Source: Library of the Commonwealth Parliament.

Particulars of the Fourth Howard Ministry, comprising Cabinet ministers, other ministers and parliamentary secretaries are shown in table 2.2.

## Australian Public Service

The Australian Public Service (APS) provides policy advice to the Australian Government and facilitates the delivery of programs to the Australian community. It is part of the broader public sector, which includes parliamentary departments and employees, the staff of members of parliament and ministers, Australian-owned companies, statutory authorities, a separate public service for each of the states and territories, and local government employees. There are currently 18 government departments, 65 statutory authorities, five executive agencies and 23 other

government bodies in the APS. A list of these bodies is available at <<http://www.apsc.gov.au/apsp/apsprofile/agencies.htm>>.

Departments, statutory authorities and executive agencies are governed by legislation specific to their functions, and by the *Financial Management and Accountability Act 1997* (Cwlth) (FMA Act). This Act details specific requirements for the management of human and financial resources. The 18 departments and five executive agencies, a majority of statutory agencies and some government bodies are also subject to the *Public Service Act 1999* (Cwlth) (PS Act). Some government bodies operate with a degree of independence with their own collective agreements and/or are identified separately under the FMA Act or the *Commonwealth Authorities and Companies Act 1997* (Cwlth) but are still defined as APS agencies under the PS Act.

## 2.2 FOURTH HOWARD MINISTRY — October 2004

### CABINET MINISTERS

Prime Minister	The Hon. John Howard MP
Minister for Transport and Regional Services (Deputy Prime Minister)	The Hon. Mark Vaile MP
Treasurer	The Hon. Peter Costello MP
Minister for Foreign Affairs	The Hon. Alexander Downer MP
Minister for Trade	The Hon. Warren Truss MP
Minister for Finance and Administration	Senator the Hon. Nick Minchin MP
Minister for Health and Ageing	The Hon. Tony Abbott MP
Attorney-General	The Hon. Philip Ruddock MP
Minister for Communications, Information Technology and the Arts	Senator the Hon. Helen Coonan
Minister for Immigration and Multicultural Affairs	Senator the Hon. Amanda Vanstone
Minister for Defence	The Hon. Dr Brendan Nelson MP
Minister for Industry, Tourism and Resources	The Hon. Ian Macfarlane MP
Minister for Employment and Workplace Relations and Minister Assisting the Prime Minister for the Public Service	The Hon. Kevin Andrews MP
Minister for the Environment and Heritage	Senator the Hon. Ian Campbell
Minister for Agriculture, Fisheries and Forestry	The Hon. Peter McGauran MP
Minister for Families, Community Services and Indigenous Affairs and Minister Assisting the Prime Minister	The Hon. Mal Brough MP
Minister for Education, Science and Training and Minister Assisting the Prime Minister for Women's Issues	The Hon. Julie Bishop MP

### OTHER MINISTERS

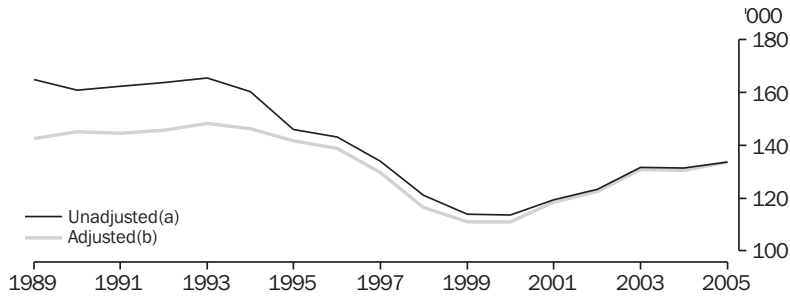
Minister for Vocational and Technical Education and Minister Assisting the Prime Minister	The Hon. Gary Hardgrave MP
Minister for Local Government, Territories and Roads	The Hon. Jim Lloyd MP
Minister for Revenue and Assistant Treasurer	The Hon. Peter Dutton MP
Minister for Veterans' Affairs and Minister Assisting the Minister for Defence	The Hon. Bruce Billson MP
Minister for Human Services and Minister Assisting the Minister for Workplace Relations	The Hon. Joe Hockey MP
Special Minister of State	The Hon. Gary Nairn MP
Minister for Ageing	Senator the Hon. Santo Santoro
Minister for Justice and Customs	Senator the Hon. Chris Ellison
Minister for the Arts and Sport	Senator the Hon. Rod Kemp
Minister for Fisheries, Forestry and Conservation	Senator the Hon. Eric Abetz
Minister for Community Services	The Hon. John Cobb MP
Minister for Small Business and Tourism	The Hon. Fran Bailey MP
Minister for Workforce Participation	The Hon. Dr Sharman Stone MP

### PARLIAMENTARY SECRETARIES

Parliamentary Secretary to the Prime Minister	The Hon. Malcolm Turnbull MP
Parliamentary Secretary to the Minister for Transport and Regional Services	The Hon. De-Anne Kelly MP
Parliamentary Secretary to the Treasurer	The Hon. Chris Pearce MP
Parliamentary Secretary (Foreign Affairs)	The Hon. Teresa Gambaro MP
Parliamentary Secretary to the Minister for Immigration and Multicultural Affairs	The Hon. Andrew Robb AO MP
Parliamentary Secretary to the Minister for Defence	Senator the Hon. Sandy Macdonald
Parliamentary Secretary to the Minister for Finance and Administration	Senator The Hon. Richard Colbeck
Parliamentary Secretary to the Minister for Health and Ageing	The Hon. Christopher Pyne MP
Parliamentary Secretary to the Minister for the Environment and Heritage	The Hon. Greg Hunt MP
Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry	The Hon. Sussan Ley MP
Parliamentary Secretary to the Minister for Education, Science and Training	The Hon. Pat Farmer MP
Parliamentary Secretary to the Minister for Industry, Tourism and Resources	The Hon. Bob Baldwin MP

Source: Library of the Commonwealth Parliament.

### 2.3 AUSTRALIAN PUBLIC SERVICE EMPLOYEES — June



(a) Actual number of employees. (b) Employee numbers adjusted for changes in Australian Public Service coverage during the period.

Source: Australian Public Service Commission, APS Employment Database, <<http://www.apsc.gov.au>>.

Each government department is managed by a Chief Executive Officer, or Departmental Secretary, who is responsible to the relevant minister for the 'efficient, effective and ethical' use of resources. The minister, in turn, takes political responsibility for the actions of the department. As well as answering to the relevant minister, the APS is accountable to the Australian community through a variety of mechanisms including parliamentary committees, administrative law, the Ombudsman and the Auditor-General. Statutory agencies are responsible for a specific function described within departments' portfolio responsibilities. For example, the Australian National Audit Office falls within the Department of the Prime Minister and Cabinet and provides a range of audit services to the Parliament and Australian Government public sector agencies.

In June 2005, there were 133,596 APS employees working under the PS Act (graph 2.3). Of this number, there were 123,242 ongoing employees and 10,354 were non-ongoing. All APS employees have a responsibility to comply with all applicable Australian laws and are held accountable for their work practices, such as the *Commonwealth Authorities and Companies Act 1997* (Cwlth), the *Workplace Relations Act 1996* (Cwlth), the *Criminal Code Act 1995* (Cwlth) and the *Crimes Act 1914* (Cwlth).

In addition, APS employees are subject to the APS Values and Codes of Conduct. These guidelines require public servants to act 'responsively, accountably, impartially and with integrity' when working with other APS employees and the public. The guidelines are available at <<http://www.apsc.gov.au/values/conductguidelines.htm>>.

## Commonwealth elections

### Voting methods

Members of the House of Representatives are elected by voters using the voting method known as the alternative vote (known in Australia as 'preferential voting'); Senators are elected by voters using the voting method known as proportional representation (single transferable vote variant).

### Franchise

Any Australian citizen aged 18 years and over, or British subject who was on the Commonwealth Roll as at 25 January 1984, is qualified to enrol and vote at Commonwealth elections. Residence in a particular electorate for at least a period of one month is also a requirement. Enrolment and attendance at a polling place on polling day (except under certain lawful exceptions) are compulsory for all eligible persons.

### Parliamentary terms

Members of the House of Representatives are elected for a maximum term of three years, though elections may be called earlier. Senators have fixed terms of six years. Normally half the Senate retires every three years, and half-Senate elections are usually held at the same time as elections for the House of Representatives, though they need not be. The most recent separate elections for each house occurred in 1970 (Senate) and 1972 (House of Representatives).



At times of disagreement between the House of Representatives and the Senate, the two houses may be dissolved and an election called for both. Of the 41 Commonwealth elections, six have been ‘double dissolution’ elections, the most recent of which occurred in 1987.

There have been 41 parliaments since Federation. The longest parliament was the third, which ran from 20 February 1907 to 19 February 1910, and the shortest was the eleventh, which ran from 6 February to 16 September 1929. The 41st Parliament first met on 16 November 2004.

Electorates

For the purpose of House of Representatives elections each state or territory is divided into single-member electorates according to the number of members of the House of Representatives to which the state or territory is entitled (table 2.4). The article *Drawing House of Representatives electorate boundaries* which discusses electoral redistributions in detail is in *Year Book Australia 2005*. In Senate elections the whole state or territory constitutes a single electorate.

2.4 ENROLMENT AND ELECTORATES  
— June 2006

	Electors enrolled	Electorates
New South Wales	4 299 510	50
Victoria	3 324 691	37
Queensland	2 458 457	28
Western Australia	1 259 528	15
South Australia	1 058 029	11
Tasmania	343 494	5
Northern Territory	111 254	2
Australian Capital Territory	226 576	2
<b>Total</b>	<b>13 081 539</b>	<b>150</b>

Source: Australian Electoral Commission.

2004 election

The House of Representatives was dissolved on 31 August 2004. Elections for the House of Representatives and half of the Senate were held on 9 October 2004.

The Liberal-Nationals coalition retained control of the House of Representatives and gained control of the Senate. The coalition therefore formed Australia’s 59th Commonwealth government. The state of the parties in the Commonwealth Parliament following the election is shown in table 2.5. For details of the 2004 election, see: <<http://www.aec.gov.au>>.

2.5 STATE OF THE PARTIES, Commonwealth Parliament — September 2006

House of Representatives	
Government parties	87
Liberal Party	74
Nationals	12
Country Liberal Party	1
Australian Labor Party	60
Independent	3
<b>Total</b>	<b>150</b>
Senate	
Government parties	39
Liberal Party	32
Nationals	6
Country Liberal Party	1
Australian Labor Party	28
Australian Democrats	4
The Greens	4
Family First Party	1
<b>Total</b>	<b>76</b>

Source: Library of the Commonwealth Parliament.

State government

The Australian nation was created by the federation of the six British self-governing colonies of New South Wales, Tasmania, Queensland, Western Australia, Victoria and South Australia which became the ‘Original States’ in the Commonwealth of Australia. Under the constitutional arrangements that came into existence in 1901 significant powers were retained by these states. The extent of state legislative power is defined by the Commonwealth and state Constitutions, and includes education, police, public health, public transport, agriculture, roads, community services, corrective services, mineral resources, emergency services, ports and the oversight of local government.

Governors

A state governor is the representative of the Sovereign, appointed by the Sovereign on the advice of the state’s premier. The governor exercises the executive power of his or her state on the advice of the premier. Other powers and functions are similar to the powers exercised at the Commonwealth level by the Governor-General.

In addition, governors have been invested with various statutory functions by state Constitutions and the *Commonwealth Australia Act 1986* (Cwlth), as well as under the Acts of the parliaments of the states. For example, governors

may administer the prerogative of mercy by the reprieve or pardon of criminal offenders, and may remit fines and penalties due to the Crown in right of their state.

The governors also possess what are referred to as ‘reserve powers’. These may be used without the advice of the premier, but are used only in times of political uncertainty.

The governors of the states at September 2006 are shown in table 2.6.

**2.6 GOVERNORS OF THE STATES  
— September 2006**

New South Wales	Her Excellency Professor Marie Bashir AC
Victoria	Professor David de Kretser AC
Queensland	Her Excellency Ms Quentin Bryce AC
Western Australia	His Excellency Lieutenant General John Murray Sanderson AC, AM
South Australia	Her Excellency Mrs Marjorie Jackson Nelson AC, MBE
Tasmania	His Excellency the Hon. William Cox AC, RFD, ED

Source: *Library of the Commonwealth Parliament.*

**Governments**

Each state is governed by a ministry headed by a premier. The state cabinet, chaired by the premier, is the centre of political and administrative power in each state.

Each state has a formal opposition, with the same role as at the Commonwealth level, headed by an opposition leader.

Table 2.7 lists the premiers at September 2006.

**2.7 PREMIERS, States — September 2006**

New South Wales	The Hon. M Iemma MP (ALP)
Victoria	The Hon. SP Bracks MP (ALP)
Queensland	The Hon. P Beattie MP (ALP)
Western Australia	The Hon. AJ Carpenter MP (ALP)
South Australia	The Hon. M Rann MP (ALP)
Tasmania	The Hon. PA Lennon MP (ALP)

Source: *Library of the Commonwealth Parliament.*

**Parliaments**

Five of the six Australian states have a bicameral parliament. In Queensland there is a single house. The lower houses in New South Wales, Victoria, Queensland and Western Australia are entitled Legislative Assembly; in South Australia and Tasmania the term is House of Assembly. The title of the five upper houses is Legislative Council.

**Elections**

The members of the parliaments of each state are elected by the residents of that state using either the alternative vote (‘preferential voting’) or proportional representation (single transferable vote variant).

**Territory government**

The Commonwealth Government assumed control of both the Northern Territory and the Australian Capital Territory during 1911. The Northern Territory (since 1978) and the Australian Capital Territory (since 1989) are now self-governing territories with powers almost matching those of the original states. The Northern Territory has been working towards full statehood, though a referendum on the question was rejected by Northern Territory voters in 1998. Norfolk Island was accepted into the Commonwealth as an Australian territory in 1914. *The Norfolk Island Act 1979* (Cwlth) grants a considerable degree of self-government to that territory.

The Northern Territory and Norfolk Island both have an administrator of the territory, appointed by the Governor-General (table 2.8). The Australian Capital Territory has neither administrator nor governor. Each territory has an elected Legislative Assembly, with a wide range of powers.

Each territory has a government headed by a chief minister (table 2.9). The Northern Territory and the Australian Capital Territory have a formally recognised opposition headed by an opposition leader. Norfolk Island’s Legislative Assembly does not possess a formal opposition.

**2.8 ADMINISTRATORS — September 2006**

Northern Territory	The Hon. EJ Egan AM
Norfolk Island	The Hon. GEJ Tambling

Source: *Library of the Commonwealth Parliament.*

## 2.9 CHIEF MINISTERS — September 2005

Northern Territory	The Hon. CM Martin MLA (ALP)
Australian Capital Territory	The Hon. J Stanhope MLA (ALP)
Norfolk Island	The Hon. GR Gardner

Source: Library of the Commonwealth Parliament.

Jervis Bay Territory, and the external territories of the Cocos (Keeling) Islands, Christmas Island, Coral Sea Islands, and Ashmore and Cartier Islands, make up the non-self governing territories of Australia.

The resident communities in each of Jervis Bay Territory, the Cocos (Keeling) Islands and Christmas Island are provided with an extensive range of government services. Each of the Cocos (Keeling) Islands and Christmas Island has an elected local government, and residents may vote in Commonwealth parliamentary elections in the electorate of Lingiari (Northern Territory). Residents of Jervis Bay Territory are enrolled in the electorate of Fraser (Australian Capital Territory).

Australia's activities in its Antarctic Territory are governed by the Antarctic Treaty (1959) (see the article *Australia and Antarctica* in the *International relations* chapter). Under this agreement the nations active in Antarctica consult on the uses of the continent, with a commitment that it should not become 'the scene or object of international discord'.

## Local government

Local government has a limited constitutional position in Australia, being organised under state or territory legislation upon broadly similar lines across Australia. The main variation is the existence of various councils in the Northern Territory that are based on rural indigenous communities. There are no local councils in the Australian Capital Territory, where the Territory government has direct responsibility for local services. Local government in Australia is unlike that in many other nations, for it provides a relatively narrow range of services.

Each state and the Northern Territory has a number of local government areas, known variously as cities, towns, municipalities, boroughs, shires or districts. The generic local body is the council. In June 2006 there were 673 local councils. Councillors and aldermen are elected by local residents, though councils may be dismissed by state governments – and occasionally are.

Within each local government area various services are provided, though there are many variations between states as well as between urban and rural councils. The Brisbane City Council is responsible for the provision of a wide range of services across most of Brisbane; by contrast, many small rural councils provide a relatively small number of services. Local government responsibilities include the management of health, welfare, sanitary and garbage services, road, street and bridge construction, water supply and sewerage, museums, fire brigades, harbour services, town planning and local libraries. The scope of local government duties differs a great deal around the nation, for in all states many of the responsibilities of a local nature are performed either directly by the state government or through semi-government authorities, known as statutory authorities. The provision of household water, for instance, is typically undertaken by a statutory authority operating under state legislation.

## Political parties

### The party system

An Australian party system had begun to develop during the last years of the colonial period in the 1890s, to the extent that most seats in the first Commonwealth Parliament were won by candidates from just three major groups, one of which was the Australian Labor Party. The outline of the modern system could be seen by 1910 following the fusion of two non-Labor parties in opposition to Labor. In 1919 the Country Party won a significant number of seats, and by 1923 it had joined the major non-Labor party in the first of many conservative coalition governments. Today the party battle at the Commonwealth level and in New South Wales, Queensland, Victoria and Western Australia is dominated by the contest between Labor and the Liberal and National (formerly Country) parties. Elsewhere the major contest is between the Liberal and Labor parties.

Many minor parties have contested House of Representatives and Assembly elections, but only in Tasmanian House of Assembly and Australian Capital Territory Legislative Assembly elections has the dominance of the major parties been threatened on occasion by minor parties and independents. The use of proportional representation for most of the upper house elections has given minor parties and independents a realistic chance of winning Senate

and Legislative Council seats. Since 1980 the major parties have controlled the Senate and Legislative Councils only intermittently.

## Parties and Parliament

Australian parliaments have thus been dominated by tightly controlled parties since the early 20th century. This has been the key factor in a decline in the significance of parliament relative to that of the executive.

The impact of parties can especially be seen in the operations of each parliamentary house, particularly in the legislative process. Many questions and a great deal of criticism are raised in the House of Representatives and the state lower houses, and legislative amendments are often moved. However, because governments usually enjoy a majority in these lower houses, questions may be avoided, amendments cannot be forced, and whether or not opposition views are accepted depends on the wishes of the government of the day.

It has been a different story whenever the Senate and the Legislative Councils have not been controlled by government, for the upper houses are powerful and all can alter or reject government legislation. When a government controls an upper house, however, that body's influence upon legislation tends to decline. For example, with the

coalition Commonwealth Government controlling both national houses from July 2005, the Senate's impact on legislation appears to have lessened significantly.

## Reference notes

The Australian Constitution is reproduced in *Year Book Australia* from time to time, the latest being the 1998 edition. Details of constitutional referendums are found in *Year Book Australia 1974*, *Year Book Australia 1977–78* and *Year Book Australia 1986*.

In *Year Book Australia 1924* the names are given of each ministry from Federation until February 1923. *Year Book Australia 1953* contains a list of ministries which covers the period between February 1923 and July 1951. The names of members of subsequent ministries are listed in issues of *Year Book Australia 1953* to 1975–76 inclusive, and in successive issues from 1980.

Full details of Commonwealth elections are issued by the Australian Electoral Commission following each election. State and territory election details are issued by the relevant electoral offices or commissions.

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## INTERNATIONAL RELATIONS

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Australia's foreign and trade policies are designed to advance the security and prosperity of Australia and Australians.

The international environment is increasingly challenging and uncertain. Globalisation has made the world more interdependent and provided opportunities for trading nations such as Australia by promoting trade liberalisation and raising living standards. However, globalisation has also increased countries' vulnerability to transnational threats. The threat of international terrorism continues to impact on the security environment and countering terrorism is a major focus of Australia's foreign policy.

Australia pursues bilateral, regional and multilateral strategies to advance its national interest. Australia has close bilateral relationships with countries in the region and key relations with major powers, including the United States of America. Australia is an active member of regional organisations, such as the Asia-Pacific Economic Cooperation forum, the Association of South East Asian Nations Regional Forum, the East Asia Summit, and the Pacific Islands Forum.

The Australian Government is a strong supporter of multilateral organisations. It uses its membership of such bodies, including the United Nations and the World Trade Organization, to work for regional security and stability, trade liberalisation, good governance, human rights and sustainable development, among other important goals.

The International Council for Science in conjunction with the World Meteorological Organisation established an International Polar Year in 2007–2008. The article *Australia and Antarctica* concludes this chapter and outlines the role the Australian Government has played internationally in the preservation of the polar environment.



## Australia's credentials and place in the international system

Australia is an independent and outward-looking nation actively involved in international affairs. Australia has close links with Europe and North America as well as a record of active engagement in Asia and the Pacific.

Australia is a stable, democratic society with a skilled workforce and a strong, competitive economy – gross domestic product (GDP) has grown by an annual average of four per cent over the past decade. A large part of Australia's prosperity is based on international trade and investment.

Australia's cultural diversity, record of constructive international engagement, strong political institutions and liberal democratic values inform its involvement in world affairs.

## Australia's bilateral relationships

Australia fosters significant relationships with a range of countries on the basis of shared interests. As a medium-sized power, Australia's international engagement focuses on those countries with the greatest influence on its strategic and economic situation.

### United States of America (USA)

The USA is Australia's closest security ally and its most important economic partner. Australia engages closely with the USA and advocates views across a broad range of international issues. The relationship with the USA complements Australia's commitment to the Asia-Pacific region, where US engagement contributes to security and prosperity.

At the heart of government relations between Australia and the USA is the ANZUS Treaty, signed in 1951. This treaty binds the two countries in mutual cooperation on military and security issues and contains a commitment that both Australia and the USA will act to meet common dangers. The two countries cooperate extensively to counter terrorism, combat the spread of weapons of mass destruction and enhance military interoperability.

The Australia-United States Ministerial Consultations (AUSMIN) are held between foreign and defence ministers on a regular basis to discuss strategic issues of mutual concern. The strength of the alliance with the USA was reaffirmed at AUSMIN 2005, held in Adelaide, which marked the 20th anniversary of the consultations.

Prime Minister Howard visited the USA in July 2005 and May 2006. In March 2006, US Secretary of State Rice visited Australia and participated in the inaugural ministerial-level Trilateral Strategic Dialogue with Foreign Minister Downer and Japanese Foreign Minister Aso. Australia and the USA also cooperate closely on climate change issues and in January 2006 were partner countries in the first ministerial meeting of the Asia-Pacific Partnership on Clean Development and Climate.

The Australia-United States Free Trade Agreement entered into force on 1 January 2005, providing significant new opportunities for Australian business in the USA. The USA is one of Australia's top merchandise trading partners, its largest services trading partner and the major source of foreign investment. In 2005 Australia exported goods and services to the USA worth \$9.2 billion (b) and \$4.4b respectively, and imported goods and services from the USA worth \$21.4b and \$6.4b. Major Australian merchandise exports to the USA are meat, alcoholic beverages and passenger motor vehicles.

People-to-people ties, including educational and cultural links, are extensive.

### Japan

Australia's close relations with Japan are built on long-established common interests and values. Both countries are industrialised democracies, committed to prosperity and stability in the Asia-Pacific region and key allies of the USA.

In March 2006 Foreign Minister Downer and Foreign Minister Aso signed a Joint Ministerial Statement declaring the Australia-Japan comprehensive strategic partnership to be stronger than ever. Cooperation on defence and security issues is becoming an increasingly significant part of the bilateral relationship. Australia and Japan are working together to identify new areas to broaden the existing partnership on security matters, including counter-terrorism and counter-proliferation, and in areas such as humanitarian relief and peacekeeping. The commencement in March 2006 of the ministerial-level Trilateral Strategic Dialogue



involving Australia, Japan and the USA reflects the common strategic interests shared by all three countries.

Since signing the Australia-Japan Commerce Agreement in 1957, both countries have benefited from a dynamic and interdependent economic partnership. Japan has been Australia's largest export market since 1967 – almost 40 years. Merchandise exports to Japan totalled \$28.4b in 2005, more than the combined value of goods exports to China and the USA. Australia's top exports to Japan are coal, iron ore, beef and aluminium. Japan is also Australia's third largest source of foreign investment.

The Australia-Japan Trade and Economic Framework, signed by the prime ministers of both countries in 2003, includes a joint undertaking to work towards comprehensive and balanced trade and investment liberalisation. In April 2005, the prime ministers agreed the two countries should undertake a two-year joint feasibility study into a bilateral free trade agreement (FTA). In March 2006 Australia and Japan agreed to intensify work on the feasibility study.

In 2006 Australia and Japan commemorated the 30th anniversary of the signing of the 1976 Basic Treaty of Friendship and Cooperation with the Australia-Japan Year of Exchange, a joint prime ministerial initiative to promote friendship, deeper mutual understanding and cooperation between the two countries. The Australia-Japan Foundation, established in 1976, promotes a wide range of bilateral professional, educational and cultural activities.

The fourth Australia-Japan Conference (AJC4) was held in Tokyo on 23 June 2006. These conferences bring together representatives from government, business, the arts and academia to discuss current issues of importance to Australia and Japan and to promote new areas of exchange. The AJC4 co-chairs statement delivered strong private sector support for the Government's objective of continuing to enhance bilateral cooperation in political, security, trade and cultural fields.

## China

Australia has constructive and friendly relations with China on the basis of mutual respect and recognition of shared interests and differences. China's importance to Australia has grown with China's increasing economic, political and strategic weight in the Asia-Pacific region and in the global economy.

Australia engages with China on a range of issues of mutual interest, including regional security, cross-Strait relations, security on the Korean Peninsula and development assistance in the South Pacific. Australia and China have a regular bilateral human rights dialogue.

Two-way trade has increased significantly over the past decade and China is now one of Australia's largest merchandise trading partners. In 2005, Australia exported goods and services worth \$16b to China. Major Australian merchandise exports to China included iron ore, alumina, wool and copper ores. In April 2005 Prime Minister Howard and his Chinese counterpart launched negotiations for a possible Australia-China FTA.

In April 2006 Premier Wen Jiabao visited Australia. During Premier Wen's visit, twelve government-to-government agreements and memorandums of understanding were signed across a range of fields including cooperation in peaceful uses of nuclear technology, mutual legal assistance, coal mine safety, education and training, agricultural technical cooperation and agricultural market access.

The Australia-China Council, established by the Australian Government in 1978, plays a significant role in enhancing Australia's cultural relations and people-to-people ties with China.

Within the parameters of its one-China policy, Australia promotes important economic, trade, cultural and people-to-people links with Taiwan.

## Indonesia

Australia and Indonesia are close neighbours enjoying a wide-ranging relationship encompassing political, security, commercial, cultural and people-to-people links. The relationship is underpinned by frequent two-way high-level visits. There is extensive bilateral cooperation between Australia and Indonesia on counter-terrorism, people smuggling and transnational crimes.

Australia is committed to providing ongoing assistance for Indonesia's economic and social development. Under the Australia-Indonesia Partnership, which includes \$1b committed by Australia following the Indian Ocean tsunami on 26 December 2004, the Australian Government is providing funds to help rebuild communities in Aceh and in other disaster-affected areas, and to promote economic growth across Indonesia.

The Australia-Indonesia Ministerial Forum and the Australia-Indonesia Trade Ministers' Meeting are key platforms for enhancing cooperation between the two countries. The former met in Bali on 28 and 29 June 2006 and the latter met in Canberra on 10 August 2006. In September 2005 respective trade ministers signed a Trade and Investment Framework aimed at enhancing commercial ties. Two-way trade in goods and services between Australia and Indonesia was valued at \$8.8b in 2005, making Indonesia Australia's 13th largest trading partner. Australia's major merchandise exports to Indonesia include crude petroleum, aluminium, cotton and live animals.

The relationship is characterised by strong people-to-people links. Over 16,000 Indonesian students were enrolled to study in Australia in 2005. Australia promotes bilateral understanding and exchanges through the Australia-Indonesia Institute, established by the Australian Government in 1989.

## **Association of Southeast Asian Nations (ASEAN)**

Australia attaches priority to its relationship with ASEAN, which is a key regional institution comprising Brunei Darussalam, Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam. As a dialogue partner, Australia participates in important ASEAN meetings, notably the ASEAN Regional Forum on promoting regional security and confidence building, and the ASEAN Post Ministerial Conference.

Australia's close and long-standing engagement with ASEAN and the nations of East Asia generally was bolstered further when Prime Minister Howard attended the inaugural East Asia Summit (EAS) in Kuala Lumpur on 14 December 2005. The EAS brought together leaders from the ten ASEAN countries as well as Australia, China, Japan, India, New Zealand and the Republic of (South) Korea to discuss issues of strategic and economic importance to the region. On 10 December 2005 Foreign Minister Downer signed the instrument of accession to the Treaty of Amity and Cooperation in Kuala Lumpur following a meeting of EAS Foreign Ministers, paving the way for Australia's inclusion in the EAS.

In 2004 at an ASEAN-Australia New Zealand Summit celebrating 30 years since Australia's inclusion as an ASEAN dialogue partner, leaders announced the start of negotiations for an

ASEAN-Australia New Zealand FTA. These negotiations are ongoing. Agreement was also reached in 2004 on an ASEAN-Australia Joint Declaration for Cooperation to Combat International Terrorism, which underpins regional cooperation on counter-terrorism and other regional security issues.

Australia has substantial relationships with many of the individual members of ASEAN. Australia has signed FTAs with Singapore and Thailand and negotiations have begun on a possible Malaysia-Australia FTA.

Singapore is Australia's largest trade and investment partner in ASEAN. In 2005 goods and services exports to Singapore were valued at \$3.9b and \$2.4b respectively, while goods and services imports from Singapore were valued at \$8.6b and \$2.8b. Australia's largest export to Singapore is crude petroleum. High level exchanges continue to reinforce the strength of the bilateral relationship and in August 2005 the 5th Singapore-Australia Joint Ministerial Meeting was held in Perth. Singaporean Prime Minister Lee Hsien Loong visited Australia in June 2006.

Australia's bilateral relationship with Thailand is strong and close, with cooperation in a broad range of areas of mutual interest including trade and investment, law enforcement, counter-terrorism, education, defence, migration and tourism. In 2005 Australia exported goods and services to Thailand valued at \$4.1b and \$0.5b respectively and imported goods and services valued at \$4.8b and \$0.9b.

Australia's relations with Malaysia have strengthened since elections in Malaysia in March 2004. In 2005, Malaysia's Prime Minister Badawi paid an official visit to Australia – the first such visit by a Malaysian Prime Minister in 21 years. In addition to the launch of bilateral FTA negotiations, the Australian Government announced the establishment of an Australia-Malaysia Institute to enhance people-to-people ties. In 2005, Australia exported goods and services to Malaysia valued at \$2.5b and \$1.0b respectively, and imported goods and services valued at \$6.0b and \$0.8b.

Australia is promoting closer bilateral engagement with the Philippines across a range of shared political, security and economic interests. The inaugural Philippine-Australia Ministerial Meeting was held in Sydney in August 2005.

Australia takes appropriate opportunities to press for democratic reform and national reconciliation in Burma (Myanmar), including in the United Nations (UN) General Assembly.

## **Korean Peninsula**

Australia's relations with the Republic of (South) Korea (ROK) are underpinned by an expanding trade and investment partnership. A shared commitment to democratic values and market economies contribute to a similar strategic outlook, including strong alliance relationships with the USA and cooperation in support of a nuclear-free Korean Peninsula.

Australia's commodity exports have contributed significantly to the ROK's remarkable economic progress since the end of the Korean War in 1953. The ROK is Australia's third largest merchandise export market. There are further opportunities for Australia to supply goods and services to the ROK, including energy and resources products. In 2005, Australian exports of goods and services to the ROK amounted to \$12.1b, with total two-way trade in the same period reaching \$17.6b. Major Australian merchandise exports to the ROK include coal, crude petroleum, iron ore and beef. Over 250,000 Koreans visited Australia in 2005, and 26,000 Koreans chose Australia as their preferred study destination in the same period.

The Australia-Korea Foundation, established in 1992, promotes awareness of the importance of the bilateral relationship and fosters enhanced cultural and people-to-people links.

Australia actively supports efforts to resolve tensions on the Korean Peninsula. Australia resumed diplomatic relations with the Democratic Peoples Republic of Korea (DPRK) in 2000, but development of the relationship has been suspended pending progress by the DPRK on verifiably dismantling its nuclear weapons programs. Australia urged the DPRK to return immediately and unconditionally to the six-party talks which aim to resolve the nuclear issue. Australia has worked closely with regional partners to ensure the DPRK understands the extent of international concern over the nuclear issue and uses the DPRK embassy in Canberra to register these messages directly. The Australian Government liaised closely with key players in the region and other allies to ensure a strong and rapid international response to the DPRK's missile tests on 5 July 2006. In November 2005, Australia

cosponsored a resolution on the human rights situation in the DPRK at the Third Committee of the UN General Assembly.

## **New Zealand**

Australia and New Zealand share a close relationship and a natural alliance based on common values and proximity. Strategic and defence relations are set out in the Canberra Pact (1944), the ANZUS Treaty (1951) and the Australia-New Zealand Closer Defence Relations Agreement (1991). The Australia-New Zealand Leadership Forum, involving ministers, business representatives, academics and other senior community leaders from both countries met in 2004, 2005 and, most recently, in May 2006 to explore ways to broaden and deepen the bilateral relationship.

Two-way trade and investment takes place under the Australia New Zealand Closer Economic Relations Trade Agreement, which created a free trade area between the two countries in 1983. An annual ministerial meeting addresses ways of further facilitating the free flow of trade between the two countries. Exports of Australian goods and services to New Zealand were valued at \$9b and \$2.7b respectively in 2005. Australia imported goods and services from New Zealand valued at \$5.4b and \$2.0b over the same period. Australia's major merchandise exports to New Zealand are refined petroleum, motor vehicles, medicaments and computers. Australia is New Zealand's largest trading partner.

People-to-people contact between the two countries is extensive. The trans-Tasman Travel Arrangements of 1973 allow Australians and New Zealanders to visit, live and work in each other's countries without restriction.

## **East Timor**

Australia worked closely with the East Timorese people and the UN in support of East Timor's transition to independence in 2002. In response to the breakdown in law and order in East Timor in April 2006 and at the invitation of the East Timorese leadership, Australia deployed troops and police as part of a multinational international force to help stabilise the security situation. Australia is at the forefront of international efforts to provide humanitarian assistance to East Timor and has advocated a new expanded UN mission in East Timor to address the country's immediate and longer-term assistance and development

needs. Australia signed an agreement with East Timor on maritime boundary and resource issues on 12 January 2006.

## South Pacific

Australia values its close historical, political, economic and community links with the island countries and territories of the Pacific. Australia is the largest provider of development assistance to the South Pacific and is playing an active role in the region in support of enhanced security, economic reform and good governance.

Australia is a founding member and major donor to a number of key regional organisations in the South Pacific. The Pacific Islands Forum is the region's principal political institution bringing together the independent and self-governing states of the Pacific in an annual Leaders' meeting. The 36th Forum meeting was held in Papua New Guinea (PNG) from 25–27 October 2005. At this meeting Forum Leaders adopted a new Agreement Establishing the Pacific Island Forum as an intergovernmental organisation. Forum Leaders also endorsed a Pacific Plan to strengthen regional cooperation and integration.

Australia is coordinating the ongoing state-building work of the Regional Assistance Mission to Solomon Islands. In 2006, Australia sent an observer team to the Solomon Islands elections and assisted the Solomon Islands Government to respond to subsequent civil unrest.

The Australian and PNG Governments established the Enhanced Cooperation Program (ECP) in 2004 under which Australian officials are deployed to assist PNG Government agencies strengthen governance and accountability. Australia worked with PNG to revise arrangements for the ECP following a PNG court ruling in 2005 determining that aspects of the program were unconstitutional. Australian officials have remained in PNG as advisers in the areas of economic and financial management, governance and the prevention of corruption, law and justice, border management and transport security.

In 2005 Australia and Nauru negotiated a fourth memorandum of understanding which covers the operation of the offshore processing centres and promotes better economic management. Australia continued to support Tonga's political and economic reform process and has provided an Australian to head Tonga's customs service.

## Canada

The Australia-Canada relationship is mature, highly productive and broadly based. Trade relations go back more than 100 years and formal diplomatic links are over 60 years old. Visits to Canada by Prime Minister Howard in May 2006 and by Foreign Minister Downer in September 2006 reaffirmed the two countries' close friendship and common interests. In addition to an active trade and investment relationship, Australia and Canada cooperate closely on international security, counter-terrorism and environmental issues, including in the UN. In 2005, Australia exported goods and services to Canada valued at \$1.7b and \$0.5b respectively. Australia imported goods and services from Canada of approximately the same value.

## Europe

The European Union (EU) is an increasingly influential player in international affairs. The enlargement of the EU from 15 to 25 member states on 1 May 2004 created an economy comparable in size to the USA. Australia's relations with the EU are underpinned by the 1997 Joint Declaration on Relations between Australia and the European Union and the 2003 action plan *Australia-European Union: an agenda for cooperation*. Ministerial consultations between Australia and the EU are held annually. Australia regularly holds broad-ranging policy dialogues at ministerial level with the EU Presidency, which rotates every six months.

Australia engages with the EU on global and regional strategic issues, with a growing and productive focus on security and development challenges in the Asia-Pacific region. Although Australia and the EU differ over agricultural policy, they cooperate closely on other key international trade policy issues. Australia's total merchandise trade with the EU (exports and imports) was worth \$48.9b in 2004–05. Bilateral trade in services is growing strongly. Services exports to the EU were valued at \$7.6b in 2004–05, with imports worth \$9.0b.

Australia has close ties with many countries in Europe. Australia and the United Kingdom (UK) share a particularly close and vibrant relationship, based on shared history and values, common strategic interests and strong trade and investment links. The strength of this relationship is underscored by regular high-level interaction. In March 2006 UK Prime Minister Tony Blair visited Australia. During the visit the establishment of an

Australia-UK Ministerial Dialogue to enhance cooperation on international security issues was announced. Over 2005–06, Australia's Governor-General, Prime Minister and Foreign Minister paid official visits to the UK.

Bilateral relations with other European states were also advanced by high-level visits over the past twelve months, including the Governor-General's visit to Turkey, the Prime Minister's visit to Ireland and visits by the Foreign Minister to France, Germany, the Czech Republic and Hungary. Marking the 400th anniversary of Australia-Netherlands contact and reflecting strengthening bilateral relations, a number of high-level visits took place between Australia and the Netherlands in 2006, including by Foreign Minister Downer in January and then Dutch Prime Minister Balkenende in April. As a demonstration of Australia's expanding relationship with Turkey, the Turkish Prime Minister visited Australia in December 2005 when a series of initiatives to develop bilateral trade, political, education and travel links were announced.

Australians of European descent contribute to strong people-to-people relationships with a range of European countries.

## **South Asia**

India is a significant power and has become an increasingly important political, strategic and economic partner for Australia. The bilateral relationship has a strong institutional framework that includes a Foreign Ministers Framework Dialogue, a Joint Ministerial Commission involving trade ministers, senior officials' talks and a strategic dialogue. During the Prime Minister's visit to India in March 2006, the two sides signed a Trade and Economic Framework to provide a more strategic focus to bilateral trade and investment.

India now ranks sixth as a market for Australian exports and twelfth as a trading partner overall. In 2005, Australian exports of goods and services to India were valued at \$6.9b and \$1.0b respectively. Australia's major merchandise exports to India are non-monetary gold, coal, copper ores and wool.

Australia established the Australia-India Council in 1992 to broaden and deepen bilateral contacts and understanding.

Australia maintains productive political and economic relationships with the other countries of South Asia. Australia contributed to relief and

reconstruction efforts in northern Pakistan following the devastating earthquake in October 2005.

Australia continues to contribute to international efforts in support of Afghanistan's democratic transition through military contributions and the aid program. Australia has intensified its engagement with Afghanistan through increased military deployments. These include an Australian Defence Force (ADF) Reconstruction Task Force (RTF) deployed to a Netherlands-led Provincial Reconstruction Team in Oruzgan Province, southern Afghanistan, commencing in the second half of 2006. The RTF will undertake infrastructure development activities and skills training for the local population. Australia made further financial commitments of up to \$150 million (m) over the next five years for reconstruction in Afghanistan and has established an embassy in Kabul.

## **Latin America**

Australia's relationship with Latin America includes strong bilateral economic interactions and cooperation on multilateral issues of mutual concern such as UN reform, multilateral trade negotiations, sustainable fishing and environmental protection. Latin America is an important destination for Australian investment, primarily in the mining and mining services sectors. Two-way trade is increasing, mainly due to a surge in exports of Australian coal. The Council on Australia Latin America Relations, established in 2001, seeks to advance Australia's economic, political and cultural relations with Latin America.

## **Middle East**

The Middle East is an area of global strategic and commercial importance. Australia has long supported a resolution of the Middle East conflict which recognises the right of Israel to exist within secure and recognised boundaries and establishes a viable Palestinian state.

Australia continues to support democracy and stability in Iraq. These efforts have seen progress with elections held in December 2005 and the subsequent establishment of a government of national unity. The ADF contribution to a stable and secure Iraq and in support of rehabilitation and reconstruction currently comprises up to 1,400 ADF personnel deployed to the Middle East Area of Operations. This includes a significant deployment to southern Iraq in a security overwatch role. Since 2003, Australia has committed over \$173m to reconstruction, rehabilitation and humanitarian programs in Iraq.



Australia's commercial interests in the Middle East are expanding, including in agriculture and services. Australia is considering whether to negotiate a broad FTA with the Gulf Cooperation Council (Saudi Arabia, Bahrain, Kuwait, Qatar, Oman and the United Arab Emirates). The Council for Australian-Arab Relations was established by the Australian Government in 2002 to strengthen ties between Australia and Arab countries.

Iran's nuclear program remains of deep concern in the Middle East region and globally. Australia is working closely with the international community to find a diplomatic solution to the Iran nuclear issue.

## Africa

Australia's most significant relationship in Africa is with South Africa, which is its largest African trading partner. Australian mining companies are increasingly active throughout Africa and this sector is an important focus of bilateral engagement. In Zimbabwe, Australia applies a range of sanctions to encourage political and economic change, while continuing to provide emergency food and other humanitarian aid. Australia is working with the international community to address the humanitarian crises in Sudan, including Darfur. Since 2003 Australia has welcomed more than 15,000 refugees from Sudan, and the ADF and Australian Federal Police (AFP) have deployed personnel to the UN Mission in Sudan.

## Australia's security interests

Countering the threat of transnational terrorism is a key priority for ensuring the security and safety of Australia and Australians.

Australia's efforts are concentrated on building the resolve and capacity in the region to defeat terrorism. Australia has concluded twelve bilateral memorandums of understanding on counter-terrorism with Malaysia, Thailand, the Philippines, Fiji, Cambodia, PNG, Indonesia, India, East Timor, Brunei, Pakistan and Afghanistan. In May 2006 the Government announced a Third Regional Counter-Terrorism Assistance Package totalling \$92.6m over four years. This package is aimed at expanding regional cooperation to keep weapons of mass destruction (WMD) out of the hands of terrorists, build regional capability for responding to terrorist attacks and counteract terrorist propaganda. In 2004 Australia established with Indonesia the Jakarta Centre for Law

Enforcement Cooperation to boost the capacity of law enforcement agencies to fight terrorism and other transnational crimes.

Australia also works with the UN and in other forums in support of international counter-terrorism efforts. In December 2005 the Australian Government launched an international campaign to strengthen international export and other control standards applying to Man-Portable Air Defence Systems as part of its efforts to counter the terrorist threat and enhance aviation security in the Asia-Pacific region.

Australia attaches high priority to countering the proliferation of WMD. In 2005 the government published a paper entitled *Weapons of Mass Destruction: Australia's Role in Fighting Proliferation* which highlights the extent and nature of the contemporary threat posed by WMD proliferation and Australia's multifaceted strategy to address that threat (see <<http://www.dfat.gov.au/publications/wmd/>>). This includes efforts to strengthen adherence to and compliance with the major non-proliferation treaties – the Nuclear Non-Proliferation Treaty, the Chemical Weapons Convention, the Biological and Toxin Weapons Convention and the Comprehensive Nuclear-Test-Ban Treaty. Through active participation in the International Atomic Energy Agency and other forums, Australia contributes to international efforts to resolve concerns over the nuclear activities of Iran and the DPRK.

Australia is the permanent chair of the Australia Group, which is dedicated to preventing the proliferation of chemical and biological weapons. The Proliferation Security Initiative – a global initiative established in 2003 to develop practical measures to disrupt illicit trade in WMD – is a core element of Australia's counter-proliferation strategy. Australia undertakes an active counter-proliferation outreach program, providing practical technical assistance to key regional countries to help them improve export control measures so they meet relevant international obligations and strengthen national structures.

Australia's alliance relationship with the USA is crucial to Australia's security and to strategic stability in the Asia-Pacific region. Reflecting shared security interests, the inaugural ministerial meeting of the Trilateral Strategic Dialogue between Australia, Japan and the USA was held in Sydney in March 2006. Australia is deepening bilateral defence and security relationships with countries throughout the Asia-Pacific region and

with regional security organisations such as the ASEAN Regional Forum and the North Atlantic Treaty Organisation.

Australia works bilaterally and in regional forums to combat transnational crime. For example, Australia co-chairs with Indonesia the Bali process on people-smuggling, trafficking in persons and related transnational crime. The website at <<http://www.baliprocess.net>> provides more information.

## Australia's economic interests

Trade and investment are vital to Australia's economic prosperity. Over 1.7 million Australian jobs are directly or indirectly connected to exports. Australia is pursuing an ambitious trade policy agenda, which combines multilateral, regional and bilateral strategies to open new markets, reduce barriers to trade and promote Australian goods and services.

Australia's trade policies and practices are described in detail in the Australian Government Trade Minister's annual Trade Statement, *Trade 2006* (see <<http://www.dfat.gov.au/trade/trade2006>>) and are discussed at National Trade Consultations and meetings of the Trade Policy Advisory Council. Economic fact sheets for over 170 of Australia's trading partners, including summaries of their trade with Australia, are available at <<http://www.dfat.gov.au/geo/fs>>.

## World Trade Organization (WTO)

Australia is a strong supporter of the WTO as the premier forum for global trade liberalisation. A stronger multilateral trading system is the most effective way of providing Australian exporters with increased access to world markets for their products and services.

Australia is pursuing the reduction of trade barriers and the expansion of markets through the Doha Round of multilateral negotiations in the WTO. Despite setbacks in 2006, the round would deliver major benefits for the Australian economy by opening up international markets for Australian goods and services exporters. Australia is encouraging a high level of ambition in WTO negotiations on further liberalisation of agriculture, industrials and services. Industrials account for 76% of Australia's merchandise exports, while services now represent more than 70% of Australia's GDP. Australia also actively encourages all WTO members to engage constructively in the negotiations.

The Doha Round also has the potential to deliver significant economic benefit to Australia by reducing subsidies in agriculture, which remains the most distorted sector in world trade. Australia co-founded and continues to chair the Cairns Group of 18 agricultural exporting countries, which has been influential in the debate over agriculture trade reform since its inception in 1986. Achieving an ambitious outcome on agriculture in the Doha Round is a key priority for Australia as well as other group members. Australia hosted the 20th anniversary meeting of the Cairns Group in September 2006.

Australia pursues a number of other trade objectives through the WTO, including through its dispute settlement procedures. Australia participates in negotiations with countries seeking to join the WTO and works with regional developing countries to assist their efforts to accede.

## Asia-Pacific Economic Cooperation (APEC)

Australia strongly supports the APEC forum, which makes an important contribution to regional cooperation, economic growth and stability. APEC economies represent over 60% of global GDP and over 50% of world trade. They account for over two-thirds of Australia's trade, amounting to \$211b in 2005.

A core APEC objective is encompassed in the 'Bogor Goals' to achieve free and open trade and investment in the Asia-Pacific region. In recent years, APEC Leaders have recognised the growing need to address 'beyond the border' impediments to business activity, including intellectual property rights and transparency-related issues, and have commissioned new work in this area. They have also recognised that economic prosperity is not possible without security and, at their annual meeting in 2003, adopted the complementary goal of protecting the security of their people. As a result, APEC now has a far more comprehensive and diverse agenda. The forum supports work across its diverse agenda with practical activities in the areas of capacity building and economic and technical cooperation and through engagement with business.

Australia is working to promote and implement key elements of APEC's agenda, including trade and investment liberalisation, business facilitation, counter-terrorism, secure trade, and disaster response and emergency preparedness. Australia has led APEC's response to the challenges that



avian influenza and other emergencies pose to growth, stability and welfare in the region. Australia hosted the APEC Avian Influenza Preparedness and Response Meeting in Brisbane in October 2005 and, in June 2006, convened a 'desktop' exercise to test communications in the region in the event of an outbreak.

Responsibility for hosting APEC meetings rotates among members annually. Australia will host APEC in 2007. This will involve up to 100 days of meetings during the year, including a meeting of the Leaders of APEC's 21 members, seven ministerial meetings and meetings of officials, business and academics.

### **Free Trade Agreements (FTAs)**

Australia negotiates FTAs with important trading partners to deliver improved access for Australian exporters in target markets. FTAs are consistent with WTO principles, help to open up all trade in goods, provide improved conditions for services trade and investment, and are generally faster to negotiate and implement than other trade deals.

Australia's longest-standing free trade agreement is the Australia-New Zealand Closer Economic Relations Trade Agreement, which began in 1983. The Agreement is widely regarded as a model trade agreement and has been very successful in boosting trans-Tasman trade and investment links and strengthening the international competitiveness of both economies.

The Singapore-Australia FTA entered into force in 2003. In addition to tariff elimination, the agreement provides increased market access for Australian exporters of services and provides a more open and predictable business environment.

The Australia-United States FTA, which entered into force on 1 January 2005, is a landmark agreement with the world's largest economy. It has led to significantly improved access for Australian industrial and agricultural goods in the USA and provides important guarantees to underpin the substantial bilateral services trade.

The Thailand-Australia FTA, which also entered into force on 1 January 2005, is a major market opening agreement. Under the agreement, more than half of Thailand's 5,000 tariffs – accounting for nearly 80% of Australia's exports to Thailand – were eliminated and those not immediately eliminated will be phased down.

Australia is negotiating a number of new FTAs. Negotiations with China were launched in April 2005 and the significant economic complementarities between the two economies mean that an FTA would deliver substantial mutual economic gains. The prime ministers of Australia and Malaysia agreed in April 2005 to launch negotiations for a bilateral FTA and a number of negotiation rounds have been held since then. An FTA would secure access to Malaysia's market and provide certainty for Australian firms doing business there. Australia, together with New Zealand, is negotiating a comprehensive FTA with the countries of ASEAN covering trade in goods and services and investment. Australia and the United Arab Emirates are no longer negotiating an FTA following the implementation of a unified trade policy across the Gulf Cooperation Council.

Australia and Japan are also engaged in work on a FTA feasibility study. Australia and Mexico have agreed to establish a Joint Experts Group to examine ways of expanding the economic relationship, including through a possible FTA.

### **Australia's environment interests**

Australia attaches high priority to the protection, conservation and ecologically sustainable use of the environment. In international environment negotiations Australia pursues outcomes that advance its environmental and trade interests in a mutually reinforcing framework.

### **Climate change**

Australia plays a leading role in practical international efforts to address climate change. On 12 January 2006 ministers from Australia, China, India, Japan, ROK and the USA met for the first Asia-Pacific Partnership on Clean Development and Climate (AP6) meeting in Sydney. The AP6 aims to manage greenhouse emissions while promoting economic growth and energy security. It features practical technology-based partnerships between government and business. The Australian Government is also active in the UN Framework Convention on Climate Change where it is promoting practical and inclusive multilateral approaches to climate change. Australia has a series of dynamic bilateral climate change partnerships with the USA, EU, China, Japan, South Africa and New Zealand.

## Whales

Australia is a driving force behind global whale conservation and is an active member of the International Whaling Commission (IWC). Australia was one of the first countries to join the IWC. Australia supports whale sanctuaries and non-lethal research on whale populations to protect them as they recover from centuries of hunting. With New Zealand, Australia has argued in the IWC for the creation of a South Pacific Whale Sanctuary. At the IWC meeting in June 2006 Australia helped ensure continued protection of whales by upholding the moratorium on commercial whaling.

## Biosafety protocol

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity has the potential to impact on Australia as a developer and user of genetically modified organisms in agricultural applications. Although not a party to the protocol, the Australian Government engages actively at international meetings and consults closely with key domestic industries and like-minded agricultural exporting countries to protect Australia's environmental and trade interests.

## Tsunami warning mechanisms

The Indian Ocean tsunami of 26 December 2004 had a major impact on a number of Australia's neighbouring countries. Following the tsunami, Australia played a leading role in establishing an Indian Ocean tsunami warning system and developed a comprehensive national warning system. As part of the Indian Ocean system, Australia's increased monitoring capacity off the west and north coast will provide vital regional coverage and early warning.

## Australia's engagement with the United Nations

Australia was a founding UN member in 1945 and has been an active participant in peacekeeping operations and other UN activities. Its core interests in the UN's agenda are international security, environment, human rights and targeted development. Australia also has a strong interest in the UN technical agencies dealing with issues such as agriculture, health, refugees and international nuclear safeguards.

Australia supports efforts to reform the UN system and make it more efficient and responsive to contemporary challenges. Australia has been heavily engaged in reform initiatives endorsed at the UN World Summit held in New York in September 2005, including the establishment of a Human Rights Council. Australia is represented on the governing councils of a number of UN bodies, programs and specialised agencies. These include the Commission on Narcotic Drugs, the Commission on Sustainable Development, the United Nations Environment Programme, the United Nations Democracy Fund, the Joint UN Program on HIV/AIDS, the International Labor Organisation, the International Maritime Organisation, the International Civil Aviation Organisation, the Universal Postal Union and the Organisation for the Prohibition of Chemical Weapons.

## Australia and the Commonwealth

Australia is an active member and supporter of the Commonwealth of Nations – an association of 53 countries – and particularly values its role in promoting the fundamental political principles of democracy, good governance and the rule of law. Prime Minister Howard attended the Commonwealth Heads of Government Meeting held in Malta in 2005. The Commonwealth Secretary-General visited Australia in March 2006 for the Commonwealth Games held in Melbourne.

## Australia's human rights policy

Australia has a long tradition of supporting human rights around the world and was closely involved in the development of the international human rights system by helping draft the Universal Declaration of Human Rights in 1948. Australia takes an active and constructive approach to improving human rights standards and systems internationally, including through participation in UN mechanisms for the promotion and protection of human rights; targeted development assistance programs; and support for good governance and the establishment of national human rights institutions. Australia has formal human rights dialogues with China and Vietnam.

On 15 March 2006 Australia voted for the historic UN General Assembly resolution establishing a new Human Rights Council to replace the previous Commission on Human Rights. Australia had served on the Commission since 2003.

Australia attended the inaugural session of the new Human Rights Council held in June 2006 in Geneva.

## Role of DFAT in Australia's international relations

The Department of Foreign Affairs and Trade (DFAT) is the principal source of advice to the Australian Government on foreign and trade policy issues and is responsible for implementing the Government's foreign and trade policies. The Department works to achieve four primary outcomes to advance the interests of Australia and Australians internationally:

- Australia's national interests protected and advanced through contributions to international security, national economic and trade performance, and global cooperation;
- Australians informed about and provided access to consular and passport services in Australia and overseas;
- public understanding in Australia and overseas of Australia's foreign and trade policy and a positive image of Australia internationally; and
- efficient management of the Commonwealth overseas-owned estate.

## Services to the Australian community

### Consular services

DFAT provides consular services to Australians travelling overseas and their families in Australia through its network of overseas missions and honorary consulates (consisting of 173 points of consular service worldwide), the 24-hour Consular Emergency Centre in Canberra and consular cooperation arrangements with other countries. Consular services include: assisting Australians who are hospitalised, imprisoned, or require welfare assistance overseas; helping family members when Australian travellers go missing or die overseas; and coordinating responses to overseas emergencies affecting Australian nationals. Of the 5 million Australians who travelled overseas in 2005–06, the Department provided significant consular assistance to 15,882 of them. The Department's smartraveller campaign promotes safe overseas travel by Australians. In 2005–06 DFAT issued travel advice updates for 152 destinations on the web site at <<http://www.smartraveller.gov.au>>.

### Passport services

The Department provides secure travel documents to eligible Australians in accordance with the *Australian Passports Act 2005* (Cwlth). In 2005–06 the Department issued 1,259,692 passports – compared with 1,260,831 the previous year. On 24 October 2005 the Department introduced the ePassport. This passport has a microchip embedded in its centre pages and uses sophisticated facial recognition technology to improve identity verification processes and fraud detection. The ePassport represents a significant step forward in travel document security, helping to protect Australian travellers and the Australian community from identity-related fraud. Of the passports issued in 2005–06, 822,781 were ePassports.

### Public information services

DFAT provides a range of information services on foreign and trade policy to the Australian public and media, including through briefings and public presentations and the production of public affairs material such as brochures, reports and publications. Links to the Department's recent publications are at <<http://www.dfat.gov.au/publications/>>. Through targeted public diplomacy programs managed by Australia's overseas missions, the department promotes an accurate and contemporary image of Australia internationally and a clearer understanding of Australia's foreign and trade policies and strategies. In 2005 Australia showcased its reputation as a leading business, tourism and education destination through its participation in the World Expo in Aichi, Japan. Detailed information about Australia's foreign and trade policies can be obtained from the department's website at <<http://www.dfat.gov.au>>.

### Network of Australian diplomatic and consular missions overseas

DFAT manages an extensive network of Australian diplomatic and consular missions abroad, supporting Australia's international interests and providing consular and passport services. The Department's central office is in Canberra and it maintains offices in all other state and territory capitals, as well as in Newcastle and Thursday Island. Information on the location of overseas embassies, high commissions, consulates and multilateral missions managed by DFAT can be found in the on-line version of the Department's annual report at <[http://www.dfat.gov.au/annual\\_reports](http://www.dfat.gov.au/annual_reports)>.

### Location and number of DFAT staff

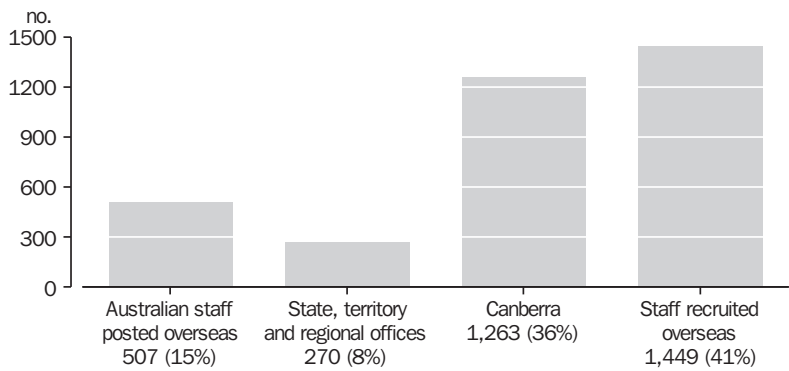
The Department currently employs 2,040 Australia-based staff, of whom around 25% are posted overseas; an additional 1,449 locally-engaged staff are employed by the Department's overseas missions (graphs 3.1 and 3.2).

### Australian overseas aid program

The Australian Government's overseas aid program aims to assist developing countries to reduce poverty and achieve sustainable

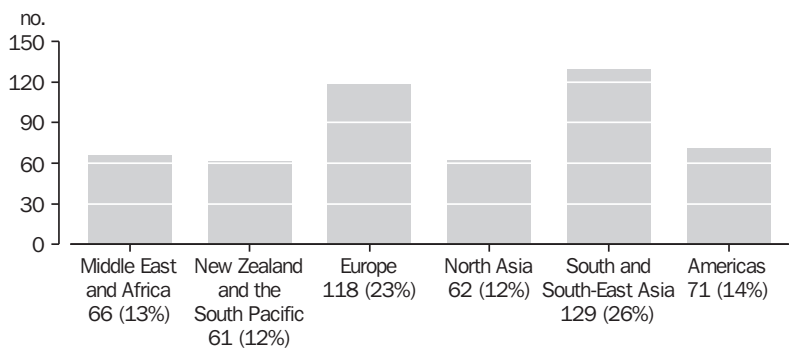
development, in line with Australia's national interest. The aid program works with Australia's developing country partners, other donors, UN agencies and multilateral organisations such as the World Bank, to promote economic growth, stability, security, and functioning governments. Focusing predominantly on the Asia-Pacific region, the aid program also helps reduce the adverse impacts of conflict, natural and other disasters on vulnerable populations; and address long-term constraints to development including poor governance, corruption and instability.

3.1 LOCATION AND NUMBER OF DFAT STAFF — 30 June 2006



Source: Department of Foreign Affairs and Trade.

3.2 LOCATION OF AUSTRALIA-BASED DFAT STAFF POSTED OVERSEAS — 30 June 2006



Source: Department of Foreign Affairs and Trade.

The Government's recently released White Paper, *Australian Aid: Promoting Growth and Stability* (2006) will help guide the direction of the overseas aid program in coming years. It provides a comprehensive account of how the Australian Government will approach the doubling of its aid budget to about \$4b annually by 2010. The White Paper provides four guiding themes for the aid program: accelerating economic growth; fostering functioning and effective states; investing in people; and promoting regional stability and cooperation.

Australia's peace and security is inextricably linked to that of its neighbouring countries. By helping to reduce poverty and promote sustainable development, the aid program is an integral part of Australia's foreign policy and security agenda. The aid program reflects a coordinated whole-of-government approach to international development issues which draws on the skills and expertise of a wide range of Government agencies and other parts of the Australian community, including the business and academic sectors.

Over the last 20 years, more than 500 million people in the Asia-Pacific region have been lifted out of poverty, but another 700 million live on less than US \$1 per day and almost 2 billion live on less than US \$2 per day, including over half the population of Indonesia. Asia is making progress towards the UN Millennium Development Goals, but much of the Pacific is not. The Asia-Pacific states such as China, Thailand and Vietnam, are growing strongly while still facing large economical social challenges, while other countries still have to overcome some serious challenges to achieve and sustain growth and reduce poverty – including PNG, most of the Pacific island countries, East Timor, Cambodia, Laos, Indonesia and the Philippines.

In 2006–07, the Australian Government is providing an estimated \$2.946b in Official Development Assistance (ODA), an increase of \$455m over the 2005–06 budget figure of \$2.491b. The ratio of Australia's ODA to gross national income for 2006–07 is estimated at 0.30%. Details of ODA to partner countries in 2006–07 are provided in table 3.3.

Further information and publications on the aid program can be obtained from the web site of the Australian Agency for International Development, <<http://www.aisaid.gov.au>>.

### 3.3 AUSTRALIAN OFFICIAL DEVELOPMENT ASSISTANCE(a) — 2006–07

Major partner countries/regions	\$m
Papua New Guinea and Pacific	
Papua New Guinea	332.2
Solomon Islands	223.0
Vanuatu	34.7
Fiji	33.8
Samoa	22.0
Tonga	13.4
Kiribati	13.0
Regional Pacific	94.4
<i>Total</i>	766.6
East Asia	
Indonesia (ongoing program)	165.9
Indonesia (AIPRD)(b)	178.4
Vietnam	81.5
Philippines	68.6
China	41.8
Cambodia	48.5
East Timor	43.6
Laos	21.9
Thailand	5.3
Regional East Asia	47.8
<i>Total</i>	713.4
South Asia, Africa and Other	
Bangladesh	36.3
Sri Lanka	31.0
India	9.8
Regional South Asia and Other	47.3
Africa	82.1
Middle East and Central Asia	408.5
<i>Total</i>	614.9
Other Government Departments (not attributed to country/region)	202.8
Core contributions to multilateral organisations, other ODA, reconciliation of expenses to cash	648.6
<b>Total ODA (cash)</b>	<b>2 946.3</b>

(a) Budget estimates for 2006–07. (b) Australia-Indonesia Partnership for Reconstruction and Development.

Source: AusAID.

### Australian Agency for International Development (AusAID)

AusAID is an administratively autonomous agency within the Australian Government's Foreign Affairs and Trade portfolio. The agency is responsible for management of Australia's overseas aid program on behalf of the Government. The objective of the aid program is to assist developing countries reduce poverty and achieve sustainable development, in line with Australia's national interest.

## Guiding themes of the overseas aid program

With three overarching priorities – gender equality, partnerships and untied aid – the 2006 White Paper on Australian Aid sets out four themes to guide the direction of the aid program:

- *Accelerating economic growth*

Growth is fundamental for poverty reduction and critical to stability in many parts of the region. As a means to achieve this, the aid program works to improve the policy environment for growth; promotes free trade through assistance to enhance trade facilitation; and supports the strengthening of important drivers of growth through assistance for infrastructure, skilled workforce development and rural and business development.

A new Australia-Pacific Technical College reinforces Australia's commitment to workforce development in the region. Assistance to strengthen rural development through research, small scale infrastructure, agricultural safeguards and business development, will improve the economic prospects of the region's poor, the majority of whom live in rural areas.

- *Fostering functioning and effective states*

The goal of significantly increasing Australia's overseas aid by 2010 is conditional on improved governance in partner countries. Australia has a strong focus on governance and aims to build demand for stronger, more responsible leadership.

A new Pacific Leadership Program, commencing in 2006–07 will foster the development of future leaders from a variety of fields including the academic, social, scientific, business and political. The Government places considerable emphasis on strengthening law and justice institutions and systems in a number of countries in the region, particularly in the Pacific.

Australia is actively engaged in international research, analysis and program development with respect to fragile states. Expertise from AusAID, the Treasury, the AFP, the Department of Defence and external research organisations is being drawn upon to build understanding and analysis of fragile states, and improve the impact of Australian overseas aid.

- *Investing in people*

The Government is investing in people in developing countries by strengthening national health systems; tackling major diseases (HIV/AIDS, malaria and potential pandemics); strengthening national education systems; and supporting higher education through scholarships and linkages.

The aid program is developing new strategies in education and health to build stronger basic services, and focus on financial management, human resources and policy development. The aid program is building on Australia's HIV/AIDS leadership role, including through boosting its response to HIV/AIDS in PNG and, more broadly, through support for the work of Australia's Ambassador for HIV/AIDS. Australia is undertaking significant planning and preparedness work to manage outbreaks of infectious disease including Avian Influenza. The aid program supports higher education through a comprehensive range of scholarships and learning support programs.

Gender equality is an essential element in all successful development efforts. The aid program highlights the importance of gender equality through expanding activities in girls' education, maternal and reproductive health, and promoting the role of women in decision making. The elimination of violence against women is also a priority for the aid program.

- *Promoting regional stability and cooperation*

Stability is a critical pre-determinant for growth and poverty reduction. Challenges to stability continue to emerge, most notably transboundary threats. These are not only direct threats to development – they also deter investment, diminish legitimate and stable employment prospects and have spill-over impacts on neighbouring countries. Australia addresses corruption, illicit drugs, people trafficking and terrorism through a range of whole-of-government initiatives.

With the goal of enhancing growth and reducing the cost of governance through regional integration, Australia is supporting greater regional integration, where appropriate, through ASEAN, APEC and the Asian Development Bank (ADB) Greater Mekong Sub-region program. Further assistance is being provided to promote regional governance in the Pacific, including targeted support for the Pacific Plan.



## Aid effectiveness

The projected increase in Australia's overseas aid by 2010 is subject to the continued and effective application of resources and the performance of partner governments and institutions. The aid program is building on Australia's commitment to aid effectiveness, placing it at the forefront of international development practice.

The effectiveness of the aid program is ensured by:

- *Strengthening the performance orientation of the aid program*

Australia aims to provide significant incentives for good performance by allocating additional resources to selected countries that meet agreed performance criteria. A new Office of Development Effectiveness monitors the quality and evaluates the impact of Australian aid and prepares the Annual Review of Development Effectiveness.

- *Combating corruption*

Australia's goal to increase overseas aid is conditional on strengthened governance and reduced corruption in partner countries. Anti-corruption is a key consideration in the design and implementation of aid activities. AusAID works with whole-of-government partners and through regional and global initiatives to help mitigate corruption. The aid program works closely with partner countries to help them better monitor their performance and to enhance policy dialogue around anti-corruption and good governance themes.

- *Enhancing Australia's engagement with the Asia-Pacific region*

Australia is building on its strong record of policy coherence in the Asia-Pacific region, especially in relation to trade and development policy. AusAID is broadening its cooperation with other government departments and agencies to deliver more effective aid programs in the region. New country and regional strategies will also involve whole-of-government consultation and provide a single framework for planning and review of development activities.

In addition to stronger government engagement in the region, the aid program is promoting further research, non-government organisation (NGO) and community links. The development research program will be underpinned by a new strategy which encourages long-term partnerships with

research organisations both in Australia and overseas. Further assistance is being provided through NGO programs to support development priorities in partner countries. Linkages with new groups in the region such as community-based organisations, professional bodies and businesses are being fostered.

- *Working in partnership with regional governments and other donors*

The aid program works closely with partner countries and other donors. Country strategies increasingly reflect the 2006 White Paper themes and individual country circumstances and priorities, and are produced jointly with partner governments.

Australian overseas aid is fully untied. This means that all suppliers, irrespective of where they are based, are potentially able to supply goods and services for Australian development assistance. This enhances relations with partner governments and achieves better value for money through increased competition.

## Country and regional programs

Map 3.4 shows the geographical distribution of Australian aid in 2005–06. An outline of individual country and regional current aid programs is provided in the following paragraphs.

### Papua New Guinea (PNG)

While PNG faces considerable challenges, the PNG Government has initiated strong reforms with respect to central bank independence, tariff reforms, the labour market and the financial sector. Economic activity suffers, however, because of poor infrastructure, burdensome regulation and licensing, and the effects of crime. Over 40% of the population lives on less than US\$1 per day. Developments such as the PNG-Australia gas pipeline present new opportunities for long-term growth.

Australian support to PNG is guided by the PNG-Australia Development Cooperation Strategy 2006–2010 and focuses on four central themes: improved governance and state building; sustainable economic growth and productivity; improved stability and service delivery; and fighting HIV/AIDS. Australia is developing a performance-based partnership with PNG that is underpinned by the new country strategy and performance framework.



Australia continues to assist PNG with economic and public sector reforms including implementation of the PNG Government's Public Sector Reform Strategy and efforts to review and rationalise public expenditure. Other assistance covers corporate planning, provincial financial management and payroll integrity. Australia also supports the Enhanced Cooperation Program (ECP) which focuses on action to address corruption; and seeks to improve economic management and growth, law and order, and border control and transport security.

Australia assists key agencies in the law and justice sector and community organisations in accordance with priorities set by PNG's National Law and Justice Policy and Plan of Action, and Medium Term Development Strategy 2005–2010.

Australia is helping PNG achieve economic growth which engages rural populations as both contributors and beneficiaries. Australia is providing significant assistance to PNG's primary agricultural research and development institutions through the PNG-Australia Agricultural Research and Development Support Facility.

Australia assists infrastructure development through the Transport Sector Support Program to address PNG's transport infrastructure constraints. Strengthening the private sector remains an important component of Australia's approach in PNG. In addition to investment in infrastructure and rural development, Australia is working with the private sector and with the ADB to develop small and medium size enterprises in PNG.

Australia supports PNG's National Education Plan 2005–2014 and assists PNG to improve education delivery in areas such as teacher training, curriculum development and infrastructure maintenance. Australia works closely with other donors to support improvements in PNG's health sector, including through capacity building and training delivered to key health sector providers, delivery of clinical health services and training of local staff.

Australia is assisting Bougainvilleans and the Government of PNG to implement autonomy in Bougainville. Australia provides practical assistance to the autonomous government for economic development, with the aim to support self reliance and stability.

HIV/AIDS prevalence in PNG is approaching 2% of the adult population. Australia supports the implementation of PNG's National Action Plan on HIV/AIDS. In particular, the aid program is

addressing gender aspects of HIV/AIDS including domestic violence; support for primary health care services to handle sexually transmitted infections; expanded prevention and behavioural change programs; and support for stakeholders, including government and community-based organisations.

## **Pacific region**

Most countries in the Pacific region have under-resourced institutions and narrow economic and resource bases. They suffer from small size, remoteness from major markets and vulnerability to natural disasters. Melanesian countries, in particular, have large numbers of young working-age people and low economic growth, leading to high unemployment and increased poverty. Australia has bilateral aid programs with a number of Pacific island nations including Solomon Islands, Vanuatu, Fiji, Samoa, Kiribati and Tonga. It provides assistance to micro-states including Cook Islands, Niue, Tuvalu, Federated States of Micronesia, Palau, Tokelau and Marshall Islands.

Australia's Pacific Regional Aid Strategy 2004–2009 provides a framework for assistance to the Pacific to support its development goals. The strategy focuses on economic growth; effective, accountable and democratic government; strengthened law, justice and security; and enhanced service delivery.

Pacific 2020 is an initiative supported by Australia to foster dialogue and debate on actions to accelerate economic growth in the Pacific, PNG and East Timor. Pacific 2020 provides practical policy guidance for Pacific island countries on realising opportunities and managing challenges in nine critical growth areas:

- four crosscutting growth factors – private sector investment, land, labour and political governance; and
- five important economic sectors – agriculture, fisheries, forestry, mining and petroleum, and tourism.

As a means to accelerate economic growth in the Pacific, Australia, through a new Pacific Land Mobilisation program, will contribute to research on the difficult issue of land tenure and disseminate information on innovative land mobilisation practices. Where there is clear demand, Australia will work with Pacific partners to deliver innovations and improvements in land tenure arrangements.

Australia will support regional governance solutions, where appropriate, to foster greater stability and cooperation. Australian support for the Pacific Plan, endorsed by Pacific leaders in October 2005, includes strengthening regional audit arrangements, establishing a regional ombudsman's office, and building country and regional statistical systems.

Australia is establishing an Australia-Pacific Technical College to deliver Australian standard qualifications to the Pacific, and contribute to the upgrading of technical skills. Pacific island economies will benefit from a larger skilled workforce to support economic growth; and graduates will benefit from greater employment prospects in both domestic and regional labour markets.

Australia is assisting the Pacific to address its environmental challenges such as changing sea levels and climate variability. A new environment strategy which is under development will focus on climate change and adaptation, freshwater management and strengthening environmental regulatory regimes.

Australia will continue to take a leadership role in promoting expanded access to HIV/AIDS treatment. Australia will also continue its assistance to prevent the spread of HIV/AIDS, including through programs to support surveillance, behavioural change and community-based programs. Australia is assisting Pacific countries prepare for emerging diseases, including Avian Influenza, with a particular focus on strengthening the capacity of regional and national systems to respond to potential outbreaks.

Australia is supporting Solomon Islands as it emerges from a history of recent upheavals and challenges with a view to establishing positive patterns for long-term growth and development. Development assistance is provided through the Regional Assistance Mission to Solomon Islands (RAMSI) and through a bilateral aid program. Australia's contribution to RAMSI involves broad Australian Government expertise.

Australia's aid program supports long-term stability for Vanuatu by accelerating economic growth and improving governance. A major governance initiative focuses on supporting necessary structural reforms and government policies that promote economic growth and improve services for the people of Vanuatu.

Australia is working with the Fiji Government and other donors to promote economic growth and stability, in particular by strengthening the enabling environment for private sector development. Equally important is supporting Fiji's own public sector reform agenda, with a focus on financial management, planning and human resource development.

## **East Asia**

The East Asian region has enjoyed strong economic growth and reductions in poverty levels. The proportion of people living on less than US\$1 per day in East Asia dropped from 58% in 1981 to 15% in 2001. This trend continues, largely due to growth in China. Yet despite this progress, East Asia remains home to 585 million people living on less than US\$2 per day. Many parts of the region lack economic opportunities and suffer high poverty rates. Australia has bilateral programs with several East Asian countries including Indonesia, Philippines, Vietnam, China, Cambodia, East Timor and Laos.

Australia supports regional initiatives to address and manage threats such as pandemics, natural disasters and transnational crime (including people smuggling, illegal fishing, drug trafficking and money laundering). These threats require national as well as transnational responses.

Australia provides a valuable contribution to addressing HIV/AIDS in the region. Australia's regional assistance will support the reduction of HIV-related harm associated with injecting drug use, improve treatment for injecting drug users and strengthen national HIV/AIDS policy-making and programming.

Australia is addressing corruption through further developing its anti-corruption strategy to encourage the rule of law, promote improved public sector management and strengthen civil society. Australia is also working with the World Bank to address corruption in natural resource management and infrastructure, and supports the OECD's Anti-Corruption Initiative for the Asia-Pacific.

Australia is supporting studies on regional integration. The aid program is working with ASEAN, multilateral development banks and other key donors to pilot activities in regional security, private investment, infrastructure development and donor coordination.

Under \$5 million  
Over \$5 million  
Over \$20 million  
Over \$100 million

(a) Based on 2005-06 estimates.  
Source: AusAID

Australian support through the Australia-Indonesia Partnership for Reconstruction and Development has made a major contribution to international relief and reconstruction efforts in Aceh and other tsunami-affected areas, as well as to broader development in Indonesia. The program aims to improve economic and public sector management, rebuild essential infrastructure and enhance economic growth. Ongoing assistance will be provided to support the education and health sectors address communicable diseases such as HIV/AIDS.

In the Philippines, Australia's development priorities are: economic governance; security and stability; and addressing rural poverty in the south. Australia is laying the foundation for performance-based initiatives which will support health, education and infrastructure investments. Australia continues to support activities to promote security and stability.

Australia's aid program to Vietnam seeks to strengthen economic growth through improving private sector development and facilitating economic integration. Australia's development cooperation program supports Vietnam's Five Year Socio-Economic Development Plan 2006–2010.

Australia's strategy for development cooperation with Cambodia has three themes: strengthening the rule of law; increasing the productivity and incomes of the rural poor (particularly in the agriculture sector); and reducing the vulnerability of the poor to natural disasters.

Australia is assisting East Timor build institutions for the efficient use of new resource-based revenues. Australia supports effective and accountable planning, budgeting and expenditure management to improve public sector management. Australia is also committed to supporting peace and stability in East Timor, following the civil unrest in mid-2006.

## **South Asia**

Australia is assisting Pakistan through the commitment of 500 new scholarships for study in Australia. These scholarships will be provided over the next five years through AusAID in partnership with the Australian Government Department of Education, Science and Training. Australia's support to Pakistan's reconstruction efforts following the South Asian earthquake in October 2005 includes the rebuilding of education and health facilities.

In Bangladesh, Australia is supporting education and fostering stronger governance through regional and bilateral mechanisms. In Sri Lanka, Australia is building consensus for durable peace through international NGOs, UN agencies and local partners, and is providing assistance to communities affected by conflict. Australian aid to India is based on mutual strategic interest and providing Australian skills and expertise where they can offer most value.

## **Africa and the Middle East**

Australia has a strong record in responding to humanitarian situations in Africa and will continue to help ease the impact of humanitarian crises. The Government is working with the World Food Program, UN Children's Fund, the World Bank and the UK Department for International Development to facilitate HIV/AIDS prevention and care, provide for vulnerable children, improve water and sanitation, and enhance food security.

Australia supports the Afghanistan Compact which provides a road map for building a stable and democratic state. Australia is involved in international efforts to support security and stability in Afghanistan. Australian assistance will help rebuild government institutions, provide further support for human rights, and deliver critical health and education services.

Australia will provide further assistance to Iraq to support international efforts in establishing a viable and stable democracy. Australian aid assistance to Iraq includes significant recognition of bilateral debt relief. Other assistance focuses on strengthening governance and institutional capacity in key ministries.

Australia partners with UN agencies, international NGOs and other multilateral agencies to support humanitarian activities which deliver relief and essential services to vulnerable communities in Lebanon and Palestine.

## **Global programs**

### **Emergency, humanitarian and refugee programs**

Recent events in the Asia-Pacific underscore the high degree of vulnerability of regional countries to natural disasters and humanitarian crises. The 2004 Indian Ocean tsunami killed more than 167,000 people and caused up to US\$1.2b in damage to productive sectors. The May 2006 earthquake in Yogyakarta, Indonesia killed at least 5,782 people, injured more than 33,000 and left

more than 200,000 homeless. In the Pacific, cyclones and other natural disasters, such as volcanic eruptions, are an ongoing concern. Australia's humanitarian, emergency and refugee programs contribute significantly to reducing the impact of conflict and natural and other disasters on vulnerable groups.

The aid program is strengthening its partnerships with Australian institutions. These partnerships draw in expertise and personnel from both state government and Australian Government agencies, and from the volunteer, health and business sectors. Australia is also bolstering partner-country disaster and emergency response capabilities.

Australia provides core support for key humanitarian agencies such as the UN Office for the Coordination of Humanitarian Affairs, the International Committee of the Red Cross and the UN Central Emergency Response Fund. Australia maintains a significant partnership with the WFP and works closely with the UN High Commissioner for Refugees. Through the International Refugee Fund, Australia helps to address the needs of people displaced by conflict.

### **Multilateral organisations**

The Australian Government actively encourages the World Bank and ADB to focus on policies and initiatives that will benefit developing countries in its region. These international financial institutions are principal partners in the region given their financial resources, specialist skills and important roles in global development policy.

Australia continues to support the Heavily Indebted Poor Countries Initiative. This provides multilateral debt relief to the world's poorest and most heavily indebted countries which have demonstrated commitment to reform. Australia is providing a substantial up-front contribution to finance its share of multilateral debt relief through the G8 Multilateral Debt Relief Initiative.

Australia is committed to the Global Environment Facility which supports projects in developing countries concerning biodiversity, climate change, international waters, the ozone layer, land degradation and persistent organic pollutants. Australia also supports the Multilateral Fund for the Montreal Protocol on Substances that Deplete the Ozone Layer.

Support for UN development agencies extends the reach of Australia's aid program. These organisations mobilise and coordinate resources on a scale beyond the capacity of individual

donors and play a significant role in consensus building on development issues. Australia supports core UN agencies that play a significant global developmental role. Australia is strengthening its engagement with UN partners that focus on HIV/AIDS, emerging infectious diseases, women and children's health, and good governance.

Australia's support for Commonwealth organisations will focus on the Commonwealth Fund for Technical Cooperation which provides assistance to member countries – many of them small island developing nations.

### **Non-government, volunteer and community programs**

NGOs play an important role in the delivery of Australian aid. They mobilise public support for development and, through their networks in partner countries, strengthen civil society and provide specialist skills. By assisting the development of local communities, NGOs can help build sustainability and enhance ownership of the development process. The AusAID-NGO Cooperation Program supports accredited Australian NGOs to undertake cost effective, practical and direct poverty reduction activities. The aid program is developing ties with community-based organisations, professional bodies, businesses, and local government institutions to diversify its range of partners in addressing regional development challenges.

### **Australian Centre for International Agricultural Research (ACIAR)**

ACIAR is a statutory authority within the Australian Government's Foreign Affairs and Trade portfolio. As part of Australia's aid program the Centre assists Australian and developing country researchers, institutions and international research centres to develop solutions to agricultural problems. The objective is to assist developing countries improve their livelihoods through sustainable increases in agricultural productivity and enhanced natural resources management. Government appropriation for ACIAR in 2005–06 was \$49.3m. The Centre focuses its research funding on the Asia-Pacific region and 80% of ACIAR's research and development expenditure is allocated to bilateral programs. The remaining 20% is allocated to multilateral

programs involving selected international agricultural research centres through unrestricted grants and project specific funding.

In 2005–06, ACIAR funded more than 200 research projects in countries in the Asia-Pacific region. ACIAR programs are organised around four clusters: economics/farming systems; cropping systems; livestock systems; and natural resource management.

Through close collaboration with partner government policy makers and research institutions, the projects are designed to promote policy initiatives, capacity building and knowledge and technology exchanges. Increasingly, delivery of benefits to farmers, policy makers and natural resource managers is being achieved by utilising pilot-scale delivery of research outcomes, through research partners and where appropriate NGOs and other agencies. The projects reflect the themes of the national research priorities such as environmental sustainability including water, soil loss, salinity and acidity; and safeguards with a focus on invasive pests and diseases.

The White Paper, *Australian Aid: Promoting Growth and Stability* (2006), outlines priorities for the overseas aid program over the next decade. These include an increased focus on better quality education in the Asia-Pacific region. ACIAR develops the skills of partner country research scientists through formal training courses and informally through project activities. The Centre has in place a Fellowship Scheme that creates over 50 post-graduate educational opportunities at Australian universities for developing country scientists involved in ACIAR projects. In 2005–06 the Centre supported 57 active Fellowships allowing students from 14 developing countries to study for postgraduate qualifications in Australia. ACIAR also manages research management

training fellowships for agricultural scientists and economists from partner countries. Ten training courses, including master classes provided through the ATSE Crawford Fund, were held for scientists involved in ACIAR-supported research.

Another key component of the 2006 White Paper is assessing the impacts and effectiveness of aid delivered by Australia. ACIAR has an Impact Assessment Program that commissions independent economic reviews of selected past projects and the outcomes arising from these. These assessments focus on the adoption of outcomes by examining economic returns and the role of these returns in alleviating poverty. A major review in 2005 of 29 past impact assessments showed that the benefits from adoption of project outcomes totals around \$3.4b to Asia Pacific developing countries. A separate review was undertaken in 2006 of Australian benefits arising from the same group of 29 impact assessments, together with an additional 12 impact assessments and a randomly selected group of five research areas. The results revealed benefits to Australia from these 46 assessments totalling \$735m.

ACIAR is committed to communicating the results of research it funds through scientific publications as well as research and development awareness publications. The publishing program is complemented by the flagship quarterly *Partners* magazine, which aims to communicate the benefits of ACIAR research to a wider range of audiences, general and scientific.

Further information can be obtained from the ACIAR web site, <<http://www.aciar.gov.au>>. The site allows visitors to search for project information by country, or by research discipline and to find out about ACIAR activities.



## **Bibliography**

### **Web sites**

The Department of Foreign Affairs and Trade web site last viewed September 2006

<<http://www.dfat.gov.au>> provides a range of comprehensive and up-to-date material on Australia's foreign and trade policy. The web site contains a browsable list of topic categories, as well as a continually updated current issues list.

The Department also produces hard copy publications on many foreign and trade policy issues which can be purchased online or by contacting the Department on (02) 6261 1111 or (02) 6261 3114.

### **Related web sites**

AusAID, last viewed September 2006 <<http://www.ausaid.gov.au>>

Australian Centre for International Agricultural Research (ACIAR), last viewed September 2006  
<<http://www.aciar.gov.au>>

Australian Safeguards and Non-Proliferation Office (ASNO), last viewed September 2006  
<<http://www.asno.dfat.gov.au>>

Australian Trade Commission (Austrade), last viewed September 2006 <<http://www.austrade.gov.au>>

Export Finance and Insurance Corporation (EFIC), last viewed September 2006  
<<http://www.efic.gov.au>>

# Australia and Antarctica

In the 1940s and 1950s national rivalries over activities in Antarctica led to diplomatic negotiations for a treaty governing Antarctic affairs. The International Geophysical Year 1957–1958 provided a positive backdrop to the negotiations, demonstrating that scientists, even from nations taking different sides in the Cold War, could work together amicably in the Antarctic. Australia played a key role in the negotiations that led to the signing of the Antarctic Treaty in 1959 and hosted the first Antarctic Treaty Consultative Meeting in Canberra in 1961.

Given the Cold War context of its negotiation, the Antarctic Treaty is an exceptional agreement. It sets aside Antarctica for peace and science. The Treaty, open to any member of the United Nations, now has 45 States Parties.

The Australian Government and Australian explorers and scientists have had a long and distinguished involvement in the Antarctic continent. The Australian Antarctic Territory covers nearly 5.9 million square kilometres, about 42% of Antarctica and equivalent to nearly 80% of the area of Australia itself. The Australian claim is based on a long historical association with this part of Antarctica. The great Australian explorer Sir Douglas Mawson asserted British sovereignty over this territory, and then in 1933, Britain placed the territory under the authority of the Commonwealth of Australia.

While the Antarctic Treaty was first and foremost a security and demilitarisation agreement, it is now complemented by comprehensive environmental protection through the 1980 Convention on the Conservation of Antarctic Marine Living Resources and the 1991 Madrid Protocol.

Representatives of the nations of the Antarctic Treaty system now gather annually to discuss the management of the area at Antarctic Treaty Consultative Meetings (ATCM). Maintaining the health of this system

while preserving Australia's sovereign claim, encouraging and taking advantage of scientific research undertaken on and around the continent, and ensuring the continent's environmental protection are some of Australia's principal long-term objectives for Antarctica.

Each year the ATCM and its Committee for Environmental Protection discuss issues facing Antarctica. These include the impact of increasing human activity on the continent, such as tourism, scientific research and infrastructure development, as well as scientific cooperation and operational matters. The ATCM designates areas deserving special protection and management and recently adopted a new instrument that will establish a novel liability regime for activities causing environmental emergencies. The Department of Foreign Affairs and Trade leads the Australian delegation to the ATCM.

Australia has significant scientific and operational involvement in the Antarctic. The Australian Government maintains three permanently occupied stations and shares a summer base with Romania. Australian stations are staffed and supplied by the Australian Government Antarctic Division, which was established in the Department of External Affairs in 1948, and is now part of the Department of the Environment and Heritage.



Courtesy Australian Antarctica Division.

# 4

## DEFENCE

*This chapter was contributed by the Australian Government Department of Defence (June 2006).*

This chapter provides an overview of the roles and activities of the Defence organisation – the Australian Defence Force and the Department of Defence. In particular, it focuses on the strategic environment, current operations and capability. The chapter also shows trends in Defence spending, and looks at the composition of the workforce.

## Strategic environment

In 2005, the Australian Government released its most recent strategic defence review, *Defence Update 2005*. *Defence Update 2005* confirms and builds on the key judgements made in the *2000 Defence White Paper* and the *Defence Update 2003*. Defeating the threat of terrorism, countering the proliferation of weapons of mass destruction and supporting fragile states in difficulty remain the Government's highest priorities. The *Defence Update 2005* states that threats will be increasingly interrelated across both national and international environments, and across organisational and jurisdictional boundaries. It also notes that in the years ahead, Australia may face challenges that cannot be easily anticipated or predicted. The contribution the Australian Defence Force (ADF) makes to future national security is likely to go far beyond traditional warfighting.

The current high demand placed on the ADF is likely to continue, with the ADF expecting to conduct concurrent deployments domestically, regionally and internationally in support of Australia's interests. Recently, the ADF has been operating at a very high tempo with deployments in Afghanistan, Iraq, Solomon Islands and East Timor. In managing these challenges, the ADF has shown its ability to respond to the complex security environment with flexibility and agility – in roles as diverse as traditional warfighting, border protection, peacekeeping and humanitarian support. The ADF has consistently demonstrated that it is among the most capable forces in the world.

## Operations

During 2005–06, the ADF was involved in military operations, the provision of humanitarian support to other nations, and various joint and combined exercises involving the three Services and allied or regional military forces.

Operation Catalyst is the ADF's contribution to the rehabilitation and reconstruction of Iraq. The ADF is part of a multinational force that is working to develop a secure and stable environment to assist national recovery.

Operation Slipper is the ADF's contribution to the international coalition against terrorism and is an important component of the Australian Government's commitment to working with the international community to help prevent acts of terrorism around the world.

Operation Astute is the name for the ADF stabilisation operations in support of the Government of East Timor.

The ADF continued to lead the military component of the Regional Assistance Mission to Solomon Islands (RAMSI), a multinational regional force which provides support to the Australian Federal Police and the regional police forces (known as the Participating Police Force) in maintaining the rule of law and stability in the country.

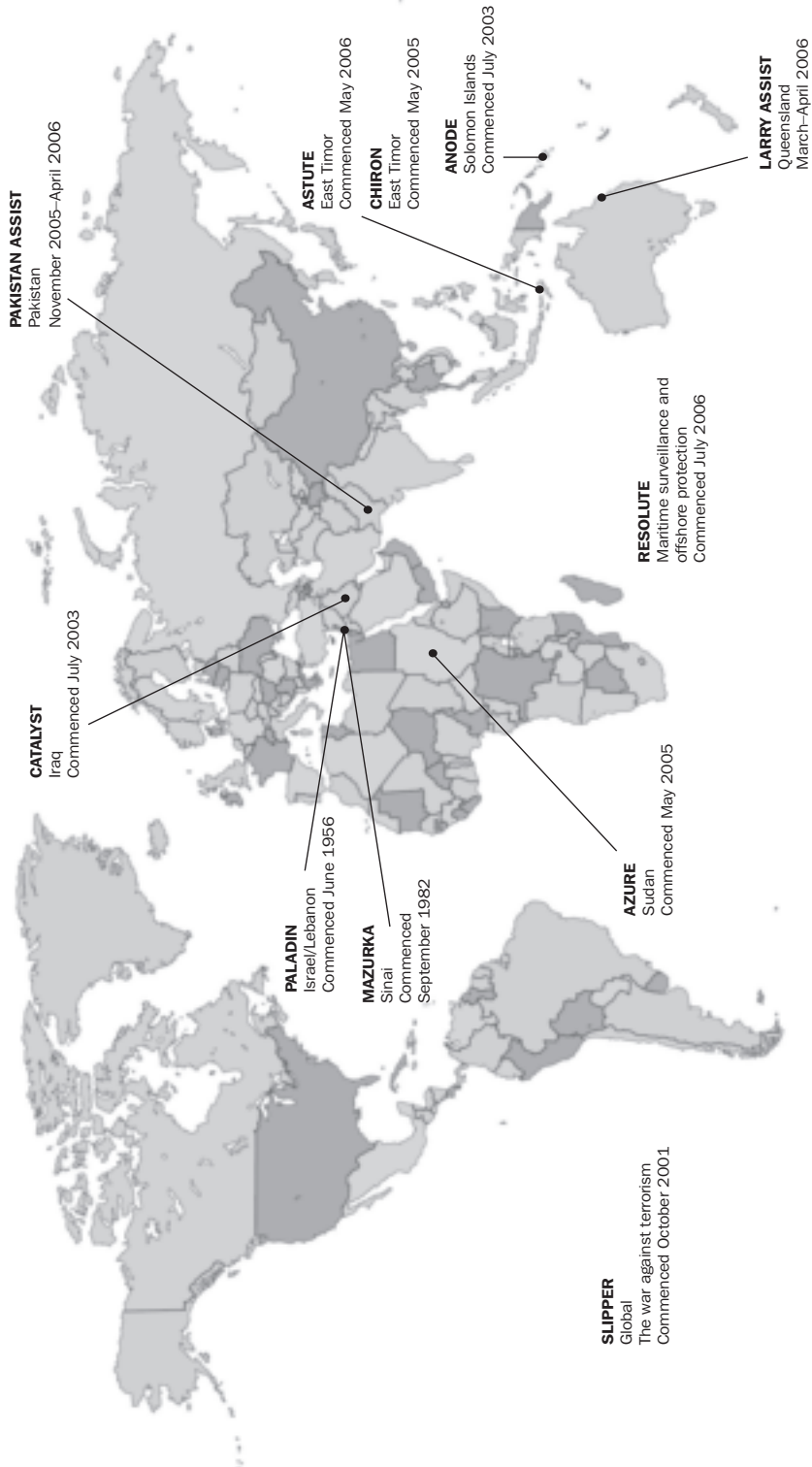
The ADF continues to undertake operations against illegal fishing and unauthorised boat arrivals in Australia's northern approaches.

As at June 2006, the ADF has over 4,000 personnel deployed on several operations around the world. Map 4.1 shows areas of ADF involvement in major operations during 2005–06 and details of ADF involvement are given in table 4.2.

## Resources

Defence funding was increased in the 2001–02 Commonwealth Budget and forward estimates to address a number of specific priorities detailed in the *2000 Defence White Paper*. The White Paper provided a funding commitment for Defence of around \$28.5 billion (b) (in 2006–07 dollars) over the decade from 2001–02. This funding injection equates to an increase of some 3% of average real growth per year over the period.

4.1 AUSTRALIAN DEFENCE FORCE, Major operations — 2005–06



Source: Department of Defence.

## 4.2 AUSTRALIAN DEFENCE FORCE, Major operations(a) — 2005–06

MIDDLE EAST	
Operation Catalyst	<p>Operation Catalyst is Australia's contribution to the rehabilitation of Iraq. The ADF is participating in coalition efforts to develop a secure environment in Iraq, assist national recovery programs and facilitate the transition to Iraqi self-government. Operation Catalyst comprised, on average, 1,400 personnel at any one time. Over the past year, forces included:</p> <ul style="list-style-type: none"> <li>• a Task Force Headquarters;</li> <li>• a maritime element of one frigate dual force assigned to Operation Slipper;</li> <li>• aviation elements including two C-130 Hercules transport aircraft and two AP-3C Orion maritime patrol aircraft dual force assigned to Operation Slipper;</li> <li>• a security detachment to provide force protection and escort to the Australian Embassy and staff in Baghdad;</li> <li>• a contingent of ADF and civilian personnel working as embedded staff in various coalition headquarters and units; and</li> <li>• the Al Muthanna Task Group comprising approximately 470 personnel and 40 light armoured vehicles. The task group provided support to the Japanese-Iraq Reconstruction and Support Group and provided training to the Iraqi Army.</li> </ul>
Operation Slipper	<p>Operation Slipper is Australia's contribution to the international coalition against terrorism in Afghanistan. Deployed forces have included:</p> <ul style="list-style-type: none"> <li>• an Australian National Headquarters element;</li> <li>• a maritime element of one frigate;</li> <li>• an aviation element of two AP-3C Orion maritime patrol aircraft;</li> <li>• one Army officer working in a coalition headquarters in Afghanistan;</li> <li>• a Special Forces Task Group, comprising approximately 190 personnel; and</li> <li>• an aviation support element comprising two CH-47 helicopters and approximately 110 personnel; and</li> <li>• several support staff embedded in coalition force elements.</li> </ul>
Operation Mazurka	<p>Operation Murzurka began in September 1982 and is Australia's contribution to providing personnel to the Multinational Force and Observers to monitor the security arrangements in the Sinai. The ADF contributes 25 personnel to the Multinational Force, serving as specialist staff and military observers.</p>
Operation Paladin	<p>Operation Paladin commenced in June 1956 and is Australia's continuing contribution to the United National Truce Supervisory Organisation in the Middle East. The ADF contributes 12 unarmed military observers who supervise, observe and report on the various cease-fire arrangements, truces and peace treaties that have been negotiated between Israel and neighbouring Arab nations since 1948.</p>
EAST TIMOR	
Operation Astute	<p>Operation Astute is the name for the ADF stabilisation operations in support of the Government of East Timor. As at June 2006, the Australian deployment included about 2,600 ADF personnel deployed in the East Timor area of operations (land, sea and air). Of these, approximately 1,900 ground troops were in Dili, and actively engaged in security operations in the capital, which included the suppression of communal and gang violence. A break up of key Australian forces deployed to East Timor at the height of the operation included:</p> <ul style="list-style-type: none"> <li>• an Amphibious Landing Ship in Dili harbour to provide medical, communication, accommodation and various support facilities as required;</li> <li>• eight landing craft heavy;</li> <li>• an Infantry Battalion Group;</li> <li>• a Commando Company Group;</li> <li>• eight Australian Army Black Hawk helicopters;</li> <li>• C-130 Hercules aircraft to transport people and equipment; and</li> <li>• a detachment of Royal Australian Air Force, Air Field Defence Guards.</li> </ul>

For footnotes see end of table

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## 4.2 AUSTRALIAN DEFENCE FORCE, Major operations(a) — 2005–06 — *continued*

EAST TIMOR — <i>continued</i>	
Operation Chiron	Operation Chiron is Australia's contribution to the United Nations (UN) Office in East Timor and continues the work of Operation Spire, Australia's contribution to the UN Mission in support of East Timor which concluded in May 2005. Australia's contribution to Operation Chiron consists of three Military Advisers who provide a liaison and monitoring function in support of the Mission.
SUDAN	
Operation Azure	Operation Azure is the deployment of the ADF personnel to a UN peacekeeping operation in Sudan. The UN Security Council authorised the establishment of the UN Mission in Sudan on 24 March 2005 under resolution 1590. As at June 2006, the military component numbered 13 personnel.
SOLOMON ISLANDS	
Operation Anode	Operation Anode is the ADF contribution to RAMSI. The military contingent of RAMSI is supporting the Participating Police Force effort in maintaining law and order. As at June 2006, the military component numbered approximately 140 personnel.
BORDER PROTECTION	
Operation Resolute	<p>Operation Resolute commenced on 17 July 2006 consolidating all previous border security activities into a single whole-of-government operation. The previous operations were Operation Cranberry (illegal fishing and smuggling), Operation Relex II (unauthorised arrivals), Operation Celesta (Heard Island and McDonald Islands fishing patrols), Operation Estes (security patrols of Australia's oil and gas infrastructure) and Operation Mistral (patrols in the southern ocean).</p> <p>Resources allocated to Operation Resolute include:</p> <ul style="list-style-type: none"> <li>• one major Navy fleet unit (Anzac or guided missile frigate) for northern waters response;</li> <li>• one landing craft heavy to augment security patrols;</li> <li>• one major Navy fleet unit and replenishment vessel to support operations in the Southern Ocean;</li> <li>• five RAN Fremantle/Armidale patrol boats, to be increased to seven;</li> <li>• one Mine Hunter Coastal, with one also at reduced notice to move;</li> <li>• one AP-3C maritime patrol aircraft, with an additional one at stand-by at certain threat levels; and</li> <li>• Regional Force Surveillance Unit patrols, intelligence resources, other support elements and training assets.</li> </ul>
PEACETIME NATIONAL TASKS	
Operation Larry Assist	<p>Operation Larry Assist assisted the Government of Queensland with the provision of humanitarian relief to the residents of far north Queensland in the aftermath of Tropical Cyclone Larry. Over the period March to April 2006, the ADF provided over 400 personnel and the following capabilities:</p> <ul style="list-style-type: none"> <li>• 11 military helicopters;</li> <li>• three Navy Landing Craft; and</li> <li>• two RAAF C-130 Hercules Aircraft.</li> </ul> <p>The ADF established an Engineer Group with a water purification unit capable of producing 7,500 litres of drinkable water per hour; undertook the distribution of individual ration packs and bottled water throughout the Johnstone Shire; supplied a field kitchen to provide facilities for the preparation of fresh food for the local population; distributed approximately 3,000 tarpaulins; provided a bath unit to shower up to 120 persons per hour; provided up to 500 beds; a Primary Health Care support team; and a number of Environmental Health Officers.</p>

For footnotes see end of table

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4.2 AUSTRALIAN DEFENCE FORCE, Major operations(a) — 2005–06 — continued

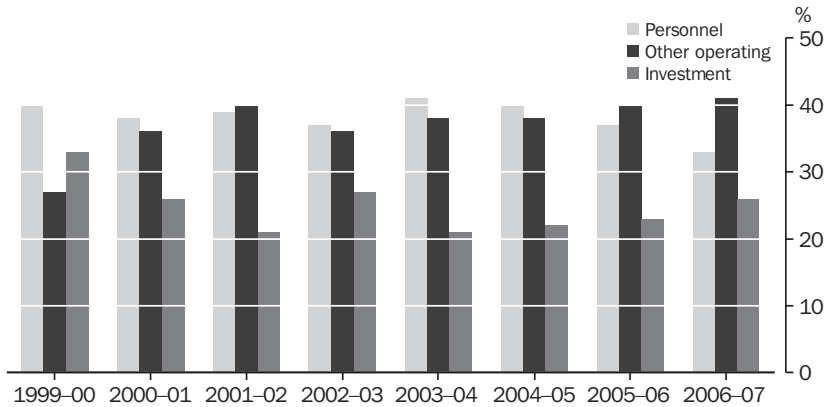
PEACETIME NATIONAL TASKS — continued

Operation Pakistan Assist	<p>Operation Pakistan Assist provided humanitarian aid to the people of Dhani in Pakistan, following the earthquake on 8 October 2005.</p> <p>The ADF contribution comprised a Primary Health Care Facility of 140 personnel and four Black Hawk Helicopters. During the period November 2005 to March 2006, the ADF completed the following:</p> <ul style="list-style-type: none"><li>• treated over 9,500 patients,;</li><li>• conducted over 4,000 immunisations;</li><li>• conducted three medical clinics away from the main base; and</li><li>• flew 74 aeromedical evacuations.</li></ul>
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(a) Correct as at July 2006.

Source: Department of Defence.

4.3 DEFENCE RESOURCING, By category



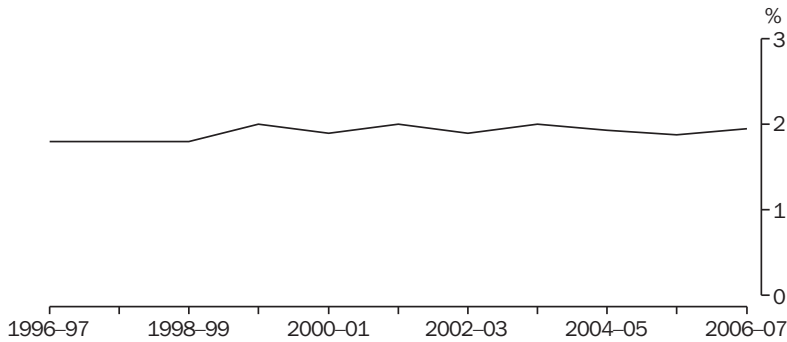
Source: Department of Defence.

In addition to the implementation of the White Paper, the Government has given Defence a number of specific directions to meet emerging strategic priorities. Key 2006–07 Budget measures include:

- supplementation of \$623 million (m) for the conduct of ADF operations including:
  - the continued ADF contribution to stabilisation and reconstruction activities in Iraq (an additional \$392.7m over three years);
  - the continued ADF contribution, including deploying and sustaining the Reconstruction Task Force, to Afghanistan (an additional \$218.2m over three years); and
  - the ADF contribution to the surveillance of Australia’s northern approaches (\$12.1m);
- funding to improve the sustainability and survivability of the Army in operational conditions (\$440.5m over four years); and
- funding to purchase C-17 Globemaster III heavy airlifters to enhance Defence’s heavy airlift capability (\$1,918.6m over four years).

Graph 4.3 reflects the significance of both employee costs and the investment in specialist military equipment and infrastructure in delivering Defence capability. The increased share for investment is consistent with progress towards acquiring the equipment capabilities outlined in the Defence White Paper. Longer-term projections indicate increases in personnel costs due to growth towards a larger ADF as specified in the White Paper.

#### 4.4 DEFENCE RESOURCING, Share of GDP(a)



(a) 2006-07 projected.

Source: Department of Defence.

## Capabilities

The changing strategic environment highlights the need for the ADF to be a flexible and adaptable defence force, which is ready to be deployed at short notice and can be sustained on operations for as long as required. Capability is the power to achieve a desired effect in a nominated environment in a specified period of time, and to sustain it for a designated period.

Defence maintains a force structure with the following elements:

### Navy

- a surface combatant force of five Adelaide-class guided missile frigates and eight Anzac-class frigates;
- a naval aviation force comprising 16 Seahawk helicopters, six Sea King helicopters and 13 Squirrel helicopters;
- a surface patrol capability comprising a mix of Fremantle and Armidale-class patrol boats. The Fremantle-class will be replaced by September 2007, leaving a force of 14 Armidale-class patrol boats;
- six Collins-class submarines;
- an afloat support capability consisting of an oil tanker and a replenishment ship;
- a mine warfare force comprising six Huon-class coastal mine hunters, two auxiliary minesweepers and two clearance diving teams;
- an amphibious lift force comprising two amphibious landing ships, one heavy landing ship and six heavy landing craft; and

- a hydrographic force consisting of two Leeuwin-class hydrographic ships and their embarked survey motor boats, four Paluma-class survey motor launches, a laser airborne depth sounder aircraft and a deployable survey unit.

### Army

- a special forces capability comprising a Special Air Service regiment, a Regular Army commando battalion; an Army Reserve commando regiment and an Incident Response Regiment;
- a medium combined arms operations capability based on 1st Brigade, consisting of a tank regiment, a cavalry regiment, a medium artillery regiment; a combat engineer regiment, a combat support regiment, a mechanised infantry battalion and a combat service support battalion;
- a light combined arms operations capability based on 3rd Brigade, consisting of an armoured personnel carrier squadron, a field artillery regiment, a combat engineer regiment, a command support regiment, three infantry battalions and a combat service support battalion;
- an aviation force based on 16th Brigade consisting of two aviation regiments of both rotary-wing and fixed-wing aircraft (including 35 Black Hawk, 41 Kiowa, 25 Iroquois, six Armed Reconnaissance and six Chinook helicopters, and the lease of three King Air fixed-wing aircraft);

- a ground-based air defence capability which maintains a ground-based air defence system consisting of RBS-70 shoulder-launched missile systems and Rapier missile systems;
- a combat support force, consisting of a surveillance and target acquisition battery, an engineer support regiment headquarters, two Army Reserve engineer construction regiments, two Regular Army engineer construction squadrons, a construction engineer works section, a topographical survey squadron, a signals regiment, an intelligence battalion, a military police battalion and a combat training centre;
- a regional surveillance capability based on three regional force surveillance units;
- a logistic support force consisting of two headquarters, two signals squadrons, a petroleum company, a recovery company, three force support battalions, a deployed force support unit, three health support battalions and a psychology unit;
- a motorised combined arms capability, based on 7th Brigade, comprising a cavalry regiment, a field artillery regiment, a combat engineer regiment, a combat support regiment, three Regular Army and Army Reserve infantry battalions and a combat service support battalion; and
- a protective operations capability drawn from the Army Reserve, with six brigades each comprising two or three infantry battalions; a cavalry unit and combat and logistic support units.

## **Air Force**

- an air combat force of 17 F-111C, five F-111G and 71 F/A-18 aircraft, crews, weapon systems and support infrastructure; 33 Hawk Lead-In fighter aircraft and four PC-9 Forward Air Control aircraft also contribute to this force;
- an air combat support force comprising two expeditionary combat support wings and a health services wing;
- a surveillance and response force, consisting of air traffic control radar, tactical air defence radars, the Jindalee Operational Radar Network – a wide-area surveillance system monitoring Australia's northern approaches, and 19 AP-3C Orion aircraft, crews and weapons systems; and

- an airlift force consisting of 24 C-130 Hercules, 14 DHC-4 Caribou, four Boeing 707, and five VIP aircraft – two Boeing 737 BBJ and three CL604 Challenger aircraft. The first of four C-17 Globemaster III aircraft will commence operations in 2007.

## **Defence Materiel Organisation (DMO)**

The DMO is responsible for equipping and sustaining the ADF through the acquisition and sustainment of capital equipment assets. The DMO is a prescribed agency, giving the organisation greater responsibility and accountability to ensure the ADF gets its equipment on time, on budget and to required levels of quality and safety. The DMO manages approximately 45% of the annual Defence budget, with \$5b for acquiring equipment and \$3.6b to maintain and support existing military systems. The DMO is part of the Department of Defence and employs around 6,800 people including ADF members and contracted personnel in more than 50 locations nationally and internationally. The DMO manages over 210 major projects (those with a contract value of more than \$20m) and more than 100 minor projects. Major projects include delivery of the ANZAC ships to the Navy, the New Air Combat Capability project, the Air Warfare Destroyer program, Australian Light Armoured Vehicles and the Armed Reconnaissance Helicopters. For more information about the DMO, refer to <<http://www.defence.gov.au/dmo>>.

## **People**

As one of the largest employers in Australia, Defence has a diverse workforce of just over 91,000 people made up of:

- 51,000 permanent ADF personnel comprising the Navy, Army and Air Force;
- 22,000 Reserve members, with the Army employing around 70% of Reserves; and
- 19,000 Australian Public Service (APS) civilian staff consisting of permanent, temporary and part-time employees. This includes 5,000 from the DMO which became a prescribed agency within the Defence portfolio on 1 July 2005.

About 1,000 Defence APS civilian staff are also members of the active Reserves and are counted in both categories.

Contractors and Australian industry also contribute to the Defence workforce by providing support in a variety of areas and are an important element of the total Defence effort.

Detailed information on the Defence workforce can be found at <<http://www.defence.gov.au/annualreports/>>.

## **Defence Housing Authority**

The Department of Defence and the Defence Housing Authority have a purchaser-provider relationship, with Defence the purchaser of housing, relocation and related services.

The Defence Housing Authority was established in 1987 to provide accommodation for members of the ADF and their families. The Authority provides complete relocation solutions including arranging

removal requirements; payment of entitlements; allocation of homes and a smooth move out process. Staff support ADF members at 16 Housing Management Centres in major regional centres and another 13 outposts around Australia and help families move when the ADF member is posted to a new location.

Over the past few years, the Defence Housing Authority has adopted a more strategic approach to the business of providing houses, focusing on the most cost effective means of providing housing at community standards. For more information about the Defence Housing Authority, refer to <<http://www.dha.gov.au>>.

## **Bibliography**

### **References**

Department of Defence publications can be found at <<http://www.defence.gov.au/publications.cfm>>, including:

*Defence White Paper 2000 – Our Future Defence Force*

*Australia's National Security: A Defence Update (2003, 2005)*

*Defence Annual Report 2004–05*

*Defence Portfolio Budget Statements 2006–07.*

### **Web sites**

Department of Defence, last viewed September 2006 <<http://www.defence.gov.au>>

Minister for Defence, last viewed September 2006 <<http://www.minister.defence.gov.au>>

Defence Housing Authority, last viewed September 2006 <<http://www.dha.gov.au>>

Defence Materiel Organisation, last viewed September 2006 <<http://www.defence.gov.au/dmo>>





## POPULATION

Population statistics measure the size, growth, composition and geographic distribution of population, as well as the components that shape population change – births, deaths and migration. Population statistics underpin discussion on a wide range of topical issues, including dynamics in family structures, fertility, ageing and migration. Statistics on population trends assist governments in developing social and economic policies in areas such as health, education, housing, the labour market, and the environment.

There are also important legislative requirements for the Australian Bureau of Statistics (ABS) to produce population estimates. The legislation which determines the distribution of state, territory and local government grants uses ABS population estimates as one of the bases for calculation. Population estimates are also used to determine the number of seats each state and territory is entitled to in the House of Representatives.

The chapter contains two articles – *Fertility and its effect on Australia's future population* and *Infant mortality over the last 100 years*.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Population size and growth

The Census of Population and Housing is the principal source of information about Australia's population. It has been held every five years since 1961 with the most recent census conducted in August 2006. The Census provides a base from which Australia's estimated resident population is calculated. The Census population count is adjusted for visitors from overseas, Australian residents temporarily overseas on census night and an estimate of both the number of people missed and those counted more than once.

To obtain estimated resident population figures for dates between censuses, births and net overseas migration are added to the Census-based figure, and deaths are subtracted. For state and territory figures, interstate migration estimates are also applied.

Australia's estimated resident population at June 2005 was just over 20.3 million (mill.), an increase of 1.2% from the previous year (table 5.1). This growth rate was the same as the overall world growth rate (table 5.2).

### 5.1 COMPONENTS OF POPULATION CHANGE AND ESTIMATED RESIDENT POPULATION(a)

Year ended 30 June	Components of population change				Population		
	Births(b)	Deaths(b)	Natural increase(b)	Net overseas migration(c)	At end of period	Increase(d)	Increase
	'000	'000	'000	'000	'000	'000	%
2000	249.3	128.4	120.9	107.3	19 153.4	227.5	1.20
2001	247.5	128.9	118.6	135.7	19 413.2	259.9	1.36
2002	247.4	130.3	117.2	110.6	19 641.0	227.7	1.17
2003	247.4	132.2	115.2	116.5	19 872.6	231.7	1.18
2004	252.1	133.2	118.9	100.0	20 091.5	218.9	1.10
2005	255.8	131.4	124.5	123.8	20 339.8	248.3	1.24

(a) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

(b) Births and deaths are on year of occurrence basis and differ from those shown in the Births and Deaths sections of this chapter.

(c) Includes migration adjustments from June 2001. (d) The difference between total growth and the sum of natural increase and net overseas migration during 1999–2001 is due to intercensal discrepancy.

Source: Australian Demographic Statistics (3101.0).

### 5.2 POPULATION, GROWTH RATE AND RANK, By selected countries

Country	Estimated population			Projected population	Rank	
	2004	2005	Growth rate	2050	2005	2050
	mill.	mill.	%	mill.	no.	no.
<b>Australia</b>	<b>20.1</b>	<b>20.3</b>	<b>1.2</b>	<b>28.1</b>	<b>52</b>	<b>64</b>
Canada	32.5	32.8	0.9	41.4	35	43
China	1 298.8	1 306.3	0.6	1 424.2	1	2
Germany	82.4	82.4	0.0	73.6	14	22
Hong Kong (SAR of China)	6.9	6.9	0.6	6.2	98	116
India	1 065.1	1 080.3	1.4	1 601.0	2	1
Indonesia	238.5	242.0	1.5	336.2	4	5
Japan	127.3	127.4	0.1	99.9	10	17
Malaysia	23.5	24.0	1.8	43.1	46	42
New Zealand	4.0	4.0	1.0	4.8	122	125
Papua New Guinea	5.4	5.5	2.3	10.7	106	92
Singapore	4.4	4.4	1.6	4.6	120	130
Thailand	63.7	64.2	0.7	69.3	19	25
United Kingdom	60.3	60.4	0.3	64.0	22	29
United States of America	293.0	295.7	0.9	420.1	3	3
World	6 376.9	6 451.1	1.2	9 224.4	..	..

Source: Australian Demographic Statistics, (3101.0); Population Projections, Australia, 2004 to 2101 (3222.0); US Census Bureau, 'International Data Base', last viewed June 2006, <<http://www.census.gov>>.

Compared with other countries, Australia's growth rate was higher than New Zealand (1.0%), Canada (0.9%), United States of America (0.9%) and Hong Kong (0.6%); considerably higher than the United Kingdom (0.3%), Japan (0.1%) and Germany (0.0%); and well below the growth rates for Papua New Guinea (2.3%) and Malaysia (1.8%). China (0.6%), the world's most populous nation, had a growth rate half that of Australia.

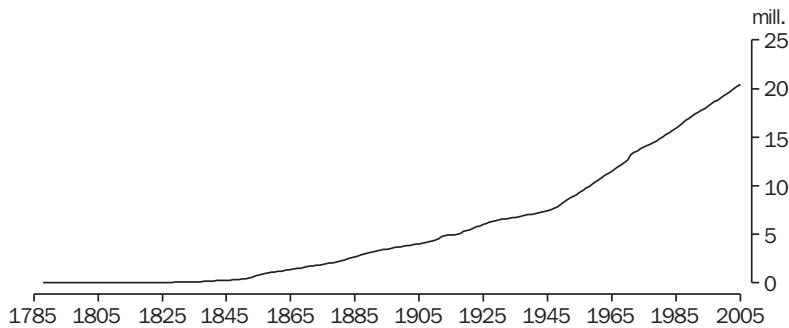
Figures provided by the US Census Bureau's *International Data Base* for 227 countries rank Australia's population 52nd in size for the year 2005 and project a fall to 64th position by 2050.

Australia's estimated resident population of 20.3 mill. at June 2005 has grown by nearly 2.3 mill. people or 12.5% during the past decade. The growth of Australia's population has two components: natural increase (the number of

births minus the number of deaths) and net overseas migration (net permanent and long-term migration). For state and territory estimates, a third component – net interstate migration – is also included. Since Federation in 1901, Australia's population increased by 16.6 mill. people. Graph 5.3 shows the growth in Australia's population since European settlement in 1788.

Population growth has occurred unevenly across all states and territories (table 5.4). Consequently, the proportion of Australia's population resident in each state and territory has changed over time. From 1955 to 2005, the proportion of the Australian population living in New South Wales decreased (from 37.9% to 33.3%), as did Victoria (from 27.4% to 24.7%), South Australia (8.9% to 7.6%) and Tasmania (3.4% to 2.4%). The proportion of Australia's population living in all

5.3 POPULATION



Source: Australian Historical Population Statistics, 2006 (3105.0.65.001); Australian Demographic Statistics (3101.0).

5.4 POPULATION, By state and territory

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
30 June	'000	'000	'000	'000	'000	'000	'000	'000	'000
1955	3 490.7	2 517.2	1 350.0	819.6	657.1	314.1	18.2	32.8	9 199.7
1965	4 175.4	3 164.4	1 644.5	1 067.6	825.5	367.9	53.9	88.5	11 387.7
1975	4 932.0	3 787.4	2 051.4	1 265.3	1 154.9	410.1	92.9	199.0	13 893.0
1985	5 464.5	4 120.1	2 571.2	1 371.2	1 418.6	442.8	148.5	251.4	15 788.3
1995	6 127.0	4 517.4	3 265.1	1 469.4	1 733.8	473.7	177.6	304.8	18 071.8
2002	6 634.1	4 857.2	3 711.0	1 518.7	1 924.6	472.6	198.7	321.5	19 641.0
2003	6 682.1	4 911.4	3 801.0	1 526.3	1 949.9	477.3	198.5	323.4	19 872.6
2004	6 720.8	4 963.0	3 888.1	1 532.7	1 978.1	482.2	199.8	324.1	20 091.5
2005	6 768.9	5 023.2	3 977.1	1 542.1	2 011.0	485.7	203.4	325.8	20 339.8

(a) Includes Other Territories from September quarter 1993. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands. Prior to September quarter 1993, Jervis Bay Territory was included with the ACT, and the territories of Christmas Island and the Cocos (Keeling) Islands were excluded from population estimates for Australia.

Source: Australian Historical Population Statistics, 2006 (3105.0.65.001); Australian Demographic Statistics (3101.0).

other states and territories increased over the same period, with Queensland increasing from 14.7% to 19.5%, Western Australia from 7.1% to 9.9%, the Australian Capital Territory from 0.4% to 1.6% and the Northern Territory from 0.2% to 1.0%. Western Australia overtook South Australia to become the fourth most populous state in 1983.

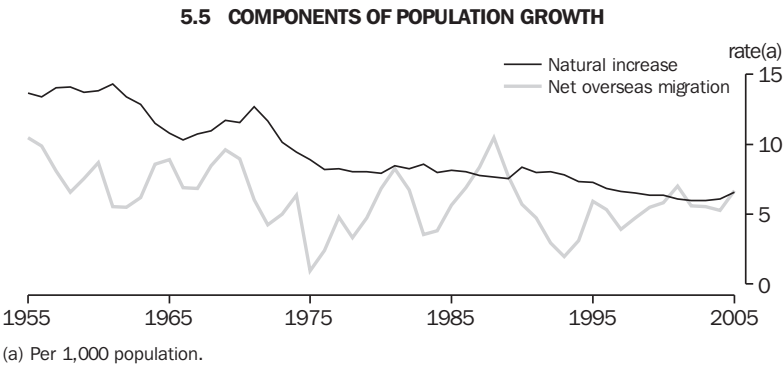
**Components of population growth**

Over the last 50 years the population more than doubled from 9.2 mill. in 1955 to 20.3 mill. in 2005. Natural increase has been the main component of population growth in Australia over this period, contributing around two-thirds of the total increase. Net overseas migration, while a significant source of growth, is more volatile, fluctuating under the influence of government policy as well as political, economic and social conditions in Australia and the rest of the world.

Yearly growth rates due to natural increase and net overseas migration from 1955 to 2005 are shown in graph 5.5.

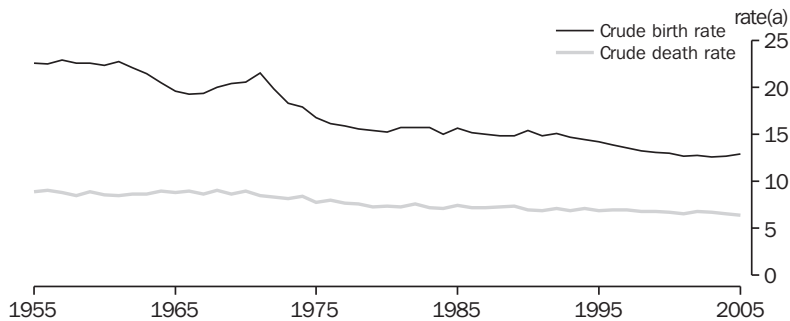
Fifty years ago, Australia was in the midst of a baby boom. In 1955, the crude rate of natural increase was 13.7 people per 1,000 population. The rate then increased to a peak of 14.3 in 1961, after which, declining fertility led to a fall in the rate of natural increase. The rate of natural increase rose again in the late-1960s, reaching a peak of 12.7 people per 1,000 population in 1971. A decade later the rate had fallen to 8.5. In 1996 the rate of natural increase fell below 7.0 for the first time in Australia's history. This downward trend continued, reaching the lowest recorded rate of natural increase (6.0 people per 1,000 population) in 2002 and 2003. In recent years there has been a slight rise in the rate to 6.6 people per 1,000 population in 2005. Nonetheless, ABS population projections suggest that continued sub-replacement fertility, combined with an increase in deaths due to an ageing population, will result in natural increase falling below zero around the middle of this century.

In 2005 the crude death rate was 6.4 deaths per 1,000 population, falling from 8.9 in 1955. The crude birth rate declined from 22.6 births per 1,000 population in 1955 to 13.0 in 2005. The lowest crude birth rate during this period, 12.6 births per 1,000 population, was recorded in 2003. Crude birth and death rates from 1955 to 2005 are shown in graph 5.6.



Source: *Australian Historical Population Statistics, 2006* (3105.0.65.001); *Australian Demographic Statistics* (3101.0).

5.6 COMPONENTS OF NATURAL INCREASE



(a) Per 1,000 population.

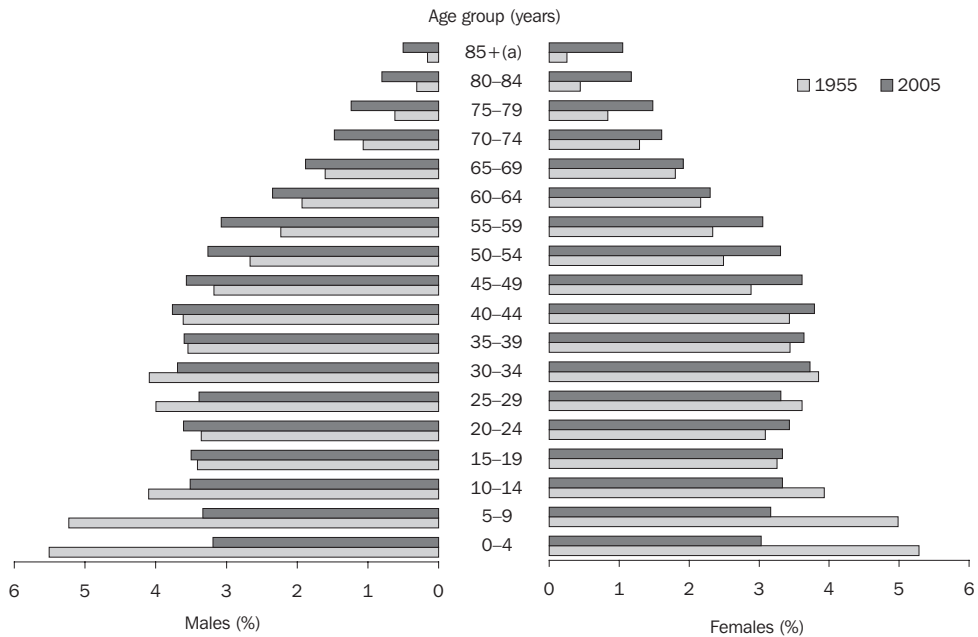
Source: Australian Historical Population Statistics, 2006 (3105.0.65.001); Australian Demographic Statistics (3101.0).

Population age and sex structure

Over the last 50 years the absolute number of people increased in all age groups. However, the proportion of the population in older age groups increased while the proportion in younger age groups declined. Graph 5.7 shows the proportions of the population by age group and sex in 1955

and 2005, illustrating the ageing of Australia's population. Australia's population is ageing because of sustained low fertility, resulting in proportionally fewer children in the population, and increased life expectancy, resulting in proportionally more older people in the population.

5.7 AGE DISTRIBUTION OF POPULATION – 1955 and 2005



(a) The 85+ age group includes all ages 85 years and over and is not directly comparable with the other five-year age groups.

Source: Australian Historical Population Statistics, 2006 (3105.0.65.001); Population by Age and Sex, Australian States and Territories, June 2005 (3201.0).

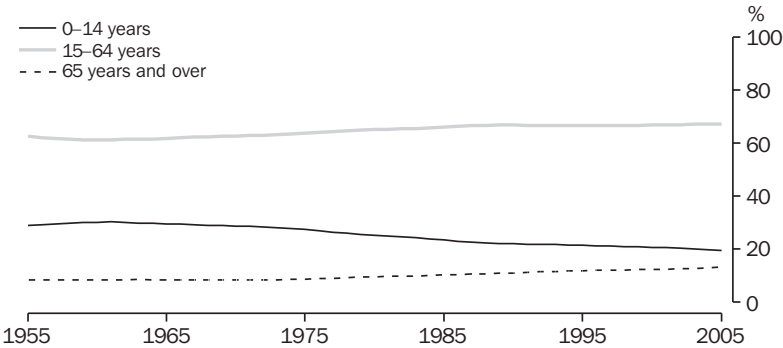
In 1955 there were 112,900 more males than females in Australia's population, while in 2005 there were 96,900 more females than males. Since 1979 Australia has been home to more females than males. At June 2005, the sex ratio of Australia's population was 99.1 males per 100 females.

People aged 0–14 years represented 29.0% of Australia's population in 1955, while those aged 15–64 years represented 62.6% and those aged 65 years and over represented 8.4%. Although Australia's population continued to grow since 1955, the proportion of children aged 0–14 years decreased to 19.6% by 2005. In contrast, the proportion of people aged 15–64 years increased to 67.3% by 2005 and the proportion of the population aged 65 years or more increased to 13.1% (graph 5.8).

The change in the age structure of Australia's population over time is illustrated by the change in the median age (the age at which half the population is older and half is younger). In 2005 the median age of the Australian population was 36.6 years, an increase of 5.8 years over the median age of 30.8 years in 1985. Graph 5.9 shows the median ages of the population by states and territories in 1985 and 2005.

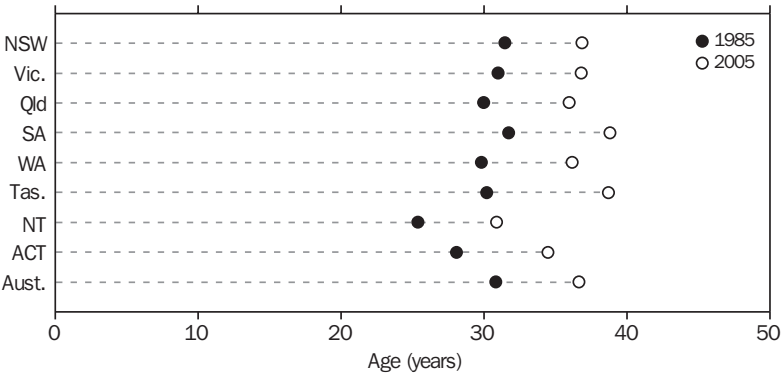
In 2005 the population of South Australia had the highest median age of all states and territories (38.8 years), closely followed by Tasmania (38.7 years). The Northern Territory (30.9 years) had the lowest median age in 2005.

5.8 PROPORTION OF POPULATION, By age group



Source: Australian Historical Population Statistics, 2006 (3105.0.65.001); Population by Age and Sex, Australian States and Territories (3201.0).

5.9 MEDIAN AGE OF POPULATION



Source: Population by Age and Sex, Australian States and Territories (3201.0).

Tasmania experienced the largest increase in median age over the 20 years to 2005, increasing by 8.6 years from 30.1 years in 1985 to 38.7 years in 2005. The next largest increase was South Australia at 7.1 years, from 31.7 years in 1985 to 38.8 years in 2005.

In 2005 there were just over 2.7 mill. people aged 65 years or more in Australia, an increase of 63,100 people (2.4%) over 2004. All states and territories experienced growth in this age group, with the Northern Territory (6.8%) and the Australian Capital Territory (3.9%) experiencing the greatest increases (table 5.10).

5.10 POPULATION AGED 65 YEARS AND OVER		
	Proportion of population in 2005	Population growth from 2004 to 2005
	%	%
New South Wales	13.7	2.1
Victoria	13.5	2.3
Queensland	12.1	3.1
South Australia	15.2	1.8
Western Australia	11.8	3.2
Tasmania	14.5	2.2
Northern Territory	4.6	6.8
Australian Capital Territory	9.6	3.9
<b>Australia(a)</b>	<b>13.1</b>	<b>2.4</b>

(a) Includes Other Territories.

Source: *Population by Age and Sex, Australian States and Territories (3201.0)*.

## Population projections

The ABS published projections of the population of Australia to the year 2101 and of the states, territories, capital cities and balances of state to the year 2051, based on assumptions about future levels of fertility, mortality and overseas and interstate migration. Three main projections (Series A, B and C) have been published using different combinations of assumptions.

Assumptions used for the three series of projections were:

### Series A

- a total fertility rate of 1.9 babies per woman from 2018 onwards

- high life expectancy at birth, increasing to 92.7 years for males and 95.1 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 140,000 people per year from 2007–08 onwards
- high levels of interstate migration.

### Series B

- a total fertility rate of 1.7 from 2018 onwards
- medium life expectancy at birth, increasing to 84.9 years for males and 88.0 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 110,000 per year from 2004–05 onwards
- medium levels of interstate migration.

### Series C

- a total fertility rate of 1.5 from 2018 onwards
- medium life expectancy at birth, increasing to 84.9 years for males and 88.0 years for females by 2050–51 and remaining constant thereafter
- net overseas migration of 80,000 per year from 2007–08 onwards
- small levels of interstate migration.

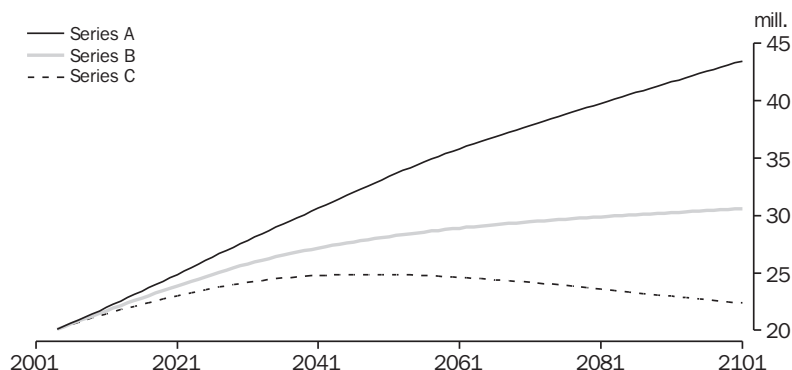
Unless otherwise stated the following analysis uses Series A and C to depict a range, although not the full range, of projected populations. At times, to simplify the analysis, only the medium series – Series B – has been used.

Australia’s population at June 2004 of 20.1 mill. people is projected to increase to between 24.9 and 33.4 mill. people in 2051, and reach between 22.4 and 43.5 mill. by 2101.

Both Series A and B project continuing population growth throughout the projection period. In Series A the population is projected to reach 33.4 mill. in 2051 and 43.5 mill. in 2101. In Series B the population will reach 28.2 mill. in 2051 and 30.6 mill. in 2101. Series C projects the population to peak in 2048 at 24.9 mill., and then gradually decline to 22.4 mill. in 2101 (graph 5.11).



### 5.11 PROJECTED POPULATION — 30 June



Source: *Population Projections, Australia, 2004 to 2101 (3222.0)*.

The growth rate of the population reflects the interaction of the components of population change – natural increase (the excess of births over deaths) and net overseas migration. Since the early-1990s Australia's population grew by between 1.2% and 1.3% per year. Growth rates are projected to decline throughout the projection period in all three main series, remaining above 1.0% for the next ten years (Series B) to 30 years (Series A). Both Series A and B project positive population growth throughout the projection period, although growth rates for both series decline over time and at varying rates. In Series A, Australia's population growth rate gradually declines to 1.00% in 2034 and to 0.42% by the end of the projection period. In Series B, growth decreases at a faster rate, reaching 1.00% in 2014 and 0.11% by 2101. Series C, in contrast, projects a more rapid decline in growth, resulting in zero growth in 2048. Declines in population are projected from 2049 onwards, as assumed levels of net overseas migration are insufficient to compensate for losses due to natural decrease (because of declining births and increasing deaths).

Series B projects continuing population growth over the next 50 years in all states and territories except Tasmania and South Australia. Between

2004 and 2051 the population of Queensland is projected to increase by 77%, the Northern Territory by 75% and Western Australia by 60%, well above the projected growth for Australia of 40%.

New South Wales is projected to remain the most populous state in Australia, although its share of Australia's population will decline slightly, from 33% at June 2004 to 31% in 2051 under Series B. Queensland will replace Victoria in 2041 as the second most populous state, with Queensland's share of Australia's population increasing from 19% to 24% over the next 50 years, and Victoria's share decreasing from 25% to 23%. Western Australia will increase its share of Australia's population from 9.8% at June 2004 to 11.2% in 2051, while South Australia's share will decline from 7.6% to 5.6% over the same period. Similarly, Tasmania's share will decline from 2.4% in 2004 to 1.6% in 2051. The Northern Territory's share will remain more or less the same, increasing marginally from 1.0% to 1.2%. Likewise, the Australian Capital Territory's share will change only marginally, decreasing from 1.6% to 1.4%. These projections are summarised in table 5.12.

### 5.12 ACTUAL AND PROJECTED POPULATION — 30 June

	2004(a)	2021				2051	
	Actual '000	Series A '000	Series B '000	Series C '000	Series A '000	Series B '000	Series C '000
<i>Capital city/balance of state</i>							
Sydney	4 225.1	4 970.9	4 871.5	4 813.8	6 311.6	5 608.8	5 292.1
Balance of New South Wales	2 495.7	2 973.7	2 842.9	2 711.6	3 796.3	3 133.9	2 668.2
<i>New South Wales</i>	6 720.8	7 944.6	7 714.4	7 525.4	10 107.9	8 742.7	7 960.4
Melbourne	3 593.0	4 411.2	4 253.4	4 135.3	5 894.6	5 041.1	4 566.8
Balance of Victoria	1 370.0	1 475.6	1 508.3	1 546.5	1 534.2	1 533.0	1 624.4
<i>Victoria</i>	4 963.0	5 886.8	5 761.7	5 681.8	7 428.7	6 574.1	6 191.2
Brisbane	1 777.7	2 597.4	2 403.6	2 238.3	4 202.0	3 354.7	2 778.1
Balance of Queensland	2 110.4	2 929.4	2 745.6	2 578.0	4 382.8	3 544.3	2 966.0
<i>Queensland</i>	3 888.1	5 526.9	5 149.2	4 816.3	8 584.8	6 899.0	5 744.1
Adelaide	1 123.2	1 212.5	1 201.3	1 186.9	1 326.8	1 203.9	1 138.5
Balance of South Australia	409.5	423.3	424.0	433.8	409.3	376.8	399.0
<i>South Australia</i>	1 532.7	1 635.8	1 625.2	1 620.7	1 736.1	1 580.7	1 537.5
Perth	1 454.6	1 994.2	1 875.3	1 749.4	2 999.2	2 453.6	2 017.6
Balance of Western Australia	523.5	661.7	623.0	579.5	891.0	710.9	560.9
<i>Western Australia</i>	1 978.1	2 655.9	2 498.4	2 328.9	3 890.2	3 164.5	2 578.6
Hobart	202.2	235.7	220.2	207.4	286.9	219.6	178.2
Balance of Tasmania	280.1	308.0	283.8	259.4	333.2	233.5	157.2
<i>Tasmania</i>	482.2	543.7	504.0	466.8	620.1	453.0	335.4
Darwin	109.4	164.8	149.7	127.5	295.5	232.3	153.0
Balance of Northern Territory	90.4	114.5	101.2	87.8	175.0	117.7	71.3
<i>Northern Territory</i>	199.8	279.2	250.9	215.3	470.5	350.0	224.3
<i>Australian Capital Territory(b)</i>	324.1	402.1	364.5	330.1	547.1	401.6	289.5
<i>Total capital cities(c)</i>	12 809.3	15 988.8	15 339.4	14 788.7	21 863.7	18 515.7	16 413.8
<i>Total balance of states and territories(d)</i>	7 279.6	8 886.3	8 528.7	8 196.6	11 521.7	9 650.1	8 447.0
<b>Australia(e)</b>	<b>20 091.5</b>	<b>24 878.4</b>	<b>23 871.4</b>	<b>22 988.4</b>	<b>33 389.8</b>	<b>28 169.7</b>	<b>24 864.5</b>

(a) Projections based on 2004 estimated resident population. (b) Canberra and Balance of ACT not projected separately.  
(c) Includes ACT. (d) Excludes Balance of ACT. (e) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

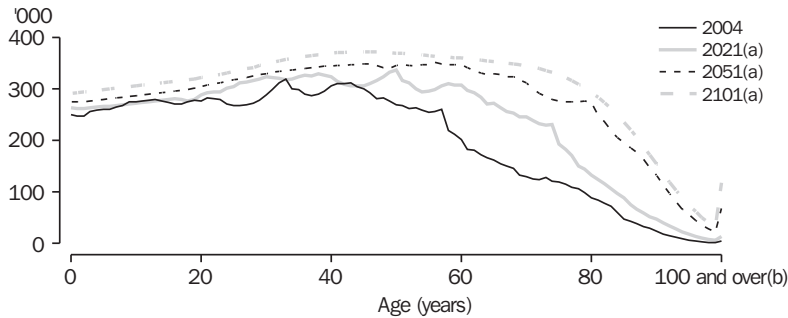
Source: *Population Projections, Australia, 2004 to 2101 (3222.0)*.

Graph 5.13 illustrates the ageing of Australia's population projected to occur over the next 100 years. This is the result of fertility remaining at low levels over a long period of time coupled with increasing life expectancy. The median age of Australia's population is projected to increase from 36.4 years at June 2004 to between 39.9 and 41.7 years in 2021, and to between 44.6 and 48.2 years in 2051. In 2101 the median age of the population is projected to be between 46.2 and 49.3 years.

Ageing of the population affects the relative sizes of different age groups within the population. The proportion of the population aged under 15 years

is projected to decrease from 20% (4.0 mill. people) of Australia's population in 2004 to between 13% and 16% (3.3 mill. and 5.4 mill.) in 2051, and to remain at similar proportions thereafter (between 13% and 16% in 2101, or 2.9 mill. to 6.8 mill. people). In contrast, the proportion of the population aged 50 years and over is projected to increase, from 30% (6.0 mill. people) in 2004 to between 44% and 48% (11.9 mill. and 14.6 mill.) in 2051, and 46% and 49% (11.0 mill. and 19.9 mill.) in 2101. As a consequence, the age structure of the population will be noticeably different by 2051, as shown in graph 5.13.

### 5.13 AGE STRUCTURE OF THE PROJECTED POPULATION



(a) Series B population projections. (b) Includes all ages 100 years and over and is not directly comparable with other ages.

Source: *Population Projections, Australia, 2004 to 2101 (3222.0)*.

Table 5.14 presents a range of indicators, such as population size and age structure, to illustrate changes in Australia's population from 1901 to 2101.

## Geographic distribution of the population

Most of Australia's population is concentrated in two widely separated coastal regions – the south-east and east, and the south-west. Of the two regions, the south-east and east is by far the largest in area and population. The population within these regions is concentrated in urban centres, particularly the state and territory capital cities.

Australia's population density at June 2005 was 2.6 people per square kilometre (sq km), compared with 2.5 people per sq km in 2000. Of the states and territories, the Australian Capital

Territory had the highest population density at June 2005 with 138 people per sq km (reflecting the fact that the city of Canberra constitutes a large proportion of the Australian Capital Territory's area), followed by Victoria with 22 people per sq km. The Northern Territory had a population density of only 0.1 people per sq km, the lowest of all the states and territories (reflecting more recent settlement, distance from areas settled earlier, large arid areas and, perhaps, climate).

Population density at June 2005 was highest in the city centres, particularly in the Sydney Statistical Division where the three most densely populated Statistical Local Areas (SLAs) in Australia were located. These were Sydney (C) - Central (8,400 people per sq km), Waverley (A) (6,600 people per sq km) and North Sydney (A) (5,800 people per sq km). Fourth on the list and Victoria's most densely

**5.14 POPULATION, Summary indicators**

	Unit	1901	1947	1971	2004	2021(a)	2051(a)	2101(a)
Total population	'000	3 774.1	7 579.4	13 067.3	20 091.5	23 871.4	28 169.7	30 594.7
Proportion of population								
0–14 years	%	35.2	25.1	28.7	19.8	16.9	15.1	14.8
15–64 years	%	60.8	66.8	63.0	67.2	64.3	59.1	57.8
65–84 years	%	3.9	7.7	7.8	11.5	16.3	20.1	20.9
85 years and over	%	0.1	0.4	0.5	1.5	2.4	5.8	6.6
Sex ratio(b)	ratio	110.1	100.4	101.1	98.9	99.5	99.9	100.8
Median age	years	22.5	30.7	27.6	36.4	40.7	45.2	46.1
Proportion living in capital cities	%	36.8	51.2	63.5	63.8	64.3	65.7	n.a.

(a) Series B population projections. (b) Males per 100 females.

Source: *Australian Historical Population Statistics, 2006 (3105.0.65.001)*; *Population Projections, Australia, 2004 to 2101 (3222.0)*.

populated SLA was Port Phillip (C) – St. Kilda (5,600 people per sq km). The SLA of New Farm in inner Brisbane (5,400 people per sq km) was Australia's fifth-most densely populated SLA. The geographic distribution of Australia's population at June 2005 is shown in map 5.15.

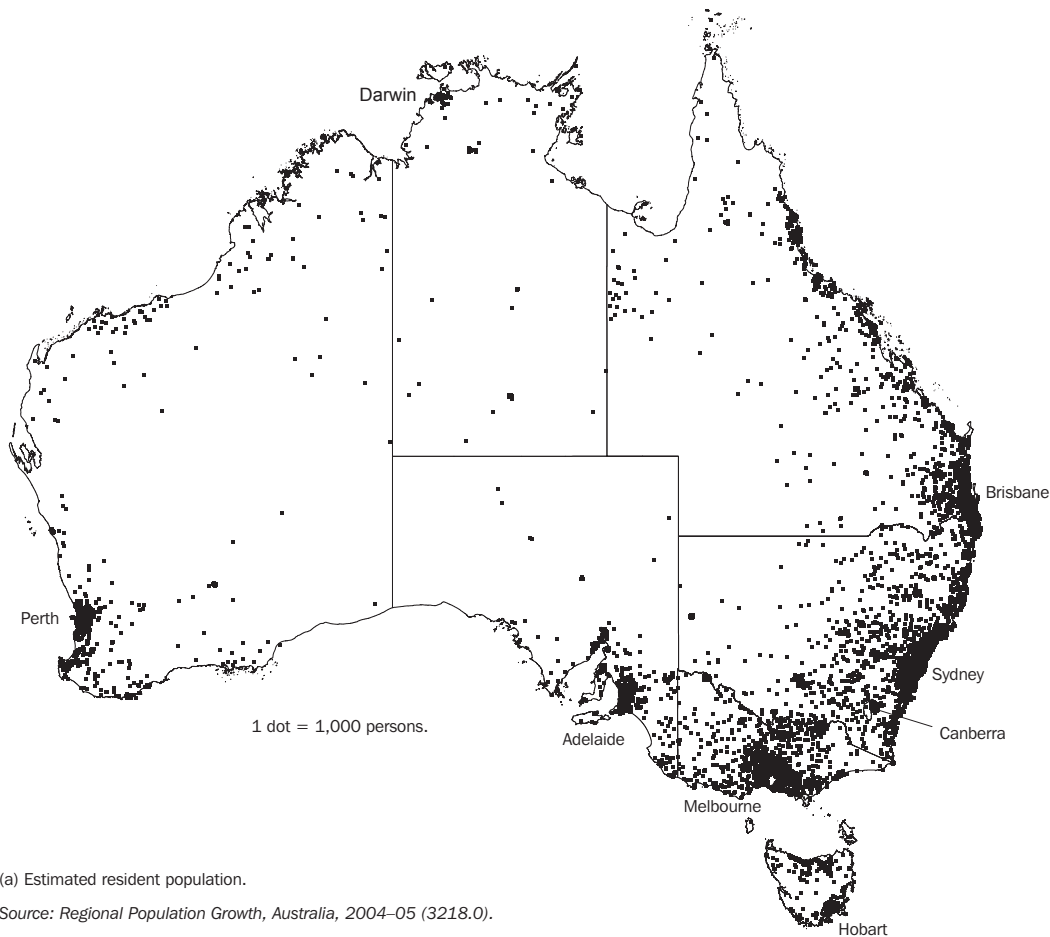
**Regional population change**

At June 2005, capital city Statistical Divisions (SDs) were home to 12.9 mill. people, or around two-thirds (64%) of Australia's population. The capital city SD of Melbourne experienced the largest increase in population of capital cities between 2000 and 2005, followed by Brisbane and

Sydney. In terms of percentage growth, however, Brisbane was the fastest growing capital city between 2000 and 2005, with an average annual growth rate of 2.3% per year. Perth experienced the second highest average annual growth rate over this period (1.5%). Table 5.16 illustrates the changes in population of Australia's major regions over the five-year period 2000–05.

Generally, the largest growth outside capital city SDs occurred in Australia's coastal regions. Of these regions, the largest increase in population between 2000 and 2005 occurred in Gold Coast-Tweed, up by an average 14,500 people per year (or 3.3% per year). Mandurah to the south of

**5.15 POPULATION DISTRIBUTION(a) – June 2005**



(a) Estimated resident population.

Source: *Regional Population Growth, Australia, 2004–05* (3218.0).

Perth recorded the fastest growth over the same period with an average growth rate of 5.1% per year. This growth was also faster than any capital city. Hervey Bay experienced the second fastest growth (up 4.3% per year) followed by Sunshine

Coast (3.5% per year). The population of Kalgoorlie/Boulder decreased by an average 0.6% per year between 2000 and 2005.

#### 5.16 ESTIMATED RESIDENT POPULATION, By major regions(a)

	June 2000 '000	June 2005 '000	Average annual change 2000–05	
			no.	%
<b>CAPITAL CITY STATISTICAL DIVISION</b>				
Sydney	4 069.1	4 254.9	37 160	0.9
Melbourne	3 422.7	3 634.2	42 302	1.2
Brisbane	1 619.3	1 810.9	38 333	2.3
Adelaide	1 102.4	1 129.3	5 365	0.5
Perth	1 372.9	1 477.8	20 974	1.5
Greater Hobart	196.5	203.6	1 434	0.7
Darwin	105.1	111.3	1 237	1.2
Canberra	314.8	324.8	1 988	0.6
<b>STATISTICAL DISTRICT</b>				
Newcastle (NSW)	486.0	510.9	4 967	1.0
Wollongong (NSW)	266.2	275.9	1 942	0.7
Nowra-Bomaderry (NSW)	29.9	32.9	605	2.0
Bathurst-Orange (NSW)	74.7	78.2	703	0.9
Lismore (NSW)	30.9	31.3	81	0.3
Coffs Harbour (NSW)	45.4	49.7	855	1.8
Port Macquarie (NSW)	37.2	41.1	783	2.0
Tamworth (NSW)	42.2	43.3	213	0.5
Dubbo (NSW)	34.8	35.8	198	0.6
Wagga Wagga (NSW)	52.0	53.5	289	0.6
Albury-Wodonga (NSW/Vic.)	94.2	100.3	1 209	1.3
Geelong (Vic.)	157.5	165.8	1 653	1.0
Warrnambool (Vic.)	29.2	31.1	384	1.3
Ballarat (Vic.)	82.6	88.8	1 238	1.5
Bendigo (Vic.)	78.3	84.4	1 212	1.5
Shepparton (Vic.)	44.0	47.2	644	1.4
La Trobe Valley (Vic.)	75.0	74.9	–10	—
Mildura (Vic.)	44.4	47.6	643	1.4
Sunshine Coast (Qld)	179.6	212.9	6 658	3.5
Bundaberg (Qld)	56.2	60.9	954	1.6
Hervey Bay (Qld)	38.7	47.8	1 813	4.3
Rockhampton (Qld)	67.4	69.1	353	0.5
Gladstone (Qld)	38.6	42.5	780	1.9
Mackay (Qld)	63.8	70.7	1 380	2.1
Townsville (Qld)	131.1	148.8	3 533	2.6
Cairns (Qld)	112.3	123.4	2 215	1.9
Toowoomba (Qld)	107.5	119.1	2 329	2.1
Gold Coast-Tweed (Qld/NSW)	409.8	482.0	14 454	3.3
Mandurah (WA)	57.6	74.0	3 274	5.1
Bunbury (WA)	48.3	56.2	1 572	3.1
Kalgoorlie/Boulder (WA)	29.7	28.9	–178	–0.6
Geraldton (WA)	30.8	31.2	83	0.3
Launceston (Tas.)	98.4	103.2	965	1.0
Burnie-Devonport (Tas.)	77.7	79.3	304	0.4
Canberra-Queanbeyan (ACT/NSW)	355.8	371.4	3 136	0.9

(a) Based on 2005 Australian Standard Geographical Classification boundaries.

Source: Australian Demographic Statistics (3101.0).

# Interstate migration

The main factor changing the distribution of Australia's population has been internal migration. During 2004–05, 358,800 people moved from one state or territory to another. This is a decline of 27,600 people compared with the previous year.

In 2004–05 Queensland, Tasmania, Western Australia and the Northern Territory all experienced net interstate migration gains, while New South Wales, Victoria, South Australia and the Australian Capital Territory experienced net interstate migration losses. Queensland has experienced positive net interstate migration for more than 30 years; in contrast, New South Wales has experienced net losses every year since 1978–79. As table 5.17 illustrates however, any losses due to interstate migration in 2004–05 were offset by growth due to natural increase and/or net overseas migration.

# Aboriginal and Torres Strait Islander population

There are no accurate estimates of the population of Australia before European settlement. Many estimates were based on post-1788 observations of a population already reduced by introduced diseases and other factors. Smith (1980) estimated the absolute minimum pre-1788 population at 315,000. Other estimates put the figure at over one million people, while recent archaeological evidence suggests that a population of 750,000 could have been sustained.

Whatever the size of the Indigenous population before European settlement, it declined dramatically under the impact of new diseases, repressive and often brutal treatment, dispossession, and social and cultural disruption and disintegration (see the article *Statistics on the*

*Indigenous Peoples of Australia*, in *Year Book Australia 1994*). The decline of the Indigenous population continued well into the 20th century.

More recently, changing social attitudes, political developments, improved statistical coverage and a broader definition of Indigenous origin have all contributed to the increased likelihood of people identifying as being of Aboriginal or Torres Strait Islander origin. This is reflected in the large increases in the number of people who are identified as Indigenous in each Census, increases in excess of those which can be attributed to natural increase in the Indigenous population.

In developing estimates of the size and age structure of the Indigenous population, Census counts are adjusted for undercount as well as other factors, including cases where Indigenous status was not known. These estimates are referred to as 'experimental' estimates of the Indigenous population.

Table 5.18 shows the distribution of the experimental estimated Indigenous population by state and territory between 1991 and 2001, based on the 2001 Census of Population and Housing. The estimates for 1991 and 1996 have been calculated using 2001 population estimates and experimental Indigenous life tables to 'reverse survive' the population back to 1991. The average annual growth rate of the Indigenous population in Australia for the five-year period 1996–2001 was 2.0%, approximately twice that of the total population.

The Indigenous population at 30 June 2001 was 458,500 people, of whom 134,900 (29%) lived in New South Wales, 125,900 (27%) in Queensland, 65,900 (14%) in Western Australia and 56,900 (12%) in the Northern Territory. The Northern Territory had the largest proportion of its population who were Indigenous (29%),

5.17 POPULATION GROWTH RATES — 2004–05

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
Rate	%	%	%	%	%	%	%	%	%
Natural increase	0.63	0.59	0.70	0.40	0.71	0.45	1.28	0.90	0.63
Net overseas migration	0.55	0.65	0.44	0.44	0.83	0.14	0.19	–0.08	0.55
Net interstate migration	–0.38	–0.05	0.81	–0.23	0.07	0.04	—	–0.50	..
Total population growth	0.80	1.20	1.95	0.61	1.62	0.63	1.48	0.32	1.18

(a) Includes Other Territories.

Source: Australian Demographic Statistics (3101.0).

### 5.18 EXPERIMENTAL ESTIMATES OF THE INDIGENOUS POPULATION

	1991(a)		1996(a)		2001(a)	
	'000	%	'000	%	'000	%
New South Wales	107.3	29.2	121.5	29.3	134.9	29.4
Victoria	22.3	6.1	25.2	6.1	27.8	6.1
Queensland	100.2	27.3	113.6	27.4	125.9	27.5
South Australia	20.6	5.6	23.2	5.6	25.5	5.6
Western Australia	52.9	14.4	59.6	14.4	65.9	14.4
Tasmania	13.9	3.8	15.7	3.8	17.4	3.8
Northern Territory	46.7	12.7	52.0	12.5	56.9	12.4
Australian Capital Territory	2.9	0.8	3.4	0.8	3.9	0.9
<b>Australia(b)</b>	<b>366.9</b>	<b>100.0</b>	<b>414.4</b>	<b>100.0</b>	<b>458.5</b>	<b>100.0</b>

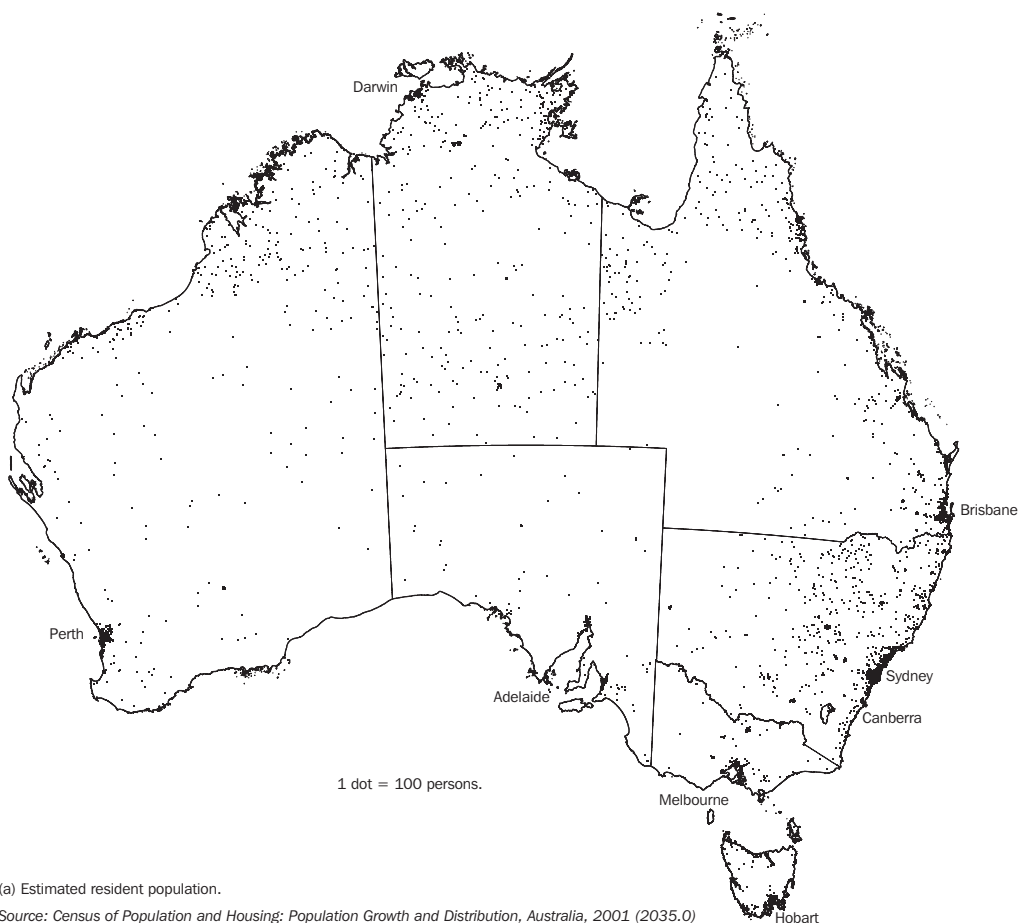
(a) Based on the 2001 Census of Population and Housing. (b) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

Source: *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2009* (3238.0).

compared with 4% or less for all other states and the Australian Capital Territory. In 2001, the Indigenous population represented 2.4% of the total Australian population.

While most of Australia's population is concentrated along the eastern and south-west coasts (map 5.15), map 5.19 shows the Indigenous

### 5.19 INDIGENOUS POPULATION DISTRIBUTION(a) – June 2001





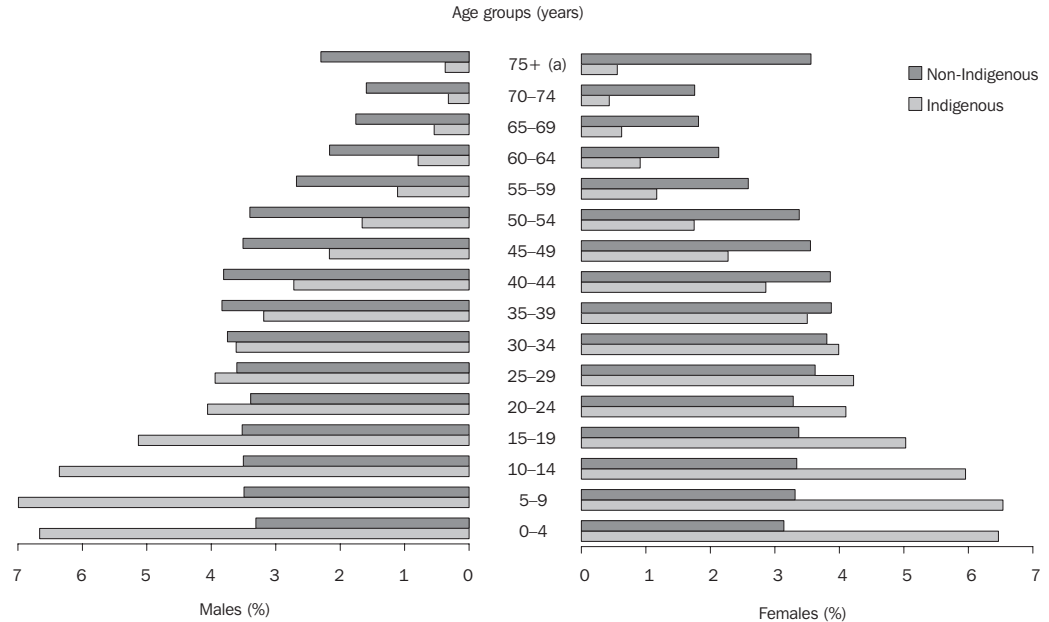
population is more widely spread. Australia's total population is contained within the most densely settled areas of the continent, while the Indigenous population live in areas covering more of the continent. This partly reflects the higher level of urbanisation among the non-Indigenous population than the Indigenous population. Indigenous people are much more likely to live in very remote areas than non-Indigenous people. The SLAs with the highest number of Indigenous people per square kilometre were located in Darwin, whereas the SLAs with the highest overall population densities were located in Sydney.

In 2001, 30% of Indigenous people lived in Major Cities compared with 67% of the non-Indigenous population. Proportions of Indigenous and non-Indigenous populations who lived in Inner Regional areas were similar (20% and 21% respectively). The proportion of population living in Outer Regional areas was higher for Indigenous people (23%) than for the non-Indigenous population (10%). The proportion of Indigenous people living in Remote or Very Remote areas (26%) was 13 times that of the non-Indigenous population living in these areas (2%).

The Indigenous population is a relatively young population, with a median age of 21 years, compared with 36 years for the non-Indigenous population. The younger age structure of the Indigenous population is shown in graph 5.20. In 2001, 39% of Indigenous people were aged under 15 years compared with 20% of non-Indigenous people. People aged 65 years and over comprised 3% of the Indigenous population and 13% of the non-Indigenous population.

The age structure of the Indigenous population reflects higher rates of fertility, and deaths occurring at younger ages. Although the total fertility rate among Indigenous women has fallen in recent decades, from around 6 babies per woman in the 1960s to 2.1 babies per woman in 2001, it remains higher than the total fertility rate for the total female population (1.7 babies per woman in 2001). In the period 1996–2001, life expectancy at birth for Indigenous Australians was estimated to be 59.4 years for males and 64.8 years for females, compared with 76.6 years for all males

5.20 AGE DISTRIBUTION OF THE INDIGENOUS AND NON-INDIGENOUS POPULATION – June 2001



(a) Includes all ages 75 years and over and is not directly comparable with other age groups.

Source: *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2009* (3238.0).

and 82.0 years for all females for the period 1998–2000: a difference of approximately 17 years for both males and females.

The ABS produced projections of the Indigenous population for the period 2002 to 2009 using the results of the 2001 Census of Population and Housing as the base. Assuming no further unexplained growth in census counts of the Indigenous population (low series), Australia's Indigenous population is projected to increase from 458,500 people in 2001 to 501,500 people in 2006, and to 528,600 people by 2009. If unexplained growth (that which cannot be attributed to natural increase) were to continue at the same rate as observed between the 1996 and 2001 censuses, the Indigenous population (high series) would increase to 542,900 people in 2006 and to 600,200 people by 2009. The projected average annual growth rate of the Indigenous population for the low series is 1.8% while for the high series it is 3.4%. These projected growth rates are both higher than the observed increase in the total Australian population for the year ending June 2002 (1.2%).

Indigenous populations of all states and territories are projected to continue growing between 2001 and 2009. The rates of growth in New South Wales are projected to remain constant in both series over the projection period, while the rates of growth are projected to decline in both series in Queensland, South Australia, Western Australia, Northern Territory and the Australian Capital Territory. For Victoria the growth rates decline slightly in the high series but remain constant after

2002 in the low series. For Tasmania the growth rates remain constant in the high series but increase slightly in the low series.

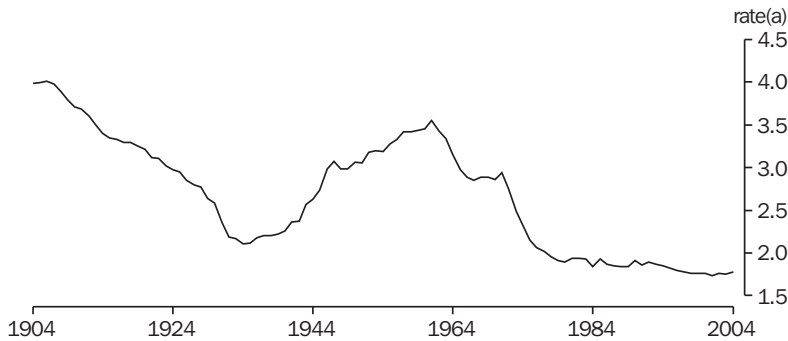
## Births

In 2004 there were 254,200 births registered in Australia, resulting in a total fertility rate of 1.77 babies per woman. Until recently, Australia had been experiencing the second of two long periods of fertility decline since 1901 – from 1907 to 1934, and from 1962 to the late-1990s (excluding a plateau from 1966 to 1972). In recent years the total fertility rate has been relatively stable.

For the first decade of the 20th century, the total fertility rate remained at around 3.7 to 4.0 babies per woman, then consistently declined over the next two and a half decades. By 1934, during the Depression, the total fertility rate had fallen to 2.1 babies per woman. It then increased during the second half of the 1930s, as women who had deferred child-bearing in the Depression years began to have children. Fertility increased through World War II and the 1950s, and peaked in 1961 when the total fertility rate reached 3.5 babies per woman (graph 5.21).

After 1961 the total fertility rate fell rapidly, to 2.9 babies per woman in 1966. This fall can be attributed to changing social attitudes, in particular a change in people's perception of desired family size, facilitated by the oral contraceptive pill becoming available. During the 1970s the total fertility rate dropped further, falling to replacement level (2.1 babies per woman) in 1976, below which it has since

### 5.21 TOTAL FERTILITY RATE



(a) Births per woman.

Source: *Births, Australia* (3301.0).

remained. This fall was more marked than the fall in the early-1960s and has been linked to increasing participation of women in education and the labour force, changing attitudes to family size, lifestyle choices and greater access to contraceptive measures and abortion.

In the late-1970s the total fertility rate began to decline at a slower rate, continuing through the 1980s and 1990s. Over the last six years the total fertility rate has been relatively stable (between 1.73 and 1.77 babies per woman) indicating that the decline in fertility recorded since the 1970s has halted.

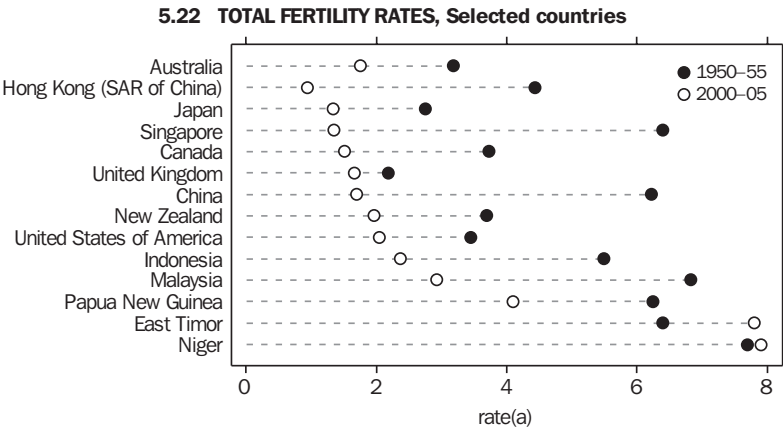
According to United Nations projections, the world average total fertility rate for the five-year period 2000–05 is estimated at 2.65 babies per woman, declining from the relatively constant 5.0 babies per woman that existed until the late-1960s and early-1970s. However, total fertility rates for individual countries vary considerably. Many factors can influence a country's fertility rate, such as differences in social and economic development and the prevalence of contraceptive use. In general, developing countries have higher fertility rates than developed countries.

Over the last 50 years fertility declined in most countries. According to the United Nations projections, Singapore and China experienced some of the largest declines in the average total fertility rate – from 6.4 and 6.2 babies per woman

respectively in 1950–55 to 1.4 and 1.7 in 2000–05 (graph 5.22). During 2000–05, Macao (SAR of China) recorded one of the lowest average total fertility rates (0.84), followed by Hong Kong (SAR of China) (0.94). Several European countries also had low fertility, including Ukraine (1.12), Spain (1.27), Italy (1.28), Germany (1.32) and the Russian Federation (1.33). Although below the world's average of 2.65, Australia's total fertility rate for 2004 of 1.77 babies per woman is comparable to other developed countries.

In contrast, many African countries had high fertility in the period 2000–05 with Niger (7.91) being the highest. In south-east Asia, East Timor (7.79) had one of the world's highest fertility rates and, like Niger, experienced sustained high fertility between the periods 1950–55 and 2000–05 (graph 5.22).

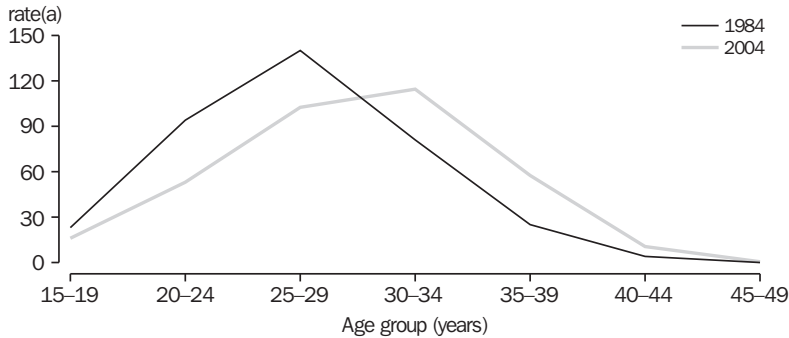
Australian women continue to delay child-bearing. The median age at child-bearing increased from 27.1 years in 1984 to 29.0 years in 1994, then to 30.6 years in 2004. Over the last 20 years there has been a fall in the fertility rate of teenagers, from 23.2 babies per 1,000 teenage females in 1984 to 16.3 in 2004. Conversely, the fertility rate of women aged 40–44 years more than doubled, from 4.3 babies per 1,000 women in 1984 to 10.6 in 2004. However, births to older mothers failed to compensate for the decline in births to younger women, resulting in a decline in total fertility (graph 5.23).



(a) Births per woman.

Source: United Nations Population Division, 'World Population Prospects: The 2004 Revision', last viewed June 2006, <<http://www.un.org>>.

### 5.23 AGE-SPECIFIC FERTILITY RATES



(a) Births per 1,000 women.

Source: *Births, Australia* (3301.0).

An alternative to the 'snapshot' measure provided by the total fertility rate is total issue data (the total number of children ever born alive per woman). Total issue data reveal a decline over time in the average number of children ever born by age of women. While at younger ages the decline in the average number of children may be related to the postponement of child-bearing, the average number of children among women aged 40-44 years also declined. Completed fertility (the average number of births a cohort of females

have borne) for women born in 1954 show an average of 2.3 births per woman. Projections show that the cohort of females born in 2004 would have an average of 1.6 births per woman, if current trends were to continue.

Table 5.24 provides summary measures of fertility for the period 1994 to 2004.

### 5.24 SELECTED SUMMARY MEASURES OF FERTILITY

	Registered births	Crude birth rate	Total fertility rate	Exnuptial births(a)
	'000	no.(b)	no.(c)	%
1994	258.1	14.5	1.85	25.6
1995	256.2	14.2	1.83	26.6
1996	253.8	13.9	1.80	27.4
1997	251.8	13.6	1.78	28.1
1998	249.6	13.3	1.76	28.7
1999	248.9	13.1	1.76	29.2
2000	249.6	13.0	1.76	29.2
2001	246.4	12.7	1.73	30.7
2002	251.0	12.8	1.76	31.3
2003	251.2	12.6	1.75	31.6
2004	254.2	12.7	1.77	32.2

(a) Births to unmarried mothers. (b) Births per 1,000 population. (c) Births per woman.

Source: *Australian Historical Population Statistics* (3105.0.55.001); *Births, Australia* (3301.0).

# Fertility and its effect on Australia's future population

Fertility is an important component of population change and particularly population age-structure. Fertility is measured by the total fertility rate (TFR) which represents the average number of children that a woman could expect to bear during her reproductive lifetime, assuming current age-specific fertility rates apply. There has been widespread discussion about low and declining fertility in Australia in the last few decades. Although there are signs that the TFR is stabilising at around 1.8 children per woman, this is still well below the replacement level of 2.1 children per woman. Low fertility has implications for a population's ability to sustain itself. This article examines the effect of different fertility levels (assumptions) on Australia's future population size and age composition.

## Trends in fertility

Having reached a TFR of 3.0 during the early-1920s, Australian fertility was relatively low during the Great Depression of the 1930s, falling to 2.1 children per woman in 1934. In 1961, at the height of the 'baby boom', it peaked at 3.5 children per woman. Since then, fertility has declined, falling sharply during the early-1960s, before hovering at around 2.9 children per woman in the period 1966–71. The TFR reached replacement level (2.1) in 1976. Fertility subsequently continued to fall as increasing numbers of women chose to delay or forego

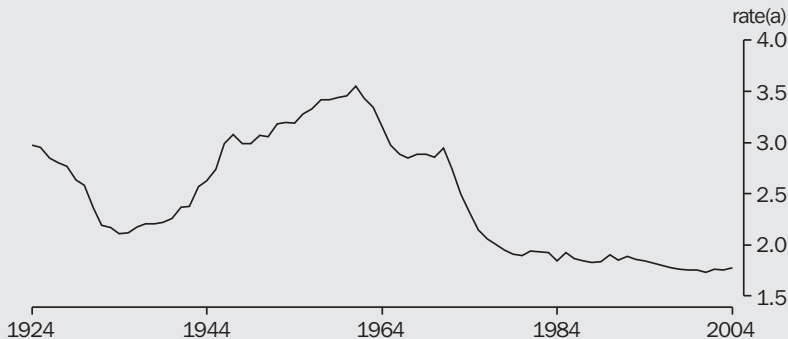
having children. The TFR stabilised somewhat during the 1980s, before resuming a more gradual decline during the 1990s. The TFR reached a low in 2001 at 1.73 children per woman, with small increases in the TFR evident from 2002 to 2004 (graph 5.25). The dimensions and duration of this recent upswing are not yet possible to gauge.

## Age-specific fertility

Over the last 20 years (1984–2004) the fertility of younger women declined while the fertility of older women increased, reflecting the continuing trend towards older motherhood (graph 5.26). Women aged 20–24 years experienced the greatest decrease, with fertility nearly halving (down by 43%) over the period (from 94.3 children per 1,000 women in 1984 to 53.4 children per 1,000 women in 2004). Teenage fertility (women aged 15–19 years) decreased by 30% (from 23.2 to 16.3), and fertility of women aged 25–29 years decreased by 27% (from 140.4 to 102.5).

In contrast, the fertility rate for women aged 30–34 years increased by 41% (from 81.2 children per 1,000 women in 1984 to 114.4 children per 1,000 women in 2004), and the rates for women aged 35–39 years and 40–44 years more than doubled (from 25.0 to 57.4 and 4.3 to 10.6,

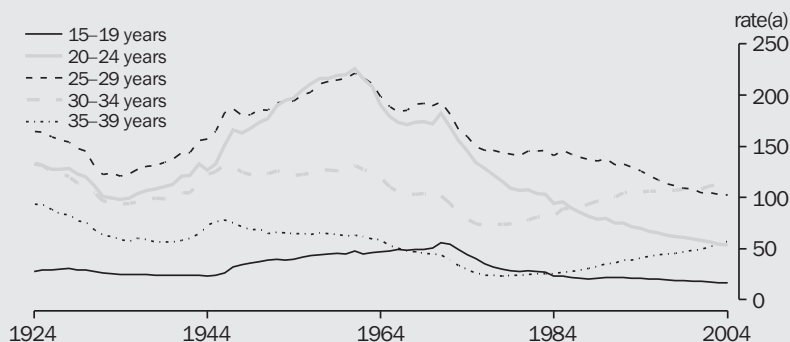
5.25 TOTAL FERTILITY RATE



(a) Births per woman.

Source: *Births, Australia* (3301.0).

## 5.26 AGE-SPECIFIC FERTILITY RATES(a), By selected age groups



(a) Births per 1,000 women.

Source: *Births, Australia* (3301.0).

respectively). However, the fertility of women aged 35 years and over has not yet attained the level observed during the baby boom nor the higher rates observed at the height of the 1920s.

### Future fertility prospects

The latest Australian Bureau of Statistics (ABS) population projections (2004–2101) assume three future scenarios for fertility in Australia: high fertility (TFR of 1.9 babies per woman by 2018 and remaining constant thereafter), medium fertility (TFR of 1.7) and low fertility (TFR of 1.5) (see *Population projections*). Additional scenarios considered in this article range from a TFR of 1.0 to the replacement level TFR of 2.1.

### Effect of varying fertility on future population

Fertility has a steady and pronounced impact on population growth. Holding mortality and net overseas migration (NOM) constant at the medium levels specified in the most recent ABS population projections, a change of 0.1 births per woman in the medium TFR (1.7 births per woman) would result in population change of almost one mill. people (larger or smaller) by 2051 and more than two mill. by 2101. The medium projection series assumes the TFR will decrease to 1.7 babies per woman by 2018 and then remain constant, life expectancy at birth will continue to increase each year until 2050–51 at a

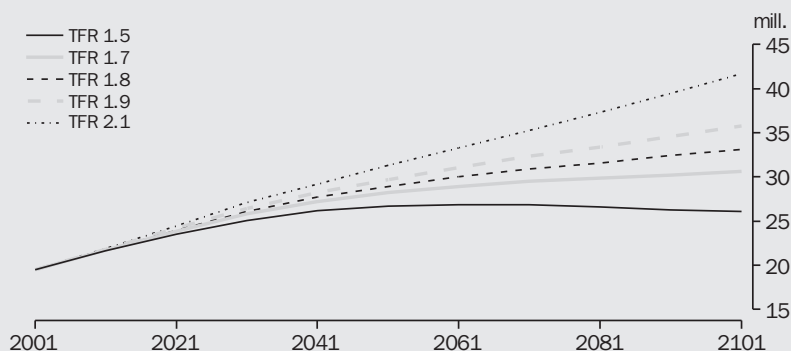
declining rate reaching 84.9 years for males and 88.0 years for females, and NOM will be held constant at 110,000 per year throughout the projection period.

If fertility were to remain constant at its 2004 level of 1.8 children per woman, Australia's population would reach 28.9 mill. by 2051, and 33.1 mill. by 2101. If the TFR were to increase to 1.9 children per woman, Australia's population would grow to 29.7 mill. by 2051, and to 35.8 mill. by 2101. In both cases the population would continue to grow beyond 2101 (graph 5.27).

With a medium fertility assumption of 1.7 children per woman Australia's population would reach 28.2 mill. by 2051 and 30.6 mill. in 2101. If the TFR fell further, to 1.5 children per woman, Australia's population would peak at 26.7 mill. in 2051 before declining gradually to 26.1 mill. in 2101.

Under each of these scenarios, fertility being below replacement level (TFR of 2.1), in the future Australia will move from a state of natural increase (an excess of births over deaths) to a state of natural decrease (an excess of deaths over births). However, a state of natural decrease will not necessarily lead to population decline provided that gains in population growth due to net overseas migration offset the loss due to natural decrease.

### 5.27 PROJECTED POPULATION, By varying fertility assumptions

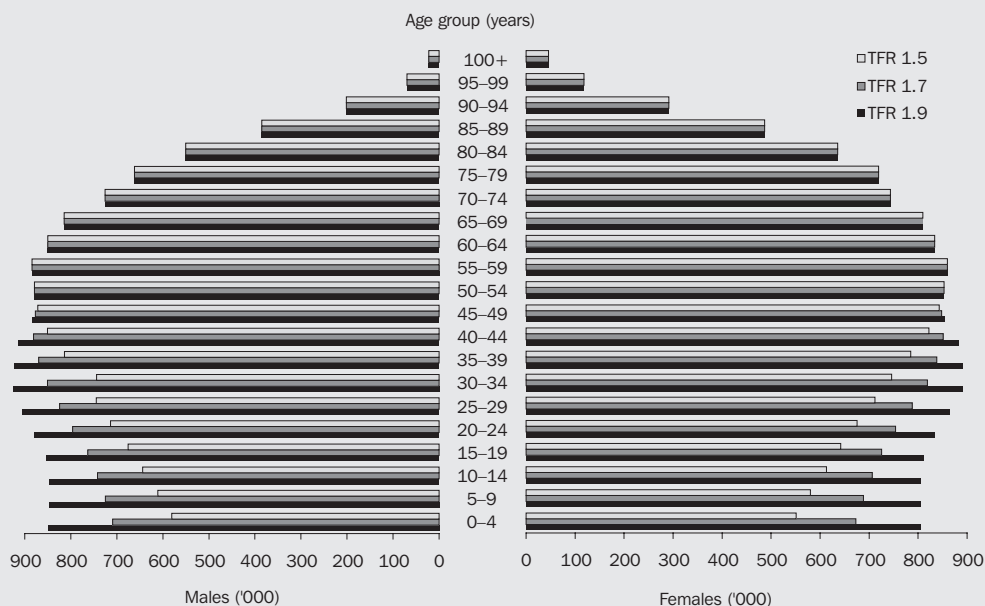


Source: Population Projections, Australia, 2004 to 2101 (3222.0); ABS data available on request, Population Projections.

In contrast, if fertility were to increase to replacement level Australia's population would increase to 31.3 mill. by 2051 and 41.7 mill. by 2101, and natural increase would continue beyond the projection period. Since each generation would replace itself, the population would eventually achieve stability in terms of both size and age structure.

The level of fertility affects not only population size and growth, but also the age distribution of the population. The impact of fertility is most evident in the younger age groups of the population. Low levels of fertility mean fewer children born each year and, therefore,

### 5.28 PROJECTED AGE STRUCTURE, By varying fertility assumptions – June 2051



Source: Population Projections, Australia, 2004 to 2101 (3222.0); ABS Data available on request, Population Projections.



proportionally fewer people in younger age groups, resulting in an older (or 'top-heavy') population. Conversely, high levels of fertility enlarge these groups and result in a younger population.

By 2051, the median age of Australia's population could range from 43.1 years to 47.4 years under the high (TFR of 1.9) and low (TFR of 1.5) fertility assumptions respectively. This is considerably older than the median age of 36.4 years in 2004. Should fertility remain at 1.8 children per woman the median age will be 44.2 years by 2051. Replacement level fertility would result in a lower median age of 41.1 years by 2051.

By 2051, the proportion of the population aged under 15 years could vary from 13% to 17% under the low (TFR of 1.5) and high (TFR of 1.9)

fertility scenarios respectively, a lower proportion compared with 2004 (20%). Should fertility remain at 1.8 children per woman, 16% of the population would be aged under 15 years. If fertility were at replacement level (TFR of 2.1), 18% of the population would be under 15 years (graph 5.28 and table 5.29).

In 2004 people aged 65 years and over comprised 13% of the total population. By 2051, 25% of the population will be aged 65 years and over under the high fertility assumption (TFR of 1.9), or 27% under the low assumption (TFR of 1.5). If fertility remained at 1.8 children per woman, people aged 65 years and over would account for 25% of the population by 2051. With fertility at replacement level (TFR of 2.1), the proportion of the population aged 65 years and over would be lower at 23% by 2051.

**5.29 PROJECTED POPULATION(a), By varying fertility assumptions — 30 June**

	2004	2011	2021	2051	2101	Median age, 2051	Persons aged 0–14 years, 2051	Persons 65 years and over, 2051
Total fertility rate	mill.	mill.	mill.	mill.	mill.	years	%	%
1.0	20.1	21.5	22.7	23.2	17.2	52.4	9.2	31.3
1.1	20.1	21.5	22.9	23.9	18.7	51.4	10.0	30.5
1.2	20.1	21.5	23.0	24.6	20.3	50.4	10.9	29.6
1.3	20.1	21.6	23.2	25.3	22.1	49.4	11.7	28.8
1.4	20.1	21.6	23.4	26.0	24.0	48.4	12.6	28.0
1.5	20.1	21.6	23.5	26.7	26.1	47.4	13.4	27.3
1.6	20.1	21.7	23.7	27.4	28.2	46.3	14.2	26.5
1.7	20.1	21.7	23.9	28.2	30.6	45.2	15.1	25.8
1.8	20.1	21.7	24.0	28.9	33.1	44.2	15.9	25.2
1.9	20.1	21.8	24.2	29.7	35.8	43.1	16.7	24.5
2.0	20.1	21.8	24.4	30.5	38.7	42.1	17.5	23.9
2.1	20.1	21.9	24.5	31.3	41.7	41.1	18.3	23.3

(a) Data for 2004 is estimated resident population. Life expectancy at birth is assumed to continue to increase at a declining rate, reaching 84.9 years for males and 88.0 years for females by 2050–51, and remaining constant thereafter. Net overseas migration is assumed to remain constant throughout the projection period at 110,000 people per year.

Source: *Population Projections, Australia, 2004 to 2101 (3222.0)*; ABS data available on request, *Population Projections*.

## Reference

McDonald, Peter 2005, 'Has the Australian Fertility Rate Stopped Falling', *People and Place*, vol. 13, no. 3. pp.1–5.

## Deaths

In 2004, 132,500 deaths (68,400 males and 64,100 females) were registered in Australia, compared with 132,300 deaths registered in 2003. This represents an increase of approximately 200 deaths (or 0.2%). Since 1984 the number of deaths registered increased by 0.9% on average annually.

The steady increase in the number of deaths over time reflects the increasing size of the population, and particularly the increasing number of older people. As population ageing continues, the number of deaths will continue to rise and is projected to outnumber births around the mid-2040s.

Despite population ageing over the last 20 years Australia's death rates have continued to decline. The crude death rate decreased from 7.1 deaths per 1,000 population in 1984 to 6.6 deaths per 1,000 in 2004. Against the background of an older population, this fall indicates the considerable decline in age-specific death rates over the period. The standardised death rate (which eliminates the effect of the changing age structure of the population) for 2004 was the lowest on record at 6.3 deaths per 1,000 population, and 32.3% lower than the rate recorded in 1984 (9.3).

**Life expectancy**

Life expectancy is the average number of additional years a person of a given age and sex might expect to live if the age-specific death rates of the given period were to continue throughout his or her remaining lifetime.

Over the last 50 years the life expectancy of a new-born boy increased from 67.1 years in the period 1953–55 to 78.1 years in 2002–04. Likewise, the life expectancy of a new-born girl increased from 72.8 to 83.0 years during the same period (graph 5.30). The increase in life expectancy at birth is due to declining death rates at all ages.

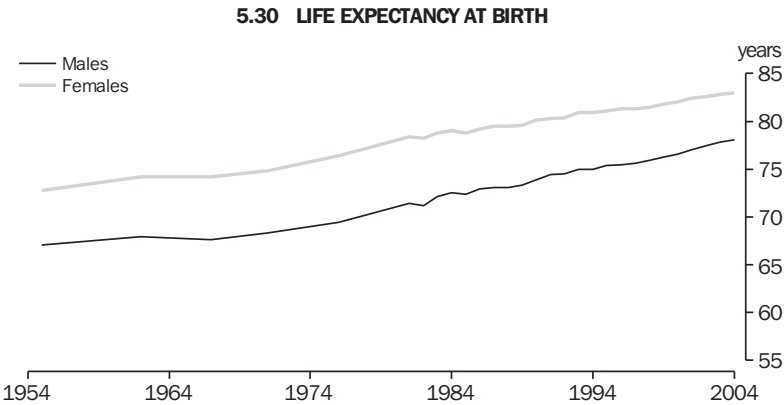
Improvements in living conditions in the early part of the 20th century, such as better water supply, sewerage systems, food quality and health education resulted in an overall decline in mortality. The continuing reduction in mortality in the latter half of last century is attributed to improving social conditions and advances in medical technology such as mass immunisation

and antibiotics. The past two decades in particular have seen further increases in life expectancy. These increases are due in part to lower infant mortality, fewer deaths among young adults from motor vehicle accidents and fewer deaths among older men from heart disease. The reduction in the number of deaths from heart disease has been related to medical advances and behavioural changes such as improvements in diet and a reduction in smoking.

During the 20th century life expectancy of new-born girls was consistently higher than that of new-born boys, with the difference peaking at about 7 years in the 1970s and early-1980s. The difference was largely due to the significant decline in heart disease, stroke and respiratory disease mortality among women. In recent years the gap in life expectancy between new-born males and females narrowed to around 5 years. This can be attributed to the large reductions in death rates of males aged 45 years and over, and particularly to the reduction in heart disease deaths among males.

The increase in life expectancy for older persons has implications for retirement planning and income policies. Life expectancy of 65 year olds increased from 14 years for males and 18 years for females in 1983, to 18 years for males and 21 years for females in 2002–04.

Australians have a life expectancy at birth which compares well with that experienced in other developed nations. Life expectancy at birth of Australian males (78.1 years) is exceeded by only



Source: Australian Historical Population Statistics (3105.0.65.001).

Hong Kong (SAR of China) and Iceland (both at 79 years) and is comparable with Japan, Macao (SAR of China), Sweden, Switzerland and Israel (each 78 years). Life expectancy at birth of Australian females (83 years) is exceeded by only Hong Kong (SAR of China) and Japan (both at 85 years) and is the same as Spain, France, Iceland, Italy and Switzerland (each 83 years). The combined Australian male and female life expectancy of new-born babies for 2002–04 is 80.5 years, the same as Canada, and higher than New Zealand and the United Kingdom (both 79 years) and the United States of America (77 years).

A life table is a statistical model that is constructed from the death rates of a population at different ages. It is frequently used to express death in terms of the probability of dying. In its simplest form, a life table is generated from age-specific death rates and the resulting values are used to measure mortality, survivorship and life expectancy. Table 5.31 shows the expectations of additional years of life at specific ages for Australian males and females for the period 2002–04.

Table 5.32 provides summary measures of mortality for the period 1994 to 2004.

5.31 EXPECTATION OF LIFE(a)		
	Males	Females
At exact age (years)	years	years
0	78.1	83.0
10	68.6	73.5
20	58.9	63.6
30	49.4	53.8
40	39.9	44.1
50	30.6	34.6
60	21.8	25.5
70	14.1	17.0
80	8.0	9.8
90	4.1	4.8
100	2.5	2.8

(a) Calculated using data for the three years 2002–04.

Source: *Deaths, Australia* (3302.0).

### International migration

Each year Australia’s population increases as a result of net overseas migration (the excess of permanent and long-term arrivals over permanent and long-term departures) and natural increase (the excess of births over deaths).

Traditionally, Australia’s population growth has come predominantly from natural increase. However, since 1998–99, net overseas migration comprised 45% or more of population growth, ranging from 45% in that year to 52% in 2000–01. In 2004–05 net overseas migration (123,800 people) represented half (50%) of Australia’s population growth for the year (table 5.1).

5.32 SELECTED SUMMARY MEASURES OF MORTALITY					
	Registered deaths '000	Crude death rate no.(b)	Infant mortality rate no.(c)	Life expectancy at birth(a)	
				Males years	Females years
1994	126.7	7.1	5.9	75.0	80.9
1995	125.1	6.9	5.7	75.4	81.1
1996	128.7	7.0	5.8	75.5	81.3
1997	129.4	7.0	5.3	75.6	81.3
1998	127.2	6.8	5.0	75.9	81.5
1999	128.1	6.8	5.7	76.2	81.8
2000	128.3	6.7	5.2	76.6	82.0
2001	128.5	6.6	5.3	77.0	82.4
2002	133.7	6.8	5.0	77.4	82.6
2003	132.3	6.7	4.8	77.8	82.8
2004	132.5	6.6	4.7	78.1	83.0

(a) Data for 1994 is based on deaths registered in 1994 only. Data for 1995 onwards are based on three-year averages, with the year shown being the last year of the three-year period. (b) Deaths per 1,000 population. (c) Infant deaths per 1,000 live births.

Source: *Australian Historical Population Statistics* (3105.0.65.001); *Deaths, Australia* (3302.0).

# Infant mortality over the last 100 years

The survival of infants in their first year of life is commonly viewed as an indicator of the general health and wellbeing of a population. Infant mortality refers to deaths of children under one year of age, and is measured by the infant mortality rate (IMR). IMRs indicate the level of infant deaths in a calendar year per 1,000 live births in the same calendar year. In 2004 there were 1,200 infant deaths registered in Australia.

Over the last 100 years Australia's infant mortality has decreased dramatically (graph 5.33). In 1904, almost 82 infants out of every 1,000 live born babies died before their first birthday. By 2004 this had declined to 5 infant deaths per 1,000 live births. This decline largely reflects improvements in pre and post-natal care, improved sanitation, the decline in infectious diseases, drug development, and improved birth conditions.

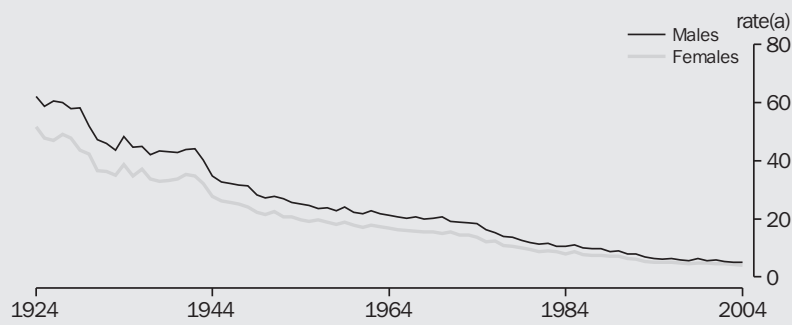
The improvement in the IMR has been a major contributor to increased life expectancy at birth. A baby born in the period 1901–10 was 18 times more likely to die before its first birthday than a baby born during 2002–04. Males born in 1901–10 had a life expectancy of 23 years less than males born in 2002–04 (78.1 years). For females, life expectancy in 1901–10 was 24 years less than for females born in 2002–04 (83.0 years).

Males typically experience higher IMRs than females. This is attributed mostly to biological and genetic factors. Males in Australia have consistently recorded higher IMRs to females (graph 5.33). Australia's male IMR declined from 62 infant deaths per 1,000 births in 1924 to 5 infant deaths in 2004. Similarly, the female IMR declined from 52 infant deaths per 1,000 live births to 4 infant deaths, over the same period.

IMRs vary across the states and territories (table 5.34). However, it is important to note that for the smaller states and territories IMRs fluctuate from year to year. The Northern Territory consistently recorded the highest IMRs of all Australian states and territories. In 2004 the Northern Territory's IMR was 10.7 infant deaths per 1,000 live births. South Australia experienced the lowest IMR (3.2 infant deaths per 1,000 live births) in 2004.

IMRs for the Indigenous population are higher than those experienced by the total population (table 5.35). For the period 2002–04 Indigenous IMRs for New South Wales, Queensland and South Australia were around double that for total persons. For Western Australia, Indigenous IMRs were three times as high as total persons. The Northern Territory experienced the highest Indigenous IMR (15.4 infant deaths per 1,000 live births) followed by Western Australia (14.1).

5.33 INFANT MORTALITY RATES



(a) Infant deaths per 1,000 live births.

Source: Australian Historical Population Statistics, 2006 (3105.0.65.001); Deaths, Australia (3302.0); Australian Demography Bulletins.

Australia's IMR is quite low when compared with other countries (graph 5.36). According to the United Nations, for the period 2000–05, Japan had one of the lowest IMRs (3.2 infant deaths per 1,000 births), followed by Australia (4.9), Italy (5.2), United Kingdom (5.3) and New Zealand (5.4). In comparison, Ethiopia (99.5) and Indonesia and South Africa (each 42.7) had the highest IMRs. Whilst these rates are high, these

IMRs have decreased dramatically since 1950–55. Indonesia and Ethiopia experienced the largest change in IMRs from 1950–55 to 2000–05 with a decrease of 159 infant deaths per 1,000 live births and 100 infant deaths per 1,000 live births, respectively.

#### 5.34 INFANT MORTALITY RATES, By state and territory

	2002		2003		2004	
	Infant deaths		Infant deaths		Infant deaths	
	no.	rate(a)	no.	rate(a)	no.	rate(a)
New South Wales	397	4.6	398	4.6	399	4.6
Victoria	305	5.0	309	5.1	282	4.5
Queensland	277	5.8	230	4.8	262	5.2
South Australia	90	5.1	65	3.7	54	3.2
Western Australia	102	4.3	100	4.1	99	3.9
Tasmania	37	6.2	40	7.0	21	3.6
Northern Territory	42	11.3	32	8.4	38	10.7
Australian Capital Territory	14	3.4	24	5.8	29	6.9
<b>Australia(b)</b>	<b>1 264</b>	<b>5.0</b>	<b>1 199</b>	<b>4.8</b>	<b>1 184</b>	<b>4.7</b>

(a) Infant deaths per 1,000 live births. (b) Includes Other Territories. Other Territories comprise Jervis Bay Territory, Christmas Island and the Cocos (Keeling) Islands.

Source: *Deaths, Australia, 2004* (3302.0).

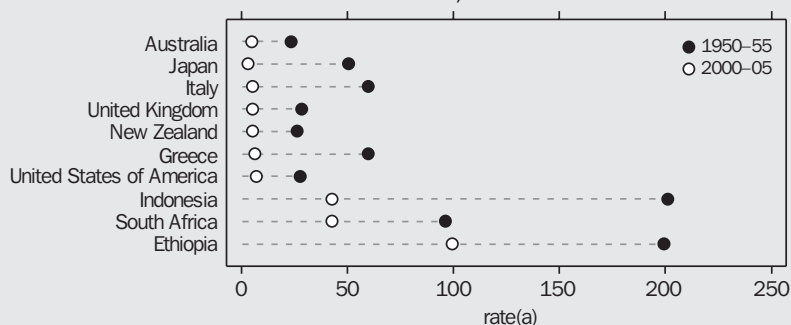
#### 5.35 INFANT MORTALITY RATES(a)(b), By Indigenous origin(c)

	New South Wales	Queensland	South Australia	Western Australia	Northern Territory(d)
Indigenous persons					
1999–2001	10.9	11.7	8.0	16.6	19.2
2002–04	8.5	10.9	9.4	14.1	15.4
Total persons					
1999–2001	5.4	5.9	4.5	4.7	11.4
2002–04	4.6	5.3	4.0	4.1	10.1

(a) Infant deaths per 1,000 live births. (b) Victoria, Tasmania and the Australian Capital Territory not included due to poor coverage rates or small numbers of Indigenous infant deaths. (c) Deaths for whom Indigenous status was not specified have not been prorated over Indigenous and non-Indigenous deaths. As a result, Indigenous and non-Indigenous infant mortality rates may be underestimated. (d) Contribution of Indigenous deaths to total deaths is much larger in the Northern Territory than in other states.

Source: *Deaths, Australia, 2004* (3302.0).

### 5.36 INFANT MORTALITY RATES, Selected countries



(a) Infant deaths per 1,000 live births.

Source: United Nations Population Division, 'World Population Prospects: The 2004 Revision', last viewed June 2006, <<http://www.un.org>>.

## Reference

United Nations 2000, 'World Population Monitoring 1998. Health and mortality: selected aspects', Department of Economic and Social Affairs Population Division.

Overseas migration played an important role in changing Australia's population. In 2004–05, 431,100 people arriving in Australia were added to the population through overseas migration (table 5.37). This included permanent (settler) arrivals, Australian residents returning from an overseas trip of twelve months or more, and overseas visitors intending to stay twelve months or more in Australia. In that year there were also 307,300 people removed from the Australian population through overseas migration, including Australian residents emigrating or going overseas for twelve months or more, and overseas visitors leaving Australia after staying for twelve months or more. The ABS applies a number of adjustments to data on long-term and permanent movements in deriving net overseas migration. Previously these movement data were adjusted for changes between intended and actual traveller duration (this adjustment was known as 'category jumping').

A new method of adjustment developed by the ABS takes into account problems in the enumeration of long-term and permanent arrivals and departures as a result of short trips overseas made by long-term visitors to Australia and short trips to Australia made by residents who have departed Australia on a long-term basis. It also takes into account changes in traveller intention, as did the earlier method.

While many of the source countries of settler arrivals to Australia have remained the same over the last 20 years, there have also been significant changes (table 5.38). When ranked in terms of settler arrivals to Australia, United Kingdom and New Zealand remained in the top four source countries over the period 1984–85 to 2004–05. While many of the source countries made consistently large contributions there are a number of countries whose contribution either increased or decreased. For example, in 1984–85 Iraq was ranked 56 as a source of settlers to Australia, and had climbed to 12 in 2004–05. Conversely, Vietnam which was ranked 3 in 1984–85 fell to 11 in 2004–05.

## Migration program

In 2004–05, 123,400 people arrived in Australia intending to settle, the majority of whom (70%) arrived as part of the Migration Program. Of Migration Program arrivals, most arrived under the skilled migration category (43% of all permanent arrivals), while 27% of all permanent arrivals arrived under the family migration category. A further 11% of all permanent arrivals arrived as part of the Humanitarian Program, while 18% were eligible to settle in Australia because of their New Zealand citizenship.

### 5.37 NET OVERSEAS MIGRATION COMPONENTS, By selected years

	1984-85	1994-95	1999-2000	2002-03	2003-04	2004-05
	'000	'000	'000	'000	'000	'000
Arrivals						
Permanent (settlers)	77.5	87.4	92.3	89.4	104.4	116.1
Long-term	85.7	151.1	212.8	303.5	294.1	315.0
<i>Total</i>	163.3	238.5	305.1	392.9	398.5	431.1
Departures						
Permanent	20.4	26.9	41.1	48.1	55.9	59.2
Long-term	74.9	118.5	156.8	228.3	242.6	248.1
<i>Total</i>	95.2	145.5	197.8	276.4	298.5	307.3
Category jumping(a)	5.7	-12.9	—	..	..	..
<b>Net overseas migration</b>	<b>73.7</b>	<b>80.1</b>	<b>107.3</b>	<b>116.5</b>	<b>100.0</b>	<b>123.8</b>

(a) Prior to 1998-99 'category jumping' was applied to adjust migration. For 1999-2000 this was set to zero due to deficiencies in the estimation method. For 2002-03 to 2004-05 component figures have been adjusted for changes in traveller intention and multiple movement.

Source: Australian Demographic Statistics (3101.0); Migration, Australia (3412.0).

### 5.38 PERMANENT (SETTLER) ARRIVALS(a), By country of birth(b)

	1984-85			1994-95			2004-05		
	Rank	Number	Proportion	Rank	Number	Proportion	Rank	Number	Proportion
	no.	'000	%	no.	'000	%	no.	'000	%
United Kingdom	1	11.6	15.0	1	10.7	12.2	1	18.2	14.8
New Zealand	2	9.1	11.7	2	10.5	12.0	2	17.3	14.1
China (excludes SARs and Taiwan Province)	6	3.1	4.1	7	3.7	4.2	3	11.1	9.0
India	10	1.9	2.5	6	3.9	4.5	4	9.4	7.6
Sudan	74	0.0	0.1	44	0.4	0.4	5	5.7	4.6
South Africa	14	1.4	1.9	9	2.8	3.2	6	4.6	3.7
Philippines	5	3.2	4.1	5	4.1	4.7	7	4.2	3.4
Singapore	23	0.8	1.0	33	0.7	0.7	8	3.0	2.5
Malaysia	7	2.4	3.1	18	1.1	1.3	9	2.9	2.4
Sri Lanka	9	2.3	3.0	12	2.0	2.2	10	2.3	1.9
Vietnam	3	8.5	10.9	3	5.1	5.8	11	2.2	1.8
Iraq	56	0.2	0.2	10	2.5	2.9	12	1.9	1.6
Indonesia	15	1.3	1.7	19	1.0	1.2	13	1.9	1.6
Korea, Republic of (South)	28	0.7	0.9	31	0.7	0.8	14	1.8	1.4
Fiji	27	0.7	0.9	14	1.5	1.7	15	1.7	1.4
United States of America	12	1.5	2.0	13	1.8	2.0	16	1.6	1.3
Afghanistan	42	0.2	0.3	41	0.4	0.4	17	1.5	1.2
Lebanon	8	2.4	3.1	17	1.2	1.4	18	1.4	1.2
Pakistan	52	0.2	0.3	36	0.6	0.7	19	1.3	1.1
Thailand	32	0.5	0.6	23	0.8	0.9	20	1.3	1.0
Other	..	25.5	32.9	..	32.1	36.7	..	27.8	22.5
<b>Total</b>	<b>..</b>	<b>77.5</b>	<b>100.0</b>	<b>..</b>	<b>87.4</b>	<b>100.0</b>	<b>..</b>	<b>123.4</b>	<b>100.0</b>

(a) Based on stated traveller intention at arrival and not adjusted for change in traveller intention or multiple movement. (b) Based on the top 20 source countries in 2004-05.

Source: Migration, Australia (3412.0).

The number of visas issued to prospective settlers varies significantly from year to year. So too does the balance between the types of visas issued. Table 5.39 shows that in the five years to 2004-05 the proportion of settlers arriving under the skilled migration category ranged from 33% in 2000-01 to 46% in 2003-04 then down to 43% in 2004-05.

Of skilled migrants arriving in 2004-05 (53,100), 29% came from Europe (85% of whom were from United Kingdom and Ireland), while 19% came from southern Asia and 17% from north-east Asia. South-east Asia contributed 16% and sub-Saharan Africa contributed 10% of skilled immigrants to Australia during 2004-05.



**5.39 PERMANENT (SETTLER) ARRIVALS, By eligibility category(a)**

	2000–01		2001–02		2002–03		2003–04		2004–05	
	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion
	'000	%	'000	%	'000	%	'000	%	'000	%
Migration program										
Family	20.1	18.8	23.3	26.3	28.1	29.9	29.5	26.5	33.2	26.9
Skilled	35.7	33.3	36.0	40.5	38.5	41.0	51.5	46.2	53.1	43.0
Total(b)	56.0	52.1	59.6	67.0	66.7	71.1	81.3	72.8	86.5	70.1
Humanitarian program	7.6	7.1	6.7	7.6	9.6	10.2	10.3	9.3	13.2	10.7
Non-program migration										
New Zealand	42.3	39.4	21.5	24.1	16.4	17.4	18.7	16.8	22.4	18.1
Other	1.5	1.4	1.2	1.3	1.2	1.3	1.3	1.1	1.3	1.1
Total	43.7	40.7	22.6	25.4	17.6	18.7	20.0	17.9	23.7	19.2
<b>Total</b>	<b>107.4</b>	<b>100.0</b>	<b>88.9</b>	<b>100.0</b>	<b>93.9</b>	<b>100.0</b>	<b>111.6</b>	<b>100.0</b>	<b>123.4</b>	<b>100.0</b>

(a) Data have not been adjusted for changes in traveller intention or multiple movement. (b) Includes Special Eligibility category.

Source: Department of Immigration and Multicultural Affairs, 'Immigration Update' (2002–03 and 2004–05).

In 2004–05, 27% of settlers (33,200) came as part of the family component of Australia's immigration program. The major country of birth regions were Europe (23%), south-east Asia (22%), north-east Asia (18%), southern Asia (10%) and north Africa and the Middle East (9%).

Of the 13,200 settlers arriving under the Humanitarian Program, the highest proportion were born in north Africa and the Middle East (61%), followed by sub-Saharan Africa (28%) and central Asia (6%).

In addition to the 99,700 settler arrivals under the Migration and Humanitarian Programs during 2004–05, there were a further 23,700 non-program (i.e. non-visaed) arrivals. Traditionally, non-program migrants are predominantly New Zealand citizens; they accounted for 94% of non-program migrants in 2004–05. Under the Trans-Tasman Agreement, New Zealand citizens are free to enter Australia without applying for a visa.

## Country of birth

Australia's population has increased each year since the end of World War II, due to a combination of high post-war fertility and high levels of migration. In 1901, 23% of Australia's population was born overseas. By 1947 the proportion of the overseas-born population had declined to 10%. The creation of a national government immigration portfolio in 1945

accompanied a gradual increase in the proportion of overseas-born Australians, and by 1995 this proportion had increased to 23%. In 2005 the number of overseas-born Australians passed 4.8 mill., representing almost one-quarter (24%) of the total population (table 5.40).

Over the past 25 years patterns of immigration have changed and the diversity of countries of birth has increased. Of the overseas-born population the United Kingdom remains the largest source country, despite having fallen from 36% of the overseas-born population in 1981 to 24% in 2005. Some of the older migrant streams, such as people born in Italy, Greece and the Netherlands, have declined in absolute numbers as their populations aged and the number of deaths exceeded net gains in population due to more recent migration.

In contrast, over the last 25 years the New Zealand-born population living in Australia nearly trebled, and in 2005 was the second largest overseas-born group (9% of the overseas-born population). There have also been large increases in people born in Asian countries. For example, the China-born population increased nearly eightfold, from 25,200 people in 1981 to 191,200 people in 2005 (making up 4% of the overseas-born population), while the Vietnam-born population increased fourfold, from 40,700 people in 1981 to 177,700 people in 2005 (also making up 4% of the overseas-born population).

#### 5.40 MAIN COUNTRIES OF BIRTH OF THE POPULATION

	1954(a)	1961(a)	1971(a)	1981(a)	1995(b)	2005(b)
	'000	'000	'000	'000	'000	'000
United Kingdom(c)	664.2	755.4	1 081.3	1 075.8	1 220.9	1 137.4
New Zealand	43.4	47.0	74.1	160.7	304.2	455.1
Italy	119.9	228.3	288.3	275.0	261.6	224.3
China	10.3	14.5	17.1	25.2	107.2	191.2
Vietnam	n.a.	n.a.	n.a.	40.7	157.8	177.7
India	12.0	14.2	28.7	41.0	80.0	138.7
Philippines	0.2	0.4	2.3	14.8	98.3	129.4
Greece	25.9	77.3	159.0	145.8	142.3	127.2
Germany	65.4	109.3	110.0	109.3	120.1	115.2
South Africa	6.0	7.9	12.2	26.5	58.8	113.8
Malaysia	2.3	5.8	14.4	30.5	82.8	100.3
Netherlands	52.0	102.1	98.6	95.1	96.1	87.7
Lebanon	3.9	7.3	23.9	49.4	77.1	85.3
Hong Kong (SAR of China)	1.6	3.5	5.4	15.3	76.6	76.2
Total overseas-born	1 285.8	1 778.3	2 545.9	2 950.9	4 164.1	4 829.5
<i>Australia</i>	<i>7 700.1</i>	<i>8 729.4</i>	<i>10 173.1</i>	<i>11 388.8</i>	<i>13 907.7</i>	<i>15 499.1</i>
<b>Total population(d)</b>	<b>8 986.5</b>	<b>10 508.2</b>	<b>12 719.5</b>	<b>14 516.9</b>	<b>18 071.8</b>	<b>20 328.6</b>

(a) Census counts. (b) Estimated resident population at 30 June. For 2005, data are preliminary. (c) Includes Ireland in 1954, 1961 and 1971. (d) Includes country of birth 'Not stated' and 'At sea'.

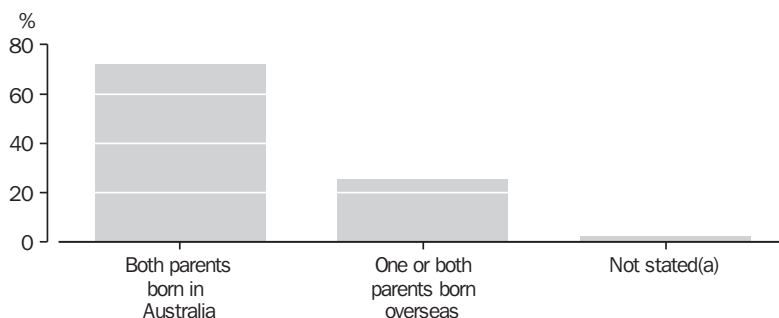
Source: *Migration, Australia (3412.0)*; ABS data available on request, *Estimated Resident Population*.

The 2001 Census showed that 3.5 mill. people born in Australia had at least one overseas-born parent, accounting for 26% of Australia's population (graph 5.41). Of these, 43% had both parents born overseas, 35% had their father (but not their mother) born overseas and 22% had their mother (but not their father) born overseas.

### Marriages, divorces and de facto relationships

Marriage rates in Australia have fluctuated since 1901, broadly in response to prevailing economic and social conditions, as well as changing age structure over time. The crude marriage rate (the number of marriages registered in a calendar year per 1,000 population) has fallen in times of depression or recession (e.g. in the 1930s) and

5.41 BIRTHPLACE OF PARENTS OF AUSTRALIAN-BORN PEOPLE — 2001



(a) Includes persons who stated one parent was Australian-born and did not state the birthplace of the other parent.

Source: ABS data available on request, *2001 Census of Population and Housing*.

increased at other times, such as during and immediately after the two world wars. Falls in the crude marriage rate since 1970 can be mainly attributed to changes in attitudes to marriage and living arrangements that have occurred since then.

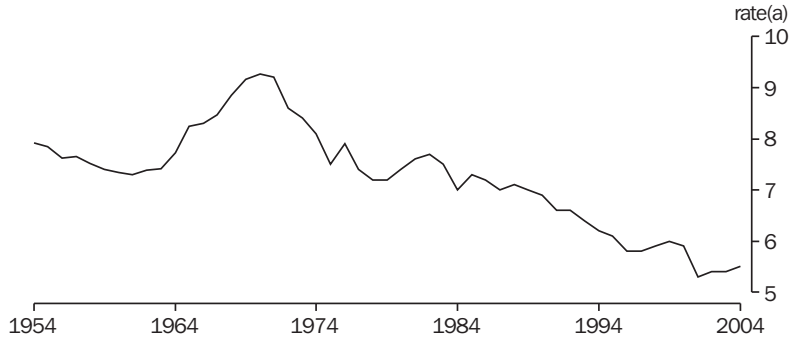
There were 111,000 marriages registered in Australia in 2004, resulting in a crude marriage rate of 5.5 marriages per 1,000 population. The highest crude marriage rate recorded was 12.0 marriages per 1,000 population in 1942. Fluctuations in the crude marriage rate between 1954 and 2004 are shown in graph 5.42.

Marriage rates for the unmarried population (per 1,000 not currently married men or women aged 15 years and over) have also fallen over time. In 1976 marriage rates for the unmarried

population were 63 per 1,000 unmarried men and 61 per 1,000 unmarried women. By 2001, these rates had declined to 31 and 28 respectively.

The trend towards older age at marriage continued in 2004. The median age at marriage for men was 32 years, rising from 29 years in 1994. For women the median age at marriage rose to 29 from 27 years in 1994. The median age at first marriage for men increased from 27 years in 1994 to 29 years in 2004, and for women from 25 years to 28 years (graph 5.43). Part of this increase can be attributed to the increasing incidence of de facto relationships. Another factor is young people staying in education longer.

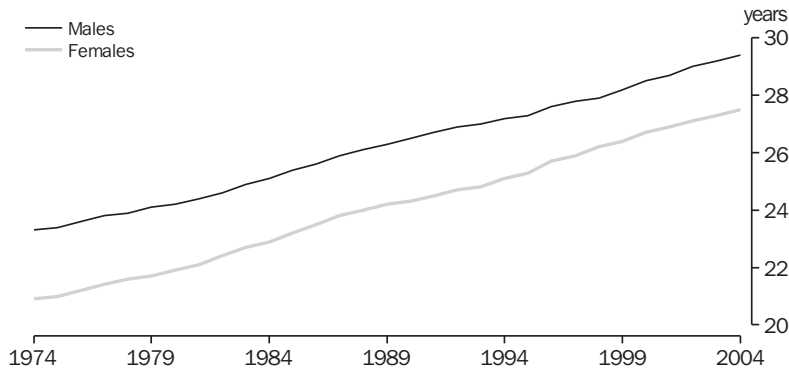
5.42 CRUDE MARRIAGE RATE



(a) Marriages per 1,000 population.

Source: Australian Social Trends (4102.0); Marriages, Australia (3306.0.55.001).

5.43 MEDIAN AGE AT FIRST MARRIAGE



Source: Marriages, Australia (3306.0.55.001).

Marriage data for 2004 reflects a continuation of a 30-year trend for more Australian couples to cohabit prior to entering a registered marriage. In 1975 only 16% of couples cohabited prior to marriage, while 76% of couples cohabited prior to marriage in 2004. Widowed males who remarried in 2004 were the least likely to have cohabited before marriage, with divorced males and females the most likely. Only 58% of widowed males and 64% of widowed females who remarried in 2004 cohabited before marrying their partner, while the proportion of divorced males and females who cohabited prior to remarriage was 81% and 82% respectively.

Table 5.44 shows summary measures for marriages between 1994 and 2004.

De facto relationships

Between 1996 and 2001, the census count of people aged 15 years and over in de facto relationships rose by 28% from 744,100 to 951,500. This was marginally higher than the increase between 1991 and 1996 (27%). In 2001, de facto partners represented 12% of all people living as socially married (up from 10% in 1996 and 8% in 1991) and 6% of all persons aged 15 years and over (up from 5% in 1996 and 4% in 1991). These rises may be due to both increases in the number of de facto partners and in the willingness of people to identify themselves as living in de facto relationships. In 2001 the median age of males in de facto relationships was 34.2 years while the median age of females was 31.8 years. In 1991 the comparative medians were 32.3 years and 29.7 years respectively. Graph 5.45 shows the age distribution of male and female partners in de facto relationships in 2001.

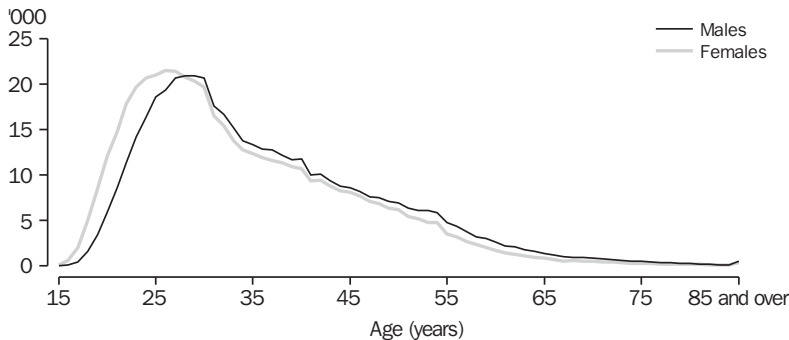
5.44 SELECTED SUMMARY MEASURES OF MARRIAGES

Year ended 31 December	Registered marriages '000	Crude marriage rate no.(a)	Median age at marriage	
			Bridegroom years	Bride years
1994	111.2	6.2	29.0	26.6
1995	109.4	6.1	29.2	26.8
1996	106.1	5.8	29.6	27.2
1997	106.7	5.8	29.7	27.5
1998	110.6	5.9	29.8	27.7
1999	114.3	6.0	30.1	27.9
2000	113.4	5.9	30.3	28.3
2001	103.1	5.3	30.6	28.6
2002	105.4	5.4	31.0	28.9
2003	106.4	5.4	31.2	29.1
2004	111.0	5.5	31.5	29.2

(a) Marriages per 1,000 population.

Source: *Marriages, Australia* (3306.0.55.001); *Marriages and Divorces, Australia* (3310.0).

5.45 DE FACTO PARTNERS(a) — 2001



(a) Opposite-sex couples only.

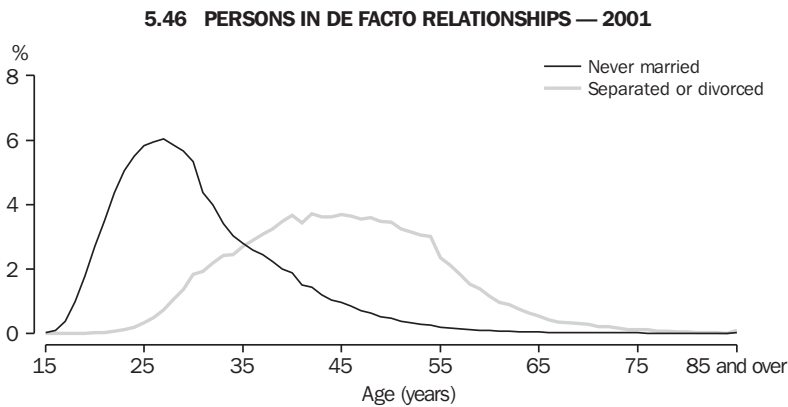
Source: ABS data available on request, *Census of Population and Housing*.

De facto partnering has arisen as an alternative living arrangement prior to or instead of marriage, and following separation, divorce or widowhood. Some couple relationships, such as that between a boyfriend and girlfriend who live together but do not consider their relationship to be marriage-like, are classified as de facto. Of all people in de facto relationships in 2001, 68% had never been in a registered marriage and 28% were either separated or divorced. The likelihood of being never married was higher among people aged under 35 years, counterbalanced by higher proportions of separated and divorced de facto partners aged 35 years and over (graph 5.46).

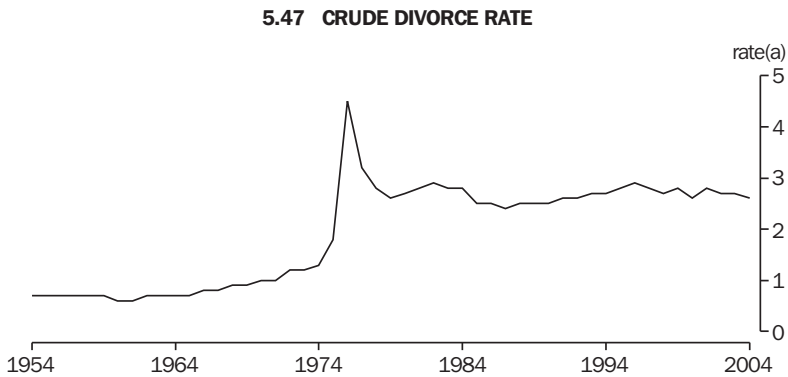
**Divorces**

For most of the 20th century there was a slow but steady rise in the crude divorce rate (the number of divorces in a calendar year per 1,000 population),

increasing from 0.1 divorces per 1,000 population for each year between 1901 and 1910 to 0.8 divorces per 1,000 population between 1961 and 1970. The most important factor involved in the higher divorce rates in the latter quarter of the century was the introduction of the *Family Law Act 1975* (Cwlth) which came into operation on 5 January 1976. This legislation allows only one ground for divorce – irretrievable breakdown of the marriage, measured as the separation of the spouses for at least one year. Following the implementation of this law there was a large increase in the divorce rate in 1976. The rate then declined over the next three years as the backlog of applications was cleared. Since then the crude divorce rate has remained between 2.4 and 2.9 divorces per 1,000 population (graph 5.47). In 2004 the crude divorce rate was 2.6 divorces per 1,000 population.



Source: ABS data available on request, 2001 Census of Population and Housing.



(a) Divorces per 1,000 population.

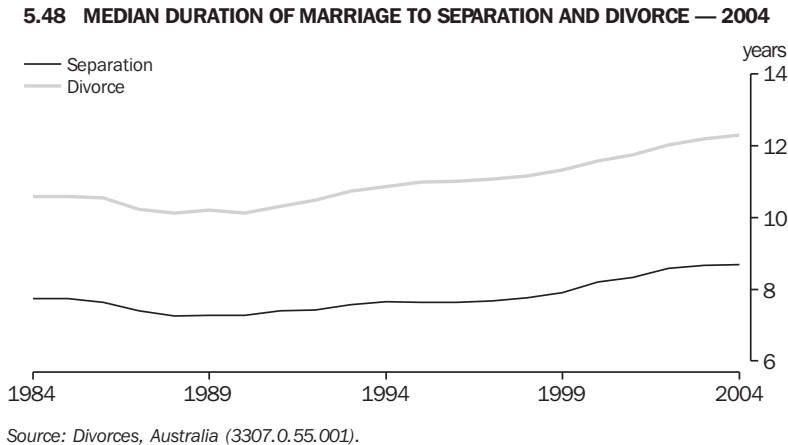
Source: Divorces, Australia (3307.0.55.001).

The most recent divorce rates based on the number of married men and women are for 2001. The divorce rate of the married population in 2001 was 13 divorces per 1,000 married men or women, slightly higher than the rate recorded in both 2000 and 1991 (of 12 divorces per 1,000 married men or women).

The median duration of marriage to both separation and divorce has increased since the late-1980s revealing that marriages are lasting longer on average (graph 5.48). In 2004 the median duration of marriage to separation was 8.7 years, compared with 7.6 years in 1994, while the median duration of marriage to divorce was 12.3 years, compared with 10.9 years in 1994.

In 2004, 6% of divorces involved separation within the first year of marriage, 33% within the first 5 years and a further 22% were separated within 5 to 9 years of marriage. Of divorcing couples in 2004, 16% were married less than 5 years, 25% between 5 and 9 years and 59% were married for 10 years or more. Around 16% of divorces occurred to couples who had been married for 25 years or more.

Table 5.49 shows summary measures for divorces granted in the period 1994 to 2004.



**5.49 SELECTED SUMMARY MEASURES OF DIVORCES**

	Divorces granted '000	Crude divorce rate no.(a)	Median age at divorce	
			Husband years	Wife years
1994	48.3	2.7	39.7	36.8
1995	49.7	2.8	40.0	37.1
1996	52.5	2.9	40.2	37.4
1997	51.3	2.8	40.3	37.6
1998	51.4	2.7	40.5	37.8
1999	52.6	2.8	40.9	38.2
2000	49.9	2.6	41.4	38.6
2001	55.3	2.9	41.8	39.1
2002	54.0	2.7	42.2	39.5
2003	53.1	2.7	42.6	39.9
2004	52.7	2.6	43.0	40.3

(a) Divorces per 1,000 population.

Source: Divorces, Australia (3307.0.55.001); Marriages and Divorces, Australia (3310.0).

# Households and families

At 30 June 2001 there were an estimated 7.4 mill. households in Australia which were home to an estimated 19.1 mill. people, or 98% of the resident population. Australian households changed considerably in number, size and composition over the last 90 years. During this period, the number of households increased on average by 2.4% per year, compared with an average population increase of 1.7% per year. This difference reflects a fall in average household size from 4.5 people per household in 1911 to 3.6 people per household in 1954 and 2.6 people per household in 2001 (graph 5.50). Much of this decline can be attributed to reductions in completed family size and the increase in one and two-person households. The number of one-person households has grown largely as a result of population ageing combined with longer life expectancy of women over men. Population ageing, increased childlessness among couples and an increase in the number of one-parent families also contributed to the increase in the number of two-person households.

## Families

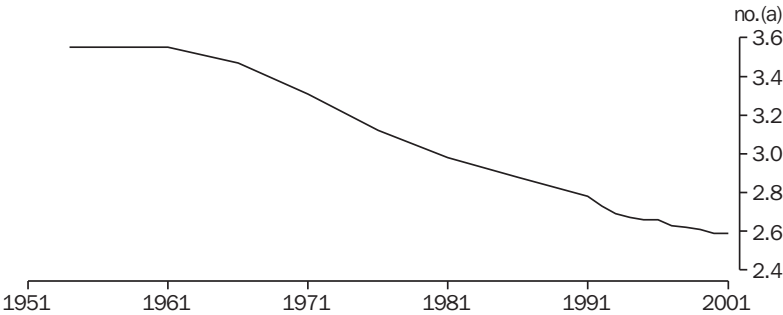
Over the past decade, there have also been changes in the types of families in Australia. The number of families increased from 4.3 mill. in 1991 to 4.9 mill. in 2001, with couple families with children the most common type of family over this period. However, as a proportion of all families, couple families with children decreased. In 1991

couple families with children made up 54% (2.3 mill. families) of all families while in 2001 this had decreased to 47% (also 2.3 mill. families). Other family types have significantly increased in number over the last 10 years. The number of couple families without children, comprising couples who have not yet had children and also those couples whose children have left home ('empty-nesters'), increased by 30%, from 1.4 mill. families in 1991 to 1.8 mill. families in 2001. One-parent families also increased, from 552,000 in 1991 to 763,000 in 2001, an increase of 38% (graph 5.51).

## Household and family projections

Household and family projections are estimates of future numbers of households and families based on assumptions about changing living arrangements of the population. The ABS has published three series of projections for the years 2001 to 2026 – Series I, II and III. In Series I, the pattern of living arrangements as determined from the 2001 Census is used throughout the projection period. In Series II and III, recent trends in living arrangements are incorporated into the projections. It should be noted that estimates of the numbers of families in 2001 in the discussion below are derived from 2001 estimated resident population data in conjunction with 2001 Census data, and therefore differ from the 2001 Census counts of families mentioned above.

5.50 AVERAGE HOUSEHOLD SIZE

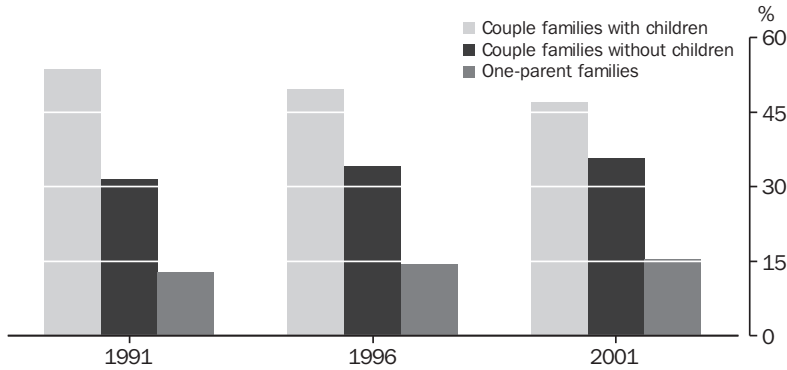


(a) Persons per household.

Source: ABS data available on request, Household Estimates; Australian Demographic Statistics (3101.0); Census of Population and Housing, 1954–1981.



### 5.51 FAMILIES, By selected family types



Source: ABS data available on request, Census of Population and Housing.

### Household types

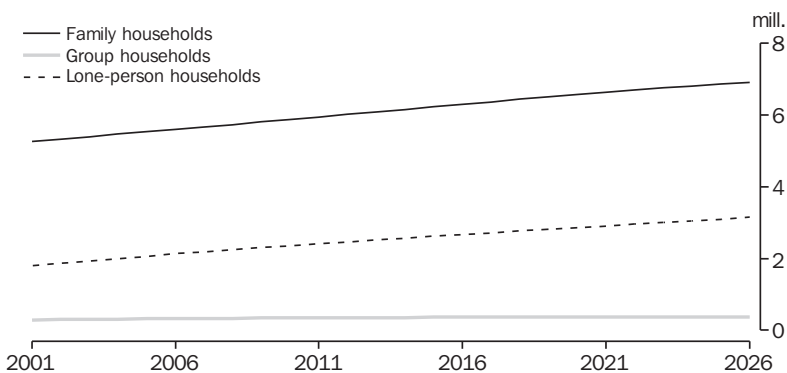
The projections show continuing growth in the number of households in Australia, from 7.4 mill. in 2001 to between 10.2 mill. and 10.8 mill. by 2026. This represents an overall increase of between 39% and 47% compared with population growth of 25% over the same period. As a result, average household size in Australia is projected to decrease from 2.6 people per household in 2001 to between 2.2 and 2.3 people per household in 2026.

The projected decrease in average household size reflects changes in the different types of households over the next 25 years. For example, lone-person households are projected to increase from 1.8 mill. (25% of all households) in 2001 to

between 2.8 mill. and 3.7 mill. (28% to 34% of all households) in 2026. This represents the fastest projected increase of all household types over this period. The ageing of the population coupled with the longer life expectancy of women over men, increases in separation and divorce, and the delay of marriage are some of the factors contributing to the growth in lone-person households.

Family households are projected to remain the most common type of household, increasing from 5.3 mill. in 2001 to between 6.7 and 7.0 mill. in 2026. However, as a proportion of all households, family households are projected to decrease from 72% in 2001 to between 62% and 69% in 2026 (graph 5.52).

### 5.52 PROJECTED NUMBER OF HOUSEHOLDS, SERIES II, By type



Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

## Family types

Between 2001 and 2026, the number of couple families with children is projected to increase slowly in both Series I and II, and to decrease in Series III. This scenario reflects a gradual trend away from this type of family and is related to increasing numbers of couple families without children (as a result of the ageing of the population, declining fertility and delayed childbirth) and increasing numbers of one-parent families (as a result of increased family break-up).

In 2001 there were 2.5 mill. couple families with children, accounting for just under half (47%) of all families in Australia. In Series I, which assumes current living arrangements of the population continue until 2026, this number is projected to increase to 3.0 mill. in 2026 (42% of all families). In Series III, which assumes changes in living arrangements observed between 1986 and 2001 continue at the full rate until 2026, the number is projected to decrease to 2.0 mill. (30% of all families) (table 5.53).

Couple families without children are projected to experience the largest and fastest increases of all family types in Australia. As a result, in Series II and III, couple families without children are projected to outnumber couple families with children in 2011 and 2010 respectively. From 1.9 mill. families in 2001 (36% of all families), couple families without children are projected to increase to between 2.9 mill. and 3.3 mill. families in 2026 (41% and 49% of all families respectively). This growth is primarily related to the ageing of the population, with 'baby boomers' becoming 'empty nesters', and to a lesser extent to delayed family formation and declining fertility of younger couples.

One-parent families are projected to increase from 838,000 families in 2001 to between 1.1 mill. and 1.4 mill. families in 2026. In 2001 the number of female one-parent families (698,000) was around five times the number of male one-parent families (140,000). This ratio is projected to continue throughout the projection period.

### 5.53 HOUSEHOLD AND FAMILY PROJECTIONS

	2001 '000	2026			Change from 2001 to 2026		
		Series I '000	Series II '000	Series III '000	Series I %	Series II %	Series III %
Households							
Family	5 269.0	7 030.1	6 920.0	6 714.9	33	31	27
Group	293.2	345.7	371.5	403.6	18	27	38
Lone-person	1 805.3	2 842.0	3 149.4	3 693.0	57	74	105
Total	7 367.5	10 217.9	10 440.9	10 811.5	39	42	47
Families							
Couple families with children	2 491.5	2 976.3	2 610.3	2 010.4	19	5	-19
Couple families without children	1 917.6	2 948.6	3 108.1	3 312.0	54	62	73
One-parent							
Male	139.8	188.2	202.7	223.2	35	45	60
Female	698.4	894.1	989.6	1 146.1	28	42	64
Total	838.2	1 082.3	1 192.3	1 369.3	29	42	63
Other families	98.7	126.3	111.2	122.2	28	13	24
Total	5 346.0	7 133.5	7 021.8	6 813.9	33	31	27
Population	19 413.2	24 201.8	24 201.8	24 201.8	25	25	25

Source: Household and Family Projections, Australia, 2001 to 2026 (3236.0).

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# 6

## LABOUR

The information contained in this chapter presents a picture of the labour market in Australia. Unlike other statistics that have a particular economic or social focus, labour statistics cut across both dimensions, and in so doing they provide useful insights into economic and community life in Australia.

This chapter provides a broad overview of the Australian labour market. It briefly describes key labour statistics concepts and measures (e.g. employment, unemployment, job vacancies, earnings, industrial disputes); highlights the main features of the Australian labour market in 2005–06; examines developments in the Australian labour market over the medium and long-term; and presents more detailed analysis of a number of issues impacting on the Australian labour market.

The chapter contains three articles – *Barriers and incentives to labour force participation*, *Retirement and retirement intentions* and *Locations of work*.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Labour market statistics

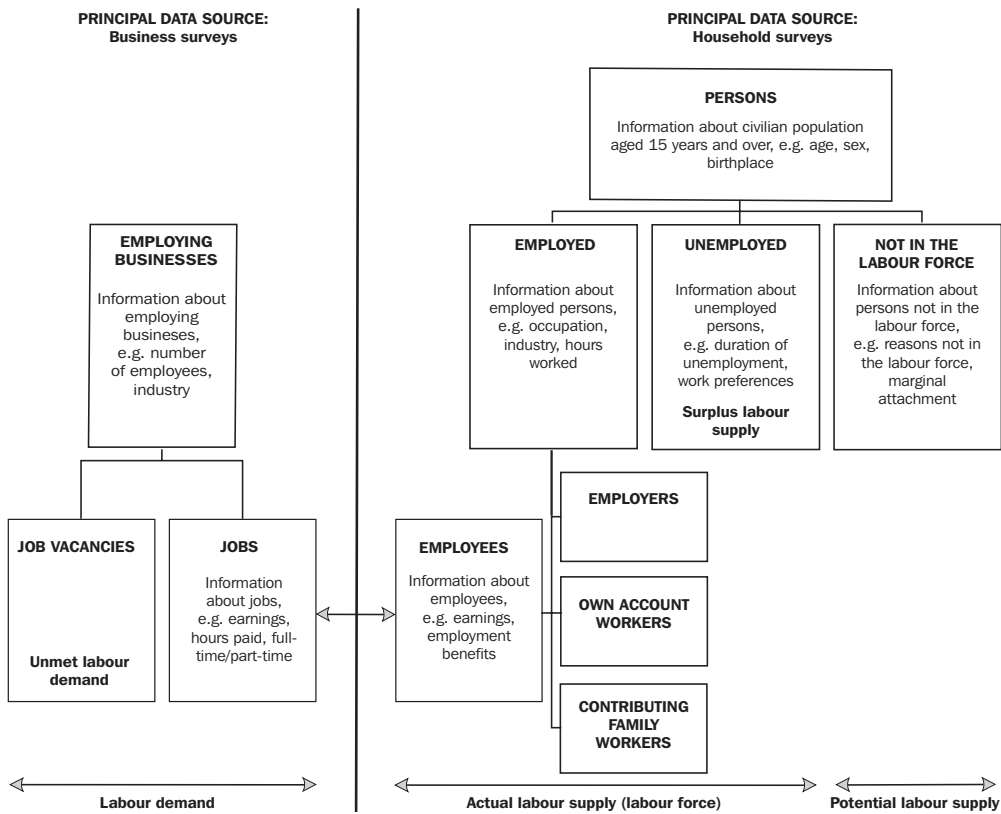
Most labour market statistics focus on some aspect of labour demand or labour supply. In Australia, surveys of businesses conducted by the Australian Bureau of Statistics (ABS) are the primary source of data on labour demand. The types of data collected through business surveys include labour costs, earnings and job vacancies. The ABS population censuses and household surveys constitute the primary sources of information about the size and characteristics of labour supply. Information obtained through these types of collections includes data on current and previous labour force experience, as well as demographic data such as age, sex, family type and country of birth. Diagram 6.1 illustrates how labour statistics, from ABS household and business surveys, relate to the labour market.

The concepts and definitions underlying Australian labour statistics are based on the conventions, recommendations and guidelines developed and maintained by the International Labour Organisation and the United Nations Statistical Office. Australian labour statistics comply in almost every respect with these international standards.

## Labour force

The labour force represents the key official measure of the total supply of labour available to the labour market during a given short reference period. It represents the labour available for the production of economic goods and services. Therefore, people in the labour force are also referred to as the 'currently economically active population'.

### 6.1 AUSTRALIAN LABOUR STATISTICS FRAMEWORK



Source: Labour Statistics: Concepts, Sources and Methods (6102.0.55.001).

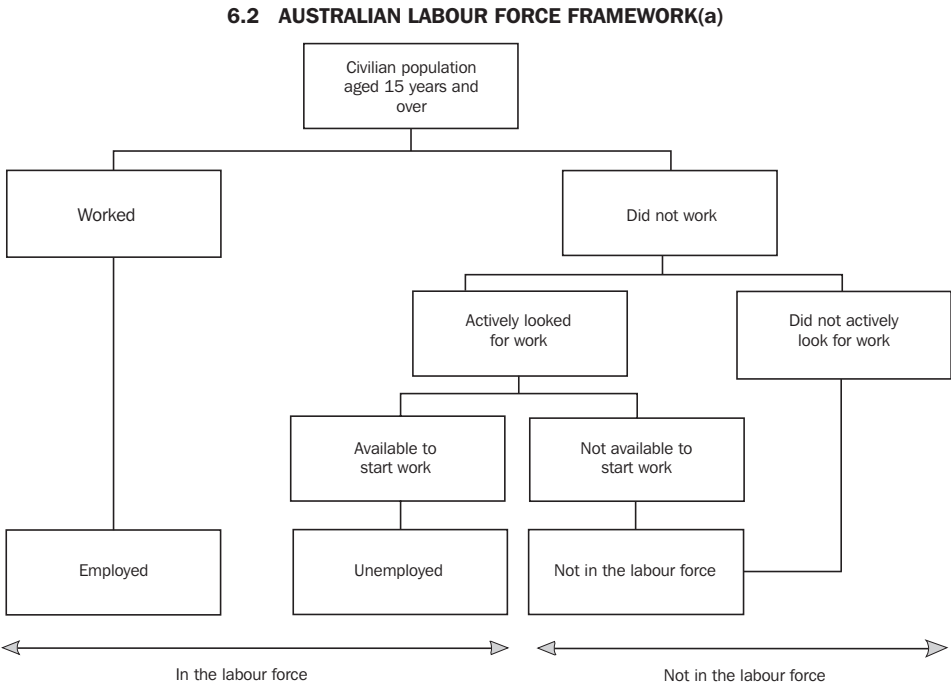
The Australian labour force framework classifies people into three mutually exclusive categories: employed; unemployed; and not in the labour force. The employed and unemployed categories together make up the labour force, which gives a measure of the number of people contributing to, or willing to contribute to, the supply of labour. The third category (not in the labour force) represents the currently inactive population. This framework is illustrated in diagram 6.2. Further details about the Australian labour force framework, and the specific criteria for classifying people to these three basic categories, are available in *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).

For the purpose of compiling Australian labour force statistics, the population is restricted to people in the civilian population aged 15 years and over. This practice is consistent with international guidelines for the collection of labour statistics.

### Characteristics of the labour force

The size and composition of the labour force are constantly changing. Changes in the size of the labour force are caused by changes in labour force participation as well as changes in the size and composition of the adult population. Between June 2005 and June 2006 the labour force grew by 1.7%. During the same period the civilian population aged 15 years and over grew by 1.4%. The difference between these two rates reflects an increase in the labour force participation rate over this period.

The labour force participation rate is one of the most important indicators for analysing the overall level of labour market activity. The participation rate is calculated by dividing the total number of people in the labour force by the total number of people in the civilian population aged 15 years and over. Analysis of participation rates, particularly by age, sex and family type, provides the basis for monitoring changes in the size and composition of the labour supply.



(a) This diagram provides a simple overview. The detailed rules for determining whether a person is classified as employed, unemployed or not in the labour force are outlined in 'Labour Statistics: Concepts, Sources and Methods' (6102.0.55.001).

Source: *Labour Statistics: Concepts, Sources and Methods* (6102.0.55.001).

During the last two decades the overall labour force participation rate has increased slowly, rising from 61.4% in 1985–86 to 64.5% in 2005–06. This long-term rise in the labour force participation rate has been driven by an increase in the female participation rate. The female participation rate increased from 47.4% in 1985–86 to 57.2% in 2005–06. In contrast, the male participation rate fell from 75.9% to 72.1% over the same period. Graph 6.3 shows male and female participation rates between 1985–86 and 2005–06, and illustrates the convergence of male and female participation rates over this period.

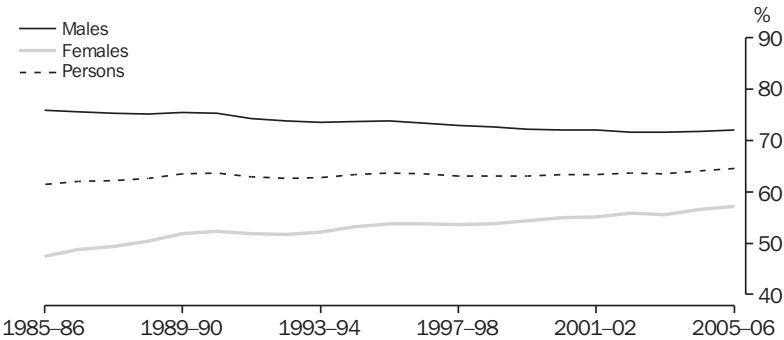
Underlying these contrasting trends in male and female participation rates are varying movements in the age-specific participation rates. As shown in table 6.4, male and female participation rates are similar in the 15–19 year age group. Participation rates for men and women then rise as young

people move from education and training to employment. For men, participation rates peak in the 25–34 and 35–44 year age groups, while female participation rates peak in the 20–24 year age group.

A comparison of age-specific participation rates for women between 1985–86 and 2005–06 indicates more women are participating in the labour force during their peak child-bearing years (the 25–34 year age group). In 1985–86, the participation rate for women aged 25–34 years was 59.3%. However, by 2005–06 this had increased to 72.5%.

Participation rates for men declined between 1985–86 and 2005–06 for almost all age groups. The exceptions were men aged 55–64 years (62.0% to 67.0%) and men aged 65 years and over (8.9% to 11.9%).

6.3 LABOUR FORCE PARTICIPATION RATES(a)



(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

6.4 LABOUR FORCE PARTICIPATION RATES(a), By age

Age group (years)	Males		Females	
	1985–86	2005–06	1985–86	2005–06
	%	%	%	%
15–19	61.4	58.8	60.0	61.3
20–24	90.4	85.5	74.9	77.9
25–34	94.8	91.4	59.3	72.5
35–44	94.7	91.4	63.1	73.6
45–54	89.9	88.1	52.2	75.9
55–64	62.0	67.0	20.8	46.1
65 and over	8.9	11.9	2.4	4.2
<b>Total</b>	<b>75.9</b>	<b>72.1</b>	<b>47.4</b>	<b>57.2</b>

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).



Table 6.5 shows changes in labour force status between 2001–02 and 2005–06. During this period the total number of people employed grew by 9.8% to 10 million. This comprised an increase of 8.9% in the level of full-time employment and an increase of 12.1% in the level of part-time employment. Part-time employed people now account for 29% of all employed people. Women dominate the part-time workforce, accounting for 72% of part-time workers.

The unemployment rate fell from 6.7% in 2001–02 to 5.1% in 2005–06. The unemployment rate for women was higher than for men in 2005–06 (5.2% compared with 5.0%).

Labour force participation, employment and unemployment vary across states and territories, and across capital cities and regional areas. Table 6.6 shows labour force status by state/territory and capital city/balance of state for 2005–06.

The Australian Capital Territory had the highest participation rate (72.3%) and lowest unemployment rate (3.2%) of all the states

and territories. Tasmania had the lowest participation rate (61.0%) and the highest unemployment rate (6.5%).

In New South Wales, Victoria, Queensland and Tasmania, the capital cities had lower unemployment rates and higher participation rates than the balance of state. However, both Adelaide and Perth had higher unemployment rates than the balance of state.

In 2005–06 there were 10.6 million people in the Australian labour force, of whom 25% were born overseas (table 6.7). The labour force participation rate of people born overseas was 58.6% compared with 68.2% for people born in Australia. People born in main-English speaking countries (United Kingdom, United States of America, Canada, New Zealand and South Africa) participated in the labour force at a higher rate than those born in other countries (64.8% compared with 55.0%). The unemployment rate for people born in main-English speaking countries (3.9%) was lower than that for both people born in Australia (5.0%) and people born in other than main-English speaking countries (6.1%).

### 6.5 LABOUR FORCE STATUS(a)

	Employed			Unemployed			Labour force	Civilian population	Unemployment rate	Participation rate
	Full time	Part time	Total	Full time	Part time	Total				
	'000	'000	'000	'000	'000	'000	'000	'000	%	%
MALES										
2001–02	4 369.4	732.6	5 101.9	317.6	64.7	382.3	5 484.2	7 610.8	7.0	72.1
2002–03	4 425.6	768.3	5 193.9	285.6	63.6	349.2	5 543.1	7 731.4	6.3	71.7
2003–04	4 526.8	781.7	5 308.5	259.1	57.2	316.3	5 624.8	7 854.7	5.6	71.6
2004–05	4 630.1	808.1	5 438.2	231.5	60.6	292.1	5 730.3	7 980.5	5.1	71.8
2005–06	4 724.6	818.7	5 543.3	229.8	61.6	291.3	5 834.6	8 094.3	5.0	72.1
FEMALES										
2001–02	2 225.3	1 840.9	4 066.2	182.1	99.0	281.0	4 347.3	7 892.2	6.5	55.1
2002–03	2 276.5	1 924.2	4 200.7	176.7	98.5	275.2	4 475.9	8 007.3	6.1	55.9
2003–04	2 313.6	1 937.4	4 251.0	170.8	98.9	269.7	4 520.6	8 132.2	6.0	55.6
2004–05	2 411.7	1 994.8	4 406.5	156.9	96.6	253.5	4 660.0	8 246.8	5.4	56.5
2005–06	2 455.8	2 066.8	4 522.5	150.5	97.7	248.1	4 770.7	8 347.1	5.2	57.2
PERSONS										
2001–02	6 594.7	2 573.4	9 168.1	499.6	163.7	663.3	9 831.5	15 503.0	6.7	63.4
2002–03	6 702.1	2 692.5	9 394.5	462.3	162.1	624.4	10 018.9	15 738.7	6.2	63.7
2003–04	6 840.3	2 719.1	9 559.5	430.0	156.0	586.0	10 145.5	15 986.9	5.8	63.5
2004–05	7 041.8	2 802.9	9 844.7	388.4	157.2	545.6	10 390.3	16 227.3	5.3	64.0
2005–06	7 180.4	2 885.4	10 065.8	380.2	159.3	539.5	10 605.3	16 441.4	5.1	64.5

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

### 6.6 LABOUR FORCE STATUS(a), By state and territory — 2005–06

	Employed full time '000	Total employed '000	Unemployed '000	Labour force '000	Civilian population aged 15 and over '000	Unemploy- ment rate %	Participation rate %
Capital city/balance of state							
Sydney	1 591.6	2 151.3	103.5	2 254.8	3 462.6	4.6	65.1
Balance of New South Wales	762.1	1 110.3	79	1 189.4	2 012.3	6.6	59.1
<i>New South Wales</i>	2 353.0	3 261.6	182.6	3 444.2	5 474.9	5.3	62.9
Melbourne	1 319.5	1 849.5	96.6	1 946.0	2 983.4	5.0	65.2
Balance of Victoria	443.1	644.9	43.8	688.7	1 113.1	6.4	61.9
<i>Victoria</i>	1 762.6	2 494.3	140.4	2 634.7	4 096.5	5.3	64.3
Brisbane	678.3	941.5	45.9	987.3	1 456.7	4.6	67.8
Balance of Queensland	761.9	1 063.4	59.0	1 122.4	1 724.2	5.3	65.1
<i>Queensland</i>	1 440.2	2 004.9	104.9	2 109.8	3 180.8	5.0	66.3
Adelaide	377.2	547.8	31.3	579.1	934.1	5.4	62.0
Balance of South Australia	135.6	195.7	8.2	203.9	328.3	4.0	62.1
<i>South Australia</i>	512.8	743.5	39.5	783.0	1 262.5	5.0	62.0
Perth	544.8	775.5	33.3	808.7	1 205.0	4.1	67.1
Balance of Western Australia	203.5	283.0	11.5	294.5	421.8	3.9	69.8
<i>Western Australia</i>	748.3	1 058.4	44.8	1 103.2	1 626.8	4.1	67.8
Hobart	63.8	95.7	5.9	101.5	165.5	5.8	61.3
Balance of Tasmania	87.1	127.6	9.6	137.2	225.7	7.0	60.8
<i>Tasmania</i>	151	223.3	15.4	238.7	391.2	6.5	61.0
<i>Northern Territory</i>	76.5	98.0	5.9	103.9	148.6	5.7	69.9
<i>Australian Capital Territory</i>	135.3	181.8	6.1	187.8	260.0	3.2	72.3
<b>Australia</b>	<b>7 180.4</b>	<b>10 065.8</b>	<b>539.5</b>	<b>10 605.3</b>	<b>16 441.4</b>	<b>5.1</b>	<b>64.5</b>

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

### 6.7 LABOUR FORCE STATUS(a), By birthplace(b) — 2005–06

	Employed full time '000	Total employed '000	Unemployed '000	Labour force '000	Not in the labour force '000	Unemployment rate %	Participation rate %
Born in Australia	5 321.0	7 551.3	401.3	7 952.6	3 709.9	5.0	68.2
Born overseas	1 859.5	2 514.5	138.2	2 652.7	1 870.4	5.2	58.6
Main-English speaking countries	793.2	1 056.5	42.8	1 099.2	598.0	3.9	64.8
Other than main-English speaking countries	1 066.3	1 458.0	95.4	1 553.5	1 272.3	6.1	55.0
<b>Total</b>	<b>7 180.4</b>	<b>10 065.8</b>	<b>539.5</b>	<b>10 605.3</b>	<b>5 580.2</b>	<b>5.1</b>	<b>64.5</b>

(a) Annual averages. (b) Excludes persons in institutions.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

Table 6.8 provides an overview of the labour force status of people at June 2006, according to the family relationship within the household. For couple families with dependants present, 85% of husbands (or male partners) were employed full time compared with 27% of wives (or female partners). A further 38% of wives were employed

part time. Just over half (52%) of male lone parents with dependants were employed full time compared with 24% of female lone parents with dependants. The unemployment rates for husbands and wives were lower than for all other groups of males and females.

## 6.8 LABOUR FORCE STATUS, By relationship in household — June 2006

	Employed full time '000	Total employed '000	Unem- ployed '000	Labour force '000	Not in the labour force '000	Civilian population aged 15 and over '000	Unemploy- ment rate %	Participation rate %
<b>MALES</b>								
Family member	3 891.4	4 573.5	201.5	4 775.0	1 624.1	6 399.1	4.2	74.6
Husband or partner	3 209.0	3 563.8	88.3	3 652.0	1 154.6	4 806.6	2.4	76.0
With dependants	1 822.5	1 949.7	49.9	1 999.6	152.5	2 152.0	2.5	92.9
Without dependants	1 386.5	1 614.1	38.4	1 652.5	1 002.1	2 654.6	2.3	62.2
Lone parent	73.6	88.2	9.3	97.5	41.6	139.1	9.5	70.1
With dependants	44.0	56.2	6.9	63.1	21.2	84.3	10.9	74.8
Without dependants	29.6	32.0	2.4	34.4	20.3	54.7	7.0	62.8
Dependent student	12.0	199.4	31.5	230.9	267.4	498.3	13.7	46.3
Non-dependent child(a)	516.2	621.4	61.9	683.4	102.9	786.2	9.1	86.9
Other family person	80.6	100.7	10.5	111.2	57.7	168.9	9.5	65.8
Non-family member	689.4	831.9	57.9	889.8	418.7	1 308.5	6.5	68.0
Lone person	429.2	501.2	41.1	542.2	329.9	872.1	7.6	62.2
Not living alone	260.2	330.8	16.8	347.6	88.8	436.4	4.8	79.6
Relationship in household not determined	155.2	195.8	13.8	209.7	231.2	440.9	6.6	47.6
<b>Total</b>	<b>4 736.0</b>	<b>5 601.3</b>	<b>273.2</b>	<b>5 874.5</b>	<b>2 274.0</b>	<b>8 148.5</b>	<b>4.7</b>	<b>72.1</b>
<b>FEMALES</b>								
Family member	1 945.0	3 810.7	203.2	4 014.0	2 563.6	6 577.6	5.1	61.0
Wife or partner	1 431.8	2 731.3	88.9	2 820.2	1 849.4	4 669.6	3.2	60.4
With dependants	569.3	1 361.0	51.4	1 412.3	666.0	2 078.3	3.6	68.0
Without dependants	862.5	1 370.4	37.5	1 407.9	1 183.4	2 591.3	2.7	54.3
Lone parent	178.8	353.3	47.3	400.6	296.5	697.1	11.8	57.5
With dependants	119.9	269.4	43.2	312.6	182.0	494.6	13.8	63.2
Without dependants	58.9	83.9	4.1	88.0	114.5	202.5	4.7	43.5
Dependent student	6.2	263.1	30.2	293.3	238.9	532.2	10.3	55.1
Non-dependent child(a)	270.6	375.1	30.0	405.1	63.2	468.3	7.4	86.5
Other family person	57.5	87.9	6.8	94.7	115.7	210.4	7.2	45.0
Non-family member	444.5	625.6	29.9	655.5	698.2	1 353.6	4.6	48.4
Lone person	299.7	413.5	17.6	431.1	616.1	1 047.2	4.1	41.2
Not living alone	144.9	212.1	12.3	224.4	82.0	306.4	5.5	73.2
Relationship in household not determined	97.2	160.2	8.7	168.9	294.9	463.8	5.2	36.4
<b>Total</b>	<b>2 486.8</b>	<b>4 596.5</b>	<b>241.9</b>	<b>4 838.4</b>	<b>3 556.6</b>	<b>8 395.0</b>	<b>5.0</b>	<b>57.6</b>
<b>PERSONS</b>								
Family member	5 836.4	8 384.3	404.7	8 789.0	4 187.7	12 976.7	4.6	67.7
Husband, wife or partner	4 640.8	6 295.1	177.1	6 472.3	3 004.0	9 476.2	2.7	68.3
With dependants	2 391.8	3 310.7	101.3	3 411.9	818.4	4 230.4	3.0	80.7
Without dependants	2 249.1	2 984.5	75.9	3 060.3	2 185.5	5 245.8	2.5	58.3
Lone parent	252.4	441.5	56.6	498.1	338.1	836.1	11.4	59.6
With dependants	163.9	325.6	50.1	375.6	203.3	578.9	13.3	64.9
Without dependants	88.5	115.9	6.5	122.4	134.8	257.2	5.3	47.6
Dependent student	18.3	462.5	61.7	524.3	506.3	1 030.5	11.8	50.9
Non-dependent child(a)	786.9	996.5	92.0	1 088.5	166.0	1 254.5	8.4	86.8
Other family person	138.1	188.6	17.3	205.9	173.4	379.3	8.4	54.3
Non-family member	1 133.9	1 457.5	87.8	1 545.3	1 116.9	2 662.1	5.7	58.0
Lone person	728.9	914.6	58.7	973.3	946.0	1 919.3	6.0	50.7
Not living alone	405.1	542.9	29.1	572.0	170.9	742.8	5.1	77.0
Relationship in household not determined	252.4	356.0	22.6	378.6	526.1	904.7	6.0	41.8
<b>Total</b>	<b>7 222.8</b>	<b>10 197.8</b>	<b>515.1</b>	<b>10 712.9</b>	<b>5 830.7</b>	<b>16 543.5</b>	<b>4.8</b>	<b>64.8</b>

(a) Aged 15 years and over.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

## Employed people

People are considered to be employed if they were in paid work or helped in a family business, for one hour or more in the reference week of the monthly Labour Force Survey (LFS) conducted by the ABS. Those people who were absent from work in the reference week of the survey are also considered to be employed, unless they had been on unpaid leave for more than four weeks. This section contains information about people who are employed, including whether they worked full time or part time, the industry and occupation they worked in, and the characteristics of their employment arrangements.

Relating employment levels to population levels enables evaluation of the strength of job growth compared with population growth. The measure relating these two levels is the employment to population ratio. Its usefulness lies in the fact that, while movements in the employment level reflect net changes in the level of people holding jobs, movements in the ratio reflect net changes in the number of people employed relative to changes in the size of the population.

The overall employment to population ratio rose from 59.1% in 2001–02 to 61.2% in 2005–06 (table 6.9). In 2005–06 the employment to population ratio for men was considerably higher than for women (68.5% compared with 54.2%), which reflects the higher participation of men in the labour force.

### Full-time and part-time employment

Employed people are regarded as either full-time or part-time workers depending on the number of hours worked. Full-time workers are those who:

- usually work 35 hours or more per week in all jobs, or
  - usually work less than 35 hours a week but actually worked 35 hours or more during the reference week of the LFS.
- Part-time workers are those who usually work less than 35 hours a week and either did so during the reference week, or were not at work during the reference week.
- Graph 6.10 shows annual percentage changes in part-time and full-time employment since 1985–86. For most of this period, part-time employment increased at a greater rate than full-time employment. As a result, the proportion of people employed part-time rose from 18% in 1985–86 to 29% in 2005–06. Full-time employment grew at a faster rate than part-time employment between 2002–03 and 2003–04, the first time this had happened since the commencement of the monthly LFS in 1978. However, the past year has seen a return to the previous trend, with part-time employment growing at a rate of 2.9% in 2005–06 compared with full-time employment which increased by 2.0%.
- Following a period of strong economic growth in the late-1980s, and the subsequent economic downturn of the early-1990s, employment growth fluctuated considerably. In 1988–89 growth in full-time employment peaked at 3.6%. Part-time employment grew strongly in 1986–87 (8.4%) and 1989–90 (8.2%). Subsequently the rate of growth of full-time and part-time employment began to slow. At the onset of the economic downturn in 1990–91, full-time employment fell by 1.6%. The impact of the downturn and its effects on the demand for labour intensified in 1991–92 when full-time employment fell more strongly (down 3.4%). At the same time, the rate of growth of part-time employment increased slightly from 3.2% in 1990–91 to 3.8% in 1991–92. A similar pattern was evident in 2001–02, when a decrease in full-time employment was accompanied by growth in part-time employment.

**6.9 EMPLOYED PERSONS, Employment to population ratios(a)**

	2001–02	2002–03	2003–04	2004–05	2005–06
	%	%	%	%	%
Males	67.0	67.2	67.6	68.1	68.5
Females	51.5	52.5	52.3	53.4	54.2
<b>Persons</b>	<b>59.1</b>	<b>59.7</b>	<b>59.8</b>	<b>60.7</b>	<b>61.2</b>

(a) The employment to population ratio for any group is the annual average number of employed persons expressed as a percentage of the annual average civilian population aged 15 years and over in the same group.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

## 6.10 EMPLOYED PERSONS, Change in annual average employment



Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

In 2005–06 there were 10.1 million employed people, with 71% working full time (table 6.11). Men were far more likely than women to work full time (85% and 54% respectively). Part-time work was most prevalent among the younger (aged 15–19 years) and older (65 years and over) age

groups (66% and 54% respectively). For women, at least a third of each age group worked part time, with the 20–24 years and 25–34 years age groups having the lowest proportion of part-time workers (38% and 34% respectively).

## 6.11 EMPLOYED PERSONS(a), Full-time and part-time workers — 2005–06

	Units	Age group (years)								Total
		15-19	20-24	25-34	35-44	45-54	55-59	60-64	65 and over	
MALES										
Full-time workers	'000	156.9	443.2	1 131.4	1 217.6	1 091.0	401.8	205.1	77.4	4 724.6
Part-time workers	'000	195.5	136.2	106.6	100.8	97.8	60.2	56.0	65.6	818.7
Total	'000	352.4	579.4	1 238.0	1 318.3	1 188.8	462.0	261.2	143.1	5 543.3
Proportion of part-time workers	%	55.5	23.5	8.6	7.6	8.2	13.0	21.5	45.9	14.8
FEMALES										
Full-time workers	'000	81.0	321.6	643.2	551.1	592.9	184.4	64.6	17.0	2 455.8
Part-time workers	'000	275.9	198.4	336.6	515.3	446.1	163.8	86.6	44.1	2 066.8
Total	'000	356.9	520.0	979.8	1 066.4	1 038.9	348.1	151.3	61.1	4 522.5
Proportion of part-time workers	%	77.3	38.1	34.4	48.3	42.9	47.0	57.3	72.1	45.7
PERSONS										
Full-time workers	'000	237.9	764.9	1 774.6	1 768.6	1 683.9	586.2	269.8	94.5	7 180.4
Part-time workers	'000	471.4	334.5	443.2	616.1	543.9	223.9	142.7	109.7	2 885.4
Total	'000	709.3	1 099.4	2 217.8	2 384.7	2 227.8	810.1	412.5	204.2	10 065.8
Proportion of part-time workers	%	65.8	30.4	20.0	25.8	24.4	27.6	34.6	53.7	28.7

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

# Employment by industry and occupation

The distribution of employed people across industries and occupations, and the changes over time, provide an important insight into the structure of the labour market. Graph 6.12 shows the proportion of employed people, by industry, for the years 1990–91 and 2005–06.

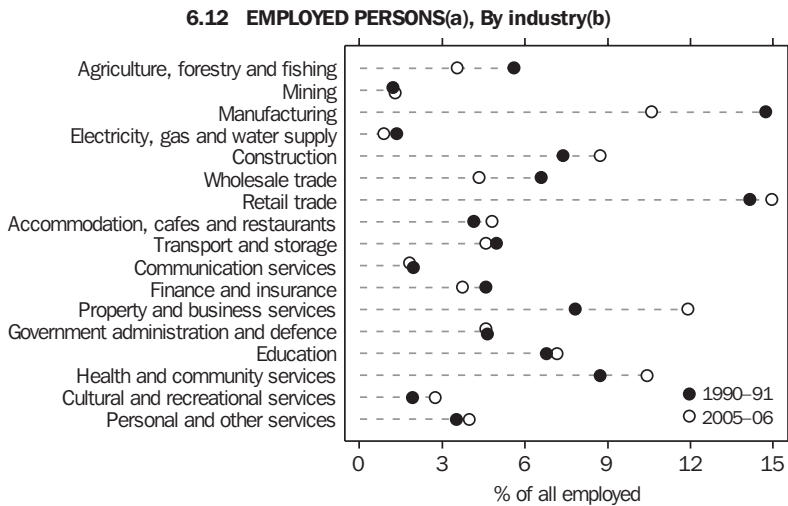
Since 1990–91 the industry composition of the labour market has changed considerably. Historically, the Manufacturing industry has been the largest employing industry, but its contribution to the number of employed people has been declining. As recently as 1990–91, the Manufacturing industry was the largest employer. However, in 2005–06, it was third after the Retail trade and Property and business services industries, which had 15% and 12% of employed people respectively. Manufacturing employment fell from 15% of all employed people in 1990–91 to 11% in 2005–06. The proportion of people employed in the Wholesale trade industry also fell over this period, from 7% to 4%.

Over the period 1990–91 to 2005–06, service-based industries increased their share of employed people to the point where the two largest industries were service industries. The increase was greatest in the Property and business services industry (from 8% to 12%) while

Construction rose from 7% to 9%, Health and community services rose from 9% to 10%, and Retail trade from 14% to 15%.

Table 6.13 shows the proportion of employed people in each broad occupation category by age group, for 2005–06. The most common occupation group was Professionals (19%), followed by Intermediate clerical, sales and service workers (17%). Advanced clerical and service workers was the least prevalent occupation group (4%).

There is a correlation between age and occupation, with a higher proportion of younger workers employed in the lower-skilled occupations, and a higher proportion of older workers employed in the more highly-skilled occupations. For example, less than 1% of workers in the 15–19 year age group and less than 2% of the 20–24 year age group were mainly engaged as Managers and administrators, while at the other end of the age spectrum, in the age group 65 years and over, 24% were employed in this occupation group. In the 15–19 year age group, 40% of employed people were engaged as Elementary clerical, sales and service workers, and a further 16% as Intermediate clerical, sales and service workers. The proportion of 20–24 year olds employed as Elementary clerical, sales and service workers (16%) was considerably lower than the proportion of 15–19 year olds employed in this occupation group. In contrast, there was a



(a) Annual average of quarterly data. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003).

### 6.13 EMPLOYED PERSONS(a) — 2005–06

Occupation group(b)	Units	Age group (years)								Total
		15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	
Managers and administrators	%	0.3	1.8	6.8	9.8	10.9	11.8	12.9	23.5	8.4
Professionals	%	1.9	13.2	23.5	21.2	22.0	19.0	20.0	20.6	19.4
Associate professionals	%	3.8	9.8	13.3	13.9	13.7	12.8	12.0	11.7	12.4
Tradespersons and related workers	%	14.9	16.6	13.8	12.4	10.9	10.2	11.2	7.9	12.7
Advanced clerical and service workers	%	0.9	2.9	4.4	4.6	4.0	5.0	4.1	4.8	4.0
Intermediate clerical, sales and service workers	%	15.7	23.1	16.9	15.7	15.9	15.2	12.9	8.9	16.5
Intermediate production and transport workers	%	7.3	7.0	7.2	8.8	8.7	9.4	9.9	7.2	8.2
Elementary clerical, sales and service workers	%	39.9	15.9	6.9	6.0	6.1	7.2	7.0	6.2	9.8
Labourers and related workers	%	15.4	9.7	7.1	7.7	7.7	9.4	10.0	9.1	8.6
Persons	'000	700.9	1 093.7	2 213.7	2 380.2	2 228.9	809.4	411.9	203.4	10 042.1

(a) Annual average of quarterly data. (b) Occupation group of main job; classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: *Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003).

much higher proportion of 20–24 year olds than 15–19 year olds employed as Intermediate clerical, sales and service workers (23%).

There are large gender differences in occupations. Women workers are more likely to be mainly engaged in clerical occupations groups, such as Advanced clerical and service workers; Intermediate clerical, sales and service workers; and Elementary clerical, sales and service workers. Men are more likely to be employed in the trade occupations, including Tradespersons and related workers, and Intermediate production and

transport workers (graph 6.14). For example, 21% of men were employed as Tradespersons and related workers compared with 3% of women, while 26% of women were employed as Intermediate clerical, sales and service workers compared with 8% of men. In the more highly-skilled occupations a higher proportion of men were employed as Managers and administrators (11% compared with 5% of women), while a higher proportion of women were employed as Professionals (22% compared with 17% of men).

### 6.14 EMPLOYED PERSONS(a), By occupation(b) — 2005–06



(a) Annual average of quarterly data. (b) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: *Labour Force, Australia, Detailed, Quarterly* (6291.0.55.003).



# Characteristics of employment

Working life in Australia continues to change. There are more diverse employment arrangements, more flexible working-time patterns, and more people working part-time hours. This section looks at the types of arrangements people are employed under, and the hours they work.

## Employment type

The ABS has developed a time series on the types of employment that people have, including employees (excluding owner managers of incorporated enterprises) who are not entitled to paid sick or holiday leave ('casual' employees) and people who operate their own business. The series was derived by combining data from the LFS and the annual Survey of Employee Earnings, Benefits and Trade Union Membership, conducted by the ABS. Employed people were classified to one of five employment types on the basis of their main job, that is, the job in which they usually

worked the most hours. The employment types are: employees with paid leave entitlements; employees without paid leave entitlements; owner managers of incorporated enterprises; owner managers of unincorporated enterprises; and contributing family workers. (For more detail see the article 'Changes in types of employment', *Australian Labour Market Statistics*, Oct 2004, (6105.0).)

Of the 10 million employed people at August 2005, over half (60%) were employees with paid leave entitlements (table 6.15). Other large groups were employees without paid leave entitlements (20%) and owner managers of unincorporated enterprises (13%).

Although the proportion of employed people who worked as employees with paid leave entitlements was the same for men and women (60%), more women were employees without paid leave entitlements (25%) than men (15%). The proportion of men working in their own business was higher than for women (25% compared with 14%).

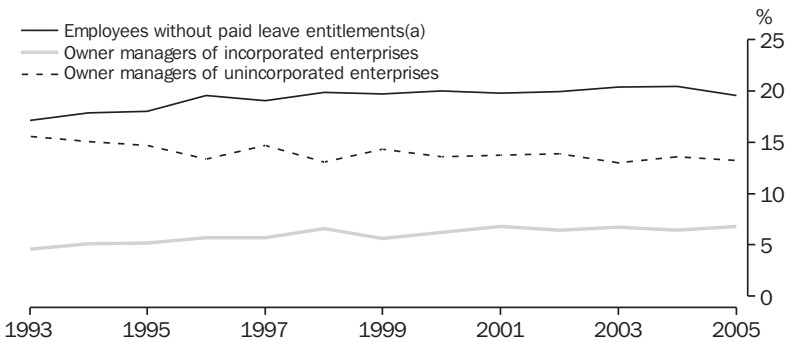
6.15 EMPLOYED PERSONS, By type of employment – August 2005

	Employees(a) with paid leave entitlements	Employees(a) without paid leave entitlements	Owner managers of incorporated enterprises	Owner managers of unincorporated enterprises	Contributing family workers	Total
	%	%	%	%	%	'000
Males	60.3	14.9	8.7	15.9	0.2	5 489.8
Females	60.0	25.3	4.5	9.9	0.4	4 486.9
Persons	60.2	19.5	6.8	13.2	0.3	9 976.7

(a) Excluding owner managers of incorporated enterprises.

Source: *Australian Labour Market Statistics*, Datacubes (6105.0).

6.16 TYPES OF EMPLOYMENT, Proportion of employed — August



(a) Excluding owner managers of incorporated enterprises.

Source: *Australian Labour Market Statistics*, Datacubes (6105.0).

Employees without paid leave entitlements rose as a proportion of total employment, from 17% in 1993 to 20% in 1998. Since 1998 the proportion has remained relatively stable. Although owner managers as a proportion of the total employed remained stable between 1993 and 2005, the division between incorporated and unincorporated enterprises has changed. Owner managers of incorporated enterprises increased as a proportion of total employed from 5% in 1993 to 7% in 2005, while owner managers of unincorporated enterprises fell as a proportion of total employed from 16% in 1993 to 13% in 2005.

### Hours worked

Hours worked statistics have a wide range of uses, including the calculation of labour productivity, and monitoring working conditions. Information on hours worked allows the ABS to classify employed people as full time or part time, and also to identify underemployed people (in conjunction with information about wanting to work more hours).

The LFS now records weekly hours worked data for employed people on three different bases:

- *Actual hours worked in all jobs*  
Refers to hours actually worked in the survey reference week, including overtime and excluding time off.
- *Actual hours worked in main job*  
Refers to hours actually worked in the survey reference week (including overtime and excluding any time off) in the job in which the most hours are usually worked.

- *Usual hours worked in all jobs*  
Refers to the hours usually worked per week by an employed person.

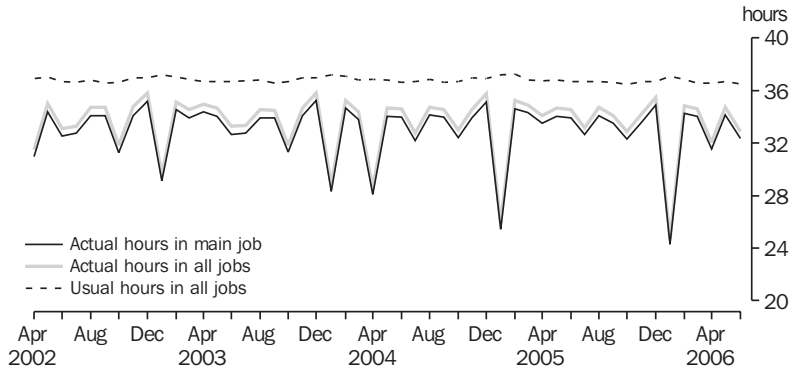
Data for the latter two measures are available from April 2001, while the first measure has been collected since the national LFS began in the 1960s.

Graph 6.17 shows average weekly hours worked for employed people for the three measures of hours worked. Average weekly hours worked is defined as aggregate hours worked by employed people during the reference week divided by the number of employed people.

The two average weekly hours actually worked measures are influenced by seasonal factors (e.g. customs in taking leave at particular times of the year), economic factors (e.g. workplace-related influences such as seasonal employment), and absences from work due to public holidays, sickness, irregular shifts, etc. Large movements occur around the months of January, April and October. The average weekly hours worked in main job series closely follows the average weekly hours worked in all job series, but at a slightly lower level. This indicates that the number of hours worked in second and subsequent jobs, averaged across all employed people, is relatively small.

Average weekly hours usually worked in all jobs exhibits much lower levels of variability over the period since April 2002. This is because the usual hours worked series is not affected by the seasonal factors and absences from work that lead to fluctuations in the actual hours worked series.

6.17 EMPLOYED PERSONS, Average weekly hours worked



Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

Actual hours worked in all jobs

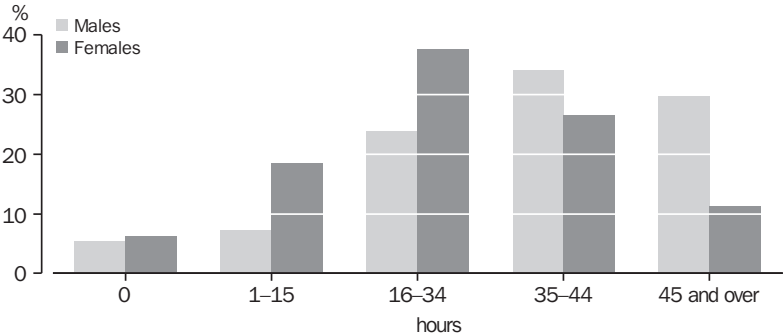
In June 2006, 34% of employed men actually worked between 35 and 44 hours per week, and a further 30% actually worked 45 hours or more per week (graph 6.18). In contrast, women were most likely to have worked between 16 and 34 hours per week (37%), or between 35 and 44 hours (27%). Women who actually worked 45 hours or more per week made up 11% of all employed women.

Average weekly hours actually worked by full-time employed people rose from 39.1 hours in 1985–86 to a peak of 41.4 hours in 1999–2000, an increase

of 6% (graph 6.19). In 2005–06, full-time employed people worked an average of 40.1 hours per week, down from the 40.7 hours per week recorded in 2004–05.

From 1985–86 to 2005–06 there was a steady increase in the number of hours actually worked by part-time workers as a proportion of the total number of hours actually worked (graph 6.20). In 1985–86, 8% of all hours actually worked were in part-time employment; by 2005–06 this proportion had risen to 14%. For men, 6% of the total number of hours actually worked were in part-time employment in 2005–06, whereas for women the proportion was much greater (27%).

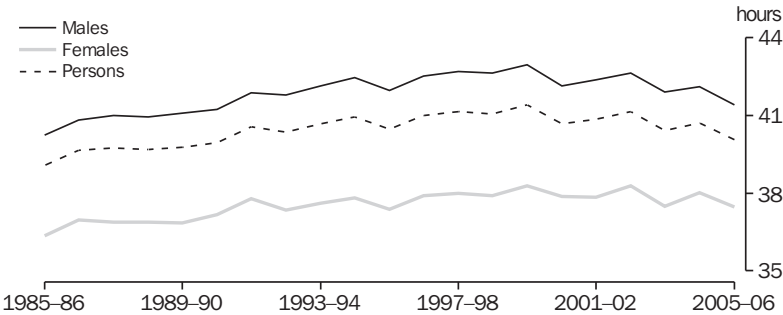
6.18 EMPLOYED PERSONS(a), Actual hours worked in all jobs — June 2006



(a) Includes employed persons who were away from work during the survey reference week.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

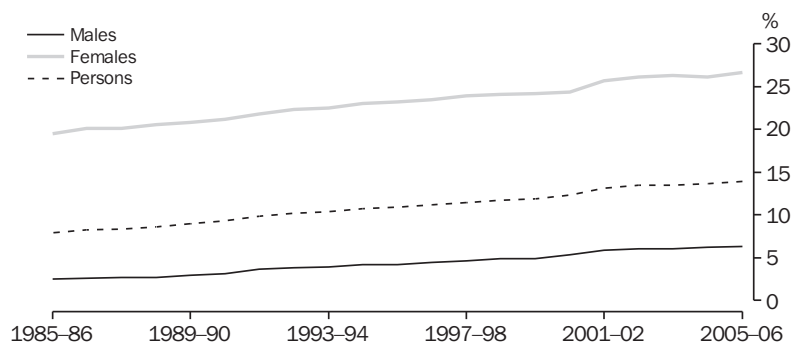
6.19 AVERAGE WEEKLY ACTUAL HOURS WORKED(a), Full-time employed persons(b)



(a) Annual average. (b) Includes employed persons who were away from work during the survey reference week.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

## 6.20 PART-TIME HOURS AS A PROPORTION OF TOTAL ACTUAL HOURS WORKED(a)



(a) Annual average.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

## Usual hours worked in all jobs

The usual hours worked in all jobs by full-time employed persons declined slightly from 2001–02 to 2005–06, from 44.5 hours per week to 44.1 hours per week. Graph 6.22 shows average weekly hours usually worked in all jobs, by occupation, for full-time employed people. In 2005–06, Managers and administrators had the highest average weekly usual hours for full-time employed men (51.0 hours per week) and women (46.3), followed by Associate professionals (47.3 and 43.6). The occupation with the lowest average weekly hours for full-time employed people usually worked was Elementary clerical, sales and service workers (42.4 hours per week for men and 39.0 hours per week for women). The next lowest average weekly hours usually worked for full-time employed men was Advanced clerical and service workers (42.7 hours per week), and Intermediate clerical, sales and service workers for full-time employed women (39.6 hours per week).

The overall average weekly hours usually worked for men (41.4) was over ten hours greater than for women (30.9) (table 6.21). This was partly due to men working longer average weekly hours in full-time employment (45.4) than women (41.4), and also because women were more likely to work part time than men.

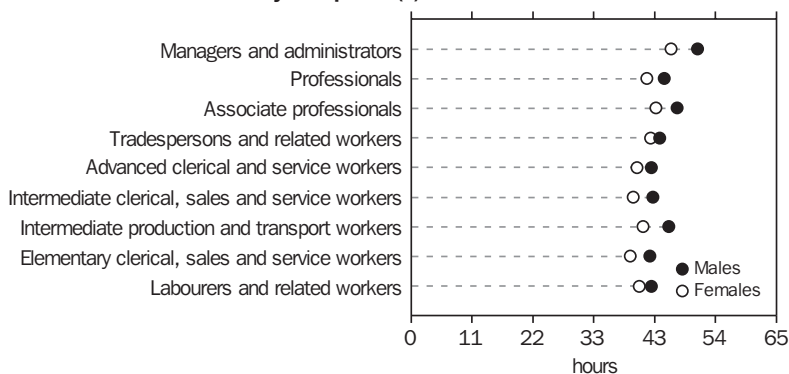
## 6.21 EMPLOYED PERSONS(a), Average weekly hours usually worked — 2005–06

	Males hours	Females hours	Persons hours
Full-time workers	45.4	41.4	44.1
Part-time workers	18.1	18.4	18.3
All workers	41.4	30.9	36.7

(a) Annual average.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).

**6.22 AVERAGE WEEKLY HOURS USUALLY WORKED(a), Full-time employed persons,  
By occupation(b) — 2005–06**



(a) Annual average of quarterly data. (b) Occupation of main job; classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: ABS data available on request, Labour Force Survey.

## Barriers and incentives to labour force participation

Data about barriers and incentives to labour force participation were collected in a module of the Multi Purpose Household Survey, conducted by the Australian Bureau of Statistics (ABS) from August 2004 to June 2005, as a supplement to the monthly Labour Force Survey. The data collected provide information on the characteristics of the potential labour force in Australia.

To better understand the reasons why people are not fully participating in the labour force, there are several groups of people who are of particular interest. These are the unemployed, persons not in the labour force and people who usually work 15 hours or less, who for the purpose of this article are referred to as people who work few hours. The survey included only those working 15 hours or less, rather than all part-time workers, as this group of people has the potential to increase their labour force participation by a greater amount than other part-time workers. Results from this survey will help to obtain a better understanding of the factors that influence people to join or leave the labour force.

### Overview

In 2004–05 there were 15.1 million people aged 18 years and over, of whom 9.7 million (64%) were employed, 465,000 (3%) were unemployed and 4.9 million (32%) were not in the labour force. Of those employed, 951,700 (10%) usually worked relatively few hours per week, that is, 15 hours or less. Women comprised the majority of this group and of those not in the labour force (75% and 64% respectively), while proportionally more men than women were unemployed (56% of unemployed people were men).

Of the 6.3 million people not employed or who worked few hours, approximately 1.8 million (or 28%) indicated that they would like a job or more hours. This group comprised:

- 321,700 (or 18%) people who usually worked few hours per week;
- 465,000 (or 26%) people who were unemployed; and
- 977,300 (or 55%) people who were not in the labour force.

The remaining 4.5 million people (or 72%) did not want a job or did not want to work more hours, or were undecided.

# People who wanted a job or more hours

Of the 1.8 million people who wanted a job or preferred more hours:

- 348,500 people indicated that they were not available to start a job, or work more hours, within four weeks;
- 813,700 were not looking for work (includes 25,300 persons who were also not available); and,
- 627,000 people were available and looking for work or more hours.

Women represented the largest proportion of those who wanted a job or more hours (62%), which is consistent with the fact that more women are underemployed or not in the labour force.

## Not available to start a job or work with more hours

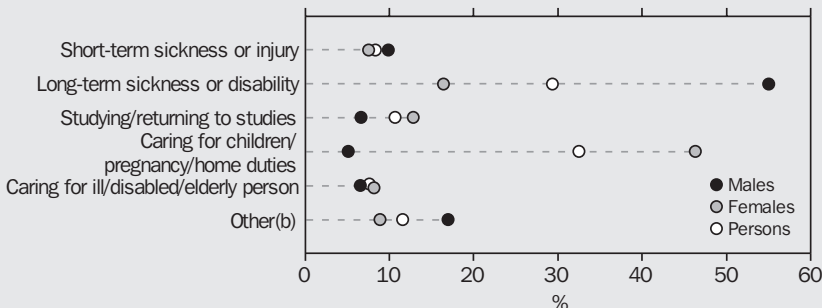
Determining the availability of those who are not employed or who work few hours is important because those who are available to work have a greater potential to increase labour force participation than those who are not available. Of the 1.8 million people who were not employed or who worked few hours and wanted a job or more hours, 1.4 million (80%) were available to start work within four weeks. The remaining 348,500 people (20%) were not available. People not in the labour force

represented approximately 92% of those not available, while the remaining 8% comprised people who worked few hours. About two-thirds (232,900 or 67%) of those who were not available were women.

Men and women who were not in the labour force differed in their reasons why they were not available to start work within four weeks. Of the 107,100 men in the labour force who wanted to work, the most commonly reported reason for not being available was long-term sickness or disability (55% or 58,900), followed by short-term sickness or injury (10% or 10,600) (graph 6.23). In contrast, a large proportion of the 213,100 women not in the labour force who wanted a job were not available due to child care, pregnancy or home duties (46%), followed by long-term sickness or disability (16%), and studying commitments (13%).

The main reason for not being available to work varied between age groups. For instance, a large proportion of people not in the labour force aged 25–44 years (mainly women) who wanted to work, reported caring for children, pregnancy or home duties as the main reason that they were not available (61%); while a large proportion of young people (aged 18–24 years) were not available due to study commitments (70%); and many of those aged 45 years and over were not available due to long-term sickness or disability (46%) (graph 6.24). Such differences reflect the effect that various life stages can have on labour force participation.

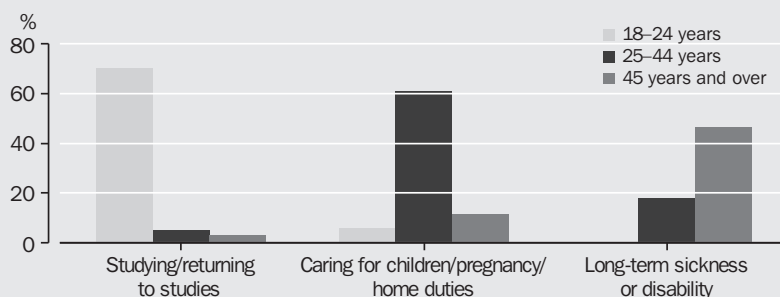
**6.23 PEOPLE NOT IN LABOUR FORCE, WANTED JOB BUT WERE NOT AVAILABLE(a), Main reasons for not being available**



(a) Availability refers to 'in the reference week' or 'within four weeks'. (b) Includes 'taking holidays' and 'moving house'.

Source: *Barriers and Incentives to Labour Force Participation, Australia, August 2004 to June 2005* (6239.0).

**6.24 PEOPLE NOT IN LABOUR FORCE, WANTED JOB BUT WERE NOT AVAILABLE(a),  
Selected main reasons not available by age group**



(a) Availability refers to 'in the reference week' or 'within four weeks'.

Source: *Barriers and Incentives to Labour Force Participation, Australia, August 2004 to June 2005* (6239.0).

## Not looking for a job or work with more hours

Of the 1.8 million people who were not employed or who worked few hours and wanted a job or more hours, an estimated 813,700 people (46%) indicated that they were not looking for a job or more hours. Most of this group were women (574,100 or 71%) and most were not in the labour force (642,700 or 79%).

Like those who were not available, the most commonly reported reason for not looking for work, or more hours, was caring for children, pregnancy or home duties (22% or 180,900 people). Once again, women made up most of this group (89% or 160,500) and people who gave this response were mostly concentrated in the 25–44 year age group (70% or 126,100). Over 40% of people in this age group were not looking for work, or more hours, due to this reason. Another common reason given for not looking for work, or more hours, was studying or returning to studies (13% or 106,000 people). Of people who gave study as their main reason for not looking for work, most (69% or 73,000) were aged 18–24 years, with 52% of this age group citing study as their main reason. Being considered too old by employers was given as the main reason for not looking for work, or more hours, by 9.7% of those who were not looking. Of people who gave this as their main reason 92% (or 72,600) were aged 55 years and over, with 30% of this age group citing it as their main reason.

## Looking and available to start a job or work with more hours – difficulties encountered

There were 627,000 people who were available to start a job, or work more hours, and were looking for work, of whom:

- 465,000 were unemployed (74%);
- 147,700 usually worked few hours (24%); and
- 14,400 were not in the labour force (2%).

(People in the last mentioned group are defined as not in the labour force because they were not available to start work in the reference week, but were available to start within four weeks).

There were varied responses from those people who were available and looking for a job or work with more hours regarding the difficulties they have in finding a job or work with more hours. Overall, the most common main difficulty reported by this group was that they lacked the necessary training, qualifications and experience (106,800 people or 17%) (graph 6.25). Over 60% (or 67,700) of the people who reported this as their main difficulty held no non-school qualifications, of whom 43% were aged 18–24 years. No jobs with suitable conditions was also a commonly reported main difficulty (80,200 people or 13%), of which 62% were



women. Most of those who reported unsuitable conditions as their main difficulty in obtaining work, or more hours, were aged 18–44 years (71,800 or 90%). Approximately 44% (or 35,700) of those who reported their main difficulty as being considered too old by employers were aged 55 years and over, and 60% of this group were men. This reflects the larger proportion of men aged 55 years and over who were available and looking for work or more hours (14% of men compared with 8% of women).

### Preferred weekly hours

The preferred number of hours of work were collected from people not in the labour force who wanted a job and people who usually worked few hours and wanted to work more. Men and women who usually worked 15 hours or less per week displayed different preferences in the number of hours they would like to work. Among the 95,500 men who wanted more hours, 62,400 (65%) indicated that they would like to work full-time hours (35 hours or more). In contrast, a greater proportion of women preferred to work part-time hours (68% or 154,400 women). Older people who usually worked 15 hours or less preferred to work less

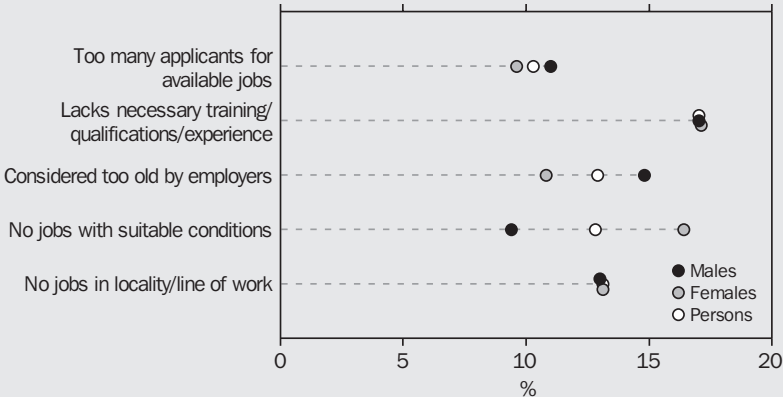
hours than their younger counterparts. For instance, the average preferred number of hours for people aged 55 years and over was 25 hours per week, compared with 30 hours for those aged 18–34 years.

Of the 977,300 people not in the labour force who wanted a job, 73% reported that they would prefer to work part-time hours (57% of men and 81% of women). The average preferred number of hours was 22 (25 hours for men and 20 hours for women).

### People who did not want more work

Over 70% of people (or 4.5 million) who were not employed or who worked few hours indicated that they did not want a job or more hours. This comprised 630,100 people who usually worked few hours, and 3.9 million people not in the labour force. By definition all unemployed people wanted a job and were actively looking. Almost two-thirds (65%) of those who did not want a job or more hours were women.

**6.25 PEOPLE AVAILABLE AND LOOKING FOR A JOB OR WORK WITH MORE HOURS, Selected main difficulties**



Source: *Barriers and Incentives to Labour Force Participation, Australia, August 2004 to June 2005* (6239.0).

The men and women who usually worked few hours and did not want to work more had very different characteristics and reasons for not wanting more hours. Approximately 45% (or 219,700) of women who did not want more hours were aged 25–44 years and 23% (or 110,700) were aged 55 years and over. The most common main reason women gave for not wanting more hours was related to caring for children, pregnancy or home duties (48% or 233,300 women gave this response) (graph 6.26). This was a major factor for women aged 25–44 years with 85% (or 186,600) of them giving this as a reason for not wanting more hours. This indicates that part-time work is particularly important for women who are raising children. Other common reasons for women not wanting more hours were ‘no need/retired from full-time work (for now)’ (24% or 118,800), with 56% of this group aged 55 years and over, and ‘studying/returning to studies’ (19% or 93,400) with 72% of this group aged 18–24 years.

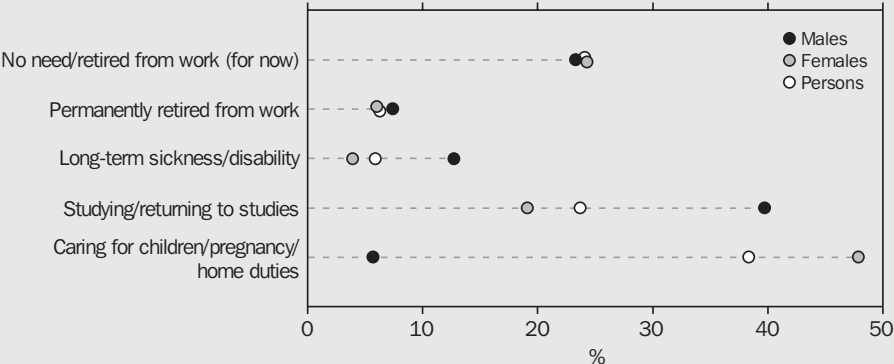
Of the 141,600 men who usually worked few hours, 44% (or 62,100) were aged 18–24 years and 35% (or 50,200) were aged 55 years and over. The most common reason given for not wanting more hours was study commitments (40% or 56,200), which reflects the large proportion of men aged 18–24 years who did not want to work more hours. Other reasons commonly reported were ‘no need/retired from full-time work (for now)’ (23% or 32,900), of whom 83% were

aged 55 years and over, and long-term sickness or disability (13% or 18,000), of whom 59% were aged 55 years and over.

The age composition of people not in the labour force was quite different to people working few hours and it also differed for men and women. Of the 4.9 million people not in the labour force almost two-thirds (64%) were aged 55 years and over. Of men not in the labour force 75% were aged 55 years and over. Of women not in the labour force 58% were aged 55 years and over and 25% were aged 25–44 years.

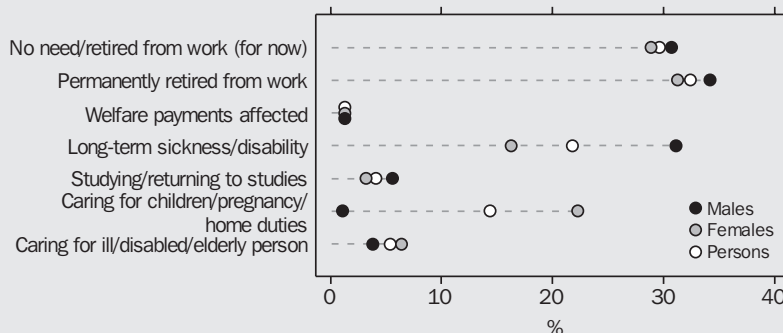
The different age structure of people not in the labour force means that the reasons given for not wanting to work were quite different to the reasons people working few hours gave for not wanting to work more hours. Of the 3.9 million people not in the labour force who did not want to work, the most common reason for them not wanting a job was being ‘permanently retired from work’ (32% or 1.3 million), followed by ‘no need/retired from work (for now)’ (30% or 1.2 million), and ‘long-term sickness/disability’ (22% or 856,200) (graph 6.27). ‘Long-term sickness/disability’ was reported by 31% of men (or 456,300) and was common for all age groups. For women, 22% (or 546,900) indicated they did not want to work due to ‘pregnancy or home duties’. Most of these women were in the age group 25–44 years (73%).

**6.26 PEOPLE WHO USUALLY WORK FEW HOURS(a),  
Selected reasons for not wanting to work more hours(b)**



(a) Refers to people who usually work 15 hours or less per week. (b) Refers to all reasons for not wanting more hours. Consequently, persons may appear in more than one category.  
Source: *Barriers and Incentives to Labour Force Participation, Australia, August 2004 to June 2005* (6239.0).

## 6.27 PEOPLE NOT IN THE LABOUR FORCE, Selected reasons not wanting a job(a)



(a) Refers to all reasons for not wanting a job, therefore persons may appear in more than one category.

Source: *Barriers and Incentives to Labour Force Participation, Australia, August 2004 to June 2005* (6239.0).

## References

- Australian Bureau of Statistics, 2006, *Barriers and Incentives to Labour Force Participation, Australia, August 2004 to June 2005* (6239.0), ABS, Canberra.
- Australian Bureau of Statistics, 2006, *Underemployed Workers, Australia* (6265.0), ABS, Canberra.
- Australian Bureau of Statistics, 2006, *Persons Not in the Labour Force, Australia* (6220.0), ABS, Canberra.

## Retirement and retirement intentions

Since 1995, Australia's estimated resident population aged 45 years and over has increased by 30%. In contrast, the number of children (aged 0–14 years) has increased by 2.3%, and the number of people aged 15–44 years by 4.8%. This uneven distribution of growth reflects the gradual ageing of Australia's population, which inevitably impacts on labour market supply, retirement and income support policies.

It is, therefore, of interest to investigate retirement trends, factors which influence decisions to retire, and the income arrangements retirees and potential retirees have made to provide for their retirement.

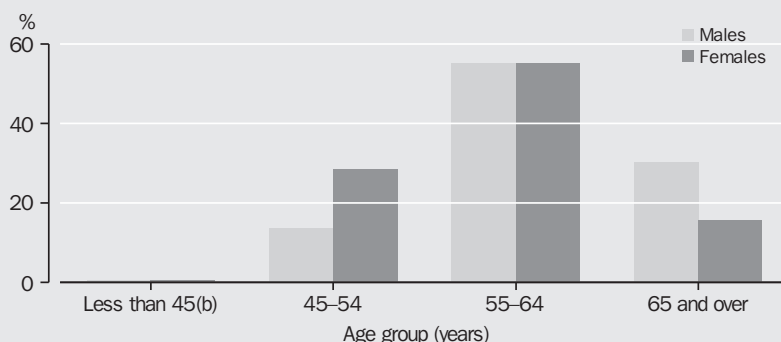
Data about retirement and retirement intentions of Australians were collected in the Multi Purpose Household Survey, conducted by the Australian Bureau of Statistics (ABS) from August 2004 to June 2005, as a supplement to the monthly Labour Force Survey.

## Retired from the labour force

### Age at retirement

It is important to note that data on retirement age presented in this article only refer to 'surviving' retirees aged 45 years and over in 2004–05. Therefore, the distribution of retirement age in this population is not representative of the age at which people retire. For example, based on Australian life expectancy, a person who retired aged 40 years in 1979–80 (aged 65 years in 2004–05) would more likely be alive to participate in this survey than a person who retired aged 65 years in 1979–80 (aged 90 years in 2004–05). This effect will be less pronounced for the statistics presented in relation to people who retired recently. However, it will have some effect on all those statistics, particularly as almost 35% of the retired population included in this article retired more than 20 years ago.

## 6.28 PEOPLE WHO RETIRED IN LAST FIVE YEARS(a), Age at retirement



(a) Aged 45 years and over. (b) Less than 1% for both males and females.

Source: Retirement and Retirement Intentions, Australia, August 2004 to June 2005 (6238.0).

The average age at retirement for people who were aged 45 years and over who were recent retirees (those who retired in the last five years) was 60 years. In this group, women retiring were approximately three years younger than men (the average retirement age for men was 61.5 years and 58.3 years for women).

### Reasons for ceasing last job

Among both retired men and women whose last job was less than 20 years ago, the main reason for ceasing their last job was due to 'reaching retirement age/being eligible to receive superannuation or the pension' (34%). Other main reasons for ceasing their last job were 'sickness, injury or ill health' (26%) and 'being retrenched, dismissed or no work available' (11%).

### Sources of income during retirement

Of people aged 45 years and over who had retired from the labour force, just over 1.3 million people (44%) reported a government pension or allowance as their main source of income just after retirement (54% of men and 37% of women) (graph 6.29). A further 13% (384,700 people) reported no income source but lived off savings, lump sum payments or other assets, and 366,700 people (12%) reported superannuation or annuity payments (20% of men and 6.3% of women).

Of those retired from the labour force, 42% indicated that their main source of income had changed since retirement. There were almost

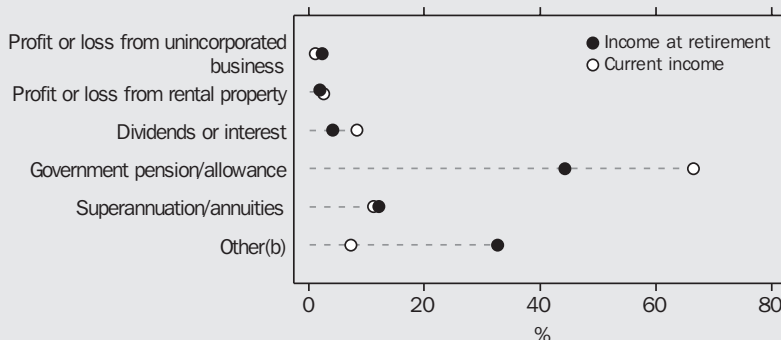
2 million people (67% of all those who were retired) who reported that their main source of current income was a government pension or allowance, representing an increase of 50% compared with the number of people who stated it as their main source of income at retirement. This may be due to people reaching the eligible age to receive a pension or allowance during their retirement rather than at the start of their retirement, or due to assets or other sources of income being exhausted. Of those whose current main source of income was a government pension/allowance, 18% of men and 9% of women were claiming the Disability Support Pension.

A large proportion of people whose main source of income at retirement was 'superannuation/annuities' or 'profit/loss from rental properties' continued to rely on them as their main source of current income (67% and 66% respectively).

### Intentions to retire from the labour force

Of the 3.7 million people in the labour force aged 45 years and over, 3.4 million (90%) indicated that they intended to retire from the labour force in the future. The remaining 384,400 people indicated that they did not intend to retire from the labour force.

## 6.29 PEOPLE WHO HAVE RETIRED FROM LABOUR FORCE, Main source of income(a)



(a) Excludes 'did not know' and 'not stated/not determined'. (b) Includes people with no income.

Source: Retirement and Retirement Intentions, Australia, August 2004 to June 2005 (6238.0).

### Age intends to retire

Of the 3.4 million people in the labour force who intended to retire from the labour force, almost half (47%) did not know at what age they would retire. Of those who did indicate an intended age:

- 2.3% intended to retire aged less than 55 years
- 19% intended to retire aged 55–59 years
- 31% intended to retire aged 60–64 years
- 39% intended to retire aged 65–69 years
- 8.4% intended to retire aged 70 years and over.

The average age at which people intended to retire was 62 years (63 years for men and 61 years for women).

### Factors influencing decision about when to retire

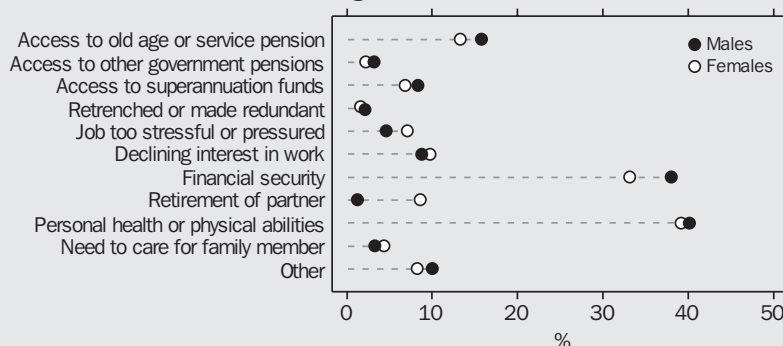
Among people in the labour force who intended to retire, the most common factors influencing their decision about when they would retire were personal health or physical abilities (40%), financial security (36%) and reaching the eligible age for an old age or service pension (15%) (graph 6.30).

### Expected main source of income at retirement

There were differences between people who had already retired and those who intended to retire, in terms of the main (expected) source of income at retirement. The main source of income at retirement for almost half (1.3 million people or 44%) of those who had already retired and were 45 years or older, was government pension or allowance, whereas only 25% (854,300 people) of those who intended to retire expected that government pension or allowance would be their main source of income at retirement. Many people intending to retire (1.4 million or 41%) expected superannuation or annuity to be their main source of income at retirement.

Over 90% (or 3.1 million) of the people who were 45 years and over in 2004-05 and who intended to retire had contributed to a superannuation scheme at some time, compared with 55% of people who had retired from the labour force. Such trends reflect changes to superannuation legislation over the last two decades, in particular the *Superannuation Guarantee (Administration) Act 1992* (Cwlth), which requires employers to make superannuation contributions for eligible employees.

### 6.30 PEOPLE IN THE LABOUR FORCE WHO INTEND TO RETIRE, Factors influencing decision of when to retire



Source: Retirement and Retirement Intentions, Australia, August 2004 to June 2005 (6238.0).

## References

- Australian Bureau of Statistics, *2006 Retirement and Retirement Intentions, Australia, August 2004 to June 2005* (6238.0), ABS, Canberra.
- Australian Bureau of Statistics, *2006 Population by Age and Sex, Australian States and Territories, June 2005* (3201.0), ABS, Canberra.

## Unemployed people

In the LFS, people are considered to be unemployed if they satisfy three criteria: they are not employed; they are available for work; and they are taking active steps to find work.

Two important measures of unemployment are the number of people unemployed and the unemployment rate. The unemployment rate, defined as the number of unemployed people expressed as a percentage of the labour force, offers an insight into the degree of 'slack' in the labour market.

Movements in the unemployment rate over the last 20 years are dominated by the economic downturns of the early-1980s and early-1990s, and the subsequent periods of economic recovery (graph 6.31). In trend terms, the unemployment rate peaked at 10.7% in December 1992, then generally fell over the rest of the 1990s and early-2000s, to 4.9% in June 2006.

Prior to 1990, the unemployment rate for men was lower than for women. However, as the unemployment rate increased sharply in 1990–91, the male unemployment rate increased to a level

above the female unemployment rate. Since May 2003, the male unemployment rate has reverted to being higher than the female unemployment rate.

As graph 6.32 shows, the number of unemployed people has generally declined from the levels recorded in the early-1990s. For the unemployed seeking full-time work, the trend has generally reflected the overall impact of the economic cycle. In contrast, over the last two decades, the trend for those seeking part-time work has generally increased steadily, rising from 102,000 people (or 17% of unemployed people) in June 1986 to 158,900 people (or 30% of unemployed people) in June 2006.

In recent years the proportion of the unemployed who had experienced unemployment for less than 26 weeks has been rising steadily, while the proportion who experienced unemployment for 52 weeks and over (long-term unemployment) has declined. In 2005–06, 69% of unemployed people had been unemployed for less than 26 weeks, while the long-term unemployed made up 18% of unemployed people (table 6.33).

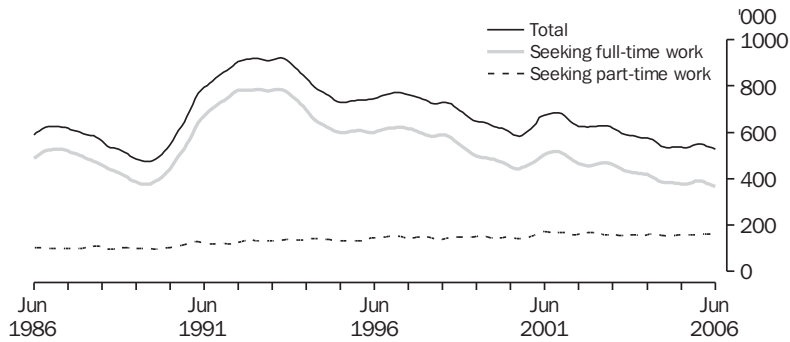
### 6.31 UNEMPLOYMENT RATE(a)



(a) Trend estimates.

Source: Labour Force, Australia, Spreadsheets (6202.0.55.001).

### 6.32 UNEMPLOYED PERSONS(a)



(a) Trend estimates.

Source: Labour Force, Australia, Spreadsheets (6202.0.55.001).

### 6.33 UNEMPLOYED PERSONS(a), By duration of unemployment

Weeks	Units	2001-02	2002-03	2003-04	2004-05	2005-06
Under 8	%	35.8	37.0	38.6	43.0	42.0
8 to under 26	%	28.0	27.7	26.9	25.7	27.2
Under 26	%	63.8	64.7	65.5	68.6	69.2
26 to under 52	%	14.1	13.7	13.5	12.4	12.9
52 to under 104	%	8.8	8.9	9.0	7.9	7.8
104 and over	%	13.3	12.8	12.0	11.2	10.1
52 and over	%	22.1	21.6	21.0	19.0	17.9
Persons	'000	663.3	624.4	586.0	545.6	539.5

(a) Annual averages.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001).



Educational qualifications can have a significant bearing on labour market prospects. Table 6.34 shows the relationship between the level of highest educational attainment and duration of unemployment. At July 2005, there was little variation in the proportion of people in long-term unemployment across all levels of highest educational attainment; with 18–20% across all categories.

Unemployed people encounter a variety of difficulties in finding work (graph 6.35). Women were more likely to report insufficient work

experience as their main difficulty (12% compared with 9% for men), as well as difficulties that relate to concerns outside the workplace, such as 'Unsuitable hours' (9% compared with 3%) and 'Difficulties with child care, other family responsibilities' (5% compared with 1%). Men were more likely to report their main difficulty as being 'Considered too old by employers' and 'Too far to travel/transport problems' (both with 11% compared with 7% for women).

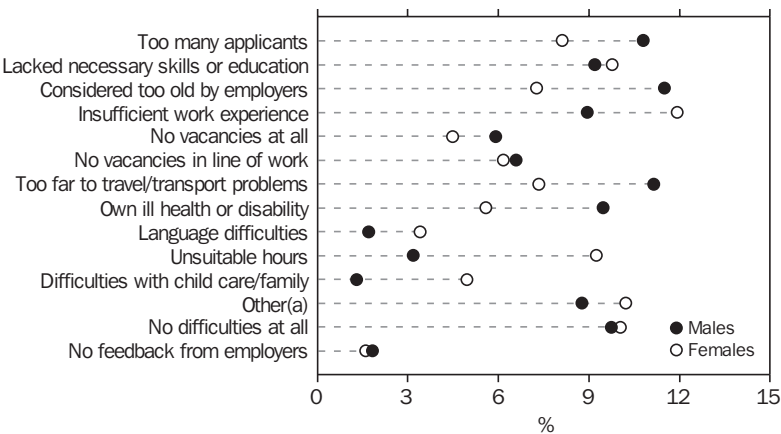
6.34 UNEMPLOYED PERSONS, Educational attainment and duration of unemployment — July 2005

Level of highest educational attainment(a)	Duration of current period of unemployment (weeks)				Number '000
	Under 8	8 to under 26	26 to under 52	52 and over	
	%	%	%	%	
Bachelor degree or above	38.3	30.7	12.3	18.7	50.1
Advanced diploma or Diploma	40.7	26.3	*13.3	*19.6	25.1
Certificate III / IV	40.9	32.0	*8.2	18.9	56.5
Certificate I / II(b)	35.4	25.2	20.9	18.6	50.1
Year 12 or below	37.4	29.8	15.4	17.4	297.7
Level not determined	*47.8	*25.7	**8.0	*18.5	5.2
<b>Total(c)</b>	<b>38.0</b>	<b>29.4</b>	<b>14.6</b>	<b>18.0</b>	<b>484.8</b>

(a) The levels of education are not necessarily listed in order from highest to lowest. For further details on how level of highest educational attainment is determined see 'Education and Work, Australia' (6227.0). (b) Includes 'Certificate not further defined'. (c) Includes no educational attainment.

Source: Job Search Experience, Australia, July 2005 (6222.0).

6.35 UNEMPLOYED PERSONS, Main difficulty in finding work — July 2005



(a) Other includes considered 'too young by employers', 'difficulties because of ethnic background' and 'other difficulties'.

Source: Job Search Experience, Australia, July 2005 (6222.0).

# Persons not in the labour force

Persons not in the labour force represent that group of the population who, during the reference week of the LFS, are neither employed nor unemployed (see diagram 6.2). Interest in this group centres primarily on their potential to participate in the labour force.

There were 5.5 million people aged 15 years and over not in the labour force at September 2005 (table 6.36). Some 15% of people outside the labour force (840,300) were marginally attached to the labour force. These people wanted to work and were either actively looking for work but were not available to start work in the reference week, or were available to start work (within four weeks) but were not actively looking for work. Of people

not in the labour force, the proportion of women who were marginally attached (17%) was higher than that for men (13%). Of the marginally attached, 10% of men were actively looking for work compared with 7% of women.

In September 2005 there were 63,100 discouraged jobseekers. Discouraged jobseekers are people who are marginally attached to the labour force, want to work and are available to start work, but are not actively looking for work as they believe they will not find a job for labour market related reasons. Of men who were marginally attached to the labour force, 9% were discouraged jobseekers, compared with 7% of women. Less than 1% of all people aged 70 years and over had marginal attachment to the labour force.

**6.36 LABOUR FORCE STATUS(a) — September 2005**

	Males '000	Females '000	Persons '000
Civilian population aged 15 years and over	7 908.3	8 115.2	16 023.5
<i>Persons in the labour force</i>	5 805.3	4 764.7	10 570.0
Employed	5 510.2	4 514.9	10 025.0
Unemployed	295.1	249.9	545.0
<i>Persons not in the labour force</i>	2 103.0	3 350.5	5 453.5
With marginal attachment to the labour force	273.8	566.5	840.3
Wanted to work and were actively looking for work	28.3	40.9	69.2
Were available to start work within four weeks	21.3	29.7	51.0
Were not available to start work within four weeks	7.0	11.1	18.1
Wanted to work but were not actively looking for work and were available to start work within four weeks	245.4	525.7	771.1
Discouraged jobseekers	25.0	38.2	63.1
Other	220.5	487.5	708.0
Without marginal attachment to the labour force	1 829.2	2 784.0	4 613.2
Wanted to work but were not actively looking for work and were not available to start work within four weeks	100.0	225.0	325.0
Did not want to work	1 579.1	2 458.4	4 037.5
Permanently unable to work	150.1	100.5	250.7

(a) Civilian population aged 15 years and over.

Source: *Persons Not in the Labour Force, Australia, September 2005* (6220.0).

## Locations of work

Working at home may give people greater flexibility than standard working arrangements. Productivity may be enhanced, as less time is spent on peripheral tasks (e.g. travel to and from work) and there is a greater ability for people to 'return' to work outside office hours (Whitehouse et al, 2002). People who work at home may also have a greater ability to balance their work and family commitments.

There were 9.4 million employed people in November 2005, of whom one-quarter (25%) worked at least some hours at home in their main or second job. Almost one-third (31%) of these people were employed only or mainly at home.<sup>1</sup>

Data about the types of places where people work, and the job characteristics and working arrangements of people who work at home were collected in November 2005 as a supplement to the monthly Labour Force Survey, conducted by the Australian Bureau of Statistics. The focus of this article is on those people employed only or mainly at home<sup>1</sup>, referred to as 'people who work at home'.

### Employment type

In November 2005 there were 724,500 people who worked at home. More than two-thirds (70%) were owner managers, just over one-quarter (27%) were employees (excluding owner managers of incorporated enterprises) and 2% were contributing family workers (graph 6.37). This contrasts with the distribution of all employed people<sup>2</sup> where one-fifth (20%) were owner managers, four-fifths (80%) were employees<sup>3</sup> and less than 0.5% were contributing family workers. Almost three-quarters (74%) of men who worked at home were owner managers, as were 68% of women who worked at home.

### Main reason people worked at home

Of the people who worked at home 40% stated their main reason was that they wanted their office at home or they wanted no overheads or rent and the majority of these (82%) were owner managers (table 6.38).

One-fifth (20%) of people who worked at home gave their main reason as operating a farm. More than one-quarter (27%) of men who worked at home stated they were operating a farm, compared with 15% of women. Of employees<sup>3</sup> who worked at home, 16% stated this was a condition of their employment.

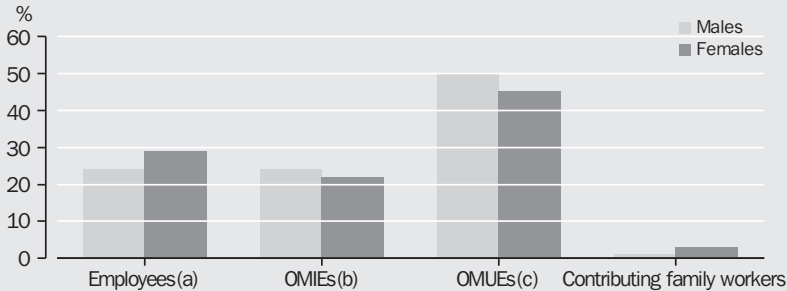
Flexible working times, which usually apply to home-based work, may assist in juggling family responsibilities, in particular child care (Whitehouse et al, 2002). One-fifth (20%) of people who worked at home gave child care or family considerations and flexible working arrangements as their main reasons for doing so (table 6.38). More than one-quarter (27%) of women who worked at home stated these reasons, compared to 12% of men.

Women are more likely to work at home as they tend to be family carers. In November 2005 women represented more than half (55%) of all people who worked at home. Women who worked at home were also more likely to have children aged under 15 years (44%), when compared with all employed women (33%).

### Arrangement to work at home

In November 2005 more than four-fifths (82%) of employees<sup>3</sup> who worked at home had an arrangement with their employer. Women represented 61% of those with an arrangement. Almost two-thirds (65%) of employees<sup>3</sup> with an arrangement had leave entitlements.

**6.37 PEOPLE WHO WORKED AT HOME, By employment type in main job**



(a) Excludes owner managers of incorporated enterprises. (b) Owner managers of incorporated enterprises. (c) Owner managers of unincorporated enterprises.

Source: *Locations of Work, Australia* (6275.0).

## Age

More than half (53%) of all people who worked at home were aged between 35 and 54 years, which was higher than the proportion of all employed people in this age group (46%) (graph 6.39). Those aged 15–24 years accounted for only 4% of

those who worked at home, but represented 18% of all employed people. Those aged 65 years and over accounted for 8% of those who worked at home, compared to 2% of all employed people. Men aged 65 years and over were more likely than women to work at home (5% and 3% respectively).

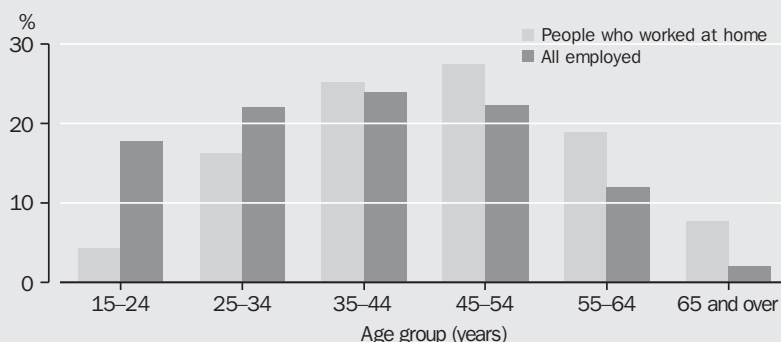
### 6.38 MAIN REASON PEOPLE WORKED AT HOME, By employment type in main job

	Employees(a) %	Owner managers %	Total(b) %
MALES			
Wanted office at home/no overheads/no rent	5.3	35.6	41.5
Childcare/family considerations	*0.4	*1.5	2.1
Flexible working arrangements	3.7	5.7	9.5
To catch up on work	2.5	*1.5	4.0
Condition of employment	4.7	..	4.8
To operate a farm	3.4	22.7	26.9
Other reason	4.0	7.0	11.1
<b>Total</b>	<b>24.0</b>	<b>74.0</b>	<b>100.0</b>
FEMALES			
Wanted office at home/no overheads/no rent	7.4	30.7	39.0
Childcare/family considerations	3.8	9.5	14.2
Flexible working arrangements	4.5	7.6	12.3
To catch up on work	2.8	*1.0	3.8
Condition of employment	4.1	..	4.2
To operate a farm	2.2	12.4	15.3
Other reason	4.5	6.3	11.2
<b>Total</b>	<b>29.3</b>	<b>67.6</b>	<b>100.0</b>
PERSONS			
Wanted office at home/no overheads/no rent	6.5	32.9	40.1
Childcare/family considerations	2.3	6.0	8.8
Flexible working arrangements	4.2	6.8	11.1
To catch up on work	2.7	1.2	3.9
Condition of employment	4.3	..	4.5
To operate a farm	2.7	17.0	20.4
Other reason	4.3	6.6	11.2
<b>Total</b>	<b>27.0</b>	<b>70.4</b>	<b>100.0</b>

a) Employees (excluding owner managers of incorporated enterprises). (b) Total includes 'Contributing family workers'.

Source: *Locations of Work, Australia* (6275.0).

### 6.39 PEOPLE WHO WORKED AT HOME AND ALL EMPLOYED PEOPLE(a)



(a) In main job.

Source: *Locations of Work, Australia* (6275.0).

## Occupation

People who worked at home were highly represented in the higher-skilled occupation groups. Two-thirds (67%) of men who worked at home in November 2005 were Managers and administrators or Professionals. In contrast, these occupations accounted for just over one-quarter (28%) of all employed men (table 6.40).<sup>4</sup> More than half (51%) the women who worked at home were Advanced clerical and service workers or Professionals. In comparison, less than one-third (29%) of all employed women<sup>4</sup> were represented in these occupations.

## Hours worked at home

Of the people who worked at home, almost two-thirds (63%) worked less than 35 hours per week<sup>5</sup> and more than one-third (37%) of these

worked 1–15 hours. In comparison, 40% of all employed people worked less than 35 hours per week.<sup>6</sup>

## Use of information technology

Improvements in technology have made home-based work a viable alternative, linking people who work at home with central offices or clients via online networks. Four-fifths (80%) of those who worked at home in their main job used information technology. The majority of these people (91%) used both a computer and the Internet. Professionals represented the highest proportion (31%) of those who used both a computer and the Internet, while Intermediate production and transport workers represented the lowest proportion (1%).

### 6.40 OCCUPATION IN JOB WORKED AT HOME(a), Main or second job

	Males	Females	Persons
	%	%	%
Managers and administrators	36.2	15.6	24.8
Professionals	30.5	20.7	25.1
Associate professionals	13.7	9.8	11.6
Tradespersons and related workers	7.4	2.6	4.8
Advanced clerical and service workers	*0.8	30.0	16.9
Intermediate clerical, sales and service workers	4.1	14.0	9.6
Intermediate production and transport workers	2.1	1.4	1.7
Elementary clerical, sales and service workers	2.0	3.1	2.6
Labourers and related workers	3.3	2.7	2.9
All people who worked at home	100.0	100.0	100.0

(a) Occupation group of main job; classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: *Locations of Work, Australia* (6275.0).

## End notes

1. Employed people who, during the survey reference week, worked more hours at their own home than any other single location in their main or second job.
2. Employed people in the survey reference week by employment type in main job.
3. Employees (excluding owner managers of incorporated enterprises).
4. Employed people in the survey reference week by occupation in main job.
5. Hours actually worked at home in main job.
6. Hours actually worked in main job.

## Reference

Whitehouse G, Diamond C & Lafferty G 2002, 'Assessing the benefits of telework: Australian case study evidence', *New Zealand Journal of Industrial Relations*, vol. 27, no. 3, pp. 257–268, Wellington, New Zealand.

## Underutilised labour

The extent to which the available supply of labour is used is an important social and economic issue. From a social viewpoint, concern centres around the number of people whose aspirations for work are not being met. From an economic perspective, there is interest in measuring the extent to which available labour resources are not being fully used within the economy.

The number of unemployed people and the unemployment rate are widely used measures of the available labour resources that are not currently utilised in the economy. However, these measures do not represent the full extent of labour underutilisation. As a result, the ABS has produced a series of broader measures that include other groups of people whose labour is underutilised, such as underemployed workers and discouraged jobseekers.

The ABS produces labour underutilisation measures based on the number of people whose labour is underutilised (headcount measures), and the number of hours of available labour that are underutilised (volume measures).

### Headcount measures of labour underutilisation

The ABS has developed a series of supplementary measures of labour underutilisation which were formed by combining information on unemployed people with that of other groups whose labour is

underutilised. There are five measures: the unemployment rate; the long-term unemployment rate; the underemployment rate; the labour force underutilisation rate; and the extended labour force underutilisation rate. These are headcount measures and provide an indication of the proportion of the population affected by labour underutilisation.

- *Underemployment rate* – the number of underemployed workers as a proportion of the labour force.

Underemployed people include part-time workers who want, and are available to work, more hours, and full-time workers who worked part-time hours in the reference week for economic reasons (i.e. involuntarily). In September 2005 there were 566,600 underemployed people (table 6.41). The underemployment rate was higher for women (7.3%) than men (3.7%). This is related to the higher proportion of women who are in part-time employment.

- *Labour force underutilisation rate* – the sum of the unemployment rate and the underemployment rate.

In September 2005 the labour force underutilisation rate was 10.5%. Women had a higher labour force underutilisation rate than men, reflecting their higher rate of underemployment.

#### 6.41 LABOUR UNDERUTILISATION — September 2005

	Units	Males	Females	Persons
Unemployed	'000	295.9	250.8	546.7
Long-term unemployed	'000	55.7	40.8	96.5
Underemployed	'000	215.1	351.5	566.6
Marginally attached to the labour force(a)				
Actively looking for work, not available in reference week but available to start work within four weeks	'000	21.3	29.7	51.0
Discouraged jobseekers	'000	25.0	38.2	63.1
Labour underutilisation rates				
Long-term unemployment rate(b)	%	1.0	0.9	0.9
Unemployment rate(c)	%	5.1	5.2	5.1
Underemployment rate(d)	%	3.7	7.3	5.3
Labour force underutilisation rate(e)	%	8.7	12.6	10.5
Extended labour force underutilisation rate(f)	%	9.5	13.8	11.4

(a) Marginal attachment to the labour force includes only a subset of the groups usually included. (b) The long-term unemployment rate is the long-term unemployed (persons unemployed for twelve months or more) expressed as a proportion of the labour force. (c) The unemployment rate is the unemployed expressed as a proportion of the labour force. (d) The underemployment rate is the underemployed expressed as a proportion of the labour force. (e) The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force. (f) The extended labour force underutilisation rate is the unemployed, plus the underemployed, plus a subset of persons marginally attached to the labour force, expressed as a proportion of the labour force augmented by the marginally attached persons.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

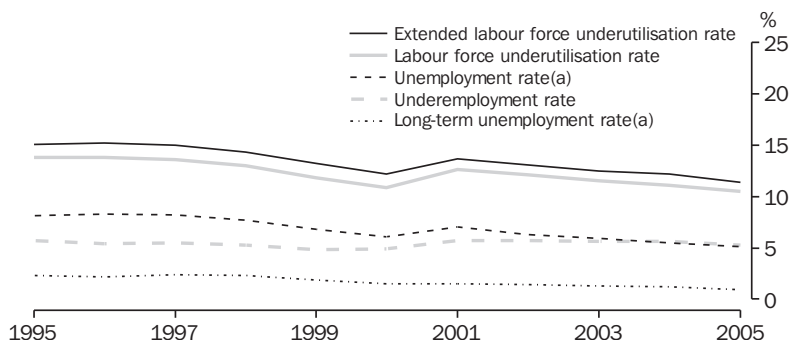
- *Extended labour force underutilisation rate* – is the sum of the unemployed, the underemployed, and two groups of people marginally attached to the labour force, as a proportion of the labour force augmented by those two groups.

The two groups of marginally attached people are: people actively looking for work, not available to start work in the reference week, but available to start within four weeks; and discouraged jobseekers. This is the broadest of the ABS measures of underutilised labour. The extended labour force underutilisation rate was 11.4% in September 2005. The extended labour

force underutilisation rate for women was higher than that for men, not only because women had a higher rate of underemployment, but also because women were more likely to be in the marginally attached populations that contribute to this rate.

Overall, movement in unemployment is the primary driver of movements in the headcount measures, although underemployment has been increasing in relative importance in recent years, particularly for women. Levels of unemployment, and the unemployment rate, fluctuate with the economic cycle (graph 6.42).

#### 6.42 LABOUR UNDERUTILISATION RATES — September



(a) Trend series.

Source: Australian Labour Market Statistics, Datacubes (6105.0).



Differences in labour underutilisation between states and territories are primarily driven by differences in unemployment rates. In September 2005, Tasmania (13.4%), Victoria (11.4%), South Australia (10.8%) and New South Wales (10.7%) all had labour force underutilisation rates equal to or above the national average (10.5%) (table 6.43).

**Volume measures of labour force underutilisation**

Labour underutilisation can also be measured in terms of the number of potential hours of labour that are not used. Such ‘volume’ measures represent the quantity of unutilised available labour (rather than the number of people affected) and may be more relevant for analysing the spare capacity of the labour force than measures based on the number of people whose labour is underutilised. The volume of underutilised labour in the labour force is derived as the number of hours of work sought by unemployed people plus the number of additional hours of work offered by underemployed workers. The volume labour force underutilisation rate is the ratio of the number of hours that are unutilised to the total number of utilised and unutilised hours in the labour force.

Table 6.44 provides experimental volume measures of labour force underutilisation for September 2005. Separate rates relating to the volume of unemployment and the volume of underemployment can also be calculated from the way the volume labour force underutilisation rate is derived. For all three underutilisation measures (i.e. unemployment, underemployment and labour force underutilisation), the experimental volume rates were lower than the corresponding headcount rates.

In September 2005, hours sought by the unemployed (16.5 million hours) formed the largest component (66%) of the volume of underutilised labour in the labour force. Additional hours offered by the underemployed (8.6 million hours) formed the remainder. Table 6.45 shows the average number of weekly hours sought or offered by the two population groups included in the volume measures. On average, unemployed people sought 30 hours of work a week, with men seeking 33 hours compared with 27 hours for women. In contrast, underemployed people offered an average of 15 hours of additional labour, with men again offering more hours (18 hours) than women (14 hours).

**6.43 LABOUR UNDERUTILISATION, By states and territories — September 2005**

	Long-term unemployment rate(a)	Unemployment rate(b)	Underemployment rate(c)	Labour force underutilisation rate(d)	Extended labour force underutilisation rate(e)
	%	%	%	%	%
New South Wales	1.1	5.3	5.3	10.7	11.7
Victoria	1.0	5.8	5.6	11.4	12.3
Queensland	0.7	4.7	5.3	9.9	10.9
South Australia	1.0	5.0	5.8	10.8	11.7
Western Australia	0.4	4.0	4.8	8.9	9.7
Tasmania	1.6	6.6	6.8	13.4	14.9
Northern Territory	*0.1	4.5	2.8	7.3	7.8
Australian Capital Territory	*0.6	2.9	3.2	6.2	6.8
<b>Australia</b>	<b>0.9</b>	<b>5.1</b>	<b>5.3</b>	<b>10.5</b>	<b>11.4</b>

(a) The long-term unemployment rate is the long-term unemployed (persons unemployed for twelve months or more) expressed as a proportion of the labour force. (b) The unemployment rate is the unemployed expressed as a proportion of the labour force. (c) The underemployment rate is the underemployed expressed as a proportion of the labour force. (d) The labour force underutilisation rate is the unemployed, plus the underemployed, expressed as a proportion of the labour force. (e) The extended labour force underutilisation rate is the unemployed, plus the underemployed, plus a subset of persons marginally attached to the labour force, expressed as a proportion of the labour force augmented by the marginally attached persons.

Source: Australian Labour Market Statistics, Datacubes (6105.0).

#### 6.44 VOLUME MEASURES(a) OF LABOUR UNDERUTILISATION — September 2005

	Units	Males	Females	Persons
Volume of potential labour in the labour force				
Unemployed persons (hours of work sought)	'000 hours	9 646.0	6 807.1	16 453.0
Underemployed workers (additional hours of work offered)	'000 hours	3 835.8	4 787.9	8 623.6
Employed persons (usual hours of work performed)(b)	'000 hours	228 278.0	139 669.5	367 947.5
<b>Total(c)</b>	<b>'000 hours</b>	<b>241 759.8</b>	<b>151 264.4</b>	<b>393 024.1</b>
Volume measures of labour force underutilisation				
Volume unemployment rate	%	4.0	4.5	4.2
Volume underemployment rate	%	1.6	3.2	2.2
Volume labour force underutilisation rate	%	5.6	7.7	6.4

(a) Experimental estimates, based on the number of hours of work sought and offered. (b) Actual hours worked in the reference week for underemployed full-time workers and usual hours worked for all other employed persons. (c) The volume of potential labour in the labour force is equal to the hours of labour sought by unemployed persons, plus the hours of labour offered by underemployed workers (both utilised and unutilised), plus the hours of labour usually provided by employed persons who are not underemployed.

Source: ABS data available on request, Labour Force Survey, Survey of Job Search Experience, and Survey of Underemployed Workers.

#### 6.45 UNDERUTILISED LABOUR(a), Average weekly hours sought or offered by selected groups — September 2005

	Males	Females	Persons
Unemployed	32.6	27.1	30.1
Seeking full-time work	37.2	32.7	35.4
Seeking part-time work	15.8	18.8	17.6
Underemployed	17.7	13.6	15.2
Seeking full-time work	23.8	22.6	23.5
Seeking part-time work	16.3	13.3	14.4

(a) Experimental estimates.

Source: ABS data available on request, Labour Force Survey, Survey of Job Search Experience, and Survey of Underemployed Workers.

Unlike the headcount measures of underutilised labour, the experimental volume measures take into account the number of hours worked or sought by individuals and this has the effect of weighting people according to the number of hours that they either worked or sought. For example, the large difference between the headcount and volume underemployment rates (5.3% and 2.2% respectively) reflects the large difference between the additional hours offered by the underemployed (15.2 hours a week) and the hours worked by the employed (36.5 hours).

## Earnings

Statistics on earnings are used to help evaluate the standard of living of employees and to make policy decisions regarding income redistribution, social welfare, taxation and wage setting.

The ABS concept of earnings is based on the definition adopted by the twelfth International Conference of Labour Statisticians in 1973.

Earnings refers to remuneration to employees for time worked or work done, as well as remuneration for time not worked (e.g. paid annual leave).

The ABS produces a range of statistics on earnings paid to employees. The quarterly Survey of Average Weekly Earnings (AWE) and the two-yearly Survey of Employee Earnings and Hours (EEH) provide a statistical measure of the remuneration paid to employees. The EEH survey also provides estimates of earnings for each of the pay-setting methods (i.e. awards, collective agreements and individual arrangements). The Survey of Employee Earnings, Benefits and Trade Union Membership, which is conducted each August as a supplement to the monthly LFS, also provides information about the earnings of employees.

The quarterly Labour Price Index (LPI) measures changes in wages and salaries, and other 'non-wage' components which contribute to the cost to employers of employing labour (i.e. annual leave, superannuation, payroll tax and workers' compensation). Unlike earnings measures determined from the AWE and EEH surveys, the LPI is unaffected by changes in the quality or quantity of work performed, that is, it is unaffected by changes in the composition of the labour force, hours worked, or changes in characteristics of employees (e.g. work performance). The LPI is produced annually on a financial year basis and consists of two components: a wage price index, published quarterly; and a non-wage price index, which is available for each financial year. Information regarding the LPI is available in the *Prices* chapter.

# Level of earnings

Data on the level of earnings reflect the variations within different population groups, and across industries and occupations. Changes in the level of earnings are also of interest in reflecting the strength of labour demand and supply.

The AWE survey provides an estimate of the gross weekly earnings paid to employees by measuring earnings during a one-week reference period in the middle month of a quarter (excluding irregular payments not related to the reference period). Data are collected from the payrolls of a sample of employers.

The AWE survey provides three types of earnings measures. The first is average weekly ordinary time earnings (commonly referred to as AWOTE) for full-time adult employees, which relates to that part of total earnings attributable to award, standard or agreed hours of work. A second measure is full-time adult total earnings, which includes both ordinary time and overtime pay. A third measure is total earnings for all employees (including full-time and part-time, adult and junior).

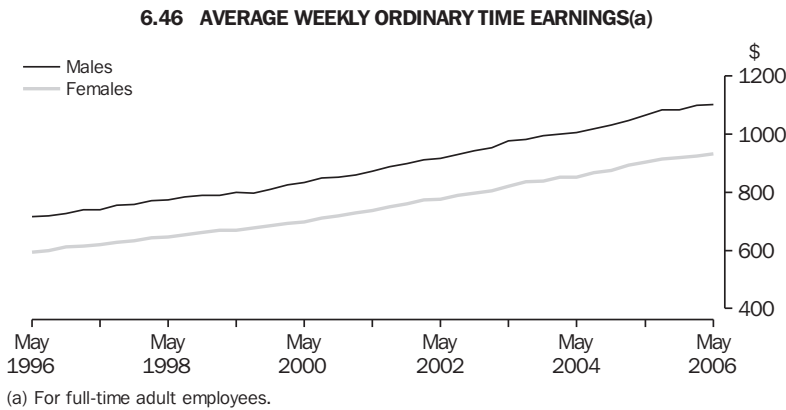
Graph 6.46 shows AWOTE from May 1996 to May 2006. Over the ten-year period, AWOTE for full-time adult male employees increased from \$716 to \$1,101 (or 54%), while for full-time adult female employees increased from \$594 to \$933 (or 57%).

In May 2006 the difference between male and female average weekly earnings was lowest for full-time adult AWOTE (where female earnings were 85% of the male figure of \$1,101) and highest for all employees total earnings (where female earnings were 66% of the male figure of \$985) (table 6.47). The latter difference reflects the inclusion of part-time employees (a higher proportion of female employees work part time) and the inclusion of overtime pay (of which men earn more than women). In May 2006, 46% of female employees worked part time compared with 15% of male employees.

Table 6.48 presents AWOTE for full-time adult men and women by states and territories in May 2006. The highest weekly earnings for men and women were in the Australian Capital Territory (\$1,201.70); the lowest weekly earnings for men and women were in Tasmania (\$943.60).

In May 2006, the mining industry recorded the highest AWOTE for full-time adults (\$1,729 for men and \$1,318 for women) (graph 6.49). The industries with the lowest AWOTE for full-time adults were Accommodation, cafes and restaurants (\$770 for men and \$725 for women) and Retail trade (\$834 and \$731 respectively).

AWOTE for full-time adult women was less than for men in all industries. Full-time adult AWOTE for females was approximately two-thirds (65%) of male full-time AWOTE in the Finance and insurance industry, rising to 94% in the Accommodation, cafes and restaurants industry.



Source: *Average Weekly Earnings, Australia, Spreadsheets (6302.0)*.

Data on average weekly earnings are also available from the EEH survey. This survey provides additional information, such as occupation. AWOTE for full-time adult employees by occupation for May 2004 are shown in graph 6.50. For both men and women, Labourers and related workers earned the lowest average weekly ordinary time earnings of all the occupation groups (\$699 for men and \$612 for women), whereas the highest earnings were for Managers and administrators (\$1,607 for men and \$1,391 for women).

Men had higher average earnings than women in each major occupation group. For full-time adult employees, the proportional difference between male and female average weekly ordinary time earnings was smallest for Labourers and related workers (average earnings of women were 88% of those of men) and greatest for Tradespersons and related workers (78%).

6.47 AVERAGE WEEKLY EARNINGS — May 2006

	Males	Females	Persons
	\$	\$	\$
Full-time adult ordinary time earnings	1 101.20	932.90	1 041.60
Full-time adult total earnings	1 165.20	948.10	1 088.30
All employees total earnings	985.10	651.00	826.90

Source: Average Weekly Earnings, Australia, May 2006 (6302.0).

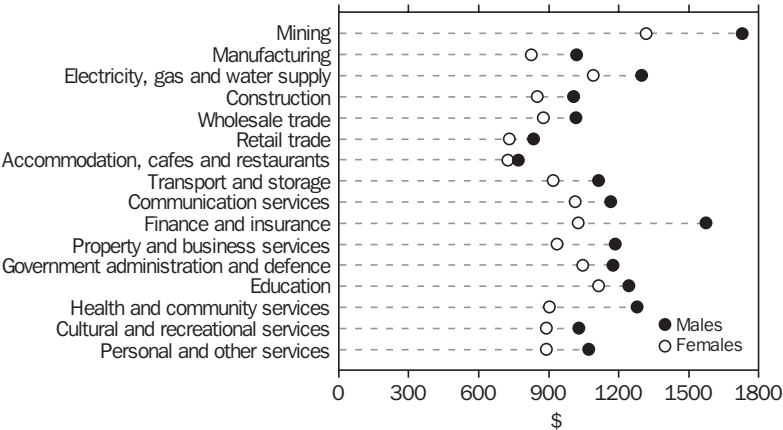
6.48 AVERAGE WEEKLY EARNINGS(a), By state and territory — May 2006

	Males	Females	Persons
	\$	\$	\$
New South Wales	1 142.20	971.60	1 079.50
Victoria	1 084.90	930.10	1 032.70
Queensland	1 035.10	881.30	979.70
South Australia	1 019.40	916.50	984.30
Western Australia	1 172.70	878.20	1 074.10
Tasmania	989.20	861.10	943.60
Northern Territory	1 114.20	939.80	1 039.00
Australian Capital Territory	1 264.80	1 104.60	1 201.70
Australia	1 101.20	932.90	1 041.60

(a) Full-time adult ordinary time earnings.

Source: Average Weekly Earnings, Australia, May 2006 (6302.0).

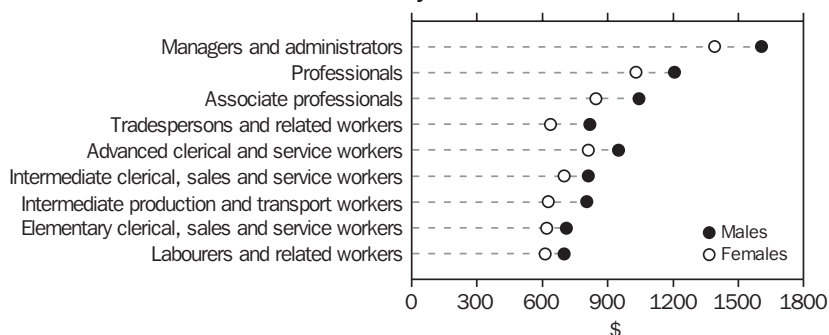
6.49 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a), By industry(b) — May 2006



(a) For full-time adult employees. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: Average Weekly Earnings, Australia, May 2006 (6302.0).

### 6.50 AVERAGE WEEKLY ORDINARY TIME EARNINGS(a), By occupation(b) — May 2004



(a) For full-time adult employees. (b) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

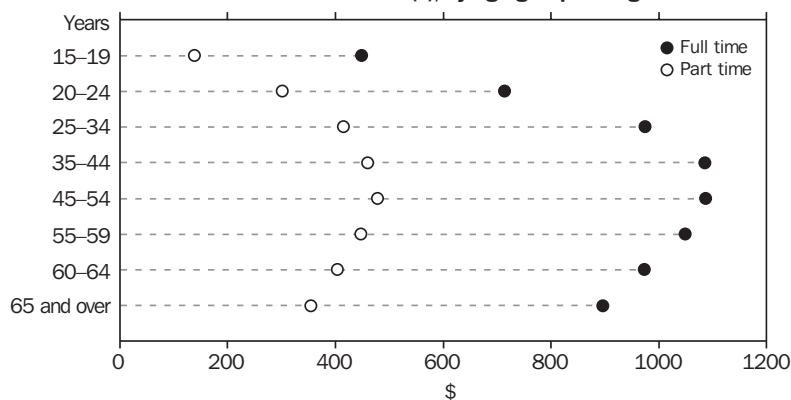
Source: ABS data available on request, Survey of Employee Earnings and Hours.

The Survey of Employee Earnings, Benefits and Trade Union Membership, provides data on average weekly earnings across a range of socio-demographic characteristics.

In August 2005, average weekly earnings of full-time workers was more than double that of part-time workers across all age groups; full-time workers earned, on average, \$983 per week in all

jobs, compared with \$367 for part-time workers. Workers with the lowest average weekly earnings were those aged 15–19 years (\$449 for full-time workers and \$138 for part-time workers) while those with the highest average weekly earnings were aged 45–54 years (\$1,086 for full-time workers and \$478 for part-time workers) (graph 6.51).

### 6.51 AVERAGE WEEKLY EARNINGS(a), By age group — August 2005



(a) In all jobs.

Source: Employee Earnings, Benefits and Trade Union Membership, Australia, August 2005 (6310.0).

## Industrial relations

Industrial relations can be regarded as the relationships and interactions in the labour market between employers and employees (and their representatives), and the intervention in these relations by governments, government agencies and tribunals (e.g. the Australian Fair Pay Commission and the Australian Industrial Relations Commission).

Historically, governments have regulated the Australian labour market to varying degrees. Changes to the structure or processes underpinning the industrial relations environment have generally followed changes in governments, and periods of social or economic change. For most of the last century, employee-employer relationships were shaped by highly centralised Commonwealth and state tribunal-based systems of conciliation and arbitration. However, since the late-1980s, the industrial relations environment in Australia has undergone significant change and is now characterised by more decentralised arrangements.

The field of industrial relations is complex and diverse and, for statistical purposes, is not easily measured. The ABS collects information on a number of topics to provide an insight into the state of the industrial relations environment, including the methods used for setting pay (i.e. awards, collective agreements and individual arrangements), industrial disputes, and trade union membership.

### How pay is set

Information on the methods of setting the main part of employees' pay is collected in the EEH survey. Three different methods of setting pay are identified – awards, collective agreements, and individual arrangements.

Awards are legally enforceable determinations made by federal or state industrial tribunals that set the terms of employment (pay and conditions). Awards usually cover a particular industry or occupation. Employees whose pay is

set by 'award only' are those who have their pay set by an award, and who are not paid more than the award rate of pay.

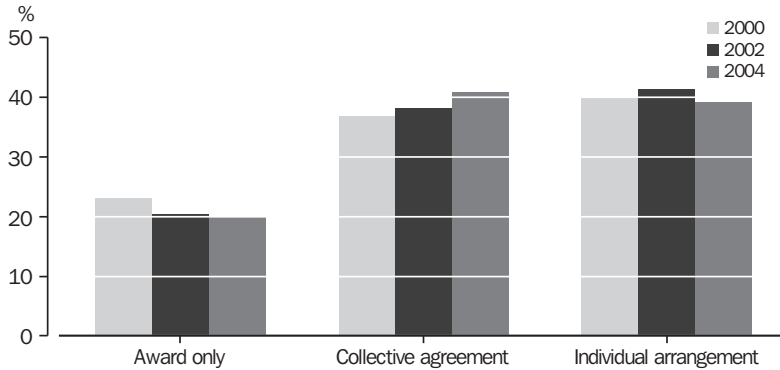
Collective agreements, which include enterprise and workplace agreements, are agreements between an employer (or group of employers) and a group of employees (or one or more unions or employee associations representing employees). Collective agreements set the terms of employment, and are usually registered with an industrial tribunal or authority.

Individual arrangements are arrangements between an employer and an individual employee on the terms of employment for the employee. Employees whose pay is set by an individual arrangement include those whose pay is set by an individual contract, registered individual agreement (e.g. an Australian Workplace Agreement), or common law contract, as well as employees receiving over-award payments by individual agreement, and working proprietors of incorporated businesses.

The proportion of employees who had their pay set by award only, decreased from 23% in May 2000 to 20% in May 2004 (graph 6.52). Over the same period the proportion of employees who had their pay set by a collective agreement increased from 37% to 41%.

In May 2004, 38% of all private sector employees had their pay set through an unregistered individual arrangement, compared with only 4% of public sector employees (table 6.53). Most public sector employees had their pay set by a registered collective agreement (92%). Men were more likely than women to have their pay set by an unregistered individual arrangement (35% compared with 27%), and less likely than women to have their pay set by award only (16% compared with 24%). Part of the difference between male and female employees' pay setting methods can be attributed to the differing proportions of men and women in the various occupation and industry groups.

### 6.52 METHODS OF SETTING PAY — May



Source: ABS data available on request, Survey of Employee Earnings and Hours.

### 6.53 METHODS OF SETTING PAY — May 2004

Sector	Collective agreement			Individual arrangement		
	Award only %	Registered %	Unregistered %	Registered %	Unregistered(a) %	Working proprietor of incorporated business(a) %
<b>MALES</b>						
Private	19.0	23.3	3.6	3.0	41.7	9.5
Public	*0.7	90.7	*0.6	3.0	5.0	—
<b>All sectors</b>	<b>15.7</b>	<b>35.2</b>	<b>3.0</b>	<b>3.0</b>	<b>35.2</b>	<b>7.8</b>
<b>FEMALES</b>						
Private	31.0	25.2	2.8	2.2	34.9	3.9
Public	*3.5	92.6	*0.2	0.9	2.8	—
<b>All sectors</b>	<b>24.4</b>	<b>41.4</b>	<b>2.2</b>	<b>1.9</b>	<b>27.2</b>	<b>2.9</b>
<b>PERSONS</b>						
Private	24.7	24.2	3.2	2.6	38.5	6.9
Public	*2.3	91.8	0.4	1.8	3.7	—
<b>All sectors</b>	<b>20.0</b>	<b>38.3</b>	<b>2.6</b>	<b>2.4</b>	<b>31.2</b>	<b>5.4</b>

(a) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: Employee Earnings and Hours, Australia, May 2004 (6306.0).

The occupation groups which had the highest proportion of employees who had their pay set by a registered or unregistered individual arrangement were Advanced clerical and service workers, and Managers and administrators (52% and 47% respectively) (table 6.54). A further 27% of Managers and administrators were working proprietors of their own incorporated business. Awards were far more prevalent in the lower skilled occupations, with 40% of Elementary

clerical, sales and service workers and 38% of Labourers and related workers having their pay set by award only. In contrast, only 1% of Managers and administrators, 7% of Professionals and 8% of Associate professionals had their pay set by award only. Collective agreements were most prevalent for Professionals (56%) and Intermediate production and transport workers (50%).



#### 6.54 METHODS OF SETTING PAY, By occupation(a) — May 2004

	Award only	Collective agreement(b)	Individual arrangement	
			Registered or unregistered(c)	Working proprietor of incorporated business(c)
	%	%	%	%
Managers and administrators	0.8	25.3	47.3	26.7
Professionals	6.7	55.8	32.8	4.7
Associate professionals	8.3	40.0	42.6	9.1
Tradespersons and related workers	22.5	34.6	35.2	7.7
Advanced clerical and service workers	8.2	30.2	51.8	9.8
Intermediate clerical, sales and service workers	25.8	38.3	34.6	1.2
Intermediate production and transport workers	17.3	50.0	29.9	2.9
Elementary clerical, sales and service workers	39.9	37.1	21.8	*1.2
Labourers and related workers	37.9	36.8	24.5	*0.8
<b>All occupations</b>	<b>20.0</b>	<b>40.9</b>	<b>33.7</b>	<b>5.4</b>

(a) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997. (b) Includes registered and unregistered agreements. (c) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: *Employee Earnings and Hours, Australia, May 2004* (6306.0).

The Accommodation, cafes and restaurants, and Retail trade industries had the highest proportion of employees who had their pay set by award only (60% and 31% respectively) (table 6.55). Collective agreements were more prevalent in Government administration and defence (89%), Education

(84%) and Electricity, gas and water supply (80%). The industries with the highest proportion of employees who had their pay set through a registered or unregistered individual arrangement were Wholesale trade (62%), Mining (58%) and Property and business services (57%).

#### 6.55 METHODS OF SETTING PAY, By industry(a) — May 2004

	Award only	Collective agreement(b)	Individual arrangement	
			Registered or unregistered(c)	Working proprietor of incorporated business(c)
	%	%	%	%
Mining	*1.9	38.8	57.6	*1.7
Manufacturing	14.9	35.8	44.5	4.8
Electricity, gas and water supply	*1.7	79.9	17.7	*0.7
Construction	15.2	24.1	40.8	20.0
Wholesale trade	14.9	16.0	61.8	7.3
Retail trade	31.3	33.4	30.3	5.0
Accommodation, cafes and restaurants	60.1	11.7	25.9	2.4
Transport and storage	14.4	41.9	36.2	7.5
Communication services	*2.1	62.6	32.8	*2.5
Finance and insurance	4.5	43.7	46.9	4.9
Property and business services	19.7	12.8	56.8	10.8
Government administration and defence	*0.8	89.3	9.9	..
Education	8.9	83.5	7.2	*0.4
Health and community services	26.6	54.8	15.9	2.7
Cultural and recreational services	17.7	38.7	40.4	*3.2
Personal and other services	23.5	45.7	27.8	*2.9
<b>All industries</b>	<b>20.0</b>	<b>40.9</b>	<b>33.7</b>	<b>5.4</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Includes registered and unregistered agreements. (c) Prior to 2004, working proprietors of incorporated businesses were classified to unregistered individual arrangements.

Source: *Employee Earnings and Hours, Australia, May 2004* (6306.0).

# Industrial disputes

In ABS statistics, an industrial dispute is a disagreement over an issue or group of issues between an employer and its employees, which results in employees ceasing work. Industrial disputes comprise: strikes, which are a withdrawal from work by a group of employees; and lockouts, which are a refusal by an employer or group of employers to permit some or all of their employees to work.

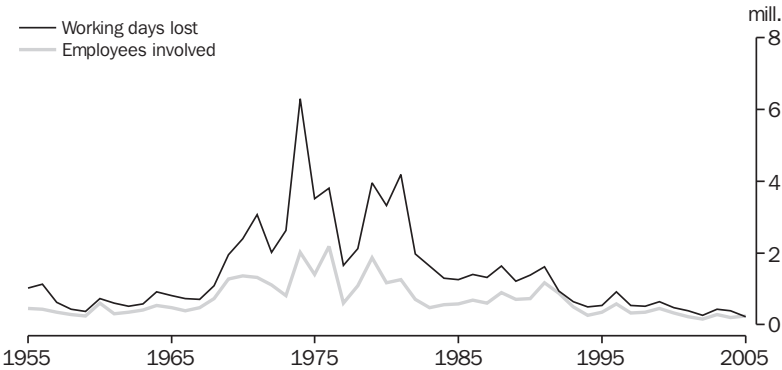
This section presents statistics on industrial disputes involving work stoppages of ten or more working days lost. Working days lost refers to working days lost by employees directly and indirectly involved in the dispute. Directly involved employees are those who actually participated in the dispute. Indirectly involved employees are those who were stood down at the location where the stoppage occurred, but who were not themselves parties to the dispute.

The number of working days lost per year, and the number of employees involved, have fluctuated from year to year, but have decreased significantly over the last two decades (graph 6.56).

There were 228,300 working days lost due to industrial disputes in 2005, a decrease of 40% from 2004 (table 6.57). There were less disputes in 2005 than in 2004 (472 compared with 692) and the average number of working days lost per dispute decreased (from 549 to 484). In contrast, the number of employees involved in industrial disputes rose by 24%, from 194,000 in 2004 to 241,000 in 2005.

The number of working days lost per thousand employees decreased from 46 in 2004 to 26 in 2005 (table 6.58). The Coal mining industry, which had the highest number in each year from 2001 to 2005, recorded the highest increase (41%) between 2004 and 2005 (from 295 to 500). The Construction industry had the second highest number of working days lost per thousand employees in 2005 (154), followed by Metal products, machinery and equipment manufacturing (104). The industries which recorded the largest decreases between 2004 and 2005 were Other mining (down from 118 to 27), Education, Health and community services (down from 82 to 29) and Construction (down from 224 to 154).

6.56 INDUSTRIAL DISPUTES



Source: ABS data available on request, Industrial Disputes collection.

6.57 INDUSTRIAL DISPUTES

	Disputes no.	Employees involved '000	Working days lost '000	Working days lost per dispute no.
2001	675	225.7	393.1	582
2002	767	159.7	259.0	338
2003	643	275.6	439.4	683
2004	692	194.0	379.8	549
2005	472	241.0	228.3	484

Source: ABS data available on request, Industrial Disputes collection.

### 6.58 WORKING DAYS LOST PER THOUSAND EMPLOYEES, By selected industries(a)

	2001	2002	2003	2004	2005
	no.	no.	no.	no.	no.
Mining					
Coal	1 154.3	361.8	375.1	294.5	500.1
Other	32.9	19.6	330.1	117.5	27.2
Manufacturing					
Metal products; Machinery and equipment	269.2	92.2	214.9	71.7	103.7
Other	149.4	82.7	59.6	34.1	27.7
Construction	280.2	224.6	248.6	223.7	153.8
Transport and storage; Communication services	39.4	54.2	53.7	37.9	20.0
Education; Health and community services	7.0	3.1	76.1	81.8	28.9
Other industries(b)	7.1	8.7	4.9	10.0	2.2
<b>All industries</b>	<b>50.4</b>	<b>32.5</b>	<b>53.7</b>	<b>45.5</b>	<b>26.4</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Includes: Agriculture, forestry and fishing; Electricity, gas and water supply; Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Finance and insurance; Property and business services; Government administration and defence; Cultural and recreational services; and Personal and other services.

Source: ABS data available on request, Industrial Disputes collection.

## Trade union membership

A trade union is defined as an organisation, consisting predominantly of employees, whose principal activities include the negotiation of rates of pay and conditions of employment for its members. In August 2005 there were 1.9 million employees who were trade union members in their main job, a 4% increase on the number recorded in August 2004. While the number of employees who were trade union members increased, the proportion of employees who were trade union members decreased slightly between August 2004 (22.7%) and August 2005 (22.4%) (table 6.59). The public sector had a higher rate of unionisation in 2005, with 47% of employees having trade union membership, compared with 17% in the private sector. A slightly higher proportion of men than women were trade union members (24% compared with 21%).

### 6.59 TRADE UNION MEMBERSHIP — August 2005

	Males	Females	Persons
Sector	%	%	%
Public	50.4	44.8	47.2
Private	18.9	14.1	16.8
<b>All sectors</b>	<b>23.5</b>	<b>21.1</b>	<b>22.4</b>

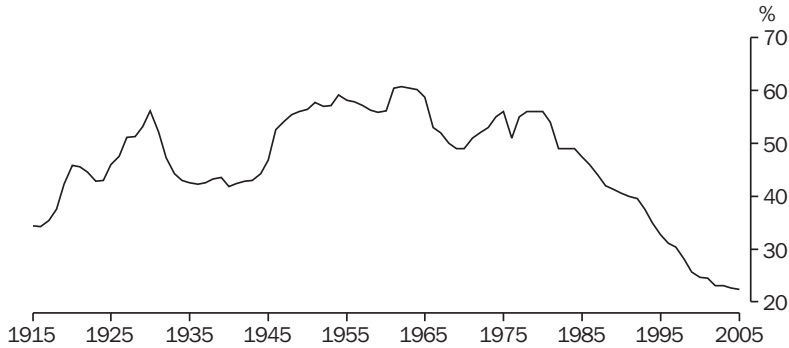
Source: Employee Earnings, Benefits and Trade Union Membership, Australia, August 2005 (6310.0).

The rate of trade union membership in Australia peaked at 61% in 1962 (graph 6.60), before declining rapidly between 1962 and 1970. This was followed by increasing membership during the 1970s. However, since then the proportion of employees who were trade union members has steadily declined.

Some of the factors contributing to the decline in trade union membership include the changing workplace relations environment and the changing industry composition of the workforce. These changes include declines in employment levels in traditionally highly unionised industries and the emergence of industries that are not highly unionised. Another factor in the decline in trade union membership is the increase in part-time and casual employment. These types of employment have historically been less unionised than full-time employment.

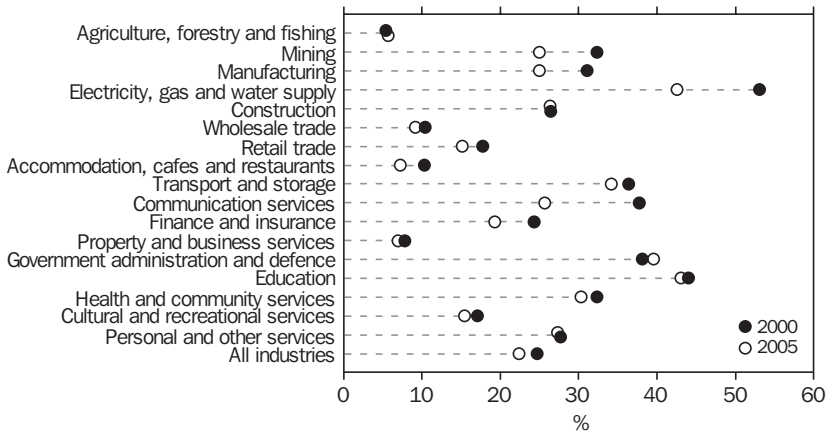
The level of trade union membership varies considerably across industries, with the Electricity, gas and water supply and Education (both 43%), Government administration and defence (40%), and Transport and storage (34%) industries being the most unionised in 2005 (graph 6.61). The least unionised industries were Agriculture, forestry and fishing (6%), Property and business services and Accommodation, cafes and restaurants (both 7%) and Wholesale trade (9%).

## 6.60 TRADE UNION MEMBERSHIP, Proportion of employees



Source: *Employee Earnings, Benefits and Trade Union Membership, Australia* (6310.0); *Trade Union Members, Australia* (6325.0); *Labour Report, 1912–1958* (microfiche no. 61–002).

## 6.61 EMPLOYEES WHO WERE TRADE UNION MEMBERS, By industry(a)



(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Employee Earnings, Benefits and Trade Union Membership, Australia* (6310.0).

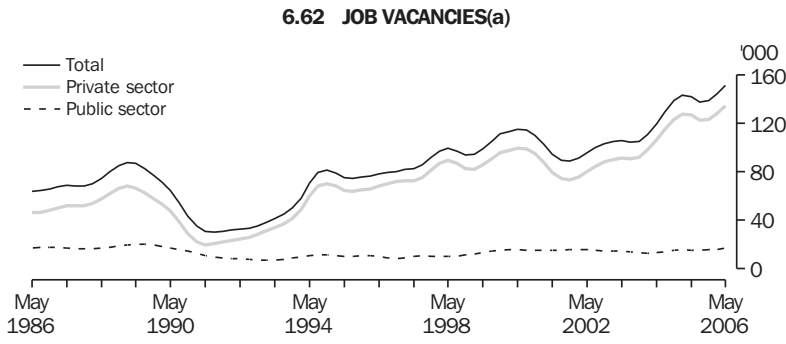
Between 2000 and 2005 most industries experienced a drop in their rate of unionisation. The largest declines occurred in the more unionised industries, with the proportion of employees who were trade union members falling in the Communication services industry (from 38% to 26%), Electricity, gas and water supply (from 53% to 43%) and Mining (from 32% to 25%). The Government administration and defence and Agriculture, forestry and fishing industries were the only industries to experience an increase in the proportion of trade union members.

## Job vacancies

In ABS statistics, a job vacancy is defined as a job available for immediate filling on the survey reference date and for which recruitment action has been taken by the employer. Job vacancy statistics can be used to assess changes in the demand for labour.

Graph 6.62 presents quarterly trend estimates of job vacancies for the period May 1986 to May 2006. It shows that the number of job vacancies decreased to 30,300 in August 1991, reflecting the labour market downturn in the early-1990s. The number of job vacancies then trended upwards to a high of 115,000 in May 2000, before falling to 88,900 in November 2001. Job vacancies then increased again, reaching a new record high of 151,600 in May 2006.

The number of job vacancies in May 2006 was highest in the Property and business services industry (35,300) followed by the Retail trade (21,600), Health and community services (14,900) and Manufacturing (13,000) industries (table 6.63). Property and business services has had the highest number of job vacancies in May in each of the past five years.



Source: *Job Vacancies, Australia, Spreadsheets (6354.0)*.

**6.63 JOB VACANCIES, By industry(a) — May**

	2002	2003	2004	2005	2006
	'000	'000	'000	'000	'000
Mining	1.1	1.1	2.0	2.7	3.9
Manufacturing	11.6	10.9	16.1	14.0	13.0
Electricity, gas and water supply	0.4	0.3	0.4	1.0	0.9
Construction	*9.2	*5.5	*7.1	*9.7	9.6
Wholesale trade	4.4	*4.1	7.3	*6.6	11.6
Retail trade	10.9	18.1	21.8	21.1	21.6
Accommodation, cafes and restaurants	*6.3	5.0	*3.8	6.3	6.7
Transport and storage	2.4	*1.6	*3.0	*4.5	3.1
Communication services	0.4	0.5	0.7	0.6	*1.1
Finance and insurance	4.0	5.0	4.7	7.4	8.1
Property and business services	14.2	*18.8	27.7	31.9	35.3
Government administration and defence	5.8	4.9	4.9	6.3	8.7
Education	3.1	5.0	4.5	4.1	3.6
Health and community services	11.1	12.0	12.1	14.0	14.9
Cultural and recreational services	1.9	3.6	*2.0	3.7	3.9
Personal and other services	*3.5	*3.1	*4.6	*4.0	*5.8
<b>All industries</b>	<b>90.3</b>	<b>99.5</b>	<b>122.7</b>	<b>137.8</b>	<b>152.0</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Job Vacancies, Australia, Spreadsheets (6354.0)*.

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## INCOME AND WELFARE

The economic wellbeing or standard of living of individuals is largely dependent on the economic and social resources available to provide for their consumption of goods and services and for participation in society. Such resources may be in the form of income received from wages and salaries, investments, income support from government, and the like. However, income does not always accurately indicate command over goods and services, particularly when income is variable or expenditure can be financed through running down assets or acquiring debts. Other resources can also contribute to the level of consumption of goods and services, including the resources of government and welfare organisations which provide services such as aged care, respite care and child care, and the resources of family and friends who provide assistance when needed.

Government programs aim to support Australians to achieve social and economic outcomes and to participate in society. Such programs provide income support for the retired, people with disabilities, carers, unemployed people, students, and families with children. Others provide income support for other special groups, such as war veterans, and war widows and their families. In addition to providing income security and supporting families with children, government programs help people to meet specific needs. For example, assistance is also provided for a range of goods and services through pensioner concession and health cards, and other types of programs such as those which aim to provide assistance with employment, and advocacy for people with disabilities.

This chapter provides information on the levels and sources of income of Australia's population, on the levels and patterns of expenditure on goods and services and on the levels of wealth. Information is also provided on the major income and community support programs of the Australian Government, describing the eligibility requirements, number of beneficiaries and government expenditure on these programs.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Household income, expenditure and wealth

## Income

This section provides indicators of the level and distribution of after-tax (disposable) household cash income, after adjusting for household size and composition. The estimates of disposable income are derived from the gross cash income data collected by the Australian Bureau of Statistics (ABS), in the 2003–04 Survey of Income and Housing, after deducting estimates of income tax liability and the Medicare levy. Gross cash income is defined as regular and recurring cash receipts from:

- wages and salaries
- profit or loss from own unincorporated business
- investment income in the form of interest
- rent and dividends
- private transfers in the form of superannuation and child support
- cash transfers from government pensions and allowances.

The restriction to cash incomes is one of practical measurement and is assessed to provide a reasonable, broad picture of the level and distribution of income. However, readers are advised that the relative mix of cash and non-cash incomes across sub-populations will be different, and can change over time.

While income is usually received by individuals, it is normally shared between partners in a couple relationship and with dependent children. To a lesser degree, there may be sharing with other members of the household. Even when there is no transfer of income between members of a household, nor provision of free or cheap accommodation, members are still likely to benefit from the economies of scale that arise from the sharing of dwellings. The income measures shown in this section therefore relate to household income. However, larger households normally require a greater level of income to maintain the same material standard of living as smaller households, and the needs of adults are normally greater than the needs of children. The income estimates are therefore adjusted by an equivalence scale to standardise the income estimates with respect to household size and composition while taking into account the economies of scale that

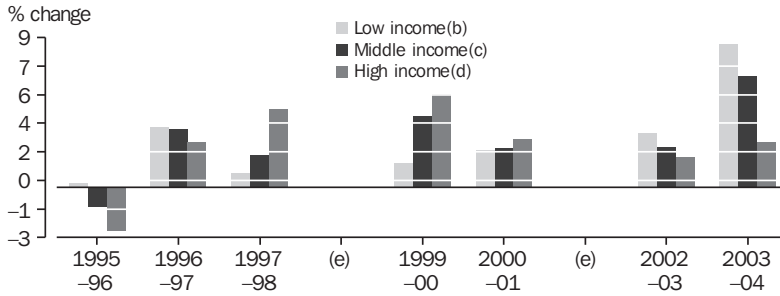
arise from the sharing of dwellings. The equivalised disposable income estimate for any household in this section is expressed as the amount of disposable cash income that a lone-person household would require to maintain the same standard of living as the household in question, regardless of the size or composition of the latter.

To calculate the equivalised disposable income of a household, each member of the household is allocated 'equivalence points'. Taking the first adult in the household as having a weight of 1 point, each additional person aged 15 years or older is allocated 0.5 of a point, and each child under the age of 15 years is allocated 0.3 of a point. Equivalised household income is then derived by dividing total household income by a factor equal to the sum of 'equivalence points' allocated to the household members. The equivalised income of a lone-person household is the same as its unequivalised income. The equivalised income of a household comprising more than one person lies between the total value and the value of its unequivalised income divided by the number of household members.

In 2003–04, average (mean) equivalised disposable household income for all persons living in private dwellings (i.e. the income that a lone-person household would require to maintain the same standard of living as the average person living in all private dwellings in Australia) was \$549 per week. There were approximately 19.6 million people living in these dwellings.

After adjusting for changes in prices and before taking account of some breaks in series between 2002–03 and 2003–04, average real equivalised disposable household income in 2003–04 (\$549) was 5% higher than in 2002–03 (\$522) and 21% higher than in 1994–95 (\$455). Between 2002–03 and 2003–04, the \$27 increase in average real income in part reflects the one-off payments to families and carers announced in the May 2004 Australian Government budget. About \$2.2 billion (b) was payable to families in 2003–04 under this initiative which, on average, increased gross weekly household incomes by about \$6, and equivalised disposable household incomes by a little over \$4 per week. Increases in real incomes between the two years also reflects higher average wages and salaries (up 4.8% in 2003–04). (For more details on breaks in series between 2002–03 and 2003–04, associated with improved survey methodology introduced with the 2003–04 survey, see *Household Income and Income Distribution, Australia, 2003–04* (6523.0).)

### 7.1 CHANGES IN MEAN REAL EQUIVALISED DISPOSABLE HOUSEHOLD INCOME(a)



(a) Change from previous survey year. (b) Persons in the second and third income deciles. (c) Persons in the middle income quintile. (d) Persons in the highest income quintile. (e) No survey was conducted in 1998-99 or 2001-02.

Source: *Household Income and Income Distribution, Australia, 2003-04* (6523.0).

For low income people (represented by the 20% of people with household income between the bottom 10% and bottom 30% of incomes), average equivalised disposable household income in 2003-04 grew by 9% (\$24 per week), compared with 7% for middle income people and 3% for high income people (graph 7.1). About \$7 (or more than one-quarter) of the increase for the low income people resulted from the one-off payments to families and carers in 2003-04. The net impact of these one-off payments on the average real equivalised disposable household incomes of high income households was less than \$1 per week. Over the period from 1994-95, there was a 22% increase in the average real incomes of both low income people and middle income people and 19% for high income people.

### Household characteristics

Households with different income levels tend to differ with respect to other characteristics as shown in table 7.2. Wages and salaries were the principal source of income for households with middle and high income levels in 2003-04, while government pensions and allowances dominated for low income households. However, low income households had the highest incidence of full ownership of their home, reflecting the high proportion of elderly people in the low income category.

Middle income households contained more people on average than high income households (2.8 compared with 2.5) but contained considerably fewer people employed (1.5 compared with 1.9). In part, this reflects the different age profiles of the two groups. Low income households had an average of 0.5 employed persons, and housed an average of 2.5 persons.

### 7.2 HOUSEHOLD CHARACTERISTICS, By income group — 2003-04

	Units	Low income(a)	Middle income(b)	High income(c)	All households
Mean equivalised disposable household income per week	\$	300	492	1027	549
Has PSI of wages and salaries(d)	%	21.0	76.0	85.9	57.5
Has PSI of government pensions and allowances(d)	%	69.8	5.6	*0.1	27.7
Owens home without a mortgage	%	47.7	30.4	25.5	34.9
Owens home with a mortgage	%	16.9	41.2	51.7	35.1
Rents from state/territory housing authority	%	8.9	1.6	*0.2	4.9
Rents from private landlord	%	21.4	23.5	19.6	21.2
Average number of persons in the household	no.	2.5	2.8	2.5	2.5
Average number of employed persons in the household	no.	0.5	1.5	1.9	1.2
Average age of household reference person	years	56	47	44	49
Mean household net worth	\$	292 085	402 425	833 288	467 626

(a) Persons in the second and third income deciles after being ranked by their equivalised disposable household income. (b) Persons in the fifth and sixth income deciles after being ranked by their equivalised disposable household income. (c) Persons in the ninth and tenth income deciles after being ranked by their equivalised disposable household income. (d) Principal source of income.

Source: *Household Income and Income Distribution, Australia, 2003-04* (6523.0); *Household Wealth and Wealth Distribution, Australia, 2003-04* (6554.0).

## Life-cycle stages

The range of income levels across the population partly reflects the different life-cycle stages that people have reached. A typical life cycle includes childhood, early adulthood, and the forming and maturing of families. Table 7.3 compares households in different life-cycle stages.

Of the groups included in table 7.3, the group with the highest average equivalised income was younger couples without children. Their average equivalised disposable household income was \$821 per week, with the average number of employed persons in the household being 1.8. For couples with dependent children only, and with the eldest child being under five years, their average equivalised disposable household income was \$557 per week. Compared with younger couples without children, this lower income reflects a 12% lower after-tax income, principally

reflecting the lower average number of employed persons in these households (1.5) and the larger average household size (3.4 persons) over which incomes are shared. Average incomes were higher for households with non-dependent children, reflecting higher proportions of people employed in these households, but incomes were lower again for households comprising older couples and lone persons, where the numbers of employed people were substantially lower.

People aged 65 years and over had the lowest average incomes, with lone persons' incomes at \$350 per week, somewhat lower than older couple only household incomes at \$399 per week. Elderly lone people were more likely than elderly couples to have government pensions and allowances as their principal source of income (77% compared with 67%), while couples were more likely to fully own their home (85% compared with 74%).

**7.3 INCOME AND HOUSEHOLD CHARACTERISTICS FOR SELECTED LIFE-CYCLE GROUPS — 2003–04**

Household composition	Number of households '000	Average number of persons no.	Average number of employed persons in the household no.	Proportion with govt. benefits as PSI(a) %	Mean equivalised disposable household income per week \$	Proportion owning home without mortgage %	Mean household net worth \$
Lone person, under 35	336.1	1.0	0.8	12.9	567	*3.0	94 318
Couple only, reference person under 35	411.7	2.0	1.8	*2.0	821	2.9	225 797
Couple with dependent children only							
Eldest child under 5	417.0	3.4	1.5	6.2	557	6.9	365 812
Eldest child 5–14	866.0	4.2	1.6	8.4	536	13.2	469 347
Eldest child 15–24	515.4	4.2	2.3	7.7	556	27.1	685 307
Couple with							
Dependent and non-dependent children only	241.8	4.9	3.0	7.0	566	32.8	588 073
Non-dependent children only	431.1	3.3	2.2	12.2	652	51.2	729 299
Couple only, reference person 55–64	509.7	2.0	1.0	27.7	547	69.0	895 008
Couple only, reference person 65 and over	656.7	2.0	0.2	66.9	399	85.2	713 605
Lone person, 65 and over	717.0	1.0	—	76.5	350	73.8	437 380
One-parent, one-family households with dependent children	526.6	2.9	0.8	54.2	391	10.8	157 613
All households	7 735.8	2.5	1.2	27.7	549	34.9	467 626

(a) Principal source of income.

Source: *Household Wealth and Wealth Distribution, Australia, 2003–04* (6554.0); ABS data available on request, 2003–04 Survey of Income and Housing.

Households comprising one parent with dependent children had an average income of \$391 per week, similar to that of elderly couples (\$399 per week), but only 11% of the one-parent households fully owned their home and, therefore, a substantially greater proportion had to make mortgage or rental payments from their income. Of these households, 54% had government pensions and allowances as their principal source of income. On average they had 0.8 employed persons in the household.

### States and territories

There are considerable differences in the average levels of income between the states and territories. Tasmania's average weekly income was

13% below the national average income level and Queensland was 5% below. New South Wales recorded an average income 4% above the national average. In table 7.4 the Australian Capital Territory and the Northern Territory are shown to have the highest average incomes (22% and 17% above the national average respectively). The high income levels reflect in part the younger age profile of the Australian Capital Territory and the Northern Territory. However, it also reflects the exclusion from the results of households in areas of the Northern Territory defined as very remote or Indigenous communities which, if included, would be likely to significantly reduce the average incomes in that territory.

#### 7.4 HOUSEHOLD INCOME PER WEEK, By state and territory — 2003–04

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
CAPITAL CITY(a)									
Gross household income per week									
Mean income	1 360	1 209	1 070	1 058	1 116	1 035	1 408	1 399	1 216
Median income	1 125	986	900	839	900	795	1 233	1 108	982
Equivalent disposable household income per week									
Mean income	618	570	532	543	545	536	643	669	578
Median income	554	517	484	468	479	482	590	628	519
Mean household net worth	640 626	505 684	402 308	362 131	394 132	374 483	376 955	504 887	503 646
BALANCE OF STATE(b)									
Gross household income per week									
Mean income	974	946	1 006	961	1 047	799	n.a.	n.a.	977
Median income	770	756	857	717	874	640	n.a.	n.a.	792
Equivalent disposable household income per week									
Mean income	492	491	508	493	523	433	n.a.	n.a.	497
Median income	425	442	461	420	492	381	n.a.	n.a.	444
Mean household net worth	439 129	409 669	371 394	392 730	452 619	289 201	n.a.	n.a.	405 102
ALL HOUSEHOLDS									
Gross household income per week									
Mean income	1 212	1 134	1 036	1 033	1 098	897	1 401	1 399	1 128
Median income	970	923	880	815	889	720	1 227	1 108	915
Equivalent disposable household income per week									
Mean income	571	548	519	529	539	476	643	669	549
Median income	514	488	472	461	483	420	591	628	491
Mean household net worth	563 213	478 180	385 698	370 046	409 594	324 864	344 239	504 887	467 626

(a) Capital city estimates for the ACT relate to total ACT. (b) NT households included in Australian total for balance of state. NT estimates are not shown separately since estimates for the NT other than Darwin are not considered reliable. Households in areas defined as very remote or Indigenous communities were excluded, accounting for about 23% of the population of the NT.

Source: *Household Income and Income Distribution, Australia, 2003–04* (6523.0); *Household Wealth and Wealth Distribution, Australia, 2003–04* (6554.0).

There are also considerable differences between the equivalised disposable household incomes recorded in capital cities in Australia compared with those earned elsewhere. At the national level, average incomes in the capital cities were 16% above those in the balance of state, and in all states the capital city average incomes were above those in the balance of state. The largest differences recorded were for New South Wales and Tasmania where the capital city incomes were respectively 26% and 24% above the average incomes across the rest of the state.

**Income distribution**

While the average equivalised disposable household income of all households in Australia in 2003–04 was \$549 per week, the median (i.e. the midpoint when all people are ranked in ascending order of income) was somewhat lower at \$491 per week. This difference reflects the typically asymmetric distribution of income where a relatively small number of people have relatively very high household incomes, and a large number of people have relatively lower household incomes (graph 7.5).

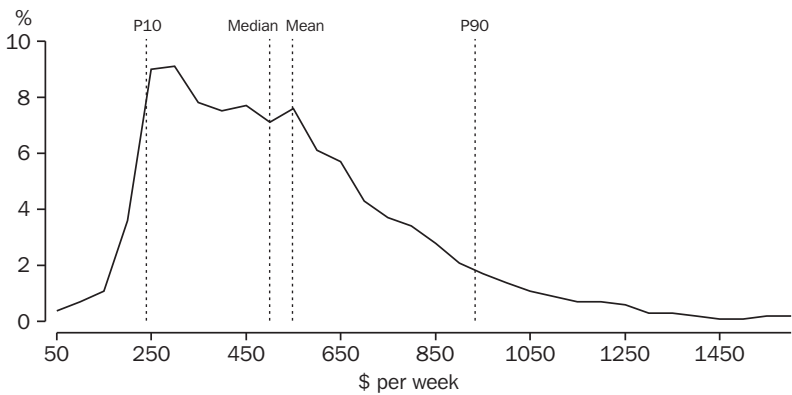
Percentile ratios are one measure of the spread of incomes across the population. To illustrate the full spread of the income distribution, the percentile ratio needs to refer to points near the extremes of the income distribution, for example, the P90/P10 ratio. P90 (i.e. the income level dividing the bottom 90% of the population from the top 10%) and P10 (i.e. dividing the bottom 10% of the population from the rest) are shown in

graph 7.5. In 2003–04, P90 was \$912 per week and P10 was \$246 per week, giving a P90/P10 ratio of 3.70. Various percentile ratios for selected years are shown in table 7.6, and the changes in these ratios can provide a picture of changing income distribution over time.

Another measure of income distribution is provided by the income shares going to groups of people at different points in the income distribution. Table 7.6 shows that, in 2003–04, 10.9% of total equivalised disposable household income went to people in the ‘low income’ group (i.e. the 20% of the population in the second and third income deciles), with 37.4% going to the ‘high income’ group (represented by the 20% of the population in the highest income quintile).

The Gini coefficient is a single statistic that lies between 0 and 1 and is a summary indicator of the degree of inequality, with values closer to 0 representing a lesser degree of inequality (if 0, then all household incomes would be equal), and values closer to 1 representing greater inequality (if 1, a single household would have all the income). The smaller the Gini coefficient the more even the distribution of income. For 2003–04, the Gini coefficient was 0.294. About a third of the decline in the Gini coefficient between 2002–03 and 2003–04 (down about 5%) results from the one-off payments to families and carers. This real-world effect also explains a significant proportion of the movement in the remaining indicators in table 7.6.

**7.5 DISTRIBUTION OF EQUIVALISED DISPOSABLE HOUSEHOLD INCOME  
— 2003–04**



Note: Persons with an income between \$25 and \$1,625 are shown in \$50 ranges on the graph.  
Source: ABS data available on request, 2003–04 Survey of Income and Housing.

## 7.6 SELECTED INCOME DISTRIBUTION INDICATORS, *Equivalised disposable household income*

	Units	1996–97	1997–98	1999–2000	2000–01	2002–03	2003–04
Ratio of incomes of households at top of selected income percentiles							
P90/P10	ratio	3.66	3.77	3.89	3.98	4.00	3.70
P80/P20	ratio	2.53	2.56	2.64	2.63	2.63	2.49
P80/P50	ratio	1.56	1.56	1.57	1.56	1.57	1.52
P20/P50	ratio	0.62	0.61	0.59	0.59	0.60	0.61
Percentage share of total income received by persons with							
Low income(a)	%	11.0	10.8	10.5	10.5	10.6	10.9
Middle income(b)	%	17.8	17.7	17.7	17.6	17.6	17.9
High income(c)	%	37.1	37.9	38.4	38.5	38.3	37.4
Gini coefficient	no.	0.292	0.303	0.310	0.311	0.309	0.294

(a) Persons in the second and third income deciles after being ranked by their equivalised disposable household income.

(b) Persons in the fifth and sixth income deciles after being ranked by their equivalised disposable household income. (c) Persons in the ninth and tenth income deciles after being ranked by their equivalised disposable household income.

Source: *Household Income and Income Distribution, Australia, 2003–04* (6523.0).

Some of the change in the indicators between 2002–03 and 2003–04 will reflect methodological improvements introduced in 2003–04, although it is not possible to quantify these impacts on the distributional measures shown in table 7.6. However, if the former method of imputing business and investment incomes based on reported previous year incomes had been continued for 2003–04, the Gini coefficient would have been about 1% higher.

While it is difficult to assess changes in income distribution over time due to the methodological improvements introduced with the 2003–04 survey, it appears that there has been no significant change in income inequality from the mid-1990s to 2003–04. If only the real impact of the one-off payments to families and carers were to be taken into account, the Gini coefficient for 2003–04 would be below the estimate for 2002–03, and not significantly different from the Gini coefficients for either 1994–95 or 1995–96 (0.302 and 0.296 respectively). This pattern would also be reflected in the other selected indicators of income distribution.

## Household expenditure

The latest household expenditure information available is from the 2003–04 Household Expenditure Survey, conducted by the ABS. This survey collected detailed information on the expenditure, income and characteristics of households in Australia.

The household is the usual unit of analysis for expenditure because it is assumed that sharing of the use of goods and services occurs at this level. If smaller units are adopted, for example, person, then it is difficult to attribute the use of both shared items such as accommodation and household goods, and of expenditure on items consumed by others, such as food.

In 2003–04, Australian households spent an average of \$893 per week on goods and services (table 7.7). The level and pattern of expenditure differ between households, reflecting characteristics such as income, household composition, household size and location.



**7.7 HOUSEHOLD EXPENDITURE AND CHARACTERISTICS, By equivalised disposable household income quintile groups — 2003–04**

	Units	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	All households
Mean gross household income per week	\$	337	697	1 033	1 396	2 280	1 128
Mean equivalised disposable household income per week	\$	226	361	492	641	1027	549
Average age of household reference person	years	57	52	47	43	44	49
Average number of persons in the household	no.	2.1	2.8	2.8	2.7	2.4	2.5
Average number of employed persons in the household	no.	0.3	0.9	1.4	1.8	1.9	1.2
Mean household net worth	\$	286 565	351 390	402 425	481 939	833 288	467 626
Family composition of household(a)							
Couple family with dependent children	%	15.0	31.9	36.0	33.5	22.7	26.9
One-parent family with dependent children	%	10.3	9.0	6.3	4.9	1.9	6.6
Couple only	%	25.6	27.6	19.7	22.5	35.9	26.5
Other one-family households	%	4.5	9.8	12.3	12.8	14.2	10.5
Multiple-family households	%	*0.7	*1.0	*1.5	*1.8	*1.3	1.2
Lone person	%	42.2	18.8	21.2	20.2	19.6	25.4
Group households	%	1.6	1.9	2.9	4.4	4.4	3.0
Expenditure(b)							
Current housing costs (selected dwelling)	%	17.8	15.5	15.8	15.6	16.0	16.1
Domestic fuel and power	%	3.8	3.2	2.6	2.4	2.1	2.6
Food and non-alcoholic beverages	%	19.9	19.1	17.5	16.3	15.4	17.1
Alcoholic beverages	%	1.9	2.2	2.5	2.9	3.0	2.6
Tobacco products	%	2.0	1.4	1.4	1.4	0.8	1.3
Clothing and footwear	%	3.5	3.7	3.9	4.1	4.2	3.9
Household furnishings and equipment	%	5.9	5.8	5.7	5.7	5.9	5.8
Household services and operation	%	7.1	6.4	6.2	6.1	5.3	6.1
Medical care and health expenses	%	4.8	5.2	4.9	5.5	5.1	5.1
Transport	%	14.1	14.9	16.2	16.9	15.3	15.6
Recreation	%	10.3	12.5	12.6	12.3	14.7	12.8
Personal care	%	1.8	1.8	1.8	2.0	2.0	1.9
Miscellaneous goods and services	%	7.2	8.2	8.7	8.9	10.1	8.9
Mean expenditure on all goods and services per week	\$	490	729	917	1 082	1 320	893
Number of households	'000	1 882.7	1 418.9	1 388.1	1 441.8	1 604.3	7 735.8

(a) As a proportion of all households. (b) As a proportion of total expenditure on goods and services.

Source: Household Expenditure Survey, Australia: Summary of Results, 2003–04 (6530.0).

Predictably, the level of household expenditure differs between households with differing income levels. In 2003–04, households in the lowest income quintile (i.e. the 20% of households with the lowest equivalised disposable household income) spent \$490 per week on goods and services, compared with \$1,320 spent by households in the highest income quintile. Households in these quintiles had average gross weekly incomes of \$337 and \$2,280 respectively. Since the Household Expenditure Survey does not collect information on all forms of income and expenditure, and there are significant timing differences between the different components of income and expenditure collected, caution should be exercised in comparing the income and expenditure data. Nevertheless, for both the

lowest and the second lowest income quintiles, average weekly household income as measured in the survey is less than average weekly household expenditure. This does not necessarily mean that these households are spending beyond their means. Some of the households in these quintiles will have had higher income in the past and so can finance their expenditure by drawing on past savings. This is especially so for retired people. Other households may take out loans in the expectation of higher incomes at a later time. The lowest quintile also includes households who reported zero or negative income. These households' losses from their unincorporated businesses or investments equalled or were greater than their income from all other sources.

In general this group can draw on economic resources other than income to maintain their standard of living, at least in the short term.

The composition of a household's weekly expenditure is also affected by the level of household income. For example, food and non-alcoholic drinks accounted for 20% of the expenditure on goods and services of households in the lowest income quintile, compared with 15% for households in the highest income quintile. In general, the proportion spent on household services, domestic fuel and power and tobacco products also declined as household income rose, while the proportion spent on recreation, clothing and footwear, and alcohol increased.

## Wealth

Wealth is a net concept and measures the extent to which the value of household assets exceeds the value of their liabilities. The 2003–04 Survey of Income and Housing collected a comprehensive range of household assets and liabilities to enable the production of statistics on net worth (or wealth). In 2003–04, the mean value of household assets was \$537,100 (table 7.8). The corresponding value of mean household liabilities was \$69,400, resulting in average household net worth of \$467,600.

Owner occupied dwellings were the main form of asset held by households. Around 70% of all households own their home outright or with a mortgage, with an average home value of \$355,000. When averaged across all households, that is, across both owner occupiers and non-owner occupiers, the average was \$249,000 and represented 46% of total average household assets. Nearly 20% of households owned property other than their own home, including holiday homes and residential and non-residential property for rent. These accounted for 13% of total household assets. Balances in superannuation funds were the largest financial asset held by households, averaging \$63,500 per household across all households and accounting for 12% of total household assets. Nearly 75% of households had some superannuation assets.

Loans outstanding on owner occupied dwellings were the largest household liability. They averaged \$113,000 for owner occupier households with a

mortgage, giving them a net value in their dwellings of \$238,000. Across all households, the average value of loans outstanding on owner occupied dwellings was \$40,000, or 58% of total household liabilities. Loans outstanding for other property averaged \$19,900 and accounted for 29% of total household liabilities.

The distribution of wealth (net worth) across households is very unequal, partly reflecting the common pattern of people gradually accumulating wealth throughout their working life. In 2003–04, the 20% of households with the least net worth accounted for only 1% of the net worth of all households, with an average net worth of \$24,300 per household. The share of net worth increases with each higher net worth quintile, with 6% for the second quintile, 13% for the third quintile, 21% for the fourth quintile, while the wealthiest 20% of households in Australia accounted for 59% of total household net worth, with average net worth of \$1.4 million (m) per household.

The distributional pattern of net worth is also marked when considered in terms of sources of income. The households where the principal source of household income was 'other' income (principally investment income) had average household net worth of \$1.1m, while for those where the principal source of income was government pensions and allowances the average household net worth was \$250,000. Net worth in renter households was on average only about 10% of the net worth in owner households with no mortgage, and about 20% of owner households with a mortgage.

The picture of wealth (net worth) is a little different and more equally distributed when viewed from the perspective of the distribution of incomes. The households in which the 20% of people with the lowest household incomes live accounted for 15% of total household net worth, similar to the shares of net worth held by the households with people in the second and third household income quintiles. The households in which the 20% of people with the highest household incomes live accounted for 37% of total household net worth.

**7.8 HOUSEHOLD ASSETS AND LIABILITIES, AND CHARACTERISTICS, By household net worth quintile groups(a) — 2003–04**

	Units	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	Total
<b>ASSETS</b>							
<b>Financial assets</b>							
Value of accounts held with financial institutions	\$'000	2.0	7.9	12.3	21.5	61.9	21.1
Value of shares (excl. own incorporated business)	\$'000	0.3	2.1	3.4	9.7	75.7	18.2
Value of trusts	\$'000	*0.1	0.9	1.5	4.2	39.0	9.2
Value of debentures and bonds	\$'000	—	*0.1	*0.3	1.9	*2.2	0.9
Value of own incorporated business (net of liabilities)	\$'000	—	*0.6	1.7	4.5	107.4	22.8
Balance of accounts with government superannuation funds	\$'000	1.0	6.6	11.8	23.0	42.6	17.0
Balance of accounts with non-government superannuation funds	\$'000	4.3	16.0	22.1	44.1	145.8	46.5
Total financial assets(b)	\$'000	7.8	34.4	53.2	109.9	477.4	136.5
<b>Non-financial assets</b>							
Value of owner occupied dwelling	\$'000	4.0	104.0	231.9	332.7	572.8	249.0
Value of other property	\$'000	*1.6	14.2	26.0	55.8	256.5	70.8
Value of own unincorporated business (net of liabilities)	\$'000	*0.1	1.1	3.1	6.7	66.8	15.6
Value of contents of dwelling	\$'000	16.2	38.5	47.9	55.9	78.3	47.4
Value of vehicles	\$'000	5.6	13.7	16.9	20.2	29.8	17.2
Value of assets n.e.c.	\$'000	*0.1	*0.3	*0.3	*0.3	*2.0	*0.6
Total non-financial assets	\$'000	27.5	171.7	326.2	471.6	1 006.2	400.6
<b>Total assets</b>	<b>\$'000</b>	<b>35.3</b>	<b>206.1</b>	<b>379.4</b>	<b>581.4</b>	<b>1 483.6</b>	<b>537.1</b>
<b>LIABILITIES</b>							
<b>Property loans</b>							
Principal outstanding on loans for owner occupied dwelling	\$'000	3.2	48.3	61.8	50.5	36.3	40.0
Principal outstanding on other property loans	\$'000	*1.3	8.5	13.4	23.1	53.0	19.9
Total property loans	\$'000	4.4	56.9	75.2	73.6	89.3	59.9
<b>Other liabilities</b>							
Debt outstanding on study loans	\$'000	2.0	1.2	0.9	0.9	1.0	1.2
Amount owing on credit cards	\$'000	1.2	1.9	1.9	1.9	2.5	1.9
Principal outstanding on loans for vehicle purchases (excl. business loans)	\$'000	2.2	3.8	3.0	2.6	1.8	2.7
Principal outstanding on investment loans (excl. business and rental property loans)	\$'000	**0.3	*0.3	0.8	2.4	8.0	2.4
Principal outstanding on loans for other purposes (excl. business and investment loans)	\$'000	0.8	1.8	1.6	1.5	1.5	1.5
<b>Total liabilities</b>	<b>\$'000</b>	<b>10.9</b>	<b>65.9</b>	<b>83.5</b>	<b>83.0</b>	<b>103.9</b>	<b>69.4</b>
<b>NET WORTH</b>							
<b>Total household net worth</b>	<b>\$'000</b>	<b>24.3</b>	<b>140.2</b>	<b>295.9</b>	<b>498.5</b>	<b>1 379.7</b>	<b>467.6</b>
<b>CHARACTERISTICS</b>							
Average number of persons in the household	no.	2.2	2.5	2.6	2.7	2.8	2.5
Average number of employed persons in the household	no.	0.8	1.2	1.3	1.4	1.5	1.2
Average age of household reference person	years	41	45	50	53	55	49
Mean equivalised disposable household income per week	\$	398	507	514	558	728	549
Has wage and salaries as PSI(c)	%	45.3	65.4	60.0	60.2	56.9	57.5
Has government pensions and allowances as PSI(c)	%	48.0	26.9	30.0	23.0	10.8	27.8
Owens home without a mortgage	%	1.1	18.4	39.7	50.6	64.9	34.9
Owens home with a mortgage	%	3.2	43.4	52.4	44.6	31.7	35.1
Rents from state/territory housing authority	%	21.8	2.2	**0.2	**0.1	n.p.	4.9
Rents from private landlord	%	65.1	29.8	5.5	3.5	2.1	21.2

(a) Household weighted. (b) Includes value of other financial investments, children's assets and loans to persons not in the same household. (c) Principal source of income.

Source: *Household Wealth and Wealth Distribution, Australia, 2003–04* (6554.0).

## Income support and other community support programs

*Information in this section was contributed by the Australian Government departments of Families, Community Services and Indigenous Affairs; Veterans' Affairs; Health and Ageing; Education, Science and Training; and Employment and Workplace Relations.*

Australian governments, at all levels, provide welfare support to the community through a range of programs. The largest component of this welfare is through income support programs provided by the Australian Government. A listing of web sites is provided at the end of this chapter where additional information about specific welfare programs provided by the Australian Government can be obtained.

## Income support programs

The Australian income support system provides financial assistance to individuals in a variety of circumstances, including families, job seekers, the aged, people with disability, carers, mature age people, and students. Assistance is also provided for a range of goods and services through pensioner concession and health cards. Some forms of assistance are provided as direct transfers to individuals, while others are payments to services on their behalf, or taxation rebates. Some programs use a combination of these means. Approximately 4.8 million people, or more than one in five individuals, are direct beneficiaries of income support and supplementary payments at any one time.

### 7.9 EXPENDITURE ON MAJOR INCOME SUPPORT PAYMENTS AND BENEFITS(a)(b)

	2002-03 \$'000	2003-04 \$'000	2004-05 \$'000	2005-06 \$'000
<b>SUPPORT FOR FAMILIES AND INDIVIDUALS</b>				
Family assistance				
Family Tax Benefit – Family Assistance Office payments(c)	10 473 856	12 869 904	12 826 730	13 534 246
Family Assistance Legislative Amendment (More Help for Families – 'One-off' payments)	..	2 222 990	..	..
Family Assistance Scheme	..	..	174 362	22 697
Maternity Allowance(d)(e)	216 634	180 063	20 053	..
Maternity Immunisation Allowance(d)	..	43 193	43 280	49 843
Maternity Payment	..	..	726 814	855 039
Double Orphan Pension	2 052	2 165	2 389	2 669
Child care support				
Child Care Benefit	1 364 358	1 387 946	1 462 670	1 501 287
Child Care for Eligible Parents Undergoing Training	12 985	12 880	17 215	21 658
Support for carers				
Carer Payment(f)	702 649	921 008	1 062 101	1 220 828
Carer Allowance(f)(g)	744 488	965 430	1 109 346	1 258 397
Support for the aged(h)				
Age Pension	17 740 214	19 540 401	19 970 348	20 588 124
Aged Persons Savings Bonus	-144	13	-28	4
'One-off' Payment to Seniors	-2	-5	..	..
Self-Funded Retirees' Supplementary Bonus	569	169	56	23
Telephone Allowance for Commonwealth Seniors Health Card Holders	11 668	12 251	13 388	18 591
Utilities Allowance(f)	..	..	68 667	288 109
Seniors Concession Allowance(f)	..	..	57 967	93 420
Widow Class B Pension	39 804	26 275	8 064	6 491
Wife Pension (Age)	195 071	194 176	179 017	173 127
Wife Pension (DSP)	351 491	326 083	290 125	258 497
Special Benefit	116 286	113 141	98 772	75 042
Bereavement Allowance	986	1 075	1 065	1 079

For footnotes see end of table.

...continued

## 7.9 EXPENDITURE ON MAJOR INCOME SUPPORT PAYMENTS AND BENEFITS(a)(b) — continued

	2002–03	2003–04	2004–05	2005–06
	\$'000	\$'000	\$'000	\$'000
<b>WORKING AGE INCOME SUPPORT</b>				
Working age income support payments				
Newstart Allowance	4 831 069	4 754 733	4 627 413	4 527 720
Parenting Payment	5 731 117	5 995 135	6 127 018	6 048 303
Mature Age Allowance	381 155	372 523	258 898	162 667
Partner Allowance	860 768	860 462	703 894	599 088
Widow Allowance	429 662	469 276	477 552	492 836
Pensioner Education Supplement	68 574	72 139	78 985	78 550
Disability Support Pension	6 851 608	7 492 532	7 910 767	8 256 566
Mobility Allowance	74 975	82 163	85 562	95 872
Sickness Allowance	85 528	85 375	89 407	85 415
<b>YOUTH AND STUDENT SUPPORT</b>				
Youth and student support				
Youth Allowance(i)	2 235 020	2 257 447	2 174 177	2 101 265
Austudy	270 623	258 848	227 059	217 765
ABSTUDY	146 018	161 129	150 403	154 973
<b>VETERANS SUPPORT</b>				
Veterans Income Support Program				
Service Pension	2 528 030	2 535 576	2 503 390	2 495 893
Income Support Supplement	274 170	294 949	313 035	328 315
Compensation Program				
Disability Pension	1 244 684	1 288 539	1 304 662	1 327 420
War Widow(er)/ Orphan Pensions	1 370 486	1 445 065	1 501 728	1 542 538
<b>ALL MAJOR INCOME SUPPORT PAYMENTS AND BENEFITS</b>				
<b>Total(j)</b>	<b>59 356 452</b>	<b>67 245 049</b>	<b>66 666 351</b>	<b>68 484 357</b>

(a) Outlays on pensions, allowances and Family Tax Benefits include expenditure on Commonwealth Rent Assistance. Details of rent assistance are included in the Housing chapter. (b) Negative values are recoveries from previous years. (c) This does not include payments made by the Australian Taxation Office. (d) Expenditure on Maternity Allowance prior to 2003–04 includes Maternity Immunisation Allowance. (e) Payments for Maternity Allowance ceased in 2004–05, as they were replaced by the Maternity Payment. (f) Includes 'one-off' bonus payments in 2003–04, 2004–05 and 2005–06 for the Carer payments, and in 2005–06 for Utilities and Seniors Concession Allowances. (g) Carer Allowance was introduced on 1 July 1999. It combined Child Disability Allowance with Domiciliary Nursing Care Benefit, which was the responsibility of the Department of Health and Ageing. (h) Pharmaceutical Allowance and Remote Area Allowance have not been added as expenditure for these items cannot be separately identified. (i) Youth allowance is composed of an allowance for full-time students administered by the Department of Education, Science and Training, and an allowance for part-time students and the unemployed which is administered by the Department of Employment and Workplace Relations. (j) Total is for the above programs only and does not include some minor income support payments.

Source: Australian Government Departments of: Families, Community Services and Indigenous Affairs; Employment and Workplace Relations; Veterans' Affairs; Health and Ageing; Education, Science and Training.

The main income support payments and benefits provided by Australian Government departments for the financial years 2002–03 to 2005–06 are listed in table 7.9 (all tables in this section are based on current dollars). Details of the main payments effective during 2005–06, together with associated statistics, are provided in this section.

Most allowance types are adjusted once or twice a year in line with increases in the Consumer Price Index (CPI) to maintain purchasing power. Pension payments are adjusted in line with the CPI and male total average weekly earnings, ensuring the maximum single pension rate does not fall below 25% of male total average weekly earnings. Many income support payments are subject to income, assets and activity tests, to ensure

benefits are targeted to those in greatest need. Details of the rates in effect at 30 June 2006 are listed in table 7.10.

Since September 1997 Centrelink has delivered most of the income support payments on behalf of Australian Government departments. Centrelink is a statutory agency established to deliver a range of Australian Government services to the Australian community. It operates under the *Services Delivery Agency Act 1997* (Cwlth). Centrelink provides advice about payment entitlements, provides referrals to Centrelink specialist staff for additional assistance, and may refer customers to other departments, agencies or community organisations where appropriate.

**7.10 MAXIMUM RATES FOR INCOME SUPPORT  
PAYMENTS AND BENEFITS(a)(b)**

	\$
Age Pension	
Single	499.70
Couple(c)	417.20
Austudy	
Single or partnered, no children	334.70
Single, with children	438.50
Partnered, with children	367.50
ABSTUDY	variable
Carer Allowance	94.70
Community Development Employment Project (CDEP) Participant Supplement	20.80
Child Care Benefit	
Approved care(d)	
Non-school age child	2.88
School age child	2.45
Registered care(d)	
Non-school age child	0.48
School age child	0.41
Defence Force Income Support Allowance (DFISA)(e)	variable
Disability Support Pension (DSP)	
Single	499.70
Couple(c)	417.20
Disability Pension	
General Rate	308.50
Extreme Disablement Adjustment (EDA)	468.60
Intermediate Rate	571.00
Special Rate (TPI)	832.10
Double Orphan Pension	47.50
Education Entry Payment	208.00
Family Tax Benefit Part A(f)	
For each dependent child	
Aged under 13 years	137.06
Aged 13–15 years	173.74
Aged 16–17 years	44.10
Aged 18–24 years	59.36
Family Tax Benefit Part B(f)	
Age of youngest child	
Aged under 5 years	117.60
Aged 5–15 years, or aged 16–18 years and full-time students	82.04
Income Support Supplement for war widows and widowers	148.80

For footnotes see end of table.

...continued

**7.10 MAXIMUM RATES FOR INCOME SUPPORT  
PAYMENTS AND BENEFITS(a)(b) — continued**

	\$
Maternity Payment 'One-off' lump sum, per birth	3 166.00
Maternity Immunisation Allowance 'One-off' lump sum	222.30
Military Compensation	variable
Mobility Allowance	71.40
Newstart Allowance	
Single	
Aged 21 or over, no children	410.60
Aged 21 or over, with children	444.20
Aged 60 or over, after 9 months	450.00
Partnered	370.50
Orphan's Pension	
Single	76.10
Double	152.10
Parenting Payment	
Sole parents	499.70
Partnered parents	370.50
Partner Allowance	370.50
Pensioner Education Supplement	
Full-time or concessional study load	62.40
Part-time study load	31.20
Service Pension	
Single	499.70
Couple(c)	417.20
Youth Allowance	
Single, no children	
Aged under 18 years, at home	183.20
Aged 18 years and over, at home	220.30
Away from home	334.70
Single with children	438.50
Partnered with no children	334.70
Partnered with children	367.50
War widow's pension and orphan's pension	524.70

(a) Rates do not include Commonwealth Rent Assistance payments. (b) Per fortnight, unless otherwise indicated. (c) Per person. (d) Per hour. (e) DFISA is covered by the maximum age or service pension. If an individual receives maximum age or service pension then that individual will not be entitled to any DFISA. If a person has a reduced age or service pension then the maximum DFISA will be the difference between the maximum age or service pension and the actual age or service pension. (f) Fortnightly figures provided for Family Tax Benefit do not include end-of-year supplements, which were \$627.80 per child for FTB Part A and \$306.60 per family for FTB Part B.

Note: For Bereavement Allowance see single Age Pension. For Carer Payment, Widow Class B Pension, Wife Pension (Age) and Wife Pension (DSP) see Age Pension. For Mature Age Allowance, Sickness Allowance, Widow Allowance see Newstart Allowance. Special Benefit generally as for Newstart/Youth Allowance.

Source: Centrelink, 'A guide to Australian Government payments 20 March–30 June 2006'. Department of Veterans' Affairs, 'You and Your Pension', 2005 Edition.



The Department of Veterans' Affairs (DVA) delivers various income support payments and pensions to eligible veterans and their families. Medicare Australia and the Australian Tax Office (ATO) also support the delivery of Family Assistance programs, with Medicare Australia also supporting the delivery of Aged Care payments.

Numbers of income support customers referred to in this section generally relate to June of the reference year. These numbers are taken from extracts of administrative data as close to 30 June as possible. The dates of extracts, however, can vary between payment types. All financial data refer to the full financial year.

### **Family assistance**

Family assistance policies are formulated to provide income support to families to assist with the costs of raising children, including newborns, in a way that recognises the needs and choices of both single and dual income families.

Family Tax Benefit Part A (FTB Part A) helps families with the cost of raising dependent children. It is paid to families with dependent children up to 21 years, and young people between 21 and 24 years who are studying full time. Payments are made for each dependent child who is not receiving Youth Allowance or a similar payment. FTB Part A is subject to a family income test and provides access to a number of supplementary payments. These are Rent Assistance, Large Family Supplement and Multiple Birth Allowance. There is also an end of year supplement.

Family Tax Benefit Part B (FTB Part B) provides extra assistance for families with only one main income earner. Payment to a family is based on the age of the youngest child, and is assessed on the income of the family's second income earner. It is paid per family, not per dependent child. Families must have at least one dependent child aged under 16 years, or aged 16–18 years who is studying full-time. The child must not be receiving Youth Allowance or similar payment. FTB Part B has a higher rate of payment where the youngest child is under 5 years of age. There is also an end of year supplement.

FTB Part A and Part B payments are administered by the Family Assistance Office (FAO), which is located at Centrelink Customer Service Centres, Medicare Australia offices and ATO shopfronts.

They are available as a direct payment from the FAO, either fortnightly or as a lump sum, or via tax instalment deductions or an end of year lump sum payment through the tax system. Some FTB recipients can receive fortnightly payments for part of the tax year with the balance as a lump sum at the end of the tax year. As at the end of June 2006, 1.8 million families with 3.5 million children received FTB Part A and 1.4 million families received FTB Part B via fortnightly payments from the FAO.

Maternity Payment is a one-off lump sum payment made to families following the birth (including stillbirth) or adoption of a baby up to the age of two years. Maternity Payment recognises the extra costs incurred at the time of a new birth or the adoption of a very young child and is not income tested.

Maternity Immunisation Allowance is a one-off lump sum payment paid for children fully immunised to the level recommended for an 18-month-old child. It must be claimed on or before the child turns two years of age and is not income tested.

The Double Orphan Pension is not means tested and is a payment for children aged under 16 years or full-time dependent students aged 16–21 years who do not receive Youth Allowance. It is available to children/young people who have at least one deceased parent and who cannot have contact with the other parent (e.g. because that parent is a long-term prisoner or their whereabouts is unknown).

Table 7.11 shows the number of recipients of and the expenditure on family assistance.

### **Child care support**

To help families with children to participate in the economic and social life of the community, the Australian Government supports their access to child care.

Child care services include centre-based long-day care, family day care, in-home care, before and after school hours care, vacation care, occasional care, and Multi-functional Aboriginal Children's Services. Flexible services that can combine various models of care are also available to meet the needs of families in rural and remote areas.



## 7.11 RECIPIENTS AND EXPENDITURE FOR FAMILY ASSISTANCE

	Units	2002-03	2003-04	2004-05	2005-06
Family Tax Benefit(a)					
Family Assistance Office (FAO)					
Recipients(a)					
Part A – fortnightly instalments(b)	no.	1 785 123	1 809 122	1 828 495	1 811 826
Part B – fortnightly instalments(b)	no.	1 223 572	1 205 760	1 396 918	1 372 693
Lump sum payments(c)	no.	59 323	63 946	77 070	56 865
Claims lodged with ATO but to be paid by the FAO(d)	no.	14 016	12 083	16 869	20 554
Total payments (Part A and Part B)(e)	\$'000	10 473 856	12 869 904	12 826 730	13 534 246
Australian Taxation Office					
Recipients(a)(d)					
Paid by tax instalment deduction or on assessment(d)	no.	83 762	99 075	117 722	134 535
Payments					
Paid by tax instalment deduction or on assessment(d)	\$'000	193 796	243 493	345 000	444 000
Reconciliation credits(d)(e)	\$'000	217 975	257 466	820 000	1 289 000
Family Assistance Legislative Amendment (More help for families – ‘One-off’ payments)	\$'000	..	2 222 990	..	..
Family Assistance Scheme	\$'000	..	..	174 362	22 697
Maternity Payment					
Recipients	no.	..	..	235 371	268 751
Payments(f)(g)	\$'000	..	..	726 814	855 039
Maternity Allowance					
Recipients	no.	207 029	209 218	22 292	..
Payments(f)(g)	\$'000	216 634	180 063	20 053	..
Maternity Immunisation Allowance					
Recipients	no.	203 900	203 658	200 343	219 775
Payments(f)(g)	\$'000	..	43 193	43 280	49 843
Double Orphan Pension					
Recipients	no.	1 137	1 151	1 286	1 312
Payments(f)	\$'000	2 052	2 165	2 389	2 669

(a) Recipients who claimed assistance using more than one payment method for the year are included in each category. (b) This provides a count of the customers eligible for payment at the time of data extraction (in June of the relevant tax year). It does not show all the customers who are eligible throughout the course of the year. (c) Figures for lump sum payments refer to payments made in the relevant tax year ending 30 June for the FTB entitlement for the previous year. (d) Number of recipients and expenditure refer to FTB payments made by ATO within the relevant tax year (i.e. regardless of FTB entitlement year) at the last Friday of June of the relevant tax year. (e) This refers to payments to customers who received FTB via fortnightly instalment from the FAO but were paid a top-up by ATO after they lodged a tax return and were reconciled. Reconciliation credits for 2004-05 and 2005-06 tax years also include FTB supplements. (f) Expenditure refers to total payments to end of June of the relevant tax year. (g) Separate expenditure figures are not available for Maternity Allowance and Maternity Immunisation Allowance for years prior to 2004-05.

Source: Department of Families, Community Services and Indigenous Affairs.

There are two main forms of Australian Government payment for child care support: the Child Care Benefit (CCB) and the Child Care Tax Rebate (CCTR).

CCB helps families with the cost of child care, with financial assistance proportionally higher for lower income families. Eligible families can have the benefit paid directly to the child care service to reduce their ongoing fees. Alternatively they can receive the benefit as a lump sum refund at the end of the financial year.

CCTR is a tax offset available to families using approved child care with parents undertaking work, study or training. Families can receive up to 30% of out-of-pocket child care expenses up to \$4,000 per child, per year, after CCB entitlements have been reconciled.

In addition, Jobs Education and Training (JET) Child Care provides flexible child care assistance to parents receiving certain Centrelink payments who wish to undertake study, work or job search activities and are aiming to enter or re-enter the workforce.

Table 7.12 shows the number of recipients of and the expenditure on CCB.

### Support for carers

There are two forms of Australian Government financial assistance that may be available in a caring situation – Carer Payment and Carer Allowance.

Carer Payment provides income support to people who, due to the demands of their caring role, are unable to support themselves through substantial workforce participation.

Carer Allowance is a supplementary payment that is available to people who provide daily care and attention in a private home for an adult or child with a disability, severe medical condition, or who is frail aged. It can be paid in addition to a social security income support payment.

In 2004, 2005 and 2006 a 'one-off' Carer Bonus of \$1,000 was paid to eligible recipients of Carer Payment and a 'one-off' Carer Allowance Bonus of \$600 for each eligible care receiver they provide care for. These bonus payments are non-taxable and do not count as income for social security or family assistance purposes.

Table 7.13 shows the number of recipients of and the expenditure on support for carers.

### Support for the aged

The principal form of support for the aged is the Age Pension. Age Pension age for men is 65 years and for women is being progressively raised to 65 years by 2014. The qualifying age for women depends on their date of birth, with the minimum age increasing by six months at two-year intervals until it reaches 65 years for those born on or after 1 January 1949.

Other payments available for older Australians include Wife Pension and Widow B Pension. However, these payments have been closed off to new claimants, so the population on and expenditure for these payments have decreased over time. These payments were designed to provide financial assistance to women below the pension age who are either the partner of an age pensioner or who have lost the financial support of a male partner through death, separation or divorce. There are now payments administered by the Department of Employment and Workplace Relations (DEWR) for women in these circumstances.

DVA provides support for the aged through the Age Service Pension and Partner Service Pension, which are components of the Service Pension and are described in a later section.

#### 7.12 RECIPIENTS AND EXPENDITURE FOR CHILD CARE SUPPORT(a)

	2002-03		2003-04		2004-05		2005-06	
	no.	\$'000	no.	\$'000	no.	\$'000	no.	\$'000
Child Care Benefit (CCB)								
Approved services(a)	697 912	..	704 000	..	725 000	..	n.a.	..
Registered services(b)	57 600	..	59 700	..	n.a.	..	n.a.	..
Total CCB expenditure	..	1 364 358	..	1 387 946	..	1 462 670	..	1 501 287
Child Care for Eligible Parents Undergoing Training	(c)12 941	12 985	12 388	12 880	18 316	17 215	18 188	21 658

(a) Number of customers who used care over the financial year. Includes CCB paid to recipients as a reduction in service fees and potentially as a lump sum payment. (b) CCB for registered care is paid at minimum rate. (c) Number of children in child care assisted through JET. Due to improved recording methods, comparisons between previous years are not appropriate.

Source: Department of Families, Community Services and Indigenous Affairs.

#### 7.13 SUPPORT FOR CARERS

	Units	2002-03	2003-04	2004-05	2005-06
Carer Payment					
Recipients(a)	no.	75 937	84 082	95 446	105 058
Total payments	\$'000	702 649	(b)921 008	(b)1 062 101	(b)1 220 828
Carer Allowance					
Recipients(a)	no.	299 609	297 607	340 005	(c)366 960
Total payments	\$'000	744 488	(b)965 430	(b)1 109 346	(b)1 258 397

(a) Number of customers in June. (b) Includes carer bonus payments. (c) Not including Health Care Card only customers.

Source: Department of Families, Community Services and Indigenous Affairs.

Table 7.14 shows the number of recipients of and the expenditure on support for the aged.

### Working age income support payments

Working age income support programs help people of working age (15–64 years) by providing income support to those seeking work or undertaking other activities such as training or community work or caring for children.

The main working age income support payments are: Newstart Allowance (NSA), Parenting Payment (Single and Partnered), Disability Support Pension and Youth Allowance (other).

In the 2005–06 Budget, the Australian Government announced a number of Welfare to Work measures aimed at addressing the specific needs of parents, mature-aged people with disability and the very long-term unemployed that encourage these people to (re-)enter the workforce. Welfare to Work measures aim to increase workforce participation and reduce welfare dependency, while maintaining a strong safety net for those who need it.

NSA provides income support for eligible job seekers aged between 21 years and Age Pension age. Youth Allowance (other) is a means-tested income support payment available to eligible young people aged 16–20 years who are seeking or preparing for paid employment or are temporarily unable to work. NSA and Youth Allowance (other) recipients must satisfy an activity test by seeking work or participating in an activity designed to improve their employment prospects. Recipients must also accept offers of suitable employment.

Most activity-tested job seekers aged 18–49 years on NSA or Youth Allowance (other) are required to start an approved Mutual Obligation activity in addition to their normal job search requirements. Mutual Obligation is based on the principle that unemployed people have an obligation to improve their job prospects in the labour market or to contribute to the community that supports them in return for unemployment payments. Eligible job seekers can satisfy their Mutual Obligation through a range of activities: Work for the Dole, Community Work, the Voluntary Work Initiative, Green Corps and Green Reserve. On successful completion of Work for the Dole and Community Work, many job seekers qualify for a Training Credit of between \$500 and \$800, which can be used to buy approved training. Prior to 1 July 2006, people aged 50 years and over on NSA were not subject to Mutual Obligation but had a Personal Adviser to ensure that their requirements were appropriate, and that they had access to appropriate services.

Under the Welfare to Work measures, from 1 July 2006 the same job search requirements apply to mature-aged people aged 50 years and over receiving NSA as they do for other job seekers. Job seekers aged 50–54 years are no longer able to fully satisfy the activity test by undertaking voluntary work or a combination of voluntary and part-time work. However, job seekers aged 55 years and over may satisfy the activity test by undertaking a minimum of 15 hours per week of voluntary work, part-time work or a combination of the two. Job seekers aged 40–49 years have Work for the Dole as their default Mutual Obligation activity.

**7.14 SUPPORT FOR AGED(a)**

	Units	2002–03	2003–04	2004–05	2005–06
Age Pension(b)					
Males	no.	739 187	761 025	782 977	800 310
Females	no.	1 121 868	1 115 225	1 132 059	1 121 819
Persons	no.	1 861 055	1 876 250	1 915 036	1 922 129
Total payments	\$'000	17 740 214	19 540 401	19 970 348	20 588 124
Widow B Pension					
Recipients	no.	2 986	1 879	839	775
Total payments	\$'000	39 804	26 275	8 064	6 491
Wife Pension (Age)(b)					
Recipients	no.	20 319	19 728	17 025	16 332
Total payments	\$'000	195 071	194 176	179 017	173 127

(a) Number of customers in June. (b) Includes the Pension Bonus Scheme, and amounts paid by the Department of Veterans' Affairs in relation to the Age Pension and related Wife Pension.

Source: Department of Families, Community Services and Indigenous Affairs.

Currently, Parenting Payment is paid to single and partnered low-income parents with primary responsibility for the care of at least one dependent child aged less than 16 years. Under the Welfare to Work measures, parents applying for Parenting Payment on or after 1 July 2006 will receive Parenting Payment until their youngest child turns six (if partnered) or eight (if single), subject to meeting other eligibility requirements. Parents who require assistance after this will usually receive Newstart Allowance and be subject to participation requirements of 15 hours per week. Parents receiving Parenting Payment prior

to 1 July 2006 will be able to remain on Parenting Payment under the current entitlement until their youngest child turns 16 years, subject to meeting other eligibility requirements. These parents will have participation requirements of 15 hours per week from 1 July 2007 or when their youngest child turns seven, whichever happens later. Assistance for preparing for work is provided to these recipients through the services of Centrelink, the Job Network and specialist services, where appropriate.

#### 7.15 RECIPIENTS AND EXPENDITURE FOR WORKING AGE INCOME SUPPORT(a)(b)

	Units	2002-03	2003-04	2004-05	2005-06
Newstart Allowance					
Short-term (less than 12 months)					
Males	no.	144 691	128 530	123 340	120 479
Females	no.	58 744	60 155	57 777	53 730
Persons	no.	203 435	188 685	181 117	174 209
Long-term (12 months and over)					
Males	no.	210 834	196 006	176 314	167 686
Females	no.	98 063	98 402	96 183	96 665
Persons	no.	308 897	294 408	272 497	264 351
Total payments	\$'000	4 831 069	4 754 733	4 627 413	4 527 720
Parenting Payment					
Single					
Males	no.	33 909	34 866	34 436	32 463
Females	no.	403 049	414 446	414 130	400 907
Persons	no.	436 958	449 312	448 566	433 370
Total payments	\$'000	4 350 133	4 657 296	4 847 856	4 818 425
Partnered					
Persons	no.	181 405	177 157	167 260	159 719
Total payments	\$'000	1 380 984	1 337 839	1 279 162	1 229 878
Mature Age Allowance					
Recipients	no.	41 070	32 905	20 877	12 038
Total payments	\$'000	381 155	372 523	258 898	162 667
Partner Allowance					
Recipients	no.	102 805	90 930	71 615	60 489
Total payments	\$'000	860 768	860 462	703 894	599 088
Widow Allowance					
Recipients	no.	43 202	45 315	44 329	44 603
Total payments	\$'000	429 662	469 276	477 552	492 836
Pensioner Education Supplement					
Recipients	no.	52 923	50 445	52 093	53 646
Total payments	\$'000	68 574	72 139	78 985	78 550

(a) Number of customers in June. (b) The number of Newstart, Mature Age, Partner and Widow Allowance customers in this table excludes Community Development Employment Projects (CDEP) participants. CDEP participants receive a CDEP scheme payment and may be eligible for the CDEP Scheme Participant Supplement and certain social security 'add-ons', such as Commonwealth Rent Assistance and Pharmaceutical Allowance. However, the basic rate of these labour market allowances is not payable to CDEP scheme participants, hence their exclusion from the customer numbers data.

Source: Department of Employment and Workplace Relations.

Other non-activity tested payments for people of workforce age include Mature Age Allowance, Partner Allowance, Widow Allowance and some Special Benefit customers. Special Benefit provides assistance to people in severe financial need and for whom no other pension, allowance or other support is available. There is also a Bereavement Allowance, which is a short-term payment for recently widowed people without dependent children, payable for up to 14 weeks. Since 20 September 2003 the Mature Age Allowance and Partner Allowance have been closed to new entrants. Since 1 July 2005, new claims for Widow Allowance have been limited to women born before 1 July 1955.

Table 7.15 shows the number of recipients of and the expenditure on working age income support.

### Youth and student support

Youth Allowance is the main income support payment for young people aged 16–20 years who are actively seeking employment and for full-time students aged 16–24 years. It is subject to a personal income and assets test. If the person does not meet the Youth Allowance independence criteria then parental income, family assets, and family actual means tests also apply. If the person is independent and partnered, a partner income test applies and the couple's combined assets are assessed.

The rate of Youth Allowance is determined on the young person's age, whether they are single or partnered, whether they have children, whether

they live at home or need to live away from home, and whether the person is a student who has been a long-term income support recipient.

Austudy payment is paid to students aged 25 years and over whose financial circumstances are such that without financial help, full-time study would not be possible. The rate of Austudy is dependent on whether the person is single or partnered, whether they have children, and whether the person is a student who has been a long-term income support recipient. An individual and (if applicable) partner income and assets test applies.

ABSTUDY payment is paid to students of Aboriginal and Torres Strait Islander descent according to the ABSTUDY definition of Aboriginality who are studying an approved course at an approved educational institution and who are not receiving other government assistance for study.

Eligible students receiving Youth Allowance, Austudy or Pensioner Education Supplement, who live away from home to study, can receive a Fares Allowance which contributes to their travel costs.

FTB is an alternative payment to Youth Allowance. It may be available to help families with the cost of raising a young person who is not receiving Youth Allowance or a similar payment. It may be payable for a young person up to 21 years of age, or aged 21–24 years who is studying full time. (See *Family assistance* for more information.)

Table 7.16 shows the number of recipients of and the expenditure on youth and student support.

**7.16 RECIPIENTS AND EXPENDITURE FOR YOUTH AND STUDENT SUPPORT(a)**

	Units	2002–03	2003–04	2004–05	2005–06
<b>Youth Allowance (YA)</b>					
Full-time students	no.	304 946	297 140	285 383	274 050
Other(b)	no.	87 486	84 665	79 573	75 186
Total YA population	no.	392 432	381 805	364 956	349 236
Payments – Full-time students	\$'000	n.a.	n.a.	1 670 733	1 565 670
Payments – Other	\$'000	n.a.	n.a.	503 444	535 595
Total YA payments	\$'000	2 235 020	2 257 447	2 174 177	2 101 265
<b>Austudy</b>					
Recipients	no.	38 779	35 026	31 174	28 836
Total payments	\$'000	270 623	258 848	227 059	217 765
<b>ABSTUDY</b>					
Recipients(c)	no.	54 545	55 478	54 693	54 214
Total payments	\$'000	146 018	161 129	150 403	154 973
<b>Fares Allowance</b>					
Payments	\$'000	1 304	1 176	1 496	1 127

(a) Number of customers in June. (b) Job seekers and part-time students – including those undertaking full-time training/agreement study. (c) Recipient numbers for ABSTUDY are reported on a whole of calendar year basis.

Note: Australian Apprentices became eligible for income support from 1 July 2005 and are included in the above figures.

Source: Department of Education, Science and Training, and Department of Employment and Workplace Relations.

## Support for people with disability

Prior to 1 July 2006 Disability Support Pension (DSP) was the main form of income support for people with a physical, intellectual or psychiatric impairment that prevents them from working for at least 30 hours per week for wages that are at or above the relevant minimum wages, or being retrained for such work, for at least two years.

However, as a result of the Australian Government's Welfare to Work measures which were announced in the 2005–06 Budget and passed into legislation in December 2005, from 1 July 2006 the hours threshold has been reduced to 15 hours per week for new claimants. This means that people with disabilities claiming income support who have a part-time work capacity of 15–29 hours per week will not be eligible for DSP. Instead, these people will generally be eligible for Newstart or Youth Allowance, with modified activity requirements tailored to reflect their assessed level of work capacity. The Welfare to Work measures also included substantially increased funding for the provision of vocational rehabilitation and employment assistance to help people with disabilities to maximise their ability to work. These changes do not affect people who are permanently blind.

DSP is income and assets tested. However, recipients who are permanently blind are exempt from the income test as well as the Work Capacity

Test. DSP for people aged 21 years and over is paid at the same rate as Age Pension. Youth rates apply to those aged under 21 years. These are largely tied to Youth Allowance rates, but include a supplement of \$94.70 per fortnight in recognition of the additional costs faced by people with disabilities. DSP youth rates are not subject to parental income or assets tests.

Other support for people with a disability includes Mobility Allowance and Sickness Allowance.

Mobility Allowance is intended to help those who are involved in paid work, vocational training or voluntary work or a combination of these, who are unable to use public transport without substantial assistance. The current rate is \$71.40 per fortnight. From 1 July 2006 a second tier of Mobility Allowance at \$100 per fortnight is available. It aims to meet the higher travel costs of those already in work for more than 15 hours per week at award wages and those seeking work. Sickness Allowance may be paid to people aged between 21 years and Age Pension age, who are temporarily unable to work or continue with their full-time study due to illness or injury but who have a job or study to return to. Wife Pension (DSP) is for female partners of DSP recipients who were on payment as at 30 June 1995. It has been closed to new entrants since 1 July 1995.

Table 7.17 shows the number of recipients of and the expenditure on support for people with disability.

**7.17 RECIPIENTS AND EXPENDITURE FOR SUPPORT FOR PEOPLE WITH DISABILITY(a)**

	Units	2002–03	2003–04	2004–05	2005–06
Disability Support Pension					
Males	no.	412 777	418 829	420 073	415 618
Females	no.	260 557	277 913	286 709	296 545
Persons	no.	673 334	696 742	706 782	712 163
Total payments	\$'000	6 851 608	7 492 532	7 910 767	8 256 566
Mobility Allowance					
Recipients	no.	44 239	46 847	49 215	51 669
Total payments	\$'000	74 975	82 163	85 562	95 872
Sickness Allowance					
Recipients	no.	8 755	8 478	8 367	7 510
Total payments	\$'000	85 528	85 375	89 407	85 415

(a) Number of customers in June.

Source: Department of Employment and Workplace Relations.



### Compensation and income support provided to veterans and their families

Compensation Pension is paid to veterans for the effects of war-caused injury or disease resulting from eligible war or defence service. The injuries or diseases must have been caused or aggravated by war service or certain defence service on behalf of Australia. Disability pension is paid at varying rates depending on the person's incapacity and lifestyle.

General Rate Disability Pension is payable to a veteran as compensation for the impairment and lifestyle effects of war or defence service. The general rate of pension is payable according to the degree of impairment of the person in increments of 10% up to 100%.

Extreme Disablement Adjustment is payable to a veteran who is severely incapacitated due to war-caused or defence-caused injury or disease, has reached 65 years of age and is not eligible to receive the Special or Intermediate Rate.

Intermediate Rate Pension is payable to a veteran suffering incapacity from war or defence-caused disabilities in which the veteran is only able to undertake part-time or intermittent employment up to 20 hours per week.

Special (Totally and Permanently Incapacitated) Rate Pension is payable to a veteran whose incapacity from war or defence-caused disabilities prevent the veteran from working more than eight

hours per week. Any veteran who is blind because of war or defence-caused conditions is also eligible for a special rate pension.

War Widow(er)'s Pension is payable to compensate widowed partners of veterans who have died as a result of war service or eligible defence service or before his or her death received a certain rate of disability pension or was an Australian prisoner of war.

Various ancillary benefits may also be provided and dependent children of defence force members who have been killed or severely injured have access to educational guidance and counselling from the Veterans' Children Education Boards.

Table 7.18 shows the number of disability and war widows' pensioners and total expenditure in pensions.

The Veterans' Children Education Scheme provides financial help, guidance and counselling to certain students up to 25 years of age (table 7.19). To be eligible a student must be the child of a veteran, an Australian mariner, or a member of the Forces, who is (or has been) in receipt of a Special Rate or Extreme Disablement Adjustment Disability Pension. Children of former prisoners of war, of veterans, or of Australian mariners whose death has been accepted as war-caused, are also eligible.

**7.18 DISABILITY AND WAR WIDOWS' PENSIONERS(a)**

Recipient	Units	2002-03	2003-04	2004-05	2005-06
Incapacitated veterans	no.	157 865	154 602	150 615	145 546
General Rate – from 10% to 100%	no.	114 872	110 577	106 139	101 399
Extreme Disablement Adjustment	no.	14 256	14 603	14 723	14 259
Intermediate Rate	no.	965	973	967	933
Special Rate (TPI or equivalent)	no.	27 772	28 449	28 786	28 955
Wives and widows(b)	no.	43 078	39 399	35 878	32 666
Children	no.	243	206	170	131
War widows and widowers(c)	no.	114 235	114 418	114 239	112 882
Orphans	no.	298	270	239	222
Other dependants	no.	576	555	539	517
<b>Total(d)</b>	<b>no.</b>	<b>314 358</b>	<b>307 514</b>	<b>299 774</b>	<b>290 089</b>
Total expenditure(e)	\$'000	2 615 170	2 733 604	2 806 389	2 869 958

(a) Number of customers in June. (b) Wives of incapacitated veterans and widows of deceased veterans who have not died from an accepted war caused condition. (c) Widows and widowers of deceased veterans who have died from an accepted war caused condition. (d) The totals do not equal the sum of the components due to overlaps. (e) Includes associated allowances.

Source: Department of Veterans' Affairs.



### 7.19 VETERANS' CHILDREN EDUCATION SCHEME, Number of education beneficiaries and expenditure(a)

Type of training	Units	2002-03	2003-04	2004-05	2005-06
At school					
Primary(b)	no.	1 263	1 181	1 189	1 096
Secondary	no.	2 440	2 512	2 171	2 035
Total	no.	3 703	3 693	3 360	3 131
Tertiary	no.	1 572	1 424	1 443	1 297
<b>Total</b>	<b>no.</b>	<b>5 275</b>	<b>5 117</b>	<b>4 803</b>	<b>4 428</b>
Total expenditure	\$'000	19 236	19 510	18 242	17 778

(a) Number of customers in June. (b) Receive an annual payment rather than fortnightly payment like others.

Source: Department of Veterans' Affairs.

The main income support pensions payable to veterans and their dependants are the Age Service Pension, Invalidity Service Pension, Partner Service Pension and the Income Support Supplement.

Age Service Pension (ASP) is payable to male veterans with qualifying service at 60 years of age. The ASP is similar to the age pension paid by Centrelink but is granted five years earlier than the age pension paid by Centrelink. The Government has introduced changes to the minimum age at which a female veteran can be granted an ASP. Under the changes, the minimum age is to be progressively lifted from 55 to 60 years in six-monthly increments every two years over the period 1995-2013.

Invalidity Service Pension is payable to veterans with qualifying service if they are permanently incapacitated for work.

Partner Service Pension is payable on the basis that the person is the partner or widow(er) of a veteran with qualifying service.

Income Support Supplement (ISS) is payable to war or defence widow(er)s of service pension age. ISS may also be paid to a widow(er) under service pension age if he or she has a dependent child, is caring for a severely handicapped person or is permanently incapacitated for work.

All recipients of income support payments are eligible for supplementary benefits, provided by the Australian Government, including some medical and hospital treatment, pharmaceutical benefits and the payment of a telephone allowance. They are also entitled to a range of concessions provided by state/territory and local governments.

A number of additional supplementary benefits and allowances are also available to eligible veterans and their dependants including the Defence Force Income Support Allowance, Rent Assistance, Remote Area Allowance, Utilities Allowance, Seniors Concession Allowance and Bereavement Payment.

Table 7.20 shows the number of recipients of and the expenditure on service pensions.

### 7.20 SERVICE PENSIONS, Number of beneficiaries and expenditure(a)

	Units	2002-03	2003-04	2004-05	2005-06
Veterans					
Old age	no.	129 382	119 803	111 491	103 273
Permanently incapacitated	no.	18 144	18 854	19 160	19 121
Tuberculosis(b)	no.	91	83	68	64
Total	no.	147 617	138 740	130 719	122 458
Wives and widows	no.	119 887	114 011	108 598	103 110
<b>Total</b>	<b>no.</b>	<b>267 504</b>	<b>252 751</b>	<b>239 317</b>	<b>225 568</b>
Total expenditure(c)	\$'000	2 802 200	2 830 518	2 816 425	2 824 208

(a) Number of customers in June. (b) Eligibility on these grounds ceased on 2 November 1978. (c) Includes associated allowances.

Source: Department of Veterans' Affairs.

## Other community support programs

In addition to the direct monetary support provided to individuals, governments also support the community through the provision of services, either directly or by subsidising the activities of third parties. These services are provided by the Australian Government, state and territory governments, and local governments. The main services that the Australian Government has responsibility for are described in the remainder of this section.

### National Strategy for an Ageing Australia

Recognising the significant implications of population ageing across a number of public policy areas, the Australian Government has developed the National Strategy for an Ageing Australia. It provides a framework to address current issues facing older people and to prepare for the ageing of Australia's population over the next 50 years.

The main themes of the National Strategy are:

- retirement income – pensions and superannuation
- a changing workforce – employment for mature age workers
- attitude, lifestyle and community support issues – housing, transport, lifelong learning and volunteering
- healthy ageing – health promotion, maintaining health and wellbeing through physical, mental and social activity
- world-class health and aged care.

### Aged care programs

Aged care programs support healthy ageing for older Australians, provide quality, cost-effective care for frail older people, and give support to their carers. Australia's aged care programs include residential care and community care, as well as a range of associated programs.

### Assessment for aged care

Using a holistic, multi-disciplinary approach, Aged Care Assessment Teams (ACATs) assess people's care needs and their eligibility for residential aged care and some community aged care services. Clients' medical, physical, social, psychological and restorative care needs are assessed before they are referred to the care they need. A person

must be assessed as eligible by an ACAT before he or she can receive subsidised residential care, a Community Aged Care Package, an Extended Aged Care at Home Package, or some other forms of flexible care.

In 2005–06 the Australian Government provided \$55.6m to state and territory governments for the operation of 115 ACATs throughout Australia.

## Care in the community

### Home and Community Care (HACC)

The HACC program is a joint initiative of the Australian, state and territory governments. The Australian Government contributes approximately 60% of HACC funding and maintains a broad strategic role. States and territories contribute approximately 40% of program funding and manage the program on a day-to-day basis. Australian Government funding available for HACC in 2005–06 was \$857.8m. Total combined Australian, state and territory funding for 2005–06 was \$1.409b.

The HACC program aims to provide a comprehensive, coordinated and integrated range of maintenance and support services for frail aged people, people with a disability and their carers. It helps people to be more independent at home and in the community. This enhances their quality of life and may prevent inappropriate admission to long-term residential care.

The HACC program funds care services, including nursing, personal care, domestic assistance, delivered meals, day care, transport, home modification and maintenance, and respite care. These services may delay or prevent the need for residential care.

### Community Aged Care Packages (CACPs)

The CACPs provide care in the home for frail older people who have complex care needs requiring care planning and case management. CACPs are tailored to meet the needs of each individual. Services may include personal care assistance, assistance with meals, domestic assistance, and transport to help the person shop or visit a medical practitioner. To be eligible for a CACP, the care recipient must be assessed by an ACAT as requiring low level residential care, have a preference to remain at home, and be able to do so.

### Extended Aged Care at Home (EACH)

EACH packages provide care to frail older people who have been assessed by ACAT as eligible for high level residential care, but have expressed a preference to live at home and are able to do so. An EACH package typically provides about 18–22 hours of assistance each week, tailored to meet the needs of the individual. Packages are flexible in content but generally include nursing input, particularly in their design and management. Services provided include clinical care, personal assistance, meal preparation, continence management, assistance with leisure activities, emotional support, therapy services, and home safety and modification. Extended Aged Care at Home Dementia packages, introduced in 2005–06, provide care in the home specifically for people with dementia.

### Residential aged care

The residential aged care program seeks to enhance the quality of life of frail older Australians through a cohesive framework of high quality and cost-effective residential care services.

The Australian Government subsidises the costs for each person in residential aged care. The level of funding depends on the care needs of the resident. Residents can be asked to pay fees and charges, some of which are based on the resident's assets and income.

To receive Australian Government funding, each aged care home must meet specific care and building standards and be accredited by the Aged Care Standards and Accreditation Agency.

### Transition care

Transition care provides short-term support and active management to help older people complete their recovery process after a hospital stay, before they return home or enter an aged care home. Delivered in collaboration with state and territory governments, transition care can be provided in

either a residential or community setting. The first transition care places were allocated in 2004–05, many services began to deliver care in 2005–06 and a total of 2,000 places will be allocated by June 2007.

### Other aged care programs

Other aged care programs include the National Respite for Carers Program, Assistance with Care and Housing for the Aged, Commonwealth Carelink, Day Therapy Centres, a range of dementia care, education and support programs, and programs to assist in the management of continence and the provision of continence aids. All of these programs are directed towards assisting frail aged people and younger people with a disability to remain in their own homes.

### Places and funding

Aged care places are allocated in proportion to the number of people aged 70 years and older. At 30 June 2006, there were 105.8 operational aged care places per 1,000 Australians aged 70 years and over. Table 7.21 shows the number of operational aged care places at 30 June in each of the years 2002 to 2006.

### Younger people with disabilities in residential aged care

The Helping Younger People in Residential Aged Care program was announced by the Council of Australian Governments on 10 February 2006 as part of a \$1.1b package of reforms to Australia's health system.

The new \$244m program commenced in July 2006 (subject to the signing of the bilateral agreements) with funding of up to \$122m coming from the Australian Government and up to \$122m coming from state and territory governments.

The program is being developed jointly with state and territory governments and the Australian Governments through bilateral agreements.

**7.21 OPERATIONAL AGED CARE PLACES(a)**

	2002	2003	2004	2005	2006
Residential care	146 002	150 786	156 056	161 165	165 782
Community care(b)	26 403	27 850	29 779	32 588	38 492
Transition care	..	..	..	..	595
<b>Total</b>	<b>172 405</b>	<b>178 636</b>	<b>185 835</b>	<b>193 753</b>	<b>204 869</b>

(a) As at June; includes flexible care places attributed as residential or community care. (b) Includes Community Aged Care Packages and, from 2004, Extended Aged Care at Home Packages.

Source: Department of Health and Ageing.

Once implemented, responsibility for the day-to-day management of the program will rest with state and territory governments while the Australian Government will retain an ongoing monitoring role.

Australian Government expenditure on residential aged care is shown in table 7.22.

Table 7.23 shows Australian Government expenditure on selected other aged care programs.

### Family assistance and community support

The Stronger Families and Communities Strategy is an Australian Government initiative giving families, their children and communities the opportunity to build a better future. The Strategy

has an appropriation of nearly \$500m (for the period 2004–09) and builds on the achievements of the first Strategy (2000–04).

The renewed Strategy has a specific early childhood focus and has been aligned with four key areas identified in the developing National Agenda for Early Childhood (the National Agenda) – healthy young families with young children; early learning and care; supporting families and parenting; and child-friendly communities. The National Agenda is a policy framework to guide current and future activity across Australia which supports optimal child development during the first eight years of a child's life, including before birth. The National Agenda promotes early intervention and prevention as an important strategy for improving the life chances of all children, including addressing underlying social and economic factors that affect children's lives.

#### 7.22 AUSTRALIAN GOVERNMENT EXPENDITURE ON RESIDENTIAL AGED CARE

	Residential care (recurrent)(a)				Capital grants			
	2002–03	2003–04	2004–05	2005–06	2002–03	2003–04	2004–05	2005–06
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
NSW	1 543.0	1 620.7	1 749.3	1 849.8	4.5	3.1	6.9	11.9
Vic.	1 046.9	1 122.9	1 237.2	1 316.8	3.6	5.2	5.1	9.7
Qld	774.7	819.0	903.0	953.7	4.2	4.2	7.8	8.1
SA	347.8	454.4	505.8	550.3	3.9	2.1	4.0	1.8
WA	417.6	369.7	414.0	441.1	2.6	0.6	1.4	2.2
Tas.	125.1	129.8	140.7	147.2	3.8	2.1	1.3	6.5
NT	36.1	14.8	15.9	17.7	0.7	..	2.1	0.5
ACT	19.1	44.1	48.0	51.6	0.1	..	..	..
<b>Aust.(b)</b>	<b>4 310.3</b>	<b>4 592.1</b>	<b>5 021.5</b>	<b>5 333.6</b>	<b>23.3</b>	<b>17.3</b>	<b>28.6</b>	<b>40.7</b>

(a) To enable comparison between years, these figures exclude a 'one-off' payment of \$3,500 per resident (\$518.7m) in 2003–04 and a \$1,000 per resident payment (\$152.0m) in 2004–05. (b) Includes expenditure by the Department of Health and Ageing and the Department of Veterans' Affairs, in accrual terms. Actual expenditures may change slightly due to late claims and adjustments.

Source: Department of Health and Ageing.

#### 7.23 EXPENDITURE FOR SELECTED AGED CARE PROGRAMS

	2002–03	2003–04	2004–05	2005–06
	\$'000	\$'000	\$'000	\$'000
Community care programs				
Home and Community Care(a)	674.1	732.8	791.9	857.8
Community Aged Care Packages	287.9	308.6	327.8	356.6
Extended Aged Care at Home(b)	10.4	15.4	33.3	66.5
Other aged care programs				
Aged Care Assessment	40.5	47.1	51.6	55.6
Assistance with Care and Housing for the Aged	2.6	2.7	2.7	2.7
National Respite for Carers Program	92.0	99.7	99.3	138.7
Commonwealth Carelink Centres	12.1	13.9	13.9	16.4
Dementia Specific Programs(c)	7.7	8.8	9.7	22.9
Day Therapy Centres	31	31.6	32.5	33.2
National Continence Management Strategy	4.8	8.7	5.5	3.5

(a) State and territory governments also contribute to Home and Community Care funding; combined expenditure in 2005–06 was \$1,409m. (b) 2005–06 includes Extended Care at Home (Dementia) packages. (c) Excludes national dementia initiatives funded under the National Respite for Carers Program.

Source: Department of Health and Ageing.

The strategy comprises four initiatives:

- Communities for Children – \$142m over five years
- Early Childhood – Invest to Grow – \$70m over four years
- Local Answers and Volunteer Small Equipment Grants – \$151m over five years
- Choice and Flexibility in Child Care – \$125m over four years.

Local Answers funds the Volunteer Small Equipment Grants initiative.

A longitudinal study of child health and development is also funded by the Strategy.

The Early Childhood Programs include both the Responding Early Assisting Children (REACH) Program and the Indigenous Children Program (ICP). REACH and ICP are early intervention and prevention measures working towards meeting the Australian Government's objective of supporting families and children in disadvantaged communities, to provide positive experiences for children in their early years. The Early Childhood Programs are funded on a continuing basis. Funding for 2006–07 is approximately \$10.8m.

### Youth support

There are a range of youth and community support programs to help disadvantaged young people to improve their level of engagement and to overcome barriers to participation with their families and the community including:

- Strengthening and Supporting Families Coping with Illicit Drug Use
- Reconnect
- New Arrived Youth Support Services
- Mentor Marketplace
- YouthLinx
- Transition to Independent Living Allowance.

Other initiatives to help create opportunities for and promote the engagement and greater participation of young people in community activities include the National Youth Roundtable, the National Indigenous Youth Leadership Group and National Youth Week.

Youth programs and initiatives aim to raise the profile and positive image of young people in the community. This is largely done through research on families and young people to inform policy and

program development, and liaison between Australian Government agencies to help improve services for young people on a range of issues affecting them including mental health, education and work.

### Child support

The Child Support Agency (CSA) is the agency that manages the assessment, collection and enforcement of child support liabilities. It aims to ensure that parents continue to financially support their children after separation, according to their capacity to do so. Parents may transfer their assessed liability privately, or have it collected and transferred through CSA.

The total amount transferred between parents in 2004–05 was \$2.38b, an increase of \$190m over the previous financial year. This includes child support assessed by CSA and transferred directly between parents, as well as child support assessed and collected by CSA. In addition, Child Support associated with parents who elect to transfer payments privately amounted to approximately \$1.5b in 2004–05.

### Housing support

Housing support policies are in place to assist low and moderate income householders to access appropriate affordable housing, and provide supporting initiatives to assist homeless people. Housing assistance programs are discussed further in the *Housing* chapter.

### Volunteering

Volunteering is an essential part of the Australian Government's objective to promote social and economic participation, and to strengthen connections within communities. The Australian Government supports volunteering through a number of programs such as:

- the Volunteer Small Equipment Grants (administered by the Department of Families, Community Services and Indigenous Affairs (FaCSIA))
- the Volunteer Management Program which funds 26 Volunteer Resource Centres throughout Australia (administered by FaCSIA)
- the Voluntary Work Initiative (administered by DEWR).

## Retirement planning assistance

The National Information Centre on Retirement Investments (NICRI) is an independent body funded by the Australian Government to provide the public with free information on financial investments, financial industry services and saving for retirement. NICRI can assist customers to provide for their retirement and to make the investment choices that are best for them.

The Financial Information Service (FIS) provided by specialist Centrelink officers, is an education and information service available to everyone in the community. FIS is independent, free and confidential, and helps people make informed decisions about investment and financial issues for their current and future financial needs.

The Australian Government produces a range of booklets which provide practical and easy-to-read information on topics such as investment options, accommodation choices, and government programs and services to assist seniors and those planning for retirement.

## Working age assistance

The Australian's Working Together initiative provides assistance to people of workforce age including job seekers, parents, people with disabilities, the unemployed, mature-age people and Indigenous Australians. Initiatives include a Working Credit to encourage people on income support to take up full-time, part-time or irregular casual work; Training Credits; the Language, Literacy and Numeracy supplement; more places in employment services; and initiatives to assist Indigenous Australians.

Other programs include the Personal Support Program and JET. The Government also funds Personal advisors who provide extra help to a range of eligible customers including those at a high risk of long-term dependency on income support.

Many of these initiatives will be superseded by the Australian Government's Welfare to Work measures announced in the 2005–06 Budget that took effect from 1 July 2006.

## Support for people with disability

The Commonwealth State Territory Disability Agreement provides the national framework for the provision of government support to services for people with disability. Under the three agreements signed so far (the first in 1991), state and territory governments have responsibility for

the planning, policy setting and management of accommodation support, community support, community access and respite care services for people with disability. The Australian Government has similar responsibilities for specialised employment assistance. Both levels of government are responsible for support for advocacy and print disability services.

The Disability Employment Assistance Program provides funding under the *Disability Services Act 1986* (Cwlth) for services that help people with disabilities to find employment. The target group is people who have an intellectual, psychiatric, sensory, neurological or physical impairment that is likely to be permanent and results in the need for ongoing support in employment.

Support for people with disabilities is also provided through rehabilitation services to improve function and independence in people with a disability so they can gain or retain suitable employment, or live independently. In addition, assistance is provided through the following programs:

- the Postal Concessions for the Blind Program
- the Print Disability Services Program
- the National Disability Advocacy Program
- the Auslan Interpreter Booking and Payment Service, and
- National Disability Conference Funding.

## Support for carers

The 2004–05 Budget provided \$72.5m over four years for additional services for older parent carers of people with disability, subject to matching by state and territory governments. The additional respite for older carers measure is implemented through bilateral agreements with state and territory governments under the Commonwealth State Territory Disability Agreement.

From January 2005, young carers have been able to access targeted services, including respite and age appropriate information, referral and advice to help them stay in education while also providing care.

In October 2005, the Australian Government announced a \$230.5m package to assist parents wishing to make private financial provisions for the current or future care and accommodation for their son or daughter with severe disability. The major component of the package allows parents and immediate family members, from



20 September 2006, to place up to \$500,000 into a trust for the current and future care and accommodation of the person with severe disability without being affected by social security means tests and gifting rules. Other assistance provided in the package includes access to mediation and counselling services for families, financial information kits and more research.

From 1 July 2006, the Government will start to establish a number of new peer support groups specifically aimed at parents of young children with disabilities at a cost of \$9m over four years. This will improve outcomes for these parents by giving them the opportunity to socialise with and learn from other people in similar family situations.

**Services provided to veterans and members of the ADF and their families**

**Defence Service Homes (DSH) Scheme**

The DSH Scheme provides financial benefits to recognise the contribution of certain men and women who have served Australia in either peacetime or wartime. The benefits include housing loan interest subsidies, comprehensive homeowners insurance cover at competitive rates, and home contents insurance (table 7.24).

**7.24 DEFENCE SERVICE HOMES SCHEME**

	Units	2002–03	2003–04	2004–05	2005–06
Subsidised loans					
Loans granted	no.	2 936	2 565	1 955	1 856
Loan accounts at 30 June	no.	51 120	45 755	41 393	37 509
Interest subsidy	\$m	10.5	9.2	7.5	7.0
Building insurance					
Homes insured at 30 June	no.	104 509	100 022	95 843	91 352

Source: Department of Veterans' Affairs.

**Military Compensation (MC)**

The objective of MC is to ensure that current and former members of the Australian Defence Force (ADF), who suffer an injury or disease which is related to service in the ADF, are provided with compensation and rehabilitation benefits and services. The DVA is responsible for providing benefits through the *Safety, Rehabilitation and Compensation Act 1988* (SRCA) (Cwlth) for injuries and diseases related to service prior to 1 July 2004 and through the *Military Rehabilitation and Compensation Act 2004* (MRCA) (Cwlth). Table 7.25 summarises activities under these Acts for 2005–06.

**Health program**

Health-care treatment is provided to people whose disabilities have been accepted by DVA as service-related, and for pulmonary tuberculosis, post-traumatic stress disorder and malignant neoplasia whether they are service-related or not. Vietnam veterans with anxiety and depression and Gulf War veterans with undiagnosable conditions are also eligible for health-care treatment whether the conditions are service-related or not.

**7.25 MILITARY COMPENSATION AND REHABILITATION SERVICE, Activities — 2005–06**

	SRCA(a) no.	MRCA(b) no.
Total lump sum and incapacity payees for 12 months ended 30 June 2006 (incl. dependent children)	4 756	174
New primary injury claims received	3 492	1 516
New permanent impairment claims received	3 827	146
New rehabilitation referrals received	894	59
New reconsideration requests received	1 271	57
New applications made to the AAT(c)	363	1
All accounts paid (incl. medical household services and attendant care)	110 273	1 709

(a) Benefits paid through the Safety, Rehabilitation and Compensation Act 1988 (SRCA) (Cwlth). (b) Benefits paid through the Military Rehabilitation and Compensation Act 2004 (MRCA) (Cwlth). (c) Administrative Appeals Tribunal.

Source: Department of Veterans' Affairs.



In addition, and subject to certain conditions, health-care treatment in Australia is provided to certain veterans of Australia's defence forces for all health conditions. War widow(er)s and certain other dependants of deceased veterans are also entitled to treatment for all conditions.

Other services include:

- vocational rehabilitation services
- acute hospital care
- dental and pharmaceutical assistance
- transport assistance
- Vietnam Veterans' Counselling Service (VVCS).

The VVCS provides counselling to veterans of all conflicts and their families, as well as working with the ex-service community to promote understanding and acceptance of veterans' problems.

Access to counselling services for rural veterans and their families was greatly improved with the establishment of the Country Outreach Program in 1988, followed soon after by a toll-free 1800 telephone link to all VVCS centres. Table 7.26 shows use of the VVCS.

**7.26 VIETNAM VETERANS' COUNSELLING SERVICE**

Type of counselling	Units	2002-03	2003-04	2004-05	2005-06
Centre-based consultation	visits	30 210	27 550	23 864	23 400
Group session consultation	hours	14 792	13 709	13 140	12 050
Country outreach consultation	visits	36 314	39 518	41 178	38 839

Source: Department of Veterans' Affairs.

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## HOUSING

Housing satisfies the essential needs of people for shelter, security and privacy. Shelter is recognised throughout the world as a basic human right. The adequacy or otherwise of housing is an important component of individual wellbeing. Housing also has great significance in the national economy, with its influence on investment levels, interest rates, building activity and employment.

In the 1920s, the Australian Government moved to provide financial assistance for access to home ownership for moderate and low income groups, and a number of policy initiatives over recent decades have focused on this goal. Governments have continued to actively promote home ownership as part of an overall policy directed at achieving people's self-reliance in housing, and a quality of housing adequate for their needs. Currently Australia has one of the highest rates of home ownership in the world. Governments also provide assistance to low income households to rent suitable and affordable housing.

The predominance of separate, free-standing houses situated on 'quarter-acre blocks' is a feature of Australian urban development. More recently, governments have moved to promote higher density housing, to provide greater choice of housing types and to make better use of existing infrastructure.

This chapter provides information on the types of dwellings Australians live in, their tenure type and housing costs. It also looks at a range of factors associated with buying a home, including home loans, house prices and the characteristics of recent home buyer households. It includes comparisons between states and territories and between households at different life cycle stages. Most of the statistics are from the 2003–04 Survey of Income and Housing, conducted by the Australian Bureau of Statistics (ABS), and other ABS collections. Administrative data relating to housing assistance are also included.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Types of dwellings

A small proportion of Australians live in institutional settings such as hostels, boarding houses, residential colleges, staff quarters, prisons, corrective and detention institutions, nursing homes and other welfare institutions. However, the vast majority (around 98%) are members of households living in private self-contained dwellings such as houses, flats or units.

Of the 7.7 million households living in private dwellings in 2003–04, 80% were living in separate houses, 11% in flats, units or apartments, and 8% in semi-detached, row or terrace houses or townhouses.

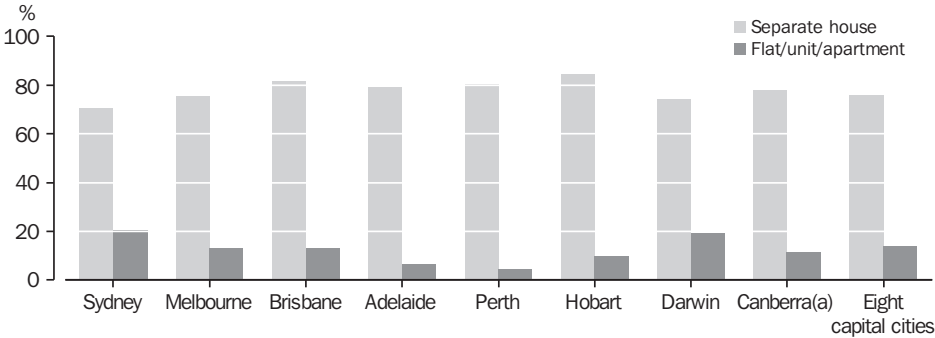
In capital cities, the proportion of households living in separate houses ranged from 70% in Sydney to 85% in Hobart. Outside of capital cities, the proportion of households living in separate houses was even higher – more than 90% in all states except New South Wales and Queensland. Higher density housing was most common in

capital cities, particularly in Sydney and Darwin where approximately one in five households were living in flats, units or apartments in 2003–04 (graph 8.1).

Separate houses are generally larger and have more bedrooms than other dwelling types. Typically, separate houses have three or four bedrooms; semi-detached houses have two or three bedrooms; and flats, units or apartments have one or two bedrooms.

The three-bedroom house is by far the most common type of dwelling in Australia. In 2003–04, 44% of all households were living in three-bedroom houses (table 8.2). A further 26% were living in houses with four or more bedrooms. In total 76% of households were living in dwellings (mainly houses) with three or more bedrooms; 20% were living in two-bedroom dwellings (mainly houses and flats, units or apartments); and 5% were living in one-bedroom dwellings (mainly flats, units or apartments).

8.1 CAPITAL CITY HOUSEHOLDS, By dwelling structure — 2003–04



(a) All ACT households.

Source: *Housing Occupancy and Costs, Australia, 2003–04* (4130.0.55.001).

8.2 ALL HOUSEHOLDS, By dwelling structure and number of bedrooms — 2003–04

	Separate house	Semi-detached/row or terrace house/townhouse	Flat/unit/apartment	All households(a)	
	'000	'000	'000	'000	%
One bedroom	58.3	54.7	234.4	366.5	4.7
Two bedrooms	694.1	301.3	503.8	1 505.3	19.5
Three bedrooms	3 390.4	257.8	109.5	3 766.5	48.7
Four or more bedrooms	2 033.1	35.2	7.3	2 076.8	26.8
<b>Total(b)</b>	<b>6 177.9</b>	<b>649.1</b>	<b>871.1</b>	<b>7 735.8</b>	<b>100.0</b>

(a) Includes other dwelling structures. (b) Includes bed-sits and dwellings with no bedrooms.

Source: ABS data available on request, *Survey of Income and Housing, 2003–04*.

# Housing utilisation

While Australian households are becoming smaller on average, dwelling size (as indicated by the number of bedrooms) is increasing. The average number of persons per household has declined from 3.1 in 1976 to 2.5 in 2003–04. In the same period, the proportion of dwellings with four or more bedrooms has risen from 17% to 27% and the average number of bedrooms per dwelling has increased from 2.8 to 3.0.

In 2003–04, most households enjoyed relatively spacious accommodation. For example, 85% of lone-person households were living in dwellings with two or more bedrooms; 73% of two-person households had three or more bedrooms; and 31% of three-person households had four or more bedrooms. Over a fifth (22%) of three-bedroom dwellings, and 8% of four-bedroom dwellings, had only one person living in them (table 8.3).

The Canadian National Occupancy Standard is widely used internationally as an indicator of housing utilisation. The measure assesses the bedroom requirements of a household by specifying that:

- there should be no more than two persons per bedroom
- children less than 5 years of age and of different sexes may reasonably share a bedroom
- children less than 18 years of age and of the same sex may reasonably share a bedroom
- single household members aged 18 years and over should have a separate bedroom, as should parents or couples.

Households living in dwellings where this standard cannot be met are considered to be overcrowded.

Only 2.7% of Australian households in 2003–04 were assessed as needing one or more extra bedrooms to meet this occupancy standard. The proportion of households experiencing overcrowding was highest among households with five or more members (16%), and among households living in one-bedroom dwellings (6%).

In contrast, 77% of households had one or more bedrooms above the number required to meet the standard. The proportion of households with spare bedrooms was highest among two-person households (89%) and among households living in dwellings with four or more bedrooms (91%). While having spare bedrooms indicates a capacity to accommodate more people in reasonable comfort, it does not necessarily mean that dwellings are not being fully utilised. Households may put these ‘spare’ rooms to various uses (e.g. study, office, gymnasium, craft or hobby room, children’s play room, guest bedroom or store room). Some may provide each child with a separate bedroom regardless of their age or sex.

In capital cities, the proportion of households with one or more spare bedrooms ranged from 68% in Darwin to 84% in Perth (graph 8.4). Outside of capital cities, the proportion of households with spare bedrooms was higher – possibly associated with higher proportions of separate houses in these areas. Conversely, overcrowding was more common in capital cities. In 2003–04, 3% of capital city households were in need of one or more bedrooms compared with 2% of households in the rest of Australia. Sydney and Darwin had the highest overcrowding rate (4%). These cities also had the highest proportions of flats, units and apartments.

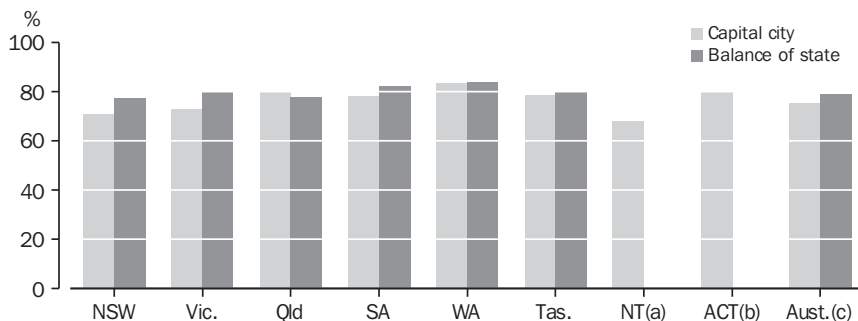
**8.3 ALL HOUSEHOLDS, By number of bedrooms and number of persons — 2003–04**

	One bedroom	Two bedrooms	Three bedrooms	Four or more bedrooms	All households(a)
	'000	'000	'000	'000	'000
Lone person	277.7	676.9	825.9	163.5	1 962.1
Two persons	75.8	620.4	1 397.6	529.0	2 625.3
Three persons	*8.7	136.3	686.6	375.5	1 207.1
Four persons	n.p.	63.2	620.2	538.6	1 223.0
Five or more persons	n.p.	*9.0	239.3	468.9	718.4
<b>Total</b>	<b>364.2</b>	<b>1 505.9</b>	<b>3 769.6</b>	<b>2 075.4</b>	<b>7 735.8</b>

(a) Includes bed-sits and dwellings with no bedrooms.

Source: ABS data available on request, Survey of Income and Housing, 2003–04.

#### 8.4 HOUSEHOLDS WITH ONE OR MORE SPARE BEDROOMS — 2003–04



(a) Balance of NT estimates are not sufficiently reliable to be shown separately. (b) Balance of ACT estimates are not available. (c) Includes NT balance.

Source: ABS data available on request, *Survey of Income and Housing*, 2003–04.

## Home owners and renters

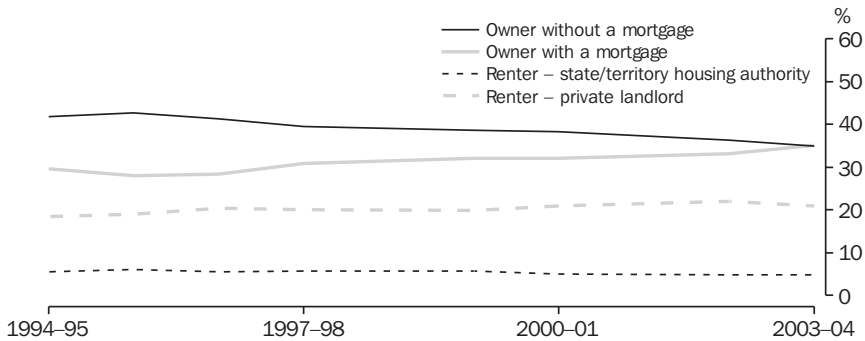
The legal rights and obligations that households have in relation to the dwelling in which they live vary considerably according to tenure type. For example, those who own their home have greater security of tenure than most renters whose occupancy rights are subject to review at relatively frequent intervals. Owners also have more freedom than renters to modify the dwelling to suit their specific needs and tastes, to keep pets, take in boarders or run a business from home. In the course of repaying their home loans, owners accumulate wealth in the form of home equity which can then be used to secure finance for other purposes.

On the other hand, renting can have advantages over home ownership, such as greater flexibility to move elsewhere at short notice, lower housing costs than many owners repaying a mortgage, and the opportunity to invest in other assets which may yield higher returns than home ownership. Households renting from a state or territory government housing authority (public renters) generally enjoy lower housing costs and greater security of tenure than those renting from a private landlord.

At the 1947 Population Census, 53% of all occupied private dwellings were either owned or being purchased by their occupants. By 1961, the home ownership rate had risen to 70% and has remained at about that level since. In 2003–04, 35% of households owned their homes outright (i.e. without a mortgage) and 35% were owners with a mortgage. A further 21% were renting from a private landlord and 5% were renting from a state or territory housing authority.

Since 1994–95, the proportion of households renting from state/territory housing authorities has declined slightly while the proportion renting privately has increased from 18% to 21% (graph 8.5). While a greater proportion of all renting households are renting from private landlords, there is an increased number of private renters receiving Commonwealth Rent Assistance. (see *Housing costs* and *Housing assistance*). Among home owners, the proportion without a mortgage has declined from 42%, while the proportion with a mortgage has risen from 30%, to converge at 35% in 2003–04. The decline in outright home ownership may reflect increasing uptake of flexible low-cost financing options which allow households to extend their existing home mortgages for purposes other than the original home purchase (see *Home buyers*).

### 8.5 ALL HOUSEHOLDS, By tenure and landlord type



Note: No data are available for 1998-99 or 2001-02. Values have been interpolated for these years.

Source: *Housing Occupancy and Costs, Australia, 2003-04 (4130.0.55.001)*.

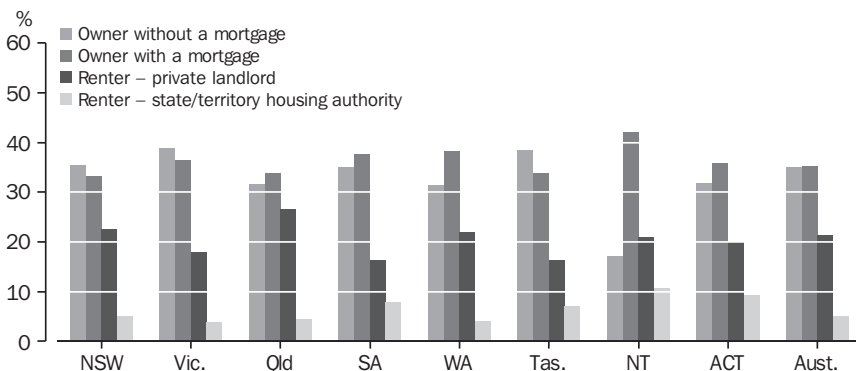
Tenure type is closely related to a household's life-cycle stage (see *Housing and life cycle*) so differences in tenure patterns between geographic regions are partly a reflection of differences in the age and family structures of regional populations. For example, in 2003-04, those states with the oldest age structures (i.e. South Australia, Tasmania, New South Wales and Victoria) had the highest rates of outright home ownership and, with the exception of New South Wales, the highest rates of home ownership overall.

The Northern Territory had the lowest home-ownership rate (59%), the lowest proportion of outright owners (17%) and the highest proportion of owners with a mortgage

(42%) (graph 8.6). The Northern Territory also had the highest proportion of renters overall (36%), and the highest proportion of public renters (11%). This pattern of housing tenure reflects the Territory's young age structure, highly mobile work force, and relatively large Indigenous population.

Australia's preference for a free-standing house on its own block of land is most evident among home owners. Of the 5.4 million households that owned their home in 2003-04, 90% lived in separate houses (graph 8.7). Over a half (55%) of all renter households lived in separate houses; 29% lived in flats, units or apartments; and 15% lived in semi-detached dwellings.

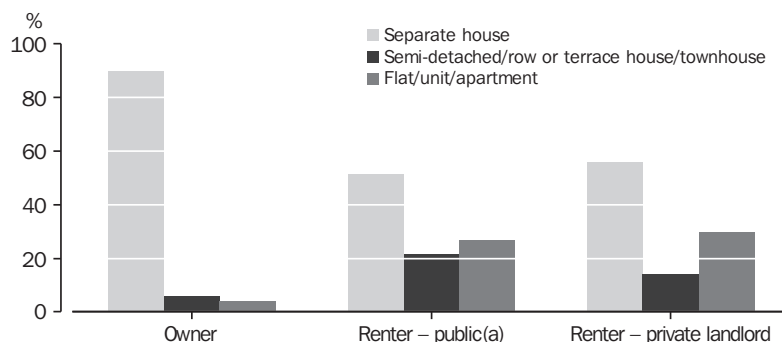
### 8.6 OWNER AND RENTER HOUSEHOLDS, By state and territory — 2003-04



Source: *Housing Occupancy and Costs, Australia, 2003-04 (4130.0.55.001)*.



### 8.7 OWNER AND RENTER HOUSEHOLDS, By dwelling type — 2003–04



(a) Renting from a state or territory housing authority.

Source: *Housing Occupancy and Costs, Australia, 2003–04* (4130.0.55.001).

## Housing costs

For most Australians, whether buying or renting their home, the provision of adequate housing for themselves and their families involves substantial ongoing expenditure throughout much of their lives. Housing costs are often the largest regular expenses to be met from a household's current income.

The measures of housing costs compiled from the Survey of Income and Housing cover different items for different types of tenure:

- *owner without a mortgage* – rates payments (general and water)
- *owner with a mortgage* – rates payments plus mortgage or unsecured loan payments if the initial purpose of the mortgage/unsecured loan was primarily to buy, build, add to or alter the dwelling
- *renter* – rent payments (not adjusted for rental assistance refunds).

In 2003–04, owners without a mortgage had the lowest housing costs, averaging \$25 per week or 3% of gross household income. In contrast, owners with a mortgage had the highest housing costs, averaging \$287 per week or 19% of their

gross household income. Among renters, housing costs averaged \$84 per week for households renting from a state/territory housing authority and more than double that (\$198) for households renting from a private landlord. In both cases, housing costs represented an average of 19% of their gross household income. The effect of Commonwealth Rent Assistance (CRA) should be taken into consideration when comparing the housing costs of private renters to those of other households. Eligible social security recipients may receive a non-taxable income supplement in the form of CRA if the private rent they pay is above a threshold level. It is estimated that CRA lowers the total housing costs by 10% for all private renters. For the one-third of private renters who receive CRA, their housing costs are estimated to be lowered by about 30%. For more information see *Housing assistance* in this chapter and *Housing Occupancy and Costs, Australia* (4130.0.55.001).

For the majority of owner and renter households, housing costs represented less than 25% of household income, but for some it was more than 50%. In 2003–04, 9% of private renters and 7% of owners with a mortgage spent more than half of their income on housing (table 8.8).

## 8.8 OWNER AND RENTER HOUSEHOLDS, Housing costs by tenure and landlord type — 2003–04

	Average weekly housing costs	Average housing costs as a proportion of gross household income	Proportion of households whose housing costs represented		Number of households
			25% or less of gross household income	More than 50% of gross household income(a)	
	\$	%	%	%	'000
Owner without a mortgage	25	3	98.0	1.4	2 702.9
Owner with a mortgage	287	19	67.3	7.0	2 713.8
Renter – state/territory housing authority	84	19	76.1	*2.4	376.4
Renter – private landlord	198	19	60.7	9.4	1 638.4
Total renters(b)	174	19	64.3	7.8	2 133.4
All owner and renter households	157	14	77.9	5.1	5 416.7

(a) Includes households with nil or negative total income. (b) Includes other landlord types.

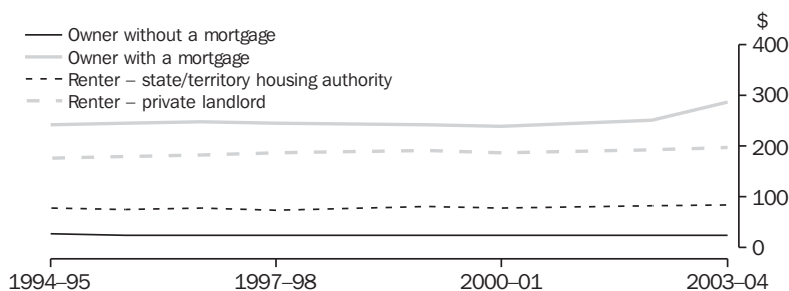
Source: *Housing Occupancy and Costs, Australia, 2003–04 (4130.0.55.001)*.

Between 1994–95 and 2003–04, owners with a mortgage experienced a \$45 increase in weekly housing costs after adjustment for inflation, most of which occurred in the last year (graph 8.9). As a proportion of gross household income, housing costs of owners with a mortgage rose from an average of 17% in 2002–03 to 19% in 2003–04, the same as in 1994–95.

For other tenure types, changes were smaller with an overall increase of \$21 for private renters and \$6 for public renters between 1994–95 and

2003–04. For private renters, this represented a small decline in the proportion of income spent on rent, from 20% to 19% – but for public renters it represented an increase, from 17% to 19% of income spent on rent (graph 8.10). As noted above, the effect of CRA receipts should be taken into consideration when making comparisons of housing costs of private renters with those of other tenure types.

## 8.9 WEEKLY HOUSING COSTS(a), By tenure and landlord type

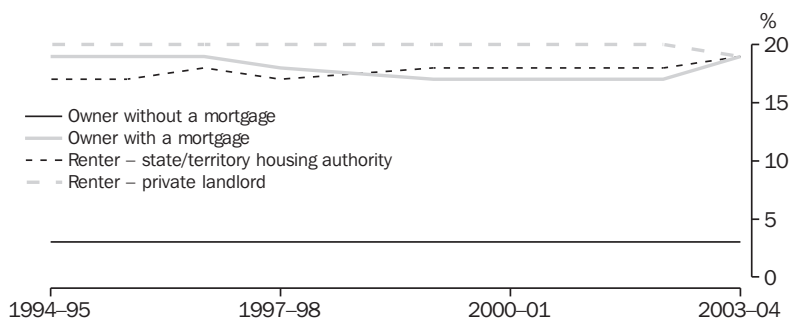


(a) Adjusted for changes in the Consumer Price Index to 2003–04 dollars.

Note: No data are available for 1998–99 or 2001–02. Values have been interpolated for these years.

Source: *Housing Occupancy and Costs, Australia, 2003–04 (4130.0.55.001)*.

## 8.10 HOUSING COSTS AS A PROPORTION OF INCOME, By tenure and landlord type



Note: No data are available for 1998-99 or 2001-02. Values have been interpolated for these years.

Source: *Housing Occupancy and Costs, Australia, 2003-04* (4130.0.55.001).

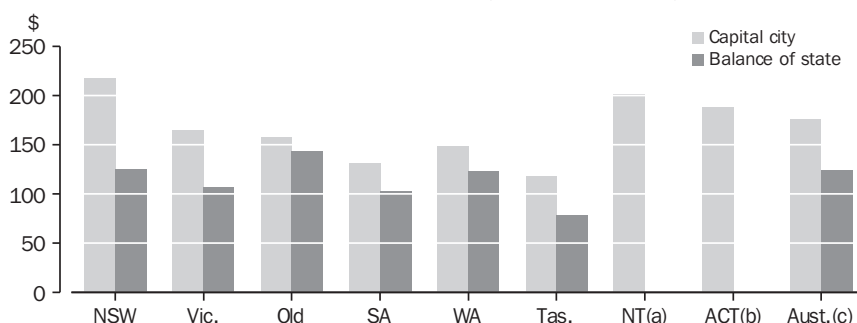
In 2003-04, households in Sydney, Darwin and Canberra had the highest average weekly housing costs – \$218, \$202 and \$189 respectively (graph 8.11). In each of these cities, housing costs averaged more than \$300 per week for owners with a mortgage; more than \$200 per week for private renters; and more than \$90 per week for public renters. At \$118 per week, average housing costs in Hobart were a little over half the Sydney average, and the lowest of all the capital cities.

In all states, average housing costs were higher in the capital city than in the rest of the state. The greatest difference was in New South Wales with Sydney housing costs 73% higher than in the rest of the state. In contrast, Brisbane housing costs

were only 10% higher than in the rest of Queensland which had the highest non-capital city housing costs in Australia.

Differences in average housing costs between regions reflect differences in property values (see *Home buyers*), rental prices and tenure patterns (see *Home owners and renters*). For example, Queensland had the second highest non-capital city median dwelling value (\$205,000) but the highest average amount of mortgage outstanding (\$106,000) and, therefore, the highest average housing costs for owners with a mortgage (\$257 per week). Queensland also had the highest non-capital city private rents, averaging \$177 per week, and the highest proportion of non-capital city households renting from a private landlord (26%).

## 8.11 AVERAGE WEEKLY HOUSING COSTS, By state and territory — 2003-04



(a) Balance of NT estimates are not sufficiently reliable to be shown separately. (b) Balance of ACT estimates are not available. (c) Includes NT balance.

Source: *Housing Occupancy and Costs, Australia, 2003-04* (4130.0.55.001).

Similarly, in 2003–04, the median value of dwellings in Sydney (\$500,000) was more than double that of Hobart (\$200,000) as was the average amount of mortgage outstanding (\$178,000 compared with \$82,000). Consequently, average weekly housing costs for home owners were higher in Sydney than in Hobart, particularly for owners with a mortgage (\$398 compared with \$205) (table 8.12). Also, private rents in Sydney were 77% higher than in Hobart. The proportion of Sydney households renting privately was also higher (24% compared with 14%) further contributing to the overall difference in average housing costs between Sydney and Hobart.

Household income also varies between regions, and when housing costs are expressed as a proportion of income, regional differences are moderated to some extent. For example, housing costs for all capital cities combined were 42% higher than in the rest of Australia (\$176 compared with \$124) but the proportion of income spent on housing costs was only 8% higher (14% compared with 13%).

## Home buyers

For most Australians, buying a home involves raising a deposit then borrowing a substantial amount of money from a bank or other lending institution which then holds a mortgage on the property. The amount borrowed is influenced by a number of factors including the price of the property, the amount of deposit, the policy of lenders regarding borrowing limits, and the ability of the borrower to repay the loan (which in turn is influenced by household income and housing loan interest rates).

The number of dwellings financed each year grew considerably between 1997–98 and 2003–04, a period of relatively low and stable housing interest rates. In 2004–05, banks and other lending institutions financed 637,000 dwellings for owner occupation, 23,000 fewer than in the previous year, despite continuing low interest rates. While the number of established dwellings financed each year has grown from 348,000 in 1994–95 to 560,000 in 2004–05, the number of new dwellings financed for construction or purchase has declined from 103,000 to 78,000 (graph 8.13). In 2004–05, new dwellings represented 12% of all dwellings financed in Australia. Western Australia had the highest proportion of new dwellings financed (17%) and New south Wales had the lowest (9%).

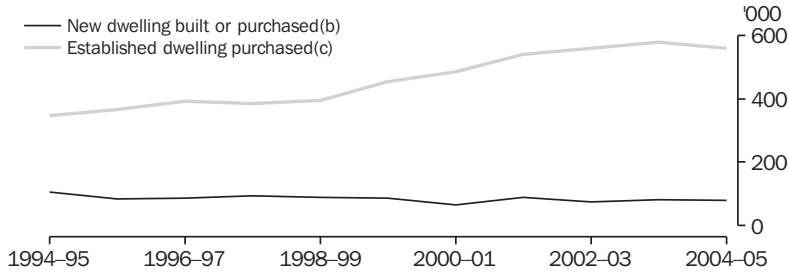
**8.12 CAPITAL CITY OWNER AND RENTER HOUSEHOLDS, Housing costs by tenure and landlord type — 2003–04**

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra(a)	Eight capital cities	Balance of Australia
<b>AVERAGE WEEKLY HOUSING COSTS (\$)</b>										
Owner without a mortgage	27	25	27	26	21	22	28	27	26	23
Owner with a mortgage	398	299	272	230	253	205	314	330	312	237
Renter – state/territory housing authority	92	90	76	81	81	78	95	92	86	81
Renter – private landlord	267	203	198	165	170	151	211	257	218	160
Total renters(b)	233	187	173	135	155	123	172	204	192	142
Total owner and renter households	218	165	158	132	149	118	202	189	176	124
<b>AVERAGE HOUSING COSTS AS A PROPORTION OF GROSS HOUSEHOLD INCOME (%)</b>										
Owner without a mortgage	2	3	3	3	2	3	2	2	3	3
Owner with a mortgage	22	19	19	17	17	14	18	18	20	18
Renter – state/territory housing authority	22	23	15	18	19	15	16	24	19	19
Renter – private landlord	21	19	20	16	17	18	18	19	20	18
Total renters(b)	20	20	20	17	17	17	17	19	19	17
Total owner and renter households	16	14	15	12	13	11	14	14	14	13

(a) All ACT owner and renter households. (b) Includes other landlord types.

Source: *Housing Occupancy and Costs, Australia, 2003–04* (4130.0.55.001).

### 8.13 NUMBER OF DWELLINGS FINANCED(a)



(a) Data includes owner occupied housing only. (b) Dwellings that have been completed within twelve months of the lodgement of a loan application, and the borrower will be the first occupant. (c) Dwellings that have been completed for twelve months or more prior to the lodgement of a loan application, or that have been previously occupied.

Source: *Housing Finance, Australia* (5609.0).

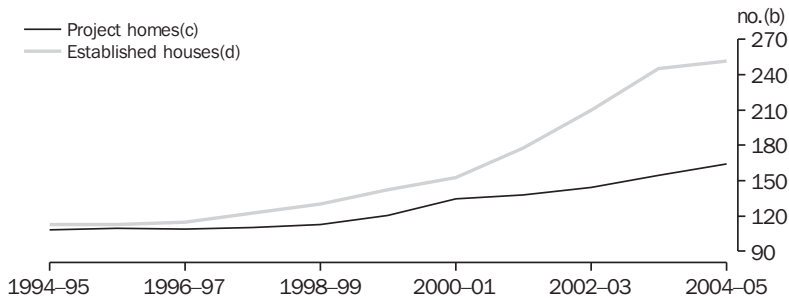
Established house prices also increased during this period, particularly between 2000-01 and 2003-04, but levelled off in 2004-05 in line with the fall in established home purchases (graph 8.14).

Median established house prices for the June quarter 2005 were highest in Sydney (\$499,000), Canberra (\$374,000) and Melbourne (\$320,000). Project home prices increased less than established house prices, particularly from 2000-01. Between 2000-01 and 2004-05, project

home prices increased by an average of 22%, while established house prices increased by an average of 65%.

Average loan sizes increased along roughly similar lines as house prices between 1994-95 and 2004-05. For most of the period, the average loan size of first home buyers was slightly less than for non-first, or changeover, buyers (graph 8.15). However, in 2004-05, both groups borrowed an average of \$210,000. Differences in average loan sizes between states and territories tended to reflect differences in median house prices (table 8.16).

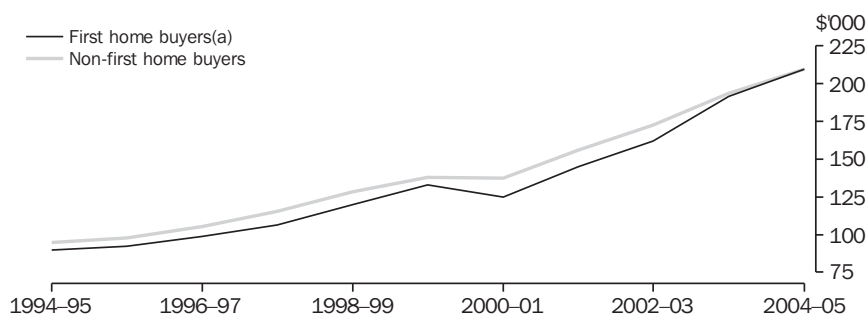
### 8.14 HOUSE PRICE INDEXES(a)



(a) Weighted average of the eight state and territory capital cities. (b) Reference base year is 1989-90 = 100. (c) Price of new house construction only (excludes land). (d) Price of house and land (includes new house/land packages).

Source: *House Price Indexes: Eight Capital Cities* (6416.0).

## 8.15 AVERAGE LOAN SIZE



(a) Persons entering the home ownership market for the first time.

Note: Excludes alterations and additions, includes refinancing.

Source: *Housing Finance, Australia* (5609.0).

## 8.16 HOUSING FINANCE FOR OWNER OCCUPATION, HOUSE PRICES AND PROPERTY VALUES

	Units	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Dwellings financed — 2004-05										
New dwelling built or purchased(a)	'000	16.5	21.1	15.8	6.1	14.8	1.5	0.7	0.8	77.5
Established dwelling purchased(b)	'000	168.4	124.9	121.2	47.9	73.9	11.3	5.9	6.3	559.7
All dwellings financed	'000	185.0	146.0	137.0	54.0	88.6	12.8	6.6	7.1	637.2
Average loan size — 2004-05										
First home buyers(c)	\$'000	259	205	202	165	169	148	159	224	210
Non-first home buyers	\$'000	254	207	207	154	171	144	179	230	210
All dwellings financed	\$'000	255	207	206	155	171	145	175	229	210
Change in Project Home Price Index(d)(e) from 1994-95 to 2004-05	%	47	49	52	50	63	58	54	48	52
Change in Established House Price Index(d)(f) from 1994-95 to 2004-05	%	132	140	116	117	98	52	54	98	123
Median price of established house transfers(d)(g) — June Qtr 2005	\$'000	499	320	310	270	300	250	260	374	n.a.
Median estimated value of all owner occupied dwellings(h) — 2003-04										
Capital city	\$'000	500	300	300	240	250	200	236	359	340
Balance of state	\$'000	280	190	205	160	180	150	n.a.	n.a.	210
Total state	\$'000	400	270	270	220	240	171	230	359	300
Average amount of mortgage outstanding(i) — 2003-04										
Capital city	\$'000	178	126	120	95	114	82	139	145	136
Balance of state	\$'000	101	84	106	75	91	62	n.a.	n.a.	96
Total state	\$'000	150	115	113	90	108	72	135	145	122

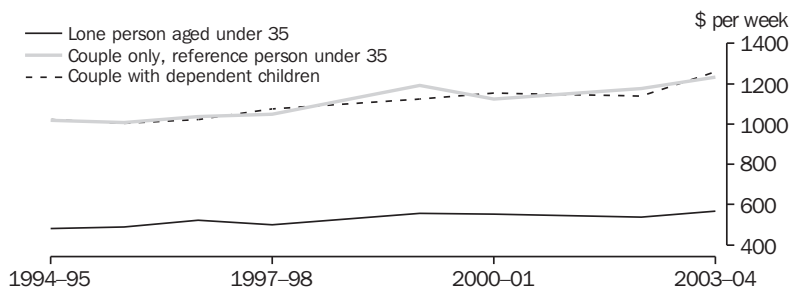
(a) A new dwelling is one that has been completed within twelve months of the lodgement of a loan application, and the borrower will be the first occupant. (b) An established dwelling is one that has been completed for twelve months or more prior to the lodgement of a loan application, or that has been previously occupied. (c) Persons entering the home ownership market for the first time. (d) Weighted average of eight capital cities. (e) Measures change in the cost of building a new house on buyer's own land. (f) Measures change in prices paid for house and land, including new house/land packages. (g) Prices paid for established houses (including land) purchased in the reference period. (h) Householder's own estimate of the market value of their dwelling at the time of the survey. (i) Only includes owners with a mortgage.

Source: *Housing Finance, Australia* (5609.0); *House Price Indexes: Eight Capital Cities* (6416.0); *Housing Occupancy and Costs, Australia* 2003-04 (4130.0.55.001).

Between 1994-95 and 2003-04, the average real disposable income of home buyers who were lone persons under 35 years increased by 18%. That of couple-only households with a reference person

under 35 years increased by 21%, and couples with dependent children by 23% (graph 8.17). In the same period, the average loan size, after adjustment for inflation, increased by 64%.

### 8.17 AVERAGE REAL DISPOSABLE HOUSEHOLD INCOME(a)



(a) Adjusted for changes in the Consumer Price Index to 2003-04 dollars.

Note: No data are available for 1998-99 or 2001-02. Values have been interpolated for these years.

Source: ABS data available on request, Survey of Income and Housing.

Almost 1.2 million Australian households bought a home in the three years prior to the Survey of Income and Housing, conducted during the twelve months ended June 2004. One in three were first home buyers, most of whom were young households with a reference person aged

under 35 years (69%) (table 8.18). Less than 10% of recent first home buyer households had a reference person aged 45 years and over. In contrast, more than half (52%) of recent changeover buyer households had a reference person aged 45 years and over.

### 8.18 RECENT HOME BUYERS(a), Selected household characteristics — 2003-04

	Units	Recent home buyers			
		First home buyer(b)	Changeover buyer(c)	All recent home buyers	All home owners
Proportion of households with reference person aged					
Under 35 years	%	68.7	18.9	35.7	14.2
35-44 years	%	22.7	28.7	26.7	21.4
45-54 years	%	4.6	23.1	16.9	23.2
55-64 years	%	*2.6	14.5	10.5	17.6
65 years and over	%	*1.4	14.7	10.2	23.7
Proportion of households in selected family/household groups					
Lone person	%	20.8	19.1	19.7	21.7
Couple only	%	34.5	28.8	30.7	30.1
Couple family with dependent children	%	30.5	39.4	36.4	25.9
One parent with dependent children	%	5.0	4.4	4.6	3.8
Proportion of households that built/purchased a new dwelling(d)	%	17.4	21.1	19.9	. .
Estimated median value of dwelling(e)	\$'000	250	310	295	300
Proportion of households with a mortgage	%	94.6	69.9	78.2	35.1
Average amount of mortgage outstanding(f)	\$'000	164	177	172	122
Average weekly housing costs	\$	330	251	278	156
Housing costs as a proportion of income	%	24	19	21	13
Estimated number of households(g)	'000	394.0	774.7	1 168.7	5 416.7

(a) Households that built or purchased their dwelling in the three years before the survey. (b) Recent home buyer households in which neither the reference person nor their partner had previously owned a dwelling. (c) Recent home buyer households in which either the reference person or their partner had previously owned a dwelling. (d) A dwelling is new if it was built under contract for the current owner or purchased from a builder/developer and the current owners are the first to live in it. (e) Householder's own estimate of the market value of their dwelling at the time of the survey. (f) Only includes owners with a mortgage. (g) Includes all family and household groups.

Source: *Housing Occupancy and Costs, Australia, 2003-04* (4130.0.55.001).



Changeover buyers are able to use the equity in their previous dwelling as an often substantial deposit on a more expensive 'upgrade'. Many will be able to discharge their mortgage quickly and some may not need to borrow at all. In 2003–04, the estimated median value of dwellings for recent changeover buyers was \$310,000 compared with \$250,000 for recent first home buyers. While changeover buyers had larger mortgages than first home buyers, the proportion of owners with a mortgage was lower (70% compared with 95%).

Consequently, average weekly housing costs of changeover buyers were lower than for first home buyers – \$251 compared with \$330. Changeover buyers also spent a smaller proportion of household income on housing than first home buyers – 19% compared with 24%.

### Housing and life cycle stages

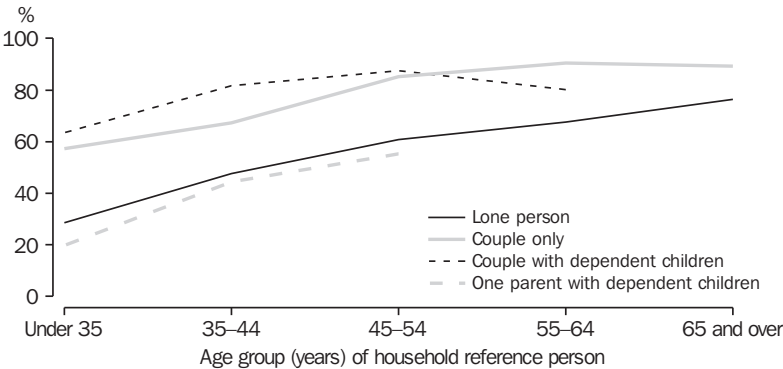
As people progress through different life cycle stages and their family structures and financial situations change, so do their housing needs and preferences. For young people leaving their parental home, a typical life experience with housing might begin with renting a small flat or unit for themselves or sharing a group house, then moving on to renting an apartment or house with their partner while saving for a deposit on their first home. Many couples will buy their first

home and pay off a considerable part of their mortgage before having their first child. Then, as the number and age of children increase, many will upgrade to a larger house. After the children have left home, most home owners will probably remain in the same home at least until retirement, by which time most will own their home outright. After retirement, some will change location, and in doing so a few will choose a smaller home, possibly a unit in a retirement village. Later, some who are too old or frail to live in their own home will move into cared accommodation (see *Residential aged care* in the *Income and welfare* chapter).

While most Australians aspire to own their home outright, at least by the time they retire, many on low incomes cannot afford to buy a home and some cannot afford to rent adequate housing. There are a range of government programs aimed at assisting low income households to buy or rent suitable and affordable housing (see *Housing assistance*).

In 2003–04, over half of young (reference person aged under 35 years) couple-only households, and young couples with dependent children owned their home (57% and 64% respectively) (graph 8.19 and table 8.21). The home ownership rate was considerably lower for young lone-person households (28%).

8.19 HOME OWNERSHIP RATES, By household composition — 2003–04



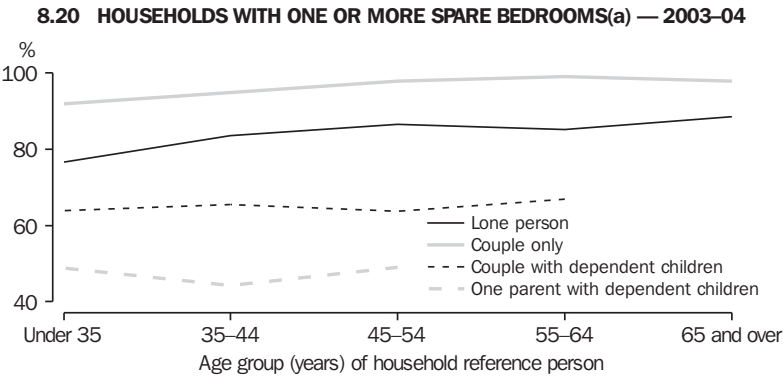
Source: ABS data available on request, Survey of Income and Housing, 2003–04.

Home ownership rates increased with age of reference person (at least up to aged 45–54 years) for all family and household groups. Beyond this age, the home ownership rate for couple-only households continued to increase as the rate for couples with dependents declined, reflecting the transition of couple families with children to ‘empty nest’ couple-only households. Similarly, at age 65 years and over, home ownership rates for lone-person and couple-only households had converged to some extent, reflecting the transition of couple-only households to lone-person households following the death of one partner.

One-parent families with dependent children had the lowest home ownership rates, ranging from 20% (reference person aged under 35 years) to 55% (reference person aged 45–54 years) and, conversely, the highest proportions of renters, particularly public renters. In 2003–04, 17% of all one-parent families with dependent children were renting from a state/territory housing authority and 38% were renting privately. Lone-person households also had relatively high proportions of renters, with 9% renting from a state/territory housing authority and 26% renting privately.

People living alone are more likely to live in high density housing than any other group, particularly when young. In 2003–04, the proportion of lone persons living in a flat, unit or apartment ranged from 41% of those aged under 35 years to 15% of those aged 65 years and over. Even so, lone persons were more likely to have one or more spare bedrooms than families with children. In 2003–04, 85% of lone-person households and 97% of couple-only households had one or more spare bedrooms (graph 8.20).

There are long-term benefits in home ownership. Initially, the cost of home purchase is often far greater than renting (due to the costs of deposits and fees, as well as ongoing mortgage repayments). However, the much lower costs associated with owning a home outright, and the investment that a home represents, can be major contributors to economic wellbeing, particularly for older people, as many retire on considerably reduced incomes.



(a) As measured against the Canadian National Occupancy Standard.  
 Source: ABS data available on request, Survey of Income and Housing, 2003–04.

## 8.21 SELECTED HOUSEHOLD AND DWELLING CHARACTERISTICS(a) — 2003–04

Household composition	Estimated number of households '000	Average number of persons in household no.	Average number of bedrooms in dwelling no.	Proportion of households with characteristic				
				One or more spare bedrooms(b)	Living in separate house	Living in flat/unit/apartment	Home owner	Renter
				%	%	%	%	%
REFERENCE PERSON AGED UNDER 35 YEARS								
Lone person	336.1	1.0	2.2	76.6	41.2	41.0	28.4	66.6
Couple only	411.7	2.0	2.6	91.9	68.6	19.1	57.2	38.6
Couple family with dependent children	476.4	3.9	3.2	63.9	88.5	5.6	63.5	33.7
One-parent family with dependent children	170.5	2.9	3.0	48.8	75.8	10.0	19.7	77.8
All households(c)	1 737.6	2.6	2.8	67.3	68.3	20.0	44.3	52.2
REFERENCE PERSON AGED 35–44 YEARS								
Lone person	294.1	1.0	2.4	83.5	53.4	29.8	47.6	49.2
Couple only	149.6	2.0	2.8	95.0	71.9	17.7	67.2	30.9
Couple family with dependent children	831.1	4.2	3.5	65.6	92.2	3.8	81.5	16.5
One-parent family with dependent children	227.0	3.0	3.0	44.2	83.7	7.7	44.4	52.8
All households(c)	1 710.7	3.2	3.2	67.8	81.8	10.1	67.8	30.0
REFERENCE PERSON AGED 45–54 YEARS								
Lone person	313.7	1.0	2.5	86.6	63.5	21	60.9	37.6
Couple only	289.1	2.0	3.2	97.9	90.2	5.1	85.2	14.5
Couple family with dependent children	419.1	4.0	3.6	63.8	95.8	*1.9	87.4	10.5
One-parent family with dependent children	110.0	2.8	3.1	49.0	85.8	*8.8	55.3	40.3
All households(c)	1 592.0	2.9	3.3	74.1	86.9	7.0	78.8	19.7
REFERENCE PERSON AGED 55–64 YEARS								
Lone person	301.2	1.0	2.5	85.1	65.1	21.1	67.4	29.5
Couple only	509.7	2.0	3.3	99.0	92.9	2.6	90.3	7.7
Couple family with dependent children	67.7	3.7	3.6	66.8	94.8	*1.6	80.2	18.7
All households(c)	1 522.9	2.1	3.1	87.8	85.7	7.5	82.5	15.5
REFERENCE PERSON AGED 65 YEARS AND OVER								
Lone person	717.0	1.0	2.5	88.6	69.1	15.4	76.4	19.7
Couple only	656.7	2.0	3.0	97.8	87.9	5.1	89.2	9.4
All households(c)	1 542.6	1.6	2.8	91.7	79.8	9.5	83.1	14.4
ALL AGE GROUPS								
Lone person	1 962.1	1.0	2.4	84.9	60.5	23.7	60.0	36.6
Couple only	2 016.9	2.0	3.0	96.7	84.4	8.3	80.7	17.3
Couple family with dependent children	1 798.4	4.0	3.4	64.8	92.4	3.6	78.0	19.7
One-parent family with dependent children	526.6	2.9	3.0	47.6	81.6	8.8	39.4	57.6
All households(c)	7 735.8	2.5	3.0	76.7	80.0	11.2	70.0	27.6

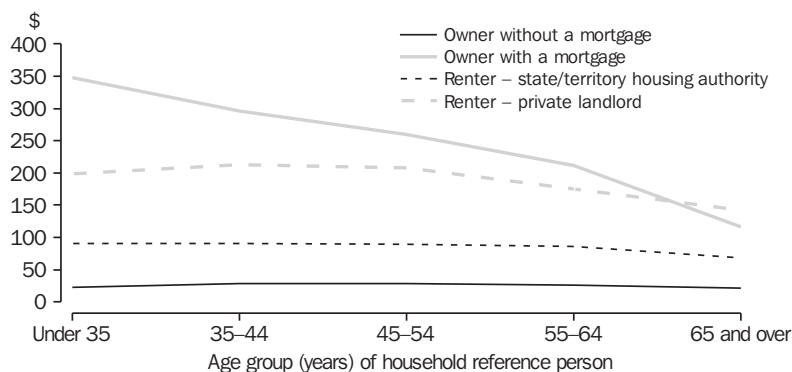
(a) By age group of household reference person. (b) As measured against the Canadian National Occupancy Standard. (c) Includes all other family and household types.

Source: ABS data available on request, Survey of Income and Housing, 2003–04.

In 2003–04, the average weekly housing costs of young households with a mortgage was \$348 – 75% more than the average weekly rent of young private renters (graph 8.22). The difference in housing costs between owners with a mortgage and private renters was progressively smaller in

older age groups, mainly because of progressively lower mortgage payments. For households with a reference person aged 65 years and over, private rents were higher, on average, than the housing costs of home owners with a mortgage.

## 8.22 AVERAGE WEEKLY HOUSING COSTS, By tenure — 2003–04



Source: ABS data available on request, Survey of Income and Housing, 2003–04.

The difference in housing costs between younger and older owners with a mortgage is largely a reflection of the difference in house prices, and hence the amount borrowed, at the time of purchase. On average, recent home buyers paid higher prices than those who bought their homes ten, twenty and thirty years ago. In 2003–04, more than half (58%) of young households with a mortgage were recent home buyers compared with 15% of the oldest home owners (reference person aged 65 years and over) with a mortgage (table 8.23). The average mortgage outstanding for young home owners was \$154,000 compared to \$42,000 for the oldest.

For other tenure types, there was much less variation in housing costs across age groups. In 2003–04, average weekly rents rose from \$199 for young households renting privately to \$213 for those with a reference person aged 35–44 years, and were progressively lower for older private renters. This pattern largely reflects the need for larger households to rent larger, and often more expensive, dwellings. In 2003–04, couple families with dependent children represented 17% of young private renter households; 28% of those with a reference person aged 35–44 years; and 16% of those with a reference person aged 45–54 years.

Average weekly rents of public renters were less than half those of private renters, starting at \$91 for younger households and declining to \$69 for the oldest. Owners without a mortgage had by far the lowest and least variable housing costs, averaging \$25 per week overall.

Much of the variation in housing costs between households at different life-cycle stages is related to differences in tenure patterns. For example, in 2003–04, young households had the highest average weekly housing costs (\$238). They also had the highest proportion of recent home buyers (58% of all home owners with a mortgage), the highest average amount of mortgage outstanding (\$154,000) and the highest proportion of private renters (46%).

Housing costs were on average lower for households with a reference person aged 35–44 years (averaging \$221 per week). Even though this group had the highest proportion of home owners with a mortgage (54% compared to 40% of younger households) only 31% of these were recent home buyers and the average amount of mortgage outstanding was considerably lower (\$130,000). This group also had a higher proportion of owners without a mortgage (13% compared with 5% of younger households) and a lower proportion of private renters (24% compared with 46% of younger households).

At other end of the spectrum, the oldest households (with a reference person aged 65 years and over) had the highest proportion of home owners without a mortgage (79%), the lowest proportion of private renters, the highest proportion of public renters, and, for those in this group that had a mortgage, it was lowest of all age groups (\$42,000). Together these factors resulted in this group having by far the lowest average housing costs (\$37 per week).

## 8.23 HOUSING COSTS, MORTGAGE, AND TENURE AND LANDLORD TYPE(a) — 2003–04

Household composition	Proportion of households with characteristic							
	Average weekly housing costs	Average housing costs as a proportion of gross household income	Average amount of mortgage outstanding(b)	Proportion of owners with a mortgage who are recent home buyers(c)	Owner without a mortgage	Owner with a mortgage	Renter – state/territory housing authority	Renter – private landlord
	\$	%	\$'000	%	%	%	%	%
REFERENCE PERSON AGED UNDER 35 YEARS								
Lone person	174	24	128	64.0	*3.0	25.4	3.4	61.4
Couple only	306	19	183	70.7	2.9	54.2	0.3	36.0
Couple family with dependent children	267	21	149	49.0	4.6	58.6	1.8	29.9
One-parent family with dependent children	156	24	113	49.3	*2.1	17.5	20.3	53.3
All households(d)	238	20	154	57.7	4.5	39.8	3.5	46.4
REFERENCE PERSON AGED 35–44 YEARS								
Lone person	162	21	106	39.7	12.1	35.5	9.7	37.5
Couple only	256	16	157	36.8	12.4	54.8	**0.7	29.6
Couple family with dependent children	260	16	138	28.4	12.6	68.3	1.3	14.0
One-parent family with dependent children	158	21	91	31.2	10.0	34.4	16.6	34.9
All households(d)	221	17	130	30.9	13.4	54.4	4.9	23.5
REFERENCE PERSON AGED 45–54 YEARS								
Lone person	134	19	88	25.8	25.0	35.9	10.5	26.0
Couple only	144	11	97	26.3	38.7	46.5	*2.9	11.1
Couple family with dependent children	208	11	116	20.4	31.8	55.8	*1.2	8.4
One-parent family with dependent children	137	14	90	20.0	20.9	34.4	14.1	24.1
All households(d)	167	12	103	21.3	31.4	47.4	4.6	14.0
REFERENCE PERSON AGED 55–64 YEARS								
Lone person	82	17	76	24.1	48.8	18.7	11.4	15.4
Couple only	70	7	71	18.2	69.0	21.3	1.7	5.3
Couple family with dependent children	142	7	151	25.7	49.6	32.1	*3.4	13.1
All households(d)	87	8	87	20.8	58.6	23.9	4.9	9.3
REFERENCE PERSON AGED 65 YEARS AND OVER								
Lone person	36	9	*31	18.4	73.8	2.6	9.8	8.1
Couple only	34	5	*42	13.2	85.2	4.0	4.0	4.7
All households(d)	37	7	42	14.8	79.2	3.9	6.6	6.5
ALL AGE GROUPS								
Lone person	101	18	97	37.7	40.8	19.2	9.0	25.6
Couple only	131	12	132	42.9	52.3	28.5	2.2	14.0
Couple family with dependent children	245	15	137	31.8	17.8	60.8	1.5	16.2
One-parent family with dependent children	151	20	95	31.4	10.8	28.6	17.4	37.8
All households(d)	157	14	122	33.7	34.9	35.1	4.9	21.2

(a) By age group of household reference person. (b) Only includes owners with a mortgage. (c) Owners who built or purchased their dwelling in the three years prior to the survey. (d) Includes all other family and household types.

Source: ABS data available on request, *Survey of Income and Housing*, 2003–04.

Housing costs decline with age for all family and household types, as does the proportion of household income spent on housing, but to a lesser extent. For example, in 2003–04, the oldest lone-person households paid an average of \$36

(9% of their gross household income) for housing, while the youngest lone-person households paid \$174 (24% of their gross household income) for housing.

## Housing assistance

*This section was contributed by the Australian Government Department of Families, Community Services and Indigenous Affairs (September 2006).*

While most Australians are able to house themselves without government assistance, such assistance remains important for various population groups, especially low income earners and social security recipients. Housing assistance is provided by the Australian Government, and the state and territory governments through a range of housing and other programs. Assistance for people with low incomes is provided through public housing, home purchase assistance and rent assistance schemes. Assistance is also provided to community organisations and local governments for refugees and crisis accommodation.

The Commonwealth State Housing Agreement (CSHA) is an agreement made between the Australian Government and state and territory governments under the *Housing Assistance Act 1996* (Cwlth) to provide strategic direction and funding certainty for the provision of housing assistance. The aim of this agreement is to provide appropriate, affordable and secure housing assistance for those who most need it, for the duration of their need.

The Australian Government Minister for Family and Community Services, and state and territory Housing Ministers committed to a new CSHA operating from July 2003 to June 2008. Ministers expressed commitment to the development of positive options for a new CSHA that will create: a modern, sustainable housing system; support community development and the renewal of public housing estates; support wider government outcomes in health, education and labour market reform; and stimulate private sector investment in the supply of low cost housing. The Australian

Government contribution will be \$4.75 billion over the five-year agreement. The CSHA sets out the terms for the provision of housing assistance for rental housing, home purchase and other specific housing programs. Details of Australian Government assistance provided under the CSHA for 2005–06 are set out in table 8.24.

### Home purchase assistance (HPA)

HPA is provided by some states to assist low-to-moderate income households to purchase a home or to provide help with mortgage repayments. Some of the mechanisms used to assist low-to-moderate income earners include loans, shared equity schemes, deposit assistance and mortgage relief. States offer HPA options in line with local market conditions. The emphasis given to loan products varies significantly between jurisdictions. Western Australia and South Australia placed the greatest emphasis on various forms of subsidised loan products, partly due to lower housing prices, which make home purchase feasible on lower incomes. Other jurisdictions such as New South Wales gave greater emphasis to mortgage relief for home purchasers experiencing hardship.

### Rent assistance

The Australian Government pays rent assistance, a non-taxable income supplement, to eligible social security recipients who pay rent in the private rental market. Rent can include private rent, lodgings, board and lodgings, site fees, fees to moor a vessel, or service and maintenance fees in a retirement village.

To be eligible for rent assistance, a person must first pay rent above a certain threshold level. Rent assistance is then paid at the rate of 75 cents in each dollar above the threshold, until a maximum amount is reached. Maximum rates and thresholds vary depending on a person's family situation.

**8.24 COMMONWEALTH STATE HOUSING AGREEMENT, Payments to states and territories — 2005–06**

	NSW	Vic.	Qld	WA	SA	Tas.	ACT	NT	Aust.
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Base funding	243 465	180 158	141 161	71 974	55 389	21 604	16 885	13 235	743 871
Community Housing Program	21 936	16 232	12 718	6 485	4 990	1 570	1 052	652	65 635
Aboriginal Rental Housing Program	18 235	3 731	25 885	16 271	8 557	696	—	19 964	93 339
Crisis Accommodation Program	13 593	10 059	7 881	4 019	3 093	973	652	404	40 674
<b>Total</b>	<b>297 229</b>	<b>210 180</b>	<b>187 645</b>	<b>98 749</b>	<b>72 029</b>	<b>24 843</b>	<b>18 589</b>	<b>34 255</b>	<b>943 519</b>

Source: Department of Families, Community Services and Indigenous Affairs.

Rent assistance is indexed twice-yearly, in March and September (by the increase in the Consumer Price Index).

At 3 March 2006 there were 941,319 income units recorded by Centrelink as entitled to rent assistance for that date. An income unit is defined as a single person with or without dependant children, or a couple with or without dependant children. The average rent paid by rent assistance recipients was \$304 per fortnight while the average rent assistance received was \$82 per fortnight.

A large proportion of rent assistance recipients are either single people or sole parents. In March 2006, 52% of rent assistance recipients were single with no dependent children, 24% were single with dependent children, 16% were couples with dependent children and 8% were couples without dependent children.

Table 8.25 provides details of the number of rent assistance recipients, average fortnightly rates of rent assistance and average fortnightly rents in March 2006. Outlays on rent assistance are included

in the total expenditure on Pensions, Allowances and Family Tax Benefits, details of which are provided in the *Income and welfare* chapter.

## Crisis accommodation

The Australian Government, and the state and territory governments provide assistance to people who are homeless or at imminent risk of homelessness, through the Supported Accommodation Assistance Programme (SAAP). SAAP is a jointly funded program between Australian, state and territory governments. The SAAP V agreement was signed in September 2005 and is now operational.

## National Indigenous housing reforms

The Standing Committee on Indigenous Housing (SCIH) is comprised of Australian Government and state and territory Indigenous housing officials. SCIH reports on its activities directly to the Housing Ministers Advisory Council and, in particular, manages the implementation of the Housing Ministers' Ten Year Statement of New Directions *Building a Better Future: Indigenous Housing to 2010* (BBF).

**8.25 RECIPIENTS OF RENT ASSISTANCE, Average rent assistance and rent paid — 3 March 2006**

	Income units(a) no.	Average rent assistance(b) \$ per fortnight	Average rent paid(c) \$ per fortnight
All recipients	941 319	82.5	303.9
Primary payment type(d)			
Youth Allowance	66 216	66	223
Age Pension	170 027	76	256
Disability Support Pension	180 511	84	262
Newstart Allowance	167 440	79	269
Parenting Payment (single)	196 720	94	358
Parenting Payment (partnered)	28 641	108	426
Family Tax Benefit Part A	98 493	77	444
Other	33 271	81	278
Income unit type			
Single – no dependent children	484 963	76	237
Couple – no dependent children	79 965	78	323
Single – 1 or 2 dependent children	189 598	91	353
Single – 3 or more dependent children	36 746	105	391
Couple – 1 or 2 dependent children	102 456	86	424
Couple – 3 or more dependent children	44 803	100	443
Couple – temporarily separated	2 788	100	338

(a) Income units are couples or singles either with or without dependent children. Dependent children are those for whom Family Tax Benefit is being paid. Income units are counted if either member is entitled to Rent Assistance as at 3 March 2006.

(b) Average Rent Assistance is taken to be 14 times the daily entitlement to Rent Assistance for 3 March 2006. (c) Average rent is the average rent taken into account in working out entitlements for 3 March 2006. (d) One member of a couple is treated as the reference person for the income unit, based on the type of payment they receive. The general order of priority is Pensions, Allowances, Family Tax Benefit. An income unit will be reported as receiving Parenting Payment (Partnered) only if neither member of the couple receives another social security payment. They will only be reported as receiving FTB Part A if neither receives a social security payment.

Source: Department of Families, Community Services and Indigenous Affairs.



Through the BBF, Housing Ministers agreed to four objectives to achieve housing improvements for Indigenous people:

- identify and address unmet housing needs of Indigenous people
- improve the capacity of Indigenous community housing organisations and involve Indigenous people in planning and service delivery
- achieve safe, healthy and sustainable housing
- coordinate program administration.

Each objective has a number of implementation strategies.

Various SCIH Working Groups have been involved in a range of activities. The National Skills Development Strategy Working Group aims to develop and maintain a national plan to guide national, state and territory industry and training agencies and government departments in implementing the training strategy for Indigenous community housing.

The National Reporting Framework provides the basis for data collection work at a jurisdictional level and provides the relevant information for all national reporting structured around the outcomes required by the BBF. SCIH members also provide advice to the Australian Housing Urban Research Institute (AHURI) on planning processes and have developed ongoing communication on the role of AHURI in Indigenous housing research.

## Home ownership

*This section was contributed by Indigenous Business Australia (August 2006).*

Indigenous Business Australia's Home Ownership Programme (IBA Homes) provides affordable home loan finance to eligible Indigenous people to assist in reducing the disparity between the rate of home ownership in Indigenous households and that in other Australian households. The rate of home ownership for Indigenous family and lone-person households was estimated in the 2001 Census to be 32%. This compares with a national non-Indigenous figure of 71%.

IBA Homes provides home loans on concessional terms to Aboriginal and Torres Strait Islander families. The scheme targets low income Indigenous families with the capacity to repay a long-term loan, but who have difficulty obtaining finance from traditional lending institutions. The loan portfolio currently includes 3,395 loans valued at \$457.9 million (m). In 2005–06, there were 580 new loans provided. Since the programme's establishment, it has helped in excess of 12,400 Indigenous families to buy their own homes.

## Community homes

On 5 October 2005 the Australian Government announced its intention to amend the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cwlth) to, in part, enable long-term leases over Indigenous land to be more readily available to prospective Indigenous home owners in the Northern Territory. A number of complementary measures to support home ownership by Indigenous individuals on Indigenous land were also announced and included the provision of \$7.3m over two years for the Home Ownership on Indigenous Land Programme, known as Community Homes, managed by Indigenous Business Australia. The programme will provide concessional loans and other home purchase incentives.

This initiative was developed to assist in redressing the disparity in home ownership rates between Indigenous and non-Indigenous Australians, to assist in alleviating the inadequate number and poor quality of community housing and to address the unique barriers to home ownership faced by Indigenous families living on Indigenous land.

Community Homes will provide Indigenous people with the realistic option of individual home ownership on Indigenous land for the first time by offering greater access to finance and home purchase incentives enabling people to have better ownership of their financial and social outcomes.

## Residential aged care

*This section was contributed by the Australian Government Department of Health and Ageing (July 2006).*

The Australian Government, through the Department of Health and Ageing, subsidises and regulates residential care for frail older people. Most of the residential care is provided by the

non-government sector, including not-for-profit and private sector providers. Australian Government payments include subsidies paid to providers for the provision of care. Targeted capital assistance is available to aged-care homes catering largely for residents with special needs or on low incomes, or located in rural and remote areas of Australia (see *Residential aged care* in the *Income and welfare* chapter).

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Indigenous Business Australia, last viewed September 2006 <<http://www.iba.gov.au>>



## HEALTH

The Australian health system has a diversity of arrangements for planning, funding, delivering and regulating health services, featuring a mix of private and public sector involvement.

The Australian Government, through the Health and Ageing portfolio, has significant financial and policy responsibility for health services, including hospitals, public health and mental health, while the state and territory governments are largely responsible for the direct provision of such services. Local governments and non-government organisations are also involved in the direct provision of health services. Private, non-salaried practitioners provide most medical, dental and allied health care. Two major national subsidy schemes – Medicare and the Pharmaceutical Benefits Scheme – are funded by the Australian Government to cover all Australian citizens and permanent residents, and are discussed in *Health care delivery and financing*. In 2004–05 total expenditure on health as a proportion of Australia's gross domestic product was 9.8%.

The chapter contains four articles. The first *Mortality trends of people aged 50 years and over* examines changes in mortality trends between 1970–72 and 2002–04. The article *Chronic conditions and disability* discusses chronic conditions and disabilities experienced by people in 2003. The third article *Health of Aboriginal and Torres Strait Islander Australians* presents findings from a survey of the Indigenous population in 2004–05, and compares these with those for the non-Indigenous population. The Australian Bureau of Statistics (ABS) collected some information on people's level of satisfaction with their lives, as part of the 2001 National Health Survey. The chapter concludes with the article *Life satisfaction and measures of progress* which discusses how life satisfaction can be measured, its relevance to an understanding of national wellbeing, and presents some related statistics.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## National health information

Under the National Health Information Agreement, to which the ABS, the Australian Institute of Health and Welfare, Australian Government Department of Health and Ageing, and the various state and territory health authorities are signatories, the National Health Information Development Plan sets out agreed national priorities for health information to be considered by the Australian Health Ministers' Advisory Council.

Data in this chapter are obtained from the most up-to-date sources available, including information on the health status of Australians collected in the 2004–05 National Health Survey (NHS), and the 2003 Survey of Disability, Ageing and Carers (SDAC) conducted by the ABS, and data from the ABS Causes of Death collection. Previous health surveys were conducted in 1989–90, 1995 and 2001.

Data from the 2004–05 NHS in this chapter are presented using the *International Classification of Diseases, 10th revision* (ICD-10).

## How Australians rate their health

The World Health Organisation defines health as 'a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity'. While the level of disease or infirmity can be assessed by mortality, disability and morbidity statistics, the presence of positive wellbeing is more difficult to measure.

## Health and wellbeing

In 2004–05 the majority of Australians aged 15 years and over considered themselves to be in good health, with 84% reporting their health

status as good, very good or excellent (table 9.1). This is similar to the proportion reported in the 2001 NHS (82%). The proportion of people reporting fair or poor health increased with age, from 7% among those aged 15–24 years to 35% among those aged 75 years and over.

In 2004–05 people with higher educational qualifications were generally more likely to report their health to be excellent. People who were employed or in a higher income unit were more likely to report their health as very good or better.

## Health status

### Morbidity

The 2004–05 NHS found almost 77% of the Australian population reported one or more long-term conditions (i.e. conditions that have lasted, or are expected to last for six months or more). In most cases, respondents were asked about conditions which had been medically diagnosed.

Among adults aged 18 years and over in 2004–05, females in general were more likely than males to report selected long-term conditions with the exception of total/partial hearing loss and back problems (table 9.2). While similar proportions of females and males reported having hypertension and diabetes, females were more likely to consult health professionals. For example, in 2004–05 it was estimated 26% of females had consulted a doctor in the two weeks prior to the survey interview, compared with 20% of males. Females also have a longer life expectancy. This results in higher proportions of females in the older age groups where long-term conditions are common. Adult males had a higher prevalence of back problems, hearing loss and diabetes.

### 9.1 SELF-ASSESSED HEALTH STATUS(a)(b) — 2004–05

Population characteristics	Excellent %	Very good %	Good %	Fair %	Poor %
Highest educational qualification(c)					
Associate diploma or above	25.8	39.5	25.7	6.9	2.0
Other qualification	19.0	33.7	28.6	13.2	5.4
Labour force status					
Employed	23.8	40.5	27.0	7.3	1.4
Unemployed	22.1	30.8	32.0	12.7	2.3
Not in the labour force	15.2	25.9	29.0	19.2	10.7
Location					
Major cities of Australia	21.8	35.4	28.1	10.6	4.2
Inner regional Australia	20.2	35.9	26.1	13.0	4.8
Outer regional Australia/other areas	17.4	34.1	29.1	13.7	5.8
Household composition					
Person living alone	15.4	29.9	30.5	16.9	7.4
Couple only	18.1	33.4	28.7	13.5	6.3
Couple with children	25.1	39.8	26.1	7.5	1.6
All other households	22.1	35.5	27.5	10.8	4.2
Income unit income					
1st quintile (lowest income)	12.1	24.9	29.6	20.4	13.1
5th quintile (highest income)	27.4	41.5	24.2	5.8	1.1
Index of disadvantage(d)					
1st quintile (most disadvantaged)	17.5	30.1	29.6	15.2	7.6
5th quintile (least disadvantaged)	25.2	39.5	25.1	7.9	2.2
Persons	20.9	35.3	27.8	11.4	4.5

(a) This table shows the percentage of persons in the specified population (e.g. persons employed) who have reported their health status as either excellent, very good, good, fair or poor. The age distribution of the population should be considered in interpreting these estimates. (b) Persons aged 15 years and over. (c) Persons aged 18 years and over. (d) Where the first quintile represents the 20% of the total population living in areas with the highest levels of disadvantage and the fifth quintile represents the 20% of the population with the lowest levels of disadvantage.

Source: ABS data available on request, 2004–05 National Health Survey.

### 9.2 SELECTED LONG-TERM CONDITIONS(a)(b) — 2004–05

	Males %	Females %	Persons %
Long sightedness	31.1	37.2	34.2
Short sightedness	24.3	30.8	27.6
Back problems(c)	21.1	18.7	19.9
Arthritis	17.1	23.0	20.1
Asthma	7.8	11.8	9.8
Hayfever and allergic rhinitis	16.7	20.1	18.4
Total/partial hearing loss	17.2	8.9	13.0
Hypertension	13.5	14.5	14.0
Diabetes mellitus	5.2	4.0	4.6

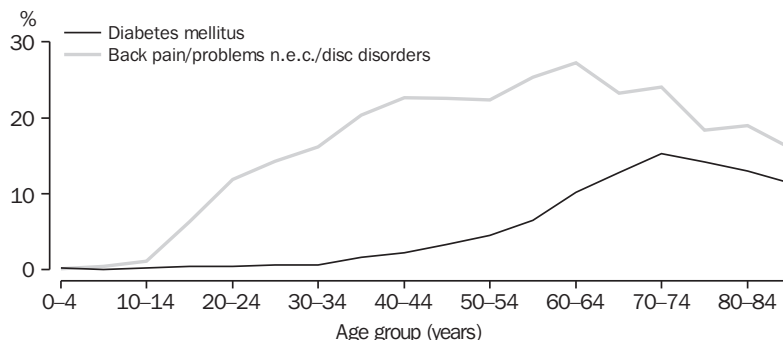
(a) Conditions which have lasted or are expected to last six months or more. (b) Persons aged 18 years and over. (c) Includes back pain, back problems n.e.c. and disc disorders.

Source: ABS data available on request, 2004–05 National Health Survey.

The proportion of people who reported back pain, back problems and disc disorders increased rapidly after early teenage years from 1% among those aged 10–14 years, to 23% among people aged 40–44 years. Prevalence then tended to decrease among those aged 65 years and over (graph 9.3).

The proportion of people reporting diabetes mellitus as a long-term condition remained below 1% among people aged less than 35 years before slowly increasing. Rates then remained between 10% and 15% for those aged 60 years and over, with the highest rate of 15% among those aged 70–74 years.

### 9.3 SELECTED LONG-TERM CONDITIONS(a), By age group — 2004–05



(a) Conditions which have lasted or are expected to last six months or more.

Source: ABS data available on request, 2004–05 National Health Survey.

## Mortality

There were 132,500 deaths registered in 2004, consisting of 68,400 males and 64,100 females. The age-standardised death rate of 626 deaths per 100,000 population in 2004 was 23% lower than the corresponding rate of 812 in 1994. This is consistent with continuing improvements in life expectancy in Australia (see the *Population* chapter).

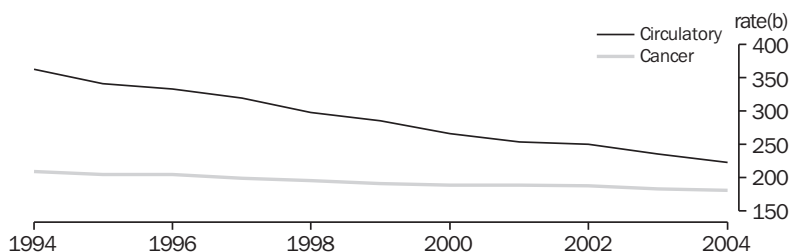
Cancer and circulatory disease (also called cardiovascular disease) together account for nearly two-thirds of all deaths. Over the ten years to 2004, death rates from cancer and cardiovascular diseases have both declined, though the decline has been more substantial in

death rates from cardiovascular diseases. From 1994 to 2004, the standardised death rate for malignant neoplasms (cancer) decreased by 14%, while the rate for circulatory diseases decreased by 39% (graph 9.4).

## Causes of death

Ischaemic heart diseases (heart attack and related disorders) and cerebrovascular diseases (stroke) are the leading causes of death for both males and females. Thereafter gender differences become apparent. Lung cancer is ranked third for males followed by chronic lower respiratory diseases; while for females, dementia and Alzheimer's disease is third and is followed by breast cancer.

### 9.4 AGE-STANDARDISED DEATH RATES FROM CIRCULATORY DISEASES AND CANCER(a)



(a) Diseases of the circulatory system (ICD-10 code I00-I99), Malignant neoplasms (cancer) (ICD-10 code C00-C97). (b) Per 100,000 population, age-standardised to the 2001 population (persons).

Source: Australian Institute of Health and Welfare, GRIM (General Record of Incidence of Mortality) Books, Canberra.



Notable differences are apparent in the rankings for certain specific causes between males and females. In males, for example, suicide is a prominent cause of death (ranked ninth) accounting for 1,661 male deaths, while this cause for females lies outside the first ten causes, accounting for 437 female deaths in 2004.

International comparisons

Australia’s death rates from all causes are among the lowest in the world, consistent with Australia’s relatively high life expectancy. Age-standardised death rates for males and females in selected countries are shown in table 9.6.

Infant mortality rates

The infant mortality rate (IMR) is defined as the number of deaths of children under one year of age per 1,000 live births. In 2004, 1,200 infant deaths were registered in Australia. This number

was 22% lower than the number registered in 1994 (1,500), and 45% lower than in 1984 (2,200). The infant mortality rate of 4.7 infant deaths per 1,000 live births in 2004 was 20% lower than the IMR in 1994 (5.9 deaths per 1,000 live births), and 49% lower than that recorded in 1984 (9.2 deaths per 1,000 live births). Australia’s infant mortality has declined significantly in the last 100 years. In 1904, one in twelve infants born did not survive to their first birthday (IMR of 81.8). In 2004, less than one in 200 infants born did not survive their first year of life (IMR of 4.7) (graph 9.7 and *Infant mortality over the last 100 years* in the *Population* chapter).

The early decline in infant mortality has been linked to improvements in public sanitation and health education. Later declines may be a consequence of the introduction of universal health insurance (Medicare) and improvements in medical technology, such as neonatal intensive care units.

9.5 LEADING CAUSES OF DEATH — 2004

Rank(a)	Underlying cause of death	ICD-10 code	rate(b)
MALES			
1	Ischaemic heart diseases	I20-I25	131.6
2	Cerebrovascular diseases	I60-I69	48.3
3	Lung cancer	C33,C34	47.4
4	Chronic lower respiratory diseases	J40-J47	31.9
5	Prostate cancer	C61	27.6
6	Colorectal cancer	C18-C21	22.2
7	Cancers of lymphoid, haematopoietic and related tissue(c)	C81-C96	21.0
8	Diabetes	E10-E14	18.7
9	Suicide	X60-X84	16.6
10	Influenza and Pneumonia	J10-J18	15.0
All causes			684.6
FEMALES			
1	Ischaemic heart diseases	I20-I25	113.1
2	Cerebrovascular diseases	I60-I69	71.4
3	Dementia and Alzheimer’s disease	F01, F03, G30	31.6
4	Breast cancer	C50	26.1
5	Chronic lower respiratory diseases	J40-J47	25.7
6	Lung cancer	C33,C34	25.1
7	Colo-rectal cancer	C18-C21	18.9
8	Influenza and Pneumonia	J10-J18	18.6
9	Diabetes	E10-E14	17.1
10	Cancers of lymphoid, haematopoietic and related tissue(c)	C81-C96	17.1
All causes			634.7

(a) Using ranking list for leading causes of death published in Bulletin of the World Health Organisation, April 2006. (b) Rate per 100,000. (c) Includes leukaemias, lymphomas and other causes.  
Source: ABS data available on request, Causes of Death collection.

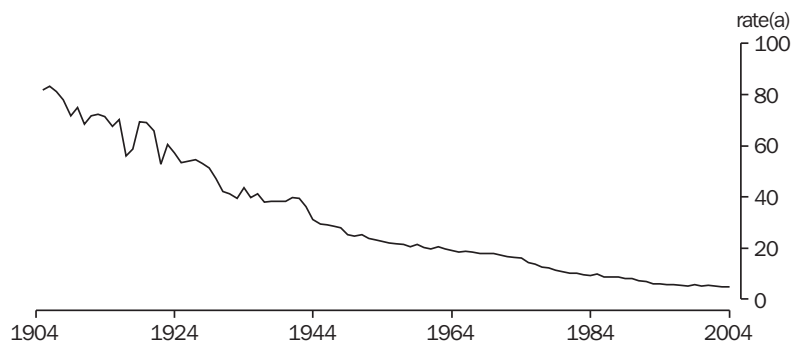
## 9.6 AGE-STANDARDISED DEATH RATES(a), By selected countries

	Year(b)	Males(c)	Females(d)
Australia(e)	2004	404	271
Canada	2000	481	316
Czech Republic	2002	709	412
Denmark	1999	615	435
Finland	2002	559	324
France	2000	543	300
Germany	2001	541	337
Greece	2001	497	308
Hungary	2002	919	487
Ireland	2001	587	380
Italy	2001	479	289
Japan	2002	416	225
Korea, Republic of (South)	2002	619	340
Netherlands	2003	508	349
New Zealand	2000	502	336
Norway	2001	511	332
Poland	2002	788	406
Portugal	2002	605	348
Slovakia	2000	874	458
Spain	2001	506	279
Sweden	2001	461	320
Switzerland	2000	476	302
United Kingdom	2002	521	368
United States of America	2000	584	399

(a) Age-standardised using the World Health Organisation standard population. Rates in this table may differ from rates in other tables because of the use of different standard populations. (b) Latest available year. (c) Rate per 100,000 males. (d) Rate per 100,000 females. (e) Age-standardised death rates in 2001 were 438 male deaths per 100,000 males and 287 female deaths per 100,000 females.

Source: World Health Organization 2004, 'The World Health Report', Geneva.

## 9.7 INFANT MORTALITY RATE



(a) Per 1,000 live births.

Source: Deaths, Australia, 2004 (3302.0).

## Mortality trends of people aged 50 years and over

Between the two three-year periods, 1970–72 and 2002–04, reductions in mortality of people aged 50 years and over have been responsible for 70% of the male and 73% of the female increase in life expectancy at birth.

Australians today are living longer than ever with life expectancies among the highest in the world. A boy born in the period 2002–04 could be expected to live on average to 78.1 years of age, while a girl could be expected to live to age 83.0 years, gains of 10.3 and 8.5 years respectively over the 32 years from 1970–72.

Increases in life expectancy are desirable insofar as they represent improving health and longevity of the population, but they also present challenges. Greater life expectancy, by definition, is a contributor to population ageing and has implications for future government spending in health and aged care, as well as provision of income for a potentially longer retirement.

Throughout the 20th century, significant gains were made in life expectancy of Australians. These gains can be viewed as having occurred in two broad phases. The first phase was driven by declines in infant and child mortality, while the second was driven primarily by reductions in death rates of people aged 50 years and over. The transition between the phases occurred just before the middle of the century (1946–48) for females and around 1970–72 for males.<sup>1</sup>

The increase in life expectancy at birth since 1970–72 has resulted from reductions in death rates at all ages, although reductions in mortality of people aged 50 years and over have been responsible for 70% of male and 73% of female life expectancy improvement. This article examines the age-groups, and specific causes of death for each sex that have contributed to the increasing longevity of the population aged 50 years and over.

### Life expectancy and mortality

Life expectancy and survival rates are based on life tables. Life tables are statistical models used to show the levels of mortality of a population at different ages. The two sets of life tables used in this article (1970–72 and 2002–04) are based on mortality rates for each of the three-year periods. The life table depicts the mortality experience of a

hypothetical group of newborn babies throughout their entire lifetime. It is based on the assumption that this group is subject to the age-specific mortality rates of the three-year reference period.

Increases in life expectancy in the population result from overall reductions in death rates over time. A statistical method has been used to determine the age-groups' relative contribution to the improvement.<sup>2</sup> The two critical factors determining the increase in life expectancy are the age at which reductions in deaths occur – the younger the reductions occur, the greater the average life-years to be lived in the future – and the absolute size of the reduction in death rates.

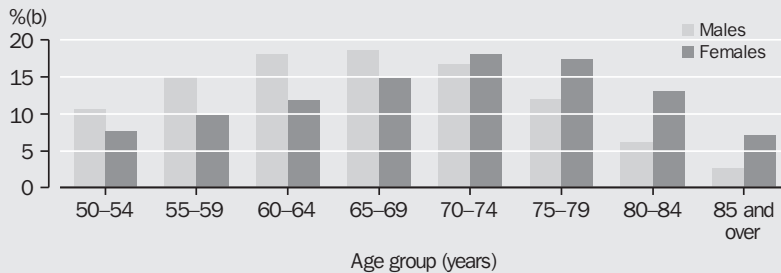
The 1970–72 life tables used in this analysis were prepared by the Australian Government Actuary (and published by the Australian Bureau of Statistics (ABS)), while the 2002–04 life tables were produced by the ABS.

### Age groups contributing to increased life expectancy

In 2002–04 males aged 50 years could expect to live a further 31 years on average to age 81 years, an increase of 7.8 years over the 1970–72 life expectancy. The female life expectancy at 50 years of age increased by 6.5 years over the same period. In 2002–04 females aged 50 years could expect to live an extra 35 years to almost 85 years of age.

The gains in life expectancy at age 50 years for males were achieved predominantly through mortality declines at the younger end of the 50 years and over population, with 63% of the increase in life expectancy coming from those aged 50–69 years. In contrast, only 44% of the female increase in life expectancy came from mortality improvements of those aged from 50–69 years, with the majority of the gains (56%) being achieved through the mortality reductions of those aged 70 years and over (graph 9.8). The older age contribution for the female gain in life expectancy results from the female death rate being already quite low for those aged 50–69 years in 1970–72. Therefore, despite age-specific death rates for females aged 50–69 years more than halving over the 32 years to 2002–04, the absolute decline in death rates in that age group was not as influential in increasing female life expectancy as the decline in the death rates of women over 70 years of age.

### 9.8 AGE CONTRIBUTION TO INCREASED LIFE EXPECTANCY AT AGE 50 YEARS(a)



(a) For the period from 1970-72 to 2002-04. (b) Per cent contribution from reduction in mortality at each age group.

Source: Deaths, Australia, 2004 (3302.0); Australian Government Actuary, 'Australian life tables 1970-72, (4.31, ABS, Canberra).

### 9.9 AGE-SPECIFIC DEATH RATES(a) FOR THE POPULATION AGED 50 YEARS AND OVER



(a) Deaths per 100,000 population.

Source: ABS data available on request, Causes of Deaths collection.

## Selected causes of death and their contribution to gains in life expectancy at age 50 years

In 1970-72, six specific causes of death were responsible for 80% of all deaths of people aged 50 years and over. In 2002-04, these same selected causes of death were responsible for 75% of all deaths of people aged 50 years and over. However, the death rates in the latter period were generally much lower than in 1970-72 with the all-cause standardised death rate falling by around half for both males (down 51%) and females (down 48%).

As would be expected, the causes of death with the highest death rates have a greater potential to contribute to improved life expectancy through their reduction than the less significant causes.

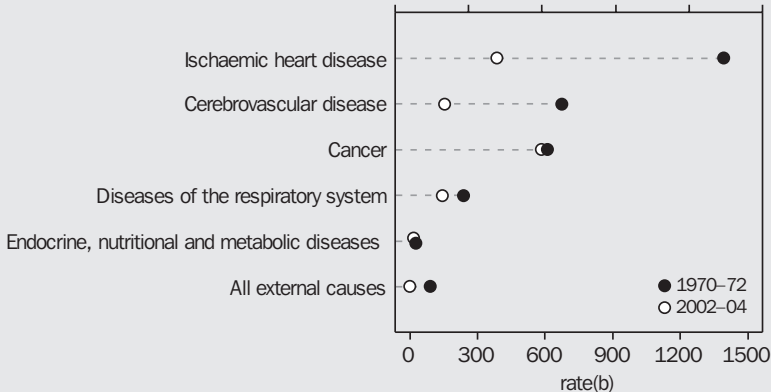
Reductions in deaths from ischaemic heart disease and cerebrovascular disease (stroke) have been key to improvements in life expectancy at age 50 years in recent decades. Reductions in associated risk factors and improvements in treatment and care have been instrumental in reducing deaths from these causes. On the other hand, the small overall declines in cancer death rates for people aged 50 years and over have not translated into significant gains in life expectancy.

# Death rates and age-standardising

Death rates in this article use averages of three years of deaths data for each period (i.e. 1970–72 and 2002–04) and the estimated resident population for the middle year of each period as the death rate denominator.

Death rates used for comparisons of particular causes of death over time have been age-standardised. Age-standardising adjusts death rates to remove the effect of differing age structures of populations when making comparisons of death rates. The standard population used was the 2001 estimated resident population.

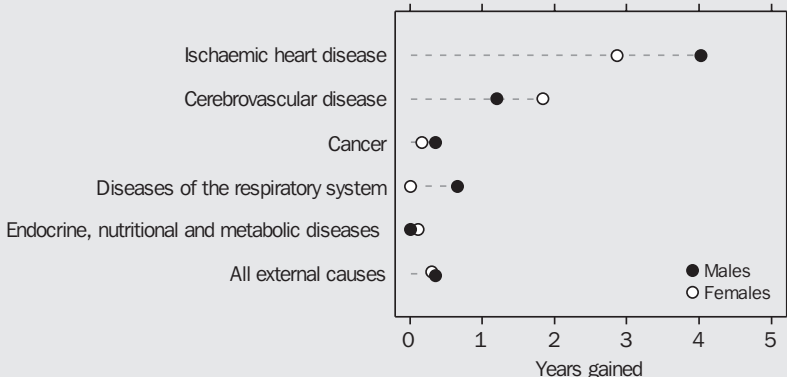
9.10 STANDARDISED DEATH RATES, By selected causes of death(a)



(a) Persons aged 50 years and over. (b) Deaths per 100,000 population. Standardised to 2001 Australian population.

Source: ABS data available on request, Causes of Death collection.

9.11 GAIN IN LIFE EXPECTANCY AT AGE 50 YEARS IN 2002–04 FROM DECREASES IN SELECTED CAUSES OF DEATH FROM 1970–72



Source: Deaths, Australia, 2004 (3302.0); ABS data available on request, Causes of Death collection; Australian Government Actuary, 'Australian life tables 1970–72, (4.31, ABS, Canberra).

Analysis in this article uses the concept of the underlying cause of death. Underlying causes of death are classified by the disease or injury which initiated the train of morbid events leading directly to death. Cause of death data are obtained from the ABS Causes of Deaths collection and are presented according to the *International Classification of Diseases, 10th revision* (ICD-10). ABS publish comparability factors to account for the introduction of the Automated Coding System in 1997 and these have been applied to the 1970–72 deaths.<sup>3</sup>

## Ischaemic heart disease

In 2002–04 ischaemic heart disease accounted for one-fifth (20%) of deaths of people aged 50 years and over. In 1970–72, over one-third (35%) of deaths were attributed to ischaemic heart disease. The male and female standardised death rates for ischaemic heart disease of those aged 50 years and over fell by around two-thirds (70% and 68% respectively) (graph 9.10). For males aged 50 years, the result of this decrease has been a gain of 4 years of life expectancy (just over half of the total gain in the period). Females gained 2.9 years (or 45% of the total female increase in life expectancy at age 50 years) from declines in ischaemic heart disease death rates (graph 9.11).

## Cerebrovascular disease

Cerebrovascular disease (stroke) was responsible for 10% of deaths of people aged 50 years and over in 2002–04 and 16% in 1970–72. Over the period, death rates also decreased dramatically with declines of 70% for males and 71% for females. These were estimated to have contributed 1.1 years to male and 1.8 years to female life expectancy at age 50 years in 2002–04.

## Cancer

Cancer was the cause of more deaths than any other selected cause for people aged 50 years and over in 2002–04 with 29% of all deaths. In 1970–72 the proportion was 17%.

Compared with the other major causes of death, cancer death rates have declined relatively slowly. In the 32 years to 2002–04, the standardised death rates for people aged 50 years and over declined by only 6% for males and 4% for

females. This small reduction in death rates was reflected in a minor contribution to increased life expectancy at age 50 years – around five months for males and two months for females.

Males had an 18% decrease in the lung cancer death rate over the 1970–72 to 2002–04 period, contributing around three months to male life expectancy at 50 years of age. Females, on the other hand, had an increase of more than two and half times (163%) in their lung cancer death rate, equivalent to almost a three-month reduction in life expectancy for women aged 50 years. This reflects an increase in smoking rates among women in the latter third of the 20th century.

Female breast cancer and colorectal cancer death rates declined by 13% and 37% respectively. Together they added around three months to life expectancy. Males also had a (17%) decline in colorectal cancer death rates, although the impact on life expectancy was less than one month.

## Diseases of the respiratory system

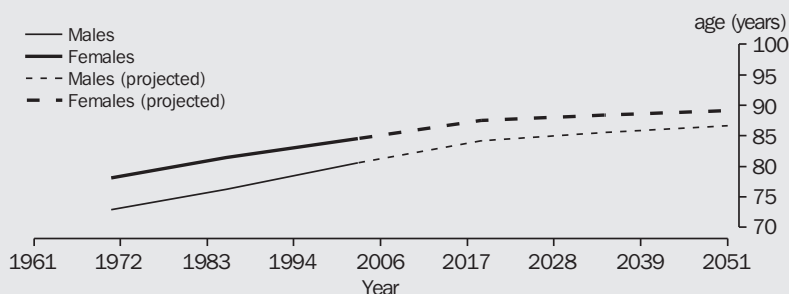
Deaths from diseases of the respiratory system (mainly pneumonia and other obstructive pulmonary disease) made up 9% of all deaths in 2002–04 and 7% in 1970–72.

For males aged 50 years and over, the standardised death rate for diseases of the respiratory system decreased by 46% and contributed around eight months to male life expectancy at age 50 years. Among females however, there has been no reduction in the death rate from this cause. As with lung cancer, this may also be attributed to the increase in womens' smoking prevalence in the latter part of the 20th century.

## Endocrine, nutritional and metabolic diseases

Deaths from endocrine, nutritional and metabolic diseases (mostly diabetes mellitus) was the underlying cause of 4% of deaths for people aged 50 years and over in 2002–04 and 2% in 1970–72.

## 9.12 TOTAL LIFE EXPECTANCY FROM AGE 50 YEARS(a)



(a) Data for 1970–72 and 2002–04 and projections to 2051.

Source: *Deaths, Australia, 2004* (3302.0); ABS data available on request, *Population Projections, Australia, 2004 to 2101* (3222.0); Australian Government Actuary, 'Australian life tables 1970–72', (4.31, ABS, Canberra).

Between age 50 and 79 years, males experienced a decline in the death rates for endocrine, nutritional and metabolic diseases, but this was offset by an increase in the death rate from age 80 years. Females had a similar pattern except the increase in the age-specific death rate was seen at age 85 years and over only. The impact on life expectancy at age 50 years for males was negligible, and only around two months for females.

### External causes

External cause of death (accidents, poisonings and violence) contributed 3% of all deaths of people aged 50 years and over in 2002–04, and 4% in 1970–72.

The standardised death rate for this cause has halved for both males and females. As a lower order cause of death, however, the effect on life expectancy at age 50 has been small – around four months for both males and females. Suicide deaths contributed one-quarter (26%) of male external causes of death, although the rate was 39% less in 2002–04 than in 1970–72.

### End notes

1. Australian Bureau of Statistics 1998, *Deaths, Australia, 1997*, (3302.0), ABS, Canberra.
2. Pollard, JH, 1989, 'Mortality changes and their economic consequences, with particular reference to cause of death', in *Studies in Contemporary Economies*, Wenig, A & Zimmerman, KF (eds), Demographic Change and Economic Development, Sprigen-Verlag, Berlin, Heidelberg.
3. Australian Bureau of Statistics 2006, *Causes of Death, Australia, 2004*, (3303.0), ABS, Canberra.

### Projections

ABS has produced population projections from 2005 to 2101 that are underpinned by assumptions of future mortality in addition to fertility and overseas migration. The medium series projection assumes life expectancy will continue to increase until 2051 where males aged 50 years could expect to live to 86.6 years, while females aged 50 years could expect to live to 89.1 years (see *Population projections* in the *Population* chapter). These projections represent increases of 6.0 years for males and 4.5 years for females over the 47 years from 2002–04 to 2051 (graph 9.12). They also point to a halving of the rate of increase in life expectancy experienced over the last three decades. While the average rate of increase in life expectancy at age 50 years for males was 3.1 months per year between 1972 and 2002, between 2004 and 2051 it is assumed to increase by an average of around 1.5 months per year. For females the rate of increase in life expectancy at age 50 years averaged 2.6 months per year between 1972 and 2002, while the assumption over the 2004 and 2051 period is for an increase of 1.1 months per year.



## Disability status

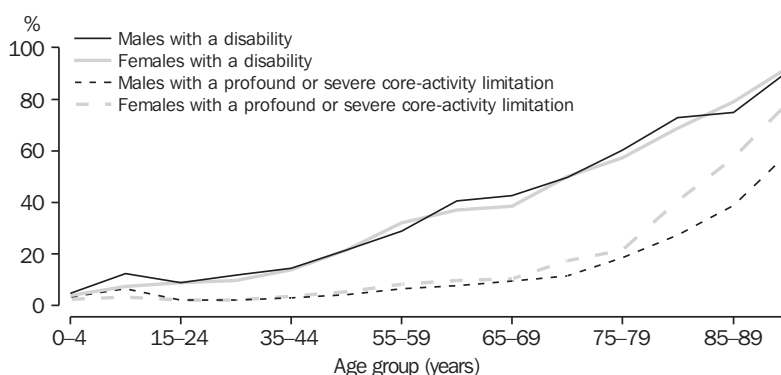
The World Health Organisation defines disability in the context of health as ‘an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual’s contextual factors (environmental and personal factors)’.

The 2003 Survey of Disability, Ageing and Carers, conducted by the ABS, found that one in five people in Australia (20%) had a reported disability,

with the rate much the same for males and females (20%). The disability rate increased with age, reaching 92% for those aged 90 years and over.

Some 6% of the population had a profound or severe core activity limitation (sometimes or always needing assistance with self-care, mobility or communication). The level of profound or severe core activity limitation gradually increased from 3% among those aged 0–4 years, to 10% among those aged 65–69 years, then increased sharply to 74% for those aged 90 years and over.

9.13 DISABILITY RATES — 2003



Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

## Chronic conditions and disability

Chronic conditions account for more of the burden of disease in Australia than conditions that are resolved more quickly, such as most infectious diseases. This is a result of medical advances in treating and preventing infectious diseases; increases in life expectancy and an ageing population; and the prevalence of behavioural risk factors such as smoking.<sup>1</sup> Increasingly, chronic conditions are major contributors to the burden of disease worldwide.<sup>2</sup> In 2005, the Australian Health Ministers established the National Chronic Disease Strategy to encourage coordinated action in response to the growing impact of chronic conditions.<sup>1</sup> In 2006, the Council of Australian Governments agreed to a package of measures to address prevention and early detection of avoidable chronic disease.<sup>3</sup>

### Data source and definitions

The 2004–05 National Health Survey, conducted by the Australian Bureau of Statistics (ABS), collected information on the health status of the population, including the prevalence of long-term conditions. The survey was confined to people in private dwellings – people in health establishments, such as hospitals or nursing homes, or in other non-private dwellings, were not covered (see *National Health Survey: Summary of Results, 2004–05* (4364.0)).

The 2003 Survey of Disability, Ageing and Carers (SDAC), conducted by the ABS, collected information on the characteristics of people with a disability, older people and carers. It involved people living in private and non-private dwellings, including health establishments such

as hospitals or nursing homes (see *Disability, Ageing and Carers, 2003: Summary Results* (4430.0)).

*Chronic health condition* is a condition which has lasted, or is expected to last, six months or more (also referred to in this article as *long-term health condition or chronic disease*).

*Disability* is a limitation in everyday activities, restriction in participation in education or employment, or physical impairment, which has lasted, or is likely to last, for six months or more.

People with *more severe disability* are those who have a *profound or severe core activity limitation*: they sometimes or always need help with mobility or self-care, or have difficulty communicating.

*Disability type causing most problems* is the person's sole disability or the one nominated as causing most problems for the person.

*Main condition* is the long-term health condition causing most problems for a person with a disability (or is the person's sole long-term health condition). It is as reported in response to a question about which condition was causing most problems.

Conditions are classified according to an adaptation of the *International Classification of Diseases, 10th revision* (ICD-10).

## Chronic conditions

In 2004–05, over three-quarters (77%) of the 19.7 million people living in private dwellings had at least one chronic health condition. The proportion of the population with at least one condition increased with age, from 41% of children aged under 15 years to almost 100% of people aged 65 years and over. These high proportions partly reflect the large number of people with some very common but less serious conditions. For example, the most commonly reported conditions were long sightedness (27%), short sightedness (22%) and hayfever and allergic rhinitis (16%).

However, other chronic conditions had the potential for more serious effects on a person's wellbeing. The more serious long-term

conditions reported in 2004–05 included some prioritised by the Australian Health Ministers.<sup>4</sup> These comprise some large groups of conditions – circulatory conditions (reported by 18% of the population living in private dwellings), mental and behavioural disorders (11%) and cancer (2%), as well as some more specific conditions – asthma (10%), diabetes (4%), arthritis (15%) and osteoporosis (3%). Injury prevention and control is also a priority area and 16% of the population reported that they had long-term effects of injury (graph 9.14).

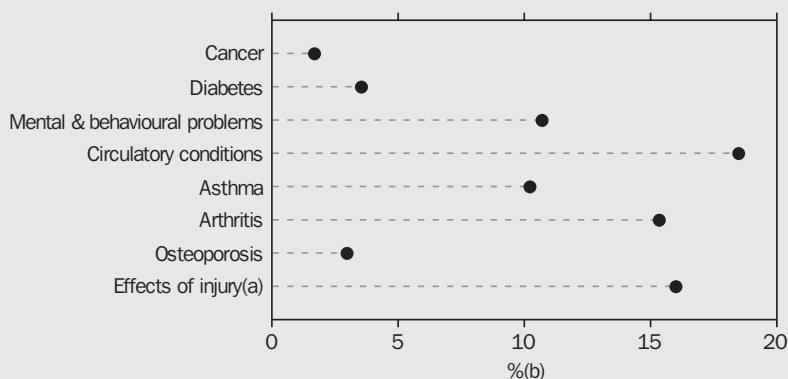
Some conditions are present from birth (e.g. congenital conditions like Down syndrome) while others often appear in childhood (e.g. asthma) or later in life (e.g. hypertension). Asthma was the most common condition among children (12%) and hayfever and allergic rhinitis among youth (19%). Among people aged 25–64 years the leading conditions were sight problems (63%) and back problems (23%). Among people aged 65 years and over, the most common conditions were sight problems (96%), arthritis (49%), hypertension (39%) and hearing loss (34%).

## Chronic conditions and disability

One of the ways people with chronic disease may be affected by their illness is through disability. That is, they may be limited in being able to carry out at least one everyday activity, or in participating in education or employment, or have a physical impairment. The disability people experience results from several factors, including the combination of conditions they have, the severity of these conditions and external factors such as the physical environment, the attitudes of others, and the assistance available to them.

In 2003, 20% of the Australian population, or 4 million people, had a disability. This included 6% of the population (1.2 million people) with more severe disability. These were people who sometimes or always needed help with everyday tasks like walking or dressing, or who had difficulty communicating. The rates of disability increased with age and more severe disability accounted for a greater proportion of all disability at older ages.

### 9.14 SELECTED CHRONIC CONDITIONS — 2004-05



(a) Any long-term condition reported as resulting from injury. People reporting such conditions are also included in the count for the particular condition. (b) Proportion of the household population with a health condition that has lasted or is expected to last for six months or more.

Source: ABS data available on request, 2004-05 National Health Survey.

People with disability usually had more than one chronic health condition. While there are various approaches to analysing the relationship between the health conditions and the disabilities reported, a simple question 'What is the condition causing most problems?' was included in the 2003 SDAC. The most common specific main condition was a musculoskeletal condition – back problems, reported by 610,000 people. When combined, the ten leading specific main conditions were reported by 53% of all people with a disability (table 9.15).

### Musculoskeletal conditions

The 1.4 million people reporting a musculoskeletal condition as the condition causing most problems comprised 34% of the 4 million people with a disability. Back problems and arthritis were the most common main conditions within this group, reported by 15% and 14% of people with a disability respectively. They were also the most common specific main conditions reported out of any condition group.

The types of disability which caused most problems for people with musculoskeletal conditions as the main condition were: chronic or recurring pain or discomfort (39%); restriction in physical activities (23%); and difficulty gripping or holding things (11%).

### 9.15 PEOPLE WITH A DISABILITY, By leading main conditions(a) — 2003

Condition group and specific conditions(b)	'000	%
Musculoskeletal conditions	1 355.1	34.2
Back problems	610.5	15.4
Arthritis and related disorders	561.3	14.2
Mental and behavioural disorders	636.9	16.1
Depression/mood affective disorders	110.9	2.8
Circulatory system conditions	349.8	8.8
Hypertension	80.8	2.0
Stroke	69.8	1.8
Diseases of the ear/mastoid process	275.9	7.0
Deafness/hearing loss(c)	218.8	5.5
Nervous system conditions	259.6	6.6
Migraine	92.3	2.3
Injuries and poisoning	259.4	6.6
Leg/knee/foot damage	115.0	2.9
Respiratory conditions	240.5	6.1
Asthma	148.9	3.8
Endocrine/nutritional/metabolic conditions	115.5	2.9
Diabetes	86.2	2.2
Other conditions	465.7	11.8
<b>Total</b>	<b>3 958.3</b>	<b>100.0</b>

(a) Conditions reported as the condition causing most problems for a person with a disability (or which were the person's sole condition). (b) The eight leading condition groups (e.g. musculoskeletal conditions) reported as main conditions for people with a disability and the ten leading specific conditions (e.g. back problems). (c) Complete or partial.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

# Mental and behavioural disorders

People with a mental or behavioural disorder as their main condition comprised 16% of people with a disability. The most common main conditions within this group were depression/mood (affective) disorders, reported as a main condition by 3% of people with a disability, followed by developmental disorders (2%) and nervous tension or stress (2%). The disability types causing most problems when mental and behavioural disorders were the main condition were: being slow at learning or understanding (33%); mental illness (20%); nervous or emotional conditions (18%); and speech difficulties (8%).

# Circulatory conditions

People reporting circulatory conditions as their main condition accounted for 9% of people with a disability. The specific circulatory conditions most commonly reported as main conditions were: hypertension (2%); stroke (2%); and heart disease (2%). The types of disability that people with circulatory conditions as their main condition reported as causing most problems were: restriction in physical activities or work (28%); loss of hearing (13%); breathing difficulties (11%); and chronic or recurring pain or discomfort (9%).

# More severe disability

Mental and behavioural conditions were more prominent as main conditions for more severe disability than for disability as a whole (table 9.16). They were reported as the conditions causing most problems for 23% of people with profound or severe core activity limitations compared with 16% of all people with disability. Nevertheless, musculoskeletal conditions were the most commonly reported main conditions for people with more severe disability (30%) as they were for all people with disability (34%).

Depression was one of the leading ten specific main conditions for more severe disability and disability as a whole. Three other specific mental and behavioural disorders were among the leading ten specific main conditions for more severe disability although they ranked lower for all disability. These were dementia, attention deficit/hyperactivity disorder (AD/HD) and autism and related disorders. (The three conditions that ranked among the leading ten for all disability but not for more severe disability

were leg damage, migraine and hypertension.) Stroke ranked fourth among main conditions for more severe disability and tenth for disability as a whole.

Overall, 31% of all people with a disability had more severe disability. However, almost all of the 58,600 people with disability and with dementia as the main condition had more severe disability. Another leading main condition which was strongly associated with more severe disability was stroke – 49,500 of the 69,800 people who had a disability and who reported stroke as the main condition had more severe disability (71%). Of people with AD/HD as the main condition, 44% had more severe disability. Similarly, 30% of people with disability and depression/mood (affective) disorders as the main condition, and 30% of people with arthritis and related disorders as the main condition, had more severe disability.

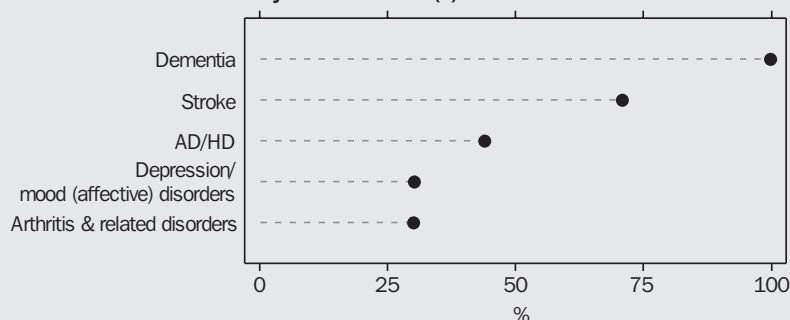
**9.16 PEOPLE WITH MORE SEVERE DISABILITY, By leading main conditions(a) — 2003**

Condition group and specific conditions(b)	'000	%
Musculoskeletal conditions	376.1	30.2
Arthritis and related disorders	168.8	13.6
Back problems	149.0	12.0
Mental and behavioural disorders	290.6	23.3
Dementia	58.6	4.7
Depression/mood affective disorders	33.6	2.7
Mental retardation/intellectual disability	31.6	2.5
Attention deficit disorder/hyperactivity (AD/HD)	25.9	2.1
Circulatory system conditions	116.5	9.4
Stroke	49.5	4.0
Nervous system conditions	84.9	6.8
Respiratory conditions	68.3	5.5
Asthma	32.4	2.6
Injuries and poisoning	65.4	5.3
Leg/knee/foot/hip damage	31.9	2.6
Diseases of the ear and mastoid process	49.7	4.0
Deafness/hearing loss(c)	33.9	2.7
Diseases of the eye and adnexa	35.6	2.9
Other conditions	157.4	12.1
<b>Total</b>	<b>1 244.5</b>	<b>100.0</b>

(a) Chronic conditions reported as the condition causing most problems for a person with more severe disability (or which were the person's sole chronic condition). (b) The eight leading condition groups (e.g. musculoskeletal conditions) reported as main conditions for people with more severe disability and the ten leading specific main conditions (e.g. back problems). (c) Complete or partial.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

**9.17 PROPORTION OF PEOPLE WITH SEVERE DISABILITY,  
By main condition(a) — 2003**



(a) Profound or severe core activity limitation.

Source: ABS data available on request, 2003 Survey of Disability, Ageing and Carers.

## End notes

1. National Health Priority Action Council, 2006, *National Chronic Disease Strategy*, Australian Government Department of Health and Ageing, Canberra.
2. World Health Organisation, *Global Strategy on Diet, Physical Activity and Health*, last viewed May 2006, <[http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy\\_english\\_web.pdf](http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf)>.
3. Department of Health and Ageing, *Australian Better Health Initiative: promoting good health, prevention and early intervention*, last viewed May 2006, <<http://www.health.gov.au/internet/wcms/publishing.nsf/Content/feb2006coag03.htm>>.
4. Department of Health and Ageing, *Health priorities*, last viewed May 2006, <<http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Health+Priorities-1>>.

## Health of Aboriginal and Torres Strait Islander Australians

The 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), conducted by the Australian Bureau of Statistics (ABS), provides information about the health circumstances of Indigenous Australians. The survey collected information from 10,400 Indigenous people in private dwellings across all states and territories of Australia, including those living in remote areas, and built on the Indigenous supplements to the 1995 and 2001 National Health Surveys (NHS(I)). It is planned to repeat the survey at six-yearly intervals as part of a cycle of Indigenous household surveys, and to coincide with every second National Health Survey (NHS). Together with the National Aboriginal and Torres Strait Islander Social Survey (NATSISS), the NATSIHS provides a wide range of information about the wellbeing, social circumstances and outcomes of Aboriginal and Torres Strait Islander peoples.

This article presents a selection of results from the 2004–05 NATSIHS, measures of selected changes since the 2001 NHS(I), and comparable results for the non-Indigenous population from the 2004–05 National Health Survey (NHS). Some information from the 2002 NATSISS is also included.

### Population

Aboriginal and Torres Strait Islander peoples comprise 2.4% of the total Australian population. During the collection phase for the 2004–05 NATSIHS, the Indigenous population in private dwellings was projected to be 474,300.

The Indigenous population is relatively young, with a median age of 21 years compared with 36 years for the non-Indigenous population. As age is closely associated with health, care should

be taken when comparing information for these two populations. To account for differences in the age structure, comparisons between Indigenous and non-Indigenous people are presented by age group or as rate ratios based on age-standardised data, as appropriate. More information on the size, age structure and distribution of the Indigenous population, is provided in the *Aboriginal and Torres Strait Islander population* in the *Population* chapter.

## Health status

### Self-assessed health

Self-assessed health status provides an indicator of overall health; it reflects an individual's perception of his or her own health. This measure is dependent on an individual's awareness and expectations regarding their health, and may be influenced by factors such as access to health services and health information.

In 2004–05, just over three-quarters (78%) of the Indigenous population reported their health as either good, very good or excellent, consistent with 77% reported in the 2002 NATSISS. The remaining 22% of Indigenous people reported their health as fair or poor.

Self-assessed health varies with age. The proportion of people aged 15–24 years reporting excellent or very good health was 59%, compared with 18% of people aged 55 years and over (graph 9.18).

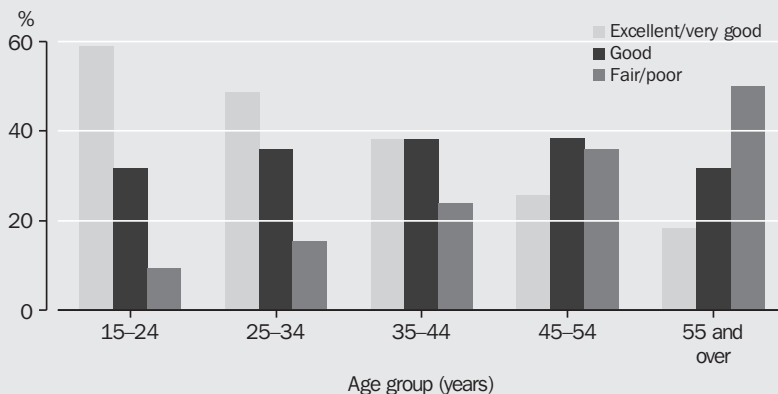
After adjusting for differences in age structure between the Indigenous and non-Indigenous populations, Indigenous people overall were almost twice as likely as non-Indigenous people to report their health as fair or poor – a relative difference which was apparent across most broad age groups.

### Social and emotional wellbeing

The 2004–05 NATSIHS collected, for the first time, information on the social and emotional wellbeing of Indigenous adults (aged 18 years and over) using selected questions from the SF-36 (measuring generic health status in the community) and the Kessler Psychological Distress Scale. Questions were also asked about feelings of anger, the impact of psychological distress, stressors, and cultural identification.

In response to questions (from the SF-36) about feelings of happiness and energy levels, more than half the adult Indigenous population reported feeling happy (71%), calm and peaceful (56%), and/or full of life (55%) all or most of the time, while just under half (47%) said they had a lot of energy all or most of the time. Indigenous people in remote areas were more likely to report having had these positive feelings all or most of the time, than were Indigenous people living in non-remote areas – a difference of at least five percentage points for each measure.

**9.18 SELF-ASSESSED HEALTH, Indigenous persons(a) — 2004–05**



(a) Aged 15 years and over.

Source: ABS data available on request, 2004–05 National Aboriginal and Torres Strait Islander Health Survey.



In response to questions from the Kessler Psychological Distress Scale, 9% of Indigenous adults reported feeling nervous all or most of the time. When asked how often they felt without hope, 7% reported having had this feeling all or most of the time. Similarly, 7% said that they felt so sad that nothing could cheer them up, all or most of the time. Around one in six Indigenous adults (17%) reported that everything was an effort all or most of the time and 12% felt restless all or most of the time.

### Long-term health conditions and disability

In 2004–05, around two-thirds (65%) of Indigenous people reported at least one long-term health condition; with a higher proportion in non-remote areas (68%) than remote areas (57%). One in seven Indigenous people (14%) reported two long-term health conditions and a further 29% reported three or more. After adjusting for age differences between the two populations, Indigenous and non-Indigenous Australians were equally likely to report a long-term health condition.

Consistent with results from 2001, eye/sight problems (30%), asthma (15%), back and disc disorders (13%), heart/circulatory diseases (12%) and ear/hearing problems (12%) were the most commonly reported long-term health conditions among Aboriginal and Torres Strait Islander

people in 2004–05. In addition, 6% of Indigenous people reported diabetes and 2% reported kidney disease (table 9.19).

### Asthma

Asthma was reported by 15% of Indigenous Australians in 2004–05 – almost twice as often in non-remote areas (17%) as in remote areas (9%). Within the Indigenous population, asthma was more prevalent among females than males in all age groups apart from children aged 0–14 years (graph 9.20).

After adjusting for age differences between the Indigenous and non-Indigenous populations, Indigenous people were 1.6 times more likely to report asthma as a long-term health condition than non-Indigenous people (table 9.19).

### Heart and circulatory problems/diseases

Consistent with results from the 2001 survey, 12% of Indigenous Australians reported a long-term health condition associated with the circulatory system, such as heart disease or hypertensive disease. In 2004–05, these long-term conditions were more prevalent in remote (14%) than non-remote (11%) areas. Rates of heart and circulatory problems/diseases were higher for Indigenous females than for males in all broad age groups.

**9.19 SELECTED LONG-TERM HEALTH CONDITIONS OF INDIGENOUS AND NON-INDIGENOUS PERSONS(a) — 2001 and 2004–05**

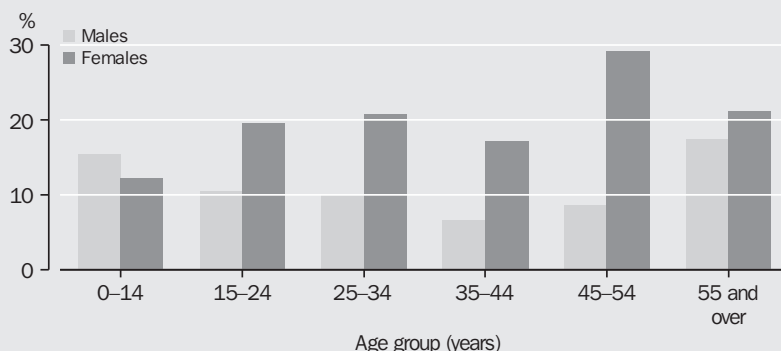
	2001 Indigenous %	2004–05 Indigenous %	2004–05 Indigenous to non-Indigenous ratio(b) rate
Arthritis	8.1	9.1	1.2
Asthma	16.5	15.1	1.6
Back pain/problems n.e.c., disc disorders	15.2	13.1	1.2
Diabetes/high sugar levels	5.2	6.1	3.4
Ear/hearing problems(c)(d)	14.6	12.2	1.0
Eye/sight problems	29.2	30.2	0.9
Heart and circulatory problems/diseases	10.5	11.8	1.3
Kidney disease(c)	1.2	1.8	10.0
All persons with a long-term health condition(e)	66.5	64.6	1.0

(a) A medical condition (illness, injury or disability) which has lasted at least six months, or which the respondent expects to last for six months or more. This is an ICD–10 based output classification. (b) Age-standardised Indigenous rate divided by age-standardised non-Indigenous rate, except for ear/hearing problems. (c) Difference between 2001 and 2004–05 data is statistically significant. (d) Indigenous to non-Indigenous rate ratio for ear/hearing problems is based on actual rates, not age-standardised rates. (e) Sum of components may exceed total as persons may have reported more than one long-term health condition.

Source: ABS data available on request, 2001 National Health Survey; 2004–05 National Aboriginal and Torres Strait Islander Health Survey; and 2004–05 National Health Survey.



### 9.20 PREVALENCE OF ASTHMA, Indigenous persons — 2004–05



Source: ABS data available on request, 2004–05 National Aboriginal and Torres Strait Islander Health Survey.

Heart and circulatory diseases/problems tend to develop over the course of a lifetime. Results from the 2004–05 NATSIHS show a marked increase in the prevalence of these conditions among Indigenous people from around 35 years of age onwards. After adjusting for age differences between the Indigenous and non-Indigenous populations, Indigenous people were 1.3 times more likely than non-Indigenous people to report heart disease and/or circulatory problems (table 9.19).

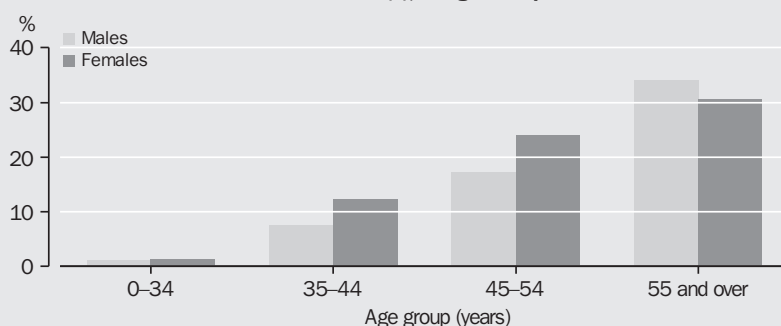
## Diabetes

Diabetes (including high sugar levels) continues to be a significant health issue among Indigenous Australians, with an overall prevalence of 6% in

2004–05. Consistent with results from 2001, diabetes was almost twice as prevalent among Indigenous people in remote areas (9%) as it was in non-remote areas (5%). Within the Indigenous population, diabetes was more prevalent among females than males, particularly among those in the 35–54 year age group (graph 9.21).

After adjusting for age differences between the Indigenous and non-Indigenous populations, Indigenous people were more than three times as likely as non-Indigenous people to report some form of diabetes (table 9.19).

### 9.21 PREVALENCE OF DIABETES(a), Indigenous persons — 2004–05



(a) Includes persons who reported high sugar levels.

Source: ABS data available on request, 2004–05 National Aboriginal and Torres Strait Islander Health Survey.

# Kidney disease

In 2004–05, kidney disease was reported by 2% of Indigenous people overall (3% in remote areas and 1% in non-remote areas). Kidney disease increased with age, from less than 1% of Indigenous children aged 0–14 years to 7% of Indigenous Australians aged 55 years and over. After adjusting for age differences, rates of kidney disease were about 10 times higher in the Indigenous population than in the non-Indigenous population (table 9.19). The treatment of kidney disease accounts for around one-third of all hospital admissions of Indigenous people.<sup>2</sup>

The 2004–05 NATSIHS collected information from private dwellings only (i.e. not from health-care facilities) and may, therefore, have underestimated the prevalence of kidney disease in the Indigenous population.

# Disability

The 2002 NATSISS provided, for the first time, information on the prevalence of disability among Indigenous Australians aged 15 years and over. Data for Indigenous people aged 18 years and over in non-remote areas is comparable with results for non-Indigenous adults from the 2002 General Social Survey, conducted by the ABS.

In 2002, over one-third (36%) of Indigenous people aged 15 years or over had a disability or long-term health condition which limited their

ability to perform everyday activities. Overall rates of disability were similar for males and females; rising from 23% of those aged 15–24 years to 70% of those aged 55 years and over.

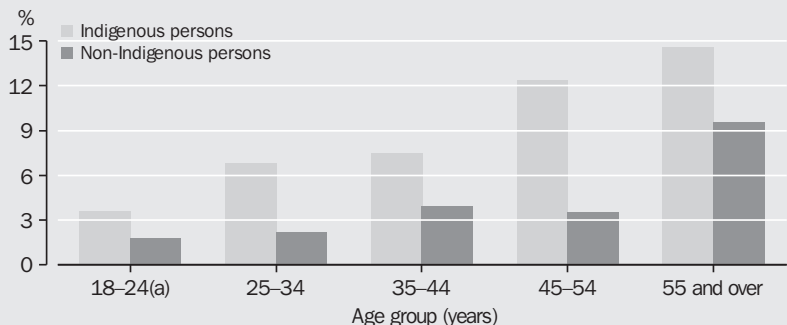
Among Indigenous people with a functional limitation, 8% had a profound or severe core activity limitation, meaning that they always or sometimes needed assistance with at least one activity of everyday living (self-care, mobility or communication).

In non-remote areas, after adjusting for age differences between the two populations, Indigenous adults were much more likely than non-Indigenous adults to have a profound or severe core activity limitation, regardless of age (graph 9.22). The earlier onset of long-term health conditions and/or disability, and consequent need for assistance, means that Indigenous people have a comparatively higher need for service provision at relatively younger ages.

# Health-related actions

An individual's health-related actions, and access to health professionals and services are important factors in the successful prevention and management of health conditions. Apart from visits to a dentist, Indigenous people were more likely than non-Indigenous people to have taken at least one of the surveyed health-related actions in 2004–05 (table 9.23).

**9.22 AGE-SPECIFIC RATES OF PROFOUND OR SEVERE CORE ACTIVITY LIMITATION(a) — 2002**



(a) Persons aged 18 years and over in non-remote areas. Estimates for Indigenous and non-Indigenous persons aged 18–24 years have relative standard errors of 29% and 32% and should be used with caution.

Source: ABS data available on request, 2002 National Aboriginal and Torres Strait Islander Social Survey and the 2002 General Social Survey.

## 9.23 HEALTH-RELATED ACTIONS OF INDIGENOUS AND NON-INDIGENOUS PERSONS — 2001 and 2004–05

Health-related actions(a)	2001 Indigenous %	2004–05 Indigenous rate	2004–05 Indigenous to non-Indigenous ratio(b)
Admitted to hospital	18.8	16.4	1.3
Visited casualty/outpatients	5.9	4.8	2.3
Consulted GP/specialist	21.8	20.1	1.1
Consulted dentist(c)	5.9	3.8	0.6
Consulted other health professional	16.3	17.3	1.5
Days away from work/study(d)	12.1	14.2	1.3
Other days of reduced activity(e)	n.a.	12.7	1.4

(a) Hospital admissions relate to the twelve months prior to interview. All other health-related actions relate to the two weeks prior to interview. (b) Age-standardised Indigenous rate divided by age-standardised non-Indigenous rate. (c) Persons aged two years and over. (d) Persons aged 5–64 years. (e) Persons aged five years and over.

Source: ABS data available on request, 2001 National Health Survey; 2004–05 National Aboriginal and Torres Strait Islander Health Survey; and 2004–05 National Health Survey.

## Health risk factors

### Smoking

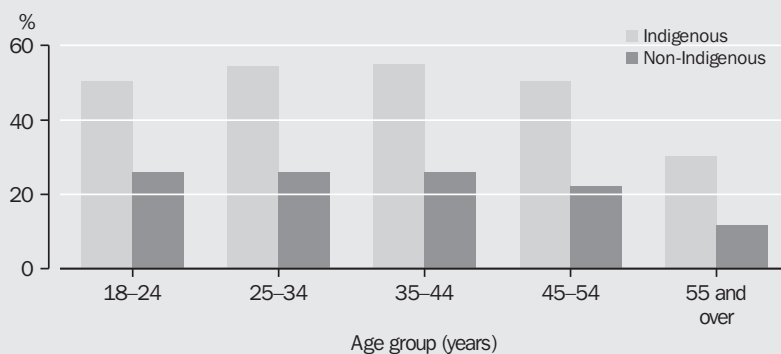
In 2004–05, half the adult Indigenous population (50%) reported smoking one or more cigarettes per day. Smoking was more prevalent among Indigenous than non-Indigenous adults in every age group (graph 9.24). After adjusting for age differences between the two populations, Indigenous adults were more than twice as likely as non-Indigenous adults to be current daily smokers.

### Alcohol consumption

In 2004–05, around half of all Indigenous adults (49%) reported having consumed alcohol in the week prior to interview, of whom one-third

(16%) reported drinking at risky/high risk levels. When compared with results from 2001, the proportion of Indigenous adults who reported drinking at risky/high risk levels in 2004–05 was about three percentage points higher overall (five points higher in non-remote areas and two points lower in remote areas). After adjusting for differences between the age-structure of the Indigenous and non-Indigenous populations, Indigenous adults were less likely than non-Indigenous adults to have consumed alcohol in the preceding week (45% compared with 63%), although the proportions who reported drinking at risky/high risk levels were similar (15% compared with 14%).

9.24 CURRENT DAILY SMOKERS, By Indigenous status — 2004–05



Source: ABS data available on request, 2004–05 National Aboriginal and Torres Strait Islander Health Survey and 2004–05 National Health Survey.

## Diet and exercise

Many of the principal causes of ill-health among Aboriginal and Torres Strait Islander people are nutrition-related diseases, such as heart disease, Type II diabetes and renal disease. While a diet high in saturated fats and refined carbohydrates increases the likelihood of developing these diseases, regular exercise and intake of fibre-rich foods, such as fruit and vegetables, can have a protective effect against disease.

In 2004–05, the majority of Indigenous Australians aged twelve years and over reported eating at least one serve of vegetables (95%) and/or fruit (86%) each day. In addition, 79% usually drank whole milk and 11% drank low/reduced fat milk. Indigenous people in non-remote areas were more likely to drink whole milk than were non-Indigenous people, regardless of age.

Information relating to the frequency, intensity and duration of exercise undertaken by Indigenous Australians living in non-remote areas showed that the proportion who were sedentary or engaged in low level exercise in the two weeks prior to interview was higher in 2004–05 (75%) than in 2001 (68%).

## Body mass

In the 2004–05 NATSIHS and NHS, self-reported height and weight measurements were collected for people aged 15 years and over. Using Body Mass Index<sup>1</sup> scores, just under one-third (31%) of Indigenous people were recorded as being in the normal or healthy weight range, with a further

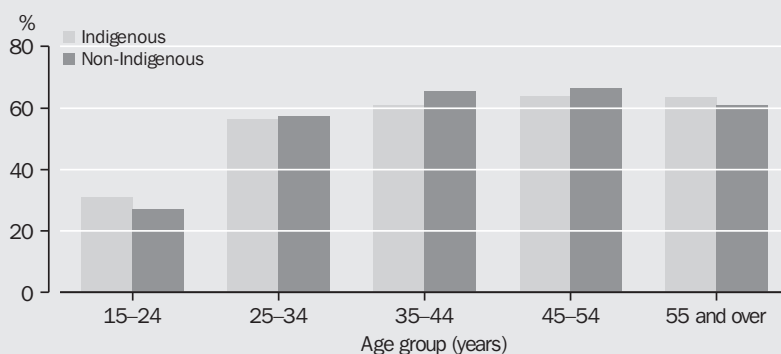
23% in the overweight category and 24% classified as obese. After adjusting for non-response, and age differences between the two populations, Indigenous Australians were 1.2 times more likely to be overweight/obese than non-Indigenous Australians. In each age group the disparity between Indigenous and non-Indigenous people was greater for females than for males.

## Breast-feeding

In 2004–05, the majority of Indigenous women aged 18–64 years with children, reported having breast-fed them (84%), consistent with results from 2001 (86%). The proportion of women who breast-fed their children was higher in remote areas (92%) than non-remote areas (80%). Similarly, 79% of Indigenous children under four years of age had been breast-fed for at least some period, of which 13% were being breast-fed at the time of the 2004–05 survey.

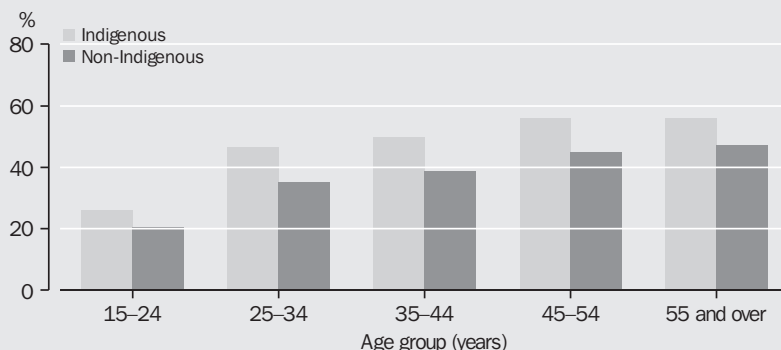
The data presented in this article represent only some of the insights that can be obtained from the 2004–05 NATSIHS. Other health-related topics include child and adult immunisation, substance use and women's health (including contraception). In addition, the survey also collected a range of socio-economic information which can be used to provide a broader context for the range of health indicators. Readers interested in undertaking further analysis of the data are referred to the *National Aboriginal and Torres Strait Islander Health Survey: Users' Guide, 2004–05* (4715.0.55.004).

**9.25 OVERWEIGHT AND OBESE MALES — 2004–05**



Source: ABS data available on request, 2004–05 National Aboriginal and Torres Strait Islander Health Survey and 2004–05 National Health Survey.

## 9.26 OVERWEIGHT AND OBESE FEMALES — 2004–05



Source: ABS data available on request, 2004–05 National Aboriginal and Torres Strait Islander Health Survey and 2004–05 National Health Survey.

### End note

1 Body Mass Index (BMI) scores are calculated from reported height and weight information, using the formula: weight in kilograms divided by the height in metres squared. BMI values are grouped as follows: Underweight (less than 18.5); Normal weight (18.5 to less than 25.0); Overweight (25.0 to less than 30.0) and Obese (30.0 or higher).

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## Health risk factors

A range of factors influence the health outcomes of an individual or the population. These include the interaction of socio-economic, biomedical and environmental factors which contribute to illness and injury. There are also specific lifestyle behaviours which may further impact a person's health, increasing the risk of chronic disease.

The 2004–05 NHS collected information on a number of self-reported risk factors:

- almost one in four adults (23%) smoked
- 13% of adults consumed alcohol at levels which, if continued, would be risky or a high risk to their health in the long term
- 70% of people aged 15 years and over reported sedentary or low exercise levels in the two weeks prior to interview
- 52% of people aged 15 years and over were classified as overweight or obese based on their calculated Body Mass Index where self-reported height and weight were known. This contrasts with only 33% who described themselves at interview as overweight
- 14% of people aged 12 years and over reported they usually consumed five or more serves of vegetables every day (the recommended daily intake)

- 54% of people aged 12 years and over reported they usually consumed two or more serves of fruit every day (the recommended daily intake).

## Chronic disease

Chronic illness is a growing problem in Australia as the population ages. Chronic diseases such as diabetes, heart disease, cancer and arthritis, are associated with a high burden of disease and account for a high financial burden in Australia. These conditions (including injuries which contribute to chronic disease) are National Health Priority Areas (NHPAs). Many of these diseases can be prevented or delayed by addressing lifestyle factors such as poor diet or insufficient exercise, or by better management of conditions such as high blood pressure or obesity. There are a range of initiatives in place to prevent and manage chronic disease and reduce its impact.

Table 9.27 shows health expenditure on seven NHPAs. In total, expenditure on NHPAs in 2000–01 accounted for \$22.3 billion (b), that is 44% of allocated recurrent expenditure or 36% of total health expenditure for the year. Hospital expenditure accounted for 48% of all expenditure on NHPAs.

## Cardiovascular disease

Cardiovascular disease, also known as ‘circulatory disease’, comprises all diseases and conditions involving the heart and blood vessels including high blood pressure, heart disease, stroke, and peripheral vascular diseases. Although the death rates from cardiovascular disease in Australia have notably decreased over the last three decades, this group of diseases remains as one of the leading causes of death in Australia.

Total health expenditure attributable to cardiovascular disease is \$5.5b, which accounts for 10.9% of allocated recurrent health system expenditure in 2000–01 (table 9.27).

## Morbidity

The 2004–05 NHS indicated that around 3.5 million Australians (18%) reported having a circulatory system condition as a long-term condition (having lasted or being expected to last for six months or more). The most common cardiovascular condition reported was hypertension (high blood pressure) which affected 11% of the population.

The prevalence of long-term circulatory system conditions increases with age. For people aged 55 years and over, the prevalence of all circulatory system conditions is 46%. The prevalence of hypertension is 33%, and ischaemic heart disease (also called coronary heart disease) is 7%. The prevalence of cerebrovascular disease (stroke) is 2%.

**9.27 HEALTH EXPENDITURE ON NATIONAL HEALTH PRIORITY AREAS(a) — 2000–01**

Disease group	Hospital \$m	Aged care homes(b) \$m	Out-of- hospital medical services \$m	Other professional services(c) \$m	Pharmaceuticals \$m	Research \$m	Total(d) \$m
Cardiovascular diseases	2 533	526	782	73	1 411	153	5 479
Arthritis and other musculoskeletal conditions	1 828	482	879	710	680	55	4 634
Injuries	2 831	105	622	265	184	6	4 013
Mental disorders	1 196	366	499	134	616	109	3 741
Cancer	1 988	37	343	22	183	215	2 918
Diabetes mellitus	289	38	183	33	234	35	812
Asthma	170	16	110	21	370	6	692
<b>All NHPAs</b>	<b>10 835</b>	<b>1 570</b>	<b>3 418</b>	<b>1 258</b>	<b>3 678</b>	<b>580</b>	<b>22 289</b>

(a) Allocated recurrent expenditure (which totalled \$50.1b in 2000–01). (b) Includes expenditure on residents that require and receive a level of care that falls within one of the four highest levels in residential aged-care services. (c) Includes services delivered outside of hospitals by paramedical professionals such as physiotherapists, chiropractors, occupational therapists, audiologists, speech therapists, hydropaths, podiatrists, therapeutic and clinical massage therapists, clinical psychologists, dietitians and osteopaths. (d) Includes other minor categories of expenditure.

Source: Australian Institute of Health and Welfare, ‘Health system expenditure on disease and injury in Australia 2000–2001’, Cat. No. HWE 28, AIHW, Canberra.

### Mortality

Despite declines in mortality rates in the last 30 years, cardiovascular disease (or diseases of the circulatory system) remains as one of the leading cause of death in Australia in 2004, accounting for 47,637 or 36% of all deaths. Ischaemic heart disease accounted for 19% of all deaths, and cerebrovascular diseases a further 9%.

Between 1994 and 2004, age-standardised death rates for diseases of the circulatory system declined by 40% for males (from 441 to 267 per 100,000 population), and 38% for females (from 300 to 186 per 100,000 population). In the same period age-standardised death rates for people declined from 363 to 223 per 100,000 population (graph 9.28).

### Arthritis and other musculoskeletal diseases

Osteoarthritis, rheumatoid arthritis and osteoporosis are the most commonly occurring musculoskeletal conditions. Although they are not immediately life threatening and have low associated mortality, they have substantial influence on the quality of life and impose a heavy economic burden on the community. Total health expenditure attributable to musculoskeletal diseases is \$4.6b, which accounts for 9.2% of allocated recurrent health system expenditure in 2000–01 (table 9.27).

Osteoarthritis is one of the most common types of arthritis and affects the cartilage in the joints. Cartilage cushions the ends of bones where bones meet to form a joint. In osteoarthritis this cartilage

degenerates. Osteoarthritis is most commonly found in the knees, neck, lower back, hip and fingers.

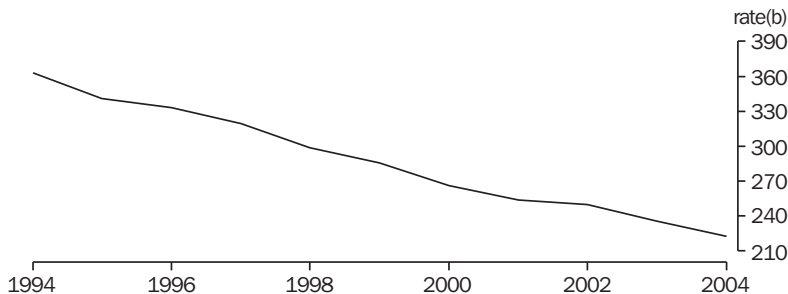
Rheumatoid arthritis is the most common form of inflammatory arthritis. Inflammatory arthritis is characterised by joint swelling and destruction. In rheumatoid arthritis the immune system attacks the tissues lining the joints. As a result of this attack, inflammation occurs causing pain, heat and swelling. The disease can also cause inflammation of connective tissue, blood vessels and organs.

Osteoporosis (porous bones) is a disease where bone density and structural quality deteriorate, leading to an increased risk of fracture. The most common sites of fracture are the bones of the spine, the hip and the wrist. However other bones are commonly affected, including the shoulder, ribs and the pelvis.

### Morbidity

The 2004–05 NHS shows over 3 million Australians (15%) had some form of arthritis and over half a million Australians (3%) had osteoporosis. The prevalence is greater in females for all ages. The overall prevalence of arthritis is 18% for females compared with 13% for males, while the prevalence of osteoporosis is 5% for females and 1% for males. The prevalence of arthritis and osteoporosis was increasingly higher for older age groups in 2004–05 (graph 9.29). For people aged 65–74 years and 75 years and over, the prevalence of arthritis was 49% and 50% respectively, while the prevalence of osteoporosis was 12% and 17% respectively.

**9.28 AGE-STANDARDISED DEATH RATES FROM CARDIOVASCULAR DISEASE(a)**

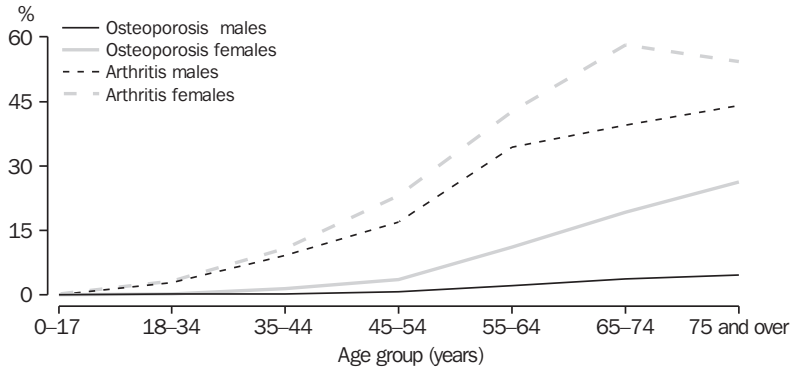


(a) ICD-10 codes I00-I99. (b) Per 100,000 population, age standardised to the 2001 population (persons).

Source: Australian Institute of Health and Welfare, 'GRIM (General Record of Incidence of Mortality) Books', AIHW, Canberra.



### 9.29 PREVALENCE OF ARTHRITIS — 2004–05



Source: ABS data available on request, 2004–05 National Health Survey.

### Injuries and deaths due to external causes

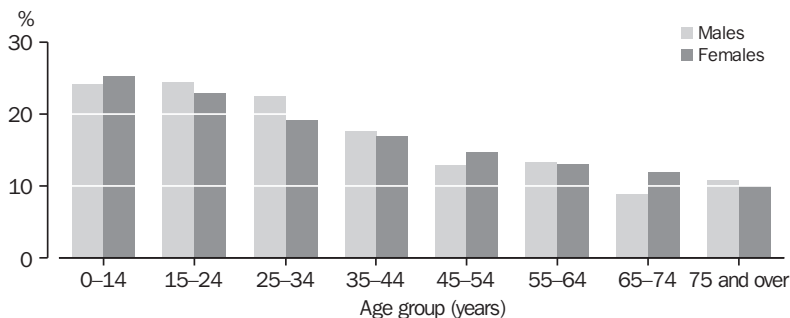
Injury and poisoning are broad terms that encompass the adverse effects on the human body that may result from events. These events may be accidental, such as falls, vehicle accidents and exposure to chemicals, or intentional such as suicide attempts and assaults by other people. Such events, and the factors involved in them, are collectively known as ‘external causes of injury and poisoning’, and are a significant source of preventable illness, disability and premature death in Australia.

Males and females, and people in different age groups, experience different levels and types of risk from injury events (risk in this sense refers to both the probability of an injury event occurring and the severity of the injuries that may result).

#### Morbidity

Respondents to the 2004–05 NHS were asked about events in the four weeks prior to interview that resulted in an injury for which they had sought medical treatment or taken some other action. Detailed information was collected about the most recent injury event in that period. Injuries data from the survey are presented in graph 9.30 and highlight differences in the reporting of injury events among males and females of different age groups.

### 9.30 PROPORTION WHO WERE RECENTLY INJURED(a) — 2004–05



(a) Most recent event, in the four weeks prior to interview, that resulted in injury and consequential treatment or other action.

Source: ABS data available on request, 2004–05 National Health Survey.

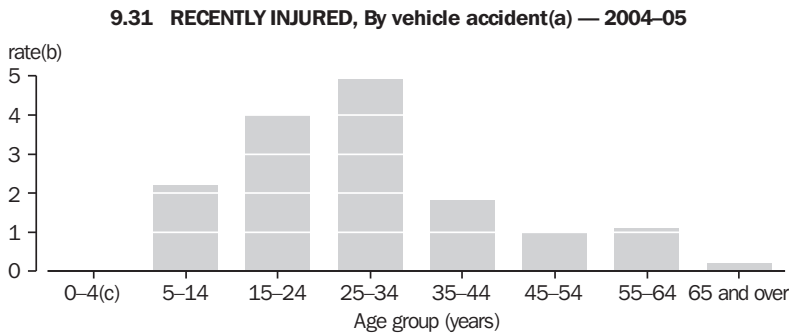
During the 1990s, the number of people dying as a result of injury from traffic accidents decreased. However, traffic accidents remain a serious source of preventable death, injury and disability. Results from the 2004–05 NHS indicate two in 1,000 people experienced a recent injury as a result of a vehicle accident. Inexperienced road users are an acknowledged risk group in terms of the potential for death or injury from vehicle accidents. Results from the 2004–05 NHS show people aged 15–34 years experienced a higher rate of recent injury from vehicle accidents compared with people aged 35 years and over (graph 9.31).

Mortality

External causes were responsible for 7,966 deaths (6% of all deaths) registered in 2004 (table 9.32). Since 1994 there has been a 7% decrease in the

standardised death rate for deaths from external causes of injury and poisoning. This decrease has been influenced largely by the decline in deaths from motor vehicle accidents.

In 2004, suicide and transport accidents accounted for nearly half of all deaths due to external causes. There were 2,098 deaths attributed to intentional self-harm (suicide) in 2004, accounting for 26% of the total deaths from external causes. Transport accidents accounted for 1,689 deaths, or 21% of total registered deaths in 2004 due to external causes. There was a much higher crude death rate for males than for females for both suicide (16.6 to 4.3 per 100,000) and transport accidents (12.4 to 4.5). The crude death rate for deaths resulting from falls was higher for females (4.5) than for males (4.2).



(a) Most recent event, in the four weeks prior to interview, that resulted in injury and consequential treatment or other action. Includes motorised and non-motorised vehicles.  
(b) Rate per 1,000 persons. (c) Rate is less than 0.2.

Source: ABS data available on request, 2004–05 National Health Survey.

9.32 EXTERNAL CAUSES OF DEATH — 2004

Cause of death (ICD-10 code)	no.	%	Crude death rate		
			Males(a)	Females(b)	Persons(c)
Suicide (intentional self-harm) (X60-X84)	2 098	26.3	16.6	4.3	10.4
Transport accidents (V01-V99)	1 689	21.2	12.4	4.5	8.4
Accidental poisoning by and exposure to noxious substances (X40-X49)	737	9.3	5.1	2.3	3.7
Falls (W00-W19)	873	11.0	4.2	4.5	4.3
Assault (X85-Y09)	164	2.1	1.0	0.6	0.8
Accidental drowning and submersion (W65-W74)	197	2.5	1.5	0.5	1.0
Other(d)	2 208	27.7	12.1	9.9	11.0
All external causes	7 966	100.0	52.9	26.5	39.6

(a) Per 100,000 males. (b) Per 100,000 females. (c) Per 100,000 population. (d) Includes accidental exposure to other and unspecified factors (X58-X59), other accidental threats to breathing (W75-W84) as well as a variety of other external causes of death.

Source: ABS data available on request, Causes of Death collection.

# Mental health

Most people in Australia enjoy good mental health. However, in 2004–05, approximately 2.1 million people (11% of the population) reported having a long-term mental or behavioural problem that had lasted, or was expected to last, for six months or more. Mental illness is not a major direct cause of death, but it is associated with a proportion of deaths due to suicide and some other conditions, and can lead to chronic disability. Mental ill health is one of the leading causes of non-fatal burden of disease and injury in Australia. Together, mental disorders accounted for 7.5% of allocated recurrent health system expenditure in 2000–01 (table 9.27).

## Morbidity

In the 2004–05 NHS, information on long-term mental and behavioural problems was collected from all respondents. A long-term condition was defined as one which the respondent regarded as having lasted or was expecting to last six months or more. Respondents in the survey were not specifically asked if they had been diagnosed with any mental disorders, so the information they provided could be based on self-diagnosis rather than diagnosis by a health professional.

In 2004–05, 11% of the Australian population reported that they had a long-term mental or behavioural problem. Proportionally more females (11%) than males (10%) reported these problems.

The most commonly reported problems for adults (aged 18 years and over) were classified into two groups – anxiety-related problems, and mood (affective) problems such as depression and bipolar disorder. Each were reported by approximately 5% of all males and 7% of all females. In addition, around 1% of the population reported that they had a mental and behavioural disorder due to substance use (graph 9.33).

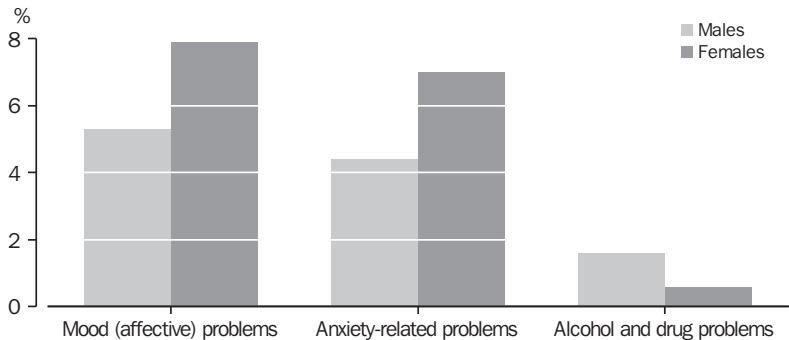
## Cancer

Cancer is a disease of the body's cells. Normally, cells grow and reproduce in an orderly manner. Sometimes, though, abnormal cells will grow. These abnormal cells may then reproduce and spread uncontrolled throughout the body. Cancer is the term used to describe about 100 different diseases including malignant tumours, leukaemia (a disorder of the white blood cells), sarcoma of the bones, Hodgkin's disease and non-Hodgkin's lymphoma (affecting the lymph nodes) in which uncontrolled cell growth threatens the rest of the body. Cancer is a major cause of death in Australia and accounted for 5.8% of allocated recurrent health system expenditure in 2000–01 (table 9.27).

## Morbidity

In the 2004–05 NHS, an estimated 338,300 Australians (1.7%) reported they currently had a malignant neoplasm.

9.33 SELF-REPORTED MENTAL DISORDERS(a) — 2004–05



(a) Persons aged 18 years and over.

Source: ABS data available on request, 2004–05 National Health Survey.

The AIHW Cancer Registry data shows there were 88,398 registered new cancer cases in 2001. The most common registrable cancers are the combination of cancers of the colon and rectum (12,844), breast cancer (11,886), prostate cancer (11,191), melanoma (8,885) and lung cancer (8,275). Together they accounted for 60% of all registrable new cancer cases in that year. Cancer occurs more commonly in males than females. At the incidence rates prevailing in 2001, it would be expected that one in three men, and one in four women would be diagnosed with a malignant cancer before the age of 75 years.

## Mortality

In 2004 malignant neoplasms (cancer) accounted for 37,625 deaths (excluding deaths from non-melanocytic skin cancer), or 28% of all deaths registered (table 9.34). Of these, there were 21,127 male deaths and 16,498 female deaths. Overall, cancer of the trachea, bronchus and lung was the leading cause of cancer deaths, accounting for 19% of all cancer deaths.

There were some differences in cancer death rates between males and females. Among males, the leading causes of cancer deaths were cancer of the trachea, bronchus and lung (22% of all male cancer deaths), prostate cancer (13%) and colon cancer (7%). Among females the leading causes of cancer deaths were breast cancer (16% of all female cancer deaths), cancer of the trachea, bronchus and lung (15%) and colon cancer (8%). Age-specific death rates for cancer increased markedly with age, and, in most age groups, were greater for males than for females.

Mortality is influenced by the number of new cases of cancer (incidence) and the length of time lived after the initial diagnosis of cancer is made (survival). Relative survival is a measure that takes into consideration the crude survival (time between diagnosis and death) in the cancer population, and the corresponding expected survival in the general population. Expressed as a percentage, it is the cancer population that survives a specific number of years after the diagnosis divided by the general population that survives the same number of years.

In the general population during 1992–97, the expected proportion of males aged 60–69 years who survive for the next five years was 91%. The observed survival rate during 1992–97 after five years for males diagnosed with lung cancer at age 60–69 years is 11%. The five-year relative survival

proportion for males diagnosed with lung cancer at age 60–69 years is the ratio of these two percentages, that is 12%.

By convention, the proportion of people surviving is measured at one, five and ten years after diagnosis. The periods reflect different stages of management during the life of a person diagnosed. For instance, the proportion of people surviving after one year can be a measure of the success of the interventions on the immediately detectable cancer, whereas five-year and ten-year measurements are strong indicators for remission or cure.

During 1992–97 the five-year relative survival proportions for all cancers for females (63%) were higher than those for males (57%) (table 9.34). Australian five-year relative survival proportions for all cancers was ranked second behind the United States of America for both males and females when compared with other western countries for which relative survival data are available.

## Diabetes mellitus

Diabetes is a long-term condition characterised by high blood glucose (a type of sugar) level, which results from either the body producing little or no insulin, or the body not using the insulin properly (insulin resistance). Insulin is a hormone produced by the pancreas that helps the body cells use glucose.

There are three major types of diabetes mellitus. Type 1 diabetes is marked by extremely low levels of insulin. Type 2 diabetes is marked by reduced levels of insulin, or the inability of the body to use insulin properly. Gestational diabetes (which occurs in about 4–6% of pregnancies of women who have not been previously diagnosed with diabetes) is not usually long term. However, for women diagnosed with gestational diabetes, there is an increased risk of developing Type 2 diabetes later in life.

Diabetes is a costly disease, associated with substantial morbidity and mortality, primarily from cardiovascular complications, eye and kidney diseases, and limb amputations. Total health expenditure attributable to diabetes was \$0.8b in 2000–01, accounting for 1.6% of allocated recurrent health system expenditure (table 9.27).

### 9.34 DEATHS, INCIDENCE AND SURVIVAL RATES FOR COMMON REGISTRABLE CANCERS

Cancer site	Deaths (2004)		Incidence (2001)		Five-year relative survival (1992–97)	
	Males no.	Females no.	Males no.	Females no.	Males %	Females %
Stomach	715	434	1 202	700	22.6	24.8
Colon	1 432	1 352	4 233	4 085	58.3	58.7
Rectum(a)	783	559	2 728	1 798	56.6	60.6
Pancreas	1 015	963	958	900	5.4	5.2
Lung(b)	4 733	2 531	5 384	2 891	11.0	14.0
Skin (melanoma)	821	388	5 024	3 861	90.0	94.6
Breast	20	2 641	95	11 791	—	84.0
Uterus	—	327	—	1 537	—	81.4
Cervix	—	212	—	735	—	74.6
Ovary	—	851	—	1 248	—	42.0
Prostate	2 761	—	11 191	—	82.7	—
Testis	15	—	604	—	95.4	—
Bladder	602	308	2 258	696	70.8	64.7
Kidney(c)	527	381	1 514	944	59.9	57.5
Brain	634	447	786	562	23.8	23.8
Thyroid	47	50	298	882	87.9	95.6
Unknown primary	1 793	1 745	1 736	1 568	13.4	11.4
Hodgkin's Disease	44	26	218	183	82.6	84.4
Non-Hodgkin's Lymphoma	762	713	1 923	1 576	54.6	55.8
Leukaemia	842	606	1 465	1 051	41.2	43.2
<b>All cancers(d)</b>	<b>21 127</b>	<b>16 498</b>	<b>47 820</b>	<b>40 578</b>	<b>56.8</b>	<b>63.4</b>

(a) Including rectosigmoid junction, anus and anal canal. (b) Including trachea and bronchus. (c) Including ureter and urethra.

(d) Excluding non-melanocytic skin cancer.

Source: ABS data available on request, *Causes of Death collection*; Australian Institute of Health and Welfare, 'Cancer Survival in Australia: Part 1' (AIHW Cat. No. CAN 13); Australian Institute of Health and Welfare, 'Cancer age-specific data cube', last viewed July 2006 <<http://www.aihw.gov.au>>.

## Morbidity

Results from the 2004–05 NHS indicate approximately 700,000 Australians (around 3.5%) reported having diabetes as a long-term condition. Results from the three successive NHSs show diabetes is a growing health problem in Australia. The prevalence of diabetes has risen from 2.4% in 1995 to 3.0% in 2001, and to 3.5% in 2004–05 (after adjusting for changes in the age-structure of the population over time).

People born in some overseas regions have a higher prevalence of diabetes than people born in Australia. This difference may be largely due to a combination of genetic, biological, behavioural and environmental risk factors. For example, in 2001, males born in the Middle East and North Africa had a diabetes prevalence rate 3.6 times that of Australian-born males. The corresponding ratio for females was 2.4.

## Mortality

In 2004 diabetes mellitus was the underlying cause of death in 3,599 deaths, 2.7% of all deaths registered. Of these, 1,869 deaths were males and

1,730 females. The age-standardised death rate due to diabetes was 17 per 100,000 people (21 per 100,000 for males and 14 per 100,000 for females).

In addition to deaths where diabetes was the underlying cause, there were a further 8,136 deaths in 2004 where diabetes was listed as an associated (or contributing) cause of death. When diabetes was recorded as the underlying cause of death, other conditions listed as associated causes included ischaemic heart disease (52%), cerebrovascular diseases (23%), renal failure (25%) and heart failure (19%).

## Asthma

Asthma is a chronic inflammatory disorder of the lung's air passages which makes them narrow in response to various triggers. This leads to episodes of shortness of breath and wheezing. Asthma can begin at all ages, including the very young. The disease can start as a mild chronic cough and lead to mild or severe wheezing, and sometimes even to respiratory arrest.

Although asthma has low associated mortality, people with asthma can experience reduced quality of life and require a range of health services, from general practitioner care to emergency department visits or hospital in-patient care. It is one of the most frequent reasons for hospitalisation among children aged 0–9 years.

The management of asthma is an important public health issue because of the personal burden it places on those with asthma, often with onset in childhood, and the financial burden it places on the health system. In 2000–01 health expenditure on asthma accounted for \$0.7b, which represented 1.4% of allocated recurrent health expenditure (table 9.27).

**Morbidity**

The prevalence of asthma in Australia is one of the highest in the world, with more than two million Australians (10%) reporting the disease in 2004–05. Asthma is more prevalent in young people than older age groups. For people under 25 years of age, the prevalence of asthma was 12%. Up to 14 years of age, asthma was more common among males than among females. In older age groups, however, asthma was more common among females than among males.

**Mortality**

Asthma was identified as the underlying cause of a very small number of deaths (108 males and 205 females), amounting to 0.2% of deaths registered in Australia in 2004. Most asthma deaths occur in older age groups. The most recent peak in asthma deaths occurred in 1989, and age-standardised death rates for asthma have

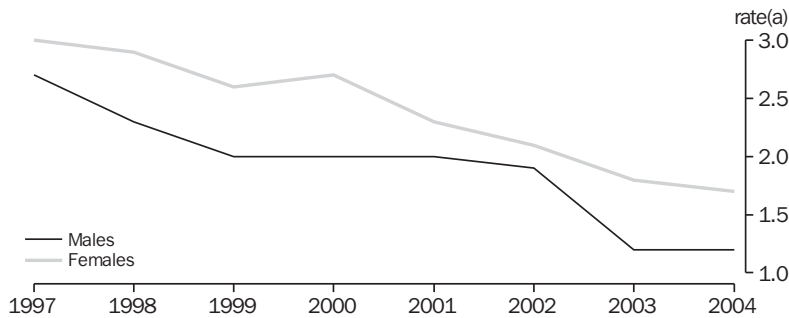
generally declined since then. Changes in coding rules for ICD-10, which apply to deaths data from 1997 onwards, have resulted in substantially decreased recording of asthma as underlying cause of death compared with previous years (see *Causes of Death, Australia, 2003* (3303.0)). Consequently, graph 9.35 shows trends for 1997 onwards.

**Communicable disease**

Communicable diseases are those diseases capable of being transmitted from one person to another, or from one species to another. Two major groups of communicable diseases, classified in the ICD-10, are certain infectious and parasitic diseases (ICD-10 codes A00-B99) and acute respiratory infections (ICD-10 codes J00-J22) which includes influenza and pneumonia as well as other acute upper and lower respiratory infections. In 2004 these two groups accounted for 4% of all deaths in Australia (5,305 deaths). Influenza and pneumonia accounted for 64% (3,381) of these deaths. Death rates increase with age, and were greater for males than females in most age groups. In 2004–05, there were 87,519 hospital separations in Australia with a principal diagnosis of infectious and parasitic diseases. Acute respiratory infections including influenza and pneumonia were responsible for a further 129,255 separations.

Through the National Notifiable Diseases Surveillance System (NNDSS), state and territory health authorities submit reports of more than 60 communicable disease notifications for compilation by the Australian Government Department of Health and Ageing (DoHA).

**9.35 AGE-STANDARDISED DEATH RATES FROM ASTHMA**



(a) Per 100,000 population, age standardised to the 2001 population (persons).

Source: Australian Institute of Health and Welfare, 'Australia's Health 2006, AIHW Cat. No. AUS73, AIHW, Canberra.

The total of notifications to NNDSS in 2005 was 125,675, an increase of 10% on the 113,852 notifications made in 2004 (table 9.36). In 2005 sexually transmitted infections (STI) were the most commonly reported communicable diseases, accounting for 43% of all notifications, followed by gastrointestinal diseases (23%) and blood-borne diseases (15%).

Chlamydia was the most common STI (41,310 notifications, 76% of total STIs); campylobacteriosis the most common gastroenteritis (16,479 notifications, 56% of total) and hepatitis C (unspecified) was the most common blood-borne disease (12,232 notifications, 63% of total).

### 9.36 NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM REPORTS

Disease(c)	Notifications		Rate(a)	
	2004(b) no.	2005 no.	2003(b) %	2005 %
<b>Blood-borne diseases</b>				
Hepatitis B (incident)	281	247	1.7	1.4
Hepatitis B (unspecified)	5 815	6 392	29.6	29.2
Hepatitis C (incident)	451	366	3.3	2.8
Hepatitis C (unspecified)	12 863	12 232	69.0	64.0
Hepatitis D	28	30	0.1	0.1
Hepatitis n.e.c.	—	—	—	—
<b>Gastrointestinal diseases</b>				
Botulism	1	3	—	—
Campylobacteriosis	15 584	16 479	116.5	116.5
Cryptosporidiosis	1 684	3 208	6.2	8.4
Haemolytic uraemic syndrome	16	20	0.1	0.1
Hepatitis A	319	325	2.2	1.6
Hepatitis E	28	31	0.1	0.1
Listeriosis	67	54	0.3	0.3
Salmonellosis	7 834	8 444	35.3	39.0
Shigellosis	522	731	2.2	2.6
SLTEC, VTEC(d)	49	87	0.3	0.2
Typhoid	76	52	0.3	0.4
<b>Quarantinable diseases</b>				
Cholera	5	3	—	—
<b>Sexually transmissible diseases</b>				
Chlamydial infection	36 222	41 310	153.2	180.1
Donovanosis	10	13	0.1	—
Gonococcal infection	7 193	8 023	34.2	35.8
Syphilis (all categories)	2 332	2 213	10.1	11.6
Syphilis less than 2 years duration	615	623	—	3.1
Syphilis more than 2 years duration	1 579	1 589	—	7.9
Syphilis – congenital	12	15	0.1	0.1
<b>Vaccine preventable diseases</b>				
Diphtheria	—	—	—	—
Haemophilus influenza type b	15	17	0.1	0.1
Influenza (laboratory confirmed)	2 133	4 568	17.5	10.6
Measles	45	10	0.5	0.2
Mumps	102	241	0.4	0.5
Pertussis	8 752	11 200	25.7	43.5
Pneumococcal disease	2 377	1 705	11.3	11.8
Rubella	31	31	0.3	0.2
Rubella – congenital	1	1	—	—
Tetanus	5	2	—	—

For footnotes see end of table.

...continued



### 9.36 NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM REPORTS — *continued*

Disease(c)	Notifications				Rate(a)
	2004(b) no.	2005 no.	2003(b) %	2004(b) %	2005 %
<b>Vector-borne diseases</b>					
Barmah Forest virus infection	1 106	1 321	6.9	5.5	6.5
Dengue	351	220	4.3	1.7	1.1
Flavivirus n.e.c.	61	29	0.3	0.3	0.1
Japanese encephalitis	1	—	—	—	—
Kunjin virus	12	1	0.1	0.1	—
Malaria	558	821	3.0	2.8	4.0
Murray Valley encephalitis	1	2	—	—	—
Ross River virus infection	4 210	2 548	19.4	20.9	12.5
<b>Zoonoses</b>					
Brucellosis	39	41	0.1	0.2	0.2
Leptospirosis	178	130	0.6	0.9	0.6
Ornithosis	236	164	1.0	1.2	0.8
Q fever	463	353	2.8	2.3	1.7
<b>Other diseases</b>					
Legionellosis	311	337	1.7	1.5	1.7
Leprosy	7	9	—	—	—
Meningococcal infection	405	393	2.8	2.0	1.9
Tuberculosis	1 060	1 090	4.8	5.3	5.4
<b>Total</b>	<b>116 046</b>	<b>127 724</b>	<b>528.1</b>	<b>566.1</b>	<b>618.2</b>

(a) Rate per 100,000 population is calculated using the estimated resident population at the midpoint (30 June) of the relevant calendar year. (b) Revised totals for 2002 to 2005 as at July 2006. Totals may vary over time as notifications are subject to revision. (c) Diseases reported to NNDSS from all jurisdictions except hepatitis B (unspecified) not reported from NT; incident hepatitis C not reported from Qld; campylobacteriosis not reported from NSW. (d) SLTEC/VTEC: Shiga-like toxin/verotoxin producing *E. coli* infections.

Source: Commonwealth Department of Health and Ageing, 'National Notifiable Disease Surveillance System', last viewed August 2006, <<http://www9.health.gov.au/cda/source/CDA-index.cfm>>.

## HIV and AIDS

In collaboration with the state and territory health authorities and the Australian Government, surveillance for human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) is conducted by the National Centre in HIV Epidemiology and Clinical Research. This centre is part of the Faculty of Medicine, University of New South Wales and is funded primarily by DoHA.

At 31 December 2005 the cumulative number of cases of newly diagnosed HIV infections (since 1985) was 25,242. The annual number of new HIV diagnoses reached a low of 716 in 1999, after which there was a continual increase (to 954 in 2005). The cumulative number of AIDS diagnoses, adjusted for reporting delay, was 9,859 (since 1981) and there was a total of 6,668 deaths following AIDS (table 9.37).

There has been a reduction in numbers of new AIDS diagnoses since the late-1990s, which has been due to the decline in HIV incidence that took place in the mid-1980s, and the use, since around 1996, of effective combination antiretroviral therapy for the treatment of HIV infection. In Australia, around 70% of all people living with HIV/AIDS are receiving antiretroviral treatment. However, the long-term effectiveness of antiretroviral treatment in preventing progression of HIV infection remains unknown.

Transmission of HIV in Australia continues to be mainly through sexual contact between men (77% in 2005). Exposure to HIV was attributed to heterosexual contact in 19.6% of new diagnoses and to injecting drug use in 3.4% of diagnoses (table 9.38). Mother-to-child transmission of HIV remains rare in Australia.

### 9.37 NEWLY DIAGNOSED HIV CASES(a), AIDS CASES AND DEATHS FOLLOWING AIDS(b)

	Year of diagnosis(c)					Total
	Prior to 2002	2002	2003	2004	2005	
HIV cases(a)	21 669	850	868	901	954	25 242
AIDS cases(b)	8 915	237	246	204	257	9 859
AIDS deaths(b)	6 247	103	118	108	92	6 668

(a) Not adjusted for multiple reporting. (b) AIDS cases diagnosed and deaths following AIDS in the years from 2002 were adjusted for reporting delays; AIDS cases diagnosed and deaths following AIDS in previous years were assumed to be completely reported. (c) The number of HIV/AIDS diagnoses for each year may be revised over time due to late reports, updated information on exposure and testing history for reported cases, and removal of previously unrecognised duplicate diagnoses.

Source: 'HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2006', National Centre in HIV Epidemiology and Clinical Research, University of New South Wales; Australian Institute of Health and Welfare.

### 9.38 CHARACTERISTICS OF CASES OF NEWLY DIAGNOSED HIV INFECTION(a), Number of cases and proportion of total cases

	Units	Year of diagnosis(b)				Total(c)
		2002	2003	2004	2005	
Total cases	no.	850	868	901	954	25 242
Males	%	88.8	89.7	86.0	90.3	91.9
State and territory						
New South Wales	%	47.9	49.3	45.2	42.0	56.1
Victoria	%	25.8	23.5	23.9	27.0	21.3
Queensland	%	15.3	14.6	17.3	17.5	11.3
South Australia	%	3.5	5.2	6.0	5.4	3.9
Western Australia	%	5.4	6.2	5.4	6.6	5.3
Tasmania	%	0.6	—	0.6	0.5	0.4
Northern Territory	%	0.9	0.6	0.9	0.2	0.6
Australian Capital Territory	%	0.6	0.6	0.8	0.7	1.1
Exposure category(d)						
Male homosexual contact	%	70.6	73.6	67.7	72.1	76.8
Male homosexual contact and injecting drug use	%	4.3	4.4	4.0	4.3	4.4
Injecting drug use(e)	%	2.7	3.6	4.3	3.4	4.2
Heterosexual contact	%	21.9	18.2	23.6	19.6	11.9
Haemophilia/coagulation disorder	%	—	—	—	—	1.3
Receipt of blood/tissue	%	—	—	0.1	0.1	1.1
Mother with/at risk of HIV infection	%	0.3	0.2	0.1	0.6	0.4
Health care setting	%	0.1	—	0.1	—	—
Other/undetermined	%	9.4	7.5	7.5	10.1	15.2

(a) Not adjusted for multiple reporting. (b) The number of HIV/AIDS diagnoses for each year may be revised over time due to late reports, updated information on exposure and testing history for reported cases, and removal of previously unrecognised duplicate diagnoses. (c) Includes figures for years prior to 2002. (d) The 'Other/undetermined' category was excluded from the calculation of the percentage of cases attributed to each HIV exposure category. (e) Excludes males who also reported a history of homosexual/bisexual contact.

Source: 'HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2006', National Centre in HIV Epidemiology and Clinical Research, University of New South Wales; Australian Institute of Health and Welfare.

## Children's immunisation

Immunisation programs for children are recognised as an effective public health intervention, and have been responsible for eradicating or minimising infectious diseases such as diphtheria, whooping cough and polio as major causes of death and disability in Australia.

The Australian Childhood Immunisation Register (ACIR), which commenced operation on 1 January 1996, aims to provide accurate and comprehensive information about immunisation

coverage for all children under the age of seven. The register is administered by Medicare Australia and is a key component of initiatives to improve the immunisation status of Australian children.

Immunisation coverage goals for Australia for the year 2000, recommended by the National Health and Medical Research Council (NHMRC), called for 90% or more coverage of children at two years of age, and near universal coverage of children at school-entry age, against diphtheria, tetanus,

pertussis (whooping cough), poliomyelitis, measles, mumps, rubella and Hib (Haemophilus influenza type b).

ACIR data indicated, at 31 March 2006, 90% of one year olds, 92% of two year olds and 84% of six year olds were fully immunised according to the NHMRC Recommended Australian Standard Vaccination Schedule. State summaries by age group based on ACIR data are published on the Medicare Australia web site at: <http://www.medicareaustralia.gov.au>.

## Health care delivery and financing

*This section draws extensively on material provided by the Australian Government Department of Health and Ageing (August 2006).*

### Role of governments

Australia's health policy is funded and delivered by several levels of government, and is supported by private health insurance arrangements. Medicare – the national health insurance scheme – is funded and administered by the Australian (Commonwealth) Government and provides cover for a range of primary care services, including visits to medical practitioners. This is supported by optional private health insurance for ancillary services and private hospital treatments. The public hospital system is jointly funded by the Australian, and state and territory governments, and administered at the state/territory level.

Most non-hospital medical services, pharmaceuticals and health research receive funding directly or indirectly from the Australian Government. Public hospital services, and home and community care for aged and disabled people are jointly funded by the Australian, state and territory governments. Residential facilities for aged people are funded by a number of sources, including the Australian Government. Public health insurance is provided through Medicare, which is discussed in more detail later in this chapter.

The states and territories are primarily responsible for the delivery and management of public health services and the regulation of health care providers and private health facilities. They deliver public hospital services and a wide range of community and public health services. For example, some state and territory government-funded organisations provide school dental care and dental care for low income

earners, with other dental care being delivered in the private sector without government funding. Local governments within states deliver most environmental health programs.

Public hospitals, which provide the majority of acute-care beds, are funded by the Australian, state and territory governments, in addition to receiving revenue from services to private patients. Large urban public hospitals provide most of the more complex types of hospital care such as intensive care, major surgery and organ transplants, as well as non-admitted patient care. Many public hospitals have their own pharmacies which provide medicines to admitted patients free-of-charge and do not attract direct Australian Government subsidies under the Pharmaceutical Benefits Scheme (PBS). The Australian Health Care Agreements provide for reforms to the pharmaceutical arrangements. Where a state or territory enters into a reform agreement with the Australian Government, under some circumstances pharmaceuticals provided to non-admitted and same-day patients may be charged to the PBS. The reforms also provide for admitted patients to receive up to one month's supply of pharmaceuticals on discharge from hospital, paid by the PBS rather than the hospital.

A small number of doctors and paramedical professionals are salaried employees of the various tiers of government. Many salaried specialist doctors in public hospitals are able to treat some private patients in hospital and usually contribute to the hospital a portion of the income earned from fees charged. Other doctors may contract with public hospitals to provide medical services.

### Private sector role

The private sector, operating in the delivery of, and insurance for, health services, receives both direct and indirect government subsidies. Within this sector, organisations operating for profit and not-for-profit play a significant role in providing health services, public health and health insurance. For example, privately-owned nursing homes provide the majority of long-term aged-care beds.

The private sector's share of surgical episodes requiring the use of an operating room was 55.8% in 2004–05, compared with 55.5% in 2003–04. This sector includes a large number of doctors and paramedical professionals who are self-employed, generally providing services such as general practice and specialist services, diagnostic imaging, pathology and physiotherapy.

Most prescribed pharmaceuticals dispensed by private sector pharmacies are directly subsidised by the Australian Government through the PBS. A component of the Australian health-care system is private health insurance, which can cover part or all of the hospital charges to private patients directly, a portion of medical fees for services provided to private admitted patients in hospitals, paramedical services, some dental services and some aids such as spectacles. The Australian Government subsidises private health insurance premiums through a 30% rebate. The rebate was increased in April 2005 to 35% for people aged 65–69 years and to 40% for people aged 70 years and over.

### National health care system

There are five major kinds of Australian Government health funding mechanisms:

- grants to state and territory governments under the Australian Health Care Agreements to assist with the cost of providing public hospital services
- medical benefits, providing patients with rebates on fees paid to privately practising doctors, optometrists and other allied health practitioners
- pharmaceutical benefits, through the PBS, providing patients with access to a broad range of subsidised medicines
- health program grants to government and non-government service providers for a range of health services (e.g. radiation oncology (capital component), pathology and primary medical services) – health program grants are used to achieve health policy objectives such as improving access for specific population groups, influencing the growth and distribution of selected and potentially high-cost services, or providing an alternative to fee-for-service arrangements, such as Medicare and the PBS
- the private health insurance rebate for private health insurance.

Diagram 9.39 shows the major flows of funding between the government and non-government sectors, and the providers of health goods and services.

### Medicare

Medicare is Australia's universal health insurance scheme. Introduced in 1984, its three objectives are to make health care affordable for all

Australians, to give all Australians access to health-care services, and to provide a high quality of care.

### Medicare benefits

Medicare benefits provide financial assistance to people who incur medical expenses for selected professional services rendered by medical practitioners, participating optometrists, practise nurses, dentists and other allied health professionals. Medicare benefits are based on a schedule of fees.

Practitioners are not required to adhere to the Schedule fee, except for optometry, which is a participating scheme under which practitioners sign an undertaking to charge no more than the Schedule fee for the services they perform.

Where practitioners bulk bill Medicare Australia, they receive the Medicare rebate, and they cannot levy additional charges on the patient.

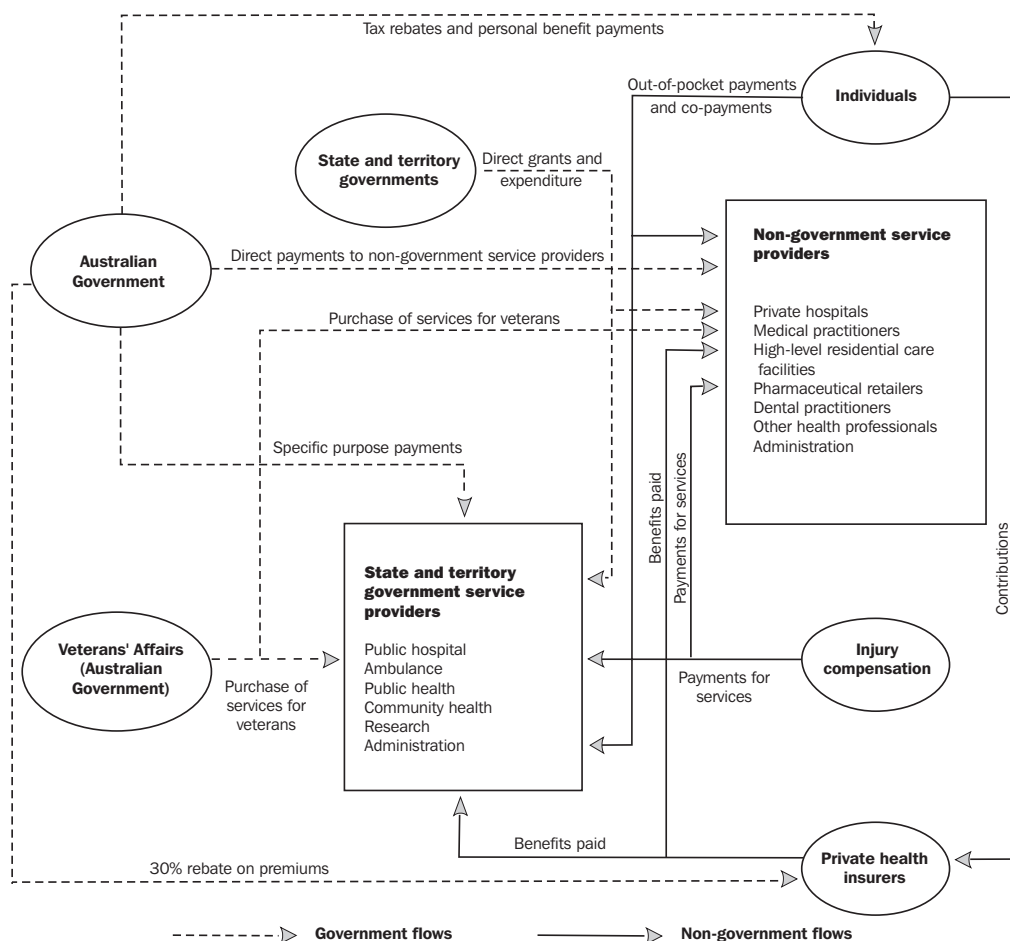
Medicare benefits do not cover services to public patients in public or private hospitals, services provided under Veterans' Affairs arrangements, some compensation cases, and some services provided under other publicly funded programs.

For private in-patients in hospitals or approved day surgeries, the Medicare benefit is 75% of the Schedule fee. Amounts paid in excess of the rebate may be claimed under private health insurance arrangements.

For non-hospital services, from 1 January 2005, the Medicare benefit is 100% of the Schedule fee for out-of-hospital non-referred (GP) attendances, including practice nurse items, and for all other out-of-hospital services, 85% of the Schedule fee or the Schedule fee less the maximum gap (\$61.50 from 1 November 2005 – indexed annually), which ever is greater.

With effect from 1 February 2004, additional benefits (from 1 November 2005 – \$5.15 and \$7.85) are paid to GPs as an incentive for bulk billing. The \$7.85 incentive applies to bulk-billed services provided by GPs, to persons under 16 years of age or concession card holders, to persons in Tasmania or in specified rural and remote areas and with effect from 1 September 2004, to a number of other geographical areas. The \$5.15 incentive applies to bulk-billed services provided by GPs to persons under 16 years of age or to concession card holders in other parts of Australia.

### 9.39 STRUCTURE OF THE AUSTRALIAN HEALTH CARE SYSTEM AND ITS MAJOR FLOW OF FUNDS



Source: Australian Institute of Health and Welfare, 'Health Expenditure in Australia 2003-04', AIHW Cat. No. HWE 32, AIHW, Canberra.

A number of 'safety net' arrangements apply for patient-billed services provided out-of-hospital. Under the original Medicare Safety net, when gap payments (fee charged less benefit paid and where fee charged is less than Schedule fee; or Schedule fee less benefit paid, where fee charged is at or above the Schedule fee) exceed \$345.50 for an individual or family in calendar year 2006, Medicare benefits increase to up to 100% of the Schedule fee for the remainder of the calendar year. Under the Extended Medicare Safety Net, for Commonwealth concession card holders and families who receive Family Tax Benefit Part A,

once out-of-pocket costs (total fee charged less benefit paid) exceed \$500 in calendar year 2006, Medicare covers 80% of the out-of-pocket costs for the remainder of the year. For other singles and families, Medicare covers 80% of the out-of-pocket costs, once those costs have exceeded \$1,000 in calendar year 2006.

In 2005-06, the Health Insurance Commission paid benefits of \$10,976.3 million (m) (\$533.46 per person) for 247.4 million items of services (12.0 services per person).

#### 9.40 MEDICARE SERVICES PROVIDED AND BENEFITS PAID

	Services(a)		Benefits(b)	
	Total mill.	Per person no.	Total \$m	Per person \$
2001-02	220.7	11.2	7 829.5	398.63
2002-03	221.4	11.1	8 115.5	408.38
2003-04	226.4	11.3	8 600.0	428.04
2004-05	236.3	11.6	9 922.9	488.12
2005-06	247.4	12.0	10 976.3	533.46

(a) Increases in services over time reflect structural changes to the Medicare Benefits Schedule, changes in service provision (services previously provided by state and territory governments under grant arrangements now covered by Medicare), population growth, ageing, etc. (b) In current prices.

Source: Health Insurance Commission, 2006 unpublished.

### Medicare levy

When Medicare began in 1984, a levy was introduced as a supplement to other taxation revenue to enable the Australian Government to meet the additional costs of the universal national health care system, which were greater than the costs of the more restricted systems that preceded it.

The Australian Taxation Office estimated revenue raised from the Medicare levy in 2004-05 to be \$6.1b which represents 17.2% of estimated total Australian Government health expenditure for the year.

### Pharmaceutical benefits scheme (PBS)

The Australian Government provides Medicare-eligible people with affordable access to a wide range of necessary and cost-effective prescription medicines through the PBS. The following details relate to charges and 'safety net' levels applying at 1 January 2006.

Medicare-eligible patients who do not hold a Health Care Card, Pensioner Concession Card or Commonwealth Seniors Health Card, are required to pay up to the first \$29.50 for each prescription item for medicines listed on the PBS. Concessional patients who hold a concession card must pay \$4.70 per prescription item.

Individuals and families are protected from large overall expenses for PBS-listed medicines by safety nets. For general patients (non-cardholders), once the eligible expenditure of a person and/or their immediate family exceeds \$960.10 within a calendar year, the additional payments the patient has to make per item (co-payment) decreases from \$29.50 to the concessional co-payment rate of \$4.70.

For concessional and pensioner patients (cardholders), once their total eligible expenditure exceeds \$253.80 within a calendar year, any further prescriptions are free for the remainder of that year. All pensioners continue to have their pensions supplemented by a pharmaceutical allowance of \$2.90 per week payable fortnightly, or \$150.80 per year, to help defray their out-of-pocket pharmaceutical expenses. The allowance is not paid to other concessional beneficiaries.

Patients may pay more than the relevant co-payment in certain circumstances. A *special patient* contribution is payable for a pharmaceutical benefit where there is a disagreement between the manufacturer and the Government over the dispensed price for that benefit item. This extra charge is paid by all patients, together with their usual patient contribution.

- In the case of *brand premiums*, the Government subsidises on the basis of the lowest priced drug, and any difference in price due to a brand premium must be met by the patient. The premium cannot be counted towards the patient's safety net. There is always one brand of a drug available on the PBS that does not have a brand premium.
- Under the *therapeutic group premium* arrangements, the Government reimbursement to pharmacists is based on the lowest priced benefit items within identified therapeutic groups. Patients pay the difference for higher priced items. Exemptions on medical grounds are available.
- For other *special patient contributions*, although some medicines in reference pricing groups deliver similar health outcomes, they may not be interchangeable for patients. Unlike products with brand and therapeutic group



premiums, patients may not be able to avoid the additional costs by taking another medicine. Where the prescribing doctor believes that there is no clinically appropriate alternative, the Government will pay the special patient contribution on behalf of the patient for most of the drugs with these patient paid charges.

In 2005–06 the PBS had 168.3 million benefit prescriptions, representing a cost to the Government of \$6,163.1m (table 9.41).

The number of PBS subsidised prescriptions per person in 2005–06 was 8.2, compared with 8.3 in 2004–05. The number of subsidised prescriptions decreased by 1.1% over the previous year, and the cost to Government of these prescriptions grew by 2.7% (in current dollars).

The rate of change in prescription numbers and their cost reflects the ongoing trend towards newer and more costly medicines.

## Private health insurance

At 30 June 2006 private health insurance was offered by 38 registered health insurers, giving a voluntary option to all Australians for private funding of their hospital and ancillary health treatment. It supplements the Medicare system, which provides a tax-financed public system that is available to all Australians. Depending on the type of cover purchased, private health insurance provides cover against all or part of hospital theatre and accommodation costs in either a public or private hospital, medical costs in hospital, and costs associated with a range of

services not covered under Medicare including private dental services, optical, chiropractic, home nursing, ambulance and natural therapies. Overall, the private health sector funds around a third of all health care in Australia.

## Health insurance coverage

The introduction of Medicare in 1984 resulted in Australians’ participation in private health insurance steadily declining. The introduction of the Australian Government 30% rebate on private health insurance in 1999, and the Government’s Lifetime Health Cover policy in 2000, saw participation in private hospital cover increase strongly, with participation rates rising from 31% in June 1999 to 46% in September 2000. Rates appear now to have stabilised, with a participation rate of 43% for the three months ending June 2006 (graph 9.42).

## Funding of hospitals

Australian Government funding to the state and territory health systems is made through the Australian Health Care Agreements.

In 2005–06 total Australian Government funding under the Australian Health Care Agreements was around \$8.4b. Of this amount, over 99% was paid to the states and territories as Health Care Grants, while the residual was either allocated to national initiatives in areas of mental health, palliative care and casemix development, or paid to those states and territories which were eligible to receive financial assistance from the Pathways Home initiative.

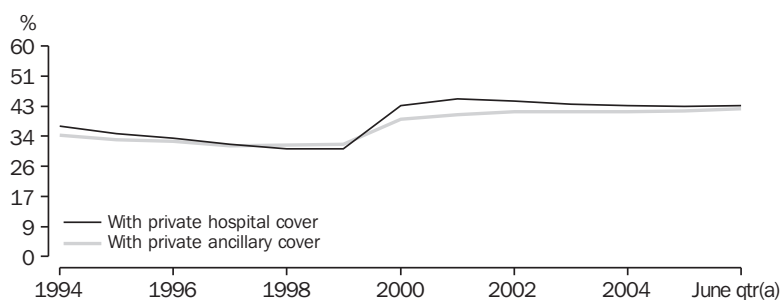
9.41 PBS, Subsidised prescriptions(a)

Year	Government cost(b)	Script volume(c)	Average Government cost per script(c)	Average patient cost per script(c)(d)	Subsidised prescriptions per capita(c)
	\$m	mill.	\$	\$	no.
2001–02	4 578.1	154.5	27.08	5.21	7.9
2002–03	5 054.7	158.5	28.84	5.40	8.0
2003–04	5 607.5	165.4	30.17	5.67	8.2
2004–05	6 001.2	170.3	31.16	6.11	8.3
2005–06	6 163.1	168.3	32.05	6.67	8.2

(a) In current prices. (b) PBS Government cost is reported on an accrual accounting basis. Categories included are expenditure for Section 85 drugs (Concessional and General), Emergency (Doctor’s Bag) Drugs, Highly Specialised Drugs, Section 100 drugs and issue costs of Safety Net cards. (c) All other information is sourced from the relevant Pharmaceutical Benefits Branch publications ‘Expenditure and prescriptions twelve months to...’ and is reported on a cash basis. The data only relate to Concessional, General and Doctor’s Bag categories. (d) Average patient cost per script is based on patient co-payments. However, this does not include the cost of patient purchase of medicines that fall below the co-payment level or on private (non PBS) prescriptions.  
 Note: Payments for IVF Centre Hormones, Human Growth Hormones, Aboriginal Health Services, and prescription medicines subsidised by the Government under the Repatriation Pharmaceutical Benefits Scheme which is administered by the Department of Veterans’ Affairs, are totally excluded.  
 Source: Health Insurance Commission Data; Commonwealth Department of Health and Ageing, Expenditure and Prescription, Pharmaceutical Benefits Branch, Canberra.



### 9.42 PERSONS WITH PRIVATE HEALTH INSURANCE, Proportion of total population



(a) For the three months ending June 2006.

Source: Private Health Insurance Administration Council, 'Annual Statistics, 1992-05' and 'Quarterly Statistics, June 2006'.

### Public hospitals

In 2004-05 there were 759 public hospitals nationally, including 20 psychiatric hospitals, compared with 749 in 2000-01. There was an average of 55,112 beds in public hospitals during 2004-05 (table 9.39), representing 68% of all beds in the hospital sector (public and private hospitals combined). Public hospital beds have increased from 2.7 beds per 1,000 population in 2000-01 to 2.8 beds in 2004-05.

The number of patient separations (discharges, deaths, and transfers) from public hospitals during 2004-05 was 4.3 million compared with just under 3.9 million in 2000-01. Same-day separations accounted for 49% of total public hospital separations in 2004-05 compared with 46% in 2000-01.

Total days of hospitalisation for public health patients during 2004-05 amounted to 16.7 million, an increase of 6% since 2000-01. The average length of hospital stay per patient in 2004-05 was 3.9 days. For 2000-01 the corresponding figure was 4.1 days, reflecting a steady increase in same-day patients up to 2004-05. If same-day patients are excluded, the 2004-05 average length of stay was 6.7 days which is the same as 2000-01.

### Private hospitals

There were 532 private hospitals in operation in 2004-05, comprising 285 private and acute hospitals and 247 free-standing day hospital facilities. The number of acute and psychiatric hospitals has decreased since 2000-01 when 299 of these hospitals were in operation. In contrast,

day hospital facilities have shown strong growth for several years, with only 217 in operation in 2000-01.

For private acute and psychiatric hospitals during 2004-05, the average number of beds available was 24,346, lower than the previous year. This was mainly due to a decline in the average number of beds available in regions outside the capital cities. Between 2000-01 and 2004-05, the average number of beds available decreased by 0.5%. There were 1.3 private hospital beds available per 1,000 population in 2004-05. The average number of beds or chairs available at free-standing day hospital facilities (used mainly for short post-operative recovery periods) increased over the same five-year period by 8.6% to 1,833, reflecting the continued growth in the number of free-standing day hospitals.

Private hospital separations in 2004-05 totalled more than 2.8 million, of which 80% were from private acute and psychiatric hospitals and 20% from free-standing day hospital facilities. Same-day separations accounted for 63% of all private hospital separations (compared with 49% of public hospital separations). This higher proportion of same-day separations contributed to the lower average length of stay in private hospitals (2.6 days) compared with public hospitals (3.9 days) (table 9.43).

The average number of full-time equivalent staff employed at all private hospitals was 48,544 of whom 63% were nursing staff. Total operating expenditure for private acute and psychiatric hospitals during 2004-05 amounted to \$5,839m. Some 51% of this amount was spent on salaries and wages (including on-costs). Revenue received

during the year was \$6,249m, of which 95.6% was received as payments from, or in respect of, patients. Total recurrent expenditure for free-standing day hospital facilities during 2004–05 amounted to \$305m, and revenue received during the year was \$376m.

## Health work force

In 2005–06 approximately 421,200 people were employed in health occupations in Australia, comprising 4.2% of the total number of employed people (table 9.44). The largest components of

the health work force were registered nurses (165,300), generalist medical practitioners (38,800) and enrolled nurses (33,400).

Females comprised 73% of the health work force. The high proportion of females in the health work force is due to their predominance in registered midwifery (99%), enrolled nursing (93%), registered nursing (91%) and physiotherapy (60%). Conversely, males represented 79% of the ambulance officers and paramedics, 69% of specialist medical practitioners and 62% of generalist medical practitioners.

### 9.43 PUBLIC AND PRIVATE HOSPITALS — 2004–05

	Units	Public(a)	Private(b)	Total
Bed supply				
Facilities	no.	759	532	1 291
Beds/chairs(c)	no.	55 112	(d)26 424	(d)81 536
Activity				
Total separations	'000	4 276	2 776	7 052
Same-day separations	'000	2 099	1 746	3 845
Total patient days	'000	16 662	7 337	23 999
Average length of stay	days	3.9	2.6	3.4
Average length of stay excluding all same-day separations	days	7.6	7.1	7.4
Average occupancy rate	%	82.8	(e)76.5	(e)80.9
Non-admitted patient occasions of service	'000	42 643	(e)1 780	(e)44 423
Staff (full-time equivalent)(c)	'000	212	49	261
Revenue	\$m	1 911	6 624	8 535
Recurrent expenditure	\$m	(f)21 758	6 144	27 902

(a) Acute and psychiatric hospitals. (b) Acute and psychiatric hospitals and free-standing day hospital facilities. (c) Annual average.

(d) Including beds, chairs, recliners at free-standing day hospital facilities. (e) Excluding free-standing day hospital facilities.

(f) Excluding depreciation.

Source: *Private Hospitals, Australia, 2004–05* (4390.0); Australian Institute of Health and Welfare, 'Australian Hospital Statistics 2004–05', AIHW Cat. No. HSE 41, AIHW, Canberra.

### 9.44 EMPLOYED PERSONS IN HEALTH OCCUPATIONS(a) — 2005–06

	Persons '000	Males %	Part-time workers %
Health professionals(b)			
Generalist medical practitioners	38.8	61.6	22.1
Specialist medical practitioners	24.5	68.5	13.6
Registered nurses	165.3	9.1	48.3
Registered midwives	13.3	*0.7	60.8
Physiotherapists	14.1	40.5	31.7
Other health professionals(b)	106.1	33.2	30.1
Health associate professionals			
Enrolled nurses	33.4	7.4	48.9
Ambulance officers and paramedics	10.0	79.1	*6.1
Aboriginal and Torres Strait Islander health workers	*1.2	*31.6	*22.7
Other health associate professionals	14.5	34.7	55.5
Total employed in health occupations(c)	421.2	26.7	38.3
Total employed in all occupations	10 042.1	55.0	28.6

(a) Annual average of quarterly data. (b) Includes health service managers; excludes veterinarians. (c) Includes health professionals, health service managers, health associate professionals.

Source: *Labour Force Survey* (6291.0.55.003) (Datacube E08).

Over a third (38%) of the health work force were employed on a part-time basis, compared with 29% of other employed people in Australia. Of people employed part time in the health work force, 91% were female, a higher proportion than in the total part-time work force (72%). Males constituted 9% of those working part time in the health work force compared with 28% of those working part time in the total work force. The higher proportion of part-time workers in the health sector is a reflection of the greater number of females in the health work force, who are more likely to work part time.

### Household expenditure on health and medical care

Average household expenditure on health and medical care increased steadily between 1984 and 2003–04. As a proportion of total household expenditure on goods and services, health and medical care increased from 3.9% in 1984 to 5.1% in 2003–04.

The Household Expenditure Survey (HES) provides estimates of expenditure on medical care and health by households across Australia. Expenditure is net of any refunds and rebates received from Medicare, private health insurance companies and employers. The ABS has undertaken the HES at five-yearly intervals since 1984. Average expenditure in this survey is calculated across all households, not just those households that spent money on specific goods or services.

Household expenditure on accident and health insurance accounted for the largest percentage of total average household expenditure on health and medical care in each of the survey periods. However, this percentage was lower in 2003–04

than in 1993–94 (39% compared with 50%) reflecting a decrease in the hospital, medical and dental insurance share of total health expenditure (from 44% in 1993–94 to 34% in 2003–04), possibly as a result of the private health insurance rebate.

While the proportion of household health expenditure spent on health practitioners' fees has been similar in each survey since 1984, expenditures on individual items have varied. In particular, general practitioner doctors' fees were higher at 3.8% of total health expenditure in 1984 compared with 3.5% in 2003–04, while specialist doctors' fees were lower at 3.9% compared with 9.3% in 2003–04.

The proportion of total health expenditure spent on medicines, pharmaceutical products and therapeutic appliances increased from 20% in 1984 to 25% in 2003–04.

### Total health expenditure

Health expenditure in Australia includes expenditure funded by the Australian, state and territory governments, by private health insurance and by individuals and households. Total expenditure on health in 2004–05 was \$87.3b compared with expenditure of \$79.1b the previous year (table 9.45). This represented an average rate of health expenditure in 2004–05 of \$4,319 per person. In 2004–05 governments combined provided just over two-thirds (68%) of the total funding for health expenditure. Health expenditure in volume terms, that is after adjustment for changes in prices, grew at an average annual rate of 5.3% between 1994–95 and 2004–05. In 2004–05 total health expenditure as a proportion of gross domestic product (GDP) was 9.8% compared with 8.1% in 1994–95.

9.45 TOTAL HEALTH EXPENDITURE

	Expenditure		Annual change		Total health expenditure as a proportion of GDP
	Current prices(a)	Volume measures(b)	Current prices	Volume measures(b)	
	\$m	\$m	%	%	%
2000–01	61 618	68 361	12.2	8.2	8.9
2001–02	67 132	72 069	8.9	5.4	9.1
2002–03	73 108	75 720	8.9	5.1	9.3
2003–04	79 114	79 114	8.2	4.5	9.4
2004–05	87 296	83 804	10.3	5.9	9.8

(a) Comprises allocated recurrent expenditure, unallocated recurrent expenditure, capital expenditure/outlays and capital consumption. (b) Reference year is 2002–03.

Source: Australian Institute of Health and Welfare, 'Health Expenditure in Australia 2003–04', AIHW Cat. No. HWE 32, AIHW, Canberra.

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# Life satisfaction and measures of progress

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Measuring a nation's progress is one of the most important tasks that a national statistical agency can take on. For over 100 years, the Australian Bureau of Statistics (ABS) has been measuring Australia's progress through the multitude of statistics published relating to Australia's economy, society and environment. However, for the most part, statistical publications have tended to focus on each of these three broad areas in isolation.

The ABS's *Measures of Australia's Progress* (1370.0) (MAP) was first published in 2002. It looks beyond the aggregate measure of economic activity, gross domestic product (GDP), which has traditionally been a key measure of national progress, and presents a suite of indicators relating to aspects of Australian life across the economy, the environment and society. Within these broad areas, dimensions of progress encompass national income, wealth and productivity, the quality of the environment, the wellbeing of the population in terms of health, education, work, housing and economic resources, and the way people live together in society.

More specifically, MAP presents 14 headline indicators across 14 headline dimensions of progress (some dimensions have more than one headline indicator while others have none). In addition, supplementary indicators are presented for the headline dimensions, and five supplementary dimensions of progress are included. The full suite of indicators provides the statistical evidence to allow the assessment of progress by readers – those who formulate and evaluate policy, researchers and the community.

While life satisfaction, or subjective wellbeing, has not been included in MAP as a dimension of progress, there is increasing interest in this

area – to enable subjective aspects of wellbeing to be considered alongside the more traditional objective measures.

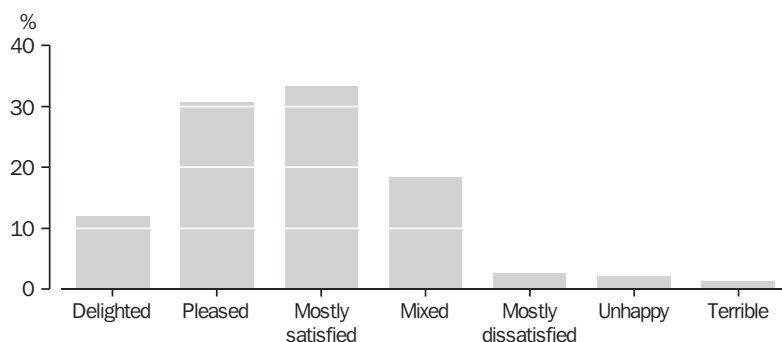
## Measuring life satisfaction

Some would argue that just as important as knowing whether aspects of life (such as health, education and economic growth) in Australia are improving, is knowing whether people actually feel that their wellbeing has improved, that is whether they are actually happier or more satisfied with their lives. In recent years there has been an interest in people's opinions and feelings about their lives and how this relates to an understanding of national wellbeing.

Progress is closely related to the concept of wellbeing, with the idea that enhanced population wellbeing is one of the outcomes of improving life in Australia. The indicators presented in MAP tend to focus on the more objective elements of wellbeing, that is the conditions and aspects of people's lives and the society they live in. Public policy tends to be aimed at improving or enhancing these conditions. However, improving particular living conditions will not necessarily make a person happier or more satisfied, as people place greater or lesser importance on different aspects of their lives (and on life in Australia generally) and in many instances these aspects are in competition with one another.

The ABS collected some information on people's overall life satisfaction in the 2001 National Health Survey (NHS). When asked about how they felt about their lives as a whole, 76% of Australian adults indicated they were delighted, pleased or mostly satisfied with their lives. Less than 6% of people indicated that they felt mostly dissatisfied, unhappy or terrible about their lives (graph S9.1).

**S9.1 LEVELS OF LIFE SATISFACTION(a) — 2001**



(a) Persons aged 18 years and over.

Source: ABS data available on request, 2001 National Health Survey.

There is no established long-term time series of life satisfaction (or happiness) statistics in Australia, although findings from various surveys conducted since the 1950s have produced results within a fairly narrow range, that is average life satisfaction of around 6.5 to 7.5 on a scale of one to ten, indicating general satisfaction with their lives. This is despite the many changes in the social, economic and environmental conditions of Australian's lives during these decades. Surveys in other Western countries have produced similar results. For these reasons, many researchers in this area agree that measures of overall life satisfaction and happiness are most useful when analysed in conjunction with other data about people's quality of life or life circumstances.

There are still many challenges in understanding the nature and quality of these life satisfaction measures and how they relate to the social and economic conditions and outcomes which shape Australian life. For these reasons, it is not clear, as yet, that any particular measure of life satisfaction would meet the criteria for inclusion as an indicator of progress in MAP. However, the ABS acknowledges that there is growing interest in life satisfaction (or happiness) as an important aspect of life in Australia. The following sections outline some of the recent research into life satisfaction and the issues associated with its measurement so that readers can consider how Australians' feelings about their lives might relate to the picture of progress.

## Life satisfaction, happiness, and how they are measured

Notions of happiness and life satisfaction are concerns for a wide range of disciplines, including economics, psychology, sociology, neuroscience and public policy. Psychologists often distinguish between the two concepts, with happiness relating to the more temporal concept of positive affect (i.e. positive mood, feelings of pleasure, joy, etc.) and life satisfaction constituting the more cognitive concept of an individuals' appraisal of his or her life situation overall – the totality of pleasures and pains, or quality of life. Life satisfaction and happiness both fall under the umbrella term 'subjective wellbeing' which relates to the way people feel about their lives. The term happiness is often used in a broader context (e.g. by economists in their discussion of 'utility') and in many fields, data on happiness and life satisfaction are used interchangeably, as are the terms themselves.

The most common method used to measure life satisfaction has been the use of survey questions asking people to report on their perceived levels of life satisfaction, for example, being asked questions such as 'All things considered, how satisfied are you with your life as a whole these days?'. Respondents are given a scale of between two and ten points against which to rate their level of satisfaction. In the 2001 NHS, the ABS used a seven-point scale with responses ranging from 'delighted' to 'terrible'. Some studies into life satisfaction ask people questions about whether they believe that circumstances have or will improve.



Others focus on people's level of satisfaction with particular aspects of their lives (such as work or family life) or with aspects of the society in which they live (such as the economy or the state of the environment).

## Interpreting measures of life satisfaction

Several characteristics of general human behaviour are believed to influence our sense of wellbeing. All of these characteristics have a regulatory effect on life-satisfaction levels (although this operates in very different ways for each) and, therefore, impact on the way data on life satisfaction can be interpreted and related to other aspects of people's lives, such as their social and economic circumstances. These are:

- *A natural tendency to feel good about ourselves and our lives*

While a person's happiness levels can fluctuate over time in response to changing circumstances, trauma or crises, there is a tendency for levels of overall life satisfaction in Western countries to return to a fairly narrow range clustered around 70 on a 100-point scale.

- *The ability to adapt to our circumstances, be they good or bad*

Just as our bodies can make physiological adjustments to things like heat or cold, it is believed that we adjust psychologically to both good or bad events so that we do not remain in a state of elation or despair. For example, studies in the 1970s and 1980s found that winning the lottery or suffering a spinal cord injury resulting in paraplegia or quadriplegia, did not significantly impact on people's levels of happiness over time. While the ability to adapt varies between individuals, it has also been found that, on average, some circumstances take longer to adapt to than others.

- *The tendency to compare ourselves with others, with our past circumstances, with our own aspirations, or some other benchmark*

This relates to the way that people make such comparisons and then judge their own wellbeing. If these comparisons favour an individual, they are more likely to express higher levels of life satisfaction than if the

comparison is an unfavourable one. A particular level of income may contribute to the satisfaction of someone who is well-off relative to those around them, but not to someone who is earning less than those around him or her.

- *The ability to make trade-offs*

As well as the ability to adjust our expectations to our circumstances or level of resources, people have the ability to change their preferences and/or the priorities they place on various aspects of their lives.

## Individuals and life satisfaction

What one person feels is important may not be so for someone else. This individual nature of life satisfaction contributes to many of the difficulties associated with its measurement, the ability to interpret measures, and the use of the findings to improve overall wellbeing at the societal level.

Analyses of the relationship between life satisfaction and various demographic, social and economic variables suggest that in many cases the relationship is not strong. Certain personality traits have been found to be strongly associated with high levels of life satisfaction or general happiness. Research (predominantly in the field of psychology) on the relationship between life satisfaction and individual characteristics has found the following are positively correlated with high levels of self-reported life satisfaction:

- extroversion
- optimism, adaptability
- high self-esteem
- the ability to set compatible goals and progress towards them
- the ability to understand and interpret the world
- a sense of meaning in life (or spirituality)
- a sense of personal control.

At the other end of the spectrum, neuroticism (or a tendency to worry) has been found to have a negative relationship with life satisfaction.

## International comparisons

While estimated levels of life satisfaction and happiness across the population have not changed greatly in many of the wealthier developed nations since the 1950s, these countries have sustained strong economic growth over the period. For example, in the United States of America, while measures of life satisfaction have remained around 70%, real GDP per person has more than doubled over the same period.

One major area of research in this area has been the comparison of levels of wellbeing and happiness across nations. Initiatives such as the World Bank's Human Development Index are designed to provide information on how quality of life differs across nations (with a view to improving it – particularly for developing nations), using a small set of data about the conditions of life in each nation. Other initiatives, such as the World Values Survey and the World Database of Happiness, attempt to provide an alternative view of wellbeing by focusing on subjective measures.

People from different cultures bring different meaning to the notions of life satisfaction and happiness based on differing cultural values, structures, histories and circumstances. This, combined with the individual nature of life satisfaction, are factors which should be considered when interpreting international comparisons of life satisfaction. Differences in survey conditions, methodologies, and response rates will also influence the reliability and interpretation of results.

The Erasmus University of Rotterdam's World Database of Happiness contains data on life satisfaction for 90 nations. These data have been collected at different times using a variety of survey methodologies. Overall life satisfaction scores collected from these countries in the 1990s ranged from 3.2 to 8.0 on a scale of one to ten. Australia's average score of 7.3 was among the highest scores. Countries such as the United Kingdom, New Zealand and the United States of America all have very similar levels of life satisfaction to Australia. There was a tendency for poorer countries to report lower levels of life satisfaction, and for levels to be higher as income increased (as measured by GDP per person, purchasing power parity), for levels up

to US\$15,000. Across countries where GDP per person exceeded this, satisfaction levels tended to be broadly similar.

A 1996 analysis of these measurements from the 1990s and other data relating to 48 countries found a range of characteristics were associated with high levels of life satisfaction. Examples of these included purchasing power, respect of civil rights, social participation, industrialisation, perceived freedom in life, literacy, tolerance, and participation in work. Conversely, characteristics associated with low levels of life satisfaction included high murder rates, lethal accidents, and incidence of corruption.

## Utility and wellbeing

In the past few years, economists have increasingly looked beyond conventional measures of growth to the field of psychology and subjective concepts when considering wellbeing in society. However, the focus on happiness as it relates to utility in economic theory dates back to the 18th century, evolving from debates around the role of public policy in maximising utility across society as a whole. Utility was defined as people's ability to meet their needs, and optimise their wellbeing. Conventional analysis has focused on income, which in turn reflects consumption possibilities, as its main determinant.

In 2004, the Australian Government Department of the Treasury produced a Wellbeing Framework. The framework draws on the early utility-based welfare economic theory that maximising aggregate utility corresponds to maximising societal wellbeing. The Treasury's Wellbeing Framework comprises five dimensions:

- the level of opportunity and freedom that people enjoy (i.e. the capacity to choose the lives they want to live)
- the level of consumption possibilities (i.e. people's command over resources to obtain goods and services to satisfy their needs and wants)
- the distribution of consumption possibilities (i.e. the spread of all aspects of consumption across the population, including across different groups in society, across different geographic regions and across generations)

- the level of risk people are required to bear (which optimally should match their risk preferences)
- the level of complexity people are required to deal with (with an emphasis on matching this to community preference so that opportunities are not limited by it).

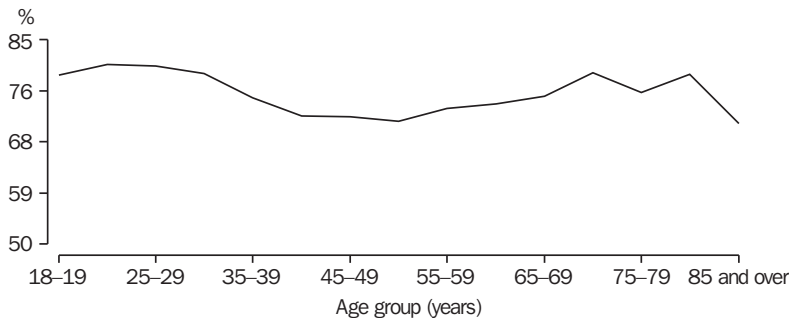
# Life satisfaction and dimensions of progress

In describing the social, economic and environmental aspects of Australian life, it is natural that many of the indicators included in MAP focus on particular aspects of life that are 'of fundamental and direct importance to human wellbeing'. Studies over the years have found that many social and economic characteristics are partially correlated with self-reported wellbeing. Some of these relationships are evident when looking at life satisfaction data collected in the 2001 NHS, specifically the proportion of people who reported that they were satisfied with their lives, that is, they indicated they were

delighted, pleased or mostly satisfied with their lives. As noted earlier, on average, 76% of Australian adults fell into this category. The proportion of people who were satisfied with their lives remained above 70% across all age groups. More people in their 20s reported they were satisfied with their lives than for any other age group, while those aged between 35 and 64 years were less likely than average to indicate satisfaction with their lives. Those aged 85 years and over were the least likely of all age groups to indicate they were satisfied (71%) (graph S9.2).

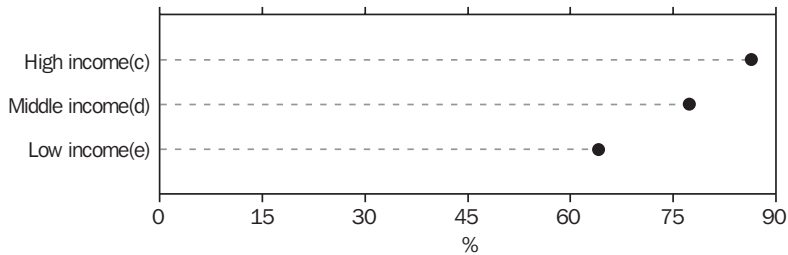
Conventional economic analysis of wellbeing (or utility) often assumes level of income as the prime determinant of wellbeing for individuals within society. In MAP, low income is identified as a key indicator for economic hardship. Taking into account the age structures of different income groups, 64% of people in the low income group felt delighted, pleased or mostly satisfied with their lives in 2001, compared with 77% of people in the middle income group, and 86% of people in the high income group (graph S9.3).

**S9.2 PROPORTION OF PERSONS WHO WERE SATISFIED WITH THEIR LIVES(a) — 2001**



(a) Persons aged 18 years and over who felt delighted, pleased or mostly satisfied with their lives.  
Source: ABS data available on request, 2001 National Health Survey.

**S9.3 PROPORTION OF PERSONS WHO WERE SATISFIED WITH THEIR LIVES(a)(b), By equivalised incomes — 2001**



(a) Persons who felt delighted, pleased or mostly satisfied with their lives. (b) Age standardised. (c) People in the income units in the highest income quintile (9th and 10th deciles). (d) People in income units in the middle income quintile (5th and 6th deciles). (e) People in income units in the 2nd and 3rd income deciles.

Source: ABS data available on request, 2001 National Health Survey.

The quality of a person's close relationships is one factor that most researchers agree has a fairly strong association with high levels of subjective wellbeing. In 2001, 81% of people who were married felt pleased or mostly satisfied with their lives compared with 63% of people who were separated or divorced. Across all living arrangements, lone parents and the adult children living with them were the people least likely to feel pleased or mostly satisfied with life (60% and 64% respectively) (table S9.4).

Participation, be it social, educational or in the workforce has also been associated with higher levels of life satisfaction. In 2001, people who were employed and those with a vocational or higher education qualification had higher than average life satisfaction levels. Conversely, people who were unemployed were considerably less likely than the population as a whole to report that they were pleased or mostly satisfied with their lives (56%).

The Australian Council for Educational Research Longitudinal Survey of Australian Youth, also collects information on the life satisfaction of Australia's young people. Between 1999 and 2002, the survey found that of a group of young people who had been in Year 9 in 1995, those who were involved in full-time work, study or combination of both activities equating to a full-time load, consistently reported higher levels of life satisfaction than those whose total participation equated to a part-time load, or those not participating at all.

**S9.4 PROPORTION OF PERSONS WHO WERE SATISFIED WITH THEIR LIVES(a)(b), By selected characteristics — 2001**

	%
Married	80.6
Separated/divorced	63.1
Never married	71.7
Non-dependent child in couple family	78.0
Non-dependent child in one-parent family	63.6
Partner in couple, no children	82.0
Parents in couple families with children	75.3
Lone parents	59.9
Living alone	67.7
With a long-term health condition	74.6
No long-term health condition	82.6
With mental and behavioural problems	45.6
With high/very high levels of psychological distress	33.8
With a non-school qualification(c)	78.4
Without a non-school qualification(c)	72.5
Employed	79.7
Unemployed	56.2
Not in the labour force	68.1
All persons aged 18 years and over	75.7

(a) Persons who felt delighted, pleased or mostly satisfied with their lives. (b) Age standardised. (c) Non-school qualification refers to a vocational or higher education qualification.

Source: ABS data available on request, 2001 National Health Survey.

Health is also a key dimension of progress for individuals. While a higher proportion of people without long-term health conditions indicated they were pleased or mostly satisfied with their lives (83%) in the 2001 NHS than those who had long-term conditions (75%), differences were more evident in relation to indicators of mental health. Unhappiness is a symptom of many mental health conditions and so it can be expected that the presence of

mental illness would lead to a lowering of self-reported life satisfaction. In 2001, the proportion of people with mental and behavioural problems, and those with very high or high levels of psychological distress, who reported they felt pleased or mostly satisfied in life was below half – 46% and 34% respectively.

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## EDUCATION AND TRAINING

Education can occur within a variety of environments, some more formal than others. Typically, formal learning occurs within the distinct sectors of preschool, school, vocational education and training, and higher education. Structured learning within formal institutions is characterised by delivery that is systemic, planned and organised ahead of time, and which usually involves some evaluation of achievement. Many other kinds of structured learning can take place outside formal institutions and can continue after a person has completed schooling or gained trade or higher qualifications. For instance, structured learning might be undertaken in the workplace, in order to acquire, develop or upgrade work-related skills. Non-formal education, while intentional, is delivered in an informal and unstructured way, on an ad hoc basis. It does not necessarily involve any student-teacher relationship or evaluation of achievement. Non-formal education includes on-the-job training and self-directed learning.

Primary, secondary, and preschool education involved around 4 million students and staff in August 2005. The education industry contributed 4.6% of Australia's gross domestic product in 2004–05 and 7% of employed persons in May 2005.

Core measures of educational activity in Australia currently focus on participation (the process of education), attainment (the outputs, whether a qualification or not) and educational resources (the inputs, such as funding and human resources). The structure of this chapter reflects these core measures. After a brief discussion of government responsibilities in education, the chapter describes the hierarchy of participation from preschool through to higher education. It then examines educational participation and attainment, and concludes with information on sources of educational funding.

The chapter concludes with the article *Skilling mature age Australians for work*.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.



## Government responsibilities in education

State and territory governments' responsibilities in education and training include: the constitutional responsibility for providing schooling to all school-aged children; the major financial responsibility for government school education and contributing funds to non-government schools; and regulating school activities and policies. They determine curricula, course accreditation, student assessment and awards for both government and non-government schools. They are responsible both for the administration and major funding of vocational education and training (VET), and for legislation relating to the establishment and accreditation of higher education courses.

The Australian (Commonwealth) Government has special responsibilities in education and training for Aboriginal and Torres Strait Islander peoples, migrants, international partnerships in education, and financial assistance for students. It is principally responsible for funding non-government schools and higher education institutions, and provides supplementary funding for government schools and VET.

The Australian Government provides special grants to the states and territories for areas of particular need. It also promotes national consistency and coherence in the provision of education and training across Australia. In early-2006 the first of the 25 planned Australian Technical Colleges (ATCs) was opened. ATCs are Australian Government funded schools that offer school-based apprenticeships concurrently with the senior (Years 11–12) school curriculum.

Government responsibilities in education and training extend beyond funding and administration. They have broader responsibility to plan for future demand both for education resources and for particular skills in the Australian workforce. Governments are also responsible for monitoring the performance of education services, and evaluating the outcomes of education.

## Early childhood education

Early childhood education in Australia encompasses both the preschool sector, and the skills development of children aged from 6 months to 3–4 years. A number of studies at the domestic and international level have noted the lower educational assets of older children who did not participate in some formal early childhood program. Research also indicates that all children are at the peak of their learning potential at ages 1–3 years. This has prompted various educational providers to introduce formal programs to maximise the uptake of basic skills in the 1–3 years age cohort. Such programs aimed at raising children's readiness for school, are generally available in child care or family day care centres.

### Preschool students

Preschool generally refers to education that is provided for children from 3 years of age to school starting age. In June 2005, according to the triennial Child Care Survey, conducted by the Australian Bureau of Statistics (ABS), 62% of 4 year olds attended preschool (graph 10.1).

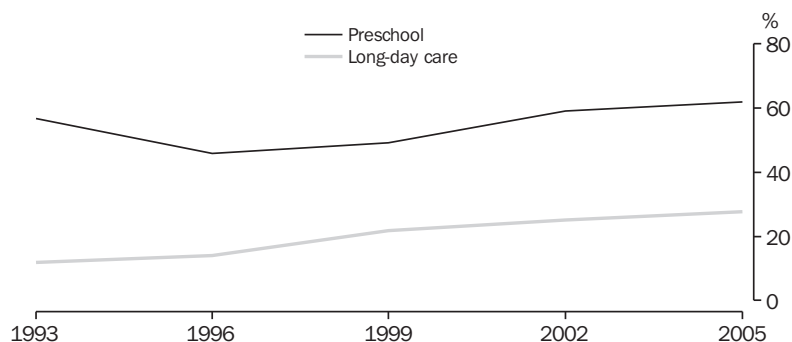
The responsibility for providing preschool education rests with individual states and territories. Preschools may be operated by government, community organisations or the private sector. They are largely sessional and normally only operational during school terms. Preschool programs may also be provided in long-day child care centres.

The age at which children may attend preschool varies across jurisdictions, reflecting the different school commencement ages. The 2002 and 2005 Child Care Surveys showed 62% of preschoolers were aged 4 years at the time of the surveys.

### Indigenous preschool students

The National Preschool Census (NPC), is conducted annually for the Australian Government Department of Education, Science and Training. The scope of the NPC is all 3–5 year olds attending preschools which are registered providers and have a preschool educational program. The NPC provides a basis for the allocation of Australian Government funding to preschools in which Indigenous students are enrolled.

### 10.1 PARTICIPATION OF FOUR YEAR OLDS — June



Note: Some children will be included in both categories.

Source: *Child Care, Australia, 2005 (4402.0)*.

In 2005, 9,019 Indigenous children were enrolled in government and non-government preschools, representing 4% of total preschool enrolments. Of these enrolments 31% were in New South Wales. Between 2004 and 2005, the number of Indigenous children enrolled in preschools decreased slightly, while non-Indigenous enrolments increased by 4% (table 10.2).

## Primary and secondary education

### School attendance

Schooling in most states and territories begins with a preparatory or kindergarten year, followed by six or seven primary year levels. Secondary schooling then involves a further six or five years to complete a full course of school study. Although primary and secondary schools are mostly separate institutions, there are some central, combined or area schools which provide

both levels of study. In Tasmania and the Australian Capital Territory, the final two years (Years 11 and 12) of government secondary schooling are available at separate secondary colleges.

School attendance is compulsory throughout Australia between the ages of 6 and 15 years (16 years in Queensland, South Australia, Western Australia, and Tasmania). Most children start primary school at around 5 years of age. The final two years of secondary schooling generally fall outside the ages of compulsory education. Despite this, 88% of the cohort of students who entered secondary school in 2000 or 2001 (depending on the state or territory of schooling) continued on to Year 11 in 2004, and 75% continued to Year 12 in 2005. While part-time attendance is rare below the senior secondary years, up to one-third of Year 12 students in some jurisdictions are defined as part time. Similarly, while most school staff are full time, a sizeable group work part time.

### 10.2 INDIGENOUS PRESCHOOL ENROLMENTS

	2003	2004	2005
New South Wales	2 694	2 672	2 773
Victoria	559	535	523
Queensland(a)	896	862	738
South Australia	1 114	1 148	1 047
Western Australia	1 834	—	1 905
Tasmania	331	341	356
Northern Territory	1 535	1 544	1 543
Australian Capital Territory	88	95	134
<b>Total Indigenous enrolments</b>	<b>9 051</b>	<b>9 055</b>	<b>9 019</b>
Total non-Indigenous enrolments	211 627	205 004	212 653

(a) Some Queensland enrolments are excluded from the NPC. Consequently, Indigenous preschool enrolments are understated.

Source: *Department of Education, Science and Training, 'National Preschool Census'*.

## School organisation and operation

In Australia, schools are classified as either government or non-government. Government schools are those which are the direct responsibility of the Director-General (or equivalent) of Education within each state or territory and receive the majority of their funding from the relevant state or territory government. Non-government refers to all other institutions delivering school education. They operate under conditions determined by state and territory government regulatory authorities and also receive Australian, and state or territory government funding.

Although each state and territory has its own approach to schooling, ongoing negotiations between the state and territory jurisdictions and the Australian Government are aimed at standardising core education curriculum modules (such as mathematics, science and English) and the age of commencement of students. The expectation is that these changes will ensure that all Australian children have access to 13 years of schooling, on a comparable basis, transferable across the respective states and territories.

Schools in Australia generally have considerable autonomy. Most states and territories have regional administrations which are responsible for matters such as planning school buildings and deploying staff, while a central curriculum unit provides general guidelines on course planning. Individual schools typically determine teaching and learning approaches within the given guidelines, and offer various course options. Assessment of students varies across states and territories, some having a completely school-based assessment system, while others combine school-based assessment with external examinations.

## Primary schooling

The main emphasis in early primary school is on the development of basic language and literacy skills, simple arithmetic, moral values and social education, health training and personal development, and some creative activities.

In upper primary school, the focus is on developing the skills learned in earlier years. English, mathematics, social studies, science, music appreciation, art and craft, physical

education and health are studied. There are also optional subjects such as religious instruction, foreign and community languages, and specific music courses.

## Secondary schooling

In some jurisdictions the first one or two years of secondary school consist of a general program which is undertaken by all students, although there may be some electives. In middle secondary years, a basic core of subjects is retained, with students able to select additional optional subjects. In other jurisdictions, students select options from the beginning of secondary school.

In senior secondary schooling, Years 11 and 12, a wider range of subject options is available in the larger schools. Individual schools increasingly develop courses suited to the needs and interests of their students, subject to accreditation and moderation procedures. Vocational programs are included in the senior secondary curriculum in all jurisdictions. School students may obtain VET certificates and undertake apprenticeships in the VET sector as part of their senior school study, undertaking some parts of these programs in the workplace.

Students reaching the minimum school leaving age may leave school and seek employment, or enrol in a vocational course with a VET institution, such as a technical and further education (TAFE) college or a private business college. For many VET courses, completion of Year 10 is a minimum entry requirement. For those continuing to the end of secondary school, opportunities for further study are available at higher education institutions, VET institutions and other educational institutions. For students continuing to higher education, eligibility to undertake university courses is almost always based on satisfactory completion of a senior secondary school certificate (Year 12 qualification).

## Other schooling arrangements

Children may be exempted from attending a school if they live too far away from an appropriate institution or have a disability. These children receive tuition through various means, including distance education, School of the Air, and use of computer, facsimile, and satellite technologies.

Children of some Indigenous groups in remote areas of the Northern Territory, who live in small decentralised communities, receive schooling mainly in Homeland Learning Centres or Catholic Indigenous schools. They are taught by Indigenous teaching assistants supported by visiting teachers from established schools.

Boarding facilities are available at some non-government schools, mainly in cities and some larger towns. A small number of government schools, in particular those catering for groups such as Indigenous people, have residential hostels located close by.

Children may be home-schooled, if they have met the criteria set down by the relevant state or territory Department of Education. They must be enrolled as a student at a day school and be available when required for assessment against the regular school year curriculum.

Special instruction for physically and/or mentally disabled or impaired students or those with social problems is provided as 'special education' by government and non-government authorities. It may be provided in special classes or units in regular schools, by withdrawal from regular classes for periods of intensive assistance by specialist staff, or in specialist schools. Parents in all states and territories have also formed voluntary organisations to establish additional schools catering for their children's special needs. The

Australian Government provides funds to states and territories, non-government authorities and community groups to assist in the provision of services and upgrading of special education facilities.

### School students and teaching staff

There were 9,623 schools operating in Australia at the time of the August 2005 schools census, of which 72% were government schools. Both staff and student numbers are generally expressed as 'full-time equivalent' (FTE), which is calculated by adding the full-time equivalent of part-time staff or students to the respective full-time count. There were 156,600 FTE teaching staff employed in government schools (66% of all teachers) and a further 79,200 FTE employed in non-government schools (table 10.3).

The 3.4 million FTE students attending primary and secondary schools in August 2005 comprised 2.3 million (67%) in government schools, and 1.1 million (33%) in non-government schools. Between 1998 and 2005 the FTE number of students attending government schools increased by 5,900 (or less than 1%), while the number attending non-government schools increased by 143,300 (15%) over the period. Since 2001, enrolments in government schools fell in the five-year period by 4,300, while enrolments in non-government schools rose by 82,200 FTE students (table 10.4).

**10.3 SCHOOLS, STUDENTS AND TEACHING STAFF — August 2005**

	Units	Government schools	Non-government schools			All schools
			Catholic	Independent	Total	
Schools	no.	6 929	1 698	996	2 694	9 623
Students (FTE)(a)						
Males	'000	1 157.3	337.2	215.3	552.5	1 709.8
Females	'000	1 098.3	336.1	214.8	550.9	1 649.2
Persons	'000	2 255.6	673.3	430.1	1 103.3	3 359.0
Teaching staff (FTE)(b)						
Males	'000	48.6	13.7	13.2	26.9	75.5
Females	'000	107.9	30.3	22.0	52.3	160.3
Persons	'000	156.6	44.0	35.3	79.2	235.8

(a) Full-time students plus full-time equivalent of part-time students. (b) Full-time teaching staff plus full-time equivalent of part-time teaching staff.

Source: ABS data available on request, National Schools Statistics collection, 2005.

#### 10.4 STUDENTS(a), By category of school — August

	2001 '000	2002 '000	2003 '000	2004 '000	2005 '000
Government schools					
Males	1 156.9	1 163.4	1 161.9	1 159.7	1 157.3
Females	1 103.0	1 105.4	1 103.1	1 100.6	1 098.3
Persons	2 259.9	2 268.8	2 265.0	2 260.2	2 255.6
Non-government schools					
Males	512.2	524.7	534.1	543.0	552.5
Females	508.9	521.4	531.3	540.7	550.9
Persons	1 021.1	1 046.2	1 065.4	1 083.6	1 103.3
All schools					
Males	1 669.0	1 688.1	1 696.0	1 702.6	1 709.8
Females	1 611.9	1 626.8	1 634.3	1 641.3	1 649.2
Persons	<b>3 280.9</b>	<b>3 314.9</b>	<b>3 330.3</b>	<b>3 343.9</b>	<b>3 359.0</b>

(a) Full-time equivalent students.

Source: ABS data available on request, National Schools Statistics collection.

Table 10.5 shows the FTE number of school students in 2005, at each year level and their distribution by category of school. Among all primary school students, 71% attended government schools and 29% attended non-government schools. At secondary level,

62% attended government schools and 38% attended non-government schools. A fifth of all school students attended Catholic schools (19% of primary school students and 21% of secondary school students).

#### 10.5 STUDENTS(a), By level/year of education — August 2005

	Government schools %	Non-government schools			All schools		
		Catholic %	Independent %	Total %	Males %	Females %	Persons '000
Primary							
Pre-year 1(b)	70.4	20.0	9.5	29.6	51.3	48.7	218.1
Year 1	70.8	19.5	9.6	29.2	51.4	48.6	265.1
Year 2	71.2	19.5	9.4	28.8	51.2	48.8	262.7
Year 3	70.5	19.7	9.8	29.5	51.2	48.8	253.7
Year 4	71.0	19.3	9.7	29.0	51.2	48.8	266.7
Year 5	70.6	19.1	10.3	29.4	51.2	48.8	271.9
Year 6	70.4	18.9	10.7	29.6	51.2	48.8	272.2
Year 7 (Qld, SA, WA, NT)	71.3	16.0	12.7	28.7	51.5	48.5	106.6
Ungraded	90.2	1.7	8.1	9.8	68.1	31.9	16.5
Total	70.9	19.1	10.0	29.1	51.4	48.6	1 933.6
Secondary							
Year 7 (NSW, Vic., Tas., ACT)	61.5	23.4	15.2	38.5	50.9	49.1	166.5
Year 8	62.2	21.6	16.2	37.8	51.2	48.8	271.9
Year 9	62.5	21.3	16.2	37.5	50.9	49.1	271.5
Year 10	62.1	21.3	16.6	37.9	50.8	49.2	262.6
Year 11	61.3	21.0	17.7	38.7	48.8	51.2	232.8
Year 12	59.5	21.9	18.6	40.5	47.1	52.9	198.8
Ungraded	90.9	2.2	6.9	9.1	61.7	38.3	21.3
Total	62.1	21.3	16.6	37.9	50.2	49.8	1 425.4
<b>All students</b>	<b>67.2</b>	<b>20.0</b>	<b>12.8</b>	<b>32.8</b>	<b>50.9</b>	<b>49.1</b>	<b>3 359.0</b>

(a) Full-time equivalent students. (b) Pre-year 1 includes a small number of Queensland students engaged in a trial of Pre-year 1 education.

Source: ABS data available on request, 2005 National Schools Statistics collection.

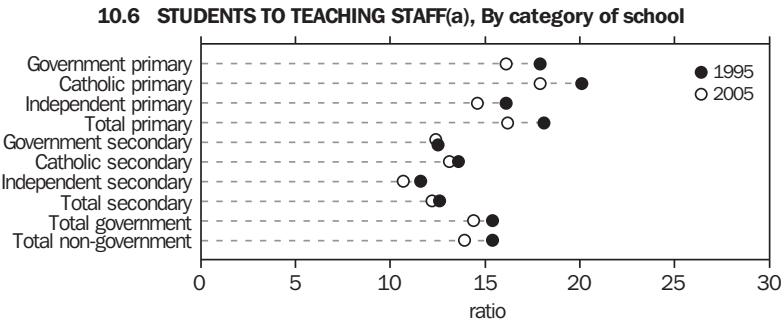
Graph 10.6 shows student/teacher ratios by category of school by level, in 1995 and 2005. These ratios represent the FTE number of school students divided by the FTE number of teaching staff. The most marked reductions in these ratios between 1995 and 2005 were the 10% decreases for primary schools – down overall from 18.1 students per teacher in 1995 to 16.2 in 2005. Among secondary schools, both Catholic and Independent schools showed decreases (from 13.6 to 13.1, and 11.6 to 10.7, respectively).

In 1995, both non-government and government schools had student/teacher ratios of 15.4. By 2005 these had decreased to 13.9 for non-government schools, and to 14.4 in government schools.

### Apparent retention rates

Apparent retention rates are regarded as important measures of the performance of education systems and related government policies. The apparent retention rate is an estimate of the proportion of students of a given cohort who continued to a particular level or year of education. In 2005 the apparent retention rate of full-time secondary school students from Year 7/8 to Year 12 was 75%. As in previous years, the 2005 apparent retention rate to Year 12 for female students was higher (81%) than the corresponding rate for male students (70%).

Table 10.7 shows apparent retention rates from Year 10 to Year 12 only, calculated for actual student numbers.



(a) Number of full-time equivalent students divided by the number of full-time equivalent teaching staff.

Note: This graph should not be used as a measure of class size.

Source: ABS data available on request, National Schools Statistics collection.

10.7 APPARENT RETENTION RATES, From Year 10 to Year 12					
	2001	2002	2003	2004	2005
	%	%	%	%	%
Full-time students					
Males	70.8	72.4	72.3	72.4	71.5
Females	80.1	81.7	81.6	82.3	81.6
Persons	75.4	77.0	76.9	77.2	76.5
Total students(a)					
Males	73.9	75.7	75.1	75.1	74.0
Females	84.9	86.9	86.4	86.9	85.7
Persons	79.4	81.3	80.7	80.9	79.8

(a) Includes part-time students.

Source: ABS data available on request, National Schools Statistics collection.

The apparent retention rates in 2005 of all students from Year 10 to Year 12 were 2.2 percentage points higher for males, and 2.1 percentage points higher for females, than in 1998. While both male and female retention have risen over this time, the difference between males and females remains at 12 percentage points (graph 10.8).

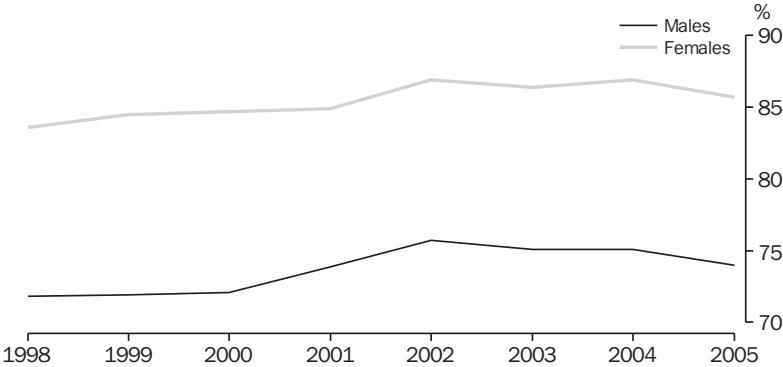
Care should be taken in interpreting apparent retention rates as their calculation cannot take into account a range of factors such as overseas migration, repeating students, mature age students, and other net changes to the school population.

### Indigenous school students

In August 2005 there were 88,634 Indigenous FTE students attending primary schools and a further 47,032 attending secondary schools (table 10.10).

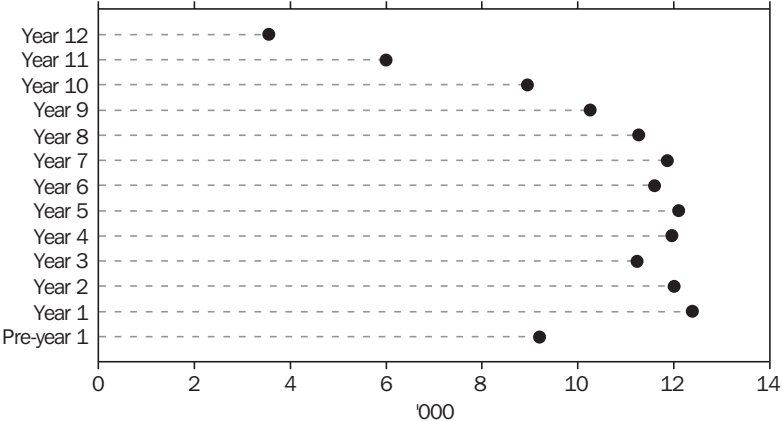
Graph 10.9 shows a decline in the number of Indigenous FTE school students at secondary school level, after Year 7. This decline is most marked from Year 10, and reflects leaving school at the end of compulsory education.

10.8 APPARENT RETENTION RATES FROM YEAR 10 TO YEAR 12, All students



Source: ABS data available on request, National Schools Statistics collection.

10.9 INDIGENOUS SCHOOL STUDENTS(a) — August 2005



(a) Full-time equivalent students.

Note: Excludes ungraded students.

Source: ABS data available on request, 2005 National Schools Statistics collection.



Table 10.10 shows a 21% increase in total Indigenous FTE enrolments between 2000 and 2005, with increases of 16% in primary and 33% in secondary schooling over that period. New South Wales and Queensland experienced the largest increases in Indigenous FTE student numbers, by 7,767 and 7,251 respectively. Indigenous FTE secondary students increased in every state and territory over the period, whereas Indigenous FTE primary school students increased in every jurisdiction, except the Northern Territory. The age profile of the Indigenous population differs markedly from the non-Indigenous population. At 30 June 2001, 39% of the Indigenous population was aged 0–14 years, compared with 20% of non-Indigenous persons.

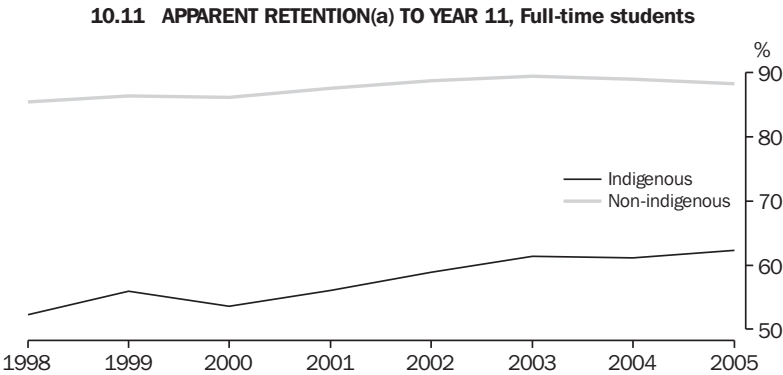
The apparent retention rate of Indigenous full-time students in secondary schooling increased between 1998 and 2005, but remains below that of non-Indigenous students. The

increased retention of Indigenous students has generally been more notable than for non-Indigenous students over this period, leading to a reduction in the difference between Indigenous and non-Indigenous retention rates.

During the period 1998 to 2005, retention of Indigenous full-time students to Year 10 has increased from 83% to 88% (non-Indigenous retention remained stable at 99%). Over the same period, Indigenous retention to Year 12 increased from 32% to 40%, compared with 73% and 77% for non-Indigenous retention. However, Indigenous retention to Year 11 (after which the minimum school leaving age has usually been reached), increased more markedly, from 52% to 62%. The gap between Indigenous and non-Indigenous retention to Year 11, narrowed from 33 percentage points in 1998 to 26 percentage points in 2005 (graph 10.11).

10.10 INDIGENOUS SCHOOL STUDENTS(a), By level of education — August									
Year	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
PRIMARY									
2000	21 235	3 950	21 235	4 791	12 209	2 747	9 980	550	76 697
2005	25 304	4 816	25 076	5 473	14 396	2 999	9 904	666	88 634
SECONDARY									
2000	11 179	1 949	9 571	1 756	5 025	1 861	3 618	334	35 292
2005	14 877	2 869	12 982	2 398	6 594	2 267	4 608	438	47 032
TOTAL									
2000	32 414	5 899	30 806	6 546	17 234	4 608	13 598	884	111 989
2005	40 181	7 684	38 057	7 871	20 990	5 266	14 512	1 104	135 666

(a) Full-time equivalent students.  
 Source: ABS data available on request, National Schools Statistics collection.



(a) Retention from the first year of secondary school in each state.  
 Source: ABS data available on request, National Schools Statistics collection.

# Vocational education and training (VET)

Most VET activity in Australia is undertaken in government-administered TAFE colleges or institutes. VET is also provided by some higher education institutions, secondary schools, agricultural colleges, adult and community education agencies, private providers of education (such as business colleges) and employers. VET providers offer programs for a wide range of purposes, ranging from recreation and leisure, through basic employment and educational preparation, to trades or advanced technical training, and para-professional and professional levels.

One of the continuing functions of VET is the establishment of partnerships between student, education institution and employer in relation to apprenticeships. In recent years these partnerships have extended beyond the traditional trades to encompass a much broader range of occupations and employers.

In 2005 there were 1,950 registered training organisations delivering publicly-funded VET. Of these, 63 were TAFEs, 11 were other government providers, 537 were community education providers and 1,339 were other providers (mainly private providers).

# Students and courses

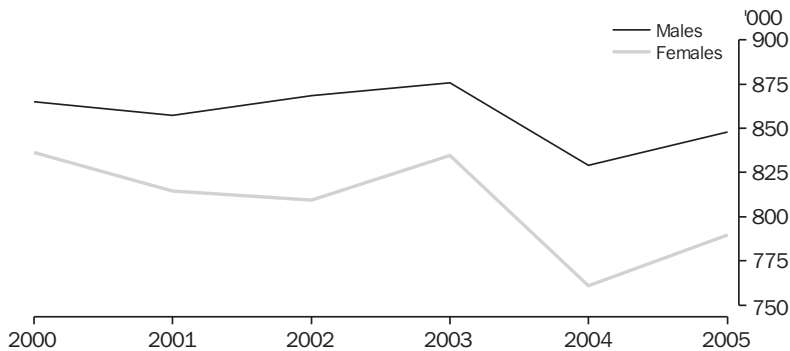
While VET student numbers increased between 2004 and 2005 (males by 2%, females by 4%), there has been an overall decline in student numbers between 2000 and 2005 (males by 2%, females by 6%) (graph 10.12).

During 2005, some 1.6 million students enrolled in a publicly-funded VET course, comprising 847,700 males and 789,500 females (table 10.13). Some 56% of VET students aged under 30 years were male, while females were the majority (52%) of VET students aged 30 years or more.

VET courses are classified according to specific fields of education on the basis of similar emphasis or subject matter orientation. Table 10.14 shows the number of course enrolments in 2005 in the twelve fields of education. Since students may be enrolled in more than one VET course, the number of course enrolments is greater than the total number of students. In 2005, there were 1.9 million course enrolments compared with 1.6 million students.

Some 20% of enrolments in vocational and preparatory courses in 2005 were in the Management and commerce field, while 17% were in Engineering and related technologies, and 10% in Society and culture. A further 16% of total enrolments were in Mixed field programmes.

10.12 VET STUDENTS



Source: National Centre for Vocational Education Research, data available on request, VET Provider Collection.

### 10.13 VET STUDENTS(a), Vocational and preparatory courses(b) — 2005

	Males	Females	Persons(c)
Age group (years)	'000	'000	'000
19 or under	215.1	169.1	384.2
20–24	157.0	115.6	272.9
25–29	88.0	74.3	162.5
30–39	150.6	146.6	297.7
40–49	118.2	147.0	265.8
50–59	73.0	83.2	156.5
60 and over	28.9	31.0	60.1
Not stated	17.0	22.7	41.6
<b>Total students</b>	<b>847.7</b>	<b>789.5</b>	<b>1 641.3</b>

(a) Includes all VET delivery by TAFE and other government providers, multi-sector higher education institutions, registered community providers and publicly-funded delivery by private providers. Fee-for-service VET delivery by private providers has been excluded. School students undertaking VET in schools have also been excluded. A student is an individual who was enrolled in a subject or completed a qualification at any time in 2005. (b) Courses leading to a vocational award. (c) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, 2005 VET Provider Collection.

Males made up a clear majority of enrolments in the education fields of Architecture and building (91%); Engineering and related technologies (90%); Agriculture, environmental and related studies (76%); and Information technology (63%).

Females were in the majority in the fields of Society and culture (73%); Management and commerce (64%); Education (61%); Creative arts (60%); Food, hospitality and personal services (59%); and Natural and physical sciences (57%) (table 10.14).

### Apprenticeships and traineeships

Of the 389,000 apprentices and trainees in-training at 31 December 2005, 43% were in the Tradespersons and related workers occupational group. Construction (26%), Automotive (16%), and the Electrical and electronics trades (15%) accounted for 57% of the trades group total (table 10.15). Females in these three trades groups represented under 1% of all the trades apprentices and trainees at that date.

Most (88%) of the apprentices and trainees in the Tradespersons and related workers occupational group were male. The only field of trade in this group with a female majority was hairdressing, where 93% were females. In contrast to the trades group, the proportion of males among the 221,000 non-trades apprentices and trainees was similar to that of females (49.5% males and 50.5% females).

### 10.14 VET COURSE ENROLMENTS(a), Vocational and preparatory courses(b) — 2005

	Males	Females	Persons(c)
Field of education	'000	'000	'000
Natural and physical sciences	3.0	3.9	6.9
Information technology	46.0	27.3	73.4
Engineering and related technologies	281.0	32.2	313.5
Architecture and building	110.3	10.5	120.9
Agriculture, environmental and related studies	75.6	23.9	99.6
Health	50.9	57.5	108.6
Education	22.3	34.4	56.9
Management and commerce	136.9	244.8	382.0
Society and culture	53.6	142.4	196.2
Creative arts	20.8	31.5	52.3
Food, hospitality and personal services	75.0	108.2	183.4
Mixed field programmes	130.4	164.0	295.2
<b>Total enrolments(a)</b>	<b>1 005.7</b>	<b>880.7</b>	<b>1 888.7</b>

(a) Includes all VET delivery by TAFE and other government providers, multi-sector higher education institutions, registered community providers, and publicly-funded delivery by private providers. Fee-for-service VET delivery by private providers has been excluded. School students undertaking VET in schools have also been excluded. (b) Courses leading to a vocational award. (c) Includes 'sex not stated'.

Source: National Centre for Vocational Education Research, data available on request, 2005 VET Provider Collection.

### 10.15 APPRENTICES AND TRAINEES, In-training — 31 December 2005

Occupation(a)	Males '000	Females '000	Persons '000
Managers and administrators	2.4	1.0	3.4
Professionals	1.3	1.4	2.8
Associate professionals	14.1	14.4	28.5
Tradespersons and related workers			
Mechanical and fabrication engineering	20.9	0.4	21.4
Automotive	26.4	0.6	27.0
Electrical and electronic	24.8	0.4	25.1
Construction	43.3	0.4	43.7
Food	16.1	6.1	22.2
Skilled agricultural and horticultural workers	4.7	0.7	5.4
Hairdressers	0.9	11.3	12.1
Tradespersons and related workers n.e.c.	0.4	0.0	0.5
Other	9.7	1.1	10.8
<b>Total</b>	<b>147.1</b>	<b>21.1</b>	<b>168.2</b>
Advanced clerical and service workers	2.1	5.0	7.1
Intermediate clerical, sales and service workers	27.1	63.6	90.7
Intermediate production and transport workers	37.0	6.3	43.3
Elementary clerical, sales and service workers	8.1	12.2	20.4
Labourers and related workers	17.1	7.6	24.8
<b>Total</b>	<b>256.4</b>	<b>132.6</b>	<b>389.0</b>

(a) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.

Source: National Centre for Vocational Education Research, data available on request, New Apprenticeship Collection, March 2006 estimates.

## Staff

Table 10.16 shows the number of teachers working in VET institutions in 2005. Of all VET teachers 56% were employed full time. The majority of full-time VET teachers (63%) were male. In contrast, 65% of part-time VET teachers were female.

## Training courses

In 2005, 5.3 million people aged 15–69 years (54% of whom were male), completed one or more work-related training courses. Of the 11.2 million work-related training courses completed by these people, 30% were in the Management and professional field. Other commonly reported fields of training were Health and safety (21%), and Technical and para-professional (14%). Graph 10.17 shows the fields of work-related training courses completed by males and females in 2005.

### 10.16 VET TEACHING STAFF(a) — 2005

	Full-time staff(b) '000	Part-time staff '000	All teaching staff '000
Males	9.3	4.2	13.5
Females	5.5	7.6	13.1
<b>Persons</b>	<b>14.8</b>	<b>11.7</b>	<b>26.5</b>

(a) Annual average of quarterly data. (b) Refers to persons working 35 hours or more in the survey week.

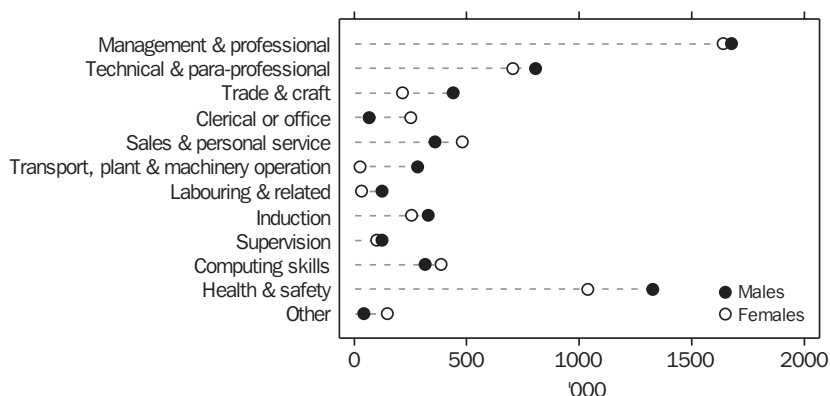
Source: Labour Force, Australia, Detailed – Electronic Delivery, May 2006 (6291.0.55.003).

## Higher education

### Institutions

In 2005, there were 74 public and private higher education institutions that received Higher Education Loan Programme (HELP) funding on behalf of students in the form of student HELP loans from the Australian Government Department of Education, Science and Training (DEST). Higher education student tables in this section include enrolments from these institutions. In contrast, in 2004 there were 41 higher education institutions which received operating grants from DEST.

### 10.17 WORK-RELATED TRAINING COURSES COMPLETED(a), Field of training — 2005



(a) Persons aged 15–69 years

Source: ABS data available on request, 2005 Survey of Education and Training.

Apart from the Australian National University and the Australian Maritime College, which are established under Commonwealth legislation, Australian universities operate under state or territory legislation. However, they are autonomous bodies responsible for their own governance and make their own decisions on allocation of funding, staffing and academic courses.

Most higher education institutions provide both full-time and part-time courses, and external or distance education courses. In addition, some institutions offer courses which associate full-time study with periods of employment.

### Students and courses

Table 10.18 shows the number of higher education students and their mode of participation at higher education institutions. The number of such students enrolled during the twelve-month period 1 January to 31 December 2005 was 957,176, an increase of 12,200 (or 1%) on that for the period 1 September 2003 to 31 August 2004. The greatest increase in numbers of students occurred among those choosing multi-modal (a mixture of face-to-face and external) tuition (up by 8,826 or 17%). Students choosing internal mode (face-to-face) increased by 7,141 (1%).

Some 63% of multi-modal higher education students in 2005 were female, compared with 55% of all higher education students.

The basic undergraduate course at most institutions is a bachelor degree of three or four years duration. At some institutions, courses may also be offered at the diploma or advanced diploma level. Most institutions also offer postgraduate level study. One to two years of full-time postgraduate study are required for a master's degree and three to five years for a doctoral degree. Postgraduate diplomas and certificates are offered in some disciplines. In 2005, 68% of higher education students were enrolled in bachelor degree courses, with a further 28% enrolled in higher degree and other postgraduate courses.

Higher education institutions offer a wide variety of courses. The most commonly chosen fields of education for award course students in 2005 were: Management and commerce; Society and culture; Health; and Education (table 10.19).

Table 10.20 shows the number of higher education students by age group. Between 2004 and 2005 the growth in higher education student numbers (1%) has been strongest among 20–24 year olds (4%).

### 10.18 HIGHER EDUCATION STUDENTS(a), By mode(b) and type of enrolment

	2004			2005		
	Males	Females	Persons	Males	Females	Persons
Internal						
Full time	260 404	296 535	556 939	265 219	300 916	566 135
Part time	92 408	105 481	197 889	91 185	104 649	195 834
Total	352 812	402 016	754 828	356 404	405 565	761 969
External						
Full time	11 237	13 702	24 939	10 708	14 195	24 903
Part time	48 896	63 630	112 526	46 060	62 734	108 794
Total	60 133	77 332	137 465	56 768	76 929	133 697
Multi-modal						
Full time	13 316	24 502	37 818	17 173	28 661	45 834
Part time	5 296	9 570	14 866	5 503	10 173	15 676
Total	18 612	34 072	52 684	22 676	38 834	61 510
Total						
Full time	284 957	334 739	619 696	293 100	343 772	636 872
Part time	146 600	178 681	325 281	142 748	177 556	320 304
Total	431 557	513 420	944 977	435 848	521 328	957 176

(a) The scope of the data in this table is students enrolled at any time within the twelve-month period 1 September 2003 to 31 August 2004, and 1 January to 31 December 2005. (b) This relates to the delivery of education to the student. 'Internal' is where the delivery of education is done entirely within the institution, 'external' refers to delivery of course material to students off-campus, and 'multi-modal' is where at least one, but not all units, are provided at the institution.

Source: Department of Education, Science and Training, 'Students: Selected Higher Education Statistics'.

### 10.19 HIGHER EDUCATION STUDENTS, By level and field of education — 2005

Field of education	Level of education of study					Total courses
	Post-graduate degree	Graduate diploma/ Graduate certificate	Bachelor degree	Advanced diploma/ Diploma	Other education	
	'000	'000	'000	'000	'000	'000
Natural and physical sciences	11.4	1.9	62.2	0.2	0.3	76.0
Information technology	17.9	2.5	43.7	0.3	0.1	64.4
Engineering and related technologies	12.6	2.4	48.9	1.0	0.5	65.4
Architecture and building	2.4	1.2	16.1	0.1	0.0	19.9
Agriculture, environment and related studies	3.9	1.0	11.2	1.0	0.1	17.2
Health	16.2	9.5	81.3	0.6	0.2	107.8
Education	17.1	13.9	63.7	0.5	0.2	95.3
Management and commerce	75.2	17.5	178.6	1.8	1.0	274.0
Society and culture	33.8	14.2	152.8	4.6	2.9	208.3
Creative arts	6.6	2.5	50.6	0.5	1.0	61.2
Food, hospitality and personal services	—	—	0.1	—	—	0.1
Mixed field programmes	—	—	—	—	1.9	1.9
Non-award	—	—	—	—	22.4	22.4
<b>All students(a)</b>	<b>196.8</b>	<b>66.7</b>	<b>652.7</b>	<b>10.4</b>	<b>30.5</b>	<b>957.2</b>

(a) Students undertaking combined courses are counted in each field they are studying. Because of this, the field of education component will not necessarily add to All students.

Source: Department of Education, Science and Training, 'Students 2005: Selected Higher Education Statistics'.

## 10.20 HIGHER EDUCATION STUDENTS(a), By age group

	2003	2004	2005
Age group (years)	'000	'000	'000
<b>MALES</b>			
19 and under	88.3	88.2	89.6
20–24	152.9	163.1	170.6
25–29	65.4	65.6	65.5
30 and over	117.5	114.7	110.1
<b>Total</b>	<b>424.1</b>	<b>431.6</b>	<b>435.8</b>
<b>FEMALES</b>			
19 and under	122.2	120.6	121.8
20–24	176.9	186.4	194.3
25–29	70.0	69.7	68.7
30 and over	136.8	136.7	136.4
<b>Total</b>	<b>505.9</b>	<b>513.4</b>	<b>521.3</b>
<b>PERSONS</b>			
19 and under	210.5	208.8	211.4
20–24	329.8	349.5	364.9
25–29	135.4	135.3	134.3
30 and over	254.3	251.4	246.6
<b>Total</b>	<b>930.0</b>	<b>945.0</b>	<b>957.2</b>

(a) The scope of the data in this table is students enrolled at any time within the twelve-month period 1 September to 31 August (2003 and 2004 data), and 1 January to 31 December 2005. Includes students in enabling and non-award courses.

Source: Department of Education, Science and Training, 'Students 2005: Selected Higher Education Student Statistics'.

## Staff

Higher education staff may be classified as academic or non-academic. In 2005, as in previous years, there were more non-academic than academic staff. The largest number of academic staff were at the lecturer and senior lecturer levels.

Table 10.21 shows the ratio of male to female staff has turned around over the past decade. Males were 54% of all staff in 1994, but only 49% in 2000. By 2005, 53% of higher education staff were female.

Growth in female representation occurred at all levels of academic staff, but was most notable at senior lecturer (from 22% in 1994 to 35% in 2005) and above senior lecturer (from 12% to 21%) levels. Despite this, men still outnumbered women at all levels of academic staff except at below lecturer level. In 2005, 60% of all academic staff were male, compared with 64% in 2000 and 68% in 1994.

## 10.21 HIGHER EDUCATION STAFF

Staff classification	2000	2005
<b>MALES (%)</b>		
Academic staff		
Above senior lecturer	83.9	78.5
Senior lecturer	70.6	64.6
Lecturer	55.9	52.0
Below lecturer	47.0	46.4
<b>Total</b>	<b>63.7</b>	<b>59.9</b>
Non-academic staff	38.8	37.3
<b>All staff</b>	<b>49.5</b>	<b>47.0</b>
<b>FEMALES (%)</b>		
Academic staff		
Above senior lecturer	16.1	21.5
Senior lecturer	29.4	35.4
Lecturer	44.1	48.0
Below lecturer	53.0	53.6
<b>Total</b>	<b>36.3</b>	<b>40.1</b>
Non-academic staff	61.2	62.7
<b>All staff</b>	<b>50.5</b>	<b>53.0</b>
<b>PERSONS (no.)</b>		
Academic staff		
Above senior lecturer	6 972	8 759
Senior lecturer	8 217	9 379
Lecturer	11 467	13 193
Below lecturer	6 458	7 621
<b>Total</b>	<b>33 114</b>	<b>38 952</b>
Non-academic staff	43 764	51 455
<b>All staff</b>	<b>76 878</b>	<b>90 407</b>

Source: Department of Education, Science and Training, 'Staff: Selected Higher Education Statistics'.

## Adult and community education (ACE)

ACE is the most decentralised of the education sectors. ACE courses range broadly from general interest, recreational and leisure activities, personal development, social awareness and craft, through to vocational courses and remedial education.

Much ACE activity complements the formal programs and qualification pathways provided by the school, VET and higher education sectors. Some ACE is provided by these sectors, but many programs are delivered by a variety of community providers.

ACE activity may be indicated by the 594,800 persons enrolled for study not leading to a qualification in 2005 (table 10.22). Half of these persons were enrolled in Creative arts or Society and culture studies, with 17% of males and 30% of females in Creative arts, and 27% of males and 24% of females in Society and culture classes.



Females comprised two-thirds (67%) of those enrolled in non-qualification study in 2005. Females outnumbered males in all fields of study except Engineering and related technologies (54% male). The female majority was greatest in Creative arts (78%), and Food, hospitality, and personal services (80%).

### Participation in education

In May 2005, 2.6 million people aged 15–64 years applied to enrol in a course of study. Of these, 92% gained a place and were enrolled in a course of study (table 10.23).

In the period 2000–05 the demand for enrolment in education increased. Over the period, the number of people accepted into educational institutions also increased. Applications from persons aged 20–24 years increased by 85,600 (or 17%) (graph 10.24). The number of persons studying aged 20–24 years increased by 90,500 (20%), and students aged 25–64 years increased by 70,400 (9%). Those who applied but were not offered a place declined in all three age groups, down 3,000 (or 27%), 3,800 (24%) and 9,800 (17%) for persons aged 15–19, 20–24, and 25–64 years respectively. There was little change in the proportion of applicants who reported being unable to gain a place.

10.22 ENROLMENTS IN NON-QUALIFICATION STUDY(a) — 2005			
	Males	Females	Persons
Field of education	'000	'000	'000
Information technology	*7.8	12.1	19.8
Engineering and related technologies	27.3	23.0	50.3
Health	19.3	35.2	54.5
Management and commerce	23.1	49.3	72.4
Society and culture	52.6	94.8	147.4
Creative arts	33.3	118.3	151.6
Food, hospitality and personal services	*4.9	19.8	24.7
Other fields(b)	*10.8	14.5	25.4
Mixed field programmes	*7.2	*10.3	17.4
Field not determined	12.2	19.2	31.4
<b>Total</b>	<b>198.4</b>	<b>396.4</b>	<b>594.8</b>

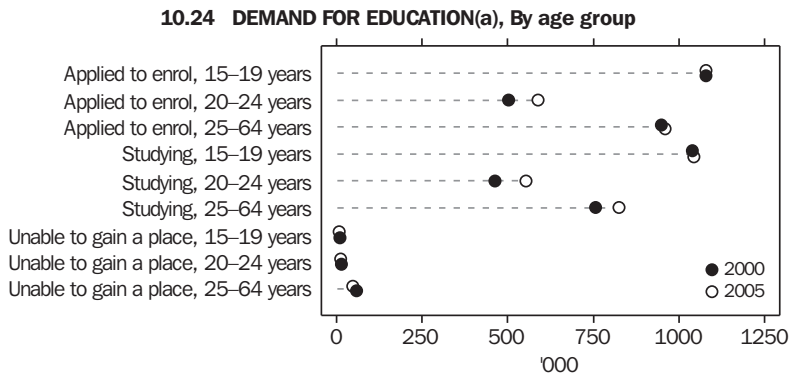
(a) Persons aged 15–69 years who were enrolled for study not leading to a qualification. (b) Includes: Natural and physical sciences; Architecture and building; Agriculture, Environmental, and related studies; and Education.

Source: ABS data available on request, 2005 Survey of Education and Training.

10.23 PARTICIPATION IN EDUCATION(a) — May 2005			
	Males	Females	Persons
	'000	'000	'000
<b>Applied to enrol</b>	<b>1 244.7</b>	<b>1 379.7</b>	<b>2 624.4</b>
Studying	1 147.8	1 272.8	2 420.6
Gained placement but deferred study	66.2	68.1	134.4
Unable to gain placement	30.7	38.7	69.4

(a) Persons aged 15–64 years.

Source: ABS data available on request, 2005 Survey of Education and Work.



(a) Persons aged 15–64 years.

Source: ABS data available on request, Survey of Education and Work.

Many young people continue in full-time education immediately after completing compulsory schooling, either in post-compulsory schooling or in other forms of education, such as VET. In May 2005, 69% of 15–19 year olds were in full-time education (including 50% still at school). Some young people return to full-time study following a period of absence after completing compulsory schooling. In the 20–24 years age cohort, excluding persons still at school, 26% were undertaking full-time tertiary study and 13% were undertaking part-time tertiary study (table 10.25).

Many people aged 25 years and over return to study, to upgrade their skills or to gain new skills, often while employed. Some 6% of all persons aged 25–64 years in May 2005, were studying part time, and 2% full time.

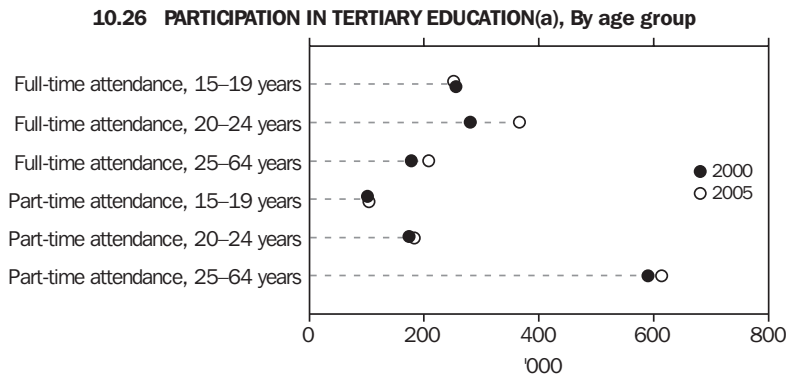
Between 2000 and 2005 the enrolment patterns of tertiary students aged 20–24 years changed, with full-time study increasing by 28%. The number of full-time students in this age group increased by 80,500 compared with an increase in part-time student numbers of 14,400 (9%). The number of both full-time and part-time students aged 25–64 years increased during the five-year period (31,900 and 50,700 respectively, an 11% overall increase). Decreases under 1% were recorded for full-time and part-time students aged 15–19 years (graph 10.26).

## Education and work

Graph 10.27 shows the labour force status of all students aged 15–64 years in May 2005. Labour force participation was lowest among those in Year 12 or below, where 57% were not in the labour force. Of students who were in the labour force, 38% were enrolled for a bachelor degree or above.

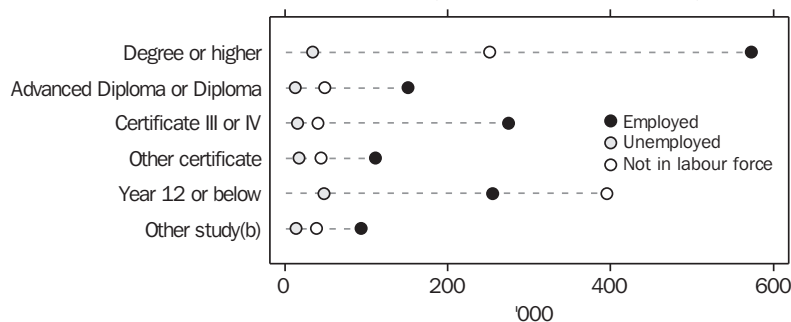
10.25 EDUCATION PARTICIPATION RATES(a) — May 2005			
	Age group (years)		
	15–19	20–24	25–64
	%	%	%
Attending school	50.2	0.2	—
Attending tertiary(b)			
Full time	18.3	25.8	2.0
Part time	7.5	12.9	5.8
Total	25.8	38.7	7.8
Attending	76.0	38.9	7.9
Not attending	24.0	61.1	92.1

(a) Persons aged 15–64 years. (b) Educational institutions other than schools.  
Source: ABS data available on request, 2005 Survey of Education and Work.



(a) Persons aged 15–64 years.  
Source: ABS data available on request, Survey of Education and Work.

**10.27 PARTICIPATION IN EDUCATION(a), By labour force status — May 2005**



(a) Persons aged 15–64 years. (b) Comprises persons in bridging courses, studying for statements of attainment, other study not leading to a qualification or unable to be determined.

Source: ABS data available on request, 2005 Survey of Education and Work.

Among young people enrolled to study in May 2005, full-time employment was much higher among those aged 20–24 years than those aged 15–19 (27% compared with 8%). In both age groups, students who undertook part-time study were more frequently employed full-time than part-time.

### Full-time participation

The ‘full-time participation rate’ describes the proportion of the population who are fully engaged in education or work or a combination of both. This includes: full-time education; full-time work; or both part-time education and part-time work. The full-time participation rate can be useful to determine the proportion of young people not fully engaged in education and/or work, and who might be at risk of future marginal participation in the labour market.

In May 2005, 191,000 (or 14%) of young people aged 15–19 years and 305,400 (or 22%) of 20–24 year olds were not full-time participants. Some 49,000 (4%) of 15–19 year olds and 102,000 (7%) of 20–24 year olds were neither enrolled to study nor in the labour force (table 10.28).

## Educational attainment

Formal educational qualifications are the desired outcome of most study at educational institutions. When issued by an accredited authority they denote a particular level of knowledge, skills and perhaps competencies. This assists the graduates themselves when entering the labour market, employers in selecting appropriate personnel, and clients in assessing the quality of professional services. The classification of educational attainment to level assists in measuring the stocks of available skills in a community, enabling policy makers to monitor the volume of skill levels compared with skill shortages, and to influence the direction of future educational focus.

In May 2005, of the 13.3 million people aged 15–64 years, 6.8 million (51%) held at least one non-school qualification. These comprised 2.6 million whose level of highest non-school qualification was a Bachelor degree or above. A further 1.1 million reported an Advanced diploma or Diploma, 2.0 million reported a Certificate III or IV and 0.8 million reported a Certificate I or II as their highest qualification. Half the population (50%) had completed Year 12, and almost two-thirds (65%) of those with Year 12 held a non-school qualification. Among those without a non-school qualification, 36% had completed Year 12, 14% had completed Year 11 and a further 31% had completed Year 10 as their highest year of schooling (table 10.29).

### 10.28 YOUTH PARTICIPATION IN EDUCATION, By labour force status — May 2005

	Enrolled in all study(a)			Not enrolled '000	Total '000
	Full time	Part time	Total		
	'000	'000	'000		
15–19 YEARS					
In the labour force					
Employed					
Full time	14.5	72.6	87.1	147.3	234.5
Part time	377.6	21.3	398.9	80.5	479.3
Total	392.1	93.9	486.0	227.8	713.8
Unemployed	67.2	4.7	71.8	51.9	123.8
Not in the labour force	479.7	5.0	484.6	49.0	533.6
Total	939.0	103.5	1 042.5	328.7	1 371.2
20–24 YEARS					
In the labour force					
Employed					
Full time	22.3	127.7	150.0	580.0	730.0
Part time	183.3	38.9	222.1	124.7	346.8
Total	205.5	166.6	372.1	704.7	1 076.8
Unemployed	19.2	7.3	26.5	61.6	88.2
Not in the labour force	144.8	9.5	154.3	102.3	256.6
Total	369.5	183.4	552.9	868.7	1 421.6

(a) All persons participating in education, including those whose study will not lead to a qualification.

Source: ABS data available on request, 2005 Survey of Education and Work.

### 10.29 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a), By highest year of school completed — May 2005

Level of education	Highest year of school completed				Total(b) '000
	Year 12 '000	Year 11 '000	Year 10 '000	Year 9 or below '000	
Postgraduate degree	376.2	6.4	8.0	**1.5	392.1
Graduate diploma/Graduate certificate	283.2	12.4	20.3	**3.3	319.2
Bachelor degree	1 772.0	47.2	67.3	7.9	1 894.4
Advanced diploma/Diploma	746.0	106.1	175.0	26.8	1 053.8
Certificate III/IV	662.8	306.8	802.3	187.5	1 959.4
Certificate I/II	300.5	120.8	325.5	83.4	830.3
Certificate not further defined	112.7	34.2	73.2	18.1	238.1
Level not determined	80.6	19.9	43.9	15.7	160.1
Total with non-school qualification	4 334.0	653.8	1 515.5	344.1	6 847.4
Total without non-school qualification	2 299.3	890.9	1 990.7	1 268.1	6 448.9
<b>Total</b>	<b>6 633.2</b>	<b>1 544.7</b>	<b>3 506.2</b>	<b>1 612.2</b>	<b>13 296.3</b>

(a) Persons aged 15–64 years. (b) Includes persons who never attended school.

Source: ABS data available on request, 2005 Survey of Education and Work.

Graph 10.30 shows the proportion of males and females aged 15–64 years and their level of highest non-school qualification in 1995, 2000, and 2005. During this period the proportion of people aged 15–64 years with a Bachelor degree or above increased by 6.8 percentage points for males and by 8.6 percentage points for females. In 1995 some 12% of males and females held a Bachelor

degree or above. By 2000, these proportions had increased to 16% and 15% respectively. The proportions of males and females with a Bachelor degree or above continued to increase, reaching 19% for males and 20% for females at May 2005. Conversely, the proportion of males and females

without non-school qualifications fell markedly over this period, by 8.4 and 12.7 percentage points, respectively.

Overall, people 25 years and over are more qualified than those under 25 years, where most (57%) are involved in some study and are yet to obtain a non-school qualification (table 10.28). Tables 10.31 and 10.32 examine the level and field of the highest non-school qualification held by people aged 15–64 years in May 2005. Some 58% of all 25–64 year olds held a non-school qualification. This compares with 27% of 15–24 year olds and the most qualified age group of 25–34 years, where 64% of that group held a non-school qualification. In 2005, 29% of persons aged 25–34 years had a highest non-school qualification of a Bachelor degree or above, compared with 16% in the 55–64 years age group (table 10.31). There was little difference however for Certificates III or IV held by these age groups (17% for 25–34 year olds compared with 15% for 55–64 year olds).

The most common main fields of education for the highest non-school qualification held by people aged 15–64 years were Management and commerce (23% of those with qualifications), and Engineering and related technologies (19%) (table 10.32). Mature aged persons (45–64 years) most frequently had qualifications in the fields of Engineering and related technologies (23%) and Management and commerce (21%).

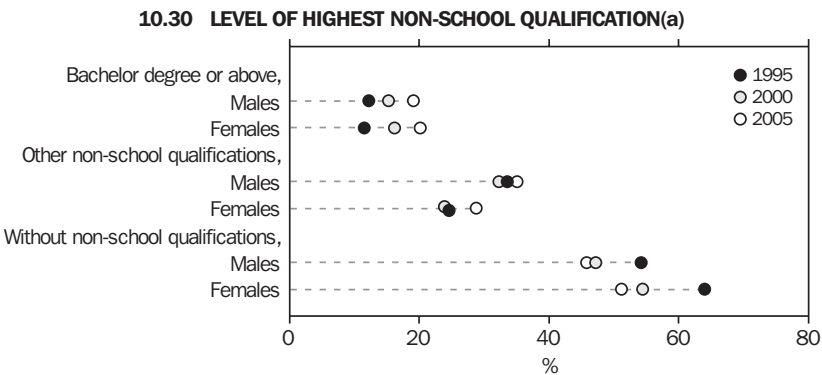
## Expenditure on education

### National funding

Total expenditure on education has two components – public and private. In this chapter, the data for the public component is compiled in accordance with the International Monetary Fund's Government Finance Statistics (GFS) framework, while the private component is sourced from the Australian System of National Accounts.

The GFS data presented here are for the general government sector only, rather than the total public sector, and therefore do not cover expenditure on education by other sectors of the government. Also, the Australian (Commonwealth) Government records expenses when supplying grants to private schools which in turn spend these grant amounts, thus producing two expenditure transactions. For these reasons, the public and private expenditure data presented here, cannot be added to derive total expenditure on education.

Data for individual time periods are expressed 'in current prices', or in terms of prices at a given time. Consequently, changes over time in, for example, operating expenses may be affected by price changes.



(a) Persons aged 15–64 years.

Source: ABS data available on request, Survey of Education and Work.

### 10.31 LEVEL OF HIGHEST NON-SCHOOL QUALIFICATION(a), By age group — May 2005

Level of education	Age group (years)					Total
	15–24	25–34	35–44	45–54	55–64	
	'000	'000	'000	'000	'000	'000
Postgraduate degree	5.9	98.2	120.7	100.7	66.7	392.1
Graduate diploma/Graduate certificate	8.5	78.2	89.0	95.6	47.9	319.2
Bachelor degree	208.5	640.2	453.1	384.3	208.3	1 894.4
Advanced diploma/Diploma	108.0	247.7	271.9	255.3	171.0	1 053.8
Certificate III/IV	227.4	471.9	506.9	438.8	314.4	1 959.4
Certificate I/II	94.7	147.1	216.4	204.9	167.2	830.3
Certificate not further defined	74.9	70.4	43.3	36.5	13.1	238.1
Level not determined	14.1	37.5	35.2	37.9	35.5	160.1
Total with non-school qualifications	742.0	1 791.1	1 736.4	1 553.9	1 024.1	6 847.4
Total without non-school qualifications	2 050.8	1 002.4	1 192.9	1 155.7	1 047.1	6 448.9
<b>Total</b>	<b>2 792.8</b>	<b>2 793.5</b>	<b>2 929.3</b>	<b>2 709.6</b>	<b>2 071.1</b>	<b>13 296.3</b>

(a) Persons aged 15–64 years.

Source: *Education and Work, Australia, May 2005* (6227.0).

### 10.32 MAIN FIELD OF HIGHEST NON-SCHOOL QUALIFICATION(a), By age group — May 2005

Field of education	Age group (years)					Total
	15–24	25–34	35–44	45–54	55–64	
	'000	'000	'000	'000	'000	'000
Natural and physical sciences	22.9	73.6	67.5	51.6	40.0	255.7
Information technology	57.4	94.2	61.2	31.7	12.2	256.7
Engineering and related technologies	91.9	281.6	348.7	321.2	267.5	1 310.8
Architecture and building	38.4	110.9	107.9	103.8	76.4	437.5
Agriculture, environment and related studies	24.2	54.8	57.1	42.0	16.1	194.2
Health	50.0	152.5	175.8	184.3	114.1	676.6
Education	22.7	100.2	125.4	160.6	92.5	501.3
Management and commerce	193.8	453.4	416.3	331.7	207.9	1 603.0
Society and culture	84.0	212.5	189.3	184.7	120.9	791.3
Creative arts	53.9	101.9	63.9	48.9	18.1	286.6
Food, hospitality and personal services	91.1	132.1	99.7	69.0	43.1	435.0
Other(b)	11.8	23.4	23.7	24.5	15.2	98.6
<b>Total</b>	<b>2 792.8</b>	<b>2 793.5</b>	<b>2 929.3</b>	<b>2 709.6</b>	<b>2 071.1</b>	<b>13 296.3</b>

(a) Persons aged 15–64 years. (b) Includes Field not determined and Mixed field programmes.

Source: *Education and Work, Australia, May 2005* (6227.0).

## General government expenditure

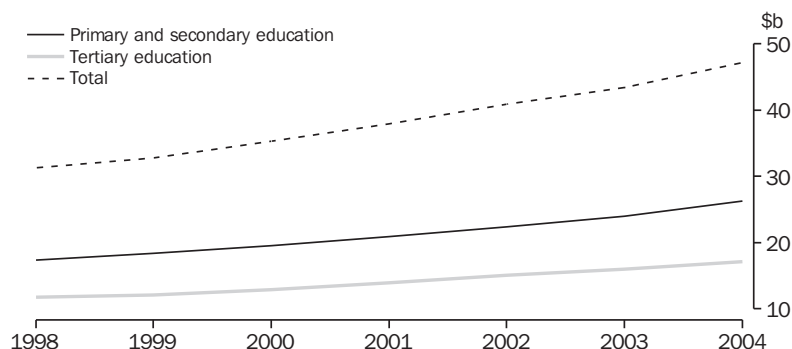
The GFS provides a framework for measuring and analysing the financial activities of government. The GFS data presented in this chapter is recorded on an accrual accounting basis. This means that transactions are recorded in the period in which income is earned or expenses incurred, regardless of when a cash payment is made.

Operating expenses for all levels of government, classified by purpose, are shown in graph 10.33 and table 10.34. Operating expenses on education include: employee expenses; non-employee expenses; depreciation of fixed assets; and current and capital transfer expenses. Between 1998–99 and 2004–05, operating expenses increased by 51% overall, with increases of 51% in primary and secondary education, and 45% in tertiary education.

Operating expenditure in 2004–05 was \$47,217 million (m), an increase of \$3,816m (9%) from the previous year. This largely reflects increases in expenditure on primary and secondary education of \$2,261m (9%) and tertiary education of \$1,111m (7%) over the same period.

Graph 10.35 summarises operating expenses on education for each level of government from 1998–99 to 2004–05. Over this period, total operating expenses of state and local government increased by 51%, while expenses for the Australian Government increased by 49%. Intra-sector transfers are transfers or transactions that occur between different levels of government for the purposes of education, the net effect of which is to reduce total government operating expenses on education.

### 10.33 OPERATING EXPENSES ON EDUCATION, All levels of government



Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004–05 (5518.0.55.001).

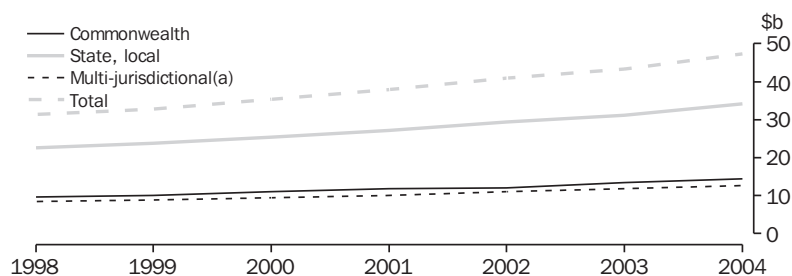
### 10.34 GOVERNMENT OPERATING EXPENSES ON EDUCATION(a)

	2000–01	2001–02	2002–03	2003–04	2004–05
	\$m	\$m	\$m	\$m	\$m
Primary and secondary education	19 576	20 902	22 377	23 971	26 232
Tertiary education	12 945	13 939	15 102	15 975	17 086
Preschool and education not definable by level	1 356	1 427	1 598	1 797	1 978
Transportation of students	827	900	1 137	949	1 145
Education n.e.c.	590	732	709	709	776
<b>Total</b>	<b>35 294</b>	<b>37 899</b>	<b>40 924</b>	<b>43 401</b>	<b>47 217</b>

(a) All levels of government.

Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004–05 (5518.0.55.001).

### 10.35 OPERATING EXPENSES ON EDUCATION, By level of government



(a) The multi-jurisdictional sector currently contains units where jurisdiction is shared between two or more governments, or the classification of a unit to a jurisdiction is otherwise unclear. The main type of units falling into this category are public universities.

Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004–05 (5518.0.55.001).



### 10.36 GOVERNMENT OPERATING EXPENSES ON EDUCATION, By level of government

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
Commonwealth Government	10 971	11 770	12 110	13 398	14 382
State and local government	25 332	27 252	29 419	31 089	34 077
Multi-jurisdictional(a)	9 361	10 016	10 974	11 738	12 671
/less Intra-sector transfers	10 369	11 139	11 579	12 825	13 913
<b>Total</b>	<b>35 294</b>	<b>37 899</b>	<b>40 924</b>	<b>43 401</b>	<b>47 217</b>

(a) The multi-jurisdictional sector currently contains units where jurisdiction is shared between two or more governments, or the classification of a unit to a jurisdiction is otherwise unclear. The main type of units falling into this category are public universities.

Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004-05 (5518.0.55.001).

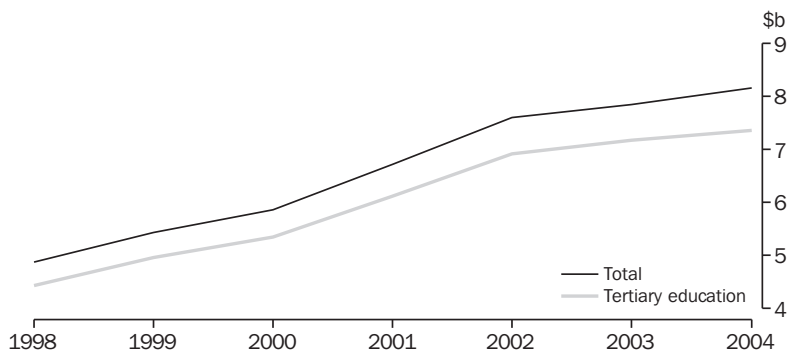
### General government revenue

Sales of goods and services (graph 10.37, table 10.38), from a GFS perspective, is defined as the revenue from the direct provision of goods and services by general government. In the context of education, this would include fees paid by students (domestic and overseas) for the provision of education services. Tertiary education has by far the highest value for sales of goods and services at \$7,366m in 2004-05, and accounts for 90% of the total of goods and services across all levels of education within the general government sector. Sales of goods and services from tertiary education institutions increased by \$192m

(nearly 3%) from 2003-04 to 2004-05. Primary and secondary education institutions had sales of goods and services of \$738m in 2004-05, an increase of 19% on the previous year.

Table 10.39 shows Australian (Commonwealth) Government grants to different levels of government by level of education. Primary and secondary education was the major recipient of Government grants at \$7,268m in 2004-05, while the universities (within the multi-jurisdictional sector) received a total of \$4,693m in the same period. These represented increases of 11% and 7% respectively from 2003-04.

### 10.37 SALES OF GOODS AND SERVICES, By level of education



Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004-05 (5518.0.55.001).

### 10.38 SALES OF GOODS AND SERVICES

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
Primary and secondary education	452	549	635	623	738
Tertiary education	5 347	6 121	6 924	7 174	7 366
Preschool and education not definable by level	49	39	32	18	5
Transportation of students	1	1	2	2	2
Education n.e.c.	8	14	17	25	49
<b>Total</b>	<b>5 856</b>	<b>6 723</b>	<b>7 610</b>	<b>7 843</b>	<b>8 160</b>

Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004-05 (5518.0.55.001).

### 10.39 COMMONWEALTH GRANTS TO OTHER LEVELS OF GOVERNMENT, By level of education — 2004–05

	Primary and secondary education \$m	Technical and further education \$m	Universities \$m	Other \$m	Total \$m
State and local government					
New South Wales	2 416	390	—	1	2 808
Victoria	1 833	278	—	1	2 112
Queensland	1 377	195	—	22	1 594
South Australia	564	95	—	5	664
Western Australia	703	114	—	1	818
Tasmania	165	30	—	3	198
Northern Territory	80	16	—	9	105
Australian Capital Territory	130	26	—	1	156
<i>Total</i>	<i>7 268</i>	<i>1 144</i>	<i>—</i>	<i>42</i>	<i>8 454</i>
Multi-jurisdictional(a)	—	—	4 693	—	4 693
<b>Total</b>	<b>7 268</b>	<b>1 144</b>	<b>4 693</b>	<b>42</b>	<b>13 147</b>

(a) The multi-jurisdictional sector currently contains units where jurisdiction is shared between two or more governments, or the classification of a unit to a jurisdiction is otherwise unclear. The main type of units falling into this category are public universities.

Source: Government Finance Statistics, Education, Australia, Electronic delivery, 2004–05 (5518.0.55.001).

#### Private expenditure

Private sector expenditure on education (sourced from the Australian National Accounts) consists of gross fixed capital formation by private educational institutions and household final consumption expenditure on education services.

Gross fixed capital formation in the field of education is estimated from statistics of the value of work done on new building and major additions to buildings of private educational institutions.

Household final consumption expenditure on education services is estimated as: fees paid by persons to government schools (including technical and agricultural colleges); fees (other than boarding fees) and gifts to universities, independent schools, business colleges, etc; plus current expenditure of non-profit educational institutions (net of fees and other current receipts). Expenditure on such items as school books, uniforms, fares for students' travel, etc. and expenditure by parents' associations on school equipment are not included.

Table 10.40 provides data for private sector expenditure on education. Both gross fixed capital formation and household final consumption expenditure increased every year between 1998–99 and 2003–04. For 2004–05, gross fixed capital formation fell 6% on the previous year, while household final consumption expenditure rose by 11%. Of the total private expenditure on

education (\$19,719m), household final consumption expenditure comprised \$18,271m (or 93%).

#### Funding by education sector

##### Schools

The primary and secondary education operating expenses of all levels of government totalled \$26,232m in 2004–05 (table 10.34). Operating expenses associated with preschool, special, and other education were \$1,978m. Preschool, primary, secondary, special school and other education expenses were largely met by state and territory governments. State and territory governments also contributed funds to the transportation of students, totalling \$1,145m in 2004–05.

While primary and secondary education is free in government schools in all states and territories, fees may be charged for the hire of text books and other school equipment (particularly in secondary schools). Voluntary contributions may also be sought from parents.

In addition to funding schools directly, most state and territory governments provide financial assistance to parents (under specified conditions) for educational expenses of school children. Assistance includes scholarships, bursaries, and transport and boarding allowances, many of which are intended to assist low-income families. The Australian Government also provides a number of assistance schemes to facilitate access to education.

#### 10.40 PRIVATE EXPENDITURE ON EDUCATION

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
Gross fixed capital formation	1 013	1 184	1 310	1 544	1 448
Household final consumption expenditure	12 914	13 969	15 117	16 445	18 271
<b>Total</b>	<b>13 927</b>	<b>15 153</b>	<b>16 427</b>	<b>17 989</b>	<b>19 719</b>

Source: ABS data available on request, Australian System of National Accounts.

#### Vocational education and training (VET)

Recurrent revenue comprises revenues appropriated by the Australian Government and state and territory governments to fund the normally occurring business activities of the sector and specifically excludes funds for capital asset construction, improvement or replacement. The Australian Apprenticeship Scheme received an additional \$729m in 2005.

Information supplied by the National Centre for Vocational Education Research shows that VET providers in receipt of public funds primarily receive recurrent revenue from the state and territory governments (48% or \$2,758m, in 2005) with additional funds being provided by the Australian Government (33% or \$1,897m). The remaining 19% (\$1,106m) is made up of on-going (recurrent) revenue earned by the sector from fees and charges arising from fee-for-service activities (11%), student fees and charges (4%) and other ordinary operating activities (4%).

Most providers charge students fees for the administration of VET courses, for tuition, for materials or for student amenities. These fees vary according to the type of course and its duration.

#### Higher education

Most higher education institutions are funded by the Australian Government under the *Higher Education Support Act 2003* (Cwlth). In 2005 the operating revenue (before extraordinary items) of these institutions amounted to \$13,904m, 42% of which came from Australian Government grants, including those provided by the Australian Research Council and the National Health and Medical Research Council.

In addition to government funding, institutions receive revenue from students who are required to contribute to the cost of their education through the Higher Education Contribution Scheme (HECS), and from other fee-paying students. Higher education fees and charges have increased in importance in recent years. In 2005, 15% of operating revenue was raised from HECS, including 'up-front' student payments. Other fees and charges accounted for a further 23% of operating revenue. These fees and charges included \$2,140m from fee-paying overseas students, representing 67% of other fees and charges – a rise of 10% since 2004.

Some institutions rely more heavily than others on fees paid by overseas students. For example, the Central Queensland University, Macquarie University, and the Royal Melbourne Institute of Technology received 46%, 27% and 25% respectively of their revenue from fee-paying overseas students. This is well above the overall national average of 15%.

#### Adult and community education (ACE)

ACE programs are typically provided by adult migrant education centres, evening colleges, language centres, welfare organisations and other community-based organisations. Educational institutions including universities and TAFE may also offer ACE programs. ACE complements the formal programs and qualification pathways provided by the schools, VET and higher education sectors. However, separate funding information for ACE is not available.

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# Skilling mature age Australians for work

Over recent years, issues associated with the ageing of the Australian population have received increased attention from governments and researchers. In the context of education and training, improving the capacity of mature age people for work and supporting their retention in the workforce have been identified as key policy areas. This article examines work-related training undertaken, by selected characteristics of mature age Australians.

For the purposes of this article, mature age people are those aged 45–64 years. Data from the periodic Survey of Education and Training – a household survey conducted by the Australian Bureau of Statistics (ABS) – are used to explore selected characteristics of mature age people who completed work-related training courses in the twelve-month period prior to the survey. The surveys collected information from individuals, about their participation in education and training and their educational attainment. Information about work-related training focusses on structured learning activities undertaken primarily to obtain, maintain or improve employment-related skills or competencies.

## People completing work-related training

In the period 2001 to 2005, the number of 15–64 year olds completing training courses increased from 4.8 million to 5.3 million, while the number of mature age people completing training courses increased from 1.5 million to 1.8 million. The proportion of all 15–64 year olds completing training who were mature age also increased, from 31% to 35%, in the period.

In 2005, mature age people completing training courses equally represented their share of all training completers, when compared with the overall population. The proportion of all training completers 15–64 years who were mature age was 35%, the same as the proportion of mature age people in the total 15–64 years population.

Of the 1.8 million people in 2005 aged 45–64 years completing training courses, 1.2 million were younger mature age (45–54 years) and 0.6 million were older mature age (55–64 years) people.

Over the period 2001 to 2005, the growth of mature age course completers was 21%. While this growth differed little between males and females (21% and 22% respectively), there was a notable difference in growth between the younger and older mature age groups. For example, 55–64 year old course completers increased by 47% over the period, compared with an increase of 12% for 45–54 year olds (table S10.1). Equivalent growth over the same period for people aged 25–44 years was much lower, at 3%.

### S10.1 PERSONS COMPLETING TRAINING COURSES

Age group (years)	2001	2005
MALES ('000)		
25–44	1 340.3	1 440.2
45–54	571.4	630.1
55–64	207.7	311.3
FEMALES ('000)		
25–44	1 188.1	1 167.2
45–54	515.6	592.0
55–64	166.9	239.1

Source: ABS data available on request, Survey of Education and Training.

## People completing more than one training course

Of the 5.3 million people at 2005 aged 15–64 years, who reported they had completed at least one work-related training course in the last twelve months, 2.8 million were men and 2.5 million were women. Overall, people more frequently reported completing more than one training course (57%), than one course only (43%).

In 2005, a greater proportion of mature age women completed more than one training course, than did mature age men (63% and 56%,

respectively). However, the proportion of people completing multiple training courses varied more with age group for males, than it did for females. For instance, men aged 25–44 years more frequently completed multiple training courses (59%), than their mature age counterparts (53%). The respective difference for females by comparison, was 60% for 25–44 years and 62% for 55–64 years (graph S10.2).

## Work-related training and labour force status

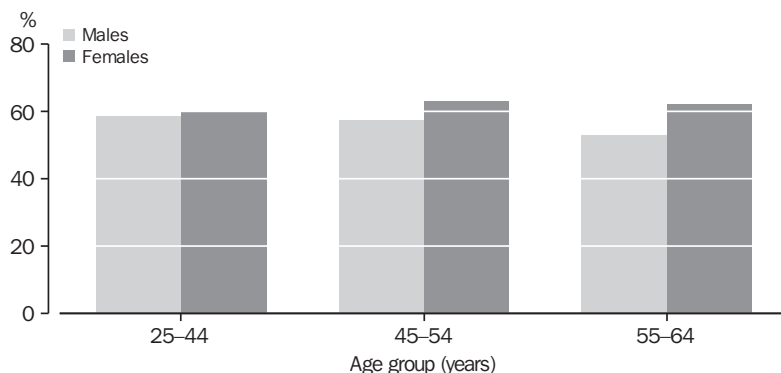
In the period 2001 to 2005, people employed full time, have continued to comprise the greatest share of all people completing work-related training courses. In 2001, 69% of all 15–64 year old course completers were employed full time, increasing to 71% by 2005. Similarly, most of the 1.8 million mature age course completers in 2005 were employed full time (72%, unchanged from 2001). A further 21% were employed part time, 2% were unemployed and 4% were not in the labour force (table S10.3).

There is a strong relationship between the completion of training courses and the labour force participation of mature age people. In 2005, 96% of all mature age training course completers were in the labour force. This compares with 56% of mature age people who did not complete a training course, but were in the labour force, comprising 37% employed full time, 17% employed part time and 2% unemployed 4%. The remaining 43% of mature age non-course completers were not in the labour force.

Mature age men in 2005 who completed work-related training courses, were most frequently engaged in full-time employment, and to a much greater extent than their female counterparts (86% and 55% respectively). Some 37% of mature age women completing courses, were engaged in part-time employment compared with 8% of their male counterparts. These differences can in part be explained by differences in the overall labour status of mature age men and women. Data from the ABS monthly Labour Force Survey indicates mature age women are less likely to be employed full time than mature age men, but are more likely to be employed part time than mature age men. At May 2005, 32% of 45–64 year old women were employed full time and a further 28% were employed part time, whereas 68% of males of the same age group were employed full time, and 8% were employed part time.

In 2005, the labour force status of 45–54 year and 55–64 year-old mature age course completers, differed notably. Younger mature aged men and women were more frequently engaged in full-time employment, than older mature age males or females. On the other hand, older mature age course completers were more frequently employed part time or not in the labour force at all, than younger mature age course completers. In 2005, 92% of males and 58% of females aged 45–54 years completing training, were employed full time. This compares with 80% of males and 46% of females aged 55–64 years.

**S10.2 PERSONS COMPLETING MORE THAN ONE TRAINING COURSE — 2005**



Source: ABS data available on request, 2005 Survey of Education and Training.

### S10.3 PERSONS COMPLETING TRAINING COURSES, By labour force status — 2005

	Age group (years)							
	25–44		45–54		55–64		45–64	
	2001	2005	2001	2005	2001	2005	2001	2005
MALES ('000)								
Employed full time	1 196.9	1 307.4	511.9	576.4	161.6	249.5	673.5	825.9
Employed part time	79.6	84.6	36.7	35.6	32.5	35.0	69.2	70.6
Unemployed	42.6	28.8	13.7	9.4	3.0	8.6	16.7	18.0
Not in labour force	21.3	19.2	9.0	8.7	10.6	18.1	19.6	26.8
FEMALES ('000)								
Employed full time	637.4	691.7	301.2	343.7	72.7	109.9	373.8	453.6
Employed part time	452.2	390.5	186.4	209.5	72.4	98.7	258.8	308.2
Unemployed	29.3	25.5	8.0	14.4	2.2	6.2	10.1	20.6
Not in labour force	69.2	59.6	20.1	24.4	19.7	24.3	39.7	48.7

Source: ABS data available on request, 2005 Survey of Education and Training.

## Support for work-related training while working

Table S10.4 shows the number of work-related training courses completed while the course participant was working, and whether or not the participant received any support for that training. Support for the course participant may have been provided as an employee training course, organised and delivered by the participant's employer. Alternatively the participant may have received financial support, such as paid time off or study leave, payment of fees, materials or accommodation expenses.

An estimated 11.2 million work-related training courses were completed by all people aged 15–64 years in 2005. The majority of these courses (96%) were completed while course participants were working. Of the 10.7 million training courses completed by 15–64 year olds in 2005 while working, most courses completed were supported (80%), and two-thirds of these were employee training courses.

In 2005, almost all courses completed by mature age people (97%), were completed while the course participants were working, most frequently supported as employee training courses, especially those courses completed by women. However, an overall decline in the proportion of employee training courses completed by mature age people (from 62% in 2001 to 49% in 2005) coincides with an increased share of training courses receiving financial support (from 18% in 2001 to 27% in 2005).

In 2005, 55% of courses completed by older mature age women were employee training courses; notably higher than the 40% of courses completed by older mature age men. In contrast, there was little difference in training courses receiving financial support that were completed by females (29%) and males (28%) aged 45–54 years.

Courses completed by mature age people while working were less likely to be supported than courses completed by 25–44 year olds while working. This was especially the case for courses completed by older mature age men in 2005, where 35% of courses received no financial support. For courses completed by younger mature age males that proportion was 26% and for 25–44 year old males the proportion was 21% (graph S10.5).

## Barriers to work-related training

Of the 5.3 million people aged 15–64 years in 2005 who had completed at least one training course, 2.7 million wanted to do further training. The most frequent main reason reported for not doing more training courses, was having too much work (19%). While men of this age group more frequently reported too much work (23%) as the main barrier to further training, women more frequently reported personal or family reasons (20%) as the main barrier to further training.



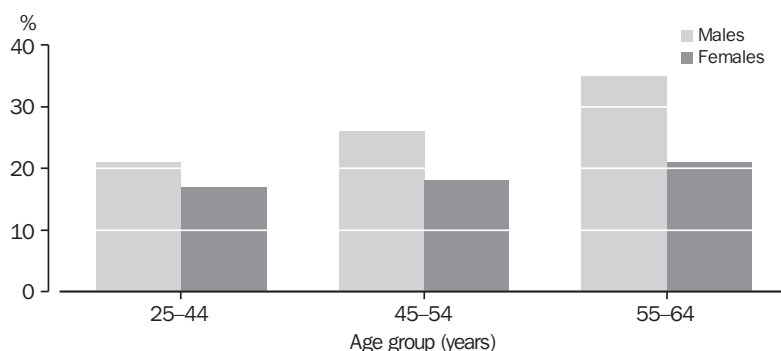
### S10.4 TRAINING COURSES COMPLETED WHILE WORKING, Whether participant supported or not(a) — 2005

	Age group (years)			
	25–44	45–54	55–64	45–64
MALES ('000)				
Received financial support	852.3	362.3	149.1	511.5
Did not receive financial support	627.3	335.2	210.3	545.5
Employee training course	1 543.6	612.9	237.4	850.3
FEMALES ('000)				
Received financial support	681.4	381.5	122.2	503.7
Did not receive financial support	412	229.9	102.2	332.1
Employee training course	1 347.8	682.1	271.1	953.3

(a) Excludes owner managers of incorporated enterprises

Source: ABS data available on request, 2005 Survey of Education and Training.

### S10.5 TRAINING COURSES COMPLETED WHILE WORKING, Without financial support — 2005

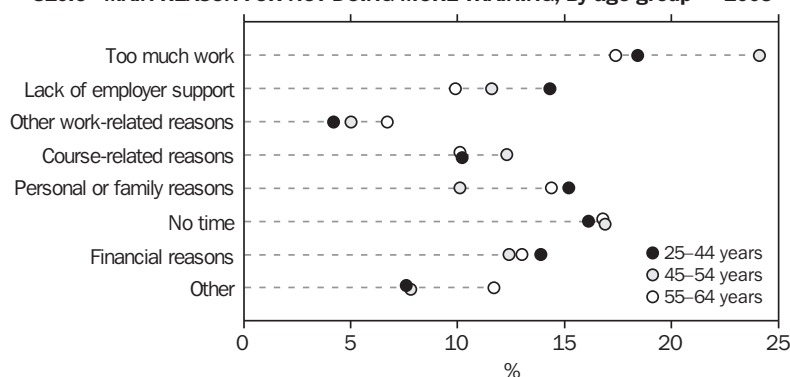


Source: ABS data available on request, 2005 Survey of Education and Training.

Graph S10.6 identifies the most frequently cited main barriers to further training among mature age people as being too much work and no time. However, the influence of some of the barriers differs between younger and older mature age people. Where 24% of younger mature age people reported too much work as the main reason for not doing more training, 17% of older mature age people reported that reason. Similarly, personal or family reasons were more frequently reported as the main barrier to further training, by older than younger mature age people. On the other hand, there was little difference between younger and older mature age people reporting either no time or financial reasons as barriers to further training.

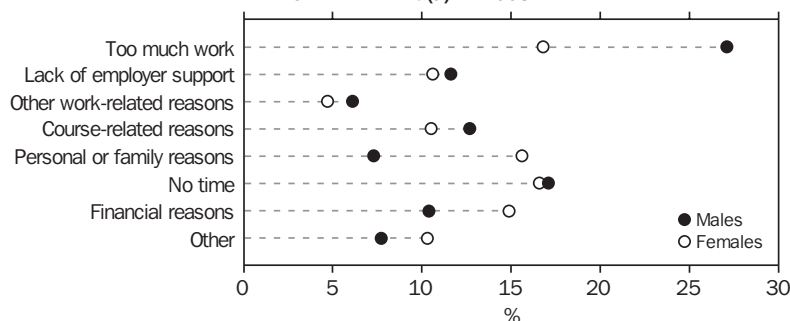
Similarly, graph S10.7 indicates that the main reason for not doing more training, differed between mature age men and women. While 27% of mature age men reported that too much work was the main barrier to further training, mature age women equally reported too much work and no time as the main barriers (both 17%). A notably greater proportion of mature age women reported personal or family reasons as the main barrier to further training, than did mature age men (16% and 7% respectively).

**S10.6 MAIN REASON FOR NOT DOING MORE TRAINING, By age group — 2005**



Source: ABS data available on request, 2005 Survey of Education and Training.

**S10.7 MAIN REASON FOR MATURE AGE PERSONS NOT DOING MORE TRAINING(a) — 2005**



(a) Persons aged 45–64 years.

Source: ABS data available on request, 2005 Survey of Education and Training.

While more mature age people have completed work-related training courses in 2005, than in 2001, there were differences between mature age male and mature age female course completers, at 2005. Mature age women were more likely to complete multiple work-related training courses and were less likely to be employed full time than mature age men.

There were also differences between course completers of mature age, when compared with the younger 25–44 years age group. Mature age people were less likely to receive financial support for training courses completed while working, and were more likely to report too much work as the main barrier to completing further training, than people aged 25–44 years.

## References

- Australian Bureau of Statistics, 2005, *Australian Labour Market Statistics* (6105.0), ABS, Canberra.
- Australian Bureau of Statistics, 2005, *Education and Training Experience, Australia 2005* (6278.0), ABS, Canberra.
- Australian Bureau of Statistics, 2005, *Mature Age Persons Statistical Report: Education and Training* (4905.0.55.001), ABS, Canberra.



## CRIME AND JUSTICE

The effects of criminal activity, as well as people's perceptions about the extent of such activity, are issues that impact directly or indirectly on the quality of people's lives. This chapter provides an overview of the Australian criminal justice system, including people's involvement with the system either as offenders or as victims of crime. As well as presenting data on the characteristics of crime victims and offenders and on outcomes from the justice process, the chapter also looks at levels of non-reporting of crime. The data presented are based on national crime and justice statistics produced by the Australian Bureau of Statistics (ABS). These are sourced from surveys such as the ABS Crime and Safety Survey and from administrative data that provide information about crimes recorded by police, the volume and flow of work through the Criminal Courts, and about people held in correctional services agencies. Justice is primarily administered through state and territory governments, with local variation in legislation, processes and operational structures. However, by taking account of these differences, nationally comparable crime and justice statistics provide indicators of the level and nature of crime across Australia and the associated outcomes of the criminal justice system.

The chapter contains three articles – *Crime victimisation*, *Victims of household break-ins*, and *Experience of personal violence*.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Criminal justice system

The criminal justice system comprises the state/territory and Australian Government institutions, agencies, departments and personnel responsible for dealing with the justice aspects of crime, victims of crime, people accused or convicted of committing a crime, and related issues and processes.

The states and territories have independent legislative powers in relation to all matters that are not otherwise specifically vested in the Commonwealth of Australia. It is the statute law and the common law of the states and territories that primarily govern the day-to-day lives of most Australians.

The eight states and territories have powers to enact their own criminal laws, while the Commonwealth has powers to enact laws, including sanctions for criminal offences, in relation to its responsibilities under the Constitution. Thus there are nine different systems of criminal law in Australia. The existence of cooperative arrangements between the various states and territories and the Commonwealth, such as those relating to extradition or to the creation of joint police services, helps address issues that have arisen out of the separate development of these various systems of criminal law.

Each state and territory has its own police, courts and corrections systems that deal with offences against local laws and also federal laws in some cases. The federal criminal justice system deals with offences against Commonwealth laws. Criminal law is administered principally through the federal, state and territory police, the courts, and state and territory corrective services. As there is no independent federal corrective service, the relevant state or territory agencies provide corrective services for federal offenders.

The various agencies that comprise the criminal justice system act within a broader process in which criminal offenders interact with police,

courts and corrective services. Diagram 11.1 illustrates the various stages involved in the processing of criminal cases and shows some of the links between these three elements of the criminal justice system.

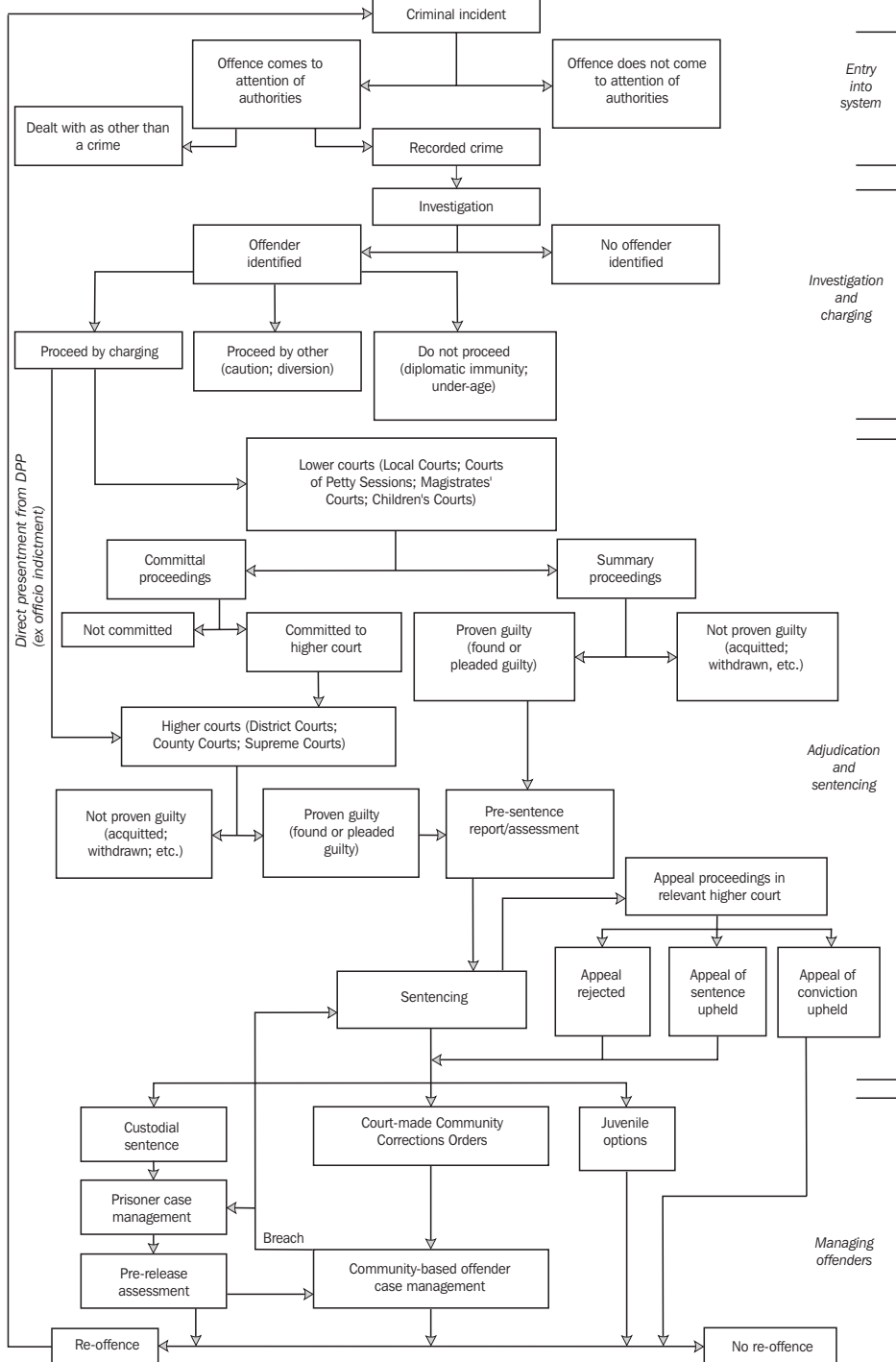
The police, as well as other agencies such as Australian Customs Service, are responsible for the prevention, detection and investigation of crimes. When alleged offenders are detected by police, they can be proceeded against either through the use of a non-court process (such as a caution, fine or diversionary conference) or charges may be laid before a criminal court. The court, including judicial officers and a jury (in the higher courts), with the assistance of the prosecution and the defence, determines the guilt or innocence of the defendant.

Following the hearing of the charges, in cases where a finding of guilt is made by the court, sentences may be imposed. These may include imprisonment, community service orders of various kinds, fines or bonds. A number of jurisdictions have also introduced penalties such as home detention or work outreach camps that are administered by correctional agencies.

## Expenditure on public order and safety

The Steering Committee for the Review of Commonwealth/State Service Provision, in the *Report on Government Services 2006*, estimated recurrent expenditure on justice in 2004–05 was approximately \$412 per person. This excluded spending by governments on items such as payroll tax and justice services outside the scope of the Report (for example, expenditure on specialist courts). Total recurrent expenditure was \$8.3 billion (b) in 2004–05; \$5.7b was spent on police services and \$1.7b on corrective services (table 11.2).

### 11.1 FLOWS THROUGH THE CRIMINAL JUSTICE SYSTEM



Source: Adapted from ABS unpublished paper, 'National Criminal Justice Statistical Framework, July 2001.

## 11.2 GOVERNMENT EXPENDITURE ON JUSTICE(a)(b)(c)

	2000-01	2001-02	2002-03	2003-04	2004-05
Justice sector	\$m	\$m	\$m	\$m	\$m
Police services(d)	4 955.8	5 094.0	5 409.7	5 588.9	5 686.4
Court administration – criminal(e)	436.9	439.1	442.9	441.9	457.8
Court administration – civil(e)(f)	383.0	407.1	432.7	440.4	469.8
Corrective services(g)	1 397.3	1 504.4	1 600.1	1 641.5	1 730.5
<b>Total justice system</b>	<b>7 173.1</b>	<b>7 444.6</b>	<b>7 885.4</b>	<b>8 112.7</b>	<b>8 344.5</b>

(a) In 2004–05 dollars. (b) Excludes payroll tax. (c) Excludes expenditure on justice services out of scope of the Report (e.g. expenditure on specialist courts). (d) Recurrent expenditure on police services includes depreciation and user cost of capital. (e) Recurrent expenditure on court administration includes depreciation but excludes user cost of capital. (f) Civil expenditure excludes expenditure on probate matters. (g) Recurrent expenditure on police services includes depreciation and user cost of capital.

Source: Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2006'.

## Police

Australia is served by police agencies in each state and the Northern Territory, with the Australian Federal Police (AFP) being responsible for policing the Australian Capital Territory. The Australian Crime Commission (ACC), the Australian Customs Service (ACS) and the Australian High Tech Crime Centre (AHTCC) also have responsibility for the maintenance of law, order and safety.

While the principal duties of the police are the prevention, detection and investigation of crime, the protection of life and property, and the enforcement of law to maintain peace and good order, they may perform a variety of additional duties in the service of the state. These duties include the prosecution of summary offences, regulation of street traffic, performing duties as clerks of petty sessions, Crown land bailiffs, mining wardens and inspectors under fisheries and other relevant legislation.

With the exception of the AFP and the ACC, police in Australia are under the control of the relevant state and territory government. However their members also perform certain functions on behalf of the Australian Government such as the registration of aliens, and the enforcement of various Commonwealth Acts and Regulations in conjunction with the AFP and other Commonwealth officers.

## Australian government policing agencies

### Australian Federal Police (AFP)

The AFP is a statutory authority established by the *Australian Federal Police Act 1979* (Cwlth). The AFP has its headquarters in Canberra, ACT. Its Criminal Investigations Program is conducted

through six Regional Commands, its Headquarters Investigations Department and its numerous liaison officers in many countries.

The AFP is responsible for the prevention, detection and investigation of criminal offences such as drug offences, money laundering and organised crime, identifying the proceeds of crime, and investigation of fraud against Commonwealth revenue and expenditure such as social security and taxation fraud. In the Australian Capital Territory, the AFP provides a full range of general community policing services, including traffic control, special operations, search and rescue services and conventional crime investigations.

### Australian Crime Commission (ACC)

The ACC is responsible for providing a coordinated national criminal intelligence framework to deal with serious and organised criminal activity. It has access to special coercive powers to assist in intelligence operations and investigation, for circumstances where traditional law enforcement methods are not sufficient to combat sophisticated criminal activity.

Special investigations are undertaken by the ACC. These include matters such as firearms trafficking, established criminal networks, money laundering and tax fraud, people trafficking for sexual exploitation, amphetamines and other synthetic drugs, identity crime and card skimming, and vehicle rebirthing.

### Australian High Tech Crime Centre (AHTCC)

The AHTCC is a national centre for coordination of the efforts of Australian law enforcement in combating serious crime involving complex technology. It provides a national coordinated approach to combating serious, complex and multi-jurisdictional high tech crimes, especially



those beyond the capability of single jurisdictions. It assists in improving the capacity of all jurisdictions to deal with high tech crime, and supports efforts to protect the National Information Infrastructure.

### Number of sworn police officers

The number of sworn police officers in the various police services in 2004–05 is shown in table 11.3. The figures in the table are not directly comparable across the various jurisdictions, as data for ACC, AFP, New South Wales and the Australian Capital Territory are based on a headcount at the end of the financial year, whereas those for the other states and territories are on a full-time equivalent basis.

### National crime statistics

National crime statistics aim to provide indicators of the level and nature of crime victimisation in Australia and a basis for measuring change over time. When an incident of crime victimisation occurs, there are a number of ways in which this can be measured and a number of stages where a measurement can be taken; from the time that a person perceives they have been a victim through to reporting to police and the laying of charges. From among a range of possible ways of measuring crime, there are two major sources of statistics produced by the ABS that can inform the user about crime victimisation. The first of these is a measure of crimes reported to and recorded by police; the second is direct reports from members of the public about their experiences of crime as collected in household surveys conducted by the ABS. Neither of these sources will provide a definitive measure of crime victimisation, but together they provide a more comprehensive picture of victimisation than either measure alone. Both sources have a number of limitations, however, of which users should be aware.

Recorded crime statistics are the result of incidents coming to police attention and a subsequent decision-making process carried out

by police in accordance with the criminal law. As such they are subject to different legislation, rules of operation and procedures in different jurisdictions. Fluctuations in recorded crime may also be a reflection of changes in community attitudes to reporting crime rather than a change in the incidence of criminal behaviour.

A complementary picture of the nature and extent of crime comes from crime victimisation surveys. One of the primary reasons for conducting victimisation surveys is that many victims of crime do not report their experiences to the police, and so are not counted in police data. Victimisation surveys provide information about the broader community experience of crime, including the volume of crime that is not officially recorded. Crime victimisation surveys are suitable for measuring crimes against individuals (or households) who are aware of and recall the incident and how it happened, and who are willing to relate what they know. These surveys allow crime information to be related to personal and household characteristics, and facilitate the study of patterns of victimisation over time and across crime categories. Not all types of crime are suitable for measurement by household surveys. No reliable victim-based information can be obtained about crimes where there is no specific victim (e.g. trafficking in narcotics) or where the victim is deceased (e.g. murder). Crimes of which the victim may not be aware cannot be measured effectively; some instances of fraud and many types of attempted crimes fall into this category.

In addition to the periodic ABS crime victimisation survey, the ABS from time to time may conduct more in-depth surveys about particular aspects of crime victimisation that are of a more sensitive nature, for example, violence. Different methodologies may be used in these instances which may yield differing results to other ABS crime victimisation collections. (For more information on comparisons with other surveys, refer to *Information Paper: Measuring Crime Victimisation, Australia – The Impact of Different Collection Methodologies, 2002* (4522.0.55.001).)

### 11.3 SWORN POLICE OFFICERS(a) — 2004–05

	no.	rate(b)
Australian Crime Commission(c)	136	n.a.
Australian Federal Police(d)	1 704	n.a.
New South Wales	14 643	217
Victoria	10 446	210
Queensland	8 765	225
South Australia	3 801	248
Western Australia	4 890	246
Tasmania	1 134	235
Northern Territory(e)	916	458
Australian Capital Territory	606	187

(a) Where possible, based on full-time equivalents. NSW Police, Australian Crime Commission and Australian Federal Police totals are based on headcounts. (b) Per 100,000 persons. (c) Seconded officers from home force. (d) Excludes the AFP officers who were responsible for ACT policing and who were separately counted against the ACT. (e) Includes Police auxiliaries and Aboriginal Community Police Officers.

Source: Australian Federal Police 'Annual Report, 2004–05'; Steering Committee for the Review of Commonwealth/State Service Provision, 'Report on Government Services 2006', Attachment 5A for state and territory figures; Australian Crime Commission 'Annual Report 2004–05', Appendix B.

## Crime victimisation

The National Crime and Safety Survey (NCSS), conducted by the Australian Bureau of Statistics (ABS) during April to July 2005, obtained information on the level of crime victimisation in the community. Information was collected from individuals and households about their experience of selected crimes, whether these crimes were reported to police and crime-related risk factors in the twelve months prior to the survey.

Households and individuals in Australia experience a diverse range of crimes. However, only the more serious crimes were covered by the NCSS. These included household crimes comprising break-in, attempted break-in and motor vehicle theft; and personal crimes comprising robbery, assault and sexual assault.

Victimisation prevalence rates used in this section refer to the proportion of persons or households experiencing an offence in the twelve months prior to the survey, in a given population, expressed as a percentage of that population.

## Victims of crime

### Households

There were 7,855,600 households in Australia in April 2005. In the twelve months prior to the survey:

- 259,800 (3.3%) households were victims of at least one break-in to their home, garage or shed
- 205,400 (2.6%) households had at least one attempted break-in
- 427,100 (5.4%) households overall were victims of either a break-in or an attempted break-in
- 74,800 (1%) households had at least one motor vehicle stolen (graph 11.4).

In total, 488,200 households were victims of one or more of these selected household crimes, equating to an overall household victimisation prevalence rate of 6.2%.

### People aged 15 years and over

In April 2005, there were 15,966,900 people aged 15 years and over living in private dwellings in Australia. In the twelve months prior to the survey:

- 58,900 (0.4%) people were victims of at least one robbery
- 770,600 (4.8%) people were victims of at least one assault
- 44,100 (0.3%) people aged 18 years and over were victims of at least one sexual assault (graph 11.4).

In total 841,500 people aged 15 years and over were victims of one or more of these selected personal crimes, equating to an overall personal victimisation prevalence rate of 5.3%.

### How much crime is reported to police?

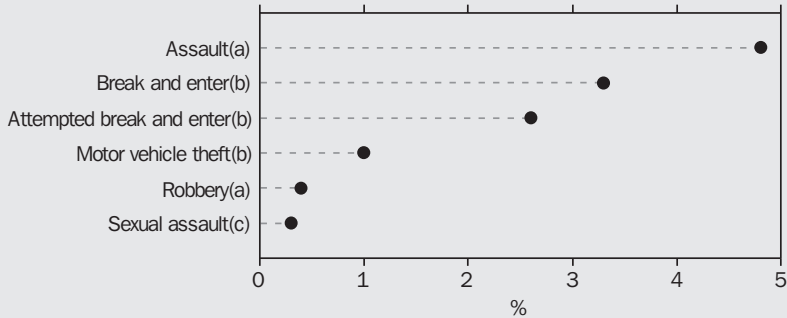
Crime is not always reported to the police, and many factors influence whether or not a crime is reported. The proportion of victims who reported the most recent incident to police varied depending on the type of offence. Household crimes were more likely to be reported to police than personal crimes. In 2005,

74% of household victims of break-in and 90% of household victims of motor vehicle theft reported the most recent incident to the police, compared with 38% of robbery victims and 31% of assault victims (graph 11.5).

### How safe do people feel?

Approximately 82% of persons felt safe or very safe when at home alone during the day, compared with 72% feeling this way after dark. Conversely, 4.0% of persons felt unsafe or very unsafe when at home alone during the day, compared with 8.3% at home alone after dark (graph 11.6).

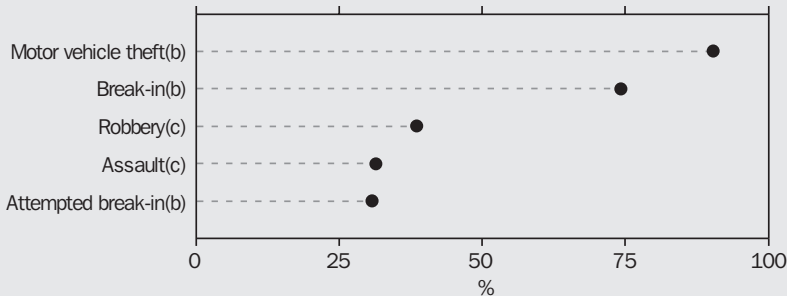
11.4 CRIME VICTIMISATION RATES — 2005



(a) Persons aged 15 years and over. (b) Households. (c) Persons aged 18 years and over.

Source: *Crime and Safety, Australia, April 2005 (4509.0)*.

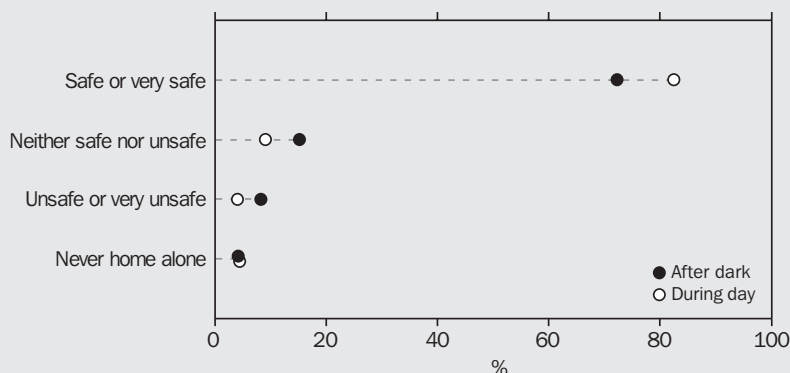
11.5 CRIME REPORTING RATES(a) — 2005



(a) Of household/person victims. (b) Households. (c) Persons aged 15 years and over.

Source: *Crime and Safety, Australia, April 2005 (4509.0)*.

### 11.6 FEELINGS OF SAFETY AT HOME ALONE — 2005



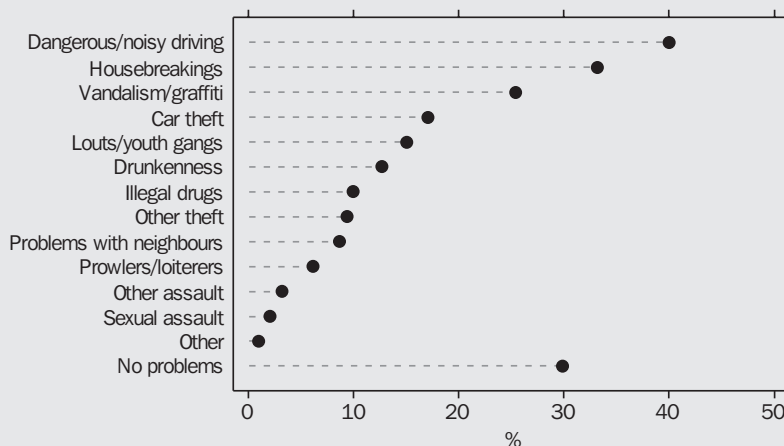
Source: *Crime and Safety, Australia, April 2005* (4509.0).

Men and women differed in their perceptions of safety, particularly after dark. Around 80% of men compared with 64% of women felt safe or very safe when at home alone. Feelings of safety also varied according to age, with 84% of persons aged 15–19 years and 83% of persons aged 20–24 years feeling safe or very safe when at home alone during the day, compared with 78% of persons aged 65 years and over.

### People's perceptions of neighbourhood problems

Overall, around 70% of people aged 15 years and over perceived that there were problems from crime and/or public nuisance in their neighbourhoods. The most commonly perceived problem was dangerous/noisy driving (40% perceived this as a problem). Other commonly perceived problems were housebreaking/burglaries/theft from homes (33%) and vandalism/graffiti/damage to property (25%) (graph 11.7).

### 11.7 NEIGHBOURHOOD PROBLEMS — 2005



Source: *Crime and Safety, Australia, April 2005* (4509.0).

## Reference

Australian Bureau of Statistics, *Crime and safety, Australia, April 2005* (4509.0), ABS, Canberra.

# Victims of household break-ins

## Characteristics of household victims of break-ins

Household crimes can have significant impacts on victims as a result of the losses a household may incur through damage or theft, and through the breach of the security of the home. It is generally accepted that not all households are at equal risk from household crimes such as a household break-in, and a number of factors can contribute to this risk. Community crime prevention programs focus on communicating to households ways in which they can help protect their home from break-in. Data from the National Crime and Safety Survey (NCSS), conducted by the Australian Bureau of Statistics during April–July 2005, show a number of characteristics of households experiencing break-in, victims' reporting of these incidents to police, and what offenders did while committing the break-in.

Break-in is defined in the NCSS as an incident where a person's home, including garage or shed was broken into. Break-in offences relating to the car or garden were excluded. To illustrate this definition, if a person broke into another person's shed and stole a bike, this would be considered a break-in incident. If a person tried, yet failed to break-in to a shed and steal a bike, this would be counted as an attempted break-in.

If a person stole the bike from an open area of land, it is not counted as a break-in or attempted break-in. Attempted break-ins and thefts without break-in are excluded from the data below.

In the twelve months prior to April 2005, 259,800 households were victims of at least one break-in to their home, garage or shed. This represented a victimisation prevalence rate of 3.3% of all households in Australia.

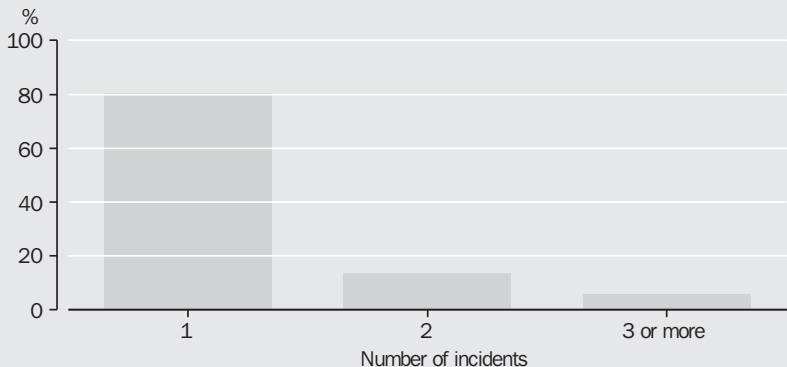
## Multiple victimisation

Of the total number of households experiencing a break-in, 80% (208,600) experienced one incident of break-in in a twelve-month period, 14% (35,700) experienced two break-in incidents, and 6.0% (15,500) experienced three or more break-ins (graph 11.8).

## Dwelling types

The survey found that 184,300 households living in separate houses experienced at least one incident of break-in in the twelve months prior to the survey. Just over 38,000 households living in flats or apartments experienced at least one incident of a break-in (table 11.9).

11.8 VICTIMS OF BREAK-IN — 2005



Source: *Crime and Safety, Australia, April 2005* (4509.0).

### 11.9 VICTIMS OF BREAK-IN, By dwelling structure — 2005

Dwelling structure	Break-in		All households
	number	rate(a)	number
	'000	%	'000
Separate house	184.3	3.1	5 905.3
Semi-detached or terrace house/townhouse etc.	34.4	3.9	876.5
Flat or apartment – on ground level	15.9	3.8	422.2
Flat or apartment – not on ground level	22.2	4.3	518.1
Other dwelling(b)	*3.1	*2.3	133.4
<b>Total</b>	<b>259.8</b>	<b>3.3</b>	<b>7 855.6</b>

(a) Percentage shown is the victimisation prevalence rate. Differences in the prevalence rate by type of dwelling are not statistically significant. (b) Includes households that did not give details of dwelling structure.

Source: *Crime and Safety, Australia, April 2005 (4509.0)*.

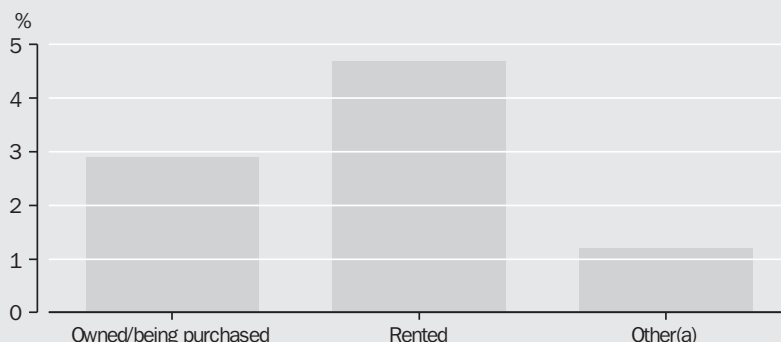
## Household tenure

The tenure of a dwelling – whether the property is owned or rented – appears to have an impact on whether or not a household experiences a break-in. Rental properties were more at risk than households that were owned or being purchased. The prevalence rate of break-ins for rental households was 4.7% compared with 2.9% for households that were owned or being purchased (graph 11.10).

## Length of time in current dwelling

The length of time a household has spent in their current dwelling also seems to be related to different levels of household victimisation. Households who had been living in their current dwelling for five years or more had a victimisation prevalence rate of 2.9% for break-ins during the twelve months prior to April 2005. In contrast, households who had been living in their property for less than a year were more likely to have experienced at least one break-in incident (4.1%). There was also a significant variation for those households who had been living in their household between three and five years and those living in their household for five years or more (4% and 2.9% respectively) (table 11.11).

11.10 VICTIMS OF BREAK-IN, Dwelling tenure type — 2005



(a) Includes households that did not give details of dwelling tenure type.

Source: *Crime and Safety, Australia, April 2005 (4509.0)*.

### 11.11 VICTIMS OF BREAK-IN, Length of time in current dwelling — 2005

		Break-in
	'000	%(a)
Less than 1 year	50.5	4.1
1 to less than 3 years	61.7	3.6
3 to less than 5 years	45.0	4.0
5 years or more	128.2	2.9
Total(b)	259.8	3.3

(a) Percentage shown is the victimisation prevalence rate. (b) Includes households that did not give details of the length of time lived in current dwelling.

Source: *Crime and Safety, Australia, April 2005 (4509.0)*.

## Residents

It would appear that the number of residents in a household has some impact on the risk of victimisation. Lone-person households were more likely to experience a break-in (4%) than two-person households (2.9%).

police could do (20,600 households or 7.9%), households thought the incident was too trivial or unimportant to report (13,200 households or 5.1%) or that householders thought the police would be unwilling to do anything (9,200 households or 3.5%).

## Reporting to police

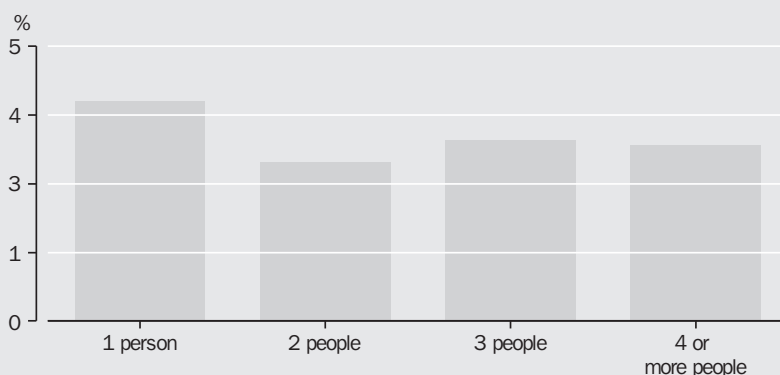
The majority of households (192,700 or 74.2% of victims) experiencing a break-in during the twelve months prior to April 2005 reported the most recent incident to police.

Of the remaining 67,100 (26%) households who did not report the most recent break-in, victims were asked about why they did not report the incident to police. The main reasons provided were: householders thought there was nothing

## What offenders did in the most recent incidents of break-ins

Around 217,000 households indicated that for the most recent incident of a break-in during the reference period, the offender did not do anything beyond physically breaking in to their home. For 201,500 households the offender stole property, while property damage was experienced by 115,200 households. A number of incidents involved the offender confronting someone (25,500 households) (graph 11.13).

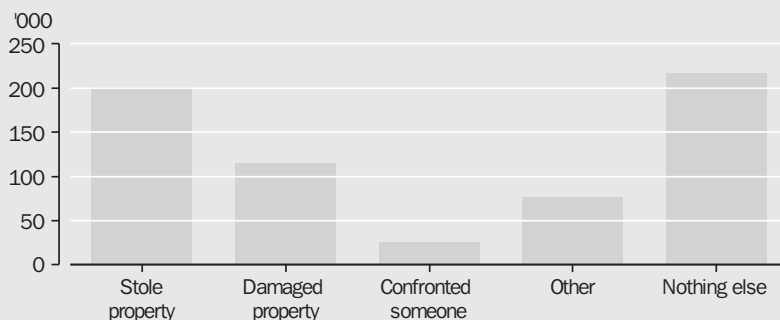
### 11.12 VICTIMS OF BREAK-IN, Number of persons resident in household — 2005



Source: *Crime and Safety, Australia, April 2005 (4509.0)*.



**11.13 WHAT THE OFFENDER DID IN THE MOST RECENT HOUSEHOLD BREAK-IN  
— 2005**



Note: Householders could have indicated more than one response.

Source: *Crime and Safety, Australia, April 2005* (4509.0).

Overall, according to findings from the 2005 NCSS, those households at greater risk of a break-in were lone-person households which were being rented rather than owned or being purchased and households where the residents had occupied the premises for less than a year. The risk of break-ins was not influenced by the

type of dwelling. Households were generally likely to report a break-in incident to police. Of those who did not, the reasons most often given were that there was nothing police could do, or the incident was too trivial.

## Reference

Australian Bureau of Statistics, *Crime and safety, Australia, April 2005* (4509.0), ABS, Canberra.

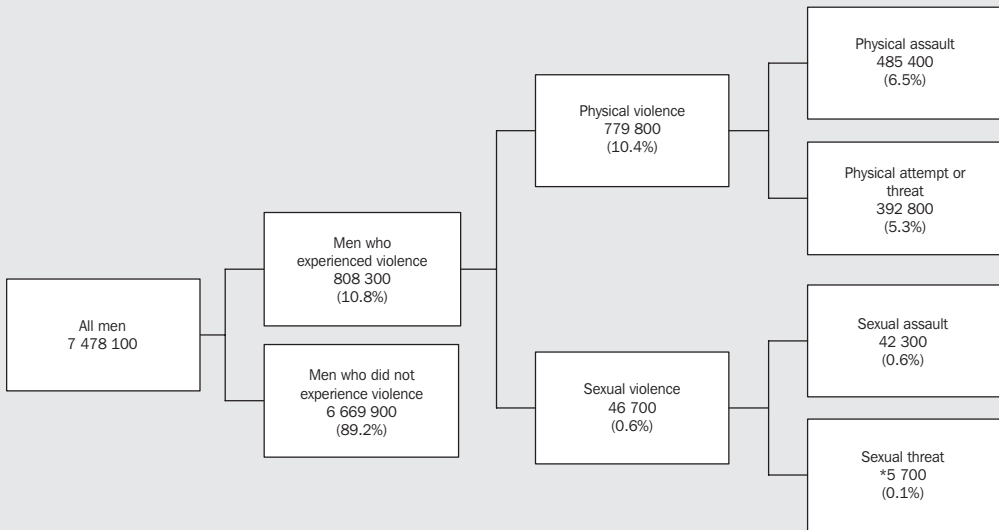
## Experience of personal violence

In addition to the main suite of criminal justice statistics regularly produced by the Australian Bureau of Statistics (ABS), more in-depth information about aspects of victimisation are collected from time to time through more detailed surveys on specific topics. An example of this is the 2005 Personal Safety Survey (PSS), conducted by the ABS during August to December 2005. Information was collected through personal interviews of people aged 18 years and over in all Australian states and territories. The survey provides information on people's safety at home and in the community and, in particular, on the nature and extent of violence against people. It also collected information about incidents of abuse, stalking and other forms of harassment.

Measuring violence in the community through household surveys is a complex task. The ABS consulted with a number of experts from the field of crime and justice to obtain advice on the information to be collected, and appropriate survey methodology. There are no generally agreed or accepted standards for defining what constitutes violence. The definitions used in the PSS were based on actions which would be considered as offences under state and territory criminal law.

Diagrams 11.14 and 11.15 show the experiences of violence for men and women in the twelve months prior to the survey in 2005.

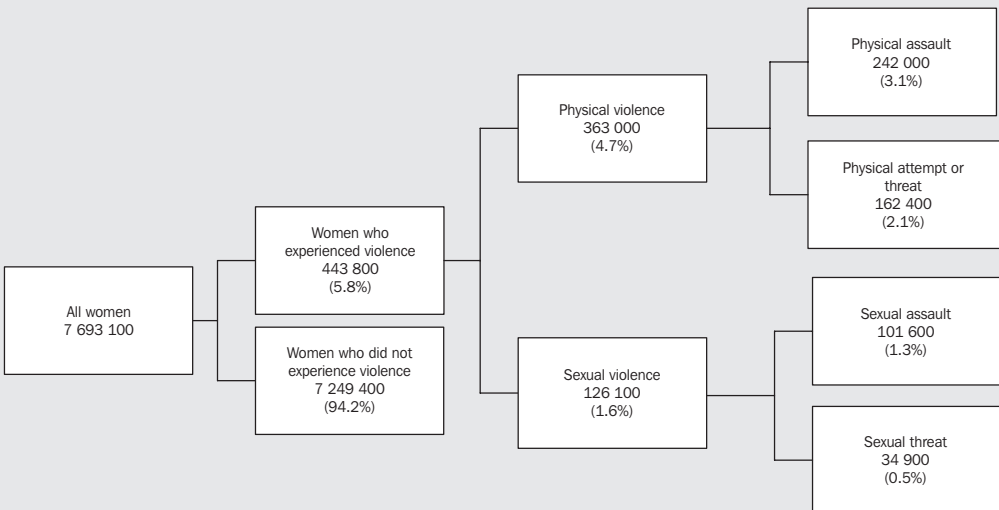
### 11.14 MEN'S EXPERIENCE OF VIOLENCE(a) – 2005



(a) Men who experienced violence during the twelve months prior to the 2005 PSS could have experienced violence more than once. The components when added may therefore be larger than the total.

Source: Personal Safety, Australia (4906.0).

### 11.15 WOMEN'S EXPERIENCE OF VIOLENCE(a) – 2005



(a) Women who experienced violence during the twelve months prior to the 2005 PSS could have experienced violence more than once. The components when added may therefore be larger than the total.

Source: Personal Safety, Australia (4906.0).

Violence, is any incident involving the occurrence, attempt, or threat of either physical or sexual assault. Physical assault involves the use of physical force with the intent to harm or frighten. An attempt or threat to inflict physical harm is included only if a person believes it is likely to be carried out. Sexual assault includes acts of a sexual nature carried out against a

person's will through the use of physical force, intimidation or coercion, or any attempts to do this. Unwanted sexual touching is excluded from sexual assault. Sexual threat involves the threat of an act of a sexual nature which the person believes is likely to be carried out.

References

Australian Bureau of Statistics, *Personal Safety, Australia* (4906.0), ABS, Canberra.  
Australian Bureau of Statistics, *Personal Safety, Australia: User Guide* (4906.0.55.003), ABS, Canberra.

Crimes recorded by police

Table 11.16 shows the number of victims of criminal offences in 2005 as recorded by Australian police.

11.16 VICTIMS(a), By selected offences — 2005	
Homicide and related offences	769
Murder	270
Attempted murder	273
Manslaughter	25
Driving causing death(b)	201
Kidnapping/abduction(c)	730
Robbery	16 787
Armed robbery	6 222
Unarmed robbery	10 565
Blackmail/extortion(d)	393
Unlawful entry with intent	284 188
Property theft(e)	204 195
Other(e)	79 993
Motor vehicle theft(f)	80 738
Other theft	519 128

(a) Number as recorded by police in all jurisdictions. Depending on the type of offence recorded, a victim may be a person, a premise, an organisation or a motor vehicle. (b) New South Wales data is estimated. Incomplete counts for Western Australia due to the introduction of a new system. Includes driving causing grievous bodily harm for Western Australia. Excludes negligent driving for Tasmania. Data not available for Northern Territory as not an offence defined by law. (c) Counts for New South Wales may be inflated slightly. (d) Includes food tampering for South Australia. (e) Property taken may not always be identified for Victoria. (f) Western Australia data includes theft of caravans and trailers.  
Source: Recorded Crime – Victims, Australia, 2005 (4510.0).

The number of victims in 2005 declined in most offence categories compared with 2004. The number of victims of homicide and related offences decreased by 10%, while victims of motor vehicle theft and unlawful entry with intent both decreased by 8%. Other theft and kidnapping/abduction both decreased by 5%.

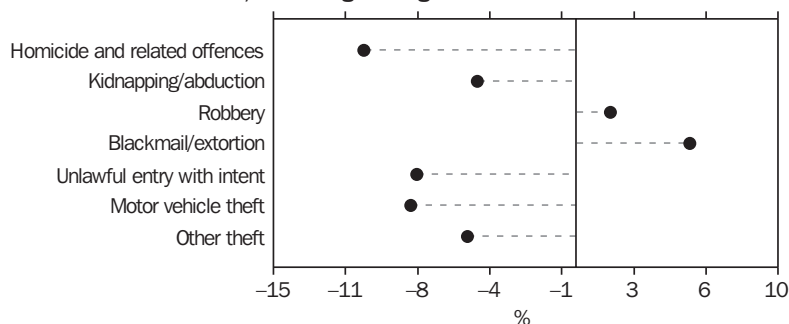
Increases were recorded for blackmail/extortion (6%) and robbery (2%).

Graph 11.17 shows the percentage change between 2004 and 2005 in the number of victims of selected offences.

In 2005, the victimisation rates for motor vehicle theft (397 per 100,000 persons) and unlawful entry with intent (1,398 per 100,000 persons) were the lowest since national reporting began in 1993, while homicide and related offences remained the same as 2004 (4 per 100,000 persons). The victimisation rate for other theft was the lowest since 1995 (2,554 per 100,000 persons).

The victimisation rate for robbery increased by less than 1% from the 2004 rate to 83 per 100,000 persons.

### 11.17 VICTIMS, Percentage change in number — 2004 to 2005



Note: The definition of victims varies according to the type of offence; it may be a person, a premise, an organisation or a motor vehicle.

Source: *Recorded Crime – Victims, Australia, 2005 (4510.0)*.

### Age of victims

Men in the age groups 15–24 years and 45–64 were twice as likely to be a victim of murder than women of the same age groups. Men were three times more likely to be a victim of attempted murder if aged 15–24 years than women in the same age group.

For kidnapping/abduction boys aged 0–14 years had the highest victimisation rate for men (5 per 100,000 males), while for women the 15–24 age group had the highest victimisation rate for the same offence (12 per 100,000 females).

The victimisation rate for robbery was the highest in the 15–24 year age group for men (315 per 100,000 males) and women (96 per 100,000 females) (table 11.18).

### 11.18 VICTIMISATION RATES(a) OF SELECTED CRIMES(b) — 2005

Age group (years)	Offence category					
	Murder	Attempted murder	Driving causing death	Kidnapping/abduction	Robbery(c)	Blackmail/extortion(c)
MALES						
0–14	0.7	0.4	0.3	5.4	25.6	0.2
15–24	1.5	2.8	2.5	3.9	315.9	3.2
25–44	2.5	3.3	1.1	1.6	111.2	2.9
45–64	1.4	1.1	0.6	0.6	44.8	2.7
65 and over	1.1	0.3	0.3	0.3	18.4	0.7
All ages(d)	1.7	1.9	0.9	2.5	99.2	2.2
FEMALES						
0–14	0.6	0.5	0.0	7.7	5.5	0.2
15–24	0.7	0.9	1.3	12.3	96.1	2.5
25–44	1.5	1.3	0.6	3.0	48.1	1.4
45–64	0.7	0.8	0.5	0.4	27.3	1.2
65 and over	0.3	0.0	0.5	0.5	16.9	0.3
All ages(d)	1.0	0.8	0.6	4.6	38.2	1.2
PERSONS(e)						
0–14	0.7	0.5	0.2	6.6	15.9	0.2
15–24	1.1	1.8	1.9	8.0	210.0	2.8
25–44	2.0	2.3	0.9	2.3	80.3	2.2
45–64	1.0	0.9	0.5	0.5	36.3	2.0
65 and over	0.7	0.1	0.4	0.4	17.8	0.4
All ages(d)	1.3	1.4	1.0	3.6	69.2	1.7

(a) Victims per 100,000 persons. (b) As recorded by police in all jurisdictions. (c) Refers to person victims only and therefore does not include organisations as victims. (d) Includes victims for whom age was not specified. (e) Includes victims for whom sex was not specified.

Source: *Recorded Crime – Victims, Australia, 2005 (4510.0)*.

Weapons used against victims of crime

In 2005, a weapon was most likely to have been used in attempted murder (72%) and murder (59%) offences. A knife was the most common type of weapon used and was involved in nearly one-third of murders (30%) and attempted murders (29%). A firearm was involved in 18% of attempted murders, 10% of murders and 5% of robberies (table 11.19).

Murders involving a weapon increased by 7% from 2004, but were 15% lower than in 2001. The proportion of weapon use for this offence was similar in 2005 compared with 2001 (59% in 2005 compared with 60% in 2001).

A knife was used in 30% of murders recorded in 2005, the highest proportion since 2001 (29%), while the use of firearms for this offence

continued to decline for this same period, from 16% in 2001 to 10% in 2005. Murders involving other weapons comprised 15% of the total (chart 11.20).

The proportion of robberies in which a weapon was used declined from 42% in 2001 to 37% in 2005. The proportions have remained relatively stable since 2002, ranging from 36% to 37%.

The use of knives was more prevalent for robberies than firearms, comprising 19% of all robberies. This proportion was slightly higher than the proportion in 2004 (18%), but lower than that recorded in 2001 (23%). Firearms accounted for 5% of total robberies in 2005, a slight decline from the proportions recorded in the preceding four years (around 6% of all robberies). Other weapon use ranged between 8% and 9% during the period 2001 to 2005 (chart 11.21).

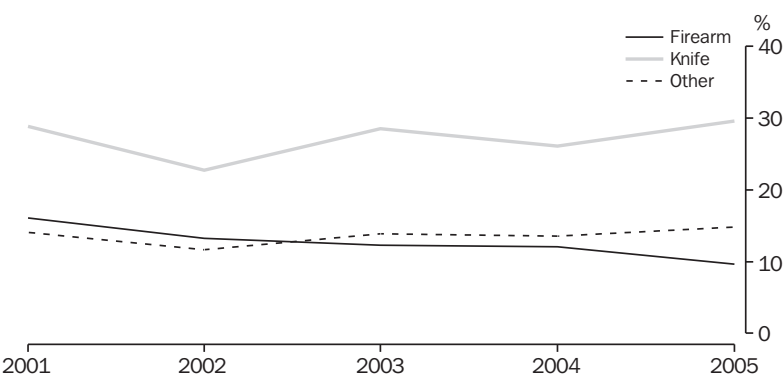
11.19 VICTIMS(a), By use of weapon in commission of selected offences — 2005

	Murder	Attempted murder	Kidnapping/abduction	Robbery(b)
Weapon used				
Firearm	26	48	9	758
Knife	80	80	66	3 182
Other weapon	40	53	25	1 471
Total(c)	159	197	114	6 222
No weapon used	107	76	613	10 174
Total(d)	270	273	731	16 787

(a) As recorded by police in all jurisdictions. (b) For the offence of Robbery, a victim may be a person or an organisation. (c) Includes weapon use not further defined. (d) Includes unknown or not stated weapon use.

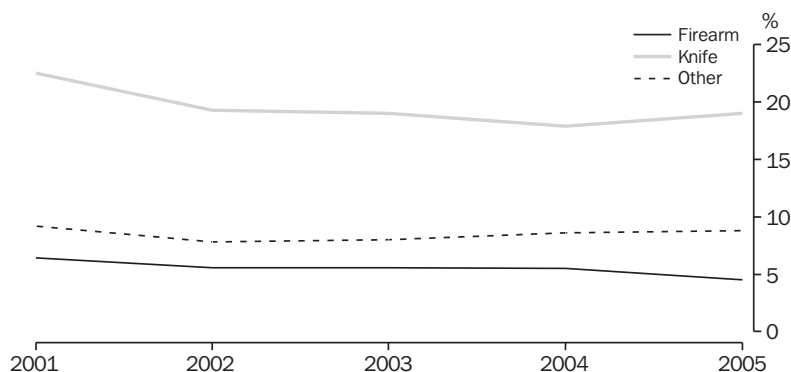
Source: Recorded Crime – Victims, Australia, 2005 (4510.0).

11.20 VICTIMS OF MURDER, Weapon used in commission of offence



Source: Recorded Crime – Victims, Australia, 2005 (4510.0).

### 11.21 VICTIMS OF ROBBERY, Weapon used in commission of offence



Source: Recorded Crime – Victims, Australia, 2005 (4510.0).

## Drug offences

The traffic in, and abuse of, illicit drugs results in significant social and financial costs to both individuals and the community. To minimise the harm associated with illicit drug activity, there is close cooperation between the Australian Government, the state and territory governments, the various police services and other law enforcement agencies. Included in these agencies is the ACS which has, among other things, responsibility for the enforcement of laws controlling the import and export of illicit drugs. These agencies direct particular attention to monitoring the various types and forms of illicit drugs and identifying emerging patterns of use through the analysis of law enforcement data on illicit drug seizures and arrests.

In 2004–05 by far the largest category of drug arrests involved cannabis offences, with 54,936 arrests, or 71% of the national total (table 11.22). The next largest category of arrests involved amphetamine offences, with 10,068 arrests, or 13% of the national total.

## Outcomes of police investigations

Statistics about the outcomes of police investigations describe the status of the processes of police investigations that are initiated following the reporting or detection of an offence. At any point in time, the status of investigations can include:

- not finalised (i.e. were still continuing, were pending or were suspended)
- finalised without an offender being proceeded against because the reported offence was not verified, the complaint was withdrawn, or the alleged offender could not be proceeded against because of some statutory or procedural bar
- finalised and an offender was proceeded against by initiating court action or some other form of formal proceeding (e.g. a diversionary conference or a formal caution).

Table 11.23 shows in 2005, approximately two-thirds of the investigations into driving causing death (68%), attempted murder (65%) and murder (64%) were finalised within 30 days of a victim becoming known to police.

### 11.22 DRUG ARRESTS(a) — 2004–05

Drug type	no.
Cannabis(b)	54 936
Heroin and other opioids	3 304
Amphetamine-type stimulants	10 068
Cocaine	425
Hallucinogens	119
Steroids	124
Other and unknown(c)	8 357
<b>Total</b>	<b>77 333</b>

(a) Total of each state and territory, including Australian Federal Police data. (b) Includes infringement notices. (c) 'Other drugs' includes phencyclidine (PCP or 'angel dust'), diazepam, lignocaine, benzocaine, dothiepin, flunitrazepam, other prescription drugs, and any drug not included elsewhere.

Source: Australian Crime Commission, 'Illicit Drug Data Report, 2004–05'.

### 11.23 VICTIMS OF RECORDED CRIME(a), By outcome of investigations at 30 days — 2005

Offence	Not finalised	Finalised		Total(b)
		No offender proceeded against	Offender proceeded against	
Homicide and related offences				
Murder	98	16	156	270
Attempted murder	97	8	168	273
Manslaughter	16	—	9	25
Driving causing death	64	11	126	201
Total	275	35	459	769
Kidnapping/abduction	479	82	171	732
Robbery				
Armed robbery	4 674	250	1 296	6 223
Unarmed robbery	8 227	733	1 603	10 566
Total	12 901	983	2 899	16 789
Blackmail/extortion	216	45	131	392
Unlawful entry with intent				
Involving the taking of property	186 543	3 354	14 258	204 195
Other	71 136	1 775	7 016	79 993
Total	257 679	5 129	21 274	284 188
Motor vehicle theft	71 242	2 686	6 792	80 738
Other theft	441 633	11 397	65 814	519 128

(a) Depending on the type of crime, a victim may be a person, a premise, an organisation or a motor vehicle. (b) Includes unknown outcomes of investigation.

Source: *Recorded Crime – Victims, Australia, 2005 (4510.0)*.

The lowest proportions of finalisations at 30 days were for victims of unlawful entry with intent (9%), and motor vehicle theft (12%) and other theft (15%). However, of the total finalised for these offence types, a high proportion had an offender proceeded against by police: other theft (85%), unlawful entry with intent (81%) and motor vehicle theft (72%).

The highest proportions of investigations finalised where there was no offender proceeded against were for victims of kidnapping/abduction (32%), motor vehicle theft (28%), blackmail/extortion (26%) and robbery (25%).

## Courts

Many courts and court-related tribunals operate throughout Australia. The majority of courts handle matters that are criminal or civil in nature, while tribunals provide a less costly alternative for progressing some civil and administrative matters outside the formality of a court. A criminal matter generally arises where a charge has been laid either by police or some other prosecuting authority on the basis of a breach of criminal law. A civil matter occurs where there is a dispute between two or

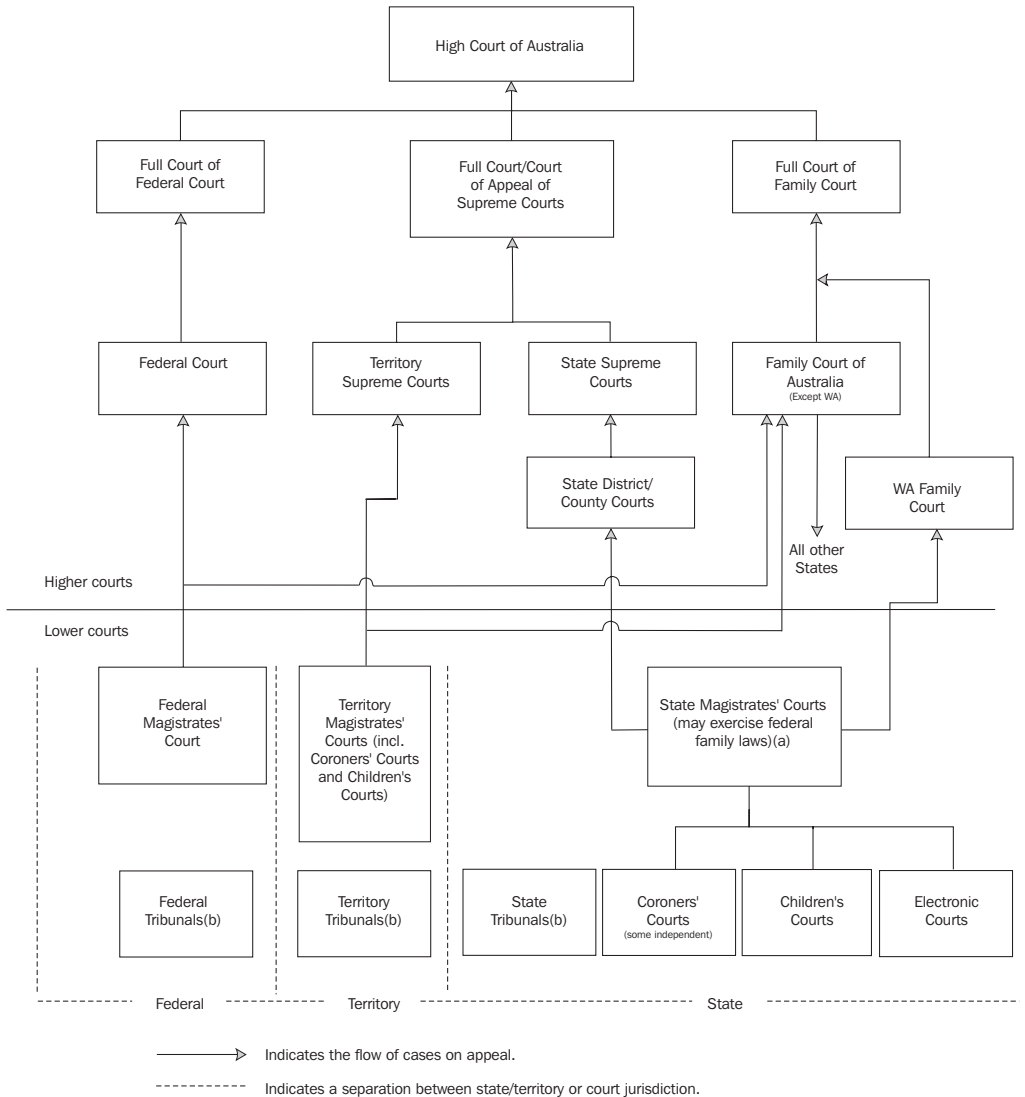
more individuals or organisations, where one party seeks legal remedy for an injury or loss from the other party who is alleged to be liable.

There are many other types of courts and tribunals in operation, commonly referred to as specialist courts and tribunals. Examples of these include the Coroners' Courts, Family Court, Federal Magistrates' Court, Drug Courts, Domestic Violence Courts, Workers' Compensation Commissions/Tribunals, Industrial Relations Commission, Small Claims Tribunals, Administrative Appeals Tribunal and Residential Tenancy Tribunal.

Courts and tribunals are arranged in a hierarchy (diagram 11.24), with the majority of less serious matters being heard before magistrates and more serious matters being heard before judges. For criminal matters the seriousness is often determined by the nature of the alleged offence. In a civil context, seriousness is generally determined according to the amount being sought in compensation. A court's or tribunal's ability to deal with a civil, criminal or other matter will depend on the state or territory's legislation or jurisdiction applicable to that particular level of court.



## 11.24 HIERARCHY OF COURTS



(a) In some jurisdictions, appeals from lower courts may go directly to the court of appeal in the Supreme Court. In the ACT, the court of appeal of the Supreme Court commenced exercising limited jurisdiction on 31 October 2001; full jurisdiction did not commence until 14 October 2002. (b) Appeals from federal, state and territory tribunals may go to any higher court in their jurisdiction.

Source: Steering Committee for the Review of Commonwealth/State Service Provision, Report on Government Services 2006.

The hierarchy of courts also applies to appeal matters. Where grounds for appeal exist, the appeal process is available in both criminal and civil matters. Appeals resulting from civil tribunal decisions may be referred to the Magistrates', District/County, Supreme or Commonwealth Courts, depending on the jurisdiction and the

rights of appeal. Criminal appeals resulting from the Magistrates' Court can be appealed at the District/County, Supreme or Commonwealth Court level in the first instance. The High Court of Australia is the highest court of appeal for both criminal and civil cases.

## Criminal courts

A system of courts for the hearing of criminal matters exists in all Australian states and territories. Once charges are laid by police, the court will hear evidence by both prosecution and defence, and will make a decision as to whether or not the defendant is guilty. In cases where the defendant is found guilty, the court may also record a conviction and impose a penalty.

The lowest level of criminal court is the Magistrates' Court or Court of Summary Jurisdiction. The majority of all criminal cases are heard in these courts. Cases heard in Magistrates' Courts do not involve a jury and a magistrate determines the guilt or innocence of the defendant. This is known as a summary proceeding. More serious offences are dealt with by the higher court levels.

All states and territories have a Supreme Court that can deal with all criminal matters. The larger jurisdictions also have an intermediate level of court, known as the District or County Court, that deals with the majority of serious offences. The Supreme Courts and Intermediate Courts are collectively referred to as the Higher Courts.

All defendants that are dealt with by the Higher Courts have an automatic entitlement to a trial before a judge and jury. In some jurisdictions, the defendant may elect to have the matter heard before a judge alone. Offences that must be heard before a judge and jury are known as indictable offences. These include offences such as murder, manslaughter and drug importation as well as serious sexual offences, robberies and assaults.

A defendant proven guilty in a criminal matter is entitled to appeal against the conviction or against the severity of penalty imposed. Under some circumstances, the prosecution is also entitled to appeal against the leniency of the penalty. The states and territories differ in the ways in which they deal with appeals. Some appeals from Magistrates' Courts may be heard before the Intermediate Courts. In other jurisdictions the Supreme Court may hear these appeals. In most jurisdictions an appeal court or Court of Criminal Appeal may be constituted to hear appeals from the Supreme or Intermediate Courts, with the highest court of appeal for all jurisdictions being the High Court of Australia.

## National criminal courts statistics

The aim of the Criminal Courts collection, conducted by the ABS, is to provide comparable statistics for the states and territories and for Australia on the characteristics of defendants dealt with by the Criminal Courts. This includes information on the offences and sentences associated with those defendants. In order to ensure consistency between the states and territories, the statistics have been compiled according to national standards and classifications. However, some legislative and processing differences may limit the degree to which the statistics are comparable across the states and territories. Differences may also arise as a result of other factors, including refinements in data quality procedures and modifications in the systems used to obtain and compile the figures.

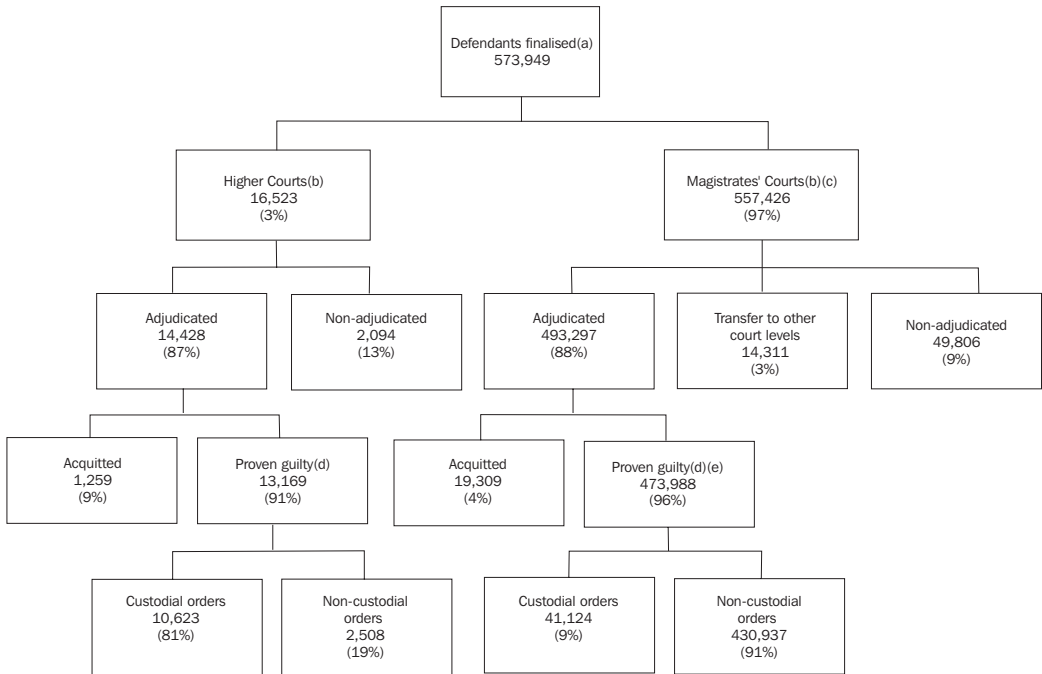
### Criminal courts defendant summary characteristics

Diagram 11.25 presents summary characteristics of defendants dealt with by the Higher and Magistrates' Courts of Australia. 'Finalised defendant' refers to all charges against a person or organisation having been formally completed so that the defendant ceases to be an item of work to be dealt with by a particular court. Adjudication is a method of finalisation based on a judgement or decision by the court as to whether or not a defendant is guilty of the charge(s) laid against them.

In 2004–05, 573,949 defendants were finalised in the Higher and Magistrates' Courts. Of these, 16,523 (3%) were in the Higher Courts and 557,426 (97%) were in the Magistrates' Courts.

The majority (87% or 14,428) of defendants finalised in the Higher Courts during 2004–05 were adjudicated. Those proven guilty comprised 91% (13,169) of all adjudications, while acquittals comprised 9% (1,259) of the total. Of those proven guilty, 88% pleaded guilty and 12% were declared guilty at trial. The remaining defendants (13%) were finalised by a non-adjudicated method such as all charges withdrawn by the prosecution.

## 11.25 CRIMINAL COURT FINALISATIONS — 2004–05



(a) Defendants will be counted twice where they are transferred from the Magistrates' Court to a Higher Court and then finalised in the Higher Court in the same reference period. (b) Includes defendants with an unknown method of finalisation. (c) Excludes defendants finalised by committal or transfer to a Higher Court and refers to finalised appearances rather than finalised defendants in Magistrates' Court in New South Wales. (d) Includes defendants for whom a principal sentence is unknown. (e) Includes guilty finding, guilty plea, guilty ex-parte and guilty n.f.d.

Source: *Criminal Courts, Australia, 2004–05* (4513.0).

The Magistrates' Courts finalised 557,426 defendants during 2004–05. Adjudications comprised 88% (493,297) of all finalisations. Defendants proven guilty (i.e. pleaded guilty or were declared guilty) and defendants acquitted comprised 96% and 4% respectively of all adjudications. Non-adjudicated methods (such as all charges withdrawn by the prosecution or transferred to another court level) comprised 12% of finalised defendants.

### Criminal courts finalisations

For all court levels, New South Wales, Queensland and Victoria accounted for 71% of finalisations nationally (29%, 24% and 18% respectively). Queensland accounted for the highest proportion of finalisations for the Higher Courts (37%) and

New South Wales for the highest proportion of finalisations in the Magistrates' Courts (29%) (table 11.26).

Men represented the majority of finalised defendants (78% or 447,140) in the Higher and Magistrates' Courts during 2004–05. Just under half (282,620) the total number of finalised defendants were men aged less than 35 years. Men in the 20–24 year age group had the highest number of finalised defendants in both the Higher Courts (3,095) and Magistrates' Courts (97,034) while the 35–44 year age group was the highest for women in both the Higher Courts (476) and Magistrates' Courts (23,850) (graphs 11.27 and 11.28).

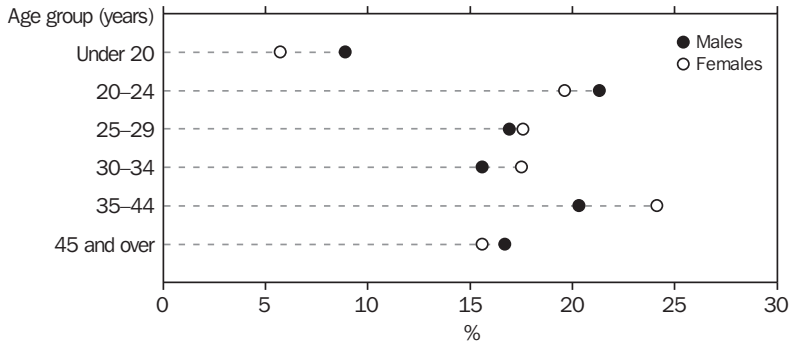
### 11.26 CRIMINAL COURT FINALISATIONS(a) — 2004–05

	Higher Criminal Courts	Magistrates' Criminal Courts
New South Wales(b)	3 356	160 560
Victoria	2 425	99 096
Queensland(c)	6 105	134 005
South Australia(c)	941	44 134
Western Australia	2 695	60 136
Tasmania	526	46 019
Northern Territory	331	8 892
Australian Capital Territory	144	4 584
<b>Australia</b>	<b>16 523</b>	<b>557 426</b>

(a) Excludes defendants finalised by a bench warrant being issued. (b) Refers to finalised appearances rather than finalised defendants in the Magistrates' Court, resulting in a possible increase in the population counts. (c) Excludes children treated as adults.

Source: *Criminal Courts, Australia, 2004–05* (4513.0).

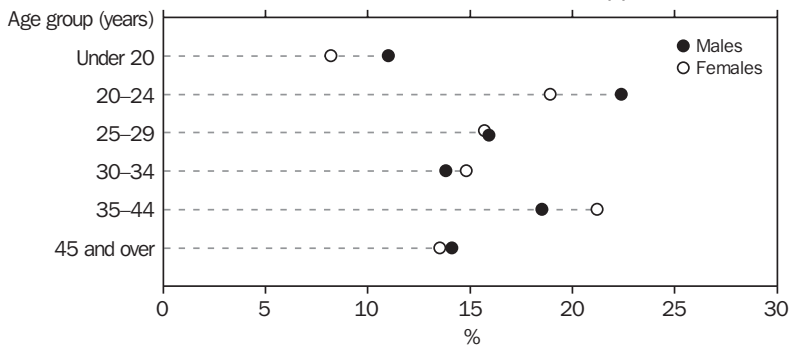
### 11.27 DEFENDANTS FINALISED IN HIGHER COURTS(a) — 2004–05



(a) Total defendants finalised includes organisations, and persons with unknown age.

Source: Data available on request, 2004–05 Criminal Courts collection.

### 11.28 DEFENDANTS FINALISED IN MAGISTRATES' COURTS(a) — 2004–05



(a) Total defendants finalised includes organisations, and persons with unknown age.

Source: Data available on request, 2004–05 Criminal Courts collection.

Adjudicated defendants – principal offence

Defendants were more likely to be adjudicated in the Higher Courts during 2004–05 for the following categories of principal offences that fall within the Division of the Australian Criminal Standard Offence Classification (ASOC): acts intended to cause injury (21%); illicit drug offences (16%); sexual assault and related offences (13%); unlawful entry with intent/burglary, break and enter; and robbery, extortion and related offences (both 11%) (table 11.29). There were

10,328 (72%) defendants adjudicated by the Higher Courts with a principal offence in one of these five categories.

In contrast, the five categories of principal offence that accounted for the majority of adjudicated defendants in the Magistrates’ Courts in 2004–05 were: road traffic and motor vehicle regulatory offences (46%); public order offences (9%); dangerous or negligent acts endangering persons (8%); theft and related offences, and acts intended to cause injury (both 7%). Overall, approximately three out of every four defendants adjudicated in the Magistrates’ Courts had one of these five categories of principal offence (table 11.30).

11.29 DEFENDANTS ADJUDICATED IN HIGHER COURTS, Principal offence — 2004–05

ASOC Division(a)	Age group (years)				Total(b)
	Under 20	20–29	30–44	45 and over	
Homicide and related offences	33	167	167	72	441
Acts intended to cause injury	315	1 354	1 109	260	3 043
Sexual assault and related offences	103	382	697	632	1 816
Dangerous or negligent acts endangering persons	43	203	153	47	446
Abduction and related offences	12	43	50	10	117
Robbery, extortion and related offences	286	813	350	68	1 525
Unlawful entry with intent/burglary, break and enter	236	814	509	63	1 622
Theft and related offences	71	256	227	83	638
Deception and related offences	14	266	436	300	1 018
Illicit drug offences	56	740	1 049	476	2 322
Weapons and explosives offences	6	51	46	22	125
Property damage and environmental pollution	49	149	101	47	348
Public order offences	19	91	88	52	251
Road traffic and motor vehicle regulatory offences	—	3	—	—	3
Offences against justice procedures, government security and government operations	19	123	110	49	303
Miscellaneous offences	9	107	148	54	335
All offence categories(c)	1 273	5 586	5 270	2 251	14 428

(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes organisations and persons with unknown age. (c) Includes defendants for whom offence data were missing or a principal offence could not be determined.

Source: Criminal Courts, Australia, 2004–05 (4513.0).

### 11.30 DEFENDANTS ADJUDICATED IN MAGISTRATES' COURTS, Principal offence — 2004–05

ASOC Division(a)	Age group (years)				Total(b)
	Under 20	20–29	30–44	45 and over	
Homicide and related offences	10	39	37	27	113
Acts intended to cause injury	2 889	12 856	13 798	4 096	33 709
Sexual assault and related offences	50	189	342	265	853
Dangerous or negligent acts endangering persons	5 635	15 520	10 635	5 198	37 192
Abduction and related offences	3	15	7	5	32
Robbery, extortion and related offences	83	139	88	13	326
Unlawful entry with intent/burglary, break and enter	1 300	3 048	1 839	207	6 420
Theft and related offences	5 670	14 110	11 111	4 117	35 134
Deception and related offences	1 754	6 854	6 003	2 275	17 313
Illicit drug offences	2 661	11 557	10 280	2 789	27 311
Weapons and explosives offences	664	2 104	2 097	1 140	6 017
Property damage and environmental pollution	2 305	4 977	3 392	824	11 754
Public order offences	7 816	18 655	13 442	4 382	45 349
Road traffic and motor vehicle regulatory offences	17 802	82 235	71 967	35 965	224 676
Offences against justice procedures, government security and government operations	3 361	10 898	11 573	4 101	32 563
Miscellaneous offences	683	3 042	3 896	1 975	14 405
<b>All offence categories(c)</b>	<b>52 693</b>	<b>186 277</b>	<b>160 549</b>	<b>67 401</b>	<b>493 297</b>

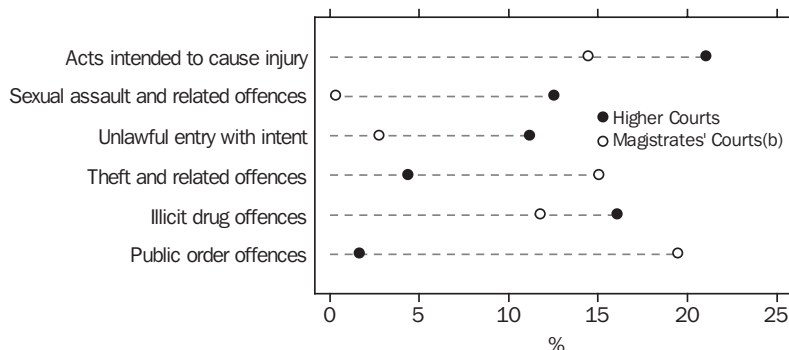
(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes organisations, and persons with unknown age. (c) Includes defendants for whom offence data were missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2004–05* (4513.0).

When defendants with a principal offence related to traffic are excluded from the adjudicated population in the Magistrates' Courts, the five categories of principal offences that accounted for the majority of defendants nationally were: public order offences (20%); theft and related offences and acts intended to cause injury (both 15%); offences against justice procedures, government security and government operations (14%); and illicit drug offences (12%) (graph 11.31).

In the Higher Courts, the most prevalent principal offence was acts intended to cause injury (21% for men and 22% for women) (graph 11.32). Proportionally, more women were adjudicated for the principal offence of deception and related offences (18%) than were men (6%). In contrast, there were proportionally more men than women with a principal offence of sexual assault and related offences (14% and 2% respectively).

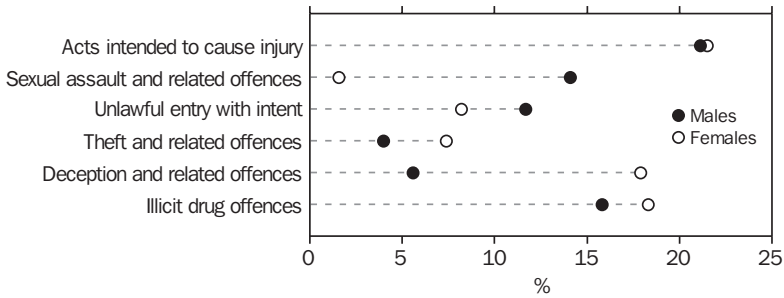
### 11.31 DEFENDANTS ADJUDICATED, Selected principal offences(a) — 2004–05



(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Excludes defendants with a principal offence in Australian Standard Offence Classification Division 14 (Road traffic and motor vehicle regulatory offences) and Subdivision 041 (Dangerous or negligent operation of a vehicle).

Source: *Criminal Courts, Australia, 2004–05* (4513.0).

### 11.32 DEFENDANTS ADJUDICATED IN HIGHER COURTS, Selected principal offences(a)(b) — 2004–05



(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2004–05 (4513.0)*.

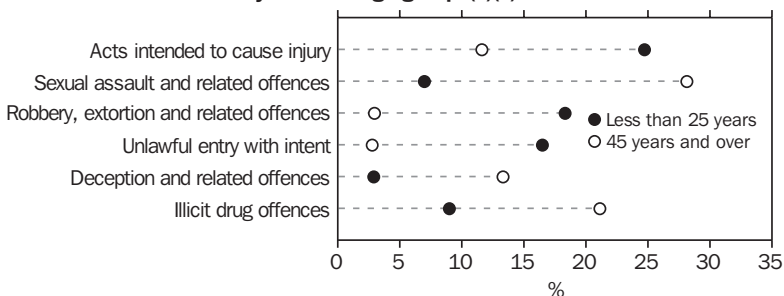
Nationally, the proportions of principal offences for defendants adjudicated were different across age groups in the Higher Courts. Defendants aged less than 25 years were more likely to be adjudicated for a principal offence of: acts intended to cause injury (25%); robbery, extortion and related offences (18%); and unlawful entry with intent/burglary, break and enter (17%). Those within the age group of 45 years and over were more likely to be adjudicated for: sexual assault and related offences (28%); illicit drug offences (21%); and deception and related offences (13%) (graph 11.33).

In the Magistrates' Court, the proportion of defendants with a principal offence of road traffic and motor vehicle regulatory offences tended to

increase with age. This was the principal offence category for 40% of adjudicated defendants aged 24 years and under, increasing to 53% for defendants aged 45 years and over.

Excluding traffic offences, defendants aged less than 25 years were more likely to be adjudicated for a principal offence in the categories of public order offences (24%) and theft and related offences (17%). Those 45 years and over were more likely to be adjudicated for public order offences (17%) and acts intended to cause injury, theft and related offences, and offences against justice procedures, government security and government operations (all 16%) (graph 11.34).

### 11.33 DEFENDANTS ADJUDICATED IN HIGHER COURTS, Selected principal offences by selected age groups(a)(b) — 2004–05

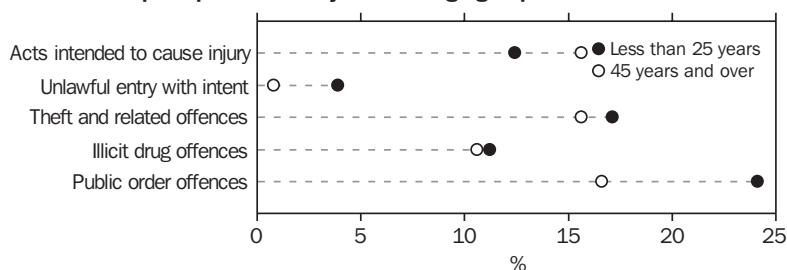


(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2004–05 (4513.0)*.



### 11.34 DEFENDANTS ADJUDICATED IN MAGISTRATES' COURTS(a)(b)(c), Selected principal offences by selected age groups — 2004–05



(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Excludes defendants with a principal offence in Australian Standard Offence Classification Division 14 (Road traffic and motor vehicle regulatory offences) and Subdivision 041 (Dangerous or negligent operation of a vehicle). (c) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2004–05* (4513.0).

## Adjudicated defendants by type of adjudication

Nationally, 91% (14,428) of adjudicated defendants were proven guilty or pleaded guilty in the Higher Courts, while the rate in the Magistrates' Courts was 96% (493,297).

Of the 2,796 adjudicated defendants that had a trial outcome in the Higher Courts, 55% (1,537) were found guilty while 45% (1,259) were acquitted (table 11.35). The majority (81% or 11,632) had a guilty plea. Only 3% (19,309) of adjudicated defendants that had a trial outcome in the Magistrates' Courts were acquitted.

Defendants adjudicated in the Higher Courts were most likely to be acquitted for the principal offences of sexual assault and related offences (24%) and homicide and related offences (18%), whereas defendants adjudicated in the Magistrates' Courts were most likely to be acquitted for homicide and related offences (31%) and abduction and related offences (28%).

The principal offences in the Higher Courts that had the highest proportion of defendants finalised with a plea of guilty were weapons and explosives offences and unlawful entry with intent/burglary, break and enter (both 91%). In contrast, adjudicated defendants with a principal offence of homicide and related offences and sexual assault and related offences were least likely to plead guilty (50% and 58% respectively) and therefore, most likely to have a trial outcome (acquittal or guilty verdict).

Defendants with a principal offence of illicit drug offences had the highest proportion of defendants either pleading guilty or proven guilty in the Higher Courts (97%). Defendants with a principal offence of dangerous or negligent acts endangering persons and illicit drug offences both had the highest proportion of defendants either pleading guilty or proven guilty in the Magistrates' Courts (99%).

### 11.35 ADJUDICATED DEFENDANTS, Principal offence and adjudication type — 2004–05

ASOC Division(a)	Higher Courts				Magistrates' Courts		
	Acquitted	Guilty verdict	Guilty plea	Total	Acquitted	Proven guilty(b)	Total
Homicide and related offences	80	140	221	441	35	78	113
Acts intended to cause injury	290	276	2 477	3 043	2 862	30 847	33 709
Sexual assault and related offences	433	330	1 053	1 816	193	660	853
Dangerous or negligent acts endangering persons	29	33	384	446	455	36 737	37 192
Abduction and related offences	16	21	80	117	9	23	32
Robbery, extortion and related offences	82	151	1 292	1 525	54	272	326
Unlawful entry with intent/burglary, break and enter	61	91	1 470	1 622	218	6 202	6 420
Theft and related offences	27	54	557	638	768	34 366	35 134
Deception and related offences	43	61	914	1 018	401	16 912	17 313
Illicit drug offences	67	240	2 015	2 322	281	27 030	27 311
Weapons and explosives offences	7	4	114	125	120	5 897	6 017
Property damage and environmental pollution	34	33	281	348	268	11 486	11 754
Public order offences	19	27	205	251	2 275	43 074	45 349
Road traffic and motor vehicle regulatory offences	—	—	3	3	9 702	214 974	224 676
Offences against justice procedures, government security and government operations	14	34	255	303	1 016	31 547	32 563
Miscellaneous offences	16	38	281	335	637	13 768	14 405
<b>All offence categories(c)</b>	<b>1 259</b>	<b>1, 537</b>	<b>11 632</b>	<b>14 428</b>	<b>19 309</b>	<b>473 988</b>	<b>493 297</b>

(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes guilty finding, guilty plea, guilty ex-parte and guilty n.f.d. (c) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: *Criminal Courts, Australia, 2004–05 (4513.0)*.

## Defendants proven guilty – principal sentence

Defendants proven guilty in the Higher Courts were more likely to receive custodial orders (i.e. custody in a correctional institution or the community or fully suspended sentences) compared with those in the Magistrates' Courts (81% and 9% respectively) (table 11.36). Acts of a more serious nature are usually dealt with in a Higher Court and are, therefore, far more likely to incur a custodial sentence.

Defendants proven guilty in the Higher Courts for homicide and related offences; robbery, extortion and related offences; and sexual assault and related offences incurred the highest proportion of custodial orders (96%, 92% and 88% respectively). Defendants proven guilty for theft and related offences in the Higher Courts incurred the highest proportion of non-custodial sentences (34%).

Defendants proven guilty in the Magistrates' Courts predominantly received non-custodial sentences for all principal offences except for

robbery, extortion and related offences (55% custodial) and unlawful entry with intent/burglary, break and enter (53% custodial) (table 11.36).

## Corrective services

Corrective services agencies are responsible for administering those penalties handed down by the criminal courts that require some form of supervision or custody of the offender. This may include imprisonment on either a full-time or part-time basis, community service and other forms of supervised work, home detention, or good behaviour bonds under supervision. Most people for whom corrective services have responsibility have received a sentence from a criminal court. Corrective service agencies may also be responsible for people prior to sentencing. Unsentenced persons may be held on remand in correctional facilities or be subject to supervised bail or similar community-based court orders.

### 11.36 DEFENDANTS PROVEN GUILTY, Principal offence and sentence — 2004–05

ASOC Division(a)	Higher Courts				Magistrates' Courts			
	Custody in corrections /community	Fully suspended sentences	Non-custodial orders	Total(b)(c)	Custodial orders(d)	Monetary orders	Other non-custodial (e)	Total(c)
Homicide and related offences	324	23	13	361	11	28	36	78
Acts intended to cause injury	1 602	520	628	2 753	7 596	11 815	11 250	30 847
Sexual assault and related offences	1 024	189	169	1 383	288	149	213	660
Dangerous or negligent acts endangering persons	231	68	117	417	1 767	31 583	3 341	36 737
Abduction and related offences	69	19	13	101	11	5	7	23
Robbery, extortion and related offences	1 153	178	111	1 443	149	27	85	272
Unlawful entry with intent/burglary, break and enter	990	247	324	1 561	3 274	968	1 888	6 202
Theft and related offences	278	126	207	611	5 964	18 187	10 042	34 366
Deception and related offences	559	178	204	975	2 658	8 783	5 415	16 912
Illicit drug offences	1 416	494	341	2 255	2 460	19 003	5 498	27 030
Weapons and explosives offences	81	22	15	118	624	4 015	1 214	5 897
Property damage and environmental pollution	162	47	103	314	945	7 185	3 303	11 486
Public order offences	103	48	70	232	1 106	27 857	13 855	43 074
Road traffic and motor vehicle regulatory offences	—	—	3	3	10 022	180 851	23 420	214 974
Offences against justice procedures, government security and operations	126	86	77	289	3 385	22 310	5 722	31 547
Miscellaneous offences	153	44	113	319	858	10 147	2 699	13 768
All offence categories(f)	8 272	2 289	2 508	13 169	41 124	342 947	87 990	473 988

(a) Classified according to Australian Standard Offence Classification (ASOC) 1997. (b) Includes custodial orders not further defined. (c) Includes defendants for whom a principal sentence is unknown. (d) Includes fully suspended sentences. (e) Includes community supervision/work orders and other non-custodial orders. (f) Includes defendants for whom offence data are missing or a principal offence could not be determined.

Source: Criminal Courts, Australia, 2004–05 (4513.0).

All states and territories operate prisons and other types of corrective services. Separate provisions exist in each state and territory for dealing with juvenile offenders. The Australian Government does not operate any prisons or other corrective services, as federal offenders (persons convicted of offences under Commonwealth laws) are supervised by state or territory agencies for correctional purposes. The majority of convicted adult prisoners from the Australian Capital Territory serve their sentences in New South Wales prisons, but local provision is made for the custody of unsentenced prisoners and periodic detainees, and for those under the supervision of community corrections (e.g. probation and parole).

As at 30 June 2005, corrective services operated 120 custodial facilities nationally comprising: 81 government-operated prisons and 7 privately-operated prisons;

5 government-operated community custodial facilities (including 2 transitional centres) and 1 privately-operated community custodial facility; 11 periodic detention centres; and 15 '24-hour' court-cell centres (under the responsibility of corrective services in New South Wales).

## Prisoners

The annual National Prisoner Census, conducted on the night of 30 June, counts all people who are in the legal custody of adult corrective services, including periodic detainees in New South Wales and the Australian Capital Territory. At any given point in time, most prisoners are serving long sentences for relatively serious offences, but the flow of offenders in and out of prisons consists primarily of people serving short sentences for less serious offences.

At 30 June 2005, there were 25,353 prisoners (sentenced and unsentenced) in Australian prisons. This represented an imprisonment rate of 163 prisoners per 100,000 adult population. The median age of imprisonment for both men and women prisoners was 33 years.

Unsentenced prisoners comprised 20% (5,133) of the total prisoner population. Most (60% or 15,308) prisoners had served a sentence in an adult prison prior to the current episode.

Of the total prisoner population, 93% (23,619) were men and 7% (1,734) were women.

Acts intended to cause injury was the offence which accounted for the highest most serious offence/charge (17% or 4,334 prisoners) (table 11.37).

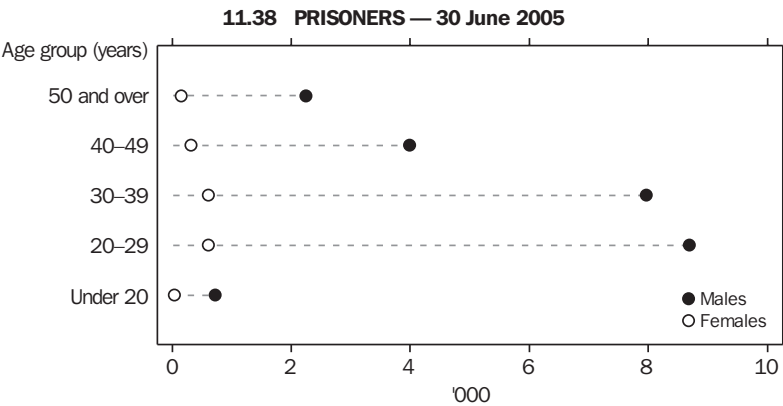
The majority of prisoners (16,653 or 71% of men and 1,224 or 71% of women) were aged 20–39 years (chart 11.38).

11.37 PRISONERS, Selected characteristics by most serious offence/charge — 30 June 2005

	Units	Homicide and related offences	Acts intended to cause injury	Sexual assault and related offences	Robbery, extortion and related offences	Unlawful entry with intent	Illicit drug offences	Other offences(a)	Total
<b>All prisoners</b>	<b>no.</b>	<b>2 565</b>	<b>4 334</b>	<b>2 716</b>	<b>2 679</b>	<b>3 270</b>	<b>2 480</b>	<b>7 309</b>	<b>25 353</b>
Males	no.	2 375	4 076	2 696	2 553	3 084	2 252	6 583	23 619
Females	no.	190	258	20	126	186	228	726	1 734
Indigenous	no.	371	1 809	551	518	810	72	1 525	5 656
Non-Indigenous	no.	2 108	2 449	2 111	2 122	2 429	2 325	5 647	19 191
Unknown	no.	86	76	54	39	31	83	137	506
Median age									
Males	years	37	31	42	28	29	37	32	33
Females	years	37	31	43	28	30	37	34	33
Indigenous	years	35	30	35	26	27	35	31	30
Non-Indigenous	years	38	31	44	29	30	37	33	34
Sentenced	no.	2 037	3 006	2 361	2 175	2 543	2 020	6 078	20 220
Unsentenced	no.	528	1 328	355	504	727	460	1 231	5 133
Prior imprisonment(b)	no.	1 081	2 976	1 117	1 725	2 550	958	4 901	15 308
No prior imprisonment(b)	no.	1 462	1 334	1 520	947	714	1 489	2 346	9 812
Unknown(b)	no.	22	24	79	7	6	33	62	233

(a) Includes Australian Standard Offence Classification (ASOC) Divisions 04, 05, 08, 09 and 11 to 16. (b) Refers to prior adult imprisonment under sentence.

Source: Prisoners in Australia, 2005 (4517.0).



Source: Prisoners in Australia, 2005 (4517.0).

There were 5,656 Indigenous prisoners at 30 June 2005, comprising 22% of the total prisoner population. In the period 2001–05, the proportion of Indigenous prisoners has gradually increased relative to the non-Indigenous prisoner population. At 30 June 2001 the proportion of Indigenous prisoners was 19.8%. This increased to 22% of the prisoner population at 30 June 2005.

Unsentenced prisoners include prisoners awaiting a court hearing or trial and convicted prisoners awaiting sentencing. At 30 June 2001 the proportion of unsentenced prisoners was 19.3%. This increased to 20.2% of the prisoner population at 30 June 2005. However there was a slight decline from the proportion at 30 June 2004 (20.4%).

### Most serious offence

At 30 June 2005, six offences accounted for just over 70% of sentenced prisoners: acts intended to cause injury (15%); unlawful entry with intent (13%); sexual assault and related offences (12%); robbery/extortion and related offences (11%); homicide and related offences (10%) and illicit drug and related offences (10%) (table 11.39).

There were differences in nearly all the types of most serious offences for which men and women were imprisoned. Homicide and related offences were similar for both men and women (10% and 11% respectively). Men were more likely to be in prison for sexual assault and related offences and robbery, extortion and related offences than women (12% of men and 2% of women and 11% of men and 7% of women respectively). Women were more likely to be in prison for deception and related offences (15% of women, 3% of men), and illicit drug offences (14% of women, 10% of men) (graph 11.40).

### Sentence length

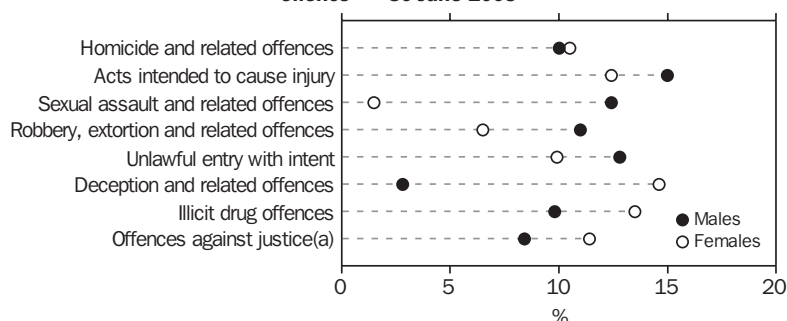
Aggregate length of sentence is a measure of the sentences imposed on an offender, sometimes taking multiple offences into account. Average sentence length excludes prisoners who receive an indeterminate type of sentence such as 'life' as well as sentences of periodic detention. At 30 June 2005 the average aggregate sentence length for all prisoners sentenced to a specific term was 58.2 months.

**11.39 SENTENCED PRISONERS, By most serious offence — 30 June 2005**

	Males	Females	Persons
Homicide and related offences	1 900	137	2 037
Acts intended to cause injury	2 847	159	3 006
Sexual assault and related offences	2 341	20	2 361
Dangerous or negligent acts endangering persons	319	22	341
Abduction and related offences	126	11	137
Robbery, extortion and related offences	2 090	85	2 175
Unlawful entry with intent/burglary, break and enter	2 414	129	2 543
Theft and related offences	1 048	143	1 191
Deception and related offences	524	190	714
Illicit drug offences	1 844	176	2 020
Weapons and explosives offences	145	—	145
Property damage and environmental pollution	188	10	198
Public order offences	213	11	224
Road traffic and motor vehicle regulatory offences	1 184	51	1 235
Offences against justice procedures, government security and government operations	1 598	148	1 746
Miscellaneous offences	138	9	147
<b>Total</b>	<b>18 919</b>	<b>1 301</b>	<b>20 220</b>

Source: *Prisoners in Australia, 2005* (4517.0).

**11.40 SENTENCED PRISONERS, By selected most serious offence — 30 June 2005**



(a) Includes offences against justice procedures, government security and operations.

Source: *Prisoners in Australia, 2005* (4517.0).

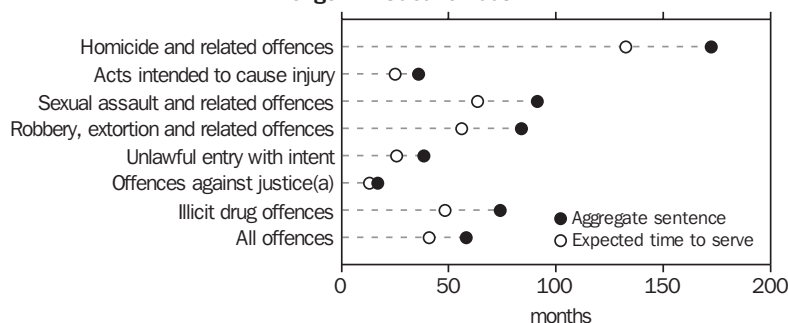
The time a prisoner is expected to serve in custody depends upon the sentence originally handed down, the system of remissions and the forms of parole available. Taking into account the earliest dates for release of sentenced prisoners, the average expected time to serve at 30 June 2005 was 40.8 months (graph 11.41).

## Community-based corrections

Community-based corrections orders are non-custodial orders under the authority of corrective services and include restricted movement, fine option, community service, parole, bail and sentenced probation.

During the March quarter 2006 there was an average of 53,893 people in community-based corrections in Australia. The most common community service orders issued were sentenced probation (32,302 persons), followed by community service (11,689) and parole (8,983) (table 11.42).

**11.41 SENTENCED PRISONERS, By average sentence length — 30 June 2005**



(a) Includes offences against justice procedures, government security and operations.

Source: *Prisoners in Australia, 2005* (4517.0).

### 11.42 PERSONS IN COMMUNITY-BASED CORRECTIONS(a)(b) — March quarter 2006

Type of penalty	no.
Community-based corrections	53 893
Restricted movement	770
Reparation	
Fine option	4 355
Community service	11 689
Supervision (compliance)	
Parole	8 983
Bail	1 457
Sentenced probation	32 302

(a) Average of figures for the first day of each month in the quarter. (b) As a person may have more than one type of order, the sum of the components may be greater than the total.

Source: *Corrective Services, Australia, March Quarter 2006 (4512.0)*.

Nationally, the rate of persons in community-based corrections was 343 persons per 100,000 adult population for the March quarter 2006. The rate for men was 570 per 100,000 adult male population, while for women it was 122 females per adult female population. Men were almost five times more likely to be in community-based corrections than women.

## Deaths in custody

In 1991 the Royal Commission into Aboriginal Deaths in Custody investigated the deaths of 99 Indigenous people that occurred in police or prison custody between January 1980 and May 1989. One of the outcomes was the establishment of a National Deaths in Custody Monitoring and Research Program at the Australian Institute of Criminology.

During 2005, 54 people died in all forms of custody in Australia, 13 fewer than for 2004. Of the 54 deaths, 15 were of Indigenous persons. The largest number of deaths in custody recorded since 1990 was in 1997 (105), while the largest number of deaths of Indigenous persons was in 1995 (21) (table 11.43).

### 11.43 DEATHS IN CUSTODY

	Police		Prison				Total(a)
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Total
1990	5	26	5	28	10	55	65
1991	5	26	8	31	13	57	70
1992	7	24	2	34	9	58	67
1993	3	28	7	42	10	71	81
1994	3	24	11	42	14	67	81
1995	4	22	17	42	21	66	87
1996	6	23	12	40	18	64	82
1997	6	23	9	67	15	90	105
1998	6	19	9	60	16	79	95
1999	6	20	13	46	19	66	85
2000	5	20	11	53	17	74	91
2001	5	26	14	42	19	68	87
2002	6	13	8	42	14	55	69
2003	7	26	10	25	17	51	68
2004	7	21	7	32	14	53	67
2005	8	12	7	27	15	39	54

(a) Includes deaths that occurred in custody other than police or prison custody (such as juvenile detention).

Source: *Australian Institute of Criminology, National Deaths in Custody Program 1990–2005 (computer file)*.



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## CULTURE AND RECREATION

Cultural and recreational activities are important contributors to the wellbeing of individuals and communities. They take many forms including involvement in visual and performing arts, music, literature, cultural heritage, religious activities, libraries, radio, television, and sports and physical recreation.

This chapter reviews a range of cultural and recreational activities undertaken by Australians and, where available, presents a statistical summary for those activities. The chapter also presents information about the industries providing a range of cultural and recreational services in Australia, and some information regarding the cultural background of the population.

Statistics have been drawn from surveys of households and businesses conducted by the Australian Bureau of Statistics (ABS), and also from its compilations of administrative data, such as that which provides information about government funding of heritage and arts activities. Other Australian Government organisations have contributed to some of the data presented in this chapter.

Further information on the operations of organisations referred to in this chapter, including their administrative and legislative backgrounds, may be obtained from their individual web sites, the addresses of which are provided at the end of the chapter.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Arts

## Industry

There are a range of arts industries operating within Australia and contributing to the artistic output of the country. In this section they will be examined in turn, commencing with the book industries.

At the end of June 2004, there were 244 organisations which were either predominantly engaged in book publishing, or generated income of \$2 million (m) or more from this activity (table 12.1). These organisations employed 5,300 people and generated \$1,560.6m in income during 2003–04, of which \$1,353.2m was from the sale of new books. Of these book sales, \$811.9m (60.0%) came from sales of Australian titles, while the value of books exported was \$190.5m.

Book sales valued at \$1,103.3m (of a total income of \$1,297.0m) were reported by organisations predominantly involved in book retailing during 2003–04. The overall profit margin for these organisations was 1.3%, and there were 561 of them employing 8,717 people at the end of June 2004. Book sales valued at a further \$303.2m were achieved by businesses for which selling books was a secondary source of income. These businesses include department stores, supermarkets and newsagents. They sold 26.7 million (mill.) books during 2003–04, approximately one-third of the total book sales of 79.9 mill. for that year.

During 2002–03, businesses mainly involved in music and theatre production put on 53,241 paid performances which attracted 14.2 mill. paid attendances. There were 865 of these businesses

operating at the end of June 2003 and employing 7,842 people (table 12.2). The businesses generated income of \$622.1m during 2002–03, of which 53% (\$331.6m) came from box office takings.

There were 176 performing arts festivals (of greater than two-days duration) conducted during 2002–03, at which there were 29,707 performances attracting 7.5 mill. attendances. Of these attendances, 80% (6.0 mill.) were free-of-charge. Performing arts festivals generated \$88.5m in income during 2002–03, of which 31% (\$27.2m) came from ticket sales. These festivals utilised a largely volunteer workforce, there being 15,728 volunteers compared with employment of only 1,272.

Information about many of the performing arts companies in Australia is available under the headings 'Music' and 'Performing Arts' on the Australian Government's Culture and Recreation Portal. The Australia Dancing portal, hosted by the National Library of Australia, provides an information and directory database relating to dance in Australia. Prominent Australian companies, such as Symphony Australia, Opera Australia, The Australian Ballet and Musica Viva publish annual reports on their web sites which provide information about employment and attendances. Gateway to the Australian Performing Arts on the AusStage web site aims to be a comprehensive listing of all live theatre events in Australia since European settlement (for which records survive).

### 12.1 BOOK INDUSTRIES

	Units	Book publishers		Book retailers(a)	
		2002–03	2003–04	2002–03	2003–04
Organisations at end of June	no.	245	244	522	561
Employment at end of June	no.	5 329	5 300	7 336	8 717
Income					
Sales of new books	\$m	1 367.9	1 353.2	941.7	1 103.3
Total	\$m	1 567.7	1 560.6	1 059.7	1 297.0
Expenses	\$m	1 476.9	1 404.4	1 045.2	1 287.6
Operating profit before tax	\$m	86.9	152.1	19.7	16.6
Operating profit margin	%	5.5	9.7	1.9	1.3

(a) Includes only those businesses which are classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition as Newspaper, book and stationery retailing and for which the value of new book sales comprises at least 50% of all income.

Source: *Book Publishers, Australia, 2003–04 (1363.0)*; *Book Retailers, Australia, 2003–04 (1371.0)*.

## 12.2 SELECTED ARTS INDUSTRIES — 2002–03

	Units	Music and theatre production	Performing arts festivals(a)	Film and video production services	Television broadcasting services(b)
Organisations at end of June	no.	865	(c)176	2 174	33
Employment at end of June	no.	7 842	(d)1 272	16 427	9 094
Volunteers(e)	no.	2 548	15 728	n.a.	n.a.
Income	\$m	622.1	88.5	1 596.6	5 158.8
Expenses	\$m	575.6	82.8	1 504.8	4 991.3
Operating profit before tax	\$m	46.5	5.7	^ 91.7	207.4
Operating profit margin	%	10.7	15.6	^ 5.9	4.1

(a) Of greater than two-days duration. (b) Excludes public and community television broadcasters. (c) Number of festivals held during the reference period. (d) Measured during conduct of festival. (e) Measured during the month of June for Music and theatre production, and during conduct of festival for Performing arts festivals.

Source: *Performing Arts, Australia, 2002–03* (8697.0); *Television, Film and Video Production, Australia, 2002–03* (8679.0).

The film and video production industry comprises businesses mainly engaged in the production of motion pictures on film or video tape for theatre or television projection, and includes services such as casting, film editing and titling. This industry is well-developed in Australia and comprises, for the most part, small specialised companies producing programmes ranging from feature films to sports coverage, documentaries and television commercials. According to the Australian Film Commission (AFC) the major market for Australian audiovisual products is the domestic television broadcast industry. However, export markets are also important for feature films and television dramas, some high-budget documentaries and some commercials.

At the end of June 2003 there were 2,174 businesses primarily engaged in providing film and video production services and employing 16,427 people (table 12.2). The total income of these businesses for 2002–03 was \$1,596.6m, with 49% (\$778.6m) coming from the production of movies, television programmes, commercials, etc.

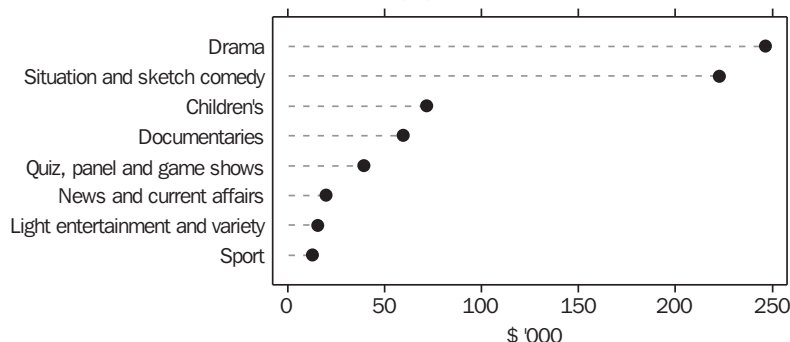
There were 9,094 employees working for 33 television broadcasting businesses at the end of June 2003 (table 12.2). These businesses earned a total income during 2002–03 of \$5,158.8m with operating profit before tax of \$207.4m. Profitability was markedly different between commercial free-to-air and subscription broadcasters. The 27 commercial free-to-air broadcasters recorded a

before-tax operating profit of \$658.9m, whereas the six subscription broadcasters recorded a before-tax operating loss of \$451.5m.

Film and video production activity is undertaken not only by film and video production businesses (as shown in table 12.2), but also by film and video distribution businesses and television broadcasting businesses. During 2002–03, businesses undertaking film and video production incurred \$1,502.5m in production costs. Productions made specifically for television accounted for most of this amount (\$1,140.7m or 75.9%). Of these productions, the highest costs were incurred by news and current affairs programmes (\$351.0m) and sport programmes (\$305.1m). However, these types of programmes were among the cheapest to produce on a cost-per-hour basis at \$19,700 and \$13,000 respectively. These figures contrast starkly with the corresponding figures for drama (\$246,600) and situation and sketch comedy (\$222,700) (graph 12.3).

The Australian Government provides assistance and encouragement for the production of high-cost feature films, television dramas and documentaries through measures such as the investment program of the Film Finance Corporation Australia, the development program of the AFC and the Australian content regulations of the Australian Communications and Media Authority.

### 12.3 AVERAGE COST PER HOUR, By type of production(a) — 2002-03



(a) For productions made specifically for television.

Source: *Television, Film and Video Production, Australia, 2002-03* (8679.0).

Table 12.4 shows the number and value of Australian, co-produced and foreign titles shot in Australia. The total production value of these titles in 2004-05 was \$811m, of which \$536m was spent in Australia – close to the ten-year average of \$537m. Foreign production accounted for \$248m (or 46%) of the amount spent in Australia in 2004-05, well above the ten-year average of \$170m. Australian production accounted for a further \$248m (46%), but this was well below the ten-year average of \$307m.

In 2004-05, the value of TV drama productions shot in Australia was \$223m – a fall for the fourth successive year since the high of \$495m reached in 2000-01. There were 34 TV drama productions in 2004-05 comprising six telemovies (\$15m), four mini-series (\$35m), fifteen series or serials (\$122m), and nine children's programmes (\$51m).

### 12.4 FILM AND VIDEO PRODUCTION

Type of film	2003-04			2004-05		
	Titles no.	Total value \$m	Spent in Aust.(a) \$m	Titles no.	Total value \$m	Spent in Aust.(a) \$m
<b>Features</b>						
Australian(b)(c)	16	134	113	19	61	60
Co-production(d)	1	7	5	3	45	27
Foreign(e)	7	432	249	9	482	243
<b>Total</b>	<b>24</b>	<b>573</b>	<b>366</b>	<b>31</b>	<b>588</b>	<b>330</b>
<b>TV drama</b>						
Australian(b)	35	190	185	29	195	187
Co-production(d)	3	19	10	4	23	13
Foreign(e)	5	38	30	1	5	4
<b>Total</b>	<b>43</b>	<b>247</b>	<b>225</b>	<b>34</b>	<b>223</b>	<b>204</b>
<b>Total</b>						
Australian(b)	51	325	298	48	256	248
Co-production(d)	4	26	15	7	67	40
Foreign(e)	12	470	279	10	488	248
<b>Total</b>	<b>67</b>	<b>821</b>	<b>592</b>	<b>65</b>	<b>811</b>	<b>536</b>

(a) Includes some expenditure on foreign production elements – e.g. fees for non-Australian actors or other individuals while working in Australia. (b) Productions under Australian creative control. (c) Figures for Australian features in 2003-04 include one high-budget animation feature that is being made over a number of years, but in order to be consistent with survey methodology its budget is counted in a single year, not apportioned across the duration of the production. (d) Includes official co-productions and other productions involving shared creative control, that is, with a mix of Australians and foreigners in key creative positions. (e) Productions under foreign creative control with a substantial amount shot in Australia.

Source: *Australian Film Commission*.

Additional information about film and video production can be obtained from the AFC web site which also provides links to nearly 800 Australian film and television web sites.

Broadcasting services in Australia are regulated primarily through the *Broadcasting Services Act 1992* (Cwlth) which established the Australian Broadcasting Authority as the independent regulator for radio and television in Australia. On 1 July 2005, this authority merged with the Australian Communications Authority to form the Australian Communications and Media Authority (ACMA), and it is this body which now has regulatory responsibility for radio and television in Australia.

The Act defines six categories of broadcasting services covering both radio and television:

*national broadcasting services* – the Australian Broadcasting Corporation (ABC) and the Special Broadcasting Service (SBS), which are largely regulated through separate legislation

*commercial broadcasting services* – free-to-air radio and television services operated for profit and funded predominantly by advertising revenue

*community broadcasting services* – non-profit free-to-air services provided for community purposes

*subscription broadcasting services* – services with general appeal to the public and funded predominantly by customer subscriptions

*subscription narrowcasting services* – services with limited appeal to the general public (either because of content or availability) and funded predominantly by customer subscriptions

*open narrowcasting services* – services providing programmes targeted to special interest groups (e.g. foreign language), or of limited appeal because of content or availability, and not funded by subscriptions.

International broadcasting services may fall into any of the last five categories and are targeted, to a significant extent, to audiences outside Australia, using a radiocommunications transmitter in Australia.

ACMA plans the availability of segments of the broadcasting services bands (VHF/UHF television, FM and AM radio), and has the power to allocate, renew, suspend and cancel licences, and collect any fees payable for those licences. It is also the

regulator for digital broadcasting and Internet content. Table 12.5 shows the number of radio and television licences on issue in Australia.

**12.5 RADIO AND TELEVISION LICENCES ON ISSUE(a) — 30 June**

	2004	2005
Commercial television licences	53	54
Community television licences	2	4
Commercial radio licences	273	274
Community radio licences	339	359
Remote Aboriginal community television licences	80	80
Open narrowcasting services planned in licence area plans	207	209
International broadcasting licences	10	10

(a) The number of licences on issue does not necessarily reflect the number of services operating, as some licences have been issued but a service is yet to commence.

Source: Australian Broadcasting Authority, *Annual Report, 2004–05*.

ACMA sets various standards which must be adhered to by commercial television broadcasters. For example, the Australian Content Standard requires all commercial free-to-air broadcasters to transmit an annual minimum of 55% Australian content between 6:00 am and midnight. Further information about ACMA and its work can be obtained from the web site.

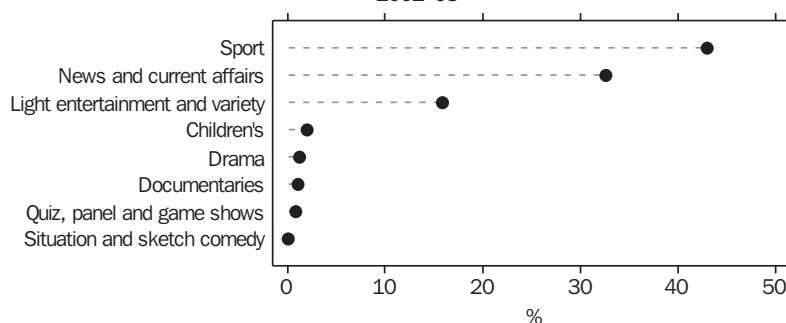
Commercial broadcast hours represent the airtime of completed first-release programmes, including commercial breaks. Programme re-runs are excluded. In 2002–03 there were 54,743 commercial broadcast hours for first-release productions made specifically for television by businesses based in Australia. As shown in graph 12.6, sport had the most broadcast hours (23,556 hours or 43.0% of the total), followed by news and current affairs (17,837 hours or 32.6%) in 2002–03 (graph 12.6). Situation and sketch comedy had the least broadcast hours (71 hours or 0.1%).

**Employment and other involvement**

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the Census was in an arts occupation. People who had unpaid involvement in arts activities – or who worked part time in arts activities but had another job they regarded as their main job in the week prior to the Census – were not recorded in the Census as having arts occupations.



## 12.6 FIRST RELEASE COMMERCIAL BROADCAST HOURS, By type of production(a) — 2002-03



(a) For productions made specifically for television.

Source: *Television, Film and Video Production Activity, Australia, 2002-03* (8679.0).

The 2001 Census found that, in August 2001, 213,177 people (2.6% of all employed persons) had their main (paid) job in an arts occupation. Of this number, 59.2% were males. Table 12.7 shows the number of people who were recorded in the 2001 Census as having their main job in one of the ten arts occupations in which the highest numbers of people were employed.

Arts work is often intermittent, unpaid or not a person's main job. Therefore, in order to obtain a more complete picture of arts work, the ABS conducted a household survey in 2004 to measure all involvement over a twelve-month period.

During the year ended April 2004, 2.7 million people (17.4% of people aged 15 years and over) were involved in some form of paid or unpaid work relating to the arts activities covered in the survey. The Australian Capital Territory had the highest involvement rate for arts work (27.6%), and this was significantly higher than the rate for Australia as a whole (17.4%) (table 12.8). The Australian Capital Territory also had the highest proportion of paid involvement, with 40.4% of those involved in arts activities receiving some payment.

## 12.7 PERSONS EMPLOYED IN SELECTED ARTS OCCUPATIONS(a) — 2001

Occupation	Males	Females	Persons
Graphic designer	11 545	9 599	21 144
Print machinists and small offset printers(b)	15 440	1 652	17 092
Architect	9 012	2 297	11 309
Music teacher (private)	2 569	5 876	8 445
Photographer	4 453	2 392	6 845
Instrumental musician	5 070	1 555	6 625
Architectural associate	5 223	1 188	6 411
Media producer	3 686	2 554	6 240
Print journalist	2 933	2 589	5 522
Urban and regional planner	3 453	1 972	5 425

(a) The ten arts occupations in which the highest numbers of employed persons had their main job. (b) Comprises Print machinists and small offset printers, n.f.d. (9,003); Printing machinist (6,266); Small offset printer (1,488); Apprentice printing machinist (270); and Apprentice small offset printer (65).

Source: *Employment in Culture, Australia, 2001* (6273.0) and ABS data available on request, *Census of Population and Housing 2001*.

The survey found that in the year prior to April 2004, more people had paid involvement in design (239,100), writing (185,500) and visual art activities (183,100) than in any other arts activity included in the survey. Of the 370,200 persons involved in design, 65.4% received some payment. This was the activity with the highest percentage of persons with paid involvement, and was followed by television for which 63.8% of the 76,200 persons involved were paid. Of persons involved in writing, 35.5% received payment, while the corresponding figure for persons involved in visual art activities was 23.5%.

## 12.8 PERSONS INVOLVED IN ARTS ACTIVITIES(a) — 2004

	Some paid involvement(b)	Unpaid involvement only	Total persons involved	Persons with no involvement	Total persons	Involvement rate(c)
	'000	'000	'000	'000	'000	%
New South Wales	272.9	611.2	884.1	4 388.0	5 272.1	16.8
Victoria	245.6	477.9	723.6	3 202.1	3 925.6	18.4
Queensland	180.4	326.3	506.7	2 476.8	2 983.5	17.0
South Australia	67.3	142.9	210.2	1 008.0	1 218.1	17.3
Western Australia	81.6	170.8	252.4	1 288.7	1 541.1	16.4
Tasmania	17.4	52.9	70.2	306.6	376.9	18.6
Northern Territory(d)	*4.2	14.2	18.3	87.4	105.8	17.3
Australian Capital Territory	27.7	40.8	68.5	179.5	248.0	27.6
<b>Australia</b>	<b>897.1</b>	<b>1 836.9</b>	<b>2 734.0</b>	<b>12 937.1</b>	<b>15 671.1</b>	<b>17.4</b>

(a) Excludes persons whose involvement was solely as a hobby for their own use or that of their family. (b) Includes persons who only received payment in kind. (c) The number of persons involved in arts activities, expressed as a percentage of the civilian population in the same group. (d) Refers to mainly urban areas only.

Source: ABS data available on request, 2004 Survey of Work in Selected Culture and Leisure Activities.

An earlier ABS household survey, conducted during March–July 2002, found that, during the twelve months prior to interview, 334,300 people undertook voluntary work for arts and culture organisations (including those concerned with heritage), and this figure was 2.3% of the adult population. Of these arts and culture volunteers, 53.3% were female. The highest rate of volunteering for arts and culture organisations – 3.8% of the adult population – occurred in the Australian Capital Territory. In the capital cities overall, the volunteer rate for these organisations was slightly lower than it was in the balance of the states. The highest levels of volunteering were for organisations categorised as sport, recreation and hobby (1.8 million volunteers), welfare and community (1.6 million) and education, training and youth development (1.2 million).

### Government and corporate support

The Cultural Ministers Council (CMC) was established in 1984 to provide a forum for the exchange of views on issues affecting cultural activities in Australia and New Zealand. It comprises those ministers from the Australian, state and territory governments who have responsibility for the arts and cultural heritage. The corresponding minister from the New Zealand Government is also a member. The relevant minister from the Papua New Guinea Government participates with observer status. CMC's core activities include the commissioning of studies and investigations through the appointment of working groups, advisory groups

or consultants. Additional information about the CMC and its activities can be obtained from the web site.

The Australia Council for the Arts is the Australian Government's arts funding and advisory body. It was formed as an interim council in 1973 and was given statutory authority by the *Australia Council Act 1975* (Cwlth). The Australia Council supports young, emerging, developing and established Australian artists – and arts organisations – through diverse funding options and a range of grant programs. During 2004–05, 4,939 grant applications were made to the Australia Council, of which 1,912 were successful. +These grants totalled \$127.7m. Nearly 65% of the grants, amounting to 92% of the funding, went to organisations or groups, while the remaining grants, with an average value of \$14,817, were paid directly to individual artists. Further information about the Australia Council and its activities can be obtained from the web site.

In 2004–05 the Australian Government provided \$1,329.4m in funding for the arts, while the state and territory governments contributed \$416.1m in total (table 12.9). The contribution of local governments to arts funding is not separately available, although it is known that they provided a total of \$897.7m for heritage and the arts during 2004–05. The corresponding figures for the Australian and state and territory governments were \$1,760.9m and \$2,356.3m respectively (see *Heritage* in this chapter for information regarding government funding of heritage activities).

## 12.9 GOVERNMENT FUNDING FOR THE ARTS, By level of government(a)

	2002–03	2003–04	2004–05
Level of government	\$m	\$m	\$m
Australian	1 209.4	1 259.2	1 329.4
State and territory	406.8	408.6	416.1
<b>Total</b>	<b>1 616.2</b>	<b>1 667.8</b>	<b>1 745.5</b>

(a) Excludes funding by local government.

Source: *Cultural Funding by Government, Australia, 2004–05* (4183.0).

Between 2002–03 and 2004–05 there were successive increases in the funding of arts activities by the Australian (Commonwealth) Government, and by the combined state and territory governments. These resulted in overall funding increases over the two-year period of \$120.0m (or 9.9%) and \$9.3m (or 2.3%) respectively.

In 2004–05, the \$1,096.5m in funding allocated by the Australian Government to broadcasting and film activities accounted for 82.5% of the total funding it provided for the arts. The combined state and territory governments, on the other hand, allocated the biggest share of their arts funding to performing arts venues (\$162.9m or 39.1%). The next highest allocations went to the performing arts themselves (\$75.1m or 18.0%) and broadcasting and film (\$70.6m or 17.0%) (table 12.10).

## 12.10 GOVERNMENT FUNDING FOR THE ARTS(a) — 2004–05

Category of arts funding	Level of government	
	Australian	State and territory
	\$m	\$m
Literature and print media	27.6	4.7
Performing arts	100.7	75.1
Performing arts venues	0.1	162.9
Visual arts and crafts	16.1	16.4
Broadcasting and film	1 096.5	70.6
Community cultural centres and activities	11.8	9.3
Administration of culture	31.3	36.7
Other arts n.e.c.	45.4	40.4
<b>Total</b>	<b>1 329.4</b>	<b>416.1</b>

(a) Excludes funding by local government.

Source: *Cultural Funding by Government, Australia, 2004–05* (4183.0).

An ABS survey of the performing arts industry, conducted in respect of 2002–03, found that government funding contributed \$134.4m to the

income of businesses mainly involved in presenting music and theatre productions, and \$27.0m to the income of performing arts festivals. These amounts comprised 21.6% and 30.5% respectively of total business income.

An ABS survey of businesses, conducted in respect of 2000–01, found that, of the \$1,446.6m they gave to organisations or individuals, arts and culture activities received \$69.6m. This amount comprised \$40.4m in sponsorship, \$22.8m in donations, and \$6.3m in business to community projects. Arts and culture activities consisted of performing arts, creative arts, and the heritage-related activities of museum, art gallery and library operation, and zoological and botanical park and garden operation.

## Participation by children

A survey of children's activities in the twelve months to April 2003 found 29.5% of children aged 5–14 years (780,400 children) participated in at least one of four selected organised cultural activities outside school hours.

Girls were more than twice as likely as boys (42.8% compared with 16.8%) to participate in at least one of these activities (table 12.11), and were also more likely to participate in two or more of the selected activities (12.0% compared with 2.2%). The rate of participation in at least one of the activities ranged from 32.9% in Western Australia to 25.2% in the Northern Territory.

Playing a musical instrument was the most popular activity (16.8% participation), while dancing had the highest ratio of girls to boys – participation by girls was 14 times higher than participation by boys.

The survey of children's activities in April 2003 also provided information about their participation in art and craft activities outside school hours in the two school-weeks prior to interview. There were 1,311,200 children who participated in these activities, a participation rate of 49.5%. For girls, the participation rate in art and craft activities was 60.6%, considerably higher than the corresponding rate for boys of 39.0%.

## 12.11 CHILDREN'S PARTICIPATION IN SELECTED ORGANISED CULTURAL ACTIVITIES(a), Participation rates(b)

	2000				2003
	All children	Age group (years)			All children
		5–8	9–11	12–14	
	%	%	%	%	%
<b>MALES</b>					
Playing a musical instrument	15.8	7.7	18.5	15.0	13.2
Singing	2.9	1.7	4.0	1.5	2.3
Dancing	1.7	1.4	2.3	*1.3	1.6
Drama	3.2	1.7	3.0	2.4	2.3
Total(c)	19.7	10.9	23.5	17.9	16.8
<b>FEMALES</b>					
Playing a musical instrument	20.2	13.4	27.3	23.5	20.7
Singing	6.7	4.7	9.6	7.6	7.0
Dancing	19.5	27.0	23.9	19.6	23.8
Drama	6.1	4.5	7.5	7.4	6.3
Total(c)	39.7	38.6	48.3	42.7	42.8
<b>PERSONS</b>					
Playing a musical instrument	17.9	10.4	22.8	19.2	16.8
Singing	4.7	3.1	6.7	4.5	4.6
Dancing	10.4	13.8	12.8	10.2	12.4
Drama	4.6	3.1	5.2	4.8	4.3
Total(c)	29.4	24.4	35.6	30.0	29.5

(a) Outside school hours during the twelve months prior to interview in April 2003. (b) A participation rate is the number of children who participated, expressed as a percentage of the number of children in that population group. (c) Components do not add to totals because some children participated in more than one activity.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)* and ABS data available on request, *Survey of Children's Participation in Cultural and Leisure Activities*.

### Experiencing the arts

Attendance at the performing arts is a significant aspect of the cultural life of many Australians. Table 12.12 shows that, in the twelve months prior to interview in 2002, 26.4% of the Australian population aged 18 years and over (3.8 million people) attended at least one popular music concert, 18.7% (2.7 million people) attended at least one musical or opera, and 18.0% (2.6 million people) attended at least one theatre performance. Attendance rates at most of the performing arts were generally similar to or slightly higher than those recorded in a survey conducted in 1999.

Attendance at cinemas was much higher than for the individual performing arts. This can be seen in table 12.12 which shows that 69.9% of the Australian population aged 18 years and over (10.1 million people) attended a cinema, drive-in or other public screening of a film at least once in the twelve months prior to interview in 2002.

Attendance at cinemas was significantly higher than in 1999, when the attendance rate was 65.6% (9.2 million people).

In April 2003 the ABS conducted a survey of children's participation in cultural and leisure activities. These activities included reading for pleasure, watching television or videos, and playing electronic or computer games – activities which involve children experiencing products of the arts. The survey found that 98.2% of children aged 5–14 years had watched television or videos outside school hours during the two school-weeks prior to interview, with little difference between the participation rates for girls and boys. For the other two activities, however, there were marked differences in the male and female participation rates. Playing electronic or computer games was more popular with boys – 81.8% participated compared with 58.9% of girls. For reading for pleasure, on the other hand, girls had the higher participation rate at 82.3% while only 67.7% of boys participated.

## 12.12 ATTENDANCE AT THE PERFORMING ARTS AND CINEMAS(a), Attendance rates(b) — 2002

	Popular music concerts %	Classical music concerts %	Dance performances %	Musicals and operas %	Theatre performances %	Other performing arts %	Cinemas %
Males	26.6	7.7	8.4	15.1	15.3	19.2	68.2
Females	26.2	10.2	13.4	22.1	20.6	21.5	71.6
Persons	26.4	9.0	10.9	18.7	18.0	20.4	69.9
Age group (years)							
18–24	43.8	6.3	10.5	16.0	19.8	23.3	92.1
25–34	33.2	6.6	10.3	17.9	17.7	24.0	81.0
35–44	25.9	8.1	14.0	17.1	19.4	20.9	76.7
45–54	24.9	10.9	12.1	21.6	19.9	20.6	69.9
55–64	20.3	13.2	10.7	23.2	17.6	19.5	56.7
65 and over	10.4	9.7	6.9	16.6	13.0	12.9	38.6
Birthplace							
Australia	27.8	8.1	10.5	19.8	18.9	20.5	71.7
Main English-speaking countries	28.5	11.5	12.6	20.5	21.3	23.5	75.9
Other countries	19.5	10.8	11.6	12.7	12.1	17.9	58.5

(a) Attendance at least once in the twelve months prior to interview in 2002. (b) An attendance rate is the number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

## 12.13 CHILDREN'S PARTICIPATION IN SELECTED LEISURE ACTIVITIES(a), Participation rates(b)

	2000 %	2003 %
<b>MALES</b>		
Watching television or videos	96.9	98.6
Playing electronic or computer games	79.1	81.8
Reading for pleasure(c)	..	67.7
<b>FEMALES</b>		
Watching television or videos	96.9	97.9
Playing electronic or computer games	58.1	58.9
Reading for pleasure(c)	..	82.3
<b>PERSONS</b>		
Watching television or videos	96.9	98.2
Playing electronic or computer games	68.9	70.7
Reading for pleasure(c)	..	74.8

(a) Outside school hours during the past two school-weeks prior to interview in April. (b) A participation rate is the number of children who participated, expressed as a percentage of the number of children in that population group. (c) Reading for pleasure was not included as a leisure activity in 2000.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

Children spent more time watching television or videos than they did on the other activities, with an average of 22 hours of viewing over a school fortnight. For each of reading for pleasure and playing electronic or computer games, the average time spent over the fortnight was 8 hours.

Regular surveys of household expenditure are conducted by the ABS, most recently in respect of 2003–04. Findings from this survey showed households spent, on average, \$36.00 per week on arts products (table 12.14), which was 4.1% of their average weekly expenditure on all products. Individual arts products for which average household expenditure was relatively large included books (\$3.94 per week), televisions (\$3.41 per week), newspapers (\$2.56 per week) and prerecorded video cassettes and video discs (\$2.08 per week).

## 12.14 EXPENDITURE ON THE ARTS BY HOUSEHOLDS — 2003–04

	Average weekly household expenditure \$	Total annual household expenditure \$m
Literature	8.43	3 400.2
Music	1.65	665.5
Performing arts	1.59	641.3
Visual arts and crafts	1.66	669.6
Broadcasting, electronic media and film	7.87	3 174.3
Other arts	1.86	750.2
Other culture(a)	12.94	5 219.3
<b>Total arts expenditure</b>	<b>36.00</b>	<b>14 520.4</b>

(a) This category consists predominantly of audio-visual equipment used for home entertainment.

Source: *ABS data available on request, 2003–04 Household Expenditure Survey*.

# Heritage

## Industry and institutions

Museums (including art galleries) engage in the acquisition, collection management, conservation, interpretation, communication and exhibition of heritage objects and artefacts. Heritage objects include those that inform people about natural science, applied science, history, transport, art and other culture. The Collections Australia Network (CAN) web site provides access to a database of information on national, state, territory, regional and local museums. CAN includes a searchable database of objects from collecting institutions across Australia.

At the end of June 2004 there were 160 art museum and 1,169 other museum locations operating in Australia (table 12.15). Almost half (49.1%) of the locations were operated without paid employees, relying on the work of 9,382 volunteers. Volunteers were also important to museums operating with employees. The 676 museum locations with paid employees employed a total of 7,624 persons assisted by 11,061 volunteers. The number of museum objects and artworks held by museums at the end of June 2004 was 54.9 million. However, only 9.7% of these were on display. There were 31.2 mill. admissions to museums during 2003–04. Art museums received income of \$324.9m during this time, while other museums received \$594.5m. In both cases the main source of income was government funding.

The main activities of libraries are the acquisition, collection, organisation, preservation and loan of library materials such as books, magazines, manuscripts, musical scores, maps and prints. The National Library of Australia (NLA) is the country's largest reference library and its role is to ensure that documentary resources of national significance relating to Australia and the Australian people – as well as significant non-Australian library materials – are collected, preserved and made accessible. The NLA web site provides online visitors with access to information about more than 5,400 Australian libraries, their collections and services via the Australian Libraries Gateway. Over 1,500 of these libraries are public, mainly operated by local governments.

Public Lending Right (PLR) is a cultural program of the Australian Government which makes payments to eligible Australian book creators and

publishers on the basis that income is lost as a result of the availability of their books for loan in public lending libraries. Some 8,858 book creators and publishers received PLR payments in 2005–06, totalling about \$7.0m. Educational Lending Right (ELR) complements PLR and makes payment to eligible Australian book creators and publishers whose books are held in educational lending libraries. An annual survey of the book stock of a representative sample of these libraries (including school, technical and further education, and university libraries) is used to determine payments. In 2005–06, 9,778 book creators and publishers received ELR payments totalling about \$10.4m. Further information on the two lending right programs can be obtained from the Department of Communications, Information Technology and the Arts web site.

At the end of June 2004, there were 532 local government library organisations with 1,716 library locations, and eight national and state library organisations with 17 locations (table 12.15). The libraries held 52.8 mill. books and other library materials, of which 39.0 mill. were available as lending stock. Libraries employed 12,471 persons assisted by 6,731 volunteers.

The primary function of archives is the permanent preservation of records which are unique because of their administrative, financial, legal, research, cultural or other information value. The records are generally no longer required for the conduct of current activities by government agencies, non-government organisations or individuals. The National Archives of Australia promotes reliable record keeping and maintains a visible and accessible archival collection on behalf of the Australian Government. The Archives of Australia web site provides information about archives in Australia and operates as a portal to the web sites of other Australian archival institutions. These include the Australian War Memorial, the National Film and Sound Archive, state and territory government archives, and archives established by churches, business corporations, universities and city councils. At the end of June 2004, there were eight national and state archive organisations with 21 locations employing 811 persons assisted by 122 volunteers (table 12.15).



## 12.15 MUSEUMS, LIBRARIES AND ARCHIVES — 2003–04

	Units	Art museums	Other museums	Local government libraries	National and state libraries	National and state archives
Locations at 30 June	no.	^ 160	1 169	1 716	(a)17	21
Employment at 30 June	no.	2 081	5 543	10 606	1 865	811
Volunteers during the month of June	no.	^ 3 125	17 318	6 315	416	122
Income	\$m	324.9	594.5	545.2	293.7	109.1
Expenses						
Labour costs	\$m	99.1	221.3	340.8	106.9	46.3
Other	\$m	166.4	323.5	204.4	200.7	60.7
Total	\$m	265.5	544.8	545.2	307.6	107.0

(a) Excludes storage facilities.

Source: *Museums, Australia, 2003–04 (8560.0); Public Libraries, Australia, 2003–04 (8561.0).*

Botanic gardens are scientific and cultural institutions established to collect, study, exchange and display plants for research and for the education and enjoyment of the public. Some have an associated herbarium, which is a scientific collection of dried preserved plant specimens used for research and the accurate classification and identification of plants and plant material. There are major botanic gardens in each capital city. Information about the botanic gardens and herbaria in Australia can be obtained from the web sites of the Australian National Botanic Gardens, the Council of Heads of Australian Botanic Gardens, and the Council of Heads of Australasian Herbaria.

Zoological parks and aquariums (i.e. animal, fauna, bird and reptile parks, aquariums, aviaries, butterfly houses and dolphinariums) are primarily engaged in the breeding, preservation, study and display of native and/or exotic fauna in captivity, and are accessible to the general public. Some of the better known zoological parks and sanctuaries are Taronga Park (Sydney), Healesville Sanctuary (60 kilometres (km) from Melbourne), the Western Plains Zoo (Dubbo), Victoria's Open Range Zoo at Werribee (just outside Melbourne), The Territory Wildlife Park (Darwin), Monarto Zoological Park (70 km from Adelaide), Lone Pine Koala Sanctuary (Brisbane) and Currumbin Sanctuary (Gold Coast). Information about Australian zoological parks and aquariums can be obtained from the 'Zoos in Australia' page on the Australian Government's Culture and Recreation Portal.

### Employment and other involvement

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the Census was in a heritage occupation. People who had

unpaid involvement in heritage activities – or who worked part time in heritage activities but had another job they regarded as their main job in the week prior to the Census – were not recorded in the Census as having heritage occupations.

The 2001 Census found that, in August 2001, 32,492 people (0.4% of all employed persons) had their main job in a heritage occupation. Of this number, 75.0% were females. Table 12.16 shows the number of people who were recorded as having their main (paid) job in heritage occupations in the 2001 Census.

Heritage work is often intermittent, unpaid or not a person's main job. Therefore, in order to obtain a more complete picture of heritage work, the ABS conducted a household survey in 2004 to measure all involvement over a twelve-month period.

During the year ended April 2004, 335,500 people (2.1% of people aged 15 years and over) were involved in some form of paid or unpaid work relating to the heritage activities covered in the survey. The Australian Capital Territory recorded the highest involvement rate for work in heritage activities at 3.9% (table 12.17). The Australian Capital Territory also had the highest proportion of paid involvement, with 56.7% of those involved in heritage activities receiving some payment.

The survey found that in the year prior to April 2004, more people had paid involvement in libraries and archives (33,700) and national parks and reserves (27,700) than in the other heritage activities included in the survey. Of the 87,800 people involved in libraries and archives, 38.4% received some payment, while 25.3% of the 113,000 persons involved in national parks and reserves also received some payment.



## 12.16 PERSONS EMPLOYED IN HERITAGE OCCUPATIONS(a) — 2001

Occupation	Males	Females	Persons
Librarian	1 748	8 565	10 313
Library assistant	1 174	7 224	8 398
Library technician	642	5 499	6 141
Environment, parks and land-care manager	1 823	509	2 332
Park ranger	1 255	351	1 606
Museum or gallery attendant	294	570	864
Museum or gallery curator	332	513	845
Archivist	295	502	797
Historian	237	336	573
Conservator	163	241	404
Museum or art gallery technician	145	74	219
<b>Total</b>	<b>8 108</b>	<b>24 384</b>	<b>32 492</b>

(a) For main job.

Source: *Employment in Culture, Australia, 2001* (6273.0).

## 12.17 PERSONS INVOLVED IN HERITAGE ACTIVITIES(a)(b) — 2004

	Some paid involvement(c)	Unpaid involvement only	Total persons involved	Persons with no involvement	Total persons	Involvement rate(d)
	'000	'000	'000	'000	'000	%
New South Wales	30.5	87.1	117.6	5 154.5	5 272.1	2.2
Victoria	23.0	60.4	83.4	3 842.3	3 925.6	2.1
Queensland	18.8	33.3	52.0	2 931.5	2 983.5	1.7
South Australia	*5.7	19.2	24.9	1 193.2	1 218.1	2.0
Western Australia	*10.1	26.5	36.6	1 504.5	1 541.1	2.4
Tasmania	*1.8	7.1	8.9	368.0	376.9	2.4
Northern Territory(e)	**0.4	*2.0	*2.4	103.4	105.8	*2.2
Australian Capital Territory	5.5	*4.2	9.7	238.3	248.0	3.9
<b>Australia</b>	<b>95.8</b>	<b>239.7</b>	<b>335.5</b>	<b>15 335.7</b>	<b>15 671.1</b>	<b>2.1</b>

(a) Heritage activities comprise work done for heritage organisations, museums and art galleries, libraries and archives, national parks and reserves, zoological parks and aquariums, and botanic gardens. (b) Excludes persons whose involvement was solely as a hobby for their own use or that of their family. (c) Includes persons who only received payment in kind. (d) The number of persons involved in heritage activities, expressed as a percentage of the civilian population in the same group. (e) Refers to mainly urban areas only.

Source: ABS data available on request, 2004 Survey of Work in Selected Culture and Leisure Activities.

## Government and corporate support

In 2004–05 the Australian (Commonwealth) Government provided \$431.5m in funding for heritage, while the state and territory governments contributed \$1,940.2m in total (table 12.18). The contribution of local governments to heritage funding is not separately available, although it is known that they provided a total of \$897.7m for heritage and the arts during 2004–05. The corresponding figures for the Australian and state and territory governments were \$1,760.9m and \$2,356.3m respectively. See *Arts* for information regarding government funding of arts activities.

## 12.18 GOVERNMENT FUNDING FOR HERITAGE, By level of government(a)

	2002–03	2003–04	2004–05
Level of government	\$m	\$m	\$m
Australian	461.1	440.3	431.5
State and territory	1 886.1	1 954.1	1 940.2
<b>Total</b>	<b>2 347.2</b>	<b>2 394.4</b>	<b>2 371.7</b>

(a) Excludes funding by local government.

Source: *Cultural Funding by Government, Australia, 2004–05* (4183.0).

Between 2002–03 and 2004–05 there were successive falls in the funding of heritage activities by the Australian Government. These falls were more than offset by a net increase in funding by the combined state and territory governments. Funding by the Australian Government fell by \$29.6m (or 6.4%) over the two-year period, while the net increase in funding by state and territory governments was \$54.1m (or 2.9%).

With funding of \$182.1m and \$120.1m respectively, museums (other than art museums) and libraries and archives accounted for 70.0% of heritage funding by the Australian Government in 2004–05. However, much of the heritage funding provided by the state and territory governments was directed at nature parks and reserves. The \$935.6m allocated in this way was 48.2% of the available total (table 12.19).

A survey of museums was conducted in respect of 2003–04. This survey found that funding from all levels of government contributed \$628.0m to the total income of museums. This amount included both current and capital funding, and funding for one-off projects. Art museums received \$200.4m of the funding, and other museums the remaining \$427.6m. Public libraries were also surveyed in respect of 2003–04. The survey found that libraries and archives received a total of \$879.2m from all levels of government. Of this amount, \$521.9m went to local government libraries, \$259.4m to national and state libraries, and \$97.9m to national and state archives. These amounts excluded capital funding.

An ABS survey of businesses, conducted in respect of 2000–01, found that they gave \$1,446.6m to organisations or individuals during this period. Of this amount, arts and culture activities received \$69.6m comprising \$40.4m in sponsorship, \$22.8m in donations, and \$6.3m in business to community projects. Arts and culture activities comprised performing arts, creative arts, and the heritage-related activities of museum, art gallery and library operation, and zoological and botanical park and garden operation.

## 12.19 GOVERNMENT FUNDING FOR HERITAGE(a) — 2004–05

Category of heritage funding	Level of government	
	Australian \$m	State and territory \$m
Art museums	46.3	170.7
Other museums	182.1	301.7
Nature parks and reserves	73.3	935.6
Zoological parks, aquaria and botanic gardens	9.6	136.9
Libraries and archives	120.1	395.3
<b>Total</b>	<b>431.5</b>	<b>1 940.2</b>

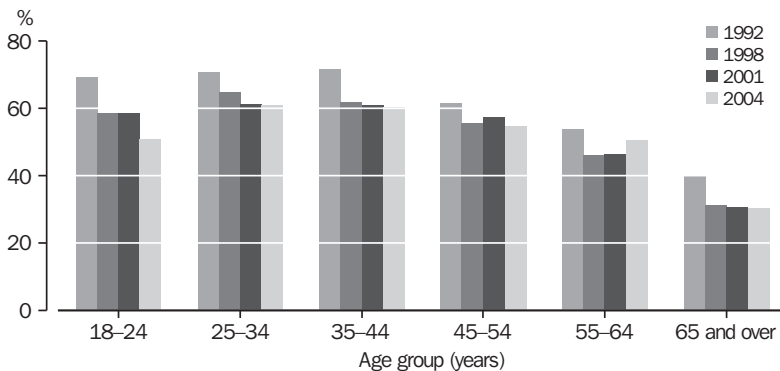
(a) Excludes funding by local government.

Source: *Cultural Funding by Government, Australia, 2004–05* (4183.0).

## Experiencing heritage

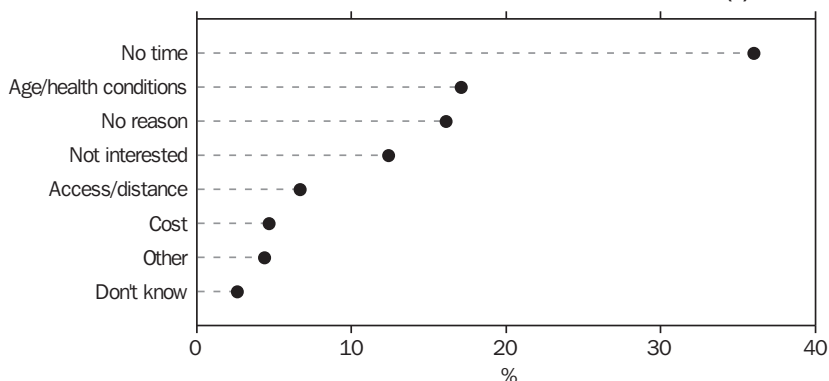
The ABS periodically conducts a survey of households in which it collects data on several environmental topics, including visits to World Heritage Areas, national and state parks. The most recent survey found that people aged 25–34 years or 35–44 years were the most likely to have visited these areas and parks in the twelve months prior to March 2004. During that period, for both age groups, just over 60% of people visited one of these areas compared with 52% for the adult population as a whole. Graph 12.20 shows visit rates have tended to decline between 1992 and 2004 within each age group. The age group contributing most to the overall fall in the visit rate was the 18–24 year olds. Their visit rate declined from 69% for the 1992 survey to 51% for 2004.

### 12.20 VISITS TO WORLD HERITAGE AREAS, NATIONAL AND STATE PARKS



Source: *Environmental Issues: People's Views and Practices, March 2004* (4602.0).

## 12.21 MAIN REASON FOR NOT VISITING A WORLD HERITAGE AREA OR PARK(a) — 2004



(a) National and state parks.

Source: *Environmental Issues: People's Views and Practices, March 2004 (4602.0)*.

Of those people who had not visited a World Heritage Area, national or state park in the twelve months prior to March 2004, 36% cited lack of time as the main reason for this. Lack of time was the most common main reason for not visiting for all age groups except people aged 65 years and over, for whom age or health conditions was the most common main reason. Inability to visit because of age or health conditions was the second most common main reason for not visiting (17% overall, and 53% for people aged 65 years and over).

A household survey conducted in March–July 2002 found that 41.6% of adults (6.0 million people) visited a botanic garden, and 40.0% (5.8 million) visited a zoological park or aquarium, at least once during the twelve months prior to interview (table 12.22). A similar survey conducted in 1999 found the corresponding attendance rates to be 36.4% (5.1 million) for botanic gardens and 33.8% (4.8 million) for zoological parks and aquariums. For art galleries, the adult attendance rate was 24.9% (3.6 million people) in 2002, compared with 20.9% (2.9 million) in 1999. The attendance rate for museums (other than art galleries) was also higher in 2002 than in 1999 – 25.0% (3.6 million) compared with 19.6% (2.8 million). However, this rise in attendance can be partly explained by the temporary closure of some large museums during the 1999 survey period. Libraries were visited at least once by 42.1% of the adult population

(6.1 million people) during the twelve months prior to interview in 2002. This compares with 36.8% (5.2 million people) in 1999.

The age group with the highest 2002 attendance rates for botanic gardens and for zoological parks and aquariums was 25–34 year olds (45.5% and 51.9% respectively), while for museums and for libraries it was 35–44 year olds (29.1% and 47.4% respectively). For art galleries, 55–64 year olds had the highest attendance rate (28.0%).

A survey of public libraries and archives in respect of 2003–04 found that there were 104.7 mill. visits to libraries during that year – an average of just over five visits per person. Local government libraries accounted for 95% of all visits. There were also 137,000 visits to the search rooms of the national and state archive organisations during 2003–04, and 218,000 recorded archival enquiries.

Regular surveys of household expenditure are conducted by the ABS, most recently in respect of 2003–04. Findings from this survey showed households spent, on average, \$0.39 per week on heritage activities – \$0.15 on art gallery and museum fees and charges and \$0.24 on national park and zoo fees and charges. This results in total annual expenditure on heritage activities by all households of \$157.3m, which is less than 0.1% of the total annual household expenditure on all products.

## 12.22 ATTENDANCE AT HERITAGE-RELATED INSTITUTIONS(a), Attendance rates(b) — 2002

	Botanic gardens %	Zoological parks and aquariums %	Art galleries %	Museums %	Libraries(c) %
Males	40.0	38.3	22.0	24.6	34.5
Females	43.2	41.8	27.7	25.4	49.6
Persons	41.6	40.0	24.9	25.0	42.1
Age group (years)					
18–24	42.6	43.2	23.8	22.3	47.2
25–34	45.5	51.9	23.9	27.0	42.0
35–44	43.4	49.1	25.8	29.1	47.4
45–54	41.4	36.7	27.8	25.3	41.9
55–64	42.2	32.8	28.0	25.7	36.9
65 and over	33.1	20.1	19.7	18.3	35.7
Birthplace					
Australia	40.4	39.9	24.8	24.9	41.5
Main English-speaking countries	48.1	46.2	29.0	29.6	49.3
Other countries	42.8	36.7	22.6	22.6	40.4

(a) Attendance at least once in the twelve months prior to interview in 2002. (b) An attendance rate is the number of people who attended, expressed as a percentage of the number of people in that population group. (c) National, state or local government libraries only.

Source: *Attendance at Selected Cultural Venues and Events, Australia, 2002 (4114.0)*.

## Sports and physical recreation

### Industry

Australia is recognised internationally as a nation that is very much involved in sport. It is widely accepted that there are many benefits associated with participation in sport and physical activity including enjoyment, social interaction, health, personal achievement, national pride and community involvement. In many ways sport unites and personifies the nation. Interestingly, Australians were competing internationally as 'Australia' even before Australia was federated as a nation.

Surveys of businesses (and government organisations) providing sports and physical recreation services were conducted by the ABS in respect of 2004–05. At the end of June 2005 there were 9,256 organisations involved in the provision of sports and physical recreation services (table 12.23). This number consisted of 8,191 employing organisations, and 1,064 with no employees. Together, the employing and non-employing organisations had a total income of \$8,820.5m and expenses of \$8,416.5m. Employing organisations accounted for 97.0% and 97.5% of these amounts respectively. Total employment at the end of June was 111,519 assisted by 181,832 volunteers during the

month of June. Of these volunteers, 18,126 (10.0%) assisted non-employing organisations.

While 42.2% of the private-sector organisations were 'not for profit', these were mainly concentrated in sports administration, where all 1,147 organisations operated on a not-for-profit basis; and in sports clubs, where 1,824 (68.9%) were not for profit. The highest proportions of organisations operating for profit occurred in the categories of health and fitness centres and gymnasia (94.3%), and other sports services (93.4%).

At least 57% of the employees in sports administration, sports clubs, and horse and dog racing were male. Health and fitness centres and gymnasia had the highest level of female employment, both in absolute terms (11,362) and as a percentage of people employed (67.3%).

Organisations in the categories of sports administration, sports clubs and other sports services were the most likely to make use of volunteer labour. Together, they accounted for 96.8% of the 181,832 volunteers assisting organisations providing sports and physical recreation services. For these three categories, volunteers outnumbered employees by over three and a half to one overall. However, for the remaining three categories, employees outnumbered volunteers by nine to one overall.

## 12.23 SPORTS AND PHYSICAL RECREATION SERVICES — 2004-05

	Units	Horse and dog racing	Health and fitness centres and gymnasia	Other sports and physical recreation venues	Sports and physical recreation administration	Sports and physical recreation clubs, teams and professionals	Other sports services(a)	Government organisations(b)	Total
Businesses/ organisations at 30 June									
For profit	no.	759	^ 777	872	..	825	1 774	..	5 007
Not for profit	no.	359	47	145	1 147	1 824	^ 127	..	3 649
Government	no.	..	..	..	..	..	..	600	600
Total	no.	1 119	^ 824	1 016	1 147	2 649	1 900	600	9 256
Total employment at 30 June									
Males	no.	9 826	5 509	9 309	6 084	12 890	6 333	n.a.	(c)49 951
Females	no.	6 719	11 362	10 005	4 535	9 326	8 571	n.a.	(c)50 518
Persons	no.	16 544	16 871	19 314	10 619	22 216	14 904	11 051	111 519
Total volunteers during the month of June	no.	3 457	^ 343	^ 2 031	^ 65 131	54 342	56 527	..	181 832
Total income(d)	\$m	1 556.3	679.4	1 109.8	1 531.0	1 884.1	582.0	1 477.9	8 820.5
Total expenses	\$m	1 515.5	649.4	1 020.3	1 461.7	1 815.1	496.6	1 457.8	8 416.5
Operating profit/surplus before tax(d)(e)	\$m	^ 41.3	^ 30.3	90.1	^ 70.9	70.6	^ 85.7	..	388.8

(a) Includes sports services such as education and coaching. (b) For Government organisations, only income and expenditure related to sports and physical recreation services were included, and only employees who spent the majority of their time on sports and physical recreation related activities were included. (c) Excludes Government organisations. (d) Includes capital funding. (e) This item is derived as total income minus total expenses, plus closing inventories minus opening inventories.

Source: Sports and Physical Recreation Services, Australia, 2004-05 (8686.0).

The main sources of income for each category of sports and physical recreation service were:

*horse and dog racing* – net industry and TAB distributions (44.3% of total income) and training fees (13.6%)

*health and fitness centres and gymnasia* – membership and competition fees (78.8%) and casual playing fees (6.8%)

*other sports and physical recreation venues* – casual playing fees (19.5%) and membership and competition fees (16.7%)

*sports administration* – television and other broadcasting rights (16.7%) and sponsorship, fundraising and donations (16.2%)

*sports clubs* – sponsorship, fundraising and donations (22.4%) and membership and competition fees (19.1%)

*other sports services* – coaching, training and instructing (55.9%) and casual playing fees (15.6%).

## Employment and other involvement

The 2001 Census of Population and Housing provides information on the number and characteristics of people aged 15 years and over whose main job in the week prior to the Census was in a sports and physical recreation occupation. People who had unpaid involvement in sports and physical recreation activities and people who worked in sports and physical recreation as a 'second job' were not recorded as being in sports and physical recreation occupations, unless their main job (in terms of hours worked) was also a sports and physical recreation occupation.

The 2001 Census found that in August 2001, 83,008 people (1.0% of all employed persons) had their main (paid) job in a sports and physical recreation occupation. This is a 21.6% increase from 1996 when 68,274 people (0.9%) had their main job in a sports and physical recreation occupation, and compares with an 8.7% increase for all occupations.

## 12.24 PERSONS EMPLOYED IN SELECTED SPORTS AND PHYSICAL RECREATION OCCUPATIONS(a) — 2001

Occupation	Males	Females	Persons
Fitness instructor(b)	3 685	8 679	12 364
Greenkeeper(c)	11 637	291	11 928
Veterinarian	2 975	2 032	5 007
Veterinary nurse	121	4 737	4 858
Recreation officer	1 035	2 807	3 842
Stud hand or stable hand	1 626	1 867	3 493
Boat builder and repairer(d)	3 153	60	3 213
Ticket collector or usher	1 576	1 624	3 200
Animal trainer(e)	2 251	875	3 126
Other sports coach(f)	1 991	887	2 878

(a) The ten sports and physical recreation occupations in which the highest numbers of persons employed had their main jobs.

(b) Comprises Fitness instructors and related workers n.f.d. and Fitness instructor. (c) Comprises Greenkeepers n.f.d., Greenkeeper and Apprentice greenkeeper. (d) Comprises Boat builder and repairer, and Apprentice boat builder and repairer. (e) Comprises Animal trainers n.f.d., Horse trainer and Animal trainers n.e.c. (f) Coaches for all sports other than gymnastics, tennis, swimming and horseriding.

Source: *Employment in Sport and Recreation, Australia, 2001* (4148.0).

Of those employed in a sports and physical recreation occupation in August 2001, fitness instructors (12,364 persons) and greenkeepers (11,928 persons) were prominent (table 12.24). There were more males (50,113 or 60.4%) than females (32,895 or 39.6%) employed in sports and physical recreation occupations. By comparison, of all employed persons, 54.8% were male.

The ABS conducted a household survey in April 2004 to measure people's involvement in organised sports and physical activities over the previous twelve months. In the year ended

April 2004, 4.3 million people (27.2% of all people aged 15 years and over) were involved in sport and physical activity organised by a club, association or other organisation. This involvement included not only players and participants, but also people involved in non-playing roles that support, arrange and/or run organised sport and physical activity. There were 1.5 million people (9.6% of all people aged 15 years and over) who were involved as coaches, referees, administrators, scorers or in other non-playing roles.

## 12.25 PERSONS INVOLVED IN ORGANISED SPORTS AND PHYSICAL ACTIVITIES(a)

Type of involvement	Some paid involvement(b)		Unpaid involvement only		Total involvements		Involvement rate(c)	
	2001 '000	2004 '000	2001 '000	2004 '000	2001 '000	2004 '000	2001 %	2004 %
Playing	88.1	87.7	3 428.3	3 580.5	3 516.4	3 668.2	23.5	23.4
Non-playing roles								
Coach, instructor or teacher	105.8	122.1	452.6	472.3	558.4	594.5	3.7	3.8
Referee or umpire	69.5	78.6	270.5	256.8	340.0	335.4	2.3	2.1
Committee member or administrator	24.3	21.6	570.7	552.8	595.0	574.4	4.0	3.7
Scorer or timekeeper	*14.6	16.7	439.1	496.3	453.7	513.0	3.0	3.3
Medical support	*11.9	14.1	78.2	90.4	90.1	104.5	0.6	0.7
Other involvement	*7.3	14.0	79.8	113.9	87.1	127.9	0.6	0.8
Total non-playing involvements(d)	233.5	267.1	1 890.9	1 982.6	2 124.3	2 249.6	..	..
<b>Total involvements(d)</b>	<b>321.6</b>	<b>354.8</b>	<b>5 319.2</b>	<b>5 563.0</b>	<b>5 640.8</b>	<b>5 917.8</b>	<b>..</b>	<b>..</b>
Total persons with involvement(d)	264.0	297.9	3 795.2	3 971.9	4 059.1	4 269.8	27.1	27.2

(a) Relates to persons aged 15 years and over who were involved in sport or physical activity organised by a club, association or other organisation in the twelve months prior to interview in April 2004. (b) Includes those who were paid for all or some of their involvement. Payment includes payment in dollars and/or goods and services. (c) Refers to the number of persons involved in organised sport and physical activity, expressed as a percentage of the civilian population aged 15 years and over. (d) The total number of involvements is greater than the corresponding total number of persons because each person can have more than one involvement.

Source: *Involvement in Organised Sport and Physical Activity, Australia, April 2001 and April 2004* (6285.0).



Of the 4.3 million people involved in organised sport and physical activity, 895,800 (21.0% of those involved) were both a player and involved in at least one non-playing role. Of the 1.5 million people with non-playing involvement, 32.8% participated in more than one non-playing role. In all, these 1.5 million people had 2.2 million involvements in non-playing roles in the twelve months prior to interview.

Of the 3.7 million players, 87,700 (2.4%) received some payment (in dollars and/or goods and services) for their involvement and, of the 2.2 million non-playing involvements, 267,100 (11.9%) attracted some payment (table 12.25). These data, and the figures in table 12.23, indicate how heavily reliant sports organisations are on the support of unpaid helpers.

A household survey, conducted by the ABS during March–July 2002, collected information on the types of organisations, clubs and associations to which people provided unpaid help in the form of time, services or skills. The survey found that just over one-third (5.0 million) of Australians aged 18 years and over undertook some form of voluntary work in the twelve months prior to interview in 2002. Sport, recreation and hobby organisations had the largest number of volunteers at 1.8 million, giving a volunteer rate of 12.1%. Although the overall volunteer rate for females (35.1%) was higher than for males (33.7%), the reverse was true for sport, recreation and hobby organisations with the male volunteer rate being 15.1% and the female 9.2%. The peak age group for volunteering for sport, recreation and hobby organisations was 40–44 year olds with a volunteer rate of 18.9%. The volunteer rate for these organisations was higher in the balance of the states (15.6%) than it was in the capital cities (10.2%). Higher rates of volunteering for these organisations were also associated with being employed (15.4%), being in a couple family with dependent children (17.8%), attending sporting events (19.3%) and participating in organised sport (25.6%).

## **Government and corporate support**

Governments of all levels play an important role in the development of sport and physical recreation in Australia at both the elite and grassroots levels. The functions of some government (and non-government) national administrative bodies are described below.

The Sport and Recreation Ministers' Council (SRMC) provides a forum for cooperation and coordination between the Australian Government and state and territory governments on matters relating to the development of sport and recreation. The governments of New Zealand and Papua New Guinea are also represented on SRMC. Its membership comprises government ministers with prime responsibility for sport and recreation. The Standing Committee on Recreation and Sport (SCORS) comprises representatives of the relevant ministers' departments and the Australian Sports Commission, and provides advice and administrative support to SRMC. A subcommittee of SCORS is the SCORS Research Group which provides a coordinated and collaborative approach to the collection and analysis of national sport and recreation data. More information about its operations and statistical output can be found on the web site.

The Australian Sports Commission (ASC) is the Australian Government agency responsible for the funding and development of sport at the national level. The ASC supports a wide range of programs designed to develop sporting excellence and increase participation in sports by all Australians. The Australian Institute of Sport (AIS) is a major program within the ASC and is responsible for developing elite sport on a national basis with a particular focus on success at the international level. More information about the ASC and AIS can be obtained from their web sites.

The Australian Sports Anti-Doping Authority (ASADA) was established in March 2006 and reports to the Minister for Art and Sport. Its mission is to protect Australia's sporting integrity through the elimination of doping. ASADA is an integrated anti-doping organisation with testing, education and advocacy roles. It replaces the Australian Sports Drug Agency, and incorporates the functions of the Australian Sports Drug Medical Advisory Committee. More information about ASADA can be obtained from its web site.

Individual sports in Australia are managed and coordinated by National Sporting Organisations (NSOs), each managing the participation in, and development of, a specific sport. Many NSOs receive funding from the ASC. More information about most NSOs can be obtained from the Australian Sports Directory on the ASC web site.



The total expenditure by all three levels of government on sport and recreation activities in 2000–01 was \$2,124.2m. Of this, Australian (Commonwealth) Government expenditure was \$198.9m (9.4% of the total), while state and territory governments spent \$875.2m (41.2%) and local governments spent \$1,050.1m (49.4%) (table 12.26). The recurrent expenditure component (\$1,585.5m) of total government expenditure on sport and recreation activities was much larger than the capital expenditure component (\$538.6m).

An ABS survey of businesses found that, during 2000–01, they gave \$1,447m to organisations and individuals, of which those involved in sport and recreation activities (which included the operation of sporting events, clubs and teams; indoor or outdoor recreational facility operations; social, leisure and hobby club activities; and recreational parks and gardens operations) received \$628m (43%). This comprised \$480m of sponsorship, \$109m of donations and \$39m of 'business to community projects' funding. Activities associated with sport and recreation attracted the most business sponsorship funding compared with the other activities surveyed, namely community service and welfare, arts and culture, health, education and training, and environmental activities.

## Participation by adults

The ABS conducted a household survey during March–July 2002 to measure participation in sports and physical activities during the twelve months prior to interview. The survey included sports or physical activities such as football or netball, which are usually organised by a club or association. It also included other sports and physical activities which may not have been organised, such as walking for exercise. Consequently, participation in swimming, for example, included people who swam for recreation at the beach, those who swam competitively as part of a team, and those who swam laps at the local pool for exercise.

The survey found 62.4% of the population aged 18 years and over (or 9.1 million people) participated as a player (rather than in a support role) at least once during the twelve-month period in one or more sports or physical activities (table 12.27). Participation rates were highest for the 18–24 year age group (72.6%), and declined steadily with age to 45.6% for persons aged 65 years and over. More males (65.0%) than females (59.9%) participated at least once during the year. However, for the 38.6% (5.6 million) of the population who participated at least weekly (on average) during this period, female participation (38.7% or 2.8 million) was virtually the same as for males (38.6% or 2.8 million).

### 12.26 GOVERNMENT FUNDING FOR SPORT AND RECREATION — 2000–01

Category	Level of government			Total \$m
	Commonwealth \$m	State and territory \$m	Local \$m	
Administration and regulation				
Administration, policy and planning	29.8	74.2	37.3	141.2
Regulation and control	39.7	20.3	4.6	64.6
<i>Total</i>	69.5	94.4	41.9	205.8
Venues, grounds and facilities				
Venues and sports grounds(a)	14.5	185.8	410.1	610.5
Recreation parks and waterways	—	94.4	587.4	681.8
<i>Total</i>	14.5	280.2	997.5	1 292.2
Participation and special events				
Participation by clubs, teams and individuals	2.4	67.0	6.5	75.9
Special events(b)	77.0	374.9	—	451.9
<i>Total</i>	79.4	441.9	6.5	527.8
Other services				
Horse and dog racing	—	22.5	n.a.	n.a.
Coaching and training	24.4	26.5	n.a.	n.a.
Other support services	11.2	9.6	n.a.	n.a.
<i>Total</i>	35.5	58.6	4.2	98.4
<b>Total</b>	<b>198.9</b>	<b>875.2</b>	<b>1 050.1</b>	<b>2 124.2</b>

(a) Includes funding for Sydney 2000 Olympic and Paralympic Games venues. (b) Includes funding for Sydney 2000 Olympic and Paralympic Games, excluding venues.

Source: Sport and Recreation Funding by Government, Australia, 2000–01 (4147.0).

## 12.27 PARTICIPATION IN SPORTS AND PHYSICAL ACTIVITIES(a) — 2002

Age group (years)	Males		Females		Persons	
	Number '000	Participation rate %	Number '000	Participation rate %	Number '000	Participation rate %
18–24	751.6	77.6	630.5	67.4	1 382.1	72.6
25–34	1 098.3	75.5	988.2	68.0	2 086.5	71.8
35–44	994.1	68.1	915.8	62.2	1 909.9	65.1
45–54	771.5	58.3	799.7	60.5	1 571.2	59.4
55–64	533.2	56.1	557.4	59.7	1 090.7	57.9
65 and over	516.0	50.6	500.0	41.3	1 016.0	45.6
<b>Total</b>	<b>4 664.7</b>	<b>65.0</b>	<b>4 391.6</b>	<b>59.9</b>	<b>9 056.3</b>	<b>62.4</b>

(a) Relates to persons aged 18 years and over who participated in sport or physical activity as a player at least once during the twelve months prior to interview.

Source: *Participation in Sport and Physical Activities, Australia, 2002 (4177.0)*.

The 2002 survey found that the activities which attracted the most participants were walking for exercise (3.7 million people), swimming (1.6 million), aerobics/fitness (1.6 million), golf (1.1 million) and tennis (1.0 million).

The most popular activities for men were walking and golf while, for women, walking and aerobics/fitness were most popular. Table 12.28 shows the ten sports or physical activities in which the most men participated and the ten in which the most women participated.

The 2004–05 National Health Survey conducted by the ABS found almost two-thirds (65.9%) of all adults had exercised for recreation, sport or fitness during the two weeks prior to interview, and the proportions of males and females exercising were similar. However, females were more likely to exercise at a lower level than males. The percentage of females exercising at a low level was 39.2% compared with 33.3% of males, whereas 8.3% of males exercised at a high level compared with 4.3% of females (table 12.29).

Almost half (49.3%) the adult population reported that they walked for exercise – 53.7% of females and 44.7% of males. Males were more likely to have undertaken vigorous exercise in the last two weeks – 18.0% compared with 11.4% of females.

## 12.28 ADULT PARTICIPATION IN SELECTED SPORTS AND PHYSICAL ACTIVITIES(a) — 2002

	Number '000	Participation rate %
<b>MALES</b>		
Walking for exercise	1 255.2	17.5
Golf	890.3	12.4
Swimming	708.4	9.9
Aerobics/fitness	632.3	8.8
Tennis	544.5	7.6
Cycling	524.0	7.3
Running	440.9	6.1
Fishing	437.5	6.1
Cricket (outdoor)	340.8	4.7
Soccer (outdoor)	318.9	4.4
<b>FEMALES</b>		
Walking for exercise	2 407.9	32.9
Aerobics/fitness	953.2	13.0
Swimming	867.4	11.8
Tennis	443.4	6.1
Netball	389.4	5.3
Cycling	305.6	4.2
Yoga	266.2	3.6
Bush walking	240.1	3.3
Running	221.9	3.0
Dancing	206.4	2.8

(a) Relates to persons aged 18 years and over who participated in sport or physical activity as a player at least once during the twelve months prior to interview.

Source: *Participation in Sport and Physical Activities, Australia, 2002 (4177.0)*.

## 12.29 EXERCISE LEVEL(a)(b)

	2001			2004–05		
	Males %	Females %	Persons %	Males %	Females %	Persons %
Sedentary	30.9	32.2	31.6	33.6	34.4	34.1
Low	34.1	41.5	37.8	33.3	39.2	36.3
Moderate	26.2	22.4	24.2	24.8	22.0	23.3
High	8.8	3.9	6.3	8.3	4.3	6.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

(a) Relates to persons aged 18 years and over during the two weeks prior to interview in the year shown. (b) This table contains age-standardised percentages, which are those which would have prevailed should the actual populations for the two reference periods both have the standard age composition. The standard population used is the estimated resident population at 30 June 2001 based on the 2001 Census of Population and Housing. Such standardisation enables comparison over time or across population groups.

Source: National Health Survey: Summary of Results, Australia, 2004–05 (4364.0).

Regular surveys of household expenditure are conducted by the ABS, most recently in respect of 2003–04. Findings from this survey showed households spent, on average, \$15.70 per week on sports and physical recreation products (table 12.30), which was 1.8% of their average weekly expenditure on all products. Of the \$7.57 spent weekly on equipment, \$3.41 went on swimming pools and \$1.14 on sports or physical recreation footwear. Major components of the \$7.02 spent on services were sports facility hire charges (\$2.30) and health and fitness studio charges (\$1.44).

## 12.30 EXPENDITURE ON SPORTS AND PHYSICAL RECREATION BY HOUSEHOLDS — 2003–04

	Average weekly household expenditure	Total annual household expenditure
	\$	\$m
Sports and recreation vehicles(a)	1.11	447.7
Sports, physical recreation and camping equipment	7.57	3 053.3
Sports and physical recreation services	7.02	2 831.5
<b>Total sports and physical recreation expenditure</b>	<b>15.70</b>	<b>6 332.5</b>

(a) This category consists of bicycles and boats.

Source: ABS data available on request, 2003–04 Household Expenditure Survey.

## Participation by children

A survey of children's activities in the twelve months to April 2003 found 1.6 million children aged 5–14 years (61.6%) participated outside school hours in sport that had been organised by a school, club or association.

Participation in organised sport peaked at the age of ten years for boys and eleven years for girls. However, across all ages boys were more likely to participate than girls – the total participation rate was 68.6% for boys and 54.2% for girls (table 12.31). There was also a higher percentage of boys participating in more than one sport (35.2% of boys compared with 22.9% of girls).

Children in Western Australia had the highest participation rate (65.8%) in organised sport outside school hours, while those in Queensland had the lowest participation rate (54.1%).

The most popular organised sports for children in 2003 were swimming, which had a participation rate of 16.6%, and outdoor soccer with 13.4%. The organised sports that attracted most boys were outdoor soccer (22.2%), swimming (15.7%), and Australian Rules football (13.6%); whereas girls favoured netball (18.1%), swimming (17.5%), and tennis (7.8%) (table 12.32). As might be expected, boys dominated participation in some sports while girls outnumbered them in others. Boys made up 98.8% of Rugby League players, 95.1% of Australian Rules footballers, and 93.0% of outdoor cricket players. On the other hand, 96.6% of netballers and 75.6% of gymnasts were girls.

Between April 2000 and April 2003, the sport participation rates rose for both boys and girls. For girls, this resulted mainly from significant increases in participation in outdoor soccer, martial arts and gymnastics. For boys, it was significant increases in participation in outdoor soccer and swimming which were the main contributors. One sport going against the general upward movement in participation was Rugby League. Between April 2000 and April 2003, participation by boys dropped significantly from 6.8% to 5.6%.

### 12.31 CHILDREN'S PARTICIPATION IN ORGANISED SPORT(a) — 2003

Age group (years)	Number			Participation rate		
	Males '000	Females '000	Persons '000	Males %	Females %	Persons %
5–8	339.6	238.0	577.6	63.4	46.9	55.4
9–11	305.1	239.7	544.9	73.8	61.1	67.6
12–14	287.1	220.8	507.9	70.3	56.6	63.6
<b>Total</b>	<b>931.9</b>	<b>698.5</b>	<b>1 630.4</b>	<b>68.6</b>	<b>54.2</b>	<b>61.6</b>

(a) Outside school hours during the twelve months prior to interview in April 2003.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

### 12.32 CHILDREN'S PARTICIPATION IN ORGANISED SPORTS(a), Participation rates(b)

	2000			2003		
	Males %	Females %	Persons %	Males %	Females %	Persons %
Swimming	13.1	15.8	14.4	15.7	17.5	16.6
Soccer (outdoor)	19.6	2.9	11.4	22.2	4.2	13.4
Netball	*0.5	18.2	9.1	0.6	18.1	9.1
Tennis	9.2	7.7	8.5	9.5	7.8	8.6
Basketball	8.8	6.3	7.6	8.6	6.9	7.7
Australian Rules football	12.6	*0.3	6.6	13.6	0.7	7.3
Cricket (outdoor)	9.9	0.6	5.3	9.1	0.7	5.0
Martial arts	5.4	2.5	4.0	6.2	3.6	4.9
Athletics and track and field	3.9	4.0	3.9	3.8	3.8	3.8
Gymnastics and trampolining	0.9	4.3	2.6	1.7	5.4	3.5
Rugby League	6.8	*0.2	3.6	5.6	**0.1	2.9
Hockey	2.3	2.5	2.4	2.5	2.6	2.5
Other organised sports	15.9	12.2	14.1	17.1	12.7	15.0
<b>Total</b>	<b>66.1</b>	<b>52.3</b>	<b>59.4</b>	<b>68.6</b>	<b>54.2</b>	<b>61.6</b>

(a) Children aged 5–14 years who participated in organised sport outside school hours during the twelve months prior to interview in April. (b) A participation rate is the number of children who participated, expressed as a percentage of the number of children in that population group.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

Although boys had the higher participation rate in organised sport, girls had a much higher participation rate than boys in another form of organised physical activity – dancing. During the twelve months ended April 2003, 307,100 girls participated in organised dancing outside school hours – a participation rate of 23.8%. The number of boys participating was 22,200 – a participation rate of only 1.6%. Participation by boys was little different to the level recorded in 2000 whereas, for girls, the participation rate increased from 19.5% to 23.8% over the same period (table 12.33).

Besides organised sport and dancing, the survey of children's activities in April 2003 also asked about participation in a couple of non-organised physical recreation activities – bike riding and skateboarding/rollerblading. For both activities, a

considerably higher percentage of boys (70.5% and 28.5% respectively) participated than did girls (53.3% and 16.9%).

Between April 2000 and April 2003, there was a small but significant drop in bike riding by girls with the participation rate falling from 56.2% to 53.3%. For boys there was little change over the same period. However, for skateboarding or rollerblading, the participation rates for both boys and girls fell substantially. For boys, the fall was from 35.6% to 28.5% while, for girls, it was from 26.1% to 16.9%. This result suggests a fall in the popularity of these largely youth-oriented activities but does not necessarily imply that children's leisure activities have become more sedentary over the period, as they may have increased their participation in either organised sport or other active leisure pursuits not covered by the survey.

### 12.33 CHILDREN'S PARTICIPATION IN SELECTED PHYSICAL RECREATION ACTIVITIES

	2000		2003	
	Number '000	Participation rate %	Number '000	Participation rate %
MALES				
Skateboarding or rollerblading(a)	481.6	35.6	386.4	28.5
Bike riding(a)	963.1	71.1	957.4	70.5
Dancing(b)(c)	22.9	1.7	22.2	1.6
FEMALES				
Skateboarding or rollerblading(a)	335.8	26.1	218.2	16.9
Bike riding(a)	723.0	56.2	687.4	53.3
Dancing(b)(c)	251.1	19.5	307.1	23.8
PERSONS				
Skateboarding or rollerblading(a)	817.4	30.9	604.5	22.8
Bike riding(a)	1 686.1	63.8	1 644.8	62.1
Dancing(b)(c)	274.1	10.4	329.3	12.4

(a) Relates to children aged 5–14 years who participated in this non-organised activity outside school hours during the last two weeks prior to interview in April. (b) Although actually a cultural activity, dancing is included here because of the physical exertion it requires. (c) Relates to children aged 5–14 years who participated in organised dancing (lessons or performances) outside school hours during the twelve months prior to interview in April.

Source: *Children's Participation in Cultural and Leisure Activities, Australia, April 2003 (4901.0)*.

## Attendance

Attending sports events (such as club matches and international competitions) is a popular pastime of many Australians. An ABS household survey conducted in March–July 2002 indicated seven million people, or 48% of all people aged 18 years and over, attended a sporting event (excluding junior and school sport) at least once in the previous twelve months. Men (56%) were more likely to have attended a sporting event than women (41%). For both men and women, attendance rates were highest for the 18–24 year

age group (70% and 59% respectively) and steadily declined with age. Among men aged 65 years and over, the attendance rate was 27%, while for women in this age group it was 16%.

The sport with the highest attendance was Australian Rules football – 2.5 million people attended this sport on at least one occasion during the year (table 12.34). Horse racing (1.9 million), motor sports (1.5 million) and Rugby League (1.5 million) were also among the most attended sports.

### 12.34 ATTENDANCE AT SELECTED SPORTING EVENTS(a) — 2002

	Number			Attendance rate(b)		
	Males '000	Females '000	Persons '000	Males %	Females %	Persons %
Australian Rules football	1 503.9	982.0	2 486.0	21.0	13.4	17.1
Horse racing	1 062.6	802.6	1 865.2	14.8	11.0	12.9
Motor sports	993.3	480.1	1 473.4	13.8	6.6	10.2
Rugby League	951.4	513.2	1 464.6	13.3	7.0	10.1
Cricket (outdoor)	635.2	231.0	866.2	8.9	3.2	6.0
Soccer (outdoor)	519.3	282.6	801.9	7.2	3.9	5.5
Rugby Union	469.7	203.9	673.6	6.5	2.8	4.6
Harness racing	318.9	189.4	508.3	4.4	2.6	3.5
Basketball	226.0	208.4	434.4	3.1	2.8	3.0
Tennis	192.5	201.0	393.5	2.7	2.7	2.7
Dog racing	150.7	81.6	232.3	2.1	1.1	1.6
Netball	66.9	152.8	219.7	0.9	2.1	1.5

(a) Attendance at least once in the twelve months prior to interview in 2002 by persons aged 18 years and over. (b) The number of people who attended, expressed as a percentage of the number of people in that population group.

Source: *Sports Attendance, Australia, 2002 (4174.0)*.

## 12.35 PERSONS WHO SPEAK A LANGUAGE OTHER THAN ENGLISH AT HOME, By language spoken — 2001

	Males	Females	Persons	Proportion born in Australia(a)	Persons as a proportion of population
	'000	'000	'000	%	%
Italian	175.4	178.2	353.6	42.7	2.0
Greek	131.8	132.0	263.7	50.9	1.5
Cantonese	108.2	117.1	225.3	20.0	1.3
Arabic (incl. Lebanese)	108.7	100.6	209.4	43.2	1.2
Vietnamese	86.1	88.1	174.2	25.5	1.0
Mandarin	67.0	72.2	139.3	12.2	0.8
Spanish	45.2	48.4	93.6	22.7	0.5
Tagalog (Filipino)	30.8	48.1	78.9	8.8	0.4
German	35.7	40.8	76.4	19.4	0.4
Macedonian	36.6	35.4	72.0	38.6	0.4
Croatian	35.2	34.6	69.9	34.0	0.4
Polish	27.1	31.9	59.1	20.0	0.3
Australian Indigenous languages	25.1	25.9	51.0	99.6	0.3
Turkish	25.7	25.0	50.7	39.7	0.3
Serbian	24.8	24.4	49.2	22.1	0.3
Hindi	24.4	23.4	47.8	13.5	0.3
Maltese	20.5	20.9	41.4	28.7	0.2
Netherlandic	18.3	21.9	40.2	14.6	0.2
All other languages(b)	352.4	368.5	720.9	19.0	4.0
<b>Total</b>	<b>1 378.9</b>	<b>1 437.6</b>	<b>2 816.5</b>	<b>29.5</b>	<b>15.8</b>

(a) Persons whose birthplace was not stated, inadequately described, n.e.c. or at sea were excluded prior to the calculation of percentages. (b) Excludes languages that were not stated, inadequately described, and non-verbal so described.

Source: ABS data available on request, 2001 Census of Population and Housing.

## Cultural diversity

### Language

Although English is Australia's national language, the cultural diversity within the population has resulted in over 200 languages being spoken in the community. In addition to the languages other than English spoken by migrants who have settled in Australia from all over the world, there are also more than 60 different languages spoken by Aboriginal and Torres Strait Islander Australians. The 2001 Census found 2.8 million people (16% of the population) spoke a language other than English at home (table 12.35), an increase of 213,100 people or 8% since 1996.

Over 50,000 people spoke an Australian Indigenous language (including Australian Creoles), which equates to 12% of all Indigenous Australians and less than 1% of the total Australian population. Two-thirds of Indigenous people in the Northern Territory and 17% of Indigenous people in South Australia spoke an Indigenous language at home. The three most commonly spoken Indigenous languages were Kriol (an Australian Creole) and two Central Australian languages – Pitjantjatjara and Warlpiri.

In 2001 the five most commonly spoken languages other than English were Italian, Greek, Cantonese, Arabic (including Lebanese) and Vietnamese, with

speakers of these languages together comprising 7% of the total population (table 12.35). The extent to which these languages are spoken is a reflection of immigration policies over the last 50 years that have sourced migrants from countries where these languages are spoken. While the number of settler arrivals from countries such as Italy and Greece was high at the end of World War II, large numbers of settler arrivals from Lebanon and Vietnam arrived during the 1970s and 1980s, and from China in the 1990s.

Greek, Arabic and Italian speakers had the largest proportions of Australian-born speakers, reflecting the fact that these languages were mainly brought to Australia 20 or more years ago and have been maintained among the children of those migrants. Languages spoken by migrants arriving in Australia more recently, such as Mandarin and Filipino, had a smaller proportion of Australian-born speakers.

English proficiency among people who spoke a language other than English at home varied with the age of the speaker and according to whether they were born in Australia (table 12.36). Around 88% of all people aged under 25 years who spoke a language other than English at home spoke English well or very well, compared with 60% of those aged 65 years and over.



### 12.36 PERSONS WHO SPEAK A LANGUAGE OTHER THAN ENGLISH AT HOME, By proficiency in English — 2001

	Units	Age group (years)				Total
		0–24	25–44	45–64	65 and over	
Total population speaking other than English at home						
Speaks English well or very well	%	88.1	87.2	77.1	59.9	81.6
Does not speak English well	%	8.4	11.5	20.1	29.5	14.9
Does not speak English at all	%	3.5	1.3	2.8	10.7	3.5
Total persons(a)	'000	860.4	930.5	671.5	354.0	2 816.5
Australian-born population speaking other than English at home						
Speaks English well or very well	%	86.7	97.4	92.9	81.3	90.5
Does not speak English well	%	8.6	2.3	6.1	14.2	6.5
Does not speak English at all	%	4.6	0.3	1.0	4.5	3.0
Total persons(b)	'000	493.4	259.2	46.5	9.9	809.0

(a) Includes 45,000 people who did not state how well they spoke English. (b) Includes 20,000 people who did not state how well they spoke English.

Source: ABS data available on request, 2001 Census of Population and Housing.

People born in Australia who spoke a language other than English at home were generally more likely to speak English well or very well than the total population speaking a language other than English at home. Overall, 91% of those born in Australia spoke English well or very well, compared with 82% of the total population speaking other than English at home.

In 2004–05, there were 36,208 participants in the Adult Migrant English Program – an initiative to improve the English language proficiency of newly arrived migrants from non-English speaking backgrounds. The main source countries of participants were China, Sudan, Vietnam, Iraq, Lebanon, Afghanistan, Thailand, South Korea, Turkey and Indonesia. In terms of migration category, 83% of Humanitarian entrants, 66% of Family entrants, and 62% of Skilled entrants had self-identified a need for English tuition.

## Religion

Although a precise definition of the concept of religion is difficult, a religion is generally regarded as a set of beliefs and practices, usually involving acknowledgment of a divine or higher being or power, by which people order the conduct of their lives both practically and in a moral sense.

At the time of European settlement, the Aboriginal inhabitants followed their own religions involving beliefs in spirits behind the forces of nature, and the influence of ancestral spirit beings.

During the 1800s, European settlers brought their traditional churches to Australia. These included the Church of England (now the Anglican

Church), and the Methodist, Catholic, Presbyterian, Congregationalist, Lutheran and Baptist churches.

With the exception of a small but significant Lutheran population of Germanic descent, Australian society in 1901 was predominantly Anglo-Celtic, with 40% of the population being Anglican, 23% Catholic, 34% other Christian and about 1% professing non-Christian religions.

Further waves of migration helped to reshape the profile of Australia's religious affiliations over subsequent decades. The impact of migration from Europe in the aftermath of World War II led to increases in affiliates of the Orthodox Churches, the establishment of Reformed bodies, growth in the number of Catholics (largely from Italian migration), and the creation of ethnic parishes among many other denominations. More recently, immigration from South-East Asia and the Middle East has expanded Buddhist and Muslim numbers, and increased the ethnic diversity of existing Christian denominations.

In response to the 2001 Census question, stated religious affiliations were: 27% Catholic; 21% Anglican; 21% other Christian denominations; and 5% non-Christian religions. Just over a quarter of all persons either stated they had no religion, or did not adequately respond to the question to enable classification of their religion.

A question on religious affiliation has been asked in every Census taken in Australia, with the voluntary nature of this question having been specifically stated since 1933. In 1971 the instruction 'if no religion, write none' was



introduced. This saw a seven-fold increase from the previous Census year in the proportion of persons stating they had no religion. Since 1971 this proportion has progressively increased to about 16% in 1996 and 2001. Table 12.37 provides a summary of the major religious affiliations at each Census since 1901.

Table 12.38 shows the number and percentage of affiliates for each religion at the 1996 and 2001 Censuses, and the percentage change which occurred during the five-year period. Followers of religions other than Christianity have shown the largest proportional increases since the 1996 Census. The number of persons affiliated with Buddhism increased by 79%, with Hinduism by 42%, Islam 40% and Judaism 5%.

Growth in the numbers and proportions of persons of all ages affiliating with Buddhism, Islam and Hinduism are largely due to changes in the countries of origin of recent immigrants. Between 1996 and 2001 there were just over half a million new arrivals to Australia and, although the most common religious affiliation of immigrants is Christianity, affiliates of other religions are more highly represented among recent immigrants than in the total population.

Of all people affiliating with Hinduism in 2001, 82% had been born overseas, with 34% born in India and 11% in Sri Lanka. Similarly, nearly three-quarters of all those affiliating with Buddhism had been born overseas – 26% in Vietnam and 8% in China. Of persons of all ages affiliating with Islam in 2001, 62% were overseas born, with almost 11% born in Lebanon and 9% in Turkey.

Christian denominations had smaller proportional changes in the numbers of affiliates than the non-Christian religions. Between 1996 and 2001 Catholic affiliates increased by 4.2% or just over 200,000 persons, while Baptist affiliates increased by 4.8%. However, as the total population grew by 6% during this period, the actual percentage of the population professing affiliation to these denominations remained virtually unchanged. The most notable decreases in Christian affiliation occurred for Churches of Christ (decreasing by 18%), the Uniting Church (decreasing by 7%), and Presbyterian and Reformed (decreasing by 6%). An 11% increase was seen for Pentecostal affiliation between 1996 and 2001 (from 174,720 to 194,592). A substantial increase, associated with immigration from south-eastern Europe, was also seen for the Orthodox Churches, with the number of Orthodox affiliates increasing by 7% (from 497,015 to 529,444).

12.37 MAJOR RELIGIOUS AFFILIATIONS

Census year	Christianity				Other religions	No religion	Not stated/ inadequately described	Total
	Anglican	Catholic	Other	Total				
	%	%	%	%	%	%	%	'000
1901	39.7	22.7	33.7	96.1	1.4	0.4	(a)2.0	3 773.8
1911	38.4	22.4	35.1	95.9	0.8	0.4	(a)2.9	4 455.0
1921	43.7	21.7	31.6	96.9	0.7	0.5	(a)1.9	5 435.7
1933	38.7	19.6	28.1	86.4	0.4	0.2	12.9	6 629.8
1947	39.0	20.9	28.1	88.0	0.5	0.3	11.1	7 579.4
1954	37.9	22.9	28.5	89.4	0.6	0.3	9.7	8 986.5
1961	34.9	24.9	28.4	88.3	0.7	0.4	10.7	10 508.2
1966	33.5	26.2	28.5	88.2	0.7	0.8	10.3	11 599.5
1971	31.0	27.0	28.2	86.2	0.8	6.7	6.2	12 755.6
1976	27.7	25.7	25.2	78.6	1.0	8.3	11.4	13 548.4
1981	26.1	26.0	24.3	76.4	1.4	10.8	11.4	14 576.3
1986	23.9	26.0	23.0	73.0	2.0	12.7	12.4	15 602.2
1991	23.8	27.3	22.9	74.0	2.6	12.9	10.5	16 850.3
1996	22.0	27.0	21.9	70.9	3.5	16.6	9.0	17 752.8
2001	20.7	26.6	20.7	68.0	4.9	15.5	11.7	18 769.2

(a) Includes 'object to state'.

Source: ABS data available on request, *Census of Population and Housing*.

### 12.38 RELIGIOUS AFFILIATION

	1996		2001		Change
	'000	%	'000	%	%
Christianity					
Anglican	3 903.3	22.0	3 881.2	20.7	-0.6
Baptist	295.2	1.7	309.2	1.6	4.8
Catholic	4 799.0	27.0	5 001.6	26.6	4.2
Churches of Christ	75.0	0.4	61.3	0.3	-18.2
Jehovah's Witness	83.4	0.5	81.1	0.4	-2.8
Lutheran	250.0	1.4	250.4	1.3	0.2
Orthodox	497.0	2.8	529.4	2.8	6.5
Pentecostal	174.7	1.0	194.6	1.0	11.4
Presbyterian and Reformed	675.5	3.8	637.5	3.4	-5.6
Salvation Army	74.1	0.4	71.4	0.4	-3.7
Uniting Church	1 334.9	7.5	1 248.7	6.7	-6.5
Other Christian	420.6	2.4	497.9	2.7	18.4
Buddhism	199.8	1.1	357.8	1.9	79.1
Hinduism	67.3	0.4	95.5	0.5	41.9
Islam	200.9	1.1	281.6	1.5	40.2
Judaism	79.8	0.4	84.0	0.4	5.2
Other religions	68.6	0.4	92.4	0.5	34.6
No religion	2 948.9	16.6	2 906.0	15.5	-1.5
Not stated/inadequately described	1 604.7	9.0	2 187.7	11.7	36.3
<b>Total</b>	<b>17 752.8</b>	<b>100.0</b>	<b>18 769.2</b>	<b>100.0</b>	<b>5.7</b>

Source: ABS data available on request, Census of Population and Housing.

In 2001, 82% of persons aged 65 years and over identified themselves as Christian, compared with 60% of 18–24 year olds. In contrast, the other religions have a younger age profile. For example, 15% of all Christian affiliates were aged 65 years and over, compared with 6% of Buddhist affiliates; and 8% of Christian affiliates were aged between 18 and 24 years, compared with 13% of Buddhist affiliates. The largest group of Buddhist affiliates was 35–44 year olds. Similar trends were evident for Hindu and Muslim affiliates. In the 2001 Census, people in the 18–24 years age group were the most likely to state that they had no religion (20%).

According to the household survey, conducted by the ABS in March–July 2002, 23% of adults participated in church or religious activities during the three months prior to interview. Women (26%) were more likely than men (20%) to have participated in church or religious activities. This pattern was evident among all age groups. As with

religious affiliation, participation in church or religious activities tended to increase with age. Among 18–24 year olds, 23% of women and 16% of men had participated in church or religious activities. Rates for people 65 years and over were higher at 29% for women and 24% for men. People born overseas (31%) were more likely than those born in Australia (21%) to have participated in church or religious activities.

The 2002 survey also found that, during the twelve months prior to interview, religious organisations received unpaid help from 1.1 million volunteers aged 18 years and over, of whom 57% were female. These volunteers for religious organisations constituted 8% of the adult population.

The 2001 Census found that 14,238 people were employed as ministers of religion in their main job, and that 80% of them were men.

# Citizenship

Citizenship is a relatively recent concept for Australia as a nation, having its origins in the *Australian Citizenship Act 1948* (Cwlth). Prior to this, Australians were British subjects. Since the inception of the Act in January 1949, more than three million people born overseas have acquired Australian citizenship. For these people, citizenship is voluntary, expressing a commitment to the laws and principles of Australia, and respect for its land and its people. It confers the opportunity to participate more fully in Australian society, giving the rights to vote, to apply for public office, and to hold an Australian passport and hence leave and re-enter Australia freely.

Australian citizenship law and policy have been amended many times since their inception to reflect a more inclusive approach to the acquisition of Australian citizenship, with recent changes in policy creating more opportunities for young adults to acquire citizenship. All migrants who meet set criteria are encouraged to become Australian citizens. Children born in Australia acquire Australian citizenship at birth if at least one parent is an Australian citizen or a permanent resident of Australia. Children born overseas may be registered as having Australian citizenship by descent if at least one of their parents is an Australian citizen. Changes to citizenship legislation in 2002 have also made it possible for Australian citizens to hold citizenship of a second country, when previously this would have meant

forfeiting their Australian citizenship. For more information see the Australian Government Department of Immigration and Multicultural Affairs web site.

The 2001 Census found almost three-quarters (74%) of people born overseas who had been resident in Australia for two years or more were Australian citizens. There was a high proportion of Australian citizens among people born in Greece (97%). However, this citizenship rate was influenced by the age and period of residence of people from Greece. For Australian residents born in Greece, most (83%) arrived in Australia in 1970 or earlier and three-quarters are aged 50 years and over. The longer overseas-born people reside in Australia and, consequently, the older they get, the more likely it is that they have acquired Australian citizenship.

Standardising gives the rates that would be expected if a given overseas-born population had the same profile of age and period of residence in Australia as the total overseas-born population (table 12.39). Based on standardised rates, people born in the Philippines, Vietnam and China were the most likely to become Australian citizens. Unstable or changing political and socioeconomic conditions in these countries may result in a greater desire for Australian citizenship than is felt by people born in other countries. In contrast, people born in the United Kingdom and New Zealand were less likely to become Australian citizens.

12.39 OVERSEAS-BORN PEOPLE RESIDENT IN AUSTRALIA FOR TWO YEARS OR MORE — 2001

Selected birthplace	Persons	Citizenship rate(a)	Standardised citizenship rate(b)
	'000	%	%
Philippines	90.4	90.4	92.1
Vietnam	141.8	95.3	91.5
China (excl. SARs & Taiwan)	114.2	80.3	90.1
Greece	108.3	97.1	89.2
Italy	204.6	79.5	65.2
United Kingdom	951.5	65.6	64.3
Germany	100.5	76.5	59.7
Netherlands	78.7	78.3	55.5
New Zealand	281.5	37.7	45.3
All overseas born(c)	3 560.3	74.4	74.4

(a) People for whom citizenship was not stated were excluded prior to the calculation of percentages. (b) The rates of citizenship that would be expected if a given overseas-born population had the same age and period of residence profile as the total overseas-born population. (c) Excludes people whose birthplace was not stated, inadequately described, not elsewhere classified or at sea.

Source: ABS data available on request, 2001 Census of Population and Housing.

Despite their comparatively low rate of take-up of citizenship, Australian residents born in the United Kingdom and New Zealand were the two largest groups among the 93,100 people granted Australian citizenship in 2004–05 (table 12.40). This is consistent with the large numbers of United Kingdom and New Zealand-born people resident in Australia. Former British, Irish and New Zealand citizens have been among the largest sources of Australian citizens since the early-1970s, when legislative changes and visa requirements prompted many Commonwealth citizens living in Australia to apply for Australian citizenship. Other residents who were granted Australian citizenship in 2004–05 were likely to have come from Asian countries such as China (8%), India (5%), Philippines (4%) and Vietnam (2%). Together, these countries comprised 20% of all citizenship grants. South Africa was another major source of new citizens, accounting for 5% of grants. These figures reflect immigration from these countries in recent years – China, India, South Africa, Philippines, Malaysia and Vietnam being in the top ten birthplaces of overseas-born people who arrived in Australia during the decade 1996–2005.

**12.40 PEOPLE GRANTED AUSTRALIAN CITIZENSHIP, By former nationality — 2004–05**

Country of former nationality or citizenship	no.	%
United Kingdom	20 127	21.6
New Zealand	9 363	10.1
China(a)	7 798	8.4
South Africa	5 085	5.5
India	5 027	5.4
Philippines	3 653	3.9
Iraq	2 115	2.3
Vietnam	2 056	2.2
Malaysia	1 798	1.9
Sri Lanka	1 711	1.8
Fiji	1 570	1.7
United States of America(b)	1 554	1.7
Sudan	1 429	1.5
Taiwan	1 148	1.2
Lebanon	1 136	1.2
Korea, Republic of (South)	1 124	1.2
Ireland	1 063	1.1
Indonesia	1 052	1.1
Bosnia-Herzegovina	1 047	1.1
Canada	954	1.0
Other/not stated	22 285	23.9
<b>Total</b>	<b>93 095</b>	<b>100.0</b>

(a) Includes citizens of Hong Kong and Macau SARs but excludes those of Taiwan. (b) Includes American Samoa.

Source: Department of Immigration and Multicultural Affairs, 'Annual Report, 2004–05'.

## Ancestry

The ancestry classification used by the ABS recognises the self-defined and self-reported ancestries of all Australians and includes ancestries which refer to nations, to groups within nations, and to groups or regions which cross national boundaries. Yet ancestry is a complex concept. A person's ancestry is shaped by country of birth and citizenship along with the more intangible concepts of language and religion. Moreover, the concept of ancestry is further complicated because a person may report more than one ancestry in answer to the Census question, and the question is open to their individual interpretation.

While ancestry has similarities with ethnic identity, the former has a more historical orientation – respondents to the 2001 Census were asked to consider their ancestry as far back as three generations. The 1986 Census was the only other to include questions about ancestry, but respondents were asked to consider their ancestry only as far back as two generations.

In 2001, more than 160 ancestries were separately identified by Australia's population. The most commonly stated were Australian (36%) and English (34%), while other main ancestries included Irish (10%), Italian (4%), German (4%), Chinese (3%), and Scottish (3%) (table 12.41). Of the 6.7 million people who reported Australian ancestry, almost all were born in Australia (99%) and had at least one Australian-born parent (98%).

While some of the other main ancestries had a strong association with Australia and with one other birthplace, others were associated with a wider range of birthplaces. Chinese ancestry, for example, was not only associated with Australia (26%), China (25%) and Hong Kong (11%), but with several other birthplaces such as Malaysia (10%) and Vietnam (8%).

Interestingly, the number of people who reported Australian ancestry almost doubled between 1986 and 2001, rising from 22% of the population to 36%. Similar growth was observed in the number of people identifying with Chinese, Indian and Vietnamese ancestries almost doubling, while the number of people reporting Lebanese ancestry increased by 76%.

While these changes are consistent with immigration trends over the period, some other changes can be attributed more to changing perceptions of ancestry. An example of this is the doubling of the number of people reporting Irish

ancestry to just under two million in 2001. These changing perceptions may also contribute to the increase in the level of Australian ancestry.

The proportion of the population who reported more than one ancestry increased from 12% in 1986 to 22% in 2001. Almost a quarter of those who reported Australian ancestry stated another ancestry, mainly English (13% of the total Australian ancestry group) and Irish (3%). Some

ancestries were more likely than others to be part of a two-ancestry response. People reporting Irish ancestry were the most likely to also report another ancestry (76%), while people who reported Vietnamese (6%), Lebanese (12%) or Chinese (15%) were the least likely to report another ancestry. These differences could be attributed to the length of time since the first immigrants from each group arrived in Australia.

#### 12.41 POPULATION, By self-reported ancestry

Ancestry	1986		2001	
	'000	%	'000	%
Australian	3 402.0	21.8	6 739.6	35.9
Other Australian ancestries(a)	198.9	1.3	106.4	0.6
New Zealander	75.1	0.5	123.3	0.7
Maori	26.0	0.2	73.0	0.4
Other Pacific Islander	19.7	0.1	91.7	0.5
European				
English	6 607.2	42.3	6 358.9	33.9
Irish	902.7	5.8	1 919.7	10.2
Scottish	740.5	4.7	540.0	2.9
Italian	620.2	4.0	800.3	4.3
German	510.4	3.3	742.2	4.0
Greek	336.8	2.2	375.7	2.0
Dutch	231.1	1.5	268.8	1.4
Maltese	125.8	0.8	136.8	0.7
Other European	1 600.7	10.3	1 196.2	6.4
Middle Eastern				
Lebanese	92.4	0.6	162.2	0.9
Turkish	36.9	0.2	54.6	0.3
Other Middle Eastern	107.0	0.7	147.0	0.8
Asian				
Chinese	201.3	1.3	556.6	3.0
Indian	71.2	0.5	156.6	0.8
Vietnamese	65.0	0.4	156.6	0.8
Filipino	38.7	0.2	129.8	0.7
Other Asian	107.4	0.7	339.5	1.8
Other ancestry(b)	284.2	1.8	243.9	1.3
<b>Total population(c)</b>	<b>15 602.2</b>	<b>100.0</b>	<b>18 769.2</b>	<b>100.0</b>

(a) Includes Aboriginal, Torres Strait Islander and Australian of South Sea Islander descent. (b) Includes 'mixed' ancestry.

(c) Components may not add to totals because people may report more than one ancestry.

Source: ABS data available on request, *Census of Population and Housing*.

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## INDUSTRY STRUCTURE AND PERFORMANCE

This chapter presents a consolidated view of industrial production in Australia. The current structure and performance of the main industrial components of the Australian economy, and their relative contribution to overall economic activity, are described in terms of the value of production and employment by industries. Statistics are also provided on the growth of industries over the past ten years and the changing contribution of individual industries to total economic activity during the period. More detailed information on the structure and performance of individual industries is provided in later chapters.

This chapter begins by outlining the development of industry since European settlement in *Evolution of Australian industry*. The section *Value of goods and services produced by Australian industry* examines industry gross value added and the contribution of individual industries to Australia's gross domestic product. *Employment in industries* looks at industry shares of total employment, average weekly paid hours, and compensation of employees. *Measures of industry structure and performance* looks at counts of businesses and selected business measures by size of business and industry. The chapter concludes with a section on *Industry productivity* which provides data on multifactor productivity for the market sector as a whole, and gross value added per hour worked for market sector industries.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Evolution of Australian industry

Australia's economic development has been one of contrast and change. In the early years of European settlement, between 1788 and 1820, there was little scope for industrial or commercial enterprises. The government, as both main producer and main consumer, established workshops to produce the basic necessities of life – flour, salt, bread, candles, leather and leather articles, blacksmith's products, tools and domestic items.

Between 1820 and 1850 the pastoral industry led Australia's economic development, and by 1850 it was supplying well over half of the British market for imported wool. The growth in the wool industry brought great advances in the rest of the economy, with local manufacturing industries being established in response to new market opportunities. Gold surpassed wool as Australia's major export earner throughout the 1850s and 1860s, resulting in a rapid expansion of banking and commerce. Increased public works activity during the 1870s played an important role in encouraging expansion in manufacturing. By 1901 this expansion had resulted in an economy where agriculture, manufacturing, mining, construction and the service industries all provided significant contributions to Australia's wealth.

From 1901 to 1930 manufacturing expanded further, with impetus from Federation and the elimination of customs barriers between states, and from World War I. With the onset of World War II, the Australian manufacturing sector was sufficiently developed and diversified to respond to the demand for war materials and equipment. Key industries expanded and new ones developed rapidly to produce munitions, ships, aircraft, new kinds of equipment and machinery, chemicals, textiles and so on. After the war all sectors of the economy experienced growth. The manufacturing sector's contribution to the economy peaked at just under 30% of gross domestic product (GDP) in the late-1950s and early-1960s.

The onset of the oil price rises in the early-1970s led the world into recession. Inflation, coupled with slower growth in Australia's GDP, affected all sectors of the economy. The modest employment growth in the 1970s was dominated by the service industries.

The 1980s and 1990s saw a decline in the relative contribution to GDP from goods-producing industries and a rise in the contribution from service industries. The falling contribution from

goods-producing industries was largely the result of a decline in manufacturing's share of GDP. The mining, manufacturing, and electricity, gas and water supply industries all experienced declining employment, along with outsourcing of some activities, particularly support services.

The early-2000s have seen a continuing decline in the relative contribution to GDP from goods-producing industries, and a continuing rise in the contribution from service industries. While manufacturing remains a significant industry, property and business services now has the highest relative contribution to GDP.

Manufacturing's share of GDP continues to be the primary driver for the falling contribution from goods-producing industries, while the finance and insurance sector has provided the largest increase in service industries.

The article *100 years of change in Australian industry* in *Year Book Australia 2005* provides more information about the evolution of Australian industry in the 20th century.

## Value of goods and services produced by Australian industry

One measure of the importance of an industry is its contribution to the Australian economy. The size of the Australian economy is typically described in terms of GDP, and the structure and performance of the economy in terms of industry gross value added (GVA).

GDP is an estimate of the total market value of goods and services produced in Australia in a given period after deducting the cost of goods and services used up in the process of production (intermediate consumption), but before deducting consumption of fixed capital. This is also described as the unduplicated value of economic production. This measure avoids double counting the goods and services produced at successive stages of production. Accordingly, it is a measure of the value added in production.

Industry GVA is the term used to describe the unduplicated value of goods and services produced by individual industries. This measure removes the distortion caused by variations in the incidence of commodity taxes and subsidies across the output of individual industries. Movements in the volume measures of GDP and industry GVA (from which the direct effects of

price changes have been removed) are key indicators of economic growth. More information is provided in the *National accounts* chapter.

Table 13.1 provides details of industry GVA and GDP for 2004–05. Data are presented at a broad industry level, generally equating to the Division level of the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). In the ANZSIC, individual businesses are assigned an appropriate industry category on the basis of their predominant activities. The table provides estimates of the unduplicated production of goods and services (industry GVA) from 2000–01 to 2004–05.

In 2004–05 the value of Australian production (GDP) was \$858 billion (b) (in volume terms), an increase of 2.3% from 2003–04. In 2004–05 the ratio of GDP to the estimated resident population (GDP per person) was \$42,437.

Graph 13.2 shows the average annual rate of growth in GVA (in volume terms) for individual industries between 1994–95 and 2004–05. The Communication services industry had the highest

average annual rate of growth (6.4%), followed by the Property and business services and Construction industries (both 5.1%).

While average annual growth rates provide an indicator of the broad underlying behaviour of the annual series over several years, these averages smooth the annual movements in the series and mask the highest and lowest movements. In terms of year-on-year changes, the fastest growing industry in this period, the Communication services industry, showed strong and relatively steady increases in GVA from 1994–95 to 1998–99. After this period, the year-on-year increases were much lower. In 2004–05 GVA of the Communication services industry rose by 4.6%.

The year-on-year changes for the Agriculture, forestry and fishing industry also varied significantly over time. While the GVA of this industry grew by 4.5% on average each year between 1994–95 and 2004–05, it fell by 24% in the period 2001–02 to 2002–03, due largely to the effects of drought on agricultural production. This was followed by strong growth between 2002–03 and 2003–04, immediately following the 2002–03 drought.

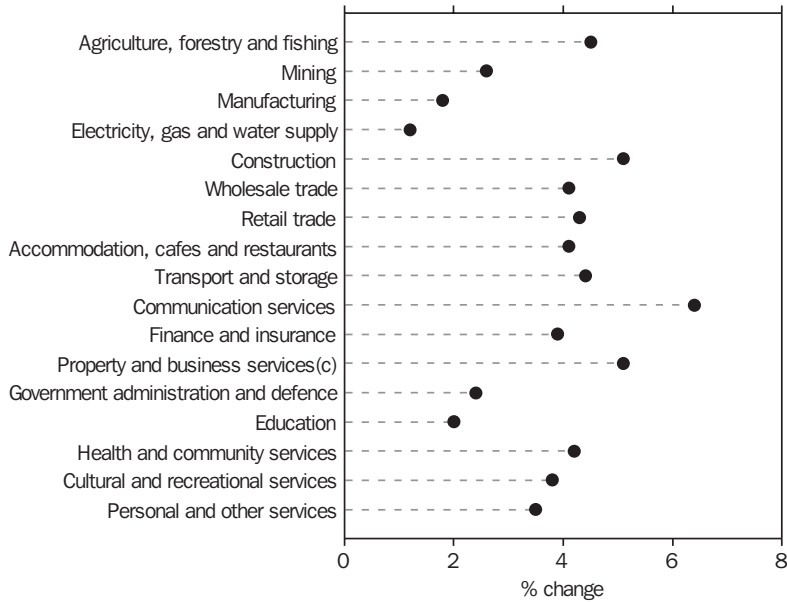
### 13.1 INDUSTRY GROSS VALUE ADDED(a)(b) AND GROSS DOMESTIC PRODUCT(b)

	2000–01	2001–02	2002–03	2003–04	2004–05
ANZSIC Division(c)	\$m	\$m	\$m	\$m	\$m
Agriculture, forestry and fishing	26 045	26 865	20 564	27 010	25 362
Mining	35 664	35 688	35 608	34 366	35 707
Manufacturing	90 878	92 808	96 277	97 103	96 144
Electricity, gas and water supply	18 624	18 491	18 663	18 816	18 943
Construction	36 871	41 276	47 950	51 117	53 024
Wholesale trade	36 073	37 034	38 786	40 675	41 926
Retail trade	43 463	45 729	47 790	50 278	52 412
Accommodation, cafes and restaurants	16 063	16 055	16 625	17 560	18 383
Transport and storage	31 798	32 947	35 270	36 851	38 701
Communication services	20 172	20 780	22 092	22 756	23 799
Finance and insurance	52 229	53 932	54 984	57 496	58 567
Property and business services(d)	87 144	91 566	94 679	97 997	99 153
Government administration and defence	29 740	31 016	31 879	32 392	33 521
Education	34 919	35 530	36 062	36 530	36 987
Health and community services	43 474	45 840	47 870	49 509	51 793
Cultural and recreational services	9 898	9 949	10 306	10 901	11 736
Personal and other services	13 778	14 334	14 626	14 834	15 033
Ownership of dwellings	59 305	61 585	64 128	66 659	69 424
Gross value added at basic prices(e)	686 212	711 609	733 235	762 850	780 616
Gross domestic product	752 434	780 817	806 161	838 251	857 765

(a) At basic prices. (b) Volume measures. Reference year is 2003–04. (c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (d) Excludes ownership of dwellings. (e) Volume measures for years other than 2003–04 and 2004–05 are not additive.

Source: *Australian System of National Accounts, 2004–05* (5204.0).

**13.2 AVERAGE ANNUAL RATE OF GROWTH IN THE PRODUCTION OF GOODS AND SERVICES(a)(b) — 1994–95 to 2004–05**



(a) Industry gross value added at basic prices. (b) Volume measures. Reference year is 2003–04.  
(c) Excludes ownership of dwellings.

Source: Australian System of National Accounts, 2004–05 (5204.0).

Another industry that has had significant variation in year-on-year changes, especially in recent years, is the Construction industry. In the period 2001–02 to 2002–03, the GVA of the industry grew by 16%, with the previous annual period (2000–01 to 2001–02) also recording strong growth (12%). This growth followed a fall of 14% between 1999–2000 and 2000–01, coinciding with the introduction of The New Tax System in July 2000. On average, GVA of the Construction industry grew by 5.1% each year in the period 1994–95 to 2004–05.

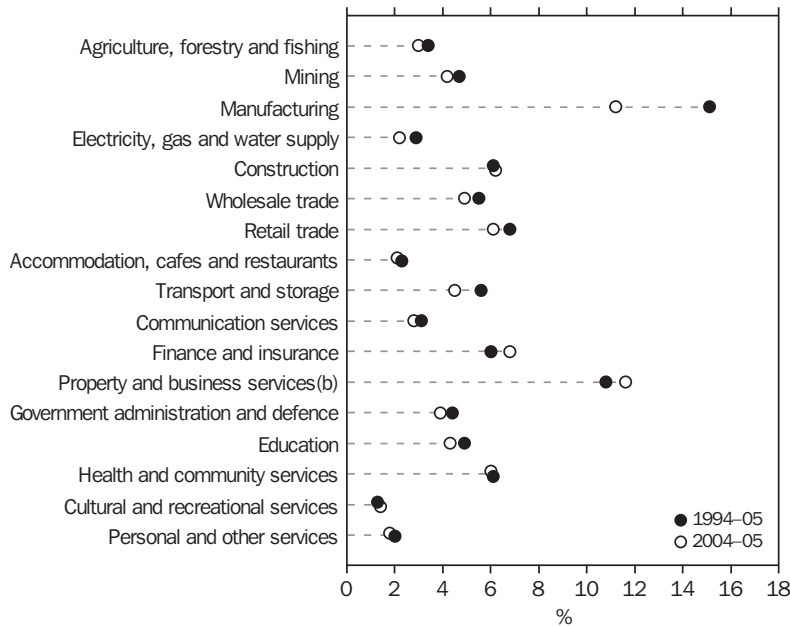
Graph 13.3 shows industry GVA shares of GDP (in current prices) in 1994–95 and 2004–05. The Property and business services industry contributed the largest share to GDP (11.6% or \$103b) in 2004–05. This was followed by the Manufacturing industry (11.3% of GDP or \$101b).

The Finance and insurance industry was the third most important industry in terms of contribution to GDP, contributing 6.9% or \$61b.

Between 1994–95 and 2004–05, the largest increase in industry GVA share of GDP was for the Property and business services industry (up 1.7 percentage points). The next largest increases were for the Finance and insurance (1.4 percentage points), and Construction (0.6 percentage points) industries.

In the same period, the largest fall in industry shares of GDP was for Manufacturing (down 2.5 percentage points). The next largest falls were for Transport and storage (0.6 percentage points), Electricity, gas and water supply (0.5 percentage points), and Wholesale trade and Education (both of which had a decrease of 0.3 percentage points).

### 13.3 CONTRIBUTION TO GROSS DOMESTIC PRODUCT(a)



(a) Industry gross value added as a proportion of gross domestic product, in current prices.

(b) Excludes ownership of dwellings.

Source: Australian System of National Accounts, 2004-05 (5204.0).

## Employment in industries

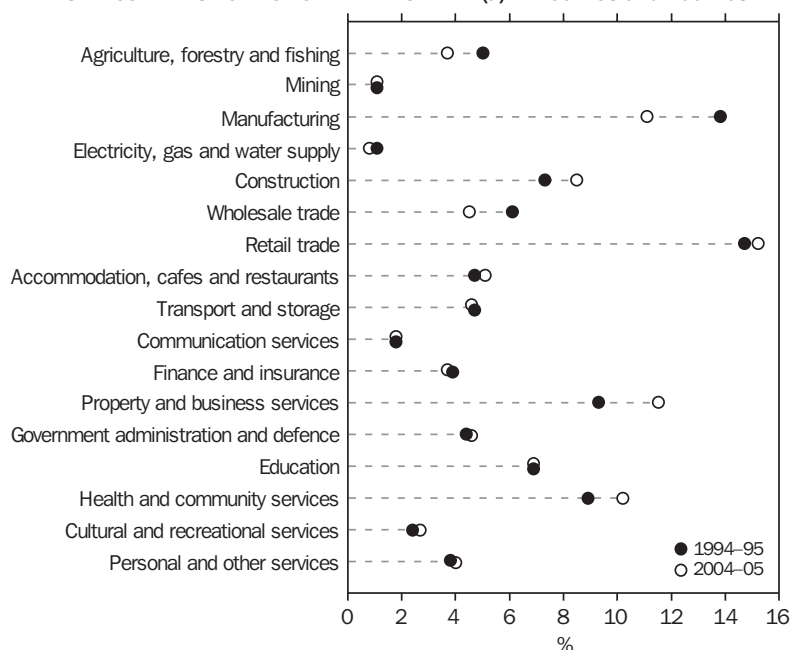
Another measure of the significance of an industry is its contribution to total employment. Employment (and unemployment) data are used as social indicators by government, research and welfare organisations. Employment is also an indicator of economic activity, although turning points in the employment series tend to lag turning points in the business cycle.

Graph 13.4 shows industry shares of total employment in 1994-95 and 2004-05. These data were derived from the Australian Bureau of Statistics (ABS) monthly Labour Force Survey and relate to the civilian population aged 15 years and over. These data reflect averages across the four quarters of each year to remove seasonal effects. People are considered to be employed if they were in paid work for one hour or more in the reference week, or worked for one hour or more without pay in a family business or farm. Employment is further described in the *Labour* chapter.

In 2004-05, 9.8 million people were employed across all industries. From an industry perspective, the Retail trade industry employed the greatest number of people (1.5 million employed persons or 15% of total employment). Property and business services employed 1.1 million people (12% of total employment) followed by Manufacturing (11%), Health and community services (10%), Construction (9%) and Education (7%).

These industries were also the main employing industries in 1994-95, although Property and business services has displaced Manufacturing as the second largest employer. Between 1994-95 and 2004-05 the Property and business services industry share of total employment increased by 2.2 percentage points. Conversely, Manufacturing's share of total employment declined by 2.7 percentage points over the period.

### 13.4 CONTRIBUTION TO TOTAL EMPLOYMENT(a) — 1994–95 and 2004–05



(a) Annual average of quarterly data.

Source: *Labour Force, Australia, Detailed – Electronic Delivery*, May 2006 (6291.0.55.003).

The industry composition of average weekly paid hours for wage and salary earners provides an insight into the labour market. Data on this topic are obtained from the biennial Survey of Employee Earnings and Hours, conducted by the ABS. This survey covers all employing organisations in Australia (public and private sectors) except enterprises primarily engaged in the Agriculture, forestry and fishing industry, private households employing staff, and foreign embassies and consulates.

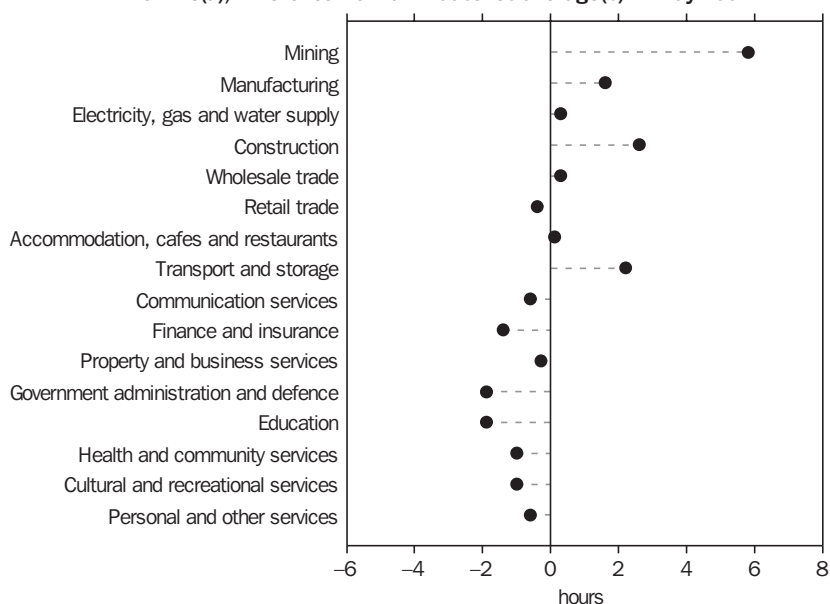
Graph 13.5 shows average weekly total paid hours for full-time adult non-managerial employees by industry in May 2004 compared with the average for all industries in the period (39.5 hours). Total paid hours are equal to ordinary time paid hours plus overtime paid hours. The highest average weekly paid hours for full-time adult

non-managerial employees was in the Mining industry (45.3 hours), followed by Construction (42.1 hours) and Transport and storage (41.7 hours). The lowest average weekly paid hours were in Education and Government administration and defence both (37.6 hours).

Paid overtime accounted for 4% of average weekly total paid hours for full-time adult non-managerial employees. Employees worked the most paid overtime in Mining (7.7% of total paid hours for the industry). Paid overtime in the Construction, Manufacturing, Transport and storage, and Electricity, gas and water supply industries accounted for 7.6%, 7.3%, 7.2% and 7.0% of total paid hours respectively.



### 13.5 AVERAGE WEEKLY TOTAL PAID HOURS FOR FULL-TIME ADULT NON-MANAGERIAL EMPLOYEES(a), Difference from all industries average(b) — May 2004



(a) Excludes Agriculture, forestry and fishing. (b) For all industries the average weekly total paid hours is 39.5 hours.

Source: *Employee Earnings and Hours, Australia, May 2004* (6306.0).

Compensation of employees is both an economic and social indicator. This item includes wages and salaries (paid in cash and in kind) and employer social contributions (e.g. employers' contributions to superannuation and worker's compensation premiums). Wages and salaries in kind can include meals, housing, uniforms, and vehicles.

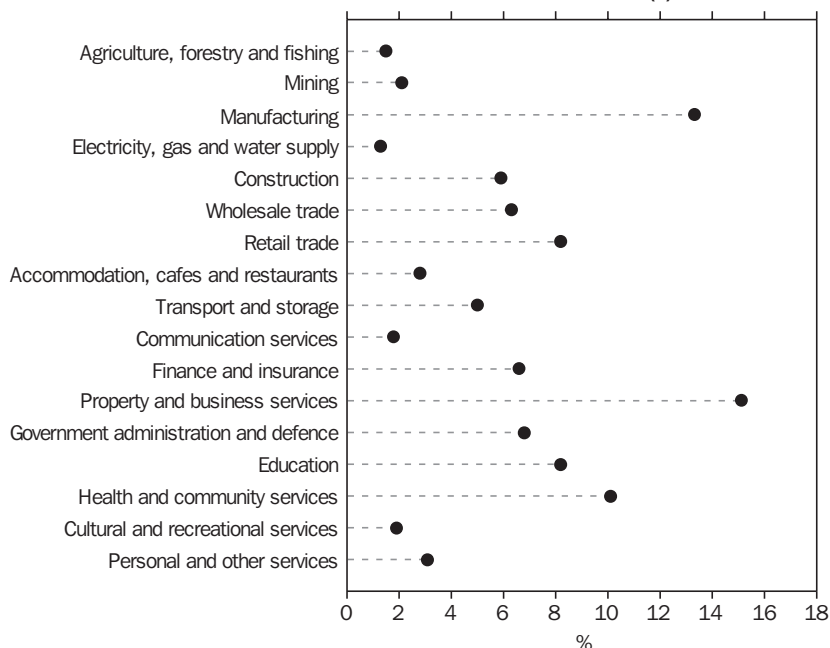
Graph 13.6 shows industry shares of total compensation of employees in 2004–05. In this period, total compensation of employees was \$426b. Total wages and salaries was \$381b (89% of total compensation of employees).

The Property and business services industry held the largest share of total compensation of employees (15%), followed by Manufacturing (13%), Health and community services (10%), Education (8%) and Retail trade (8%). These industries were also in the top six industries (along with the Construction industry) that had the highest share of total employment in 2004–05.

## Measures of industry structure and performance

This section provides details of the number of operating businesses in Australian industries and some indicators of their economic and financial performance in 2003–04. Business activities classified to ANZSIC Division K, Finance and insurance, and Division M, Government administration and defence are excluded from the statistics. In addition, entities classified to the general government institutional sector are excluded for most industries. This exclusion particularly affects data presented for the Education and Health and community services industries, where details relate only to private sector businesses. The term 'total selected industries' is used to refer to the aggregate of the industries included in this section.

### 13.6 CONTRIBUTION TO TOTAL COMPENSATION OF EMPLOYEES(a) — 2004–05



(a) Comprises wages and salaries plus employers' social contributions.

Source: Australian System of National Accounts, 2004–05 (5204.0).

Table 13.7 shows the number of operating businesses, in 2003–04, categorised by type of business based on employing status and employment size group. Small businesses are defined as those employing businesses with employment of less than 20 persons, medium businesses as those employing businesses with employment of 20 to less than 200 persons, and large businesses as those employing businesses with employment of 200 or more persons.

The total number of businesses operating in the total selected industries at the end of June 2004 was 2,265,600, consisting of 800,400 employing businesses and 1,465,200 non-employing businesses. Of the employing businesses, there were 752,700 small businesses (94% of total employing businesses), 44,900 medium businesses and 2,800 large businesses. The

Property and business services industry had the largest number of operating businesses in 2003–04 (636,700), followed by Construction (365,800) and Agriculture, forestry and fishing (235,400).

Figure 13.8 shows that non-employing businesses constituted 65% of total operating businesses in total selected industries, accounting for 11% of total sales and service income and industry value added (IVA). Conversely, although only 0.1% of total operating businesses were large businesses, they generated 37% of total sales and service income and 39% of total IVA. Of total wages and salaries paid, large employing businesses accounted for the largest proportion (41%), with medium and small employing businesses contributing 29% and 28% respectively.

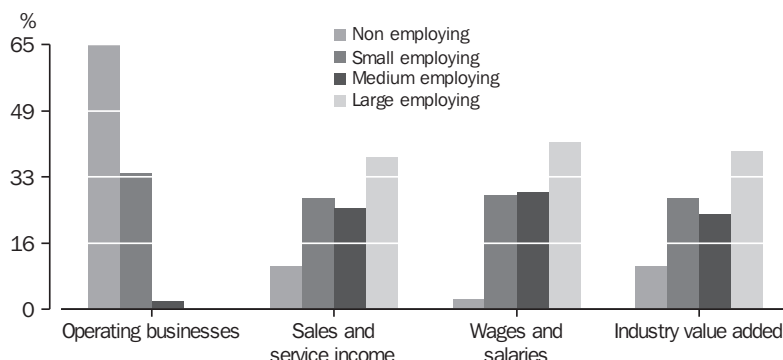
### 13.7 INDUSTRY STRUCTURE(a) — 2003–04

ANZSIC Division	Type of business				
	Employing			Non-employed	Total
	Small(b)	Medium(c)	Large(d)		
Agriculture, forestry and fishing	74 483	1 386	28	159 541	235 438
Mining	2 502	209	83	5 100	7 894
Manufacturing	56 055	6 608	635	68 424	131 723
Electricity, gas and water supply	732	132	53	1 667	2 584
Construction	108 437	2 498	118	254 728	365 781
Wholesale trade	42 648	3 292	232	43 465	89 637
Retail trade	115 704	8 036	289	111 226	235 254
Accommodation, cafes and restaurants	34 819	4 309	133	21 175	60 436
Transport and storage	34 898	1 680	159	86 334	123 071
Communication services	7 690	161	18	20 295	28 164
Property and business services	159 361	7 893	478	468 943	636 674
Education(e)	8 674	1 904	96	22 050	32 725
Health and community services(e)	48 900	4 669	345	63 564	117 478
Cultural and recreational services	18 836	815	62	61 103	80 817
Personal and other services	38 955	1 296	72	77 562	117 885
<b>Total selected industries</b>	<b>752 695</b>	<b>44 890</b>	<b>2 799</b>	<b>1 465 178</b>	<b>2 265 562</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. Excludes Finance and insurance, and Government administration and defence. (b) Total employment less than 20 persons. (c) Total employment in the range 20–199 persons. (d) Total employment of 200 or more persons. (e) Private sector businesses.

Source: Australian Industry, 2003–04 (8155.0).

### 13.8 INDUSTRY PERFORMANCE(a), Type of business — 2003–04



(a) Excludes Finance and insurance, and Government administration and defence.

Note: Large employing. Operating businesses are not shown in the graph as they are less than 0.2%.

Source: Australian Industry, 2003–04 (8155.0).

Indicators such as sales and service income, operating profit before tax (OPBT) and profit margin can be used to assess business and industry performance.

Sales and service income comprises sales of goods, income from services and rent, leasing and hiring income. OPBT is calculated as total income minus total expenses plus changes in inventories. Profit margin refers to the percentage of total

income available as OPBT. Table 13.9 and figure 13.10 present these measures for selected industries for 2003–04.

The Manufacturing industry had the highest sales and service income (\$316b), followed by the Wholesale and Retail trade industries (\$310b and \$291b respectively). The highest OPBT was earned by businesses in Property and business services industry (\$43b), Manufacturing (\$24b), and Mining and Construction (\$16b each).

### 13.9 INDUSTRY PERFORMANCE(a), Income and profit — 2003–04

ANZSIC Division	Sales and service income	Operating profit before tax
	\$m	\$m
Agriculture, forestry and fishing	52 432	4 756
Mining	60 414	15 886
Manufacturing	316 042	24 115
Electricity, gas and water supply	45 415	6 367
Construction	157 230	15 735
Wholesale trade	310 397	13 679
Retail trade	291 289	11 278
Accommodation, cafes and restaurants	45 970	2 749
Transport and storage	82 900	3 535
Communication services	40 893	7 067
Property and business services	209 220	43 038
Education(b)	8 383	1 278
Health and community services(b)	40 558	7 359
Cultural and recreational services	31 906	4 173
Personal and other services	20 010	3 071
<b>Total selected industries</b>	<b>1 713 058</b>	<b>164 085</b>

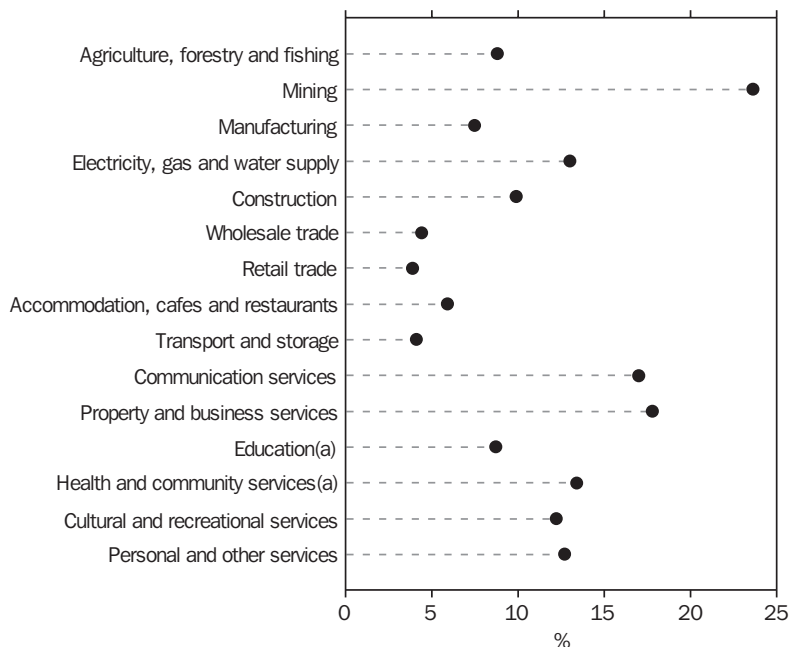
(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. Excludes Finance and insurance, and Government administration and defence. (b) Private sector businesses.

Source: Australian Industry, 2003–04 (8155.0).

Although the Manufacturing industry had the highest sales and service income of all of the selected industries in 2003–04, it recorded a low profit margin (7%) compared to other industries. The Mining industry had the highest profit margin

(24%) of all industries shown, followed by the Property and business services (18%) and Communication services (17%) industries. The smallest profit margin (4%) was returned by the Retail trade industry.

### 13.10 INDUSTRY PERFORMANCE, Profit margin — 2003–04



(a) Private sector businesses.

Source: Australian Industry, 2003–04 (8155.0).

## Industry productivity

Multifactor productivity (MFP) statistics provide a measure of changes in the efficiency of production. These measures are used by both government and private organisations to help gauge the effect of changes in work practices, technology, education and training.

MFP is the ratio of a measure of economic output to a combination of two or more factor inputs. In simple terms, MFP represents that part of the change in production that cannot be explained by changes in the measured inputs.

MFP statistics use industry GVA (in volume terms) as the measure of economic output. Two inputs are used – labour (hours worked) and capital. The capital input used is a measure of different capital assets such as dwellings, other buildings and structures, and machinery and equipment, along with livestock, intangibles and non-agricultural land.

This means that MFP largely represents the effects of technical progress, improvements in the work force, improvements in management practices, and economies of scale. MFP can also be affected in the short to medium term by other factors such as the weather, and by variations in capacity utilisation associated with the business cycle.

MFP measures are calculated for the market sector, an industry grouping comprising the following industries: Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas and water supply; Construction; Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Transport and storage; Communication services; Finance and insurance; and the Cultural and recreational services

industries. These are industries with marketed activities for which there are satisfactory estimates of the growth in the volume of output.

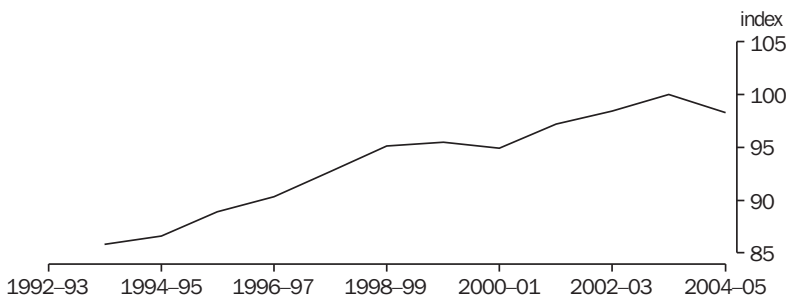
MFP estimates are subject to growth in the business cycle. It is for this reason that MFP growth is generally analysed as average growth rates from the peak of one growth cycle to the peak of another. This analysis assumes that labour is being utilised to the same degree at each peak in the growth cycle.

MFP statistics are available only for the market sector as a whole. During the period 1998–99 to 2003–04 (the last business growth cycle), the average annual rate of growth in MFP of the market sector (on an hours worked basis) was 1%, less than half that for the period 1993–94 to 1998–99 (the previous business growth cycle) (graph 13.11).

Although MFP is the more comprehensive measure of productivity, the ABS also produces industry labour productivity indexes. One measure of labour productivity, an index of industry GVA in volume measures per hour worked, is useful because it is available for each market sector industry.

Labour productivity is constant if there is no change in the amount produced (volume GVA) per hour worked. Changes in this ratio reflect changes in the average skill or productivity level of the workforce. This measure reflects not only the contribution of labour to changes in production but also the contribution of capital and other factors (e.g. technological changes and managerial efficiency).

**13.11 MULTIFACTOR PRODUCTIVITY OF THE MARKET SECTOR(a)(b)**  
— 1993–94 to 2004–05



(a) Reference year for index is 2003–04 = 100.0. (b) Gross domestic product per combined unit of labour and capital.

Source: Australian System of National Accounts, 2004–05 (5204.0).

Movements in employment and hours worked tend to lag movements in GDP. The implication being, in the period of the growth cycle when the growth in output starts to decline, indexes of labour productivity are likely to decline sharply, particularly if rapid growth in GDP is abruptly ended. Conversely, labour productivity indexes are likely to grow strongly when the economy comes out of a cyclical trough.

Graph 13.12 shows the average annual rate of growth in the amount produced per hour worked for market sector industries over the previous two business growth cycles (1993–94 to 1998–99, and 1998–99 to 2003–04). Over these periods, the average annual growth rate of the market sector as a whole was 2.3%, and 1.9% respectively.

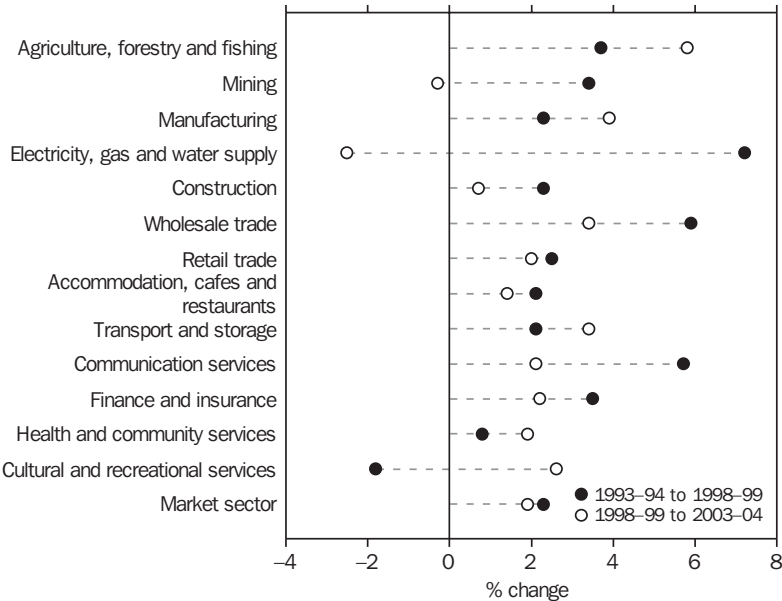
Most of the market sector industries increased their productivity per hour worked. In the last business cycle (1998–99 to 2003–04) the industries with the highest average annual productivity growth rates were Agriculture, forestry and fishing

(5.8%), Manufacturing (3.9%), Wholesale trade (3.4%) and Transport and storage (3.4%). Negative growth is seen only in the Electricity, gas and water supply (–2.5%) and Mining (–0.3%) industries.

In the previous business growth cycle (1993–94 to 1998–99) Electricity, gas and water supply (7.2%), Wholesale trade (5.9%) and Communication services were the top three industries in terms of growth in amount produced per hour worked. In the previous cycle, negative growth in amount produced per hour worked was only seen in the Cultural and recreational services industry (–1.8%).

The average annual rate of growth for a large number of market sector industries had fallen between the two business cycles (1993–94 to 1998–99 and 1998–99 to 2003–04). The largest decreases were in the Electricity, gas and water supply (–9.7 percentage points), Mining (–3.7 percentage points) and Communication services (–3.6 percentage points) industries.

**13.12 AVERAGE ANNUAL RATE OF GROWTH IN AMOUNT PRODUCED PER HOUR WORKED(a), Market sector industries — 1993–94 to 2003–04**



(a) Indexes of gross value added per hour worked in chain volume measures. Reference year is 2003–04 = 100.0.

Source: Australian System of National Accounts, 2004–05 (5204.0).

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## AGRICULTURE

Australian agriculture is fundamentally based on extensive pastoral and cropping activities. However, diversification into intensive livestock and horticultural industries is increasing. While Australian agriculture no longer contributes a large share to gross domestic product – averaging around 3% in recent years – it utilises a large proportion of natural resources, accounting for 70% of water consumption and almost 60% of Australia's land area.

Australia's agricultural businesses are mainly engaged in either beef cattle farming, dairy cattle farming, sheep farming, grain growing, or a mixture of two or more of these activities. The wet summer conditions of northern Australia are suited to beef cattle grazing in inland areas and the growing of sugar and tropical fruits in coastal areas while drier summer conditions in the south favour dryland cereal farming, sheep grazing and dairy cattle (in the higher rainfall areas), as well as beef cattle farming. In recent times, the most valuable commodities produced by Australian farmers have been beef and veal, wheat, milk, wool, vegetables, fruit and nuts and lamb and mutton.

Much of this produce is exported, with Australian wool, beef, wheat, and dairy products contributing significantly to global markets. Australia is also an important source of cotton and sugar. The main customers for exports of agricultural commodities include Japan, United States of America, China, Republic of (South) Korea, Indonesia and the Middle East.

The major source of statistics in this chapter on land use, commodity production and livestock numbers is the annual Agricultural Survey, conducted by the Australian Bureau of Statistics (ABS). Additional information is obtained from the annual Australian Agricultural and Grazing Industries Survey, conducted by the Australian Bureau of Agricultural and Resource Economics (ABARE).

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Agricultural environment

Australia's average elevation is the lowest of any continent, with a mean elevation just exceeding 200 metres. The dominant topographical feature of the continent is the Great Dividing Range, which spans the length of the eastern seaboard and has a profound influence on regional weather patterns and land use.

Australia's agricultural landscapes support a wide range of soils. Most are ancient, strongly weathered and infertile by world standards, with deficiencies in phosphorus and nitrogen. Those on floodplains are younger and more fertile. Very few are considered good quality soils for agriculture. To offset nutrient deficiencies, superphosphate and nitrogenous fertilisers are widely used, particularly on pasture and cereal crops. Fragile soil structure and a susceptibility to waterlogging are other common features of Australian soils, while large areas are naturally affected by salt or acidity. These soil characteristics restrict particular agricultural activities, sometimes ruling out agricultural activity altogether.

With the exception of Antarctica, Australia is the world's driest continent. More than a third of the continent is effectively desert; over two-thirds of the continent is classified as arid or semi-arid. The wet summer conditions of northern Australia are suited to beef cattle grazing in inland areas and the growing of sugar and tropical fruits in coastal areas. The drier summer conditions of southern Australia favour wheat and other dryland cereal farming, sheep grazing and dairy cattle (in the higher rainfall areas), as well as beef cattle. Within regions there is also a high degree of rainfall variability from year-to-year, which is most pronounced in the arid and semi-arid regions. Rainfall variability is very high by global standards and often results in lengthy periods without rain. The seasonality and variability of rainfall in Australia requires that water be stored, and 70% of water consumption is accounted for by the agricultural sector. Under normal seasonal conditions, the ability of primary producers to store water ensures that there are adequate supplies of water for those agricultural activities requiring a continuous supply. The development of large-scale irrigation schemes has opened up areas of inland Australia to agricultural activities which otherwise would not have been possible.

Evaporation is another important element of Australia's environment affecting agricultural production. Hot summers are accompanied by an abundance of sunlight. This combination of

climatic variables leads to high rates of evaporation. Areas that have been cleared for crop and pasture production tend to coincide with areas that receive five to nine months of effective rainfall (where rainfall exceeds evaporation) each year. In areas of effective rainfall of more than nine months, generally only higher value crops or tropical crops and fruits are grown, while in areas with effective rainfall of less than five months, cropping is usually restricted to areas that are irrigated.

Since European settlement the vegetation of Australia has altered significantly. In particular, large areas of Australia's forest and woodland vegetation systems have been cleared, predominantly for agricultural activity. The areas that have been altered most are those which have been opened up to cultivation or intensive grazing. Other areas, particularly those semi-arid regions previously cleared of timber and scrub to allow extensive grazing of native grasses, now show signs of returning to their previous condition. In recent years various state and territory legislation has seen restrictions applied to the area of old growth and regrowth forest and woodland that can be cleared without a permit.

For more details see the *Geography and climate* chapter.

## Land used

In spite of Australia's harsh environment, agriculture is the most extensive form of land use. At 30 June 2005, the estimated total area of establishments with agricultural activity was 445.1 million hectares (mill. ha), representing about 58% of the total land area (tables 14.1 and 14.2). The remainder of the land area consists of unoccupied land (mainly desert in western and central Australia), Aboriginal land reserves (mainly located in the Northern Territory and Western Australia), forests, mining leases, national parks and urban areas.

Livestock grazing accounts for the largest area of land use in agriculture, with approximately 382 mill. ha, or in excess of 85% of all agricultural land, being used for this activity. In the higher rainfall and irrigated areas, livestock grazing has led to the replacement of large areas of native vegetation with more productive introduced pastures and grasses, many of which have now become naturalised.

For the year ended June 2005 approximately 6% of total agricultural land had been cropped.

### 14.1 AGRICULTURAL LAND USE — Year ended 30 June

	Area cropped during year mill. ha	Area of grazing land mill. ha	Area of establishments with agricultural activity mill. ha	Proportion of Australian land area %
2001	24.5	n.a.	455.7	59.2
2002	24.1	n.a.	447.0	58.1
2003	23.6	341.3	439.5	57.1
2004	26.1	367.6	440.1	57.2
2005	26.7	382.3	445.1	57.9

Source: *Agricultural Commodities, Australia (7121.0)*; ABS data available on request, *Agricultural Survey*.

### 14.2 AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY — 30 June

	NSW mill. ha	Vic. mill. ha	Qld mill. ha	SA mill. ha	WA mill. ha	Tas. mill. ha	NT mill. ha	Aust.(a) mill. ha
2001	61.0	13.2	146.0	57.3	109.2	1.9	67.1	455.7
2002	63.4	12.8	141.4	53.5	109.0	1.8	65.2	447.0
2003	65.1	13.4	139.0	54.1	102.7	1.8	63.3	439.5
2004	63.6	13.6	144.3	52.5	101.2	1.7	63.1	440.1
2005	64.4	13.9	143.8	54.1	104.6	1.8	62.5	445.1

(a) Includes ACT.

Source: *Agricultural Commodities, Australia (7121.0)*.

## Irrigation

The high variability in river flow and annual rainfall, which are features of the Australian environment, means that successful ongoing production of many crops and pastures is dependent on irrigation. In 2004–05, just over a quarter (35,200) of all agricultural establishments reported irrigation activity. In total 10,100 gigalitres of irrigation water was applied in 2004–05, an average application rate of 4.2 megalitres per irrigated hectare.

Rice is only grown in areas that can guarantee an adequate supply of irrigation water. Grapes, cotton, vegetables, fruit (including nuts) and sugar cane are the other most intensively irrigated crops, with 90%, 89%, 89%, 74% and 40% respectively of their total growing areas being irrigated in 2004–05. However, the total area of land irrigated, about 2.4 mill. ha in 2004–05, represents less than 1% of the total land used for agriculture (table 14.3).

### 14.3 AREA OF CROPS AND PASTURES IRRIGATED — 2004–05

	NSW(a) '000 ha	Vic. '000 ha	Qld '000 ha	SA '000 ha	WA '000 ha	Tas. '000 ha	NT '000 ha	Aust. '000 ha
Pastures (native or sown)								
For grazing	277	425	^46	^46	n.p.	39	n.p.	842
For seed production	*3	n.p.	*1	^17	n.p.	3	n.p.	33
For hay and silage	48	^63	^22	^13	n.p.	^3	n.p.	151
Cereal crops								
Cut for hay	^17	*7	*7	*2	**—	^—	—	^33
For grain or seed(b)	237	^25	^38	*3	**3	4	—	309
Not for grain or seed	^8	*1	*8	*1	**—	2	—	^19
Rice	n.p.	n.p.	—	—	—	—	—	51
Sugar cane	n.p.	—	209	—	n.p.	—	—	213
Cotton	146	—	^124	—	—	—	—	270
Other broadacre crops	^30	^9	^11	*3	n.p.	8	n.p.	63
Fruit trees, nut trees, plantations or berry fruits	26	^30	31	19	^9	^4	2	122
Vegetables for human consumption	^16	23	31	16	7	16	—	109
Grapevines	36	36	*4	61	^8	*1	—	147
<b>Total(c)</b>	<b>910</b>	<b>636</b>	<b>542</b>	<b>184</b>	<b>45</b>	<b>86</b>	<b>4</b>	<b>2 405</b>

(a) Includes ACT. (b) Excludes rice. (c) Totals include other pastures or crops n.e.c.

Source: *Water Use on Australian Farms, 2004–05 (4618.0)*.

Most irrigated land is located within the confines of the Murray–Darling Basin, which covers parts of New South Wales, Victoria, Queensland and South Australia.

More information on the use of water by the agriculture sector is provided in the *Environment* chapter.

## Agriculture industry

At 30 June 2005 there were about 129,900 businesses with an annual value of agricultural operations of \$5,000 or more. For the vast

majority of these (128,515) their primary activity was agriculture, as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition*. While the remainder were undertaking some form of agricultural activity, their main activity was not in agriculture. The majority of agricultural businesses were mainly engaged in either beef cattle farming (35,979), mixed grain/sheep/beef farming (17,195), sheep farming (12,956), grain growing (12,719), or dairy cattle farming (9,881) (table 14.4).

### 14.4 BUSINESSES UNDERTAKING AGRICULTURAL ACTIVITY(a) — 30 June 2005

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
<b>Agriculture industries</b>									
Horticulture and fruit growing									
Plant nurseries	674	337	535	117	^162	^38	18	5	1 884
Cut flower and flower seed growing	^210	^184	156	^58	^134	^31	5	—	778
Vegetable growing	730	793	1 282	359	395	521	9	—	4 090
Grape growing	1 199	2 027	^141	2 300	^611	^100	4	2	6 385
Apple and pear growing	^152	^322	^29	*116	^176	^116	—	1	912
Stone fruit growing	^401	^291	*112	^209	^165	^47	—	—	1 224
Kiwi fruit growing	*32	**11	**2	—	*4	—	—	—	*50
Fruit growing n.e.c.	1 593	^520	1 793	456	264	^26	112	1	4 763
<b>Grain, sheep and beef cattle farming</b>									
Grain growing	3 164	2 690	1 417	3 143	2 289	^13	2	—	12 719
Grain-sheep/beef cattle farming	7 078	3 169	1 259	2 561	3 075	*53	—	1	17 195
Sheep-beef cattle farming	3 585	2 255	^739	926	^458	322	—	23	8 309
Sheep farming	5 446	3 790	^351	1 448	1 289	605	—	26	12 956
Beef cattle farming	11 228	7 924	12 136	1 339	1 991	1 136	203	22	35 979
<b>Dairy cattle farming</b>	1 468	6 199	956	409	296	553	—	—	9 881
<b>Poultry farming</b>									
Poultry farming (meat)	262	173	114	48	58	^11	1	—	666
Poultry farming (eggs)	^139	*117	^55	^38	^51	^19	3	1	^423
<b>Other livestock farming</b>									
Pig farming	217	^172	^273	^138	^59	^21	2	—	882
Horse farming	^627	^366	^583	^77	^97	*66	1	3	1 819
Deer farming	**24	*35	**17	**15	*2	*9	—	—	^101
Livestock farming n.e.c.	*295	**112	*90	*29	*58	*8	2	—	^593
<b>Other crop growing</b>									
Sugar cane growing	^504	—	4 054	—	5	—	—	—	4 563
Cotton growing	^260	—	360	—	—	—	—	—	620
Crop and plant growing n.e.c.	^299	^561	^502	^148	*106	^96	9	—	1 721
<b>Total</b>	<b>39 586</b>	<b>32 049</b>	<b>26 955</b>	<b>13 933</b>	<b>11 745</b>	<b>3 791</b>	<b>371</b>	<b>85</b>	<b>128 515</b>
<b>Other industries</b>	<b>^491</b>	<b>^307</b>	<b>^177</b>	<b>*178</b>	<b>^170</b>	<b>*86</b>	<b>9</b>	<b>1</b>	<b>1 418</b>
<b>Total</b>	<b>40 076</b>	<b>32 357</b>	<b>27 132</b>	<b>14 111</b>	<b>11 915</b>	<b>3 877</b>	<b>380</b>	<b>86</b>	<b>129 934</b>

(a) In this chapter 'Agricultural establishments', as defined in Explanatory Notes, 'Agricultural Commodities, Australia, 2004–05' (7121.0) are described as 'Businesses undertaking agricultural activity' and classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Agricultural Commodities, Australia, 2004–05 (7121.0)*.

## Gross value of agricultural commodities produced

The contribution of agriculture to the Australian economy can be measured in a number of ways. The most direct measurement available is the gross value of agricultural production. For the year ending 30 June 2005, the estimate of gross value of agricultural production in current prices was \$35.6 billion (b).

Table 14.5 shows the gross value of agricultural commodities produced for the years 2000–01 to 2004–05. The values shown are the values of recorded production at the wholesale prices realised in the principal marketplace. Also shown are volume indexes of the value of production, which provide an indication of the change in value

after the direct effects of price changes are removed. Volume measures are discussed in *Volume or 'real' GDP* in the *National accounts* chapter.

## Employment

The agriculture sector is an important source of employment in regional and rural Australia. The number of people employed in the Agriculture and Services to agriculture industries declined in 2006 to 330,900 persons, the fourth consecutive fall (table 14.6). The significant reduction in the work force in 2003 was largely the result of the drought experienced over most of Australia during that period, which severely affected the agriculture sector. The majority of people employed in agriculture in 2006 were men (68%).

### 14.5 AGRICULTURAL COMMODITIES PRODUCED

	2000–01	2001–02	2002–03	2003–04	2004–05
GROSS VALUE OF COMMODITIES PRODUCED (Current prices) (\$m)					
Crops					
Barley for grain	1 343.5	1 724.8	984.2	1 750.1	1 233.3
Oats for grain	138.4	251.3	209.7	278.7	171.8
Wheat for grain	5 130.4	6 356.3	2 691.9	5 635.8	4 316.5
Other cereal grains	881.2	989.0	723.6	823.1	672.8
Legumes for grain	582.8	805.5	395.0	572.8	394.2
Oilseeds	594.7	725.3	413.9	745.9	548.9
Sugar cane cut for crushing	656.7	989.1	1 018.9	854.1	979.5
Cotton	1 304.6	1 326.8	853.0	750.8	945.1
Nursery production	794.7	772.6	787.8	800.8	768.2
Fruit and nuts	2 041.5	2 129.7	2 216.1	2 183.8	2 546.9
Grapes	1 517.5	1 577.7	1 370.8	1 688.8	1 508.2
Vegetables	2 182.6	2 268.5	2 125.6	2 355.5	2 133.5
All other crops(a)	1 365.5	1 486.1	1 684.3	2 050.4	1 588.5
<i>Total</i>	<i>18 534.2</i>	<i>21 402.7</i>	<i>15 474.9</i>	<i>20 490.7</i>	<i>17 807.3</i>
Livestock slaughterings and other disposals					
Cattle and calves	6 430.6	7 142.4	6 411.1	6 658.8	7 828.8
Sheep and lambs	1 401.8	2 117.6	2 036.9	2 038.8	1 949.0
Pigs	822.3	967.7	911.3	878.9	906.0
Poultry	1 060.2	1 174.9	1 280.5	1 280.8	1 303.7
<i>Total(b)</i>	<i>9 737.8</i>	<i>11 434.5</i>	<i>10 676.0</i>	<i>10 896.0</i>	<i>12 030.2</i>
Livestock products					
Wool	2 541.2	2 713.2	3 317.8	2 396.5	2 195.5
Milk(c)	3 053.3	3 717.1	2 795.2	2 808.7	3 193.8
Eggs(c)	332.7	320.4	294.0	335.5	327.9
<i>Total(d)</i>	<i>5 964.7</i>	<i>6 750.7</i>	<i>6 412.1</i>	<i>5 540.7</i>	<i>5 717.2</i>
<b>Total(d)</b>	<b>34 236.7</b>	<b>39 587.9</b>	<b>32 563.0</b>	<b>36 927.4</b>	<b>35 554.7</b>

For footnotes see end of table.

...continued

#### 14.5 AGRICULTURAL COMMODITIES PRODUCED — continued

	2000-01	2001-02	2002-03	2003-04	2004-05
VOLUME INDEX OF GROSS VALUE OF COMMODITIES PRODUCED(e) (Index number)					
Crops					
Barley for grain	87.1	107.0	49.9	134.1	100.0
Oats for grain	81.8	111.8	74.6	157.3	100.0
Wheat for grain	100.9	110.9	46.3	119.3	100.0
Other cereal grain	148.1	135.4	71.1	117.7	100.0
Legumes for grain	81.6	86.2	73.0	138.0	100.0
Oilseeds	114.6	113.5	54.5	110.3	100.0
Sugar cane cut for crushing	81.7	82.7	97.2	97.2	100.0
Cotton	114.1	115.7	62.4	56.3	100.0
Nursery production	101.4	102.8	91.1	89.1	100.0
Fruit and nuts	87.8	84.4	84.9	84.5	100.0
Grapes	76.9	84.7	74.3	99.7	100.0
Vegetables	97.3	95.8	86.3	98.0	100.0
All other crops(a)	93.0	92.8	80.0	117.9	100.0
Total	93.7	98.2	67.0	104.6	100.0
Livestock slaughterings and other disposals					
Cattle and calves	105.4	101.1	104.6	101.2	100.0
Sheep and lambs	123.1	116.7	108.3	98.3	100.0
Pigs	94.1	102.0	108.4	104.8	100.0
Poultry	86.4	93.1	96.2	96.8	100.0
Total(b)	104.7	102.7	104.5	100.4	100.0
Livestock products					
Wool	124.7	113.3	106.2	98.8	100.0
Milk(c)	104.2	111.3	102.0	99.5	100.0
Eggs(c)	97.4	92.1	94.0	95.1	100.0
Total(d)	112.0	111.4	103.6	98.9	100.0
<b>Total(d)</b>	<b>98.3</b>	<b>100.2</b>	<b>82.3</b>	<b>102.4</b>	<b>100.0</b>

(a) Includes pastures and grasses. Excludes crops for green feed and silage. (b) Includes other livestock. (c) Excludes NT for 2002-03, (included in total). (d) Includes honey and beeswax prior to 2001-02. Collection of bee product data ceased in 2002. (e) Volume indexes reflect the change in volume of production between two periods, enabling a comparison of the value of production between the periods without it being affected by any change in price between the periods. To obtain a measure of the value of production at 2004-05 prices for a commodity in this table for an earlier period, multiply the reference year (2004-05) value of the commodity by the volume index value of that commodity for the earlier period, and divide by 100.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

#### 14.6 AGRICULTURE AND SERVICES TO AGRICULTURE INDUSTRIES, Employment(a)(b)

	Males	Females	Persons
	'000	'000	'000
2002	278.6	133.6	412.2
2003	239.8	110.0	349.8
2004	236.5	109.2	345.7
2005	227.0	109.8	336.8
2006	224.1	106.8	330.9

(a) Employed persons include persons who worked without pay for at least one hour per week in a family business or on a farm (i.e. unpaid family helpers). Persons who worked in another industry and in agriculture are classified to the industry of predominant activity, according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Annual average of quarterly data.

Source: *Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.001)*.

### Selected financial performance measures

Statistics of the financial performance of farm businesses provided in this section are based on information collected in the annual Australian

Agricultural and Grazing Industries Survey, conducted by ABARE. This collection covers farm businesses engaged in the 'broadacre' Grain, sheep and beef cattle farming industry, as defined in ANZSIC.



#### 14.7 BROADACRE FARM BUSINESSES(a), Selected financial performance measures

Annual average per farm	Units	2000-01	2001-02	2002-03	2003-04	2004-05
Total cash receipts	\$'000	254.5	314.3	257.6	295.0	289.8
less Total cash costs	\$'000	182.7	213.5	205.8	230.0	234.7
Farm cash income	\$'000	71.9	100.8	51.8	65.0	55.0
Farm business profit	\$'000	9.4	42.4	-27.4	4.5	-9.5
Profit at full equity(b)	\$'000	27.9	63.0	-6.6	30.4	14.7
plus Capital appreciation	\$'000	90.6	77.6	150.4	213.0	167.3
Profit at full equity (incl. capital appreciation)	\$'000	118.5	140.6	143.8	243.4	182.1
Farm capital at 30 June	\$'000	1 432.3	1 699.6	1 917.7	2 521.1	2 736.3
Rate of return (excl. capital appreciation)(c)	%	1.9	3.7	-0.3	1.3	0.6
Rate of return (incl. capital appreciation)(c)	%	8.3	8.3	7.5	10.8	7.2
Off-farm income(d)	\$'000	23.6	25.3	29.0	27.0	30.6

(a) Businesses classified to Group 012 in the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Farm business profit, plus rent, interest and finance lease payments less depreciation on leased items. (c) Computed by expressing profit at full equity as a percentage of total opening capital. (d) Collected for owner manager and spouse only. Includes income from wages, other businesses, investment and social welfare payments. Average for those responding farms for which details of off-farm income are available for both owner-manager and spouse.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results — March 2006'.

Selected financial performance measures – expressed as annual averages per farm – for all broadacre farm businesses for the years 2000–2001 to 2004–05 are shown in table 14.7 and for the years 1998–99 to 2004–05 in graphs 14.8, 14.9 and 14.10.

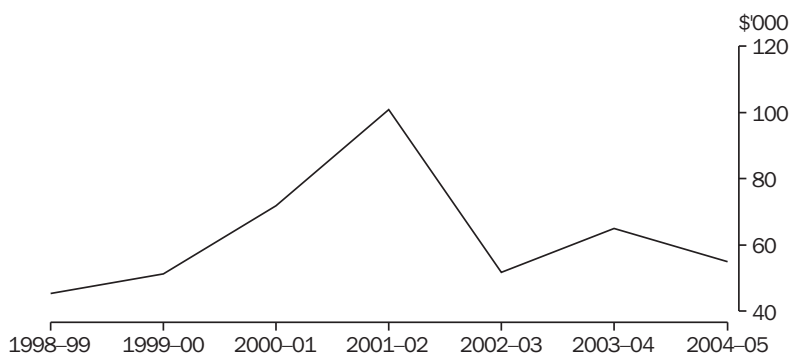
The financial performance of Australian farms improved as the impact of the widespread drought of 2002–03 receded. However, while 2003–04 saw record harvests and high cattle and lamb prices, conditions deteriorated in 2004–05 with lower cash receipts and higher cash costs.

Following a fall in 2002–03, average total cash receipts for broadacre farms in 2003–04 were estimated to have increased by 15% but have since

fallen 2% to \$290,000 in 2004–05. Average total cash costs for broadacre farms rose 12% in 2003–04 and 2% in 2004–05.

Farm cash income is a measure of the cash funds available for farm investment and consumption after paying all costs incurred in production, including interest payments, but excluding capital payments and payments to family workers. It is a short-term measure of farm income because it takes no account of depreciation on assets. Average cash income for the broadacre farms as a group fell 15% in 2004–05 to \$55,000, substantially short of the high cash income year of 2001–02 with \$100,800 (graph 14.8).

14.8 BROADACRE FARM BUSINESSES, Farm average cash income



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2006'.

Average farm business profit declined in 2004–05 to negative \$9,500 from \$4,500 the previous year (graph 14.9). Farm business profit is a longer-term measure of the profitability of farms because it takes account of depreciation and inventory changes.

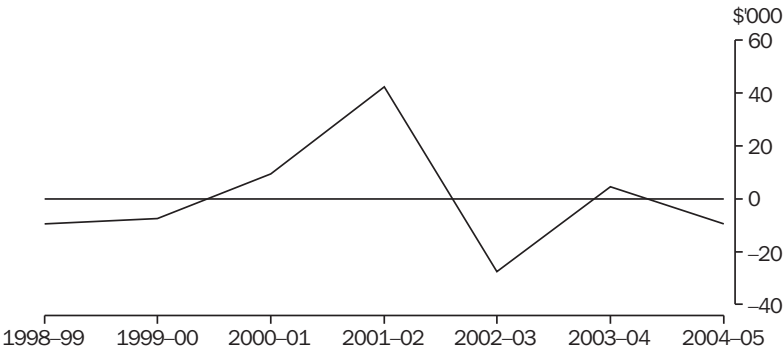
For the broadacre industries as a group, rate of return (excluding capital appreciation) averaged 0.6% in 2004–05 (graph 14.10), down from 1.3% in 2003–04.

## Agricultural production

### Crops

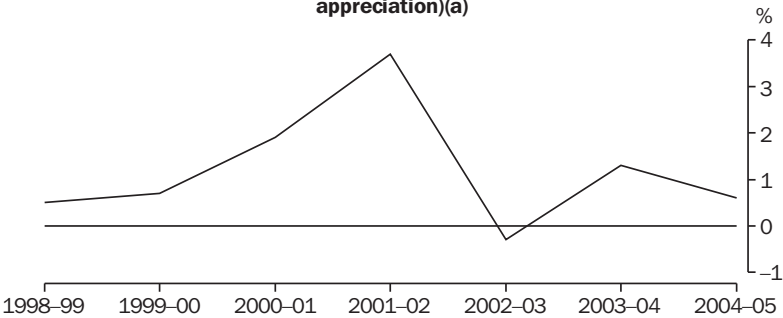
The area of land sown to crops, vegetables, fruit and nuts increased by 9% in the last four years and almost doubled in the past 40 years. These increases reflect improved plant genetics, greater variety in plant species, increased mechanisation and fertiliser use, as well as better control of pests and diseases in Australia. Table 14.11 shows the area of crops in the states and territories of Australia since 2000–2001, and table 14.12 is a summary of the area, production and gross value of the principal crops in the most recent years.

**14.9 BROADACRE FARM BUSINESSES, Farm average business profit**



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2006'.

**14.10 BROADACRE FARM BUSINESSES, Rate of return (excluding capital appreciation)(a)**



(a) Computed by expressing profit at full equity as a percentage of total opening capital.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Farm Surveys Results – March 2006'.

### 14.11 AREA OF CROPS

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
2000–01	6 723	3 044	2 955	3 982	7 731	79	6	1	24 520
2001–02	6 635	2 958	2 683	4 175	7 525	78	6	—	24 060
2002–03	6 040	3 290	2 265	4 339	7 557	75	7	2	23 575
2003–04	7 241	3 479	2 745	4 454	8 079	73	7	2	26 080
2004–05	7 674	3 570	2 694	4 397	8 329	71	7	1	26 742

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.12 SELECTED CROPS, Area, production and gross value

	Area			Production			Gross value		
	2002–03	2003–04	2004–05	2002–03	2003–04	2004–05	2002–03	2003–04	2004–05
	'000 ha	'000 ha	'000 ha	'000 t	'000 t	'000 t	\$m	\$m	\$m
Crops for grain									
Barley	3 864	4 477	4 646	3 865	10 382	7 740	984	1 750	1 233
Grain sorghum	667	734	755	1 465	2 009	2 011	300	319	270
Maize	50	70	72	310	^395	420	72	^88	81
Oats	911	1 089	894	957	2 018	1 283	210	279	172
Rice	46	66	51	438	553	339	153	180	101
Wheat	11 170	13 067	13 399	10 132	26 132	21 905	2 692	5 636	4 317
Lupins	1 025	851	845	726	1 180	937	212	278	193
Crops cut for hay									
Cereal crops	505	603	579	1 581	2 964	2 002	332	552	258
Non-cereal crops	^54	^37	39	^166	122	131	^32	21	24
Other crops									
Sugar cane cut for crushing	448	448	434	36 995	36 993	37 822	1 019	854	980
Tobacco	2	^2	^1	6	^4	^4	41	^25	^28
Cotton lint	245	227	304	^364	317	563	(a) ^853	(a)751	(a)945
Peanuts (in shell)	^10	^14	^14	^28	^44	^32	^22	^30	^21
Soybean	^6	^27	^27	^9	^60	^45	^3	^28	^17
Canola	1 298	1 211	1 377	871	1 703	1 542	389	686	503
Sunflower	^47	^72	^48	^26	^57	^61	^19	28	^24
Orchard fruit									
Oranges	n.a.	n.a.	n.a.	599	395	498	337	236	310
Apples	n.a.	n.a.	n.a.	326	260	327	381	367	529
Pears (excl. Nashi)	n.a.	n.a.	n.a.	136	139	148	80	105	89
Peaches	n.a.	n.a.	n.a.	^97	^74	^90	^84	^87	^99
Other fruit									
Bananas	11	11	10	265	257	266	322	286	327
Pineapples	3	3	^3	105	110	104	33	37	33
Grapes (bearing)	143	151	153	1 497	2 015	2 027	1 371	1 689	1 508
Vegetables									
Carrots	7	7	7	306	303	316	162	150	166
Potatoes	36	36	37	1 247	1 310	1 288	485	481	434
Tomatoes	7	8	8	364	474	408	^226	^280	^162

(a) Includes value of cotton seed.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

In Australia, cereals are divided into autumn–winter–spring growing (winter cereals) and spring–summer–autumn growing (summer cereals). In temperate regions winter cereals such as wheat, oats, barley and rye are often grown in rotation with pastures, such as subterranean

clover, medics or lucerne, and with other winter crops such as canola, field peas and lupins. Rice, maize and sorghum are summer cereals, often being grown in rotation with winter cereals in some areas.

## Wheat

Wheat is Australia's largest crop. It is produced in all states but primarily on the mainland in a narrow crescent known as the wheat belt. Inland of the Great Dividing Range, the wheat belt stretches in a curve from central Queensland through New South Wales, Victoria and southern South Australia. In Western Australia, the wheat belt continues around the south-west of the state and some way north, along the western side of the continent.

Most of Australia's wheat is exported for human consumption. A small proportion of production is used domestically for human consumption, with lower quality grain being used for domestic stock feed.

New varieties of wheat have enabled it to be grown in more marginal areas in recent years. In particular the development of dual purpose winter wheat varieties which, like oats, allow grazing of the plant up to a few months prior to harvest, have become very popular in some areas.

While severe drought conditions across Australia more than halved wheat production in 2002–03, increased plantings overall and an excellent season in Western Australia resulted in a record production of 26.1 million (mill.) tonnes in 2003–04 (table 14.13). However, this high mark was not sustained as less than ideal conditions, especially in Victoria, South Australia and Western Australia, saw

the national harvest in 2004–05 decline 16%, despite a 3% increase in area planted. New South Wales wheat farmers suffered a small fall in yield but were able to boost production by 3%.

Graph 14.14 shows that variability in wheat yields is a part of life for wheat growers, with dry periods and, less commonly, floods resulting in significant falls in production approximately every ten years over the past 100 years.

## Oats

Oats are traditionally grown in moist, temperate regions. However, in recent years improved varieties and management practices have enabled oats to be grown over a wider range of soil and climatic conditions. Oats have a high fodder feed value and, with the exception of recently developed dual purpose varieties of wheat, produce a greater bulk of growth than other winter cereals. They need less cultivation, and respond well to superphosphates and nitrogen. Oats have two main uses – as a grain crop, and as a fodder crop. Fodder crops can either be grazed in the initial stages of growth and then locked up for a period prior to harvesting for grain, or else mown and baled for hay or cut for chaff.

The majority of Australian oats harvested for grain is used domestically for stock feed purposes. A small proportion of high quality grain is used for human consumption. A small proportion of grain production is exported for human consumption.

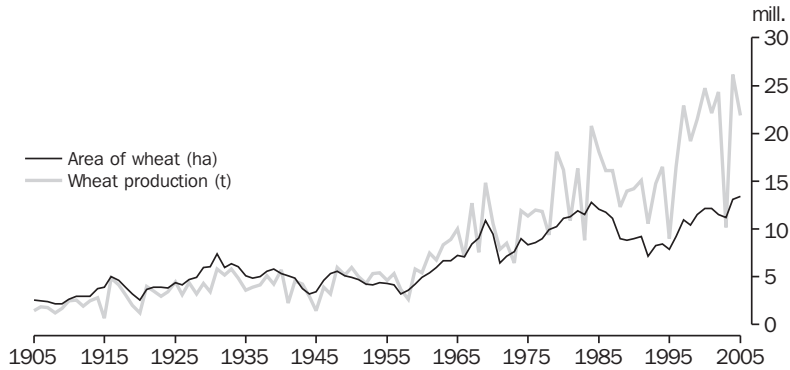
**14.13 WHEAT FOR GRAIN, Area and production**

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
2000–01	3 671	1 143	885	1 976	4 460	7	12 141
2001–02	3 446	1 136	604	1 987	4 350	6	11 529
2002–03	2 995	1 239	514	1 957	4 458	7	11 170
2003–04	3 983	1 409	790	1 960	4 917	8	13 067
2004–05	4 256	1 327	711	1 979	5 118	7	13 399
PRODUCTION ('000 t)							
2000–01	7 867	3 080	1 157	4 162	5 814	26	22 108
2001–02	8 043	2 791	901	4 778	7 760	25	24 299
2002–03	2 495	890	601	2 072	4 047	25	10 132
2003–04	7 288	3 145	1 110	3 490	11 070	26	26 132
2004–05	7 537	1 927	1 170	2 621	8 619	30	21 905

(a) Includes ACT.

Source: *Agricultural Commodities, Australia (7121.0)*.

#### 14.14 WHEAT PRODUCTION — 1905–2005



Source: *Agricultural Commodities, Australia (7121.0)*. Historical data available on request.

In 2004–05 the total area of oats planted fell by 18% to 894,000 ha after four years of increased plantings (table 14.15). With plantings down and conditions impacting on yield, total production fell 36% to 1.3 mill. tonnes. Victoria suffered the biggest drop, down 44% while production in Western Australia and New South Wales fell 39% and 30% respectively.

#### Barley

This cereal contains two main groups of varieties, 2-row and 6-row (the number of rows referring to the number of rows of seed on each stalk). The former is generally, but not exclusively, preferred for malting purposes. Barley is grown principally as a grain crop, although in some areas it is used

as a fodder crop for grazing, with grain being subsequently harvested if conditions are suitable. It is often grown as a rotation crop with wheat, oats and pasture. As barley has a short growing period, it may provide quick grazing or timely fodder supplies when other sources are not available. Barley grain may be crushed to meal for stock feed or sold for malting.

The total area of barley planted increased by 4% to 4.6 mill. ha in 2004–05, the fifth year of increased plantings (table 14.16). The largest areas planted were in Western Australia (1.3 mill. ha) and South Australia (1.3 mill. ha). However, production in these states fell as it did in three other states bringing the total harvest down by 25% to 7.7 mill. tonnes.

#### 14.15 OATS FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
2000–01	168	140	13	75	248	7	650
2001–02	231	142	^11	^108	287	6	784
2002–03	308	188	*9	88	314	4	911
2003–04	449	194	*9	89	344	4	1 089
2004–05	400	150	*21	76	243	^4	894
PRODUCTION ('000 t)							
2000–01	246	351	6	117	317	13	1 050
2001–02	320	334	^7	^203	557	12	1 434
2002–03	149	250	^4	70	477	7	957
2003–04	610	507	*5	137	752	7	2 018
2004–05	429	284	*10	90	460	^9	1 283

(a) Includes ACT.

Source: *Agricultural Commodities, Australia (7121.0)*.

#### 14.16 BARLEY FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
2000–01	615	693	112	1 041	983	10	3 454
2001–02	665	700	96	1 151	1 088	7	3 707
2002–03	636	778	108	1 194	1 140	8	3 864
2003–04	951	872	151	1 216	1 278	9	4 477
2004–05	1 023	924	97	1 280	1 313	8	4 646
PRODUCTION ('000 t)							
2000–01	1 253	1 670	115	2 320	1 358	26	6 743
2001–02	1 382	1 656	171	2 782	2 263	26	8 280
2002–03	428	478	148	1 440	1 349	21	3 865
2003–04	1 955	2 275	263	2 691	3 170	28	10 382
2004–05	1 761	1 305	178	1 979	2 489	28	7 740

Source: Agricultural Commodities, Australia (7121.0).

#### Grain sorghum

The sorghums are summer growing crops which are used in a number of ways: grain sorghum for grain; sweet or fodder sorghum, Sudan grass and Columbus grass for silage, green feed and grazing; and broom millet for brooms and brushware. However, the grain is used primarily as stock feed and is an important source for supplementing other coarse grains for this purpose.

In 2004–05, grain sorghum was one of only two of the major crops to increase production, albeit marginally (table 14.17). A 19% increase in New South Wales production was offset by a 10% decrease in Queensland.

#### Maize

Maize is a summer cereal requiring specific soil and climatic conditions. The majority of maize used for grain is grown in the south-east and Atherton Tablelands regions of Queensland, and the north coast, northern slopes and tablelands, and the Murrumbidgee Irrigation Area regions in New South Wales. Small amounts are grown for green feed and silage in association with the dairy industry.

Maize production increased by 6% in 2004–05 to 420,000 tonnes (table 14.18).

#### 14.17 GRAIN SORGHUM, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
2000–01	258	2	494	(a)	2	(a)	758
2001–02	258	**	562	(a)	**	(a)	823
2002–03	255	**	405	(a)	**	(a)	667
2003–04	212	**	519	(a)	*1	(a)	734
2004–05	211	**	544	(a)	—	(a)	755
PRODUCTION ('000 t)							
2000–01	770	4	1 156	(a)	4	(a)	1 935
2001–02	767	*4	1 247	(a)	**	(a)	2 021
2002–03	^ 531	**	930	(a)	**	(a)	1 465
2003–04	709	**	1 296	(a)	*1	(a)	2 009
2004–05	847	—	1 164	(a)	—	(a)	2 011

(a) Data not collected.

Source: Agricultural Commodities, Australia (7121.0).

#### 14.18 MAIZE FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
2000–01	26	1	47	(b)	*	(b)	74
2001–02	28	*1	53	(b)	**	(b)	83
2002–03	^ 21	*1	^ 28	(b)	—	(b)	50
2003–04	22	**	^ 48	(b)	—	(b)	70
2004–05	^ 25	*1	46	(b)	—	(b)	72
PRODUCTION ('000 t)							
2000–01	178	8	159	(b)	*	(b)	345
2001–02	246	*9	198	(b)	*	(b)	454
2002–03	^ 163	*15	^ 131	(b)	—	(b)	310
2003–04	178	**	^ 211	(b)	—	(b)	^ 395
2004–05	^ 242	^ 2	173	(b)	1	(b)	420

(a) Includes NT. (b) Data not collected.

Source: *Agricultural Commodities, Australia (7121.0)*.

### Rice

Almost all of Australia's rice is grown in New South Wales, with production centred in the Murrumbidgee Irrigation Area. Rice production is dependent on supplies of irrigation water and, therefore, is significantly affected by reductions in irrigation water allocations available to farmers.

In 2004–05, rice plantings fell by 39% to 339,000 tonnes due to 23% less plantings and cold conditions at a critical stage of plant development (table 14.19).

### Vegetables

Australia produces an extremely wide variety of vegetables, driven largely by demand from a cosmopolitan population. Many vegetables, such as spring onions, mushrooms and fresh tomatoes are grown close to major capital cities, taking

advantage of proximity to markets and low transport costs. However, the majority of vegetables are produced in the major irrigation areas of each state and territory, where access to land and water are the key drivers of investment.

In 2004–05 the area sown to vegetables was 123,000 ha, a decrease of 2% from the previous year. Potatoes were by far the largest vegetable crop in terms of area and production, accounting for 30% of the total area of vegetables planted in 2004–05 (tables 14.20 and 14.21). South Australia, Tasmania and Victoria together produced three-quarters of the total potato crop in 2004–05. Tomatoes ranked second with Victoria producing nearly 60% of the 408,000 tonnes grown nationally. Tasmania accounted for almost all green pea production, producing 92% of the total crop, or 26,500 tonnes in 2004–05.

#### 14.19 RICE FOR GRAIN, Area and production

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
2000–01	175	2	(a)	(a)	*	(a)	177
2001–02	143	^ 2	(a)	(a)	—	(a)	144
2002–03	45	**	(a)	(a)	—	(a)	46
2003–04	66	**	(a)	(a)	—	(a)	66
2004–05	51	1	(a)	(a)	—	(a)	51
PRODUCTION ('000 t)							
2000–01	1 625	18	(a)	(a)	*	(a)	1 643
2001–02	1 179	*14	(a)	(a)	—	(a)	1 192
2002–03	435	**	(a)	(a)	—	(a)	438
2003–04	550	*3	(a)	(a)	—	(a)	553
2004–05	335	4	(a)	(a)	—	(a)	339

(a) Data not collected.

Source: *Agricultural Commodities, Australia (7121.0)*.



#### 14.20 SELECTED VEGETABLES, Area

	French and runner beans	Carrots	Onions	Green peas	Lettuces	Potatoes	Pumpkins	Tomatoes	All vegetables
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
2000-01	6.6	8.0	5.0	5.8	5.8	39.6	8.3	9.6	137.1
2001-02	6.6	7.7	5.5	6.0	6.0	37.9	6.5	8.5	131.7
2002-03	^ 7.0	7.4	5.3	5.5	6.1	35.9	6.6	7.3	121.2
2003-04	7.1	7.2	5.6	5.7	6.1	36.1	5.9	8.5	125.5
2004-05	6.0	6.5	6.0	5.4	5.7	37.4	5.4	7.8	123.4

Source: Agricultural Commodities, Australia (7121.0).

#### 14.21 SELECTED VEGETABLES, Production

	French and runner beans	Carrots	Onions	Green peas (shelled weight)	Lettuces	Potatoes	Pumpkins	Tomatoes
	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t
2000-01	32.8	320.9	221.9	26.2	152.7	1 302.1	109.4	556.2
2001-02	33.7	331.1	282.5	28.4	135.0	1 333.2	96.3	425.0
2002-03	34.6	305.7	228.6	27.4	121.5	1 247.3	93.2	364.4
2003-04	31.1	302.6	233.4	29.7	127.2	1 310.4	94.6	474.2
2004-05	33.7	316.0	256.5	28.9	132.4	1 288.3	89.9	407.9

Source: Agricultural Commodities, Australia (7121.0).

#### Fruit (excluding grapes)

A wide variety of fruit is grown in Australia, ranging from pineapples, mangoes and pawpaws in the tropics to pome, stone and berry fruits in temperate regions. Table 14.22 shows the number of trees for the main types of orchard fruit, and the area under cultivation for bananas and pineapples.

Production of apples increased 26% in 2004-05 to 326,600 tonnes (table 14.22). The most significant crops in terms of gross value of production are apples, bananas and oranges (table 14.23).

#### 14.22 SELECTED FRUIT, Number of trees(a) and area

	Orchard fruit						Area of tropical fruit		All area of fruit and nuts (excluding grapes)
	Apples	Apricots	Oranges	Peaches	Pears	Plums and prunes	Bananas	Pineapples	
	'000 trees	'000 trees	'000 trees	'000 trees	'000 trees	'000 trees	ha	ha	ha
2000-01	6 455	498	6 669	1 674	1 373	1 328	11 737	2 733	170 545
2001-02	8 070	^ 411	6 767	1 587	1 312	1 325	12 583	2 963	161 439
2002-03	8 391	^ 440	7 129	^ 2 150	1 306	1 470	10 659	2 616	174 123
2003-04	8 885	^ 478	6 814	1 877	1 386	1 450	10 861	2 664	172 507
2004-05	9 163	*601	7 434	^ 2 031	1 439	^ 2 056	10 361	^ 2 742	165 418

(a) Refers to trees of bearing age (i.e. four years and over for apples, six years and over for other fruit).

Source: Agricultural Commodities, Australia (7121.0).

### 14.23 SELECTED FRUIT, Quantity and value of production

	Apples	Apricots	Oranges	Peaches	Pears	Plums and prunes	Bananas	Pineapples
QUANTITY OF PRODUCTION ('000 t)								
2000–01	324.6	20.6	550.2	74.1	168.9	31.3	358.4	119.6
2001–02	320.5	^ 12.4	450.6	88.7	144.9	25.5	313.3	119.3
2002–03	326.1	^ 19.7	599.5	^ 97.2	135.9	^ 33.2	264.8	104.7
2003–04	260.0	^ 10.7	395.2	^ 74.5	138.5	24.4	257.2	110.4
2004–05	326.6	*19.7	498.1	^ 90.3	147.7	^ 32.8	265.6	104.0
GROSS VALUE OF PRODUCTION (\$m)								
2000–01	282.0	29.5	276.8	72.7	90.2	58.5	408.6	44.0
2001–02	348.0	18.1	280.8	75.7	99.4	52.7	415.3	40.1
2002–03	380.6	^ 24.7	336.7	^ 84.3	80.3	^ 64.3	321.6	32.5
2003–04	367.5	^ 24.1	236.0	^ 86.8	105.0	55.2	285.6	37.1
2004–05	528.5	^ 29.0	310.0	^ 99.3	89.2	^ 58.2	326.9	33.5

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

### Grapes

Grapes are a temperate crop requiring predominantly winter rainfall and warm to hot summer conditions for ripening. Almost all grape production in Australia depends on irrigation water as a supplement to rainfall. An absence of late-spring frosts is essential if the loss of the developing fruit is to be prevented. Grapes are grown for winemaking, drying, and to a lesser extent, for table use. The better known grape producing areas include the Adelaide Hills,

Barossa Valley, Clare Valley, Riverland, McLaren Vale and Coonawarra (all in South Australia); Sunraysia and the Yarra Valley (Victoria); the Hunter and Riverina (New South Wales); the Swan Valley and Margaret River (Western Australia); and the Tamar Valley and Coal River Valley (Tasmania).

The gross value of grape production for 2004–05 fell by 11% from the previous year, to \$1,508m. Tables 14.24 and 14.25 show the area of vines and the quantity of grapes produced.

### 14.24 VITICULTURE, Area, production and value

	Area		Production of grapes for		Total production(a)	
	Bearing	Total	Winemaking	Drying	Quantity	Gross value
	'000 ha	'000 ha	'000 t fresh weight	'000 t fresh weight	'000 t fresh weight	\$m
2000–01	131	148	1 391	90	1 546	1 517.5
2001–02	143	159	1 515	153	1 754	1 577.7
2002–03	143	157	1 330	92	1 497	1 370.8
2003–04	151	164	1 817	129	2 015	1 688.8
2004–05	153	167	1 818	135	2 027	1 508.2

(a) Includes grapes used for table and other purposes.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

### 14.25 VITICULTURE, Area and production — 2004–05

	Bearing	Not yet bearing	All vines	Production of grapes used for			
				Winemaking	Drying	Table and other	Total
Area of vines at harvest	ha	ha	ha	tonnes fresh weight	tonnes fresh weight	tonnes fresh weight	tonnes fresh weight
Red grapes	92 849	5 184	98 033	1 009 983	10 487	26 428	1 046 897
White grapes	60 355	8 278	68 632	808 443	124 926	46 234	979 603
<b>Total</b>	<b>153 204</b>	<b>13 462</b>	<b>166 665</b>	<b>1 818 426</b>	<b>135 412</b>	<b>72 662</b>	<b>2 026 500</b>

Source: *Australian Wine and Grape Industry, 2005 (1329.0)*.

## Oilseeds

The oilseeds industry is a relatively young industry by Australian agricultural standards. The specialist oilseed crops grown include sunflower, soybeans, canola and safflower. Sunflower and soybeans are summer crops while the others are winter crops. In Australia, oilseeds are crushed for their oil, which is used for edible and industrial purposes, and in protein meals for livestock feeds.

The 1990s saw the emergence of canola as the main oilseed crop, with production increasing from around 70,000 tonnes in 1990–91 to a high of 2.8 mill. tonnes in 1999–2000. With canola again accounting for 93% of the crop, oilseeds production in 2004–05 of 1.7 mill. tonnes was 9% less than the previous year's harvest (table 14.26). Before the emergence of canola, the main specialist oilseed crop was sunflower seed. Peanuts and cotton are also major sources of oil as a by-product to their main outputs, which are food and fibre respectively.

## Cotton

Cotton is grown mainly in inland areas of northern New South Wales and southern Queensland, primarily for its fibre (lint), and relies heavily on irrigation water to produce profitable yields. When the cotton is mature, seed cotton is taken to a gin where it is separated (ginned) into cotton lint and

cotton seed. The lint is used for yarn while the cotton seed is further processed at an oil mill, where the short fibres (linters) remaining on the cotton seed after ginning are removed. These fibres are too short to make into cloth, but are used for wadding, upholstery and paper. The seeds are then separated into kernels and hulls. The hulls are used for stock feed and as fertiliser, while the kernels are crushed to extract oil. The oilcake residue (crushed kernels) is ground into meal, which is a protein roughage, and is used as a stock feed.

The estimated gross value of cotton lint and cotton seed in 2004–05 was \$945.1m, a 26% increase on the previous year (table 14.27).

## Crops and pastures cut for hay or silage

To counter Australia's seasonal conditions and unreliable rainfall, many farmers use hay and silage as methods of fodder conservation to supplement pasture and other natural sources of stockfeed.

Considerable areas are devoted to fodder crops and sown pastures, which are either used for grazing (as green feed) or harvested and conserved as hay or silage (table 14.28).

**14.26 OILSEEDS, Area and production**

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
2000–01	569	266	79	157	517	—	1 589
2001–02	585	241	^60	165	394	^1	1 447
2002–03	514	248	^28	214	349	^—	1 355
2003–04	411	242	^58	250	358	—	1 321
2004–05	486	287	26	236	428	^1	1 464
PRODUCTION ('000 t)							
2000–01	894	383	73	206	353	—	1 910
2001–02	796	349	^52	273	419	^1	1 890
2002–03	201	177	^17	211	299	—	907
2003–04	507	386	^51	355	527	—	1 827
2004–05	554	345	^23	246	488	^1	1 658

(a) Includes ACT.

Source: *Agricultural Commodities, Australia* (7121.0).

**14.27 COTTON LINT, Area, production and value**

	Area '000 ha	Quantity '000 t	Gross value(a) \$m
2000-01	536	666	1 305
2001-02	458	675	1 327
2002-03	245	^ 364	^ 853
2003-04	227	317	751
2004-05	304	563	945

(a) Includes value of cotton seed.

Source: *Agricultural Commodities, Australia (7121.0)*; *Value of Agricultural Commodities Produced, Australia (7503.0)*.

**14.28 CROPS AND PASTURES CUT FOR HAY OR SILAGE, Area and production**

		Hay	Silage made
	Area '000 ha	Production '000 t	Production '000 t
2000-01	1 521	6 433	2 960
2001-02	1 416	5 864	2 966
2002-03	1 299	4 913	2 549
2003-04	1 688	7 663	3 757
2004-05	1 639	6 322	3 859

Source: *Agricultural Commodities, Australia (7121.0)*.

**Sugar**

Sugar cane is grown commercially in Australia along the east coast over a distance of more than 2,000 kilometres from Maclean in northern New South Wales to Mossman in Queensland. More recently, it has also been grown in Western Australia.

More than 90% of sugar cane production occurs in Queensland (table 14.29), with 75% of the crop grown north of the Tropic of Capricorn.

**Livestock**

Cattle, sheep and pigs are the main livestock grown in Australia and have been present since the earliest days of European settlement.

**Cattle**

Cattle farming occurs in all states and territories. While dairy cattle are restricted mainly to southern and coastal districts, beef cattle are concentrated in Queensland and New South Wales.

Cattle numbers in Australia increased slowly during the 1960s and 1970s, despite seasonal changes and heavy slaughterings, to a peak of 31.8 mill. in 1976 (graph 14.33). Beef cattle production is often combined with cropping, dairying and sheep. In the northern half of Australia, cattle properties and herd sizes are very large, pastures are generally unimproved, fodder crops are rare and beef is usually the only product. The industry is more intensive in the south, with higher stocking rates per hectare, improved pastures and use of fodder crops, use of rotational grazing practices and increased inputs such as fertiliser and animal health products.

**14.29 SUGAR CANE CUT FOR CRUSHING, Area, production and yield**

	New South Wales			Queensland			Western Australia		
	Area harvested '000 ha	Production '000 t	Yield tonnes/ha	Area harvested '000 ha	Production '000 t	Yield tonnes/ha	Area harvested '000 ha	Production '000 t	Yield tonnes/ha
2000-01	18	1 826	102.5	382	25 867	67.7	3	423	122.2
2001-02	^ 25	^ 2 886	114.4	398	28 250	70.9	3	288	105.9
2002-03	21	2 362	110.6	423	34 231	80.9	3	401	116.4
2003-04	*30	*2 988	^ 99.5	414	33 553	81.1	4	453	112.0
2004-05	20	2 133	107.5	411	35 290	85.9	3	399	118.7

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.30 LIVESTOCK

	Cattle	Sheep and lambs	Pigs
	'000	'000	'000
2001	27 722	110 928	2 748
2002	27 870	106 166	2 940
2003	26 664	99 252	2 658
2004	27 465	101 288	2 548
2005	27 782	101 125	2 538

Source: *Agricultural Commodities, Australia (7121.0)*.

Drought conditions in the early-1980s led to a decline in the beef herd until 1984. For the next five years the size of the herd remained relatively stable. Between 1989 and 1998 cattle numbers increased gradually, despite unfavourable weather

conditions continuing in many parts of Australia. After a slight decline in 1999, cattle numbers increased to a high of 27.9 mill. in 2002. Dry conditions over much of the country in 2002–03 saw cattle numbers fall by 4% to 26.7 mill. However, improved conditions in some regions resulted in numbers increasing by 3% to 27.5 mill. in 2003–04 and a further 1% to 27.8 mill. in 2004–05.

Tables 14.31 and 14.32 show the number of cattle, by purpose and the number of cattle, by state and territory at 30 June for the period 2001–2005.

### 14.31 CATTLE, By purpose — 30 June

	2001	2002	2003	2004	2005
	'000	'000	'000	'000	'000
Milk cattle					
Cows (in milk and dry)	2 176	2 123	2 050	2 038	2 076
Other milk cattle	1 041	1 008	999	1 016	981
Total	3 217	3 131	3 049	3 055	3 056
Meat cattle					
Bulls and bull calves used or intended for service	591	620	570	617	659
Other calves under one year	6 083	5 679	5 292	5 260	5 357
Cows and heifers one year and over	12 007	12 652	12 245	12 570	12 935
Other cattle one year and over	5 823	5 788	5 508	5 964	5 776
Total	24 504	24 739	23 615	24 410	24 725
<b>Total</b>	<b>27 722</b>	<b>27 870</b>	<b>26 664</b>	<b>27 465</b>	<b>27 782</b>

Source: *Agricultural Commodities, Australia (7121.0)*.

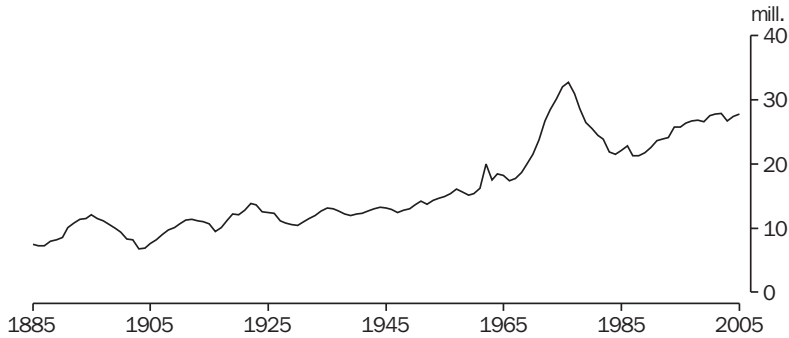
### 14.32 CATTLE, By state and territory — 30 June

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Aust.(a)
	'000	'000	'000	'000	'000	'000	'000	'000
2001	6 215	4 405	11 376	1 242	2 128	636	(b)1 707	27 722
2002	6 021	4 412	11 544	1 381	2 104	619	(b)1 777	27 870
2003	5 817	4 388	10 740	1 401	1 945	682	(b)1 683	26 664
2004	5 816	4 281	11 500	1 352	2 095	684	(c)1 730	27 465
2005	5 734	4 509	11 600	1 384	2 127	689	(c)1 729	27 782

(a) Includes ACT. (b) Excludes dairy cattle. (c) No dairy cattle were recorded in NT.

Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.33 CATTLE(a) — 1885 to 2005



(a) Total beef and dairy cattle.

Source: *Historical Selected Agricultural Commodities, By State (7124.0)*.

### Sheep

Sheep numbers reached a peak of 180 mill. in Australia in 1970 (graph 14.36). In general, numbers have fallen since then. Poor market prospects for wool after 1990 had a marked impact on the flock size with sheep numbers falling rapidly until 1995, after which there was a gradual decline until 1999. By 30 June 2003, sheep and lambs had fallen to 99.3 mill. with numbers being severely affected by drought conditions throughout much of the country. Improved conditions in 2003–04 saw numbers increase by 2% but in 2004–05 more climatic difficulties, mainly in New South Wales, caused a marginal fall in the total flock (tables 14.34 and 14.35).

### Pigs

Pig farming is a highly intensive industry. The majority of pigs are grown in specially designed sheds which provide a controlled environment conducive to the efficient production of large numbers of animals. Recent changes in the Australian pig industry have seen many smaller producers leave the industry and existing producers increase their size of operations in an attempt to remain viable. Over the last three years, the number of establishments reporting pigs has fallen 15% to 2,426 in 2004–05. In the same period, numbers of pigs have fallen 5% to 2.5 mill. largely due to the increased feed grain costs caused by the recent drought (table 14.37).

### 14.34 SHEEP AND LAMBS, By state — 30 June

	NSW mill.	Vic. mill.	Qld mill.	SA mill.	WA mill.	Tas. mill.	Aust.(a) mill.
2001	40.9	22.3	8.7	12.6	23.1	3.2	110.9
2002	38.5	21.4	6.8	13.0	23.1	3.4	106.2
2003	33.7	20.4	4.8	13.1	23.9	3.3	99.3
2004	35.2	20.0	4.8	12.9	25.1	3.2	101.3
2005	34.3	20.6	4.9	12.5	25.6	3.1	101.1

(a) Includes ACT and NT.

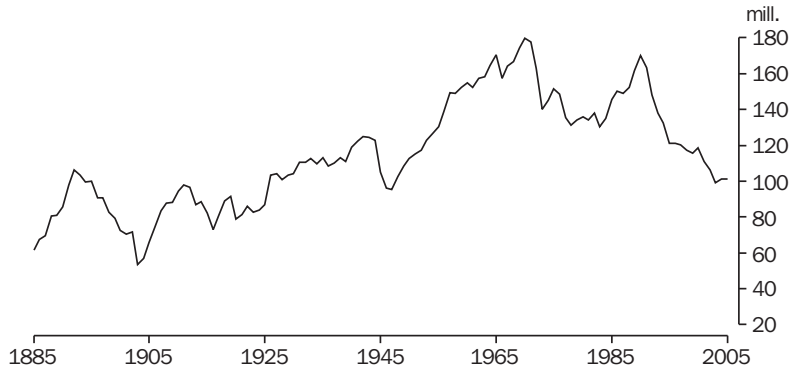
Source: *Agricultural Commodities, Australia (7121.0)*.

### 14.35 SHEEP AND LAMBS — 30 June

	2001 mill.	2002 mill.	2003 mill.	2004 mill.	2005 mill.
Sheep	83.0	77.8	73.4	72.4	71.9
Lambs (under one year old)	28.0	28.4	25.9	28.9	29.2
<b>Total</b>	<b>110.9</b>	<b>106.2</b>	<b>99.3</b>	<b>101.3</b>	<b>101.1</b>

Source: *Agricultural Commodities, Australia (7121.0)*.

#### 14.36 SHEEP AND LAMBS — 1885 to 2005



Source: *Historical Selected Agricultural Commodities, By State (7124.0)*.

#### 14.37 PIGS — 30 June

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
	'000	'000	'000	'000	'000	'000	'000
2001	845	557	597	438	286	22	2 748
2002	833	673	643	410	361	18	2 940
2003	729	555	663	381	309	^ 19	2 658
2004	^ 624	^ 547	691	^ 378	^ 291	^ 14	2 548
2005	^ 732	524	666	335	266	12	2 538

(a) Includes NT.

Source: *Agricultural Commodities, Australia (7121.0)*.

#### Poultry

Poultry farming is a highly intensive industry, with the majority of poultry raised in large sheds which provide the birds with a stable environment protected from the elements. The poultry farming

industry consists of two streams – meat production and egg production – both being major users of feed grains. Although the industry grew through the 1990's, there has been a 10% decline in the number of birds over the three years to 30 June 2005 (table 14.38).

#### 14.38 POULTRY — 30 June

	Chickens(a)			Other poultry			Total
	Chickens for egg production	Meat chickens (broilers)	Total chickens	Ducks	Turkeys	Other poultry	
	'000	'000	'000	'000	'000	'000	'000
2001	14 276	76 697	90 973	770	717	437	92 897
2002	12 858	72 739	85 597	567	584	*160	86 908
2003	12 913	70 913	83 826	^ 694	*772	**	85 535
2004	12 669	65 004	77 673	^ 953	*681	**	79 701
2005	13 175	62 728	75 903	**	*628	**	78 187

(a) Includes breeding stock.

Source: *Agricultural Commodities, Australia (7121.0)*; ABS data available on request, *Agricultural Survey*.



# Livestock products

## Milk

Dairying is a major Australian agricultural industry. The estimated gross value of dairy production at farm-gate prices in 2004–05 was \$3,194m (table 14.39), which was a 14% increase on the previous year and represented 9% of the gross value of agricultural production.

Most dairy production occurs in high rainfall coastal fringe areas where climate and natural resources allow production to be based on year-round pasture grazing. This enables efficient, low-cost milk production. With the exception of several inland river schemes, pasture growth generally depends on natural rainfall. Feedlot-based dairying is expanding, although it remains uncommon.

Milk production rose steadily until 1999–2000. Less favourable seasonal conditions and farm exits associated with deregulation of the milk industry saw production decrease by 3% to 10,545 million litres (ML) in 2000–01, before recovering to 11,271 ML in 2001–02. Dry seasonal conditions, limiting the growth of pastures and the availability of fodder crops over the last three years have seen milk production drop to 10,125 ML in 2004–05 (table 14.39).

Average annual per person milk consumption has stabilised at around 100 litres since the mid-1980s. According to Dairy Australia data for 2004–05, Australians consumed 100 litres of milk, 11.7 kilograms of cheese and 6.2 kilograms of yoghurt per person.

In 2005–06 Australia exported dairy products valued at \$2.4b (1.6% of total merchandise exports). Milk, cream and milk products

(excluding butter and cheese) contributed \$1.4b, while cheese and curd, and butter and other fats and oils derived from milk brought in \$838m and \$225m respectively.

## Meat production and slaughtering

Tables 14.40 and 14.41 show details of slaughtering and meat production from abattoirs, and from commercial poultry and other slaughtering establishments. They include estimates of animals slaughtered on farms and by country butchers. The data relate only to slaughtering for human consumption and do not include animals condemned or those killed for boiling down.

Production of beef in 2005–06 decreased by 4% to 2,050,000 tonnes.

Changing patterns in both consumer demand, and sheep and lamb supply have seen production of lamb meat exceed production of mutton for each of the past seven years. In 2005–06 mutton production increased by 3% to 244,000 tonnes and lamb production increased by 8% to 382,000 tonnes.

Significant changes have taken place in the pig meat producing industry in recent years. Capital investment and corporate takeovers have seen the emergence of a few large companies producing a significant proportion of all pig meat sold in Australia. These moves, and the trend to more intensive and efficient production techniques, have seen pig meat production rise steadily since the mid-1970s when production dipped to a low of 174,000 tonnes. In 2005–06, pig meat production remained steady at 389,000 tonnes.

14.39 WHOLE MILK INTAKE BY FACTORIES, Production, use and value

	Market milk sales by factories	Milk used in the manufacture of dairy products	Total milk production	Gross value
	ML	ML	ML	\$m
2000–01	1 920	8 625	10 545	3 053
2001–02	1 909	9 362	11 271	3 717
2002–03	1 925	8 403	10 328	(a)2 795
2003–04	1 976	8 099	10 075	2 809
2004–05	2 017	8 108	10 125	3 194

(a) Excludes NT.

Source: Value of Agricultural Commodities Produced, Australia (7503.0); Dairy Australia.

#### 14.40 PRODUCTION OF MEAT

	Carcass weight					Dressed weight		
	Beef	Veal	Mutton	Lamb	Pig meat	Total red meat	Chicken meat(a)	Total poultry(a)(b)
	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t	'000 t
2001-02	1 996	31	296	348	396	3 067	667	705
2002-03	2 035	38	268	329	420	3 090	690	726
2003-04	1 998	35	220	341	406	3 000	694	721
2004-05	2 133	29	237	354	389	3 142	750	791
2005-06	2 050	28	244	382	389	3 092	773	820

(a) Excludes NT and Tas. (b) Includes other fowls, turkeys, ducks and drakes.

Source: *Livestock Products, Australia (7215.0)*.

#### 14.41 LIVESTOCK AND POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION

	Cattle	Calves	Sheep	Lambs	Pigs	Chickens(a)	Other fowls(b) and turkeys	Ducks and drakes
	mill. head	mill. head	mill. head	mill. head	mill. head	mill. head	mill. head	mill. head
2001-02	7.6	1.0	14.4	17.4	5.4	415.6	8.6	4.0
2002-03	8.1	1.1	13.7	16.9	5.7	419.2	9.2	4.1
2003-04	7.8	1.0	10.4	16.6	5.6	423.7	9.6	4.5
2004-05	8.0	0.9	11.4	17.3	5.3	437.6	10.2	4.7
2005-06	7.6	0.8	11.8	18.7	5.4	437.9	10.8	5.2

(a) Excludes NT and Tas. (b) Comprises hens, roosters, etc.

Source: *Livestock Products, Australia (7215.0)*.

Table 14.42 shows the gross value of livestock slaughterings over recent years. Following five years of increases, the total value of slaughterings and other disposals decreased by 7% in 2002-03. Since then, mainly due to increases in the value of cattle and calves, total value of slaughterings and other disposals has increased 13%.

The largest customers for Australian beef in recent years have been United States of America, Japan and the Republic of (South) Korea. In 2005-06, Japan was the main customer for Australian beef with 403,200 tonnes purchased, 8% less than the previous year's shipment. The United States of America was Australia's second largest customer

with 302,300 tonnes purchased, down 18% on the previous year. The Republic of (South) Korea was the third largest importer of Australian beef, purchasing 141,900 tonnes.

Table 14.43 shows the volume of exports of fresh, chilled or frozen meat. In 2005-06, beef was again Australia's major meat export with shipments of bone-out beef being the major component at 891,700 tonnes, 7% less than the previous year. Exports of bone-in mutton in 2005-06 increased by 5% to 107,100 tonnes while bone-in lamb exports increased 13% to a record 119,900 tonnes which surpassed the previous year's record.

#### 14.42 GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS

	Cattle and calves	Sheep and lambs(a)	Pigs	Poultry	Total(b)
	\$m	\$m	\$m	\$m	\$m
2000-01	6 430.6	1 401.8	822.3	1 060.2	9 737.8
2001-02	7 142.4	2 117.6	967.7	1 174.9	11 434.5
2002-03	6 411.1	2 036.9	911.3	1 280.5	10 676.0
2003-04	6 658.8	2 038.8	878.9	1 280.8	10 896.0
2004-05	7 828.8	1 949.0	906.0	1 303.7	12 030.2

(a) Excludes the value of wool on skins. (b) Includes value of other livestock.

Source: *Value of Agricultural Commodities Produced, Australia (7503.0)*.

#### 14.43 EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

	Beef		Veal(a)		Mutton		Lamb		Pork
	Bone-in '000 t	Bone-out '000 t	Bone-in '000 t	Bone-out '000 t	Bone-in '000 t	Bone-out '000 t	Bone-in '000 t	Bone-out '000 t	Meat '000 t
2001-02	34.1	892.3	2.4	7.1	113.9	52.1	104.6	13.8	59.0
2002-03	37.5	894.4	3.6	6.5	109.3	52.3	87.9	14.1	62.9
2003-04	32.1	852.4	2.9	6.3	86.5	42.7	100.5	18.3	50.7
2004-05	44.6	959.4	3.3	5.8	101.7	41.8	106.8	21.7	43.5
2005-06	52.2	891.7	3.3	5.8	107.1	41.5	119.9	26.6	44.1

(a) Includes buffalo meat.

Source: *Livestock Products, Australia* (7215.0).

Table 14.44 shows the number, gross weight, gross value and unit value of live sheep and cattle exported for slaughter. The number of live sheep exported for slaughter in 2005-06 increased 31% to 4,247,700 following three years of declining trade. The number of live cattle exported for slaughter in 2005-06 fell 4% to 550,900 head, the lowest level in over a decade.

#### Wool

Australia is the world's largest wool producer, accounting for about a quarter of total production. Wool production has been declining in Australia and the world for the past ten years. Since 1990 Australian wool production has halved, to around 520,000 tonnes in 2004-05. Almost all of Australia's wool is exported, the major markets being China, Italy, India and Taiwan.

Shorn greasy wool contains an appreciable amount of grease, dirt, vegetable matter and other material. The exact quantities of these impurities in the fleece vary with climatic and pastoral conditions, seasonal fluctuations and the breed and condition of the sheep. It is, however, the clean wool fibre that is ultimately consumed by the textile industry, and the term 'clean yield' is used to express the net wool fibre content present in greasy wool.

The gross value of wool produced in 2004-05 fell 8% to \$2,195.5m (table 14.45), a little more than a third the value recorded in 1988-89 (\$5.9b), the peak year in the wool boom of the 1980s.

The total amounts of taxable wool received by brokers and purchased by dealers in recent years are shown in table 14.46. They exclude wool received by brokers on which tax had already been paid by other dealers (private buyers) or brokers.

#### 14.44 LIVE SHEEP AND CATTLE EXPORTS(a)

	Live sheep exports				Live cattle exports			
	Number '000	Gross weight '000 t	Gross value \$'000	Unit value \$	Number '000	Gross weight '000 t	Gross value \$'000	Unit value \$
2001-02	6 443.2	318.0	391 705	60.79	797.0	293.5	525 535	659.41
2002-03	5 843.2	273.0	408 235	69.87	976.6	362.5	569 288	582.95
2003-04	3 842.7	188.2	266 457	69.34	581.5	192.0	317 850	546.65
2004-05	3 233.2	166.1	206 678	63.92	573.7	191.7	374 060	652.01
2005-06	4 247.7	209.5	291 453	68.61	550.9	182.2	358 359	650.46

(a) Number of live animals exported, other than pure-bred breeding animals.

Source: *Livestock Products, Australia* (7215.0).

#### 14.45 WOOL, Production and value

	Shorn wool	Other wool(a)	Total	Gross value
	'000 t	'000 t	'000 t	\$m
2000-01	589.9	55.3	645.1	2 541.2
2001-02	536.9	50.4	587.3	2 713.2
2002-03	503.0	48.1	551.1	3 317.8
2003-04	467.5	42.0	509.5	2 396.5
2004-05	475.2	44.4	519.7	2 195.5

(a) Comprises dead and fellmongered wool, and wool exported on skins.

Source: *Agricultural Commodities, Australia* (7121.0); *Value of Agricultural Commodities Produced, Australia* (7503.0).

#### 14.46 TAXABLE WOOL RECEIVALS

	Receivals			Brokers as proportion of total receivals %
	Brokers '000 t	Dealers '000 t	Total '000 t	
2001–02	437.0	99.9	536.9	81.4
2002–03	390.6	112.5	503.0	77.7
2003–04	384.2	83.3	467.5	82.2
2004–05	383.7	91.5	475.2	80.7
2005–06	383.2	103.6	486.8	78.7

Source: *Livestock Products, Australia* (7215.0).

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## FORESTRY AND FISHING

This chapter outlines the main features of two important primary industries in Australia – forestry and commercial fishing.

Australia's native and plantation forests are an important natural resource. They provide the vast majority of timber and paper products used by Australians and support other products and services, such as honey, wildflowers, natural oils, firewood and craft wood.

Forests also provide protection for soils and water resources as well as the foundation for a broad range of cultural and spiritual experiences, and recreational and educational activities. In recent times, commercial tree growing has increasingly become an integral part of farm operations in the higher rainfall regions.

Australia's wood and paper products industries include hardwood and softwood sawmilling, plywood and panels manufacturing, woodchip production and export, and the pulp and paper industries. While providing most of its sawn timber needs, Australia is still a net importer of forest products.

The Australian Fishing Zone covers an area larger than its land mass making it the third largest fishing zone in the world. However, the catch is small by world standards as the waters of the zone lack nutrient-rich currents, causing low productivity.

Of the 6,000 species of marine and freshwater fish, crustaceans and molluscs occurring in the waters in and around Australia, less than 600 are commercially harvested. Aquaculture is an alternative to taking the naturally-occurring stocks and has considerable potential as a way to ensure the sustainability of existing yields.

A significant proportion of Australian fisheries production (edible and non-edible) is exported with the main destinations being Hong Kong, Japan and the United States of America. High value products such as rock lobster, pearls and abalone ensure that Australia remains a net exporter of fisheries products.

The chapter concludes with the article *Fishing in Australia's Antarctic waters*.

## Forestry

Australia's native and plantation forests are an important natural resource providing a wide range of products and benefits to the community.

Forests are a reservoir of biological diversity and are functioning ecosystems. They provide protection for soils and water resources, and are increasingly being recognised for their potential as carbon sinks through their ability to absorb carbon from the atmosphere (see the *Environment and Heritage* chapter). They are also the foundation for a broad range of cultural and spiritual experiences for diverse groups of people and a major tourist attraction for Australians and overseas visitors, providing for a vast array of recreational and educational activities.

Australia's native and plantation forests provide the vast majority of the timber and paper products used by Australians. Employment and wealth flow directly from the wood products derived from the forests, such as sawn timber, fibreboard, plywood and paper. These forests and plantations also support a variety of other products and services, such as honey, wildflowers, natural oils, firewood and craft wood.

The Australian Government together with state and territory governments share a vision of ecologically sustainable management of the forest estate that integrates environmental, commercial and community values and uses. These values are embodied in regional forest agreements negotiated for New South Wales, Victoria, Western Australia and Tasmania.

As a member of the international forest initiative – the Montreal Process – Australia has contributed to the development of the seven national criteria and 44 national indicators for the sustainable management of temperate and boreal forests. Australia has adopted the internationally agreed criteria and indicators, and revised them and added others to reflect its own unique forests, providing a consistent framework for monitoring and reporting on the status of its forests.

### Forest estate

#### Native forest

A forest is defined by Australia's National Forest Inventory as an area incorporating all living and non-living components, dominated by trees

having usually a single stem and a mature or potentially mature stand height exceeding two metres, and with an existing or potential crown cover of over-storey strata about equal to or greater than 20%. This definition includes Australia's diverse native forests, regardless of age. It is also sufficiently broad to encompass areas of trees that are sometimes described as woodlands.

Based on this definition, the total area of native forest (parts of which are considered 'old growth') as at December 2003 is estimated at 162.7 million hectares (mill. ha), which is about 21% of Australia's land area (table 15.1).

Some 121.6 mill. ha (75%) of native forest were on public land, and 38.9 mill. ha (24%) were on private land with the remaining 1% on land of unresolved tenure. The 121.6 mill. ha of forests growing on public land, consisted of 75.6 mill. ha (62%) on leasehold tenure, 21.5 mill. ha (18%) in Nature Conservation Reserves, 13.1 mill. ha (11%) on other Crown land, and 11.4 mill. ha (9%) managed by state forest authorities for multiple uses including wood production, recreation and informal reserves. Including forested leasehold land and private freehold forest, some 114.5 mill. ha, or 70% of Australia's native forests, were privately managed.

#### Plantations

The estimated area of planted forests in Australia in December 2004 was 1.7 mill. ha, comprised of 58% softwood species and 42% hardwood species (table 15.2). The hardwood proportion of the total estate has increased from 15% in 1994 (graph 15.3). About 95% of the softwood plantations are *Pinus radiata* and other introduced pines. Nearly all of the hardwood plantations are native eucalypts, including Tasmanian blue gum (*Eucalyptus globulus*), shining gum (*E. nitens*) and flooded gum (*E. grandis*).

A diverse range of ownership arrangements exists in the Australian plantation industry, including a variety of joint venture and annuity schemes between public and private parties. Private ownership of trees in plantation forests has increased from 46% in 1999, when it was equal to public ownership, to 58% in 2004. Private ownership of plantation land increased from 42% to 53% over the same period.

### 15.1 NATIVE FOREST AREAS — December 2003

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
DOMINANT CANOPY SPECIES									
Eucalypt									
Tall	3 820	2 465	1 189	1	170	1 130	—	28	8 803
Medium	18 190	3 407	36 022	596	12 399	1 281	11 268	81	83 244
Low	186	519	1 373	1 208	2 646	65	16 643	7	22 647
Mallee	22	1 171	122	6 044	4 969	—	—	—	12 328
Total	22 218	7 562	38 706	7 849	20 184	2 476	27 911	116	127 022
Acacia	1 251	63	6 984	1 939	4 563	74	1 613	—	16 487
Melaleuca	44	96	5 301	1	—	19	1 593	—	7 054
Rainforest	486	16	2 885	—	5	598	224	—	4 214
Casuarina	1 000	4	216	763	40	1	14	—	2 038
Mangrove	3	2	196	19	173	—	355	—	748
Callitris	1 240	56	387	261	—	1	386	—	2 330
Other	415	135	1 059	34	398	—	738	—	2 779
<b>Total</b>	<b>26 658</b>	<b>7 936</b>	<b>55 733</b>	<b>10 865</b>	<b>25 365</b>	<b>3 169</b>	<b>32 836</b>	<b>117</b>	<b>162 680</b>

#### TENURE

Public									
Multiple use forest(a)	2 496	3 312	2 925	—	1 600	1 062	—	—	11 395
Nature Conservation Reserve(b)	4 471	3 050	5 000	3 943	3 805	1 105	12	106	21 492
Other Crown land(c)	1 055	207	1 131	392	9 387	80	890	—	13 142
Leasehold(d)	9 470	46	35 581	5 255	8 920	—	16 313	11	75 596
Total	17 492	6 615	44 637	9 590	23 712	2 247	17 215	117	121 625
Private	8 523	1 298	10 213	822	1 639	922	15 511	—	38 928
Unresolved tenure	643	23	883	454	14	—	110	—	2 127
<b>Total</b>	<b>26 658</b>	<b>7 936</b>	<b>55 733</b>	<b>10 865</b>	<b>25 365</b>	<b>3 169</b>	<b>32 836</b>	<b>117</b>	<b>162 680</b>

(a) Publicly-owned land managed for multiple use including wood production. (b) Public land on which wood production is excluded (national parks, etc.). (c) Reserved areas of educational, scientific and other public institutional land, including easements, defence land, and other minor tenure classifications. (d) Crown land where the right to harvest or clear land must be approved by state/territory governments. Often known as pastoral leases.

Source: Bureau of Rural Sciences, 'National Forest Inventory, 2003'.

### 15.2 PLANTATION AREAS — December 2004

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Species type	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha	'000 ha
Hardwood	54	168	35	40	259	151	8	—	716
Softwood	287	215	180	124	110	74	4	5	1 001
<b>Total</b>	<b>341</b>	<b>383</b>	<b>215</b>	<b>164</b>	<b>370</b>	<b>226</b>	<b>12</b>	<b>5</b>	<b>1 716</b>

Source: Bureau of Rural Sciences, 'National Plantation Inventory 2005'.

## Farm forestry

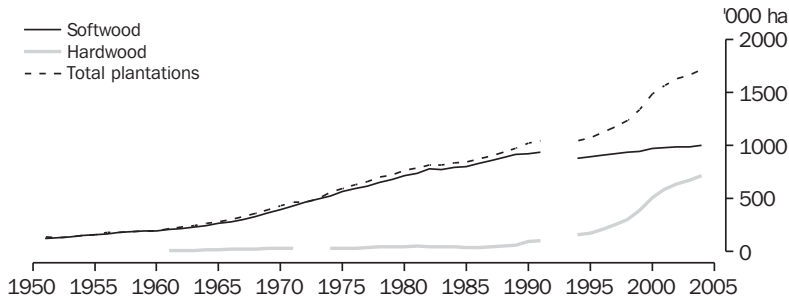
Farm forestry generally refers to the incorporation of commercial tree growing into farming systems. This may take the form of small plantations, timber belts, wind breaks, alleys and wide-spaced trees, and may also include management of native forest for commercial returns.

Farm forestry has been adopted by relatively few Australian farmers, although a large proportion of them plant trees for land protection and amenity purposes.

Managing private native forests is a potentially important component of farm forestry given 24% of Australia's total native forest area is privately owned.



### 15.3 PLANTATION AREA BY SPECIES GROUP(a)



(a) Breaks in the series are due to use of different sources and their collection methods.

Source: Commonwealth Forest and Timber Bureau (pre-1975); Australian Bureau of Agricultural and Resource Economics (1976 to 1991); Bureau of Rural Sciences – National Plantation Inventory (since 1994).

## Wood and paper products

Australia's wood and paper products industries are important components of Australia's primary and secondary industry sectors. They are particularly important in providing economic development and employment in many regions of rural Australia. The industries include hardwood and softwood sawmilling, plywood and panels manufacturing, woodchip production and export, and the pulp and paper industries.

In 2004–05 total roundwood removed from forests increased by 1% to 27.4 mill. cubic metres (mill. m<sup>3</sup>). The removal of broadleaved wood (primarily from native forests) increased 5% in 2004–05 to 13.0 mill. m<sup>3</sup>, while 2% less coniferous wood (mainly from plantations) was removed.

The value of exports of forest products in 2004–05 totalled \$2.1 billion (b), of which 41% were woodchips and 30% paper and paperboard products. The value of imports of forest products in 2004–05 was \$4.1b, of which 52% were paper and paperboard products and 12% sawnwood. This indicates a trade deficit in forest products of \$2.0b in 2004–05. Australia produced 89% of its sawn timber needs in 2004–05, of which 73% come from softwood plantations, the remainder (27%) from native forests. Imported sawn timber is mostly *Radiata* pine from New Zealand and Douglas fir (also known as Oregon) from North America.

The hardwood and softwood sawmilling industries comprise mills of various sizes which process wood into sawn timber and other products such as veneers, mouldings and floorings. The

hardwood mills are generally small scale and scattered. The softwood mills are generally larger and more highly integrated with other wood-processing facilities. Australia's production of sawn timber in 2004–05 increased by 17% to 4.7 mill. m<sup>3</sup> (table 15.4).

Other value-added timber products include plywood, wood-based panels and reconstituted wood products. Australian wood-based panels include particleboard, medium-density fibreboard, and hardboard made from softwood or hardwood pulp logs, sawmill residues or thinnings.

Pulp and paper mills use roundwood thinnings, low quality logs, harvesting residues and sawmill waste, recycled paper and paperboard to produce a broad range of pulp and paper products. Over the past five years there has been a substantial increase in the volume of wood for paper and paperboard sourced from eucalypt plantations as they have come into production. This production has increased six fold from 443,000 m<sup>3</sup> in 1998–99 to 2,640,000 m<sup>3</sup> in 2004–05, more than doubling 2003–04 production levels.

Some 42% of the paper and paper products consumed domestically in 2004–05 were imported, with 71% of printing and writing paper coming from overseas. The majority of paper products produced domestically were packaging and industrial paper (60%) along with printing and writing papers, newsprint and tissue paper. Recycled paper now contributes 54% of the fibre used in the production of all paper and paperboard.

## 15.4 PRODUCTION OF WOOD AND SELECTED WOOD PRODUCTS

Commodity	Units	2000–01	2001–02	2002–03	2003–04	2004–05
Sawn Australian-grown timber(a)						
Coniferous	'000 m <sup>3</sup>	2 354	2 552	2 671	3 014	3 467
Broadleaved	'000 m <sup>3</sup>	1 174	1 108	1 063	1 009	1 251
Total	'000 m <sup>3</sup>	3 528	3 661	3 734	4 022	4 718
Plywood	'000 m <sup>3</sup>	157	192	219	146	156
Particle board	'000 m <sup>3</sup>	904	965	1 025	1 048	944
Medium-density fibreboard	'000 m <sup>3</sup>	712	732	786	795	794
Paper and paperboard						
Newsprint(a)	'000 t	465	395	412	422	443
Printing and writing	'000 t	554	624	564	585	659
Household and sanitary	'000 t	204	198	194	200	197
Packaging and industrial	'000 t	1 449	1 679	1 892	1 956	1 945

(a) Excludes production of small establishments with fewer than four persons employed, and establishments engaged in non-manufacturing activities but which may carry on, in a minor way, some manufacturing.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Forest and Wood Products Statistics' September and December quarters 2005.

Woodchips are mainly used in the production of Australia's paper and paper products. The woodchip export industry uses sawmill residues and timber which is unsuitable for sawmilling and not required by the pulp, paper and reconstituted wood-products industries. Before the advent of the woodchip export industry, much of this material was left in the forest after logging. Considerable quantities of sawmill waste material, which would otherwise be burnt, are also chipped for local pulpwood-using industries and for export. Up until 1990–91 at least 95% of woodchips exported from Australia had been eucalypt, but since then greater quantities of softwood woodchips have become available from pine plantations.

## Fishing

### Production, processing, and exports and imports of fisheries products

#### Production and value of fisheries

Australia's major species of commercial fisheries products are prawns, rock lobster, abalone, tuna, other finfish, scallops, edible oysters and pearl oysters. Australian fishing operators concentrate their efforts on estuarine and coastal species, and pelagic (surface) and demersal (bottom living) species that occur on the continental shelf.

Table 15.5 shows the quantity of production and table 15.6 the gross value of production of the Australian commercial fishing industry in 2004–05.

The gross value of Australian fisheries production (including aquaculture) in 2004–05 decreased by 6% to \$2.0b, the fourth consecutive decline. Most of the major species contributing to the total value of production showed significant falls during 2004–05 with the values of the tuna and prawn catches falling 38% and 15% respectively (table 15.7). The value of abalone harvested rose 17% mainly due to increased prices while the 85% rise in the value of scallops was due to increased take (a threefold increase in Western Australia) and price. In total quantity terms, Australian fisheries production increased by 5% during 2004–05 to 287,403 tonnes.

Australian fisheries production covers total production from both Commonwealth and state-managed fisheries, including aquaculture. Commonwealth fisheries accounted for 16% of the total gross value of Australian fisheries production in 2004–05 (table 15.6). Commonwealth fisheries are those managed on behalf of the Australian Government by the Australian Fisheries Management Authority. State and Northern Territory governments manage inland fisheries and aquaculture, in addition to those salt water fisheries not managed by the Australian (Commonwealth) Government. The distribution of the management of fisheries between the Australian Government and state governments is determined following consultations held under the Offshore Constitutional Settlement Agreement.

### 15.5 FISHERIES PRODUCTION, Quantity(a) — 2004–05

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Cwth	Aust.
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Finfish									
Tuna	23	—	—	7 458	12	—	8	9 021	(b)11 306
Other	14 992	4 691	12 488	60 714	15 944	15 359	5 286	(c)52 084	181 558
Total	15 015	4 691	12 488	68 172	15 956	15 359	5 294	61 104	192 864
Crustaceans									
Prawns	1 627	23	9 512	2 173	3 585	—	—	(d)6 650	23 570
Rock lobster	99	467	600	2 343	12 303	1 602	—	686	18 099
Crab	411	33	3 574	780	1 224	57	437	15	6 532
Other	105	19	129	62	158	1	26	215	715
Total	2 243	542	13 814	5 358	17 270	1 660	463	7 566	48 916
Molluscs									
Abalone	186	1 615	—	1 079	304	2 709	—	—	5 893
Scallops	—	196	3 148	—	6 870	4 796	4	343	15 357
Oysters(e)	4 727	—	—	4 650	—	2 373	—	—	11 751
Other	1 478	1 401	232	2 477	895	925	97	2 718	10 224
Total	6 391	3 212	3 380	8 206	8 069	10 804	101	3 061	43 225
Other fisheries production	20	—	70	2 019	91	179	—	19	2 398
<b>Total</b>	<b>23 670</b>	<b>8 445</b>	<b>29 752</b>	<b>83 755</b>	<b>41 386</b>	<b>28 002</b>	<b>5 858</b>	<b>(f)71 750</b>	<b>287 403</b>

(a) Includes estimates of aquaculture production (except NT); excludes hatchery and inland commercial fishery production. (b) Total has been adjusted so as not to double-count some southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA. (c) Includes the finfish component of Commonwealth Fisheries, plus catch from Commonwealth Fisheries that cannot be disaggregated due to confidentiality. (d) Includes the Northern prawn, Torres Strait, South East and other fisheries. (e) Excludes pearl oyster production (which only occurs in Qld, WA and NT). (f) Total includes all fisheries under Commonwealth jurisdiction.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2005'.

### 15.6 FISHERIES PRODUCTION, Gross value(a) — 2004–05

	NSW	Vic.	Qld	SA	WA	Tas.	NT	Cwth	Aust.
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Finfish									
Tuna	119	—	—	139 955	81	—	29	71 564	(b)172 479
Other	48 773	25 270	74 452	44 948	46 996	115 680	25 888	(c)150 275	532 283
Total	48 892	25 270	74 452	184 903	47 077	115 680	25 918	221 839	704 762
Crustaceans									
Prawns	20 989	303	125 077	35 805	42 557	—	—	(d)79 741	304 473
Rock lobster	3 767	13 697	6 957	66 041	264 659	47 630	—	12 297	415 048
Crab	4 279	669	23 813	4 125	7 451	1 600	4 473	160	46 571
Other	1 431	219	1 747	1 111	2 915	7	213	4 268	11 911
Total	30 466	14 888	157 594	107 082	317 582	49 237	4 686	96 466	778 002
Molluscs									
Abalone	7 825	64 635	—	39 139	12 650	105 397	—	—	229 645
Scallops	—	400	15 703	—	24 460	4 593	14	460	45 630
Oysters(e)	35 788	—	1 250	19 995	122 000	16 804	—	—	195 837
Other	6 740	3 831	1 161	6 750	15 065	3 656	897	3 785	41 885
Total	50 352	68 865	18 114	65 884	174 175	130 450	910	4 245	512 996
Other fisheries production	1 448	—	2 000	17 015	739	3 525	(f)27 800	399	52 926
<b>Total</b>	<b>131 158</b>	<b>109 024</b>	<b>252 161</b>	<b>374 884</b>	<b>539 573</b>	<b>298 892</b>	<b>59 314</b>	<b>(g)322 950</b>	<b>2 048 686</b>

(a) Includes estimates of the value of aquaculture production, but excludes the value of hatchery and inland commercial fishery production. (b) Total has been adjusted so as not to double-count the value of some southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA. (c) Includes the finfish component of Commonwealth Fisheries, plus catch from Commonwealth Fisheries that cannot be disaggregated due to confidentiality. (d) Includes the value of Northern prawn, Torres Strait, South East and other fisheries. (e) Includes the value of pearl production in Qld and WA. (f) Includes the value of pearl production in NT. (g) Total includes the value of all fisheries under Commonwealth jurisdiction.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2005'.

### 15.7 SELECTED FISHERY PRODUCTS, Production and gross value(a)

	2002-03		2003-04		2004-05	
	'000 t(b)	\$m	'000 t(b)	\$m	'000 t(b)	\$m
<b>Finfish</b>						
Tuna(c)	13.4	317.0	14.7	279.5	11.3	172.5
Other	151.7	561.0	164.7	554.0	181.6	532.3
<b>Total</b>	<b>165.1</b>	<b>878.0</b>	<b>179.4</b>	<b>833.5</b>	<b>192.9</b>	<b>704.8</b>
<b>Crustaceans</b>						
Prawns	26.4	364.0	27.5	357.8	23.6	304.5
Rock lobster	17.1	460.7	19.7	406.9	18.1	415.0
Crab	7.0	51.0	7.3	53.7	6.5	46.6
Other	1.1	10.6	0.7	10.4	0.7	11.9
<b>Total</b>	<b>51.6</b>	<b>886.2</b>	<b>55.2</b>	<b>828.4</b>	<b>48.9</b>	<b>778.0</b>
<b>Molluscs</b>						
Abalone	5.2	216.2	5.8	196.3	5.9	229.6
Scallops	9.6	34.6	9.3	24.6	15.4	45.6
Oysters(d)	10.5	62.1	12.7	77.2	11.8	73.3
Pearls(e)	n.a.	124.0	n.a.	122.3	n.a.	122.6
Other	9.9	42.1	11.0	45.3	10.2	42.4
<b>Total</b>	<b>35.2</b>	<b>479.1</b>	<b>38.7</b>	<b>465.6</b>	<b>43.2</b>	<b>513.0</b>
Other fisheries production(f)	1.7	41.2	1.2	41.3	2.4	52.9
<b>Total</b>	<b>253.7</b>	<b>2 284.4</b>	<b>274.4</b>	<b>2 168.9</b>	<b>287.4</b>	<b>2 048.7</b>

(a) Includes estimates for aquaculture; excludes hatchery and inland commercial fisheries. (b) Excludes NT aquaculture. (c) Total has been adjusted so as not to double-count the value of some southern bluefin tuna caught in the Commonwealth Southern Bluefin Tuna Fishery which was used as input to aquaculture in SA. (d) Excludes pearl oysters. (e) Excludes the value of pearls in NT. (f) Includes the value of pearls in NT.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2005'.

### Processing of fish, crustaceans and molluscs

Processing establishments vary in size, scope of operations and sophistication of technologies employed. The majority of establishments undertake only the most basic cleaning, filleting, chilling, freezing and packaging processes, but some have the capacity for significant product transformation. Much of the value that is added to the catch is due to correct handling and quick delivery by air to local or overseas markets. Processing aims to maintain quality and freshness of export product by superior handling, cold storage and rapid transport to markets. This quality aspect is important in generating high values.

### Exports and imports

Exports of fisheries products come under Australian Government jurisdiction, while domestic market activity is the responsibility of the states and territories.

A significant proportion of Australian fisheries production (edible and non-edible) is exported. In 2004-05 the total value of exports (including live fish) declined by 7% to \$1.5b (table 15.8). However, Australia remained a net exporter of

fisheries products with rock lobster the highest earning export, accounting for 29% of total value of exports of fisheries products. Exports of abalone, the second largest edible fisheries export product, rose 11% to \$263 million (m) while prawns increased 2% to \$163m. Tuna declined 40% to \$162m. The highest value non-edible export earner, pearl, recorded a 6% fall to \$291m in 2004-05. (For some fisheries categories, the value of exports exceeds the value of production because exports are valued on a free-on-board basis which includes the value of packaging and distribution services to the point of export.)

In 2004-05, Hong Kong continued as the major destination for Australian exports of fisheries products, accounting for 33% of the total value of exports of fisheries products. Japan – the number two destination – fell further behind with exports to that country now accounting for 29%, down two percentage points on the previous year.

Western Australia was the highest earning state from exports of edible seafood in 2004-05, with income of \$362m accounting for 29% of the total value of Australia's seafood exports. Western Australia earned \$296m (82%) of this income from exporting rock lobster, South Australia earned

48% of its income from fresh and frozen fish. Prawns earned Queensland 35% of its income from exports of edible seafood.

The total value of Australian imports of fisheries products in 2004–05 rose 6% to an estimated \$1.2b (table 15.8). The major items of imports, in value terms, were prawns (\$201m), canned fish (\$189m) and fresh frozen fillets (\$187m). The two main sources of imported fisheries products were Thailand (\$238m) and New Zealand (\$164m) which together accounted for more than a third of the value of imports. In the last two years, the value of imports of fisheries products from China has doubled to \$90m while imports from Vietnam have increased 60% to \$122m. Pearls were the leading non-edible import at \$146m.

Fisheries resources

The Australian Fishing Zone (AFZ) covers offshore waters between 3 to 200 nautical miles seaward of the territorial sea baseline of Australia and its external territories. This area of almost 9 million (mill.) square kilometres makes it an expanse 16% larger than the Australian land mass and the third largest fishing zone in the world. However, the catch is small by world standards as the waters of the AFZ lack nutrient-rich currents, causing low productivity.

Map 15.9 shows the status of Australia’s Commonwealth-managed or jointly-managed fisheries resources in 2004. Brief definitions of the main status classifications can be seen below (or obtained in more detail from the Bureau of Rural Sciences, *Fisbery Status Reports 2004*):

- *Overfished*: stock biomass is below a prescribed level
- *Overfishing*: fishing is exceeding a prescribed level.

While some species are considered to be overfished, there may be opportunities to further utilise some species such as albacore and southern whiting. While there are about 3,000 known species of fish, and at least as many species of crustaceans and molluscs inhabiting Australian waters, only about 600 species are fished commercially.

The level of fishing activity has increased over the last decade to the point where almost all the major well-known fish, crustacean and mollusc resources are fully used. Some major species such as southern bluefin tuna, eastern gemfish and school shark have suffered serious biological depletion.

Aquaculture

Aquaculture is an alternative to harvesting the naturally occurring mature fish stocks. It involves the breeding and/or ‘growing out’ of aquatic organisms with intervention in the rearing process designed to enhance production e.g. regular stocking, feeding and protection from predators. It has potential as a means of reducing fishing pressure on wild capture fisheries. In 2004–05 the gross value of production of aquaculture was \$611m (table 15.10), or 30% of the total value of fisheries production.

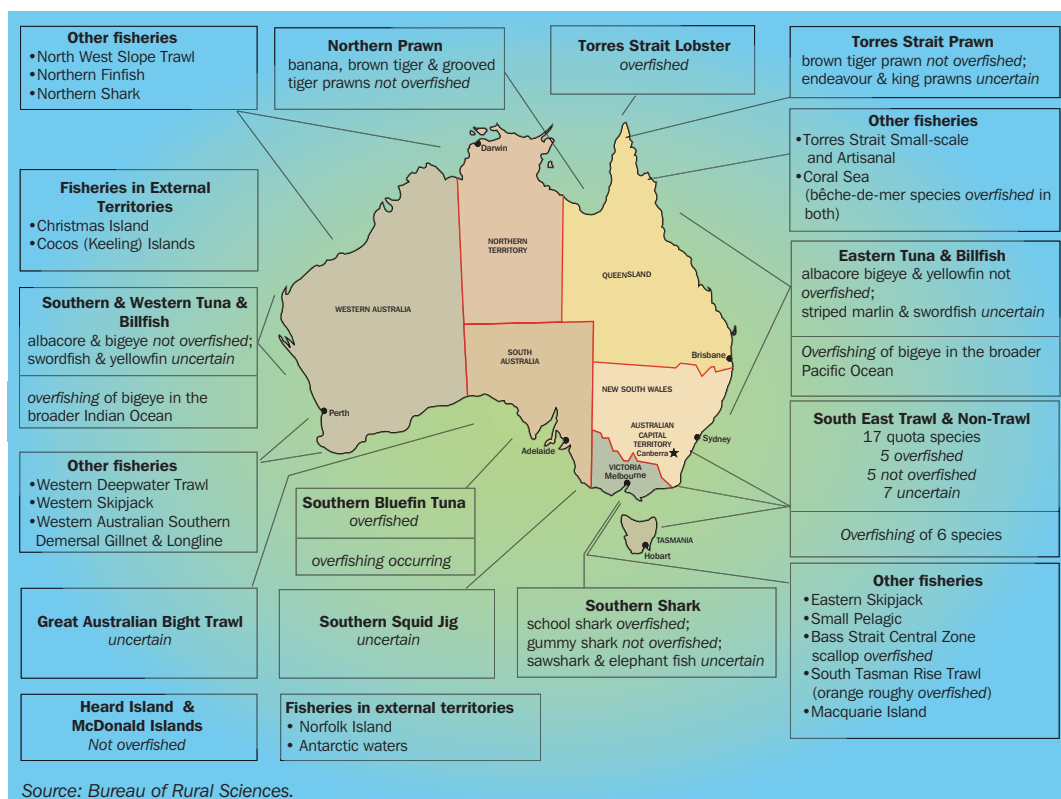
15.8 EXPORTS AND IMPORTS OF FISHERIES PRODUCTS(a), Gross value

	2002–03		2003–04		2004–05	
	Exports \$m	Imports \$m	Exports \$m	Imports \$m	Exports \$m	Imports \$m
Fish	485.2	590.6	410.0	544.8	304.4	547.3
Tuna (whole)	319.6	123.5	271.7	109.8	162.5	107.7
Other fish (including canned and fillets)	165.6	467.0	138.3	435.0	141.9	439.6
Prawns	208.2	174.9	160.6	183.6	163.1	201.3
Rock lobster	463.1	11.1	426.8	7.1	439.6	8.1
Abalone	216.1	—	237.7	—	263.2	—
Scallops	28.7	24.2	34.9	22.0	32.6	27.5
Pearls(b)	332.0	162.9	310.4	145.1	291.0	145.9
Other fisheries products	111.1	238.2	71.5	203.8	47.9	241.9
<b>Total</b>	<b>1 844.4</b>	<b>1 201.8</b>	<b>1 651.9</b>	<b>1 106.4</b>	<b>1 541.7</b>	<b>1 172.0</b>

(a) Includes non-edible products (e.g. marine fats and oils, fishmeals, pearls and ornamental fish). Exports exclude sea products landed abroad directly from the high seas. (b) Export data include items temporarily exported.

Source: Australian Bureau of Agricultural and Resource Economics, ‘Australian Fisheries Statistics, 2005’.

## 15.9 STATUS OF COMMONWEALTH-MANAGED OR JOINTLY-MANAGED FISHERIES RESOURCES – 2004



Aquaculture commenced in Australia in the late-1800s with the successful introduction of trout from the northern hemisphere and cultivation of the native Sydney rock oyster. The industry remained centred on these two species until the 1950s when the first cultured pearl farm was established in north-western Australia. A new wave of aquaculture development began in the 1980s with the beginning of the Atlantic salmon industry in Tasmania and commercial cultivation of native freshwater finfish, freshwater crayfish, prawns and Pacific oysters. The value of aquaculture production increased significantly in the 1990s based on increased production and processing of Pacific oysters, prawns, Atlantic salmon, pearls and southern bluefin tuna.

Aquacultural operations occur in diverse environmental areas including tropical, subtropical and temperate regions. The location of aquaculture is dependent on seasonal factors, the type of species being cultivated, the life-cycle stage of aquatic organisms and proximity to marine parks. The industry directly employs about

4,000 people, provides development opportunities in regional Australia and contributes to export growth.

There are many types of systems used in aquaculture employing a variety of management techniques. The main emphasis of the industry is on producing high value species in near-shore or land-based sites within the coastal zone. Systems can be open or closed depending on the water flow. Open systems allow water to move through the cages such as in open seas or flowing rivers. In closed systems, the water flow is contained as in a lake or an aquarium.

In 2004–05 the gross value of Australian aquaculture production fell 14% (table 15.10). Tuna remained the species contributing the most (\$140m) to total gross value, followed by pearl oysters (\$123m) and salmon (\$112m).

In quantity terms, Australian aquacultural production for 2004–05 fell 4%. As in previous years, salmon was the major aquaculture product (14,405 tonnes), while edible oyster (11,751 tonnes) was the second most plentiful product.



### 15.10 AQUACULTURE PRODUCTION, Quantity and value(a)

	2002-03		2003-04		2004-05	
	tonnes(b)	\$m	tonnes(b)	\$m	tonnes(b)	\$m
<b>Finfish</b>						
Salmon	13 603	106.1	14 828	115.7	14 405	112.4
Tuna	7 763	267.3	9 558	243.2	7 458	140.0
Trout	1 823	12.0	1 858	14.2	1 913	12.9
Other(c)	2 581	27.6	2 396	25.1	2 706	26.9
<i>Total</i>	<i>25 770</i>	<i>413.0</i>	<i>28 640</i>	<i>398.2</i>	<i>26 482</i>	<i>292.1</i>
<b>Crustaceans</b>						
Prawns	3 365	56.1	3 723	57.8	3 234	49.9
Yabbies	121	1.7	114	1.6	120	1.9
Other(d)	443	2.7	159	2.8	177	3.5
<i>Total</i>	<i>3 930</i>	<i>60.4</i>	<i>3 997</i>	<i>62.2</i>	<i>3 532</i>	<i>55.2</i>
<b>Molluscs</b>						
Pearl oysters	n.a.	124.0	n.a.	122.3	n.a.	122.6
Edible oysters	10 537	62.1	12 690	77.2	11 751	73.3
Other(e)	2 813	11.8	2 784	13.8	3 146	17.3
<i>Total</i>	<i>13 349</i>	<i>197.9</i>	<i>15 474</i>	<i>213.4</i>	<i>14 897</i>	<i>213.2</i>
Other fisheries production(f)	1 134	37.5	984	39.6	2 178	50.7
<b>Total</b>	<b>44 183</b>	<b>708.9</b>	<b>49 096</b>	<b>713.4</b>	<b>47 089</b>	<b>611.1</b>

(a) Excludes hatcheries production, crocodiles, microalgae and aquarium worms. (b) Excludes NT. (c) Includes eels, aquarium fish and other native fish. (d) Includes marron and redclaw. (e) Includes mussels, scallops, giant clams and abalone. (f) Includes production of species unable to be assigned to a specific category, and value of NT pearls.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Fisheries Statistics, 2005'.

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# Fishing in Australia's Antarctic waters

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*The following article is based on material contributed by the Australian Government Antarctic Division, the Australian Fisheries Management Authority, the Australian Customs Service and the Sea Power Centre – Australia, Defence (September 2006).*

The *United Nations Convention on the Law of the Sea* (1982) (UNCLOS) came into effect on 16 November 1994. The convention governs all aspects of oceans' management, including the delimitation of maritime boundaries, and environmental management and conservation of the natural resources of the oceans. This is achieved through the creation of various maritime boundaries, each having differing rules over what activities may take place in each zone.

The key zone for fisheries is the Exclusive Economic Zone (EEZ), where a coastal state has sovereign rights to the natural resources in the

zone. The coastal state is responsible for the management and conservation of fish stocks in the zone, and is also able either to fish this stock directly or allow others to fish within it.

On 1 November 1979, Australia declared a 200 nautical miles (nm) Australian Fishing Zone (AFZ), and on 1 August 1994 declared a 200 nm EEZ to gain sovereign rights over other natural resources within this 200 nm zone. Australia continues to use the term AFZ but it is defined in such a way as to be consistent with the EEZ. The Australian Fisheries Management Agency (AFMA or Fisheries) manages the AFZ under the *Fisheries Management Act 1991* (Cwlth).



*Mackerel icefish, courtesy Australian Fisheries Management Authority.*

Australia has a number of offshore territories, all of which generate an EEZ. Those in or near the Southern Ocean are Heard Island and MacDonal Islands (HIMI), about 2,160 nm south-west of Perth (Western Australia) and Macquarie Island about 810 nm south of Hobart (Tasmania). In 2004–05 only three vessels were allowed to fish in the HIMI area, as it is regarded as being fully fished, with only small numbers of fish able to be caught legally. In 2004–05 only one vessel was allowed to fish in Macquarie Island waters as the zone is also regarded as being fully fished. There has been no direct evidence of illegal fishing in this area.

### Managing sub-Antarctic fisheries

The Southern Ocean, which surrounds Antarctica, consists of the southern-most parts of the Atlantic, Indian and Pacific Oceans. In the sub-Antarctic – between 50 and 60 degrees south – there are many small islands including HIMI and Macquarie Island. The HIMI are the only example of an untouched Antarctic ecosystem in the world. They provide valuable breeding and feeding areas for many species of marine mammals and birds, while supporting a vast array of unusual invertebrates and fish. In recognition of the rich conservation values, Australia has declared a portion of the HIMI EEZ a marine reserve.

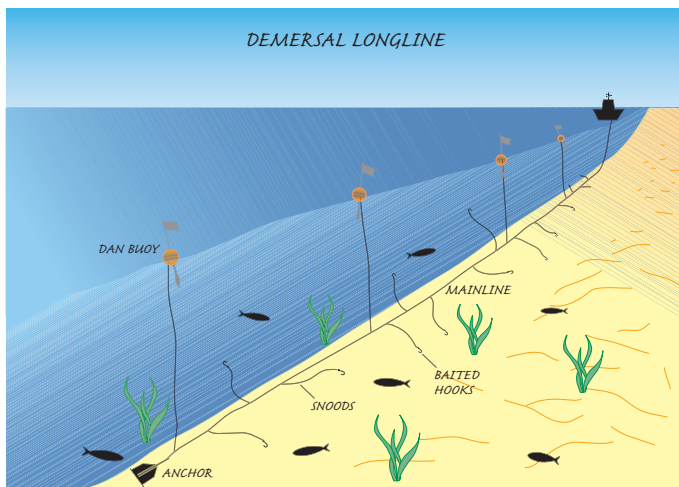
AFMA manages the HIMI fishery, which lies entirely within the area of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). These remote waters are managed under Australian legislation in

accordance with Australia's obligations under CCAMLR and other international agreements, including the UNCLOS.

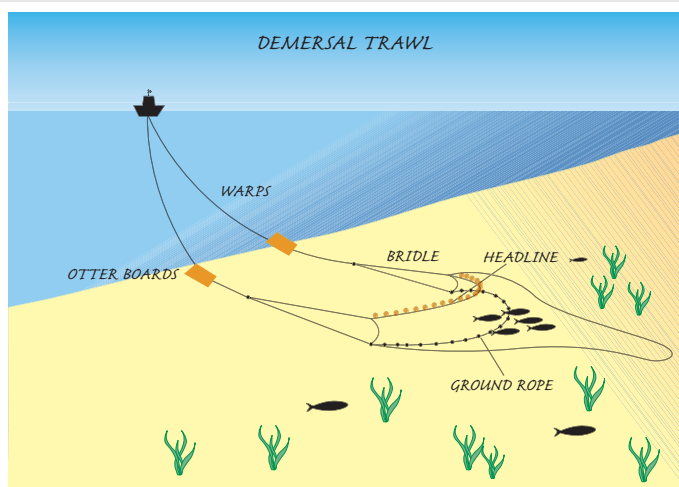
An ecosystem-based fisheries management approach is used by both AFMA and CCAMLR. This management approach is directed at addressing target species sustainability, reducing bycatch (which is the unwanted part of the catch) and maintaining the predator/prey relationships between the target and bycatch species (including mammals and seabirds). The overarching goal is to protect biodiversity and minimise the impact of fishing on the marine ecosystem.

In setting catch levels and bycatch limits in the fisheries, AFMA uses the latest scientific advice and annual fish stock survey results. These catch limits are reviewed annually and are set at levels that the fish stocks and ecosystem can sustain. Various research programs have been initiated to better understand the effects of fishing on bycatch species and the wider ecosystem and to assess ways of minimising bycatch in the fishery.

Longlining – the most common fishing method – can cause serious problems in that it has historically caught large numbers of albatross and other seabirds. Over recent years AFMA and the fishing industry have worked to reduce the unintended catch of seabirds. A number of innovative measures are now used on all longline vessels. These have resulted in a significant reduction in the number of seabirds caught.



Courtesy, Australian Fisheries Management Authority.



Courtesy, Australian Fisheries Management Authority.

Fishing by trawling does not usually harm seabirds but tends to catch fish in the smaller size range and, in some circumstances, trawls may damage the seabed. A recently commenced research project being undertaken by the Australian Government Antarctic Division aims to observe the impact of fishing gear on the sea-floor and marine ecosystem by fitting deep sea cameras to fishing lines and nets. The project will run for four years and will provide invaluable information on the Antarctic marine ecosystem as well as how it reacts to fishing gear.

### The sub-Antarctic catch

Fishers in the sub-Antarctic region target two species of fish, the Patagonian toothfish and Mackerel icefish. HIMI provides a legitimate fishery worth about \$30 million (m) a year that directly employs up to 150 people in the capture and post-harvest processes.

The Patagonian toothfish (*Dissostichus eleginoides*) is a highly-prized species distributed throughout the sub-Antarctic oceans. It is found on shelves around islands and submarine banks. Toothfish are bottom-living, in depths of 300–2,500 metres, but move off the bottom on occasion to feed.

The Patagonian toothfish is one of the two largest species of fish occurring in the Antarctic, reaching up to 2.2 metres in length and up to 100 kilograms in weight. It is believed the Patagonian toothfish can live for

up to 50 years, possibly longer. Toothfish are known to be eaten by sperm whales and elephant seals, but the extent of this is unknown. The fish are usually too large to be eaten by other types of predators.

Illegal fishing of the Patagonian toothfish has become a serious problem in recent years resulting in a marked reduction in the stocks of toothfish in some areas.

Mackerel icefish (*Champsocephalus gunnari*) live in an average water temperature of 2 degrees Celsius. Icefish thrive in the cold due to the production of a unique chemical within its body that works like anti-freeze.

Interestingly, icefish have no red blood cells. Although this makes for a pale looking fish (with clear blood), it does not reflect adversely on the delicious taste of this fish. The Australian Mackerel icefish fishery extends from 13 nm offshore of HIMI to the 200 nm Australian EEZ around the islands. The area within 13 nm of the islands is protected from fishing.

In 2004–05 the legal catch comprised over 2,500 tonnes of Patagonian toothfish and over 1,200 tonnes of icefish by two companies which collectively operated three vessels. Toothfish is a high value, quality fish and is mainly sold to the restaurant trade. Much of Australia's catch of Patagonian toothfish and icefish is exported to the United States of America and Japan.



Patagonian toothfish, courtesy Australian Fisheries Management Authority.

## Illegal, unregulated and unreported fishing

Commonly referred to as poaching, illegal, unregulated and unreported (IUU) fishing is a threat to the conservation of sub-Antarctic fish stocks. IUU fishing is intrinsically unsustainable as it results in catches that far exceed sustainable limits set for legal fishers and, if it continues unchecked, will cause severe depletion of the spawning fish stock. IUU fishing uses longlines with little or no attention given to avoiding bycatch. This leads to high levels of mortality among seabird populations, some of which are already endangered.

Another serious problem with poaching is that there is almost no data reporting for IUU catches, making decisions about the status and future management of fish stocks very difficult.

IUU fishing severely undermines national and international management and conservation measures implemented by Australia and other coastal states and international regimes such as CCAMLR and UNCLOS, whose goals are to ensure that only sustainable utilisation of the world's oceans occurs. Illegal fishing within the HIMI EEZ also challenges Australia's sovereignty.

Australia enforces its sovereign rights in its EEZ through the regulation of licensed foreign fishing vessels and direct measures to stop any illegal fishing within its EEZ. While this is a management issue for AFMA, enforcement of these regulations is the responsibility of the Australian Customs Service (Customs), with support, as required, from the Australian Defence Force (ADF), principally the Royal Australian Navy (RAN). The process for enforcing sovereign rights in the EEZ is threefold: surveillance to determine what is happening in the zone; interception of intruders; and legal action to emphasise the sovereign nature of the EEZ. The distance of all these fisheries from the Australian mainland make the surveillance and, more importantly, the interception of any intruder problematic as the intruder may have time to leave the area before interception occurs. Surveillance of waters in the Southern Ocean is difficult and challenging. The Royal Australian Air Force has, however, been highly successful in this task and provides ongoing support in the Southern Ocean.

Australia's efforts in increasing monitoring, surveillance, and enforcement activities since 1997 have lead to the apprehension of foreign fishing vessels (FFVs) fishing illegally within the HIMI EEZ . In October 1997, the helicopter-capable frigate HMAS *Anzac* deployed from Fremantle with the tanker HMAS *Westralia* in support as part of Operation Dirk. While on patrol in HIMI waters, a number of ships were boarded, with RAN personnel inserted either by boat or by Seahawk helicopter and two FFVs were escorted back to Australia to face legal action. In February 1998, the guided missile frigate HMAS *Newcastle* and the *Westralia* deployed as part of Operation Stanhope. On this trip, one FFV was apprehended and returned to Fremantle to face court. During 1998–99, AFMA used the *Cape Grafton* for civil surveillance in these waters, conducting a number of trips.

In April 2001, the *South Tomi*, a Togo-registered, Spanish-owned FFV was caught illegally fishing in the HIMI by the civilian vessel *Southern Supporter*, chartered by AFMA. When challenged, the *South Tomi* initially headed towards the port of Fremantle, but once on the high seas it turned towards Africa. The AFMA vessel chased the ship across the Indian Ocean for 14 days, while RAN personnel flew to South Africa and, with the assistance of the South African Defence Force, boarded the ship which was subsequently returned to Australia where the crew faced court. The skipper of the *South Tomi* was fined \$136,000, the illegal catch of 116 tonnes of toothfish was sold for \$1.4m and the boat was forfeited. On 29 January 2002,

the guided missile frigate HMAS *Canberra* and the *Westralia* deployed as part of Operation Sutton in order to apprehend three fishing vessels. In this operation, two FFVs were apprehended and returned to Fremantle.

In August 2003, the Customs and Fisheries vessel *Southern Supporter* undertook the longest civil pursuit in Australian maritime history following the detection of the Uruguayan-flagged vessel *Viarsa 1* in the Australian EEZ. The *Southern Supporter* chased *Viarsa 1* for more than 21 days through the icepack, beyond the tip of South Africa and into the South Atlantic Ocean. In a display of international cooperation in fisheries enforcement, South Africa and the United Kingdom also sent vessels to join the pursuit. Australian Customs and Fisheries officers, assisted by fisheries officers from South Africa, boarded the vessel after a 3,900 nm chase. The *Viarsa 1* was initially escorted back to Cape Town (South Africa) from where the ADF sailed the vessel back to Australia (under Operation Gemsbok).

In January 2004, the helicopter-capable frigate HMAS *Warramunga* deployed as part of Operation Celesta and apprehended the *Maya IV* illegally fishing in HIMI waters. The underway replenishment ship HMAS *Success* deployed and refuelled *Warramunga* before commencing its own patrol of these waters. No other FFV was sighted, but during the ship's return to Fremantle, located an FFV 350 nm south-east of Heard Island and warned it off, as there was no other reason for the vessel to be in the vicinity unless it planned to fish illegally.



HMAS *Success* returning from patrol, courtesy Department of Defence.



In December 2003, the Australian Government announced a program of full-time armed patrols of the Southern Ocean as part of a comprehensive plan to protect Australia's fisheries and enhance cooperation with countries which have interests in the region, particularly France and South Africa.

Customs received \$89.2m in the 2004–05 Federal Budget to lease a suitable patrol vessel and in late-2004 contracted the 105-metre *Oceanic Viking*. The armed vessel conducts Customs and Fisheries patrols of the Southern Ocean on a full-time basis in virtually all weather conditions. It is fitted with two deck-mounted 0.50 calibre machine guns and high speed pursuit tenders. It carries an armed Customs boarding party, Fisheries officers and other officials. A fully-equipped medical centre is staffed by an Australian Government Antarctic Division doctor. The *Oceanic Viking* also carries a full civilian crew and steaming party capable of sailing any apprehended IUU vessel back to an Australian port for further investigation.

The program has been so successful that the Australian Government allocated an additional \$217.2m in the 2005–06 Budget to continue the Customs-managed armed Southern Ocean patrol program until 2009–10.

When not on duty in the HIMI, the *Oceanic Viking* also patrols Australia's other Southern Ocean EEZs. In September 2005 it apprehended the foreign fishing vessel *Taruman*, suspected of fishing illegally inside Australia's Macquarie Island EEZ. The vessel was boarded with the agreement of the Cambodian Government, the flag state responsible for the vessel, and escorted back to Hobart (Tasmania).

In 2006 Customs continued its long-term commitment to protecting the Southern Ocean by performing regular armed patrols and working closely with other nations who are committed to protecting Southern Ocean fisheries. These include France, South Africa, the United Kingdom and New Zealand.

In particular Australia is strengthening its level of cooperation with France, whose economic zone around the French territory of Kerguelen Island adjoins the HIMI EEZ. A Maritime Cooperation Treaty on surveillance in the Southern Ocean came into effect in February 2005. Australian Customs and Fisheries officers now participate in French patrols of the Southern Ocean and vice versa. This cooperation allows virtual year-round patrol coverage of the Australian and French zones in the Southern Ocean EEZ and is a further deterrent to IUU vessels.



The Uruguayan-flagged fishing vessel *Viarsa 1* was pursued across the Southern Ocean, beyond the tip of South Africa and into the South Atlantic Ocean for more than 21 days, in August 2003. © Customs.

## MINING

Mining broadly relates to the extraction of minerals occurring naturally as solids such as coal and ores, liquids such as crude petroleum, or gases such as natural gas. Activities carried out at or near mine sites as an integral part of mining operations, such as dressing or beneficiation of ores or other minerals, are included. Natural gas absorption and purifying plants are also included. However, the first stage processing of minerals and mineral extracts, while closely related to the mining industry, is included as part of the manufacturing industry.

Australia continues to rank as one of the world's leading mining nations with substantial identified resources of major minerals and fuel close to the surface. In 2005 it had the world's largest economic demonstrated resources of brown coal, lead, mineral sands (rutile and zircon), nickel, tantalum, uranium and zinc.

Australia was the largest producer of bauxite, mineral sands (ilmenite, rutile and zircon) and tantalum in 2005. It was also one of the largest producers of uranium, iron ore, zinc and nickel.

The contribution of the mining industry to Australia's gross domestic product has remained around 4–5% over the last ten years. The mining industry is Australia's second largest export earner (after manufacturing), accounting for 38% of the total value of exports in 2005–06, principally from the coal and metal ore mining industries.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.



## Mineral, oil and gas resources

The statistics of available mineral resources provided in table 16.1 are obtained from the annual publication *Australia's Identified Mineral Resources* produced by Geoscience Australia. They provide an indication of the extent of mineral resources available for extraction with the main focus being on economic demonstrated resources (EDR).

EDR is a measure of the resources that are established, analytically demonstrated or assumed with reasonable certainty to be profitable for extraction or production under defined

investment assumptions. Classifying a mineral resource as EDR reflects a high degree of certainty as to the size and quality of the resource and its economic viability.

Australia has the world's largest EDR of brown coal (recoverable), lead, rutile, zircon, nickel, tantalum, uranium and zinc, and ranks second in the world for bauxite, copper, gold, ilmenite and silver. In addition, Australia's EDR for industrial diamonds is ranked third and manganese ore is ranked fourth largest in the world. Table 16.1 shows the importance, in a global sense, of the main mineral resources in Australia.

**16.1 ECONOMIC DEMONSTRATED RESOURCES OF MAJOR MINERALS — December 2005**

Mineral	Quantity	Australia	World	Australia's percentage of world EDR	Australia's ranking in world holdings of EDR
Bauxite	Gt	5.8	25	23	2nd
Black coal					
In situ	Gt	55.8	n.a.	n.a.	n.a.
Recoverable	Gt	39.2	(a)739	5	6th
Brown coal					
In situ	Gt	41.5	n.a.	n.a.	n.a.
Recoverable	Gt	37.4	(a)155	24	1st
Copper(b)	Mt Cu	41.4	490	8	2nd
Diamond					
Gem and near gem(c)	Mc	124.2	n.a.	n.a.	n.a.
Industrial	Mc	129.2	614	21	3rd
Gold(b)	t Au	5225	42 225	12	2nd
Iron ore	Gt	16.4	160	10	5th
Lead(b)	Mt Pb	23.8	75	32	1st
Lithium(b)	kt Li	170	4 100	4	(d)
Manganese ore	Mt	143	1 200	12	4th
Mineral sands					
Ilmenite	Mt	214.9	1 115	19	2nd
Rutile	Mt	20.5	51	40	1st
Zircon	Mt	32.9	77	43	1st
Nickel(b)	Mt Ni	23.9	64.1	37	1st
Silver(b)	kt Ag	44	283	16	2nd
Tantalum(b)	kt Ta	52	55	95	1st
Uranium(b)(e)	kt U	716	(f)1 962	36	1st
Zinc(b)	Mt Zn	41.8	228	18	1st

(a) Geoscience Australia estimate. (b) Quantity measured in contained metal. (c) Detailed data are not available on world resources of gem/near gem diamond but Australia has one of the largest stocks for this category. (d) According to United States Geological Survey estimates, Chile holds about 73% of the world's lithium resources followed by China 13%, Brazil 4.6% and Canada with just over 4%. However, resource data are not available for some important producing countries including Argentina and Russia. Lithium brine resources, now the dominant feedstock for lithium carbonate production, are produced dominantly by Chile. China and Australia have the most significant resources of lithium minerals. (e) Refer to Australia's Identified Mineral Resources 2006 for comparison of resource categories in the national scheme with those of the international scheme for classifying uranium resources. (f) Source: OECD Nuclear Energy Agency & International Atomic Energy Agency (OECD/NEA & IAEA) (2006). Compiled from the most recent data for resources recoverable at <US\$40/kilogram of uranium. Data for the United States of America is not available for this category.

Source: Geoscience Australia, 'Australia's Identified Mineral Resources 2006'.

During the year ended December 2005 significant increases in Australia's EDR were recorded for diamond (132%) and iron ore (12%) (table 16.2). The increase in Australia's diamond EDR is due to a decision to proceed with underground mining at the Argyle mine and a related upgrade of around half of the mineral resource to ore reserve. The factors behind the increase in Australia's iron ore EDR are the inclusion of several deposits for the first time – Brockman 4, Cape Lambert, Cloud Break, Jack Hills (all in Western Australia) and Frances Creek (Northern Territory) and large increases at the Christmas Creek and Southdown deposits (both in Western Australia).

Australia's oil and gas resources encompass crude oil, condensate, naturally occurring liquefied petroleum gas (LPG) and natural gas. EDR for oil and gas are resources which are judged to be economically extractable and for which the quantity and quality are computed partly from specific measurements, and partly from extrapolation for a reasonable distance on geological evidence. Subeconomic demonstrated resources (SDR) are similar to EDR in terms of certainty of occurrence but are considered to be potentially economic only in the foreseeable future.

The information presented in table 16.3 is obtained from the annual publication *Oil and Gas Resources of Australia*, produced by Geoscience Australia. The table shows that between 2001 and 2005, EDR for crude oil reserves and LPG fell by 19% and 27% respectively. Sales gas reserves increased by 17% and condensate by less than 1% over this period. Decreases in oil reserves are mainly due to production exceeding discoveries in the period while recent gas discoveries have been the main contributor to the increase in condensate and gas reserves. SDR decreased for all oil and gas resources between 2001 and 2005.

### Expenditure on mineral and petroleum exploration

Exploration involves the search for new ore occurrences or undiscovered oil or gas, and/or appraisal intended to delineate or greatly extend the limits of known deposits of minerals, oil or gas reservoirs by geological, geophysical, geochemical, drilling or other methods. This includes construction of shafts and adits primarily for exploration purposes, but excludes activity of a developmental or production nature.

#### 16.2 ECONOMIC DEMONSTRATED RESOURCES OF SELECTED MINERALS

Mineral	Quantity	Australia			World		
		2004	2005	% change	2004	2005	% change
Bauxite	Gt	5.7	5.8	1.8	23.0	25.0	8.7
Coal(a)	Gt	77.9	76.6	-1.7	899.0	894.0	-0.6
Copper(b)	Mt Cu	42.1	41.4	-1.7	490.0	490.0	—
Diamond(c)	Mc	55.6	129.2	132.4	580.0	614.0	5.9
Gold(b)	t Au	5 589	5 225	-6.5	42 000.0	42 225.0	0.5
Iron ore	Gt	14.6	16.4	12.3	160.0	160.0	—
Lead(b)	Mt Pb	22.9	23.8	3.9	70.0	75.0	7.1
Lithium(b)	kt Li	170	170	—	(d)4 110.0	(d)4 100.0	-0.2
Manganese ore	Mt	133	143	7.5	1 175.0	1 200.0	2.1
Mineral sands(e)	Mt	267.4	268.3	0.3	1 214.0	1 243.0	2.4
Nickel(b)	Mt Ni	22.6	23.9	5.8	61.8	64.1	3.7
Silver(b)	kt Ag	41.4	44	6.3	280.0	283.0	1.1
Tantalum(b)	kt Ta	53	52	-1.9	56.0	55.0	-1.8
Uranium(b)	kt U	701	716	2.1	(d)1 743.0	(d)1 962.0	12.6
Zinc(b)	Mt Zn	41.0	41.8	2.0	222.0	228.0	2.7

(a) Recoverable black and brown coal. (b) Quantity measured in contained metal. (c) Industrial diamond only. Data are not available on world resources of gem/near gem diamond but Australia has stocks among the largest for this category. (d) Excludes the United States of America. (e) Includes ilmenite, rutile and zircon.

Source: Geoscience Australia, 'Australia's Identified Mineral Resources', 2005 and 2006 issues.

### 16.3 OIL AND GAS RESOURCES — 1 January

	Crude oil		Condensate		LPG		Sales gas	
	gigalitres	million barrels	gigalitres	million barrels	gigalitres	million barrels	billion cubic metres	trillion cubic feet
Economic demonstrated resources								
2001	194	1 222	300	1 889	292	1 835	2 203	78
2002	206	1 295	289	1 821	293	1 845	2 667	94
2003	176	1 108	276	1 737	274	1 726	2 528	89
2004	187	1 175	284	1 787	235	1 481	2 594	92
2005	157	988	301	1 894	214	1 343	2 587	91
Subeconomic demonstrated resources								
2001	87	546	119	749	86	540	1 618	57
2002	68	427	115	724	79	499	1 499	53
2003	68	426	109	683	79	498	1 518	54
2004	79	494	113	713	78	493	1 504	53
2005	81	507	114	720	78	492	1 482	52

Source: Geoscience Australia, 'Oil and Gas Resources of Australia', 2002, 2003 and 2004 issues.

Expenditure during the last five years on mineral exploration other than for petroleum and water is summarised in table 16.4.

Mineral exploration expenditure in 2005–06 was \$1,241million (m), the highest recorded in over 30 years. This was \$600m (94%) higher than in 2001–02 and \$212m (21%) higher than in 2004–05. Exploration expenditure in Tasmania increased by \$19m (more than five times) in the period 2001–02 to 2005–06, the highest rate of increase for this period. Western Australia continued to account for the majority (48–59%) of the exploration expenditure over this period, followed by Queensland (14–18%).

Most of the expenditure in the period 2001–02 to 2005–06 was related to exploration for gold (table 16.5). In this period, gold exploration expenditure accounted for 32–52% of total mineral exploration expenditure. The greatest increases recorded for this period were for iron ore and uranium exploration increasing by \$136m and \$47m (both increases over six times) respectively. Significant increases were also recorded for copper and coal (both more than three times).

In 2005–06, mineral exploration expenditure was 21% higher than in 2004–05, mainly due to increases in copper (up 96%), silver, lead and zinc (up 128%) and uranium (up 171%) exploration.

### 16.4 MINERAL EXPLORATION EXPENDITURE, By state and territory

	2001–02	2002–03	2003–04	2004–05	2005–06	Change from 2001–02 to 2005–06
	\$m	\$m	\$m	\$m	\$m	%
New South Wales	48.2	58.8	50.5	73.6	114.0	136.5
Victoria	33.9	46.2	53.5	51.5	74.1	118.6
Queensland	92.6	114.2	125.2	166.4	218.8	136.3
South Australia	32.1	36.7	41.7	66.8	146.5	356.4
Western Australia	381.1	423.6	465.8	606.0	590.2	54.9
Tasmania	4.0	4.3	7.5	8.3	22.6	465.0
Northern Territory	48.5	49.0	42.5	55.6	74.7	54.0
<b>Australia</b>	<b>640.6</b>	<b>732.8</b>	<b>786.7</b>	<b>1 028.3</b>	<b>1 240.7</b>	<b>93.7</b>

Source: Mineral and Petroleum Exploration, Australia (8412.0).

### 16.5 MINERAL EXPLORATION EXPENDITURE, By mineral sought

	2001-02	2002-03	2003-04	2004-05	2005-06	Change from 2001-02 to 2005-06
	\$m	\$m	\$m	\$m	\$m	%
Selected base metals	132.8	142.3	151.8	261.1	356.6	168.5
Copper	41.5	39.8	37.8	71.3	139.5	236.1
Silver, lead, zinc	37.7	36.7	29.7	31.2	71.1	88.6
Nickel, cobalt	53.7	65.9	84.2	158.6	145.9	171.7
Gold	331.3	378.4	397.1	391.7	399.7	20.6
Iron ore	25.2	44.4	63.7	138.0	161.2	539.7
Mineral sands	33.2	27.3	23.8	27.6	29.2	-12.0
Uranium	8.7	6.9	10.5	20.7	56.1	544.8
Coal	50.4	77.8	81.5	126.8	166.4	230.2
Diamonds	35.4	29.9	25.8	23.7	22.6	-36.2
Other(a)	23.5	25.8	32.5	38.7	49.0	108.5
<b>Total</b>	<b>640.6</b>	<b>732.8</b>	<b>786.7</b>	<b>1 028.3</b>	<b>1 240.7</b>	<b>93.7</b>

(a) Includes tin, tungsten, scheelite, wolfram and construction materials.

Source: Mineral and Petroleum Exploration, Australia (8412.0).

Table 16.6 shows the overseas exploration expenditure reported in the Minerals Industry Surveys, conducted for the Minerals Council of Australia, for 2000-01 to 2004-05. The surveys cover Australian mining companies, and some overseas controlled companies. Findings from these surveys indicate total overseas exploration expenditure by Australian businesses had been falling after reaching its peak in 1997-98 when \$450m was spent. Between 2000-01 and 2004-05, expenditure fell by 65%.

In 2004-05 exploration expenditure for gold and platinum fell by 37% to \$43m (down \$26m) from the level achieved in 2003-04. Base metals fell by 58% (down \$10m) in the same period.

In the period 2001-02 to 2005-06, expenditure on oil and gas exploration rose by 43% (\$379m) (table 16.7) due to increases in both onshore and offshore exploration expenditure of 116% (\$191m) and 26% (\$188m). These changes have resulted in onshore oil and gas exploration increasing its share of total oil and gas exploration expenditure from 19% to 28% over this period with a corresponding decrease in offshore from 81% to 72%.

In 2005-06, offshore oil and gas exploration expenditure was higher by 17% (\$132m) compared with the previous year while onshore exploration was 32% (\$86m) higher.

### 16.6 OVERSEAS MINERAL EXPLORATION EXPENDITURE, By mineral sought

	2000-01	2001-02	2002-03	2003-04	2004-05	Change from 2000-01 to 2004-05
	\$m	\$m	\$m	\$m	\$m	%
Gold and platinum	77.2	45.3	28.0	69.1	43.2	-44.0
Base metals	61.8	51.5	78.5	17.5	7.3	-88.2
Mineral sands	2.4	2.4	1.0	0.2	1.5	-37.5
Diamonds	33.1	31.1	—	—	—	-100.0
Other	6.1	3.0	4.2	6.3	10.8	77.0
<b>Total</b>	<b>180.7</b>	<b>133.3</b>	<b>111.6</b>	<b>93.1</b>	<b>62.7</b>	<b>-65.3</b>

Source: Minerals Council of Australia, 'Minerals Industry Survey Reports', 2001 to 2005.

## 16.7 OIL AND GAS EXPLORATION EXPENDITURE

	2001-02	2002-03	2003-04	2004-05	2005-06	Change from 2001-02 to 2005-06
	\$m	\$m	\$m	\$m	\$m	%
Onshore	164.5	191.3	230.5	270.1	355.8	116.3
Offshore	718.1	803.7	713.5	774.6	906.1	26.2
<b>Total</b>	<b>882.6</b>	<b>995.0</b>	<b>944.0</b>	<b>1 044.7</b>	<b>1 262.0</b>	<b>43.0</b>

Source: Mineral and Petroleum Exploration, Australia (8412.0).

## Mining industry

### Economic contribution

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry Structure and Performance* chapter.

Total production of the Mining industry measured by industry GVA (in volume terms), increased by 4% between 2003-04 and 2004-05, and more than doubled between 1984-85 and 2004-05 (graph 16.8).

During the period 1984-85 to 2004-05, the largest annual decrease (6%) in production was in 1986-87 while the largest annual increase (18%) was in 1987-88.

Table 16.9 shows the industry GVA of the Mining Division as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). The table also shows the contribution of the Mining industry to Australia's GDP in the period 2000-01 to 2004-05.

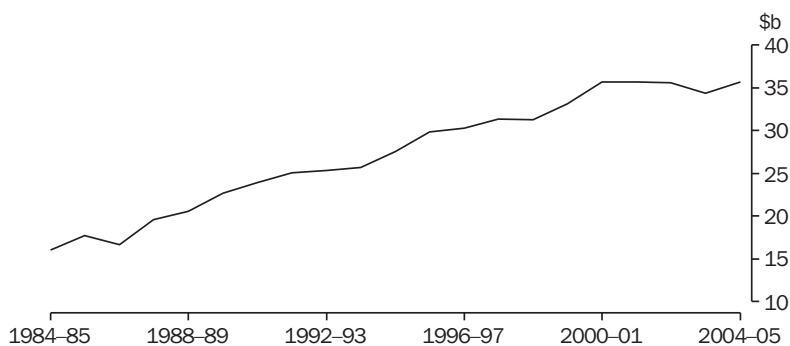
Production in the Services to mining industry accounts for a small proportion (10-12%) of total Mining production (table 16.9). However, the total value of services to mining may be larger than these figures indicate as some services may have been provided by businesses classified to other industries such as construction or business services.

### Contribution to state production

The importance of the Mining industry in terms of production as measured by total factor income varies across the states and territories. Total factor income is a measure of state production. It is the total payments received by labour and owners of capital used in the production of the goods and services.

Mining production was the largest component of total 2004-05 production in Western Australia and the Northern Territory. It was the third largest in Queensland. In other states, Manufacturing, and Property and business services industries were much larger than Mining, which was ranked 15th or lower in terms of production.

## 16.8 MINING PRODUCTION(a)(b)



(a) Industry gross value added. (b) Volume measures. Reference year is 2003-04.

Source: Australian System of National Accounts, 2004-05 (5204.0).

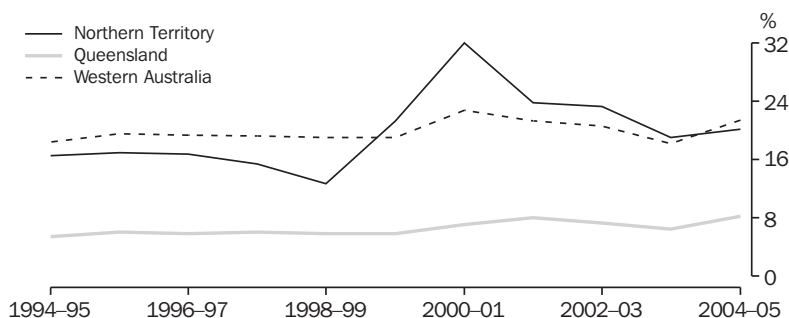
## 16.9 MINING INDUSTRY(a), Gross value added(b)

Industry	Units	2000-01	2001-02	2002-03	2003-04	2004-05	Percentage change from 2000-01 to 2004-05
Mining (excl. services to mining)	\$m	32 114	32 045	31 733	30 714	31 415	-2.2
Services to mining	\$m	3 537	3 636	3 883	3 652	4 292	21.3
Total mining(c)	\$m	35 664	35 688	35 608	34 366	35 707	0.1
Contribution to GDP(d)	%	5.0	4.8	4.5	4.1	4.9	..

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Volume measures. Reference year is 2003-04. (c) Volume measures for years other than 2003-04 and 2004-05 are not additive. (d) In current prices.

Source: Australian System of National Accounts, 2004-05 (5204.0).

## 16.10 MINING INDUSTRY CONTRIBUTION TO STATE PRODUCTION(a), Selected states



(a) State production as measured by total factor income at current prices.

Source: Australian National Accounts: State Accounts (5220.0).

During the period 1994-95 to 2004-05, the Northern Territory experienced significant changes in the contribution of the Mining industry to total state production, varying from 13% in 1998-99 to 32% in 2000-01 (graph 16.10). In 2004-05 the Mining industry accounted for 20% of total production in the Northern Territory.

In Western Australia, the contribution of the Mining industry increased from 18% in 1994-95 to 21% in 2004-05 (graph 16.10). Over this period the contribution of the Mining industry to total state production was significantly higher than the production shares of Property and business services or Manufacturing industries, the next largest industries. The Oil and gas industry was the main contributor to mining production. In 2004-05, the combined value of production for Oil and gas accounted for 37% (\$12,247m) of the total value of production (\$33,220m) in the state including some manufactured and semi-manufactured products like alumina (see the Resources Data Files on the Western Australia Department of Industry and Resources website <<http://www.doir.wa.gov.au>> last viewed

September 2006). Most crude oil and condensate and liquefied natural gas (LNG) are produced in the Carnarvon basin where the North West Shelf Project is located.

The Mining industry's share of Queensland total production varied between 5-8% in the period 1994-95 to 2004-05 (graph 16.10). This was two to seven percentage points lower than the Manufacturing industry's share of state production. In 2004-05, the Mining industry's contribution to state production was 8%. Industries with a greater share of state production than Mining in this year were Manufacturing (11%) and Property and business services (10%). Figures released by the Queensland Department of Natural Resources and Mines indicate that the value of production of fuel minerals was \$11,124m in 2004-05 with black coal accounting for 93% (\$10,347m) of this value (see <<http://www.nrm.qld.gov.au/mines>>, table 'Quantity and Value of Minerals Produced in Queensland 2004-05', last viewed September 2006). Queensland is the largest producer of black coal in the country. In 2004-05, it also produced copper, lead and zinc valued at \$3,966m.

## Exports

Table 16.11 shows the proportion of exports contributed by the Mining industry based on exports by industry of origin.

In the period 1995–96 to 2005–06 the value of exports from the Mining industry has more than tripled. By comparison, the value of exports from the Manufacturing industry has grown by 54%. As a consequence, Mining's contribution to total goods exported from Australia increased from 22% in 1995–96 to 38% in 2004–05, while Manufacturing's share fell from 64% to 49%.

## Natural resource royalties

Natural resource royalties paid by mining businesses are collected by state and Northern Territory governments for mining onshore and up to three nautical miles offshore, and by the Australian Government outside that area. The basis of the mineral royalties varies between states. Some royalties are based on the value of production at mine site, others on sales value, gross proceeds or profit. The rates imposed also vary between commodities.

Onshore and within coastal waters royalties are levied on mineral and petroleum production. State petroleum royalties and Commonwealth crude oil excise apply onshore and in coastal waters. Petroleum produced in offshore areas of Australia (but not including the North West Shelf) is generally subject to an offshore Petroleum Resource Rent Tax levied by the Australian Government. Petroleum royalties and crude oil excise apply to production from the North West Shelf project.

Natural resource royalties expenses include payments under mineral lease arrangements, and resource rent taxes and royalties. In 2003–04

businesses in the Oil and gas extraction industry paid a considerably higher proportion of natural resource royalties to sales and service income (14%) compared with those in the Coal mining (5%) or Metal ore mining (4%) industries. Natural resource royalties expenses for the Oil and gas extraction industry were \$2,231m, and for the Coal mining and the Metal ore mining industry were \$798m and \$729m respectively.

## Structure and performance

The source for the statistics in this section is the annual Economic Activity Survey (EAS) of businesses, conducted by the Australian Bureau of Statistics (ABS). Businesses in this collection are classified on the basis of their predominant activity, using the ANZSIC, 1993 edition. The industry subdivision Other mining refers to Construction material mining and Mining n.e.c., as described in ANZSIC.

In 2003–04 mining businesses paid \$6,955m in wages and salaries and generated \$60,140m in sales and service income and \$33,861m industry value added (table 16.12).

Industry value added (IVA) represents the value added by an industry to the intermediate inputs used by the industry. It measures production in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production), IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments cannot be collected in the EAS. The advantage of IVA, however, is the availability of more detailed industry and state estimates.

**16.11 VALUE OF EXPORTS(a), By industry of origin**

	Mining \$m	Manufacturing \$m	All industries \$m	Share of total exports	
				Mining %	Manufacturing %
2001–02	32 507	69 111	121 108	26.8	57.1
2002–03	31 261	65 810	115 479	27.1	57.0
2003–04	28 565	62 442	109 049	26.2	57.3
2004–05	41 123	67 496	126 823	32.4	53.2
2005–06	57 107	74 958	151 792	37.6	49.4

(a) On a 'free-on-board' basis.

Source: ABS data available on request, International trade.



Table 16.12 shows that in 2003–04, the Oil and gas extraction industry contributed the largest proportion (41%) of total mining production measured in terms of IVA, followed by Metal ore mining (27%) and Coal mining (18%). The Oil and gas extraction industry also generated the most profit (56%, \$8,771m) in 2003–04.

In terms of wages and salaries, the largest contributors were the Metal ore (28%) and Coal (28%) mining industries. The wages and salaries paid were \$1,932m from the Metal ore mining industries and \$1,922m from the Coal mining industry.

Within the Metal ore mining industry, the Gold mining industry contributed the largest share of wages and salaries (34%) and the Iron ore mining industry the largest share of sales of goods and services (30%).

Table 16.13 shows that capital expenditure in 2003–04 was the largest in the Metal ore mining industry (38%) followed by the Oil and gas extraction industry (32%). Most of the capital expenditure on acquisitions was spent on plant, machinery and equipment (43%). A significant proportion (30%) was also spent on dwellings,

other buildings and structures. The Metal ore mining industry accounted for the largest share of the expenditure in plant, machinery and equipment, while the Oil and gas extraction mining industry accounted for the largest share of the expenditure in dwellings, other buildings and structures.

The Metal ore mining and Oil and gas extraction industries contributed most of the net capital expenditure i.e. capital expenditure after deducting disposals of assets. Combined these industries accounted for 76% of total net capital expenditure made in 2003–04.

Operating profit before tax (OPBT) is a measure of profit before extraordinary items are brought to account and prior to the deduction of income tax and appropriations to owners (e.g. dividends paid).

From 2002–03 to 2003–04, OPBT for the mining industry decreased by \$1,015m or 6%. The Coal mining industry was the main contributor to this fall (down \$1,491m or 47%). After a loss of \$52m in 2002–03 the Services to mining industry recorded a profit of \$462m in 2003–04 (up \$514m).

#### 16.12 MINING INDUSTRY(a), Summary of operations — 2003–04

ANZSIC subdivision	Wages and salaries(b) \$m	Sales and service income(c) \$m	Operating profit before tax \$m	Inventories		Purchases and selected expenses \$m	Industry value added \$m
				Opening \$m	Closing \$m		
Coal mining	1 921.9	14 733.1	1 688.1	1 107.1	1 079.7	9 403.4	6 206.7
Oil and gas extraction	831.5	15 744.5	8 771.0	498.1	449.0	2 681.3	13 817.5
Metal ore mining							
Iron ore mining	518.7	5 622.5	2 230.8	425.5	450.1	2 567.9	3 393.7
Copper ore mining	204.2	2 046.3	–253.7	286.4	331.5	1 559.0	593.5
Gold ore mining	664.1	5 042.9	379.0	454.6	493.3	3 698.5	1 940.5
Mineral sand mining	106.2	927.8	118.1	177.5	189.9	633.9	349.3
Silver-lead-zinc ore mining	189.8	1 986.1	–87.7	99.5	130.4	1 130.7	949.6
Other(d)	248.7	3 355.0	1 843.3	430.1	492.0	1 842.4	1 877.7
Total	1 931.7	18 980.7	4 229.8	1 873.7	2 087.2	11 432.4	9 104.3
Other mining	546.8	4 025.9	625.6	420.1	435.9	2 324.8	1 908.3
Services to mining	1 723.1	6 656.1	461.7	184.2	250.6	4 208.9	2 823.9
<b>Total mining</b>	<b>6 955.0</b>	<b>60 140.3</b>	<b>15 776.3</b>	<b>4 083.2</b>	<b>4 302.3</b>	<b>30 050.9</b>	<b>33 860.7</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Excludes the drawings of working proprietors. (c) Includes rent, leasing and hiring income. (d) Comprises Bauxite mining, Nickel ore mining and Metal ore mining n.e.c.

Source: *Mining Operations, Australia, 2003–04* (8415.0).

### 16.13 MINING INDUSTRY(a), Fixed capital expenditure and disposals — 2003–04

ANZSIC subdivision	Capital expenditure on					Net capital expenditure
	Plant, machinery and equipment	Dwelling, other buildings and structures	Other, including land and intangibles	Total acquisitions	Disposal of assets	
	\$m	\$m	\$m	\$m	\$m	\$m
Coal mining	1 618.3	437.3	326.6	2 382.1	789.9	1 592.3
Oil and gas extraction	1 217.8	1 919.2	1 180.4	4 317.4	109.2	4 208.3
Metal ore mining						
Iron ore mining	1 105.1	341.8	195.8	1 642.7	48.3	1 594.4
Copper ore mining	428.8	93.6	19.7	542.0	6.9	535.2
Gold ore mining	311.0	984.1	750.5	2 045.6	21.1	2 024.5
Mineral sand mining	87.8	30.0	58.1	175.9	4.5	171.3
Silver-lead-zinc ore mining	116.9	52.0	21.3	190.2	7.2	182.9
Other(b)	156.5	150.5	172.6	479.7	2.5	477.2
Total	2 206.1	1 652.0	1 217.9	5 076.0	90.5	4 985.5
Other mining	180.4	33.1	241.4	455.0	68.8	386.2
Services to mining	595.3	24.8	526.0	1 146.2	244.3	901.9
<b>Total mining</b>	<b>5 817.9</b>	<b>4 066.4</b>	<b>3 492.4</b>	<b>13 376.8</b>	<b>1 302.6</b>	<b>12 074.1</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Comprises Bauxite mining, Nickel ore mining and Metal ore mining n.e.c.

Source: *Mining Operations, Australia, 2003–04 (8415.0)*.

### 16.14 MINING INDUSTRY(a), Operating profit before tax

ANZSIC subdivision	2002–03	2003–04
	\$m	\$m
Coal mining	3 179.5	1 688.1
Oil and gas extraction	9 099.9	8 771.0
Metal ore mining	3 978.3	4 229.8
Other mining	585.6	625.6
Services to mining	–52.0	461.7
<b>Total mining</b>	<b>16 791.4</b>	<b>15 776.3</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Mining Operations, Australia, 2003–04 (8415.0)*.

## Research and development (R&D) expenditure

R&D activity, in the business context, is defined as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application or new or improved products, processes, materials, devices or services. R&D activity also extends to modifications to existing products and processes. The ABS survey of R&D is based on a complete

enumeration of businesses identified as likely R&D performers. Businesses mainly engaged in agriculture, forestry and fishing are excluded.

During the period 1994–95 to 2004–05, R&D expenditure by the Mining industry increased from \$303m in 1994–95 to \$1,205m in 2004–05. As a result, the Mining industry's contribution to total (all industries) R&D expenditure rose from 9% in 1994–95 to 14% in 2004–05. The Manufacturing industry's share of total R&D expenditure continued to be the highest, accounting for 41% in 2004–05.

Graph 16.15 shows the type of R&D expenditure by the Mining industry. For the period 1994–95 to 2004–05 current expenditure other than labour costs is the major component of R&D expenditure for the Mining industry, accounting for 80% of total mining R&D expenditure in 2004–05. This category includes: expenses on materials, fuels and other inputs; rent, leasing and hiring; repairs and maintenance; payments to outside organisations for use of specialised testing facilities or for analytical work, engineering or other specialised services in support of R&D projects carried out by the business; commission and consultant expenses for research projects carried out by the business (except direct labour costs); software for own account produced as part of R&D; and the proportion of expenditure on general services and overheads attributable to R&D activity. In the Mining industry, these expenses increased by \$787m (456%) from \$173m in 1994–95 to \$959m in 2004–05. The amounts spent on capital expenditure and labour costs increased by \$10m (15%) and \$105m (161%) respectively. As a result, labour costs and capital expenditure as a proportion of total mining R&D expenditure fell to 14% and 6% respectively in 2004–05. These proportions were significantly lower than the 22% for labour costs and 21% for capital expenditure recorded in 1994–95.

In 2004–05 the Mining industry funded most of its R&D expenditure with \$1,145m (95%) sourced from money owned by the mining business (own funds).

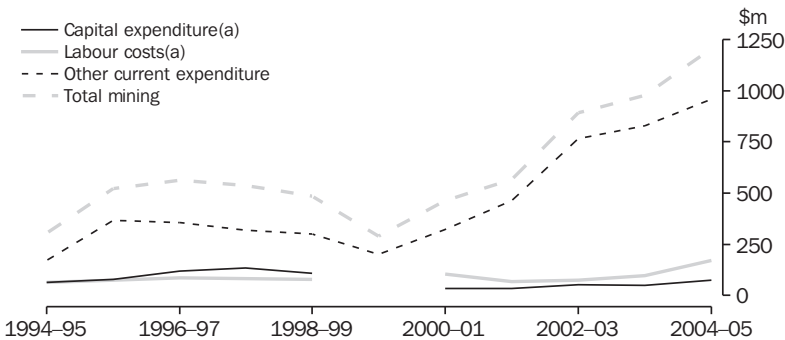
## Production and trade of major minerals, oil, gas and petroleum

### Mineral, oil and gas production

Table 16.16 shows the quantity produced for selected minerals, oil and gas. In the period 2000–01 to 2004–05 the most significant increases in production were for manganese ore and concentrate (85%), diamonds (44%) and iron ore and concentrates (43%). The steady increase in iron ore and concentrate production over this period was driven by increased production in Western Australia, which accounts for 98% of Australian production. There was also a steady increase in saleable black coal, natural gas and titanium dioxide pigment.

Production of gold, ilmenite, rutile, zinc ore, crude oil and lead decreased between 2000–01 and 2004–05 with the largest falls recorded for crude oil (34%) and rutile (17%). Diamond production changed significantly during the period with increases of 36% in 2001–02, 4% in 2002–03 and 33% in 2004–05; and decreases of 24% in both 2000–01 and 2003–04.

**16.15 MINING INDUSTRY, Type of expenditure on R&D**



(a) Data for 1999–2000 not available for publication.

Source: Research and Experimental Development, Businesses, Australia (8104.0).

## 16.16 MINERAL, OIL AND GAS PRODUCTION, Selected minerals, oil and gas

	Units	2000–01	2001–02	2002–03	2003–04	2004–05	Percentage change from 2000–01 to 2004–05
<b>Metallic minerals</b>							
Bauxite	Mt	55	54	54	56	58	5.5
Copper ore and concentrate	'000 t	2 577	2 590	2 555	2 340	2 672	3.7
Gold in mine products(a)	t	296	265	278	267	266	–10.1
Iron ore and concentrate	Mt	176	185	199	223	252	43.2
Lead ore and concentrate	'000 t	1 000	1 020	970	960	997	–0.3
Manganese ore and concentrate	'000 t	1 948	1 850	2 472	3 094	3 606	85.1
Nickel in mine products(a)	'000 t	195	193	183	185	192	–1.5
Ilmenite	'000 t	2 092	1 843	2 069	1 910	2 006	–4.1
Rutile	'000 t	209	207	208	154	174	–16.7
Synthetic rutile	'000 t	650	612	673	696	751	15.5
Titanium dioxide pigment	'000 t	181	186	189	196	203	12.2
Uranium oxide	t	9 549	7 823	9 172	9 569	10 964	14.8
Zinc ore and concentrates	'000 t	2 697	2 715	2 806	2 536	2 506	–7.1
Zircon concentrate	'000 t	377	389	458	448	432	14.6
<b>Coal</b>							
Black coal (saleable)	Mt	258	273	275	286	305	18.2
Brown coal	Mt	68	69	69	70	71	4.4
<b>Other minerals</b>							
Diamonds	'000 ct	22 475	30 676	32 006	24 310	32 446	44.4
Salt	'000 t	9 492	9 233	10 438	10 618	12 254	29.1
<b>Oil and gas</b>							
Crude oil and condensate	ML	38 705	36 100	33 320	27 876	25 372	–34.4
Natural gas	Mm <sup>3</sup>	31 524	32 136	33 159	33 259	37 267	18.2
LPG (naturally occurring)	ML	4 056	4 647	4 681	4 639	4 628	14.1

(a) 'In mine products' relates to the metal content of the mineral.

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Mineral Statistics'; 'Australian Commodity Statistics, 2005' and 'Australian Commodities, September quarter 2006'; Department of Industry, Tourism and Resources, 'Australian Petroleum Statistics'.

## Mineral and oil processing and treatment

As few minerals, oil and gas can be directly used in the form in which they are mined, most of these undergo processing and treatment before use.

Table 16.17 shows the production of the main manufactured products of mineral and oil origin.

## Exports of major minerals, oil and gas

Export earnings of minerals, oil and gas from the Australian resources sector rose to \$68 billion (b) in 2004–05, an increase of \$16b on the previous

year. The resources sector covering minerals and energy production includes some commodities which are processed outside the Mining industry (as defined by ANZSIC).

Table 16.18 provides details of the quantity and value of the main minerals, oil and gas commodities exported from Australia. In 2004–05, black coal (including coking and steaming) was the largest export earner (\$17b), followed by iron ore and pellets (\$8b), crude oil and other refinery feedstock (\$6b), refined gold (\$6b), alumina (\$4b) and aluminium (\$4b).

### 16.17 PRODUCTION OF PRINCIPAL MANUFACTURED PRODUCTS OF MINERAL AND OIL ORIGIN

	Units	2000-01	2001-02	2002-03	2003-04	2004-05
<b>METALS</b>						
<b>Non-ferrous</b>						
Alumina	'000 t	16 099	16 417	16 413	16 690	17 161
Refined aluminium	'000 t	1 788	1 809	1 855	1 877	1 890
Refined copper	'000 t	517	561	537	459	479
Lead bullion	'000 t	153	201	181	143	153
Refined lead	'000 t	215	275	267	247	234
Refined zinc	'000 t	534	572	570	502	464
Refined tin	t	1 039	829	708	553	445
<b>Ferrous</b>						
Raw steel	'000 t	8 003	8 311	9 399	9 471	7 556
<b>Precious</b>						
Refined gold	t	361	346	386	397	345
Refined silver	t	532	616	672	619	722
<b>PETROLEUM</b>						
<b>Petroleum products</b>						
Diesel automotive oil	ML	13 212	13 064	13 335	12 544	12 822
Industrial and marine diesel fuel	ML	98	105	117	84	22
Fuel oil	ML	1 951	1 684	1 441	1 105	1 092
Automotive gasoline	ML	17 887	18 000	17 984	17 375	17 913
<b>BUILDING MATERIALS</b>						
Clay bricks (standard brick equivalent)	m	1 519	1 602	1 733	1 789	1 705
Portland cement	'000 t	6 821	7 235	7 731	8 460	8 925
<b>CHEMICALS</b>						
Single superphosphates	'000 t	1 837	2 052	1 423	1 446	1 594

Source: *Manufacturing Production, Australia* (8301.055.001); *Australian Bureau of Agricultural and Resource Economics (ABARE)*, 'Australian Mineral Statistics', various issues and 'Australian Commodity Statistics 2005'; *Department of Industry, Tourism and Resources*, 'Australian Petroleum Statistics'.

Graph 16.19 shows the value of Australia's four largest mineral and oil exports during the period 1997-98 to 2004-05. Exports of black coal, iron ore and pellets, and crude oil and other refinery feedstock have been growing over this period with crude oil and other refinery feedstock recording the largest increase (181%) followed by iron ore and pellets (114%) and black coal (79%). Refined gold experienced a decrease of 12% for the same

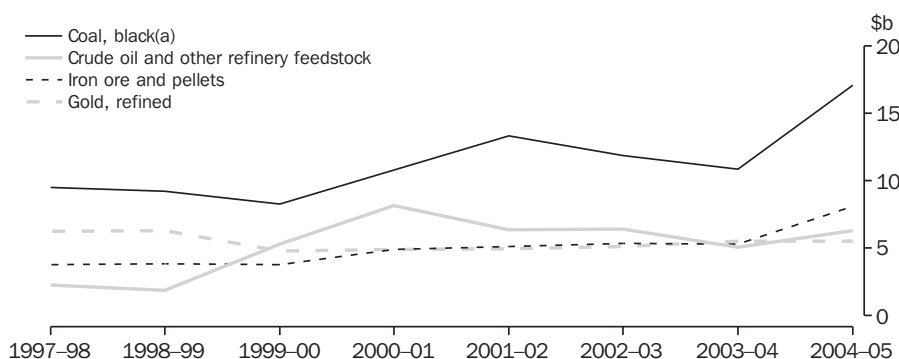
period. The increases for black coal exports in both 2000-01 and 2004-05 were due to an increase in unit values of coking and steaming coal exports. A similar peak was observed for the export of crude oil occurring in 2000-01. Over the four years following this peak the export values of crude oil and other refinery feedstock dropped by \$2b.

### 16.18 EXPORTS OF MAJOR MINERALS, OIL AND GAS

	Units		2001-02		2002-03		2003-04		2004-05	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Alumina	kt	\$m	13 091	4 114	13 168	3 660	13 572	3 781	14 073	4 383
Aluminium (ingot metal)	kt	\$m	1 490	3 965	1 551	3 696	1 546	3 441	1 512	3 726
Coal, black										
Coking	Mt	\$m	106	8 038	108	7 448	112	6 510	125	10 758
Steaming	Mt	\$m	92	5 294	100	4 448	107	4 372	106	6 336
Copper	kt	\$m	749	2 159	687	2 005	652	2 166	701	3 082
Diamonds	'000 ct	\$m	25 811	512	32 274	789	24 326	531	32 515	650
Gold, refined	t	\$m	280	4 950	282	5 133	315	5 510	309	5 523
Iron and steel										
Iron ore and pellets	Mt	\$m	156	5 160	181	5 342	195	5 277	228	8 120
Iron and steel	kt	\$m	3 297	1 484	3 589	1 855	3 818	2 004	2 338	2 031
Lead	kt	\$m	731	729	735	657	688	728	782	1 041
Manganese ore and concentrate	kt	\$m	1 660	299	2 014	312	2 603	371	3 128	473
Oil and gas										
Crude oil and other refinery feedstock	ML	\$m	23 936	6 390	20 950	6 402	17 526	5 055	15 731	6 330
LNG	Mt	\$m	8	2 613	8	2 607	8	2 174	11	3 199
LPG	ML	\$m	3 211	721	3 194	855	2 916	647	2 844	804
Salt	kt	\$m	8 912	267	10 172	233	10 285	186	12 128	226
Tin	t	\$m	8 026	49	5 963	38	143	1	1 529	8
Titanium minerals										
Ilmenite concentrate	kt	\$m	914	138	1 020	135	783	82	633	63
Rutile concentrate	kt	\$m	190	167	195	149	146	94	158	114
Uranium oxide	t	\$m	7 367	361	9 593	427	9 099	364	11 249	475
Zinc	kt	\$m	1 488	1 529	1 548	1 427	1 369	1 234	1 427	1 466
Zircon concentrate	kt	\$m	388	272	445	282	443	250	428	319

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005', 'Australian Commodities, September quarter 2006' and 'Australian Mineral Statistics', various issues.

### 16.19 EXPORTS OF SELECTED MINERALS AND OIL



(a) Includes coking and steaming coal.

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005' and 'Australian Mineral Statistics', various issues.

The major markets for Australian mineral and oil exports were Japan, China, Republic of (South) Korea, India and Singapore in the period 1989–90 to 2004–05 (graph 16.20).

Japan was consistently the main destination for Australian minerals and oil, receiving 27% (\$17b) of total exports in 2004–05. The main minerals exported to Japan were aluminium, coal, copper ores and concentrate, iron ore and pellets, crude oil and other refinery feedstock and LPG. Of this, coal was the most significant. In 2004–05, 57 megatonnes (Mt) of steaming coal and 45 Mt of coking coal were exported to Japan (54% and 36% respectively of total Australian exports for these commodities). In the same year, 1,927 megalitres (ML) of crude oil and other refinery feedstock, 2,081 ML of LPG and 80,183 kilotonne (kt) of iron ore and pellets were also exported to this country. These exports respectively accounted for 12%, 73% and 35% of Australia's total exports of crude oil and other refinery feedstock, LPG and iron ore and pellets. Aluminium and copper ores and concentrate exports to Japan contributed 37% and 27% respectively of total exports for each commodity.

Other major export destinations in 2004–05 were China, the Republic of (South) Korea, India and Singapore. After Japan, the Republic of (South) Korea was the main market for Australia's black coal with steaming coal amounting to 18Mt (17% of total exported steaming coal). Other major exports to the Republic of (South) Korea included iron ore and pellets, lead ore, lead refined, crude

oil and other refinery feed stock and zinc ore which accounted for 13%, 37%, 23%, 18% and 24% respectively of export totals. Singapore was a major market for Australian crude oil and other refinery feedstock, importing 2,861 ML in 2004–05, 18% of the total volume exported.

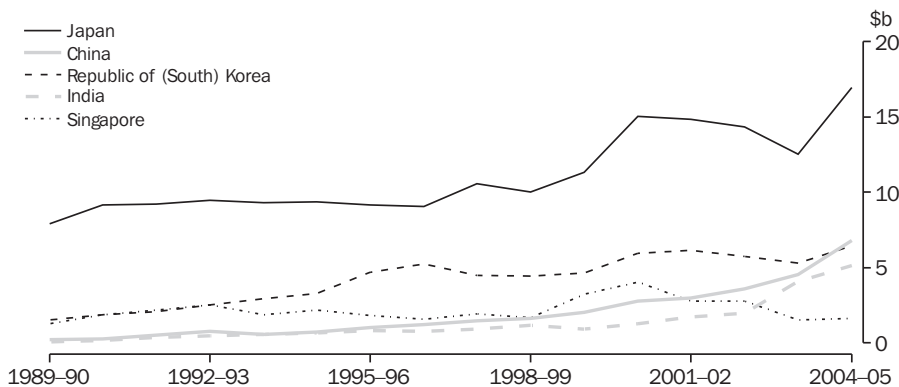
China has become a major export destination for iron ore and pellets, lead ore and LPG accounting for 44%, 27% and 21% respectively of total exports for these commodities.

Exports to India have been increasing since 1989–90 with a sharp increase between 2002–03 and 2003–04 (207%). Gold exports to India accounted for 50% (155 tonnes) of Australian exports of gold in 2004–05.

### Imports of major minerals and petroleum

Many imported mineral and petroleum commodities have had a certain amount of manufacturing applied to their raw forms. Table 16.21 provides details of the major commodities imported in the period 2001–02 to 2004–05. In terms of value, the largest imports for 2004–05 were for crude oil and other refinery feedstock (\$10b), followed by other refinery products (\$5b). The major sources of Australian imports of crude oil and other refinery feedstock were Indonesia, Malaysia and Vietnam with a combined value of \$5.8b (58% of the total import value for this commodity).

**16.20 EXPORTS OF MINERALS AND OIL, By country of destination**



Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005' and 'Australian Mineral Statistics', various issues.



### 16.21 IMPORTS OF MAJOR MINERALS AND PETROLEUM

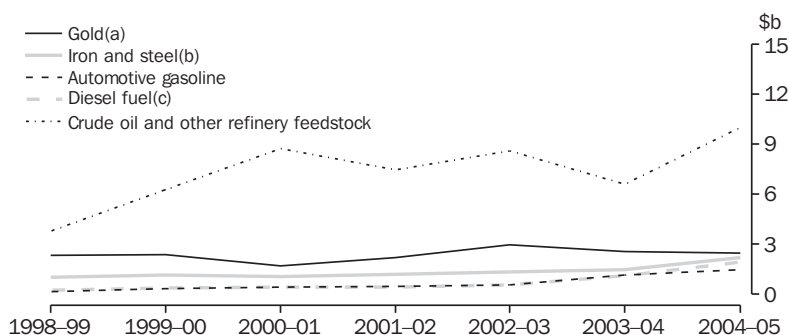
	Units		2001-02		2002-03		2003-04		2004-05	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Diamonds	'000 ct	\$m	2 431	255	3 218	302	2 229	309	2 168	347
Gold	n.a.	\$m	n.a.	2 207	n.a.	2 957	n.a.	2 559	n.a.	2 462
Iron and steel										
Iron ore and pellets	kt	\$m	3 880	104	4 667	114	5 417	140	4 648	145
Iron and steel	kt	\$m	1 354	1 099	1 306	1 226	1 583	1 353	2 116	2 041
Petroleum										
Crude oil and other refinery feedstock	ML	\$m	27 308	7 458	27 958	8 610	23 498	6 594	26 055	9 995
LPG	ML	\$m	588	116	299	76	785	166	540	143
Automotive gasoline	ML	\$m	1 436	448	1 673	569	3 242	1 168	3 125	1 459
Diesel fuel	ML	\$m	1 280	414	1 627	561	3 374	1 134	3 961	1 941
Other refinery products	ML	\$m	2 327	953	5 194	1 971	9 762	3 428	10 659	4 984
Phosphate rock	kt	\$m	933	72	711	50	723	41	797	49
Platinum and platinum group metals	kg	\$m	1 652	42	2 319	64	2 984	86	2 391	59

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005', 'Australian Commodities, September quarter 2006' and 'Australian Mineral Statistics', various issues.

Graph 16.22 shows imports of selected major minerals and petroleum during the period 1998-99 to 2004-05. The imports of crude oil and other refinery feedstock were significantly larger than the imports of other minerals particularly in 2004-05.

While the volumes of imports of crude oil and other refinery feedstock fluctuated over the period 1998-99 to 2004-05, the large changes in the value of imports were mainly due to significant unit value rises in 2000-01 and 2004-05

### 16.22 IMPORTS OF SELECTED MINERALS AND PETROLEUM



(a) Refined and unrefined bullion. (b) Includes iron ore and pellets, and iron and steel.  
(c) Includes automotive diesel oil, and industrial and marine fuel.

Source: Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005'.

## Profile of major minerals, oil and gas

*This section is based on information contributed by Geoscience Australia and the Australian Bureau of Agricultural and Resource Economics (ABARE) (September 2006).*

*Note: Values are given in Australian currency unless otherwise stated.*

### Minerals

Maps 16.23, 16.24 and 16.25 show selected mines and deposits – map 16.23 covers gold and diamonds; map 16.24 covers bauxite, coal, iron ore, manganese ore and uranium; map 16.25 covers base metals and mineral sands.

### Bauxite, alumina and aluminium

Bauxite is a heterogeneous naturally occurring material from which alumina and aluminium are produced. The principal minerals in bauxite are gibbsite, boehmite and diaspore (which has the same composition as boehmite but is denser and harder). Bauxite is the ore from which alumina (aluminium oxide) is extracted while aluminium is produced from smelting alumina.

Australia's aluminium industry is a large integrated industry of mining, refining, smelting and semi-fabrication, which is of major economic importance nationally and globally. Its EDR of bauxite (5.8 gigatonnes (Gt)) provide a world class resource base for the industry, which comprises five bauxite mines, seven alumina refineries, six primary aluminium smelters, twelve extrusion and two rolled product (sheet, plate and foil) mills. In 2005 Australia was the largest producer of bauxite and alumina. The Australian aluminium industry directly employs over 12,000 people.

Production in 2005 totalled 60.0 Mt of bauxite, 17.7 Mt of alumina and 1.9 Mt of aluminium (ingot metal). Compared with 2004 these represented an increase of 6.0% for bauxite, 7.3% for alumina and no change for aluminium.

In 2005, the Queensland Government called for expressions of interest in the development of the Aurukun Bauxite Project. The objectives for the development of the Aurukun resource include its development as a source of bauxite for a new alumina refinery in Queensland. The \$US1.3b expansion plans for the Gove alumina refinery in the Northern Territory are progressing. The project is

scheduled to be completed by 2007 and will lift the refinery's capacity from 2.1 Mt to around 3.8 Mt per year.

### Coal

Black coal is a solid rock formed from brown coal after greater heat and pressure have been applied. Black coals are distinguished by rank and may be sub-bituminous, bituminous or anthracite. Black coal is primarily used for electricity generation and the production of coke, which is integral to the production of iron and steel. Black coal is also used as a source of heat in the manufacture of cement and food processing. Brown coal is a less matured form of coal. It has a high 'in situ' moisture content (up to 60%) with a correspondingly low heating value. It is highly susceptible to spontaneous combustion. Brown coal is used widely for power generation, is made into briquettes, and can be converted to liquid or gaseous fuels.

Although coal mining occurred in all states in 2005, New South Wales and Queensland produced over 96% of all black coal (anthracite, bituminous and sub-bituminous coals) and Victoria produced all the brown coal (lignite). Australia's EDR of recoverable black coal is 39.2 Gt, which is about 5% of total world EDR making Australia's holdings the sixth largest in the world. EDR of recoverable brown coal is 37.4 Gt, which gives Australia the largest holding in the world and accounts for 24% of world EDR. All EDR is located in Victoria and about 89% is located in the La Trobe Valley.

Australia's coal production and exports have risen strongly over the last two decades. Production of black coal increased in 2005. Output of saleable black coal at 303.0 Mt was 1.7% higher than in 2004 and made Australia the world's fourth largest producer. Brown coal production reached 67.2 Mt in 2004–05. Australia was the world's fifth largest producer of brown coal with about 8% of production.

### Copper

Copper occurs in various forms. It can occur naturally in its pure state (native copper) but is principally mined as chalcopyrite. Copper is one of the most important and widely used metals of modern society due to its properties of:

- high electrical and heat conductivity
- ductile and malleable
- resistant to corrosion
- ability to form alloys with other metals.

## 16.23 SELECTED MINES AND DEPOSITS OF GOLD AND DIAMONDS – 2006



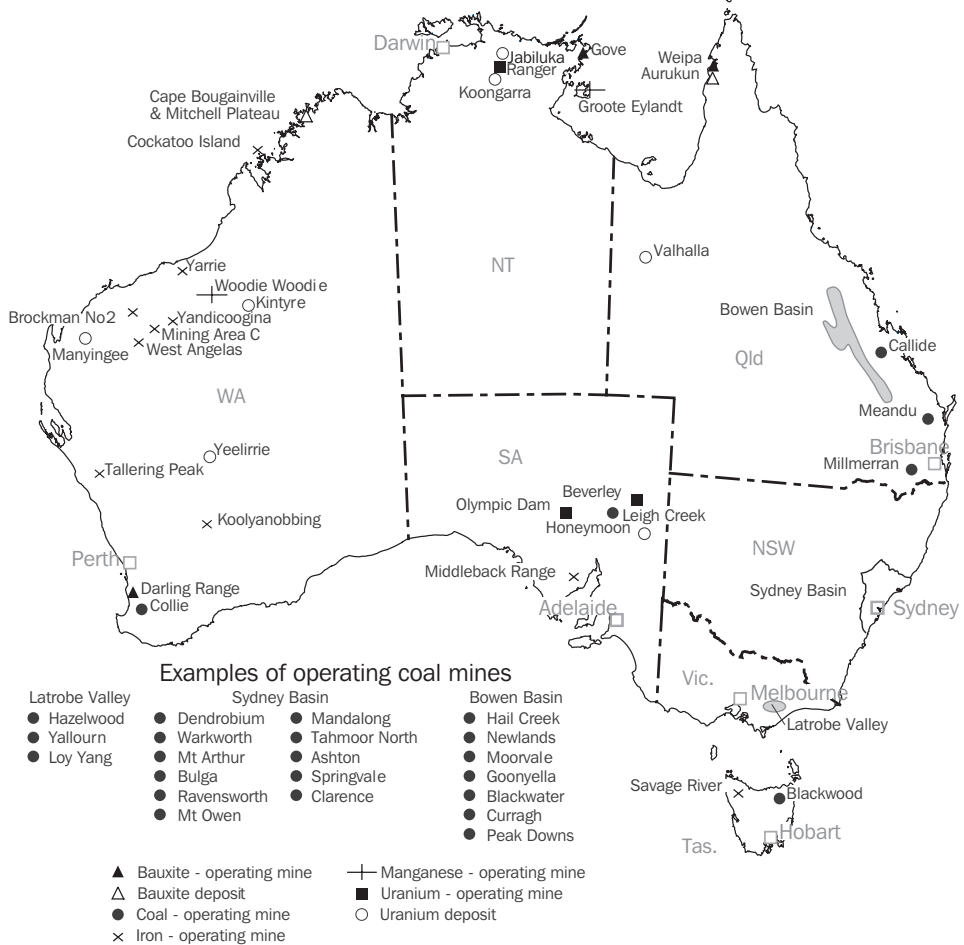
These properties enable copper to be used in a wide range of applications. The largest use of copper is in the electrical industry where copper wire and cable account for about half of the world's copper production. Other major markets are the motor vehicle and construction sectors. Copper is also an integral part of the expanding information technology sector and is used in the manufacture of computers, mobile phones, fax machines and televisions.

Major Australian copper mining and smelting operations are at Olympic Dam (South Australia) and Mt Isa (Queensland), with smaller projects in New South Wales, Queensland, Western Australia

and Tasmania. Australia's EDR of copper is 41.4 Mt giving it the world's second largest holding of copper EDR with 8% of the total.

Mine production of copper in 2005 was 921 kt of contained copper, 7% higher than in 2004 (860 kt). Queensland dominates Australian production with 399 kt (largely from Mt Isa) followed by South Australia with 213 kt (all from Olympic Dam). The remaining production occurred in New South Wales (190 kt), Western Australia (90 kt) and Tasmania (30 kt). As a producer, Australia ranks fifth, with 6% of world output, after Chile (36%), the United States of America (8%) and Indonesia and Peru (both 7%).

## 16.24 SELECTED MINES AND DEPOSITS OF BAUXITE, COAL, IRON ORE, MANGANESE AND URANIUM – 2006



Source: Geoscience Australia.

### Diamond

Diamond is composed of carbon, and is the hardest known natural substance, but a sharp blow can shatter it. Diamonds occur naturally but are extremely rare compared with other minerals. Diamonds are thought to form deep in the earth at high temperatures and pressures and are carried to the surface or near surface by volcanic rocks in narrow cylinder-like bodies called 'pipes'. A large proportion of industrial diamonds are manufactured, and it is also possible to produce synthetic diamonds of gem quality. Uses for

diamond include jewellery, computer chip manufacture, drill bit facing, and stone cutting and polishing.

Australia produced 30.7 million carats (Mc) of diamond in 2005, making it the world's second largest producer of diamond by weight after Russia, with Botswana and Congo (Kinshasa) ranked third and fourth respectively. It is the second largest producer of industrial-grade diamond and the third largest producer of gem/near gem diamond after Botswana and Russia.

## 16.25 SELECTED MINES AND DEPOSITS OF BASE METALS AND MINERAL SANDS – 2006



Source: Geoscience Australia.

Australia's EDR of gem/near gem diamonds is 124.2 Mc and industrial diamonds 129.2 Mc. These are both more than double the EDRs for 2004 as a result of the decision to proceed with underground mining at Argyle and a related upgrade of around half of the mineral resource to ore reserves based on the results of a comprehensive feasibility study. Australia's EDR of industrial diamond is ranked third in the world, with 21% of world EDR.

The majority of Australian production was from the Argyle mine in the Kimberley region of Western Australia which produced 30.5 Mc of mostly industrial and near gem diamonds in 2005. Argyle production was 48% higher than in 2004 despite mining constraints within the deepening open pit.

### Gold

Gold has a range of uses but the two principal applications are as an investment instrument and in the manufacture of jewellery. Secondary uses, in terms of the amount of gold consumed, are in electronic and dental applications.

Gold resources occur and are mined in all Australian states and the Northern Territory. Australia's EDR of gold is 5,225 tonnes, the second largest in the world after South Africa.

Australian gold production in 2005 (reported by ABARE) was 263 tonnes. This level of production makes Australia the second largest producer in the world after South Africa. The Super Pit at Kalgoorlie in Western Australia was the largest producer with an output of nearly 26 tonnes (just over 0.8 million ounces).

## Iron ore

Iron ore is the source of primary iron for the world's steel industries. Over 97% of iron ore production occurs in the Hamersley Basin (Western Australia). Small production also comes from elsewhere in Western Australia, Tasmania, South Australia and New South Wales. Australia's EDR of iron ore is 16.4 Gt which is about 10% of world EDR. Western Australia has almost all of Australia's EDR with about 92% occurring in the Pilbara district. Australia has the fifth largest iron ore holding in the world.

Australia's production of iron ore in 2005 (reported by ABARE) was 261.4 Mt, which was 17% of world output, making Australia the world's third largest producer after China and Brazil.

## Manganese ore

About 90% of the world's production of manganese is used in the desulphurisation and strengthening of steel. Other uses include the manufacture of dry batteries, as a colorant, and as an ingredient in plant fertilisers and animal feed. Manganese ore was mined in the Northern Territory and Western Australia in 2005. Production reached 3.9 Mt, 14% of world output, making Australia the third largest producer in the world. Australian production is from three mines – Woodie Woodie (Western Australia) and Groote Eylandt and Bootu Creek (both in the Northern Territory). Australia's EDR of manganese ore, at 143 Mt, is 12% of world EDR, fourth largest in the world.

## Mineral sands

The three main minerals mined from Australian mineral sands deposits are the titanium-bearing minerals rutile and ilmenite and the zirconium-bearing mineral zircon. Rutile and ilmenite are used mainly in the production of titanium dioxide pigment. A small portion, less than 4% of total titanium mineral production and typically rutile, is used in making titanium sponge metal. Zircon is used as an opacifier for glazes on ceramic tiles, and is used in refractories and the foundry industry. Production in 2005 was from Western Australia, Queensland, Victoria and New South Wales.

Australia's EDR of ilmenite is 214.9 Mt of which 59% is in Western Australia, 25% in Queensland and the rest in New South Wales (7%), Victoria (6%) and South Australia (3%). Australia accounts for 19% (the second largest holding behind China at 35%) of the world's EDR of ilmenite.

Queensland, New South Wales, Western Australia and Victoria together hold over 97% of Australia's 20.5 Mt EDR of rutile, which, at 40% of world EDR, is the world's largest.

EDR of zircon is 32.9 Mt, with Western Australia and Queensland holding just over 68%. In world terms, Australia's EDR is 43% of the total and is the largest holding by any country.

Although Australia has substantial EDR of mineral sands, Geoscience Australia estimates that some 17% of ilmenite, 28% of rutile and 25% of zircon EDR is unavailable for mining. They are in areas quarantined from mining that are largely incorporated into national parks. Deposits in this category include Moreton Island, Bribie Island and Fraser Island, Cooloolo sand mass, Byfield sand mass and Shoalwater Bay area (Queensland) and Yuraygir, Bundjalung, Hat Head and Myall Lakes National Parks (New South Wales).

In 2005 Australia produced 2.03 Mt of ilmenite, 177,000 tonnes of rutile, 55,000 tonnes of leucosene and 426,000 tonnes of zircon. The bulk of Australia's rutile and zircon production is exported compared with about 35% for ilmenite. The remaining ilmenite is upgraded to synthetic rutile. Australia was the world's largest producer of ilmenite, rutile and zircon (with 23%, 47% and 40% of world output respectively) in 2005.

## Nickel

Australia's EDR of nickel increased by 6% to 23.9 Mt in 2005. Western Australia has the largest nickel resources, with over 90% of total Australian EDR. Australia holds the largest share of the world's EDR, with 37%.

Australian mine production of nickel in 2005 increased by 1% to 189,000 tonnes, all from Western Australia. The value of all nickel products exported was \$3.5b. Australia was the world's third largest producer, accounting for 13% of estimated world nickel output.

## Tantalum

Australia is the world's largest producer of tantalum in the form of tantalum concentrates. Australia also has the world's largest stock of tantalum resources, principally in its deposits at Greenbushes and Wodgina in Western Australia.

Australia has the world's largest EDR of tantalum at 52,000 tonnes. This is approximately 95% of world EDR.

## Uranium

Australia has 716,000 tonnes of uranium in Reasonably Assured Resources recoverable at costs of less than US\$40/kilogram of uranium – this is the world's largest resource and represents 36% of world resources in this category (OECD Nuclear Energy Agency & International Atomic Energy Agency, 2005). Almost all of Australia's total resources are in six deposits:

- Olympic Dam (South Australia) which is the world's largest uranium deposit
- Ranger, Jabiluka and Koongarra in the Alligator River region (Northern Territory)
- Kintyre and Yeelirrie (Western Australia).

Three uranium mines operated in 2005 – Ranger open cut, Olympic Dam underground mine, and the Beverley (South Australia) in situ leach operations. In 2005 Ranger produced 5,906 tonnes of uranium oxide, Olympic Dam 4,335 tonnes and Beverley 977 tonnes for a total of 11,218 tonnes, 6% higher than for 2004. Australia, with approximately 23% of world uranium production in 2005, is the world's second largest producer after Canada (28%). While there are a number of undeveloped deposits in Western Australia, Northern Territory, South Australia and Queensland, uranium mining is only allowed to occur in the current three mines in the Northern Territory and South Australia.

Exports of uranium oxide in 2005 were a record 12,360 tonnes, valued at \$573m. Exports are controlled by Australian Government bilateral safeguards agreements, which are designed to ensure that Australia's uranium is used only for electricity generation and is not diverted to any military purposes. Importing countries must be signatories to the International Atomic Energy Agency's safeguards arrangements and have entered into an agreement with the Australian Government to adhere to safeguard obligations for exporting uranium.

Australian mining companies supply uranium under long-term contracts to electricity utilities in the United States of America, Japan, European Union (United Kingdom, France, Germany, Spain, Sweden, Belgium and Finland), Republic of (South) Korea and Canada.

## Zinc, lead, silver

Zinc is the 23rd most abundant element in the earth's crust. The construction, appliance and vehicle manufacturing industries use large

amounts of zinc, mainly as coatings on steel beams, sheet steel and vehicle panels in the automotive industry.

The widespread occurrence, relatively simple extraction, and combination of desirable properties have made lead useful to humans since at least 5000 BC. In deposits mined today, lead (in the form of galena) is usually associated with zinc, silver and sometimes copper, and is extracted as a co-product of these metals. More than half of the lead used comes from recycling, rather than mining. The largest use is in batteries for vehicles and communications.

The relative scarcity, attractive appearance and malleability of silver has made it suitable for use in jewellery, ornaments and silverware. Its extensive use in coins throughout history has declined over the past 40 years. In Australia, the 1966 fifty-cent piece was the last coin in general use to contain silver (80% silver, 20% copper). Silver is mined and produced mainly as a co-product of copper, lead, zinc, and to a lesser extent, gold. Today, photographic paper and film, followed by the electronics and jewellery/tableware industries are the most important users of silver.

Australian EDR of zinc is close to 42 Mt, with Queensland holding 62%. The Northern Territory, New South Wales, Western Australia and Tasmania also have zinc EDR.

Australia's EDR of 23.8 Mt of lead is 32% of world EDR. Queensland has 60% of total Australian EDR. Other holdings are in the Northern Territory, New South Wales, Western Australia and Tasmania.

EDR for silver in 2005 was 44 Kt, with Queensland having the largest share at 67.5%. Other holdings occur in South Australia (12.5%), Northern Territory (11.3%), New South Wales (5.0%), and Western Australia (2.5%) with the remainder in Tasmania and Victoria.

Australia has the world's largest EDR of zinc (18% of the world) and lead (32%), and the second largest EDR of silver (16%).

Mine production of zinc, lead and silver in 2005 was 1.37 Mt, 767,000 tonnes and 2,407 tonnes respectively. Production was higher for each commodity compared with 2004, with zinc up 33,000 tonnes, lead up 90,000 tonnes and silver up 170 tonnes. In production, Australia ranks second for lead and zinc after China and fourth for silver after Peru, Mexico and China. Cannington (Queensland) is the world's largest and lowest cost silver and lead operation and produced



almost 288,000 tonnes of lead and 43.9 million ounces of silver in 2005. Century (Queensland) had the largest zinc output at 501,000 tonnes.

**Oil and gas**

Map 16.26 shows significant locations of oil and gas production and includes oil and gas production locations, oil and gas pipelines and oil refineries.

**Crude oil and condensate**

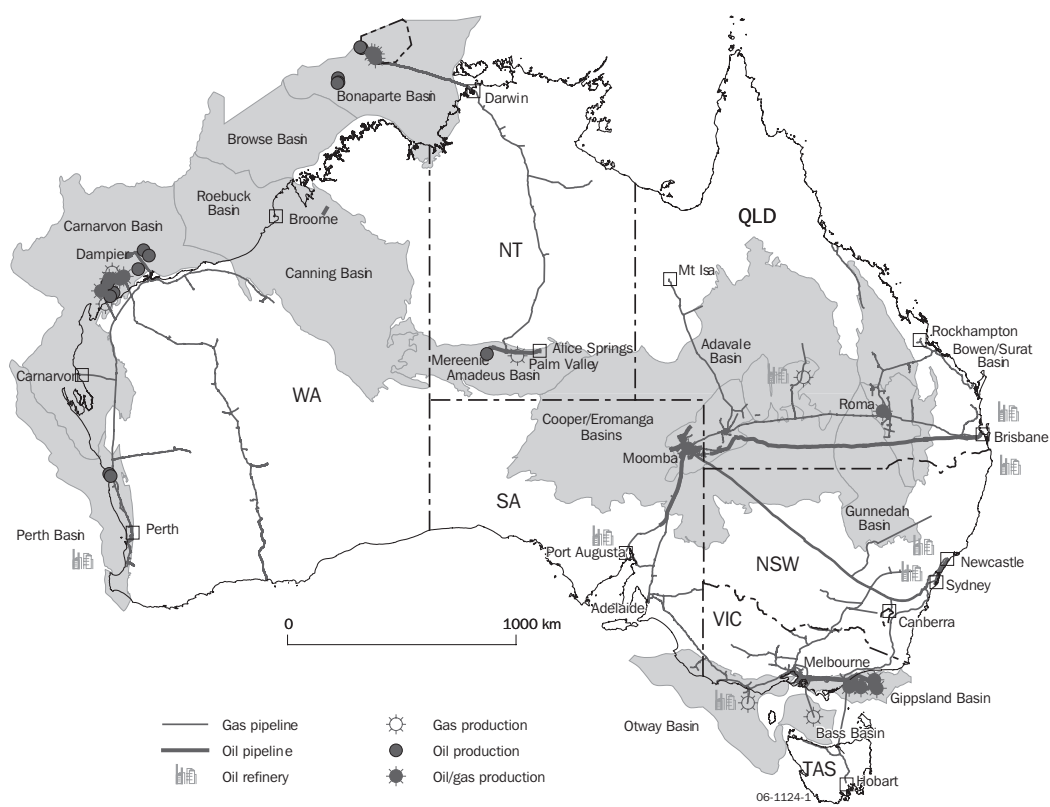
In 2005–06 production of total crude oil and condensate from the North West Shelf (off Western Australia) and the Gippsland Basin

(Victoria) accounted for 41% and 19% respectively of total Australian crude oil and condensate production. The North West Shelf was the major producer of condensate during 2005–06 with 79% of total Australian production sourced from that region.

**Liquefied natural gas (LNG)**

LNG production has in previous years been solely from the North West Shelf Venture but in February 2006 production commenced from the LNG plant in Darwin (Northern Territory). Australian LNG production in 2005–06 was 12.38 Mt. Export earnings from LNG in 2005–06 were \$4.4b, an increase of \$1.2b on 2004–05.

**16.26 LOCATIONS OF OIL AND GAS PRODUCTION AND PIPELINES – 2006**



## Liquefied petroleum gas (LPG)

LPG is a valuable co-product of oil and gas production and petroleum refining. The major constituents of LPG are propane and iso- and normal-butane, which are gaseous at normal temperatures and pressures, and are easily liquefied at moderate pressures or reduced temperatures. Operations involving LPG are expensive in relation to other liquid fuels because

LPG has to be refrigerated or pressurised when transported and stored. LPG is an alternative transport fuel for high mileage vehicles in urban areas, as well as a petrochemical feedstock and domestic fuel.

In 2005–06 the major producers were the Gippsland Basin and the North West Shelf accounting for 41% and 46% of total production respectively.

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## ENERGY

Energy is a vital input to all sectors of the economy. As well as supplying the power on which industry and households depend, the production and supply of energy provides employment, investment and export opportunities, all of which contribute substantially to the welfare and standard of living of Australians.

Energy sources are divided into two groups – renewable (energy sources for which the supply is essentially inexhaustible) and non-renewable (energy sources with a finite supply). Renewable energy sources include solar, wind, hydro-electricity, geothermal and biomass. However, most of Australia's energy comes from non-renewable sources, which include the fossil fuels of oil, natural gas and coal.

Australia's energy resources are outlined in the initial section of this chapter. Subsequent sections describe the supply and use of energy in Australia, the production of primary energy, international trade in energy products, and an analysis of energy use.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Resources

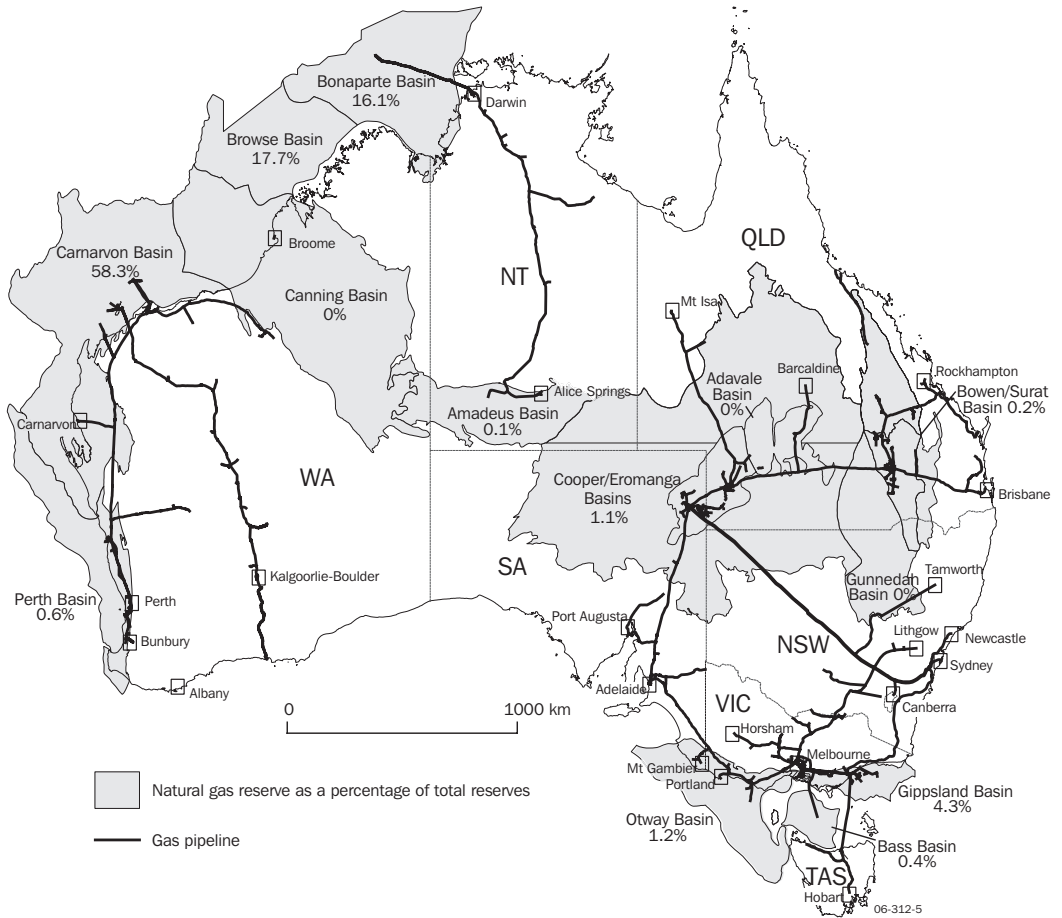
Australia has large identified resources of fossil fuels and uranium. It is ranked in the top six countries in the world for economic demonstrated resources (EDR) of black and brown coal, and has the world's largest EDR of uranium. Australia also has significant reserves of natural gas and crude oil. For a more detailed outline on Australia's energy and mineral resources, see the *Mining* chapter.

Australia has substantial resources of high quality black coal. At June 2004, the EDR of black coal totalled 1,090,800 petajoules (PJ), with most of these resources located in New South Wales and Queensland. Small but locally important black coal

resources occur in Western Australia, South Australia and Tasmania. Brown coal occurs mainly in Victoria with other deposits in Western Australia, South Australia and Tasmania.

Map 17.1 shows the extent of access to gas resources and major transmission pipelines in Australia. At June 2004, the EDR of natural gas totalled 99,520 PJ, with the Carnarvon Basin accounting for over 50% of total reserves. The total length of Australia's transmission pipeline system has increased from 9,000 kilometres (km) in 1989 to almost 29,000 km in 2005. The natural gas distribution network reaches 3.7 million (mill.) customers, including 3.6 mill. domestic customers and 100,000 commercial and industrial customers.

17.1 GAS RESERVES AND PIPELINES – June 2004



Source: Geoscience Australia, 2004.

In the period 1994–2004 the EDR of black coal, brown coal, and crude oil each decreased, while the EDR of liquefied petroleum gas (LPG), condensate, natural gas and uranium each increased (table 17.2). Changes in EDRs can be due to production activity and discoveries, and reclassification of resources due to reassessments (such as with black and brown coal in 1999 when some resources previously considered economic were reclassified as subeconomic).

The net present value (NPV) of an energy resource is the expected value of the resource based on current market value, with some modifications based on depletion and economic forces. At June 2004, the NPV of Australian energy and mineral resources was \$193 billion (b) (table 17.3). The energy resources with the highest NPV were natural gas and black coal, accounting for 41% and 25% of the total NPV of energy resources respectively. In the period 1994–2004, the value of energy resources in Australia increased from \$54b to \$193b (up by 357%).

## 17.2 ECONOMIC DEMONSTRATED RESOURCES OF PRIMARY ENERGY PRODUCTS(a) — 30 June

Fuel	1994	2004	Change from 1994 to 2004
	PJ	PJ	%
Black coal	1 331 100	1 090 800	-18.1
Brown coal	399 640	363 750	-9.0
Crude oil	10 601	6 864	-35.3
Condensate	5 347	9 287	73.7
LPG	4 094	6 864	67.6
Natural gas	44 360	99 520	124.3
Uranium	296 570	329 470	11.1

(a) Non-renewable resources only.

Source: Australian System of National Accounts, 2004–05 (5204.0).

## 17.3 NET PRESENT VALUE OF PRIMARY ENERGY RESOURCES — 30 June

Fuel	1994	2004	Change from 1994 to 2004
	\$m	\$m	%
Black coal	7 830	48 889	624.4
Brown coal	428	258	-39.7
Crude oil	17 546	30 587	174.3
Condensate	3 429	19 815	577.9
LPG(a)	1 190	11 260	946.2
Natural gas	22 104	79 493	359.6
Uranium	1 631	3 165	194.1
<b>Total</b>	<b>54 158</b>	<b>193 467</b>	<b>357.2</b>

(a) Naturally occurring.

Source: Australian System of National Accounts, 2004–05 (5204.0).

## Supply and use

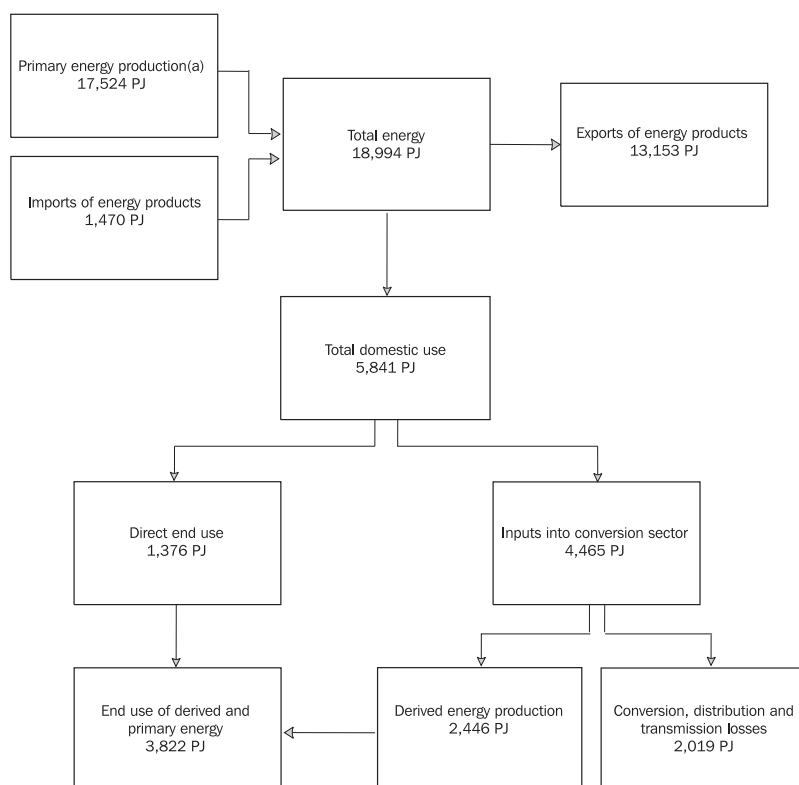
An overview of the supply and use of energy in Australia in 2004–05 is shown in diagram 17.4. Australia's total energy supply comprises primary energy production plus imports of energy. In 2004–05 Australia produced 17,524 PJ of primary energy products (including stock changes and statistical differences) and imported 1,470 PJ of energy products, mainly crude oil.

Australia's supply of primary energy products can be exported, converted into other (derived) energy products used by Australian households and industry, or stockpiled for future consumption. Most of the energy produced in Australia in 2004–05 was exported (13,153 PJ), the bulk of which was black coal (6,595 PJ) and uranium (5,287 PJ). More information on imports and exports of Australia's energy is provided in *International trade in energy products*.

In 2004–05, 5,841 PJ of energy was available for domestic use, of which, 4,465 PJ of primary energy was transformed into 2,446 PJ of derived energy. Losses from the production of derived energy, through the conversion process, distribution and transmission, accounted for 2,019 PJ of energy use. Australia's end users of energy, comprising households and industry (excluding the conversion sectors), used 3,822 PJ of energy, approximately one-fifth of the total energy supply.



## 17.4 ENERGY SUPPLY AND USE – 2004–05



(a) Includes stock changes and statistical differences of 496 PJ.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics – Australian Energy Update', 2006, Tables A and J.

## Production

In 2004–05 Australia's total primary energy production was estimated at 17,524 PJ (table 17.5) of which black coal accounted for nearly half (46%), followed by uranium (30%), natural gas (9%) and crude oil (6%). Renewable energy production (including wood, bagasse, biofuel, hydro-electricity and solar thermal energy) accounted for only 2% (261 PJ) of total production in 2004–05.

In the period 1999–2000 to 2004–05, Australia's total energy production increased by 3,478 PJ (25%). Nearly all (95%) of the increase in total energy production since 1999–2000 was accounted for by increased production involving non-renewable energy sources – black coal

(up 1,698 PJ), uranium (up 1,304 PJ), and natural gas (up 317 PJ). In the same period, total renewable energy production decreased by 6% – from 278 PJ in 1999–2000 to 261 PJ in 2004–05.

Graphs 17.6 and 17.7 show longer-term trends in the production of non-renewable and renewable energy fuels. Over the period 1974–75 to 2004–05 the production of non-renewable fuels has shown an upward trend, increasing from 3,073 PJ in 1974–75 to 16,767 PJ in 2004–05 (up 446%). However, there has been little growth in the production of renewable energy fuels, which increased by 28% in the period – from 204 PJ in 1974–75 to 261 PJ in 2004–05.

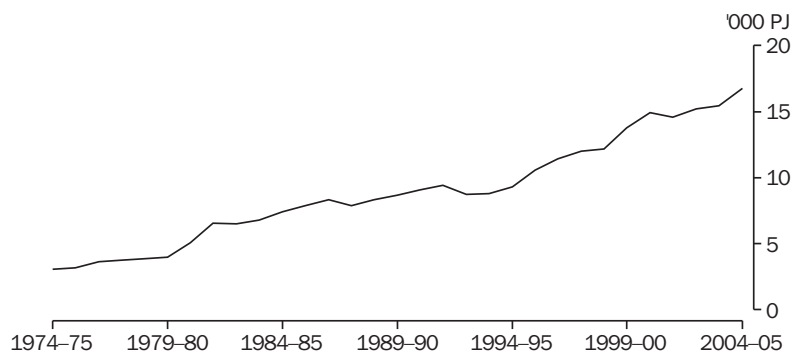
## 17.5 PRODUCTION OF ENERGY

Fuel	1999–2000	2004–05	Change from 1999–2000 to 2004–05
	PJ	PJ	%
Black coal	6 375.8	8 073.6	26.6
Brown coal	670.3	691.2	3.1
Crude oil and ORF(a)	1 386.2	1 039.2	-25.0
LPG(b)	115.7	122.6	6.0
Natural gas	1 316.5	1 633.8	24.1
Uranium	3 902.2	5 206.6	33.4
Wood	108.2	91.5	-15.4
Bagasse and biofuel	105.7	110.2	4.3
Hydro-electricity	59.7	56.2	-5.9
Solar thermal	4.1	2.6	-36.6
Stock changes and statistical differences(c)	0.9	496.0	..
<b>Total</b>	<b>14 045.3</b>	<b>17 523.7</b>	<b>24.8</b>

(a) Other refinery feedstock. (b) Naturally occurring. (c) Includes a statistical difference adjustment and previously unreported production.

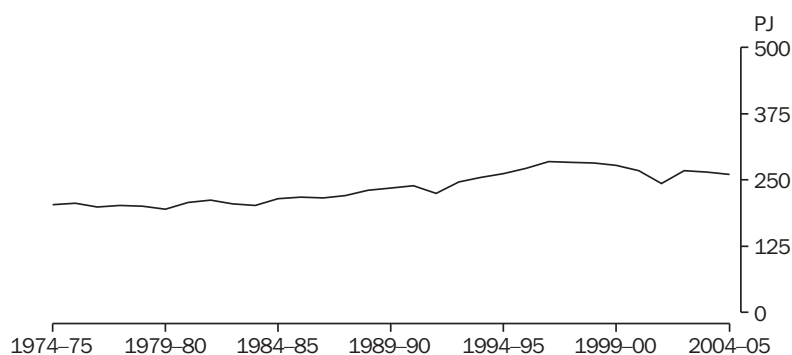
Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics — Australian Energy Update', 2005 and 2006, Table A.

## 17.6 PRODUCTION OF NON-RENEWABLE FUELS



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics - Australian Energy Update', 2005 and 2006, Table A.

## 17.7 PRODUCTION OF RENEWABLE FUELS



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics - Australian Energy Update', 2005 and 2006, Table A.

## International trade in energy products

In 2004–05 Australia exported a total of 13,153 PJ of energy products, comprising 13,086 PJ of primary energy products and 67 PJ of derived energy products (table 17.8). In terms of energy content, the largest contributors were black coal (50% of total energy exports) and uranium (40%), followed by crude oil (4%) and liquefied natural gas (LNG) (4%). Total energy exports increased by 29% from 1999–2000 to 2004–05 with uranium (up 40%) and black coal (up 32%).

In contrast, total imports of energy products were relatively small (1,470 PJ in 2004–05) (table 17.8). Crude oil and LPG made up 72% of total energy imports in 2004–05. Imports of primary energy products have remained relatively constant over recent times. Imports of derived energy products

(mainly petroleum-based products), however, have increased substantially from 157 PJ in 1999–2000 to 414 PJ in 2004–05 (up 163%).

Graph 17.9 shows the comparison between energy exports and imports over the last 30 years.

Table 17.10 shows the contribution of energy products to Australia's export earnings. In 2004–05 the export of energy products contributed approximately 24% towards Australia's total merchandise export earnings, up from 19% in 1999–2000. Black coal accounted for the largest share of the total value of energy exports (58% in 2004–05), followed by crude oil (19%) and LNG (11%). Imports of energy products (mainly crude oil) accounted for 10% of the total value of imports in 2004–05. Over the period 1999–2000 to 2004–05 the value of crude oil imports increased by \$3.8b (up 64%).

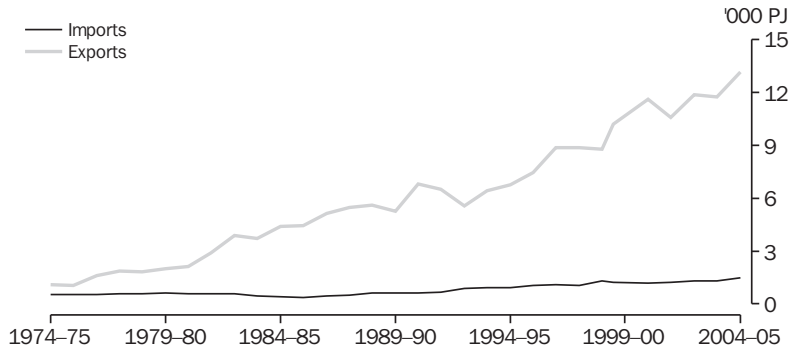
**17.8 ENERGY PRODUCTS, Volume of exports and imports**

	Exports			Imports		
	1999–2000	2004–05	Change from 1999–2000 to 2004–05	1999–2000	2004–05	Change from 1999–2000 to 2004–05
	PJ	PJ	%	PJ	PJ	%
<b>Primary energy products</b>						
Black coal	5 013.4	6 594.6	31.5	—	—	—
Crude oil and ORF(a)	772.5	555.3	–28.1	1 042.4	1 042.2	—
LPG	73.4	73.1	–0.4	13.3	13.9	4.5
LNG	431.0	576.0	33.6	—	—	—
Uranium	3 771.8	5 287.0	40.2	—	—	—
<i>Total</i>	<i>10 062.1</i>	<i>13 086.0</i>	<i>30.1</i>	<i>1 055.7</i>	<i>1 056.1</i>	<i>—</i>
<b>Derived energy products</b>						
Automotive gasoline	46.9	26.5	–43.5	36.4	107.1	194.2
Aviation gasoline	2.6	1.2	–53.8	1.5	1.6	6.7
Aviation turbine fuel	21.3	8.8	–58.7	6.3	36.2	474.6
ADO and IDF(b)	41.3	14.2	–65.6	54.0	152.2	181.9
Fuel oil and kerosene	23.6	8.0	–66.1	32.6	52.3	60.4
Other petroleum products(c)	15.8	8.6	–45.6	26.5	64.1	141.9
Briquettes	—	—	—	—	—	—
Coke	0.6	—	—	—	—	—
<i>Total</i>	<i>152.1</i>	<i>67.3</i>	<i>–55.8</i>	<i>157.3</i>	<i>413.5</i>	<i>162.9</i>
<b>Total</b>	<b>10 214.2</b>	<b>13 153.3</b>	<b>28.8</b>	<b>1 213.0</b>	<b>1 469.6</b>	<b>21.2</b>

(a) Other refinery feedstock (ORF). (b) Automotive diesel oil (ADO) and industrial diesel fuel (IDF). (c) Also includes lubricants and greases, bitumen and other bituminous products, solvents, waste oils and diesel.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics — Australian Energy Update', 2006, Table J.

### 17.9 EXPORTS AND IMPORTS OF ENERGY PRODUCTS



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics - Australian Energy Update', 2006, Table J.

### 17.10 ENERGY PRODUCTS, Value of exports and imports

	Exports			Imports		
	1999-2000	2004-05	Change from 1999-2000 to 2004-05	1999-2000	2004-05	Change from 1999-2000 to 2004-05
	\$m	\$m	%	\$m	\$m	%
Black coal(a)	8 323	17 144	106.0	5	11	120.0
Crude oil and ORF(b)	4 878	5 693	16.7	5 915	9 687	63.8
LPG	648	804	24.1	108	143	32.4
LNG	1 949	3 199	64.1	—	—	—
Uranium oxide	367	475	29.4	—	—	—
Refinery products	2 281	2 498	9.5	1 617	5 228	223.3
Total of energy products	18 446	29 813	61.6	7 645	15 069	97.1
Total merchandise trade	97 287	126 824	30.4	110 077	149 468	35.8

(a) Coking plus steaming. (b) Other refinery feedstock (ORF).

Source: International Merchandise Imports, Australia, May 2006 (5439.0); International Trade in Goods and Services, Australia, May 2006 (5368.0); Australian Bureau of Agricultural and Resource Economics, 'Australian Commodity Statistics', 2004.

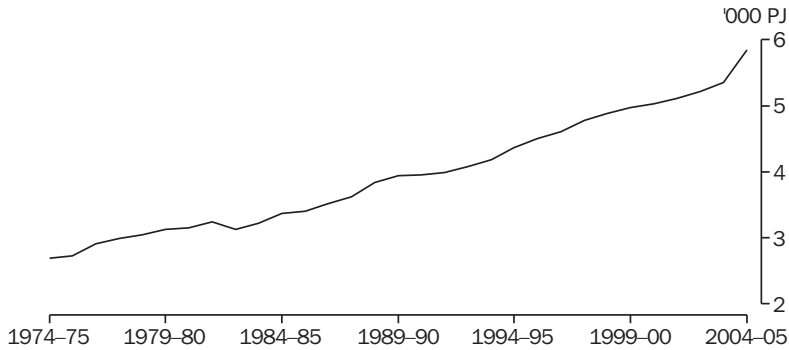
While the volume of energy exports has increased by 29% in the period 1999-2000 to 2004-05 (table 17.8), the value of energy exports over the same period increased by 62%, partly due to price increases for energy products in the period. Although uranium accounted for over a third of all exports by energy content, the value of uranium exports contributed only 2% of the total value of energy exports in 2004-05.

## Energy use

### Total energy use

In 2004-05 Australia's total domestic energy use was 5,841 PJ, less than one third of the total energy it produced (17,524 PJ) (diagram 17.4). Over the period 1974-75 to 2004-05 there was a 217% increase in the total energy use in Australia (graph 17.11).

### 17.11 TOTAL ENERGY USE



Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics - Australian Energy Update', 2006, Table F.1.

### Energy conversion and supply losses

The energy conversion sectors accounted for more than three quarters (4,465 PJ) of total domestic energy use in 2004–05 (diagram 17.4). The energy conversion sectors (including electricity generators, petroleum refiners, operators of coke ovens and blast furnaces, and gas manufacturers) transform primary energy products into more useful, higher value-added derived energy products. For example, petroleum refiners transform crude oil into petroleum products such as petrol and diesel.

The electricity generation and petroleum refining sectors are the two main users of energy. In 2004–05 these two conversion sectors used 2,439 PJ and 1,570 PJ respectively (table 17.12). Since 1999–2000, energy use by the electricity generation sector has increased by 19% and energy use by the petroleum refining sector has declined by 7%.

### Derived energy products

In 2004–05 Australia produced 2,446 PJ of derived energy products (diagram 17.4). These products included thermal electricity (850 PJ), automotive gasoline (613 PJ), diesel (495 PJ), aviation turbine fuel (196 PJ) and coal products (168 PJ) (table 17.13).

In the period 1999–2000 to 2004–05 production of derived energy increased from 2,383 PJ to 2,446 PJ (up 2.6%). In this period the production of thermal energy increased from 704 PJ to 850 PJ (up 21%). At the same time there has been a fall in the production of all coal products – coke (down 3%), coal by-products (down 12%), briquettes (down 69%) – and all petroleum products, except diesel (up 0.1%).

### 17.12 ENERGY USED IN CONVERSION, By sector

	1999–2000	2004–05	Change from 1999–2000 to 2004–05
	PJ	PJ	%
Coke oven operation	148	133	–10.1
Briquetting	11	9	–18.2
Petroleum refining	1 691	1 570	–7.2
Electricity generation	2 057	2 439	18.6
Gas manufacturing	2	4	100.0
Other conversion(a)	95	74	–22.1
Fuel used in conversion	214	236	10.3
<b>Total</b>	<b>4 218</b>	<b>4 465</b>	<b>5.9</b>

(a) Includes return streams to refineries from the petrochemical industry; consumption of coke in blast furnaces; blast furnace gas manufacture; electricity produced through cogeneration; and brown coal tar produced in tar manufacture.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics — Australian Energy Update', 2005 and 2006, Table A.

### 17.13 PRODUCTION OF DERIVED ENERGY

Fuel	1999–2000	2004–05	Change from 1999–2000 to 2004–05
	PJ	PJ	%
<b>Coal products</b>			
Coke	105.9	102.8	–2.9
Coal by-products	70.6	62.0	–12.2
Briquettes	9.8	3.0	–69.4
<b>Petroleum products</b>			
Automotive gasoline	637.9	612.8	–3.9
Aviation turbine fuel	203.8	195.9	–3.9
Fuel oil	73.0	45.4	–37.8
Diesel(a)	494.0	494.5	0.1
Thermal electricity	703.9	850.4	20.8
Other	84.1	79.2	–5.8
<b>Total</b>	<b>2 383.0</b>	<b>2 446.0</b>	<b>2.6</b>

(a) Includes automotive diesel oil and industrial and marine diesel fuel.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics — Australian Energy Update', 2006, Table F.

However, significant energy losses are involved in the process of transforming primary energy resources into derived energy products and in the delivery of derived energy products to the market. In 2004–05, over a third (2,019 PJ) of the total energy available for domestic use was lost through the conversion processes and the distribution and transmission systems (diagram 17.4).

### Energy end-use by sector

In 2004–05 Australia's end-users of energy, comprising households and industries (excluding the conversion sectors), used 3,822 PJ of energy (table 17.14). This is an increase of 7.9% since 1999–2000.

The transport sector (including household transport) is the largest end-user of energy, using 1,339 PJ in 2004–05. In 2004–05 road transport accounted for 78% (1,044 PJ) of the transport sectors energy use, with the remaining contributors being air transport (178 PJ), water transport (58 PJ), rail transport (38 PJ) and other (21 PJ). The manufacturing sector was the second highest user of energy (1,247 PJ) in 2004–05. Together with the transport sector, these two sectors account for 68% of total energy end-use.

### 17.14 ENERGY END-USE, By sector

	1999–2000	2004–05	Change from 1999–2000 to 2004–05
	PJ	PJ	%
Agriculture	71	100	40.8
Mining	273	342	25.3
Manufacturing	1 192	1 247	4.6
Construction	51	28	–45.1
Transport(a)	1 267	1 339	5.7
Commercial(b)	216	249	15.3
Residential(c)	394	433	9.9
Other(d)	79	84	6.3
<b>Total</b>	<b>3 543</b>	<b>3 822</b>	<b>7.9</b>

(a) Includes all transport use, including household motor vehicle use. (b) Includes wholesale and retail trade, communications, finance and insurance, property and business services, government administration and defence, education, health and community services, cultural and recreational services, and personal and other services, along with water, sewerage and drainage. (c) Transport use by households is included in transport. (d) Includes lubricants and greases, bitumen and solvents, as well as energy consumption in the gas production and distribution industries.

Source: Australian Bureau of Agricultural and Resource Economics, 'Australian Energy Statistics — Australian Energy Update' 2005 and 2006, Table B.

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## MANUFACTURING

Manufacturing broadly relates to the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machinery or by hand. Manufacturing covers a range of production techniques ranging from computer-assisted production using robots to production of fine jewellery by hand.

The Manufacturing industry contributed a little over 11% to Australia's gross domestic product in 2004–05. Although the value of Manufacturing industry gross value added has grown by 19% over the last ten years, the industry's share of the total production of goods and services in the economy has fallen from 14% to its current level over the period.

In May 2006 there were 1,061,500 people working in the Manufacturing industry (including both full-time and part-time workers). This represented 10% of total people employed. The majority of those employed within the Manufacturing industry were full-time workers (87%) and male (74%).

The Manufacturing industry dominates Australia's merchandise exports, accounting for 49% of the total value of exports by industry of origin in 2005–06.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Manufacturing industry

## Economic contribution

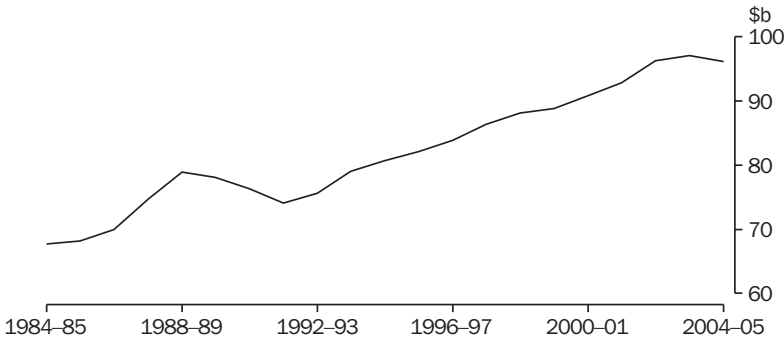
The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry structure and performance* chapter.

Total production of the Manufacturing industry, as measured by industry GVA (in volume terms), increased in most years from 1984–85 to 2004–05

(graph 18.1). During this period, production increased by 42%. It has been steadily increasing since 1991–92 with a slight decrease (1%) in 2004–05.

Table 18.2 shows the industry GVA of the subdivisions (components) within the Manufacturing Division as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). The table also shows the contribution of the Manufacturing industry to Australia's GDP in the period 2000–01 to 2004–05.

**18.1 MANUFACTURING PRODUCTION(a)(b)**



(a) Industry gross value added. (b) Volume measures. Reference year is 2003–04.

Source: Australian System of National Accounts, 2004–05 (5204.0).

**18.2 MANUFACTURING INDUSTRY(a), Gross value added(b)**

ANZSIC Subdivision	Units	2000–01	2001–02	2002–03	2003–04	2004–05	Percentage change from 2000–01 to 2004–05
Food, beverage and tobacco manufacturing	\$m	18 821	18 726	18 913	18 875	19 076	1.4
Textile, clothing, footwear and leather manufacturing	\$m	4 320	3 788	3 487	3 223	2 621	–39.3
Wood and paper product manufacturing	\$m	6 543	6 821	6 941	6 898	6 924	5.8
Printing, publishing and recorded media	\$m	9 613	9 783	10 016	10 310	10 095	5.0
Petroleum, coal, chemical and associated product manufacturing	\$m	12 521	12 639	13 377	12 773	12 817	2.4
Non-metallic mineral product manufacturing	\$m	3 863	4 111	4 456	4 611	4 852	25.6
Metal product manufacturing	\$m	16 025	17 228	17 843	17 888	17 483	9.1
Machinery and equipment manufacturing	\$m	16 002	16 038	17 198	18 072	18 185	13.6
Other manufacturing	\$m	3 567	3 908	4 181	4 453	4 092	14.7
Total manufacturing(c)	\$m	90 878	92 808	96 277	97 103	96 144	5.8
Contribution to GDP(d)	%	11.6	11.0	11.5	11.6	11.3	..

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Volume measures. Reference year is 2003–04. (c) Volume measures for years other than 2003–04 and 2004–05 are not additive. (d) In current prices.

Source: Australian System of National Accounts, 2004–05 (5204.0).

In this period, the Manufacturing industry GVA (in volume terms) rose by 5.8%, while its contribution to GDP (in current prices) declined marginally from 11.6% in 2000–01 to 11.3% in 2004–05. The largest increase in production in the period was for Non-metallic mineral product manufacturing (26%), followed by Other manufacturing (15%) and Machinery and equipment manufacturing (14%). Production for Non-metallic mineral product manufacturing and Machinery and equipment manufacturing had been growing progressively each year from 2000–01.

Production for Textile, clothing, footwear and leather manufacturing fell by 39%. It was the only industry subdivision that recorded a fall over this period. Production in this subdivision has been declining each year since 1998–99.

Between 2003–04 and 2004–05, production decreased for Textile, clothing, footwear and leather manufacturing (19%), Other manufacturing (8.1%), Metal product manufacturing (2.3%) and Printing, publishing and recorded media (2.1%). The largest increase was for Non-metallic mineral product manufacturing (5.2%).

The Manufacturing industry is the largest contributor to Australia’s export earnings. Its value of exports based on industry of origin accounted for 49% of total exports in 2005–06.

### Structure and performance

The major source of statistics in this section is the annual Economic Activity Survey (EAS) of businesses, conducted by the Australian Bureau of Statistics (ABS).

Production of an industry can be measured in terms of industry value added (IVA), in much the same way as industry GVA. However, unlike industry GVA (the national accounts concept of production), IVA is not adjusted for a number of national accounting conventions, as the information to make these adjustments cannot be collected in the EAS. The advantage of IVA, however, is the availability of more detailed (component) industry and state estimates of manufacturing production.

### Summary of operations in 2003–04

In 2003–04 manufacturing businesses paid \$55 billion (b) in labour costs, and generated \$316b of sales and services income, and \$90b of IVA (table 18.3).

Food, beverage and tobacco manufacturing was the largest contributor to total manufacturing sales and service income (\$68b or 22%) and the second largest contributor to IVA (\$18b or 19%). Machinery and equipment manufacturing contributed the most to total manufacturing IVA (\$18b or 20%) and was the second largest contributor to total manufacturing sales and service income (\$60b or 19%). Other industry subdivisions making major contributions were Metal product manufacturing (19% of sales and service income and 18% of IVA) and Petroleum, coal, chemical and associated product manufacturing (17% and 12%).

**18.3 MANUFACTURING INDUSTRY(a), Selected performance measures — 2003–04**

ANZSIC Subdivision	Labour costs(b) \$m	Sales and service income(c) \$m	Industry value added \$m
Food, beverage and tobacco manufacturing	10 155.3	68 470.4	17 609.3
Textile, clothing, footwear and leather manufacturing	2 141.5	10 291.0	3 188.6
Wood and paper product manufacturing	3 423.5	18 626.8	6 522.9
Printing, publishing and recorded media	5 480.2	20 661.7	9 316.4
Petroleum, coal, chemical and associated product manufacturing	6 557.6	52 832.8	11 257.7
Non-metallic mineral product manufacturing	2 498.2	13 645.5	4 810.7
Metal product manufacturing	9 084.2	58 742.9	15 902.5
Machinery and equipment manufacturing	12 614.7	59 843.5	17 789.9
Other manufacturing	2 721.8	12 490.0	4 036.3
<b>Total manufacturing</b>	<b>54 677.0</b>	<b>315 604.6</b>	<b>90 434.4</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Includes wages and salaries, payroll tax, fringe benefits taxes, workers compensation costs and employers contributions to superannuation. (c) Includes rent, leasing and hiring income.

Source: *Manufacturing Industry, Australia, 2003–04* (8221.0).

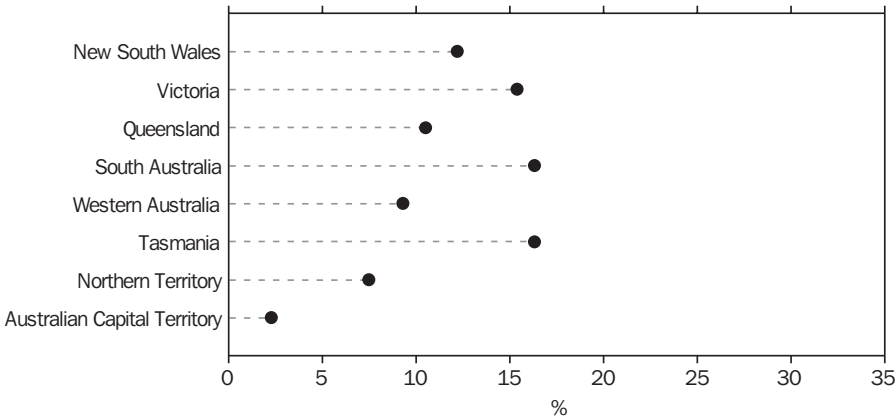
**Contribution to state production**

Graph 18.4 shows the Manufacturing industry’s contribution to state production (in current prices) for 2004–05. The trend for the Manufacturing industry’s share of total production in all states has generally been decreasing, even though Australian manufacturing production grew by 33% (in current prices) between 1997–98 and 2004–05. This is because the growth in manufacturing production has been at a slightly slower rate than the growth in other industries.

**State distribution of activity**

Graph 18.5 shows the relative contributions to overall manufacturing production by states and territories in 2003–04. New South Wales and Victoria continued to be the largest contributors to manufacturing production, accounting for 32% (\$29b) and 31% (\$28b) respectively.

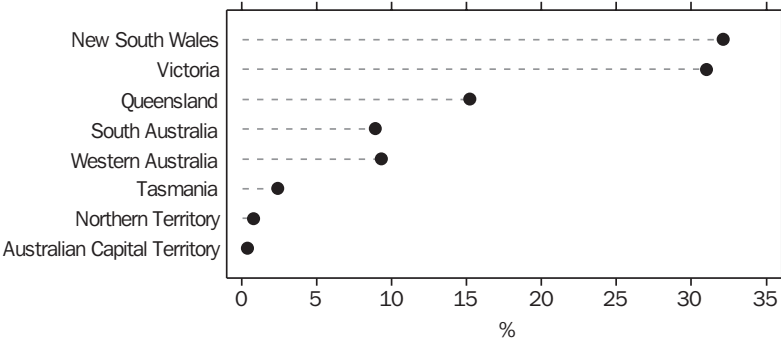
**18.4 MANUFACTURING INDUSTRY’S CONTRIBUTION TO STATE PRODUCTION(a) — 2004–05**



(a) State production as measured by total factor income (in current prices).

Source: Australian National Accounts: State Accounts, 2004–05 (5220.0).

**18.5 MANUFACTURING PRODUCTION(a) — 2003–04**



(a) Production is measured by industry value added.

Source: Manufacturing Industry, Australia, 2003–04 (8221.0).

Table 18.6 shows the production by Manufacturing industry subdivision by state and territory. In 2003–04, New South Wales contributed 38% of the total IVA of the Printing, publishing and recorded media industry (\$9.3b) and between 29% and 36% of the total IVA of the remaining manufacturing industries. Victoria contributed 45% of the total IVA of the Textile, clothing, footwear and leather manufacturing industry (\$3.2b), 38% of the total IVA of the Petroleum, coal, chemical and associated product manufacturing industry (\$11.3b), and between 23% and 35% of the total IVA of the remaining manufacturing industries.

Food, beverage and tobacco manufacturing, and Machinery and equipment manufacturing were the largest manufacturing industries in New South Wales and Victoria, accounting for 22% and 18% respectively of the manufacturing IVA for New South Wales, and 18% and 22% for Victoria.

Queensland contributed 20% of the total IVA for Metal product manufacturing which was also the largest manufacturing industry (23%) in this state. The contributions of South Australia and Western Australia to total manufacturing IVA were \$8.0b and \$8.4b respectively, although the structure of the Manufacturing industry was very different.

Machinery and equipment manufacturing was the largest manufacturing industry in South Australia, accounting for 32% of state production and 14% of the total IVA for the industry. South Australia also contributed between 5% and 11% of the total IVA of the remaining manufacturing industries. Western Australia contributed 16% of total IVA for Metal product manufacturing and 13% of total IVA for Non-metallic mineral product manufacturing. Metal product manufacturing was the largest manufacturing industry in the state, accounting for 31% of state production.

Manufacturing was not as significant for the remaining state and territories. Tasmania, which accounted for \$2.2b of total manufacturing IVA, contributed 9% of total IVA for Wood and paper product manufacturing. The total production for the Northern Territory and the Australian Capital Territory were \$0.7b and \$0.4b respectively.

### Employment

The number of full-time and part-time workers in each Manufacturing industry subdivision is provided in table 18.7. The table includes directors who are not paid a salary and self-employed people (such as contractors, owner/drivers, consultants and people paid solely by commission without a retainer).

**18.6 MANUFACTURING INDUSTRY(a), Value added — 2003–04**

ANZSIC Subdivision	NSW \$m	Vic. \$m	Qld \$m	SA \$m	WA \$m	Tas. \$m	NT \$m	ACT \$m	Aust. \$m
Food, beverage and tobacco manufacturing	6 316.1	5 020.9	2 832.9	1 707.5	1 177.8	476.9	41.4	35.8	17 609.3
Textile, clothing, footwear and leather manufacturing	999.6	1 423.6	333.3	156.3	200.6	64.0	n.p.	n.p.	3 188.6
Wood and paper product manufacturing	1 945.4	1 844.4	974.6	743.9	390.6	583.3	5.2	35.4	6 522.9
Printing, publishing and recorded media	3 578.5	3 100.0	1 107.5	598.3	628.3	141.4	32.1	130.3	9 316.4
Petroleum, coal, chemical and associated product manufacturing	3 478.2	4 278.6	1 417.8	685.6	1 219.2	152.3	18.2	7.9	11 257.7
Non-metallic mineral product manufacturing	1 549.2	1 262.0	820.5	388.0	610.4	106.9	46.6	27.1	4 810.7
Metal product manufacturing	4 685.1	3 597.6	3 153.5	950.1	2 586.1	420.6	n.p.	n.p.	15 902.5
Machinery and equipment manufacturing	5 122.4	6 265.0	2 313.0	2 540.4	1 205.5	217.1	43.3	83.3	17 789.9
Other manufacturing	1 319.6	1 198.3	819.7	265.8	354.0	45.5	n.p.	n.p.	4 036.3
<b>Total manufacturing</b>	<b>28 994.1</b>	<b>27 990.3</b>	<b>13 772.6</b>	<b>8 036.0</b>	<b>8 372.6</b>	<b>2 208.1</b>	<b>686.6</b>	<b>374.1</b>	<b>90 434.4</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Manufacturing Industry, Australia, 2003–04* (8221.0).

### 18.7 MANUFACTURING INDUSTRY(a), Employment — May 2006

ANZSIC Subdivision	Males			Females			Persons		
	Full time '000	Part time '000	Total '000	Full time '000	Part time '000	Total '000	Full time '000	Part time '000	Total '000
Food, beverage and tobacco manufacturing	109.6	9.0	118.6	41.3	18.3	59.6	150.9	27.2	178.2
Textile, clothing, footwear and leather manufacturing	15.3	2.1	17.4	23.8	12.8	36.7	39.1	15.0	54.1
Wood and paper product manufacturing	56.2	2.4	58.6	6.0	3.2	9.2	62.2	5.5	67.8
Printing, publishing and recorded media	51.5	5.5	57.0	30.3	14.9	45.2	81.9	20.4	102.2
Petroleum, coal, chemical and associated product manufacturing	54.9	2.6	57.5	21.0	5.5	26.5	75.9	8.1	84.0
Non-metallic mineral product manufacturing	32.4	2.7	35.2	6.9	2.9	9.8	39.3	5.7	45.0
Metal product manufacturing	141.9	5.4	147.2	13.1	7.8	20.9	155.0	13.1	168.1
Machinery and equipment manufacturing	187.4	10.9	198.3	27.7	10.5	38.2	215.1	21.4	236.5
Other manufacturing	46.8	5.7	52.6	8.9	5.7	14.7	55.8	11.5	67.2
<b>Total manufacturing(b)</b>	<b>739.1</b>	<b>47.9</b>	<b>787.0</b>	<b>185.8</b>	<b>88.7</b>	<b>274.5</b>	<b>924.9</b>	<b>136.6</b>	<b>1 061.5</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Includes 49,700 persons employed full time and 8,700 persons employed part time not classified to an industry subdivision.

Source: Labour Force Australia, Detailed – Electronic Delivery (6291.0.55.003); Australian Labour Statistics, July 2006 (6105.0).

In May 2006 the Manufacturing industry employed 10% (1,061,500) of all people employed in Australia (10,142,200). Males outnumbered females by a ratio of almost 3 to 1 (74% males and 26% females). The majority of people employed in the Manufacturing industry were employed full time (94% of males and 68% of females), which is higher than the proportion of people employed full time in all industries (85% of males and 54% of females).

The largest employers of males were Machinery and equipment manufacturing (198,300) and Metal product manufacturing (147,200). The largest employers of females were Food, beverage and tobacco manufacturing (59,600) and Printing, publishing and recorded media (45,200).

Table 18.8 presents information on average weekly earnings (i.e. ordinary time earnings plus overtime earnings) of employees in the Manufacturing industry compared with all industries. Between May 1986 and May 2006 the average earnings of all employees (male and female) increased by \$592 (154%) in the Manufacturing industry. The increase in the Manufacturing industry was higher than the increase of \$460 (126%) for all industries. The average earnings of full-time employees experienced similar changes between May 1986 and May 2006, increasing by \$651 (157%) in the Manufacturing industry and \$653 (150%) for all industries.

### 18.8 MANUFACTURING INDUSTRY, Average weekly earnings(a)(b) — May

	All employees			Full-time employees		
	1986	2006	Change from 1986 to 2006	1986	2006	Change from 1986 to 2006
	\$	\$	%	\$	\$	%
<b>Males</b>						
Manufacturing	417.20	1 069.80	156.4	439.30	1 118.50	154.6
All industries	425.50	985.10	131.5	465.90	1 165.20	150.1
<b>Females</b>						
Manufacturing	286.40	719.40	151.2	319.70	862.60	169.8
All industries	278.20	651.00	134.0	364.90	948.10	159.8
<b>Persons</b>						
Manufacturing	385.10	977.50	153.8	413.70	1 064.80	157.4
All industries	366.50	826.90	125.6	434.90	1 088.30	150.2

(a) Derived by dividing estimates of weekly total earnings (including overtime) by estimates of number of employees. Changes in average weekly earnings may be affected not only by changes in the level of earnings of employees but also by changes in the overall composition of the wage and salary earner segment of the labour force. (b) The actual reference period is the last pay period ending on or before the third Friday of the middle month of the quarter.

Source: Average Weekly Earnings, Australia (6302.0).

In the Manufacturing industry, the earnings of both male and female full-time employees increased but the increase for female employees was 15 percentage points more than the increase for male employees. Despite this increase, female earnings remain well below average male earnings. The difference, in percentage terms, between the earnings of males and females had decreased between May 1986 and May 2006. The average weekly earnings for male full-time employees at May 2006 was higher by \$256 (30%) than for female full-time employees. In May 1986 male full-time employees were earning \$120 (37%) more than female full-time employees.

### Operating profit before tax (OPBT)

OPBT is a measure of profit before extraordinary items are brought to account and prior to the deduction of income tax and appropriations to owners (e.g. dividends paid).

Profits for six industry subdivisions were higher in 2003–04 than they were for 2002–03 (table 18.9). Manufacturing industries with lower profits in 2003–04 were Wood and paper product manufacturing (down 2.2% or \$38 million (m)), Petroleum, coal, chemical and associated product manufacturing (down 8.3% or \$230m) and Metal product manufacturing (down 6.2% or \$284m). The Food, beverage and tobacco industry experienced the greatest increase in profits between 2002–03 and 2003–04 (59% or \$2,230m). Other industries that experienced substantial profit growth in the last financial year include Textile, clothing, footwear and leather manufacturing (37% or \$190m), Other manufacturing (37% or \$257m) and Machinery

and equipment manufacturing (17% or \$495m). The OPBT for total manufacturing increased by 14% or \$2,900m between 2002–03 and 2003–04.

Industries contributing most to total manufacturing industry profits for 2003–04 were Food, beverage and tobacco manufacturing (25% of total manufacturing OPBT), Metal product manufacturing (18%), Machinery and equipment manufacturing (14%) and Printing, publishing and recorded media (12%).

### Capital expenditure

Overall, capital expenditure by the Manufacturing industry increased by \$399m (3.1%) from 2002–03 to 2003–04 (table 18.10).

Six of the nine Manufacturing industry subdivisions recorded increases in capital expenditure in this period. The largest increases in percentage terms were in Petroleum, coal, chemical and associated product manufacturing (35% or \$588m), Wood and paper product manufacturing (33% or \$243m), and Other manufacturing (26% or \$70m). These increases were partly offset by decreases in expenditure in Machinery and equipment manufacturing (26% or \$609m) and Food, beverage and tobacco manufacturing (16% or \$525m).

The manufacturing industries with largest capital expenditure were Food, beverage and tobacco manufacturing (21% of total manufacturing capital expenditure), Metal product manufacturing (20%), Petroleum, coal, chemical and associated product manufacturing (17%) and Machinery and equipment manufacturing (13%).

## 18.9 MANUFACTURING INDUSTRY(a), Operating profit before tax

ANZSIC Subdivision	2002–03 \$m	2003–04 \$m	Change from 2002–03 to 2003–04 %	Subdivision contribution to total 2003–04 %
Food, beverage and tobacco manufacturing	3 778.4	6 008.1	59.0	25.1
Textile, clothing, footwear and leather manufacturing	514.8	704.8	36.9	2.9
Wood and paper product manufacturing	1 739.0	1 701.1	-2.2	7.1
Printing, publishing and recorded media	2 627.0	2 773.9	5.6	11.6
Petroleum, coal, chemical and associated product manufacturing	2 789.3	2 559.1	-8.3	10.7
Non-metallic mineral product manufacturing	1 379.6	1 513.3	9.7	6.3
Metal product manufacturing	4 591.6	4 307.4	-6.2	18.0
Machinery and equipment manufacturing	2 944.0	3 439.2	16.8	14.3
Other manufacturing	703.4	959.9	36.5	4.0
<b>Total manufacturing</b>	<b>21 067.1</b>	<b>23 967.0</b>	<b>13.8</b>	<b>100.0</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Manufacturing Industry, Australia, 2003–04 – Datacubes (8221.0)*.



### 18.10 MANUFACTURING INDUSTRY(a), Capital expenditure

ANZSIC Subdivision	2002-03	2003-04	Change from 2002-03 to 2003-04	Subdivision contribution to total 2003-04
	\$m	\$m	%	%
Food, beverage and tobacco manufacturing	3 349.3	2 824.7	-15.7	21.4
Textile, clothing, footwear and leather manufacturing	300.9	348.1	15.7	2.6
Wood and paper product manufacturing	738.8	981.5	32.9	7.4
Printing, publishing and recorded media	1 096.0	978.1	-10.8	7.4
Petroleum, coal, chemical and associated product manufacturing	1 697.3	2 284.9	34.6	17.3
Non-metallic mineral product manufacturing	856.9	1 060.7	23.8	8.0
Metal product manufacturing	2 171.5	2 669.6	22.9	20.2
Machinery and equipment manufacturing	2 338.9	1 730.4	-26.0	13.1
Other manufacturing	269.7	339.9	26.0	2.6
<b>Total manufacturing</b>	<b>12 819.2</b>	<b>13 217.9</b>	<b>3.1</b>	<b>100.0</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Manufacturing Industry, Australia, 2003-04 – Datacubes (8221.0)*.

### Research and experimental development (R&D)

In the business context R&D is defined as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application or new or improved products, processes, materials, devices or services. R&D activity also extends to modifications to existing products and processes. Surveys conducted by the ABS of R&D are based on a complete enumeration of businesses identified as likely R&D performers. Businesses mainly engaged in the Agriculture, forestry and fishing industry are excluded.

Total R&D expenditure by the Manufacturing industry increased by \$125m (4%) in 2004-05 (table 18.11). Industries contributing the most to manufacturing R&D expenditure in 2004-05 were Motor vehicle and part and other transport equipment manufacturing (27%), Petroleum, coal, chemical and associated product manufacturing (17%), Metal product manufacturing (12%) and Electronic and electrical equipment and appliance manufacturing (10%). Together, these industries accounted for 66% of total R&D expenditure by the Manufacturing industry and 27% of the total R&D expenditure by all industries.

### 18.11 MANUFACTURING INDUSTRY(a), R&D expenditure

ANZSIC Subdivision	2002-03	2003-04	2004-05
	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	273	292	323
Textile, clothing, footwear and leather manufacturing	28	41	35
Wood and paper product manufacturing	98	126	115
Printing, publishing and recorded media	25	45	71
Petroleum, coal, chemical and associated product manufacturing	476	550	587
Non-metallic mineral product manufacturing	87	97	70
Metal product manufacturing	321	362	414
Motor vehicle and part and other transport equipment manufacturing	744	891	916
Photographic and scientific equipment manufacturing	293	303	304
Electronic and electrical equipment and appliance manufacturing	338	378	349
Industrial machinery and equipment manufacturing	165	201	206
Other manufacturing	21	40	61
<b>Total manufacturing</b>	<b>2 868</b>	<b>3 326</b>	<b>3 451</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Research and Experimental Development, Businesses, Australia (8104.0)*.



Of Manufacturing industry total R&D expenditure in 2004–05, 7% was on capital expenditure, 45% on labour costs and 48% on other current expenditure (table 18.12). The Motor vehicle and part and other transport equipment manufacturing industry contributed the largest expenditure on R&D by the Manufacturing industry for each of labour costs (29%), and other current expenditure (24%). The Petroleum, coal, chemical and associated product manufacturing industry was the largest contributor for capital expenditure (24%) with Motor vehicle and part and other transport equipment manufacturing being the second largest contributor (23%). Manufacturing accounted for 45% of the capital expenditure, 43% of the labour costs, and 39% of other current expenditure on R&D by all industries.

## Price indexes

The ABS compiles two price indexes relating to the Manufacturing industry – the Price Index of Materials Used in Manufacturing Industries and the Price Index of Articles Produced by Manufacturing Industries. Information on recent trends in the prices of materials used and articles produced in individual manufacturing industries is provided in the section *Producer price indexes* in the *Prices* chapter.

## International trade

The Manufacturing industry dominates Australia's value of exports by industry of origin, accounting for 49% of total exports in 2005–06 (table 18.13). The value of manufacturing exports was 55% higher in 2005–06 than in 1996–97. However, the Manufacturing industry share of total value of exports has been trending down over this period.

### 18.12 MANUFACTURING INDUSTRY(a), Type of expenditure on R&D — 2004–05

ANZSIC Subdivision	Capital expenditure	Labour costs	Other current expenditure	Total
	\$m	\$m	\$m	\$m
Food, beverage and tobacco manufacturing	33	149	142	323
Textile, clothing, footwear and leather manufacturing	3	17	15	35
Wood and paper product manufacturing	3	31	81	115
Printing, publishing and recorded media	4	34	33	71
Petroleum, coal, chemical and associated product manufacturing	57	231	299	587
Non-metallic mineral product manufacturing	12	23	34	70
Metal product manufacturing	31	129	253	414
Motor vehicle and part and other transport equipment manufacturing	54	459	403	916
Photographic and scientific equipment manufacturing	10	162	132	304
Electronic and electrical equipment and appliance manufacturing	17	209	123	349
Industrial machinery and equipment manufacturing	11	96	100	206
Other manufacturing	2	19	40	61
<b>Total manufacturing</b>	<b>237</b>	<b>1 558</b>	<b>1 656</b>	<b>3 451</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Research and Experimental Development, Businesses, Australia, 2004–05 (8104.0)*.

### 18.13 VALUE OF MERCHANDISE EXPORTS OF GOODS, By industry of origin(a)

	Manufacturing	All industries	Manufacturing share of total exports
	\$m	\$m	%
1996–97	48 494	78 932	61.4
1997–98	53 301	87 768	60.7
1998–99	52 073	85 991	60.6
1999–2000	57 982	97 286	59.6
2000–01	69 128	119 539	57.8
2001–02	69 111	121 108	57.1
2002–03	65 810	115 479	57.0
2003–04	62 442	109 049	57.3
2004–05	67 496	126 823	53.2
2005–06	74 958	151 792	49.4

(a) On a free-on-board basis.

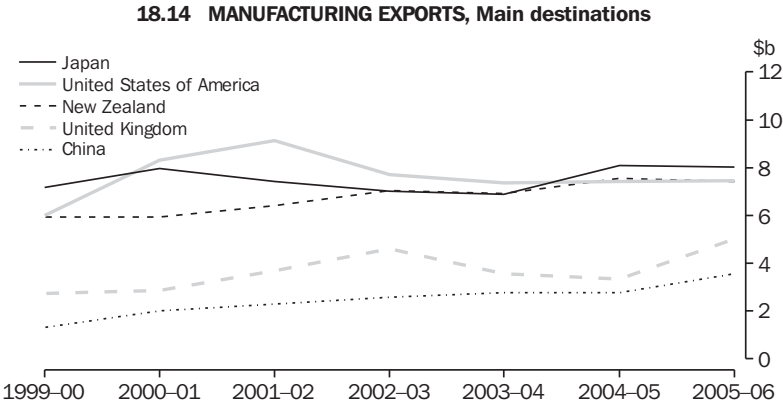
Source: *ABS data available on request, International Trade*.

Graph 18.14 shows the five main destinations for manufacturing commodities exported from Australia, during the period 1999–2000 to 2005–06. Of these, the key destinations were Japan, New Zealand (NZ) and the United States of America (USA). In 2005–06, the value of exports to Japan was \$8.0b, compared with \$7.4b for both USA and NZ. Over the period 1999–2000 to 2005–06 the value of exports to China has almost tripled from \$1.3b to \$3.6b.

More than 90% of Australia’s total value of imports during the period 1996–97 to 2005–06 were manufactured goods (table 18.15). The value of

Australia’s imports of manufactured goods more than doubled over this period, from \$74b to \$153b.

Graph 18.16 shows the value of manufacturing commodities imported from five main countries to Australia, in the period 1999–2000 to 2005–06. From 1999–2000 to 2004–05 Australia imported more manufactured goods from the USA than from any other country. However, in 2005–06, China overtook the USA as the country providing the largest amount of imports. The value of imports from China grew more than three times from \$7.3b in 1999–2000 to \$22.6b in 2005–06.



Source: ABS data available on request, International Trade.

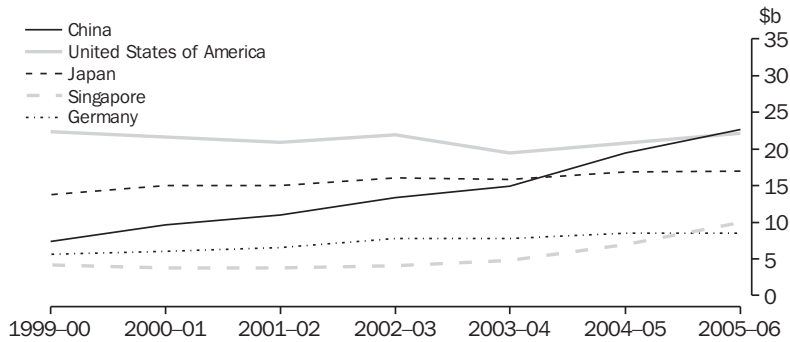
**18.15 VALUE OF MERCHANDISE IMPORTS OF GOODS, By industry of origin(a)**

	Manufacturing	All industries	Manufacturing share of total imports
	\$m	\$m	%
1996–97	73 747	78 998	93.4
1997–98	85 746	90 684	94.6
1998–99	92 437	97 611	94.7
1999–2000	102 382	110 078	93.0
2000–01	108 331	118 317	91.6
2001–02	111 162	119 649	92.9
2002–03	123 041	133 129	92.4
2003–04	122 844	130 997	93.8
2004–05	138 011	149 469	92.3
2005–06	152 904	167 603	91.2

(a) Customs value.

Source: ABS data available on request, International Trade.

### 18.16 MANUFACTURING IMPORTS(a), Selected countries



(a) Customs value.

Source: ABS data available on request, International Trade.

## Manufactured commodities

Table 18.17 shows the quantities produced of selected manufactured commodities for the period 2001-02 to 2004-05.

The largest increases between 2001-02 and 2004-05 were experienced in the production of cars and station wagons for fewer than ten persons and Portland cement. Production of these commodities increased by 25% and 23% respectively. Production of unfortified wine continued to increase over this period (22%) whereas the manufacture of beer experienced a slight decrease (3%).

In the same period, the largest declines in production were recorded by cotton yarn (80%) and wool and man-made fibre tops (68%). Production levels of other major textiles

commodities have also decreased substantially between 2001-02 to 2004-05 with scoured and carbonised wool down by 29% and wool yarn down by 14%.

Most petroleum products decreased during 2001-02 to 2004-05, fuel oil production leading this trend with a decrease of 35%. Production of automotive gasoline fell by less than 1% over this period with a 3% decrease in 2003-04 being followed by a 3% increase in 2004-05. Among the metal products, the largest increase in production was for pig iron (6%). Raw steel production was down 9% due to a 20% decrease in 2004-05.

Production of selected building materials increased over this period. Clay brick production rose by 6% between 2001-02 and 2004-05.

## 18.17 MANUFACTURING PRODUCTION, Selected commodities

	Units	2001–02	2002–03	2003–04	2004–05	Percentage change from 2001–02 to 2004–05
<b>Selected vehicles</b>						
Cars and station wagons for fewer than ten persons	no.	318 951	358 286	413 655	398 819	25.0
<b>Selected food products and beverages</b>						
Brandy spirit	'000 L	n.p.	n.p.	466	884	n.p.
Unfortified wine	'000 L	1 150 854	1 019 393	1 381 064	1 400 074	21.7
Red meat	'000 t	3 067	3 090	3 000	3 142	2.4
Chicken meat	'000 t	667	690	694	750	12.4
Milk	ML	11 271	10 326	10 075	10 125	-10.2
Cheese	'000 t	431	368	381	373	-13.5
Butter	'000 t	178	149	132	131	-26.4
Beer	ML	1 745	1 727	1 735	1 686	-3.4
Sugar(a)	'000 t	4 987	5 461	4 994	5 196	4.2
<b>Selected textiles</b>						
Scoured and carbonised wool	t	99 924	88 663	79 213	70 901	-29.0
Wool and man-made fibre tops	t	53 828	38 903	21 263	17 313	-67.8
Wool yarn	t	2 765	3 064	2 771	2 390	-13.6
Cotton yarn	t	26 926	17 902	11 235	5 432	-79.8
<b>Selected petroleum and metal products</b>						
Automotive gasoline	ML	18 000	17 984	17 375	17 913	-0.5
Fuel oil	ML	1 684	1 441	1 105	1 092	-35.2
Automotive diesel oil	ML	13 064	13 335	12 544	12 822	-1.9
Aviation turbine fuel	ML	5 390	5 149	4 964	5 325	-1.2
Alumina	'000 t	16 417	16 413	16 690	17 161	4.5
Pig iron	'000 t	6 169	6 634	6 624	6 520	5.7
Raw steel	'000 t	8 311	9 399	9 471	7 556	-9.1
<b>Selected paper and wood products</b>						
Paper and paperboard(b)	'000 t	2 897	3 061	3 164	3 244	12.0
Wood based panels(c)	'000 m <sup>3</sup>	1 890	2 030	1 989	1 894	0.2
<b>Selected building materials</b>						
Portland cement	'000 t	7 235	7 731	8 460	8 925	23.4
Clay bricks	mill.	1 602	1 732	1 789	1 704	6.4
Premixed concrete	'000 m <sup>3</sup>	19 447	20 987	22 469	22 915	17.8

(a) Raw tonnes actual. (b) Includes newsprint, printing and writing, household and sanitary and packaging and industrial.  
(c) Includes plywood, particleboard and medium density fibreboard.

Source: Australian Wine and Grape Industry, (1329.0); Livestock Products, Australia (7215.0); Manufacturing Production, Australia, (8301.0.55.001); ABS data available on request, Manufacturing Production Survey; Australian Bureau of Agricultural and Resource Economics (ABARE), 'Australian Commodity Statistics, 2005' and 'Australian Forest and Wood Product Statistics, September and December quarters, 2005'.

## International trade in manufactured commodities

### Principal commodities exported

Table 18.18 provides details of the 20 main manufacturing commodities exported from Australia, in the period 2001–02 to 2005–06. These commodities contributed 44% in total of the value of all merchandise exports in 2005–06. Manufactured commodities made up 49% of the value of all merchandise exports.

Non-ferrous metals and petroleum, petroleum products and related materials were the only two of these selected commodities to each contribute 6% or more to the total value of merchandise exports in 2005–06 contributing 6.8% and 6.0% respectively.

Between 2001–02 and 2005–06, the value of exports for transport equipment (excluding road vehicles) fell by 43% (\$0.8b), while the value of exports for textile fibres and their wastes (not manufactured into yarn or fabric) fell by 31% (\$1.6b). The value of exports of medicinal and

pharmaceutical products increased by 48% (\$1.1b) to \$3.4b in 2005–06, representing slightly over 2% of the total value of Australian exports. The value of exports of gold, non-monetary (excluding gold ores and concentrates) increased by 42% (\$2.1b).

In 2005–06, the value of exports increased for 16 of the 20 selected commodities. The largest increase in value terms was for non-ferrous metals (\$2.3b, 23%), followed by gold, non-monetary (excluding gold ores and concentrates) (\$1.6b, 22%), and petroleum, petroleum products and related materials (\$1.0b, 11%).

### Principal commodities imported

Table 18.19 provides details of the 20 main manufactured commodities imported into Australia during the period 2001–02 to 2005–06. These commodities contributed 79% in total of

the value of all merchandise imports in 2005–06. Manufactured commodities comprised 91% of the value of all merchandise imports.

In comparing the main commodities Australia exported with the main commodities imported in terms of value, it is apparent many of Australia's manufactured exports are simply transformed manufactured commodities such as food products and metals, while the majority of manufactured imports are elaborately transformed commodities such as machinery and equipment.

The major commodity imported into Australia between 2001–02 and 2005–06 was petroleum, petroleum products and related materials, which represented 13% of the total value of imports in 2005–06. Road vehicles (including air cushion vehicles) made up 12% of imports.

**18.18 EXPORTS OF SELECTED MANUFACTURED COMMODITIES**

Commodity group(a)	2001–02 \$m	2004–05 \$m	2005–06 \$m	Change from 2001–02 to 2005–06 %	Change from 2004–05 to 2005–06 %	Share of total exports 2005–06 %
Non-ferrous metals	8 853.8	7 935.3	10 278.6	16.1	22.8	6.8
Petroleum, petroleum products and related materials	8 369.2	8 095.6	9 119.5	9.0	11.2	6.0
Gold, non-monetary (excluding gold ores and concentrates)	5 128.6	5 641.6	7 273.8	41.8	22.4	4.8
Meat and meat preparations	6 248.7	6 936.4	6 713.4	7.4	–3.3	4.4
Cereals and cereal preparations	6 482.2	5 161.2	4 853.8	–25.1	–6.3	3.2
Road vehicles (including air cushion vehicles)	4 292.9	3 920.7	4 244.8	–1.1	7.6	2.8
Textile fibres and their wastes (not manufactured into yarn or fabric)	4 982.9	3 293.6	3 429.6	–31.2	4.0	2.3
Medicinal and pharmaceutical products	2 261.7	2 848.7	3 353.0	48.3	17.7	2.2
Beverages	2 286.6	2 835.5	2 895.6	26.6	2.1	1.9
Dairy products and birds' eggs	3 155.9	2 368.9	2 477.6	–21.5	4.4	1.6
General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.	1 290.0	1 427.6	1 617.5	25.4	11.7	1.1
Professional, scientific and controlling instruments and apparatus, n.e.s.	1 344.2	1 394.7	1 595.6	18.7	12.6	1.1
Electrical machinery, apparatus, appliances, parts (including non-electrical counterparts of electrical domestic equipment)	1 679.7	1 573.0	1 564.1	–6.9	–0.6	1.0
Machinery specialised for particular industries	1 398.0	1 256.4	1 444.8	3.3	13.0	1.0
Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof	1 663.0	1 237.1	1 238.8	–25.5	0.1	0.8
Office machines and automatic data processing machines	1 657.1	1 142.5	1 148.3	–30.7	0.5	0.8
Transport equipment (excluding road vehicles)	1 859.6	1 022.6	1 061.4	–42.9	3.7	0.7
Cork and wood	881.6	1 040.2	1 050.4	19.1	1.0	0.7
Non-metallic mineral manufactures, n.e.s.	956.0	846.1	877.2	–8.2	3.5	0.6
Telecommunications and sound recording and reproducing apparatus and equipment	1 083.3	914.3	844.4	–22.1	–8.3	0.6

(a) Based on the UN Standard International Trade Classification, Revision 3 (SITC Rev 3).

Source: ABS data available on request, *International Trade*.

This has been a period of growth for imports of most of the main manufactured commodities. The value of imports of petroleum, petroleum products and related materials and gold, non-monetary (excluding gold ores and concentrates) increased by 139% (\$12.3b) and 117% (\$2.6b).

In 2005–06, the largest increase in the value of imports in percentage terms was for gold, non-monetary (excluding gold ores and concentrates) (95%, \$2.3b), though in value terms, the largest increase was for petroleum, petroleum products and related materials (\$6.3b).

#### 18.19 IMPORTS OF SELECTED MANUFACTURED COMMODITIES(a)

Commodity group(b)	2001–02 \$m	2004–05 \$m	2005–06 \$m	Change from 2001–02 to 2005–06 %	Change from 2004–05 to 2005–06 %	Share of total imports 2005–06 %
Petroleum, petroleum products and related materials	8 893.0	14 907.5	21 220.7	138.6	42.3	12.7
Road vehicles (including air cushion vehicles)	14 895.2	19 564.7	20 438.2	37.2	4.5	12.2
Telecommunications and sound recording and reproducing apparatus and equipment	6 862.1	8 568.7	9 680.5	41.1	13.0	5.8
Office machines and automatic data processing machines	7 965.1	8 522.9	8 890.4	11.6	4.3	5.3
General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.	6 221.1	8 112.3	8 633.0	38.8	6.4	5.2
Electrical machinery, apparatus, appliances, parts (including non-electrical counterparts of electrical domestic equipment)	6 628.7	7 748.0	8 067.5	21.7	4.1	4.8
Medicinal and pharmaceutical products	5 009.0	6 916.4	7 205.2	43.8	4.2	4.3
Machinery specialised for particular industries	4 050.20	5 947.8	6 552.8	61.8	10.2	3.9
Transport equipment (excluding road vehicles)	3 468.4	4 364.2	5 968.0	72.1	36.7	3.6
Gold, non-monetary (excluding gold ores and concentrates)	2 219.3	2 465.6	4 804.4	116.5	94.9	2.9
Articles of apparel and clothing accessories	3 215.2	3 881.9	4 237.5	31.8	9.2	2.5
Professional, scientific and controlling instruments and apparatus, n.e.s.	2 998.10	3 601.1	3 869.9	29.1	7.5	2.3
Manufactures of metals n.e.s.	2 789.9	3 735.1	4 033.7	44.6	8.0	2.4
Power generating machinery and equipment	3 033.8	3 518.2	3 418.7	12.7	–2.8	2.0
Iron and steel	1 763.5	3 185.5	3 241.9	83.8	1.8	1.9
Organic chemicals	2 500.9	2 741.9	3 060.4	22.4	11.6	1.8
Paper, paperboard and articles of paper pulp of paper or of paperboard	2 362.5	2 549.8	2 583.3	9.3	1.3	1.5
Textile yarn, fabrics, made-up articles n.e.s. and related products	2 562.3	2 425.0	2 353.0	–8.2	–3.0	1.4
Non-metallic mineral manufacturers n.e.s.	1 970.1	2 133.1	2 199.5	11.6	3.1	1.3
Rubber manufacture n.e.s.	1 607.4	1 897.2	2 044.9	27.2	7.8	1.2

(a) Customs value. (b) Based on the UN Standard International Trade Classification, Revision 3 (SITC Rev 3).

Source: ABS data available on request, *International Trade*.

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## CONSTRUCTION

The construction industry has a major influence on every Australian. Construction provides homes, places for people to work, and recreation facilities. It provides essential facilities and infrastructure such as schools, hospitals, roads, water and electricity supply and telecommunications. The construction industry plays a significant role in the Australian economy. The demand for, and supply of construction is influenced by a variety of factors including interest rates, tax reforms and changes in populations.

The construction industry, and its activities, are strongly linked to other parts of the Australian economy such as manufacturing, wholesale trade, retail trade, and finance and insurance industries. In addition, architectural and engineering professions are closely linked with the industry.

The construction industry engages in three broad areas of activity:

- residential building (e.g. houses, flats, etc.)
- non-residential building (e.g. offices, shops, hotels, etc.)
- engineering construction (e.g. roads, bridges, water, sewerage, etc.).

Both the private and public sectors undertake construction activity within Australia. The private sector operates in all three areas of activity, with a major role in residential and non-residential building activity. The public sector has a major role in initiating and undertaking engineering construction. In addition it has a role in non-residential building activity, in particular for the health and education industries, building hospitals and schools.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Construction industry

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA).

Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry structure and performance* chapter.

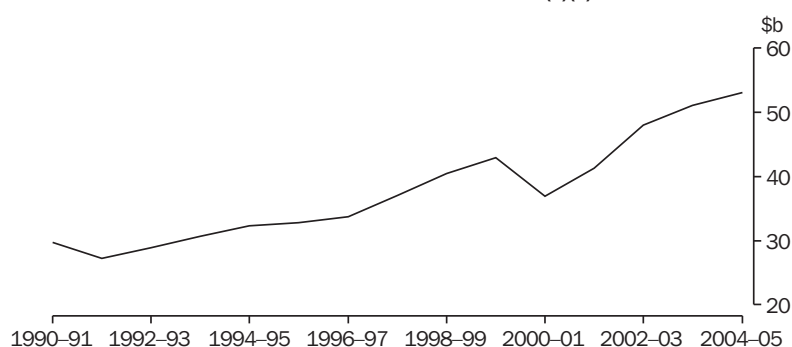
Total production of the construction industry, as measured by GVA (in volume terms), generally increased from 1991–92 to 1999–2000. The peak in 1999–2000 was followed by a sharp decline, coinciding with the introduction of The New Tax

System in July 2000. Construction industry GVA (in volume terms) has increased steadily since 2000–01, and in 2004–05 reached \$53,024 million (m) (graph 19.1).

In 2004–05 the construction industry's share of the total production of goods and services in the Australian economy GDP was 6.2%.

In 2005–06 the construction industry employed an average of 876,300 people (table 19.2), 6.9% higher than in 2004–05. The number of own account workers and employees both increased by 7.2% since 2004–05, while the number of employers rose by 2.9%.

**19.1 CONSTRUCTION PRODUCTION(a)(b)**



(a) Industry gross value added. (b) Volume measures. Reference year is 2003–04.

Source: Australian System of National Accounts, (5204.0).

**19.2 CONSTRUCTION INDUSTRY, Employment(a)**

Employment status	2004–05 '000	2005–06 '000
General construction		
Employee	202.1	222.4
Employer	9.9	10.3
Own account worker(b)	35.4	33.8
Total(c)	247.3	266.4
Construction trade services		
Employee	349.6	368.9
Employer	42.3	43.5
Own account worker(b)	180.4	197.5
Total(c)	572.3	609.8
Total construction(d)		
Employee	551.7	591.2
Employer	52.2	53.7
Own account worker(b)	215.8	231.3
Total(c)	819.6	876.3

(a) Annual average of quarterly data. (b) A worker that hires no employees. (c) Total includes contributing family worker. (d) Includes categories General construction and Construction trade services.

Source: Labour Force, Australia, Detailed — Electronic Delivery (6291.0.55.003).

In 2005–06 the majority of construction industry employment was in construction trade services (609,800 people or 70%), which includes those engaged in services such as earthmoving, concreting, bricklaying, roofing, plumbing, electrical, carpentry, painting, glazing and landscaping. General construction includes the construction of houses, buildings and structures. In 2005–06 average annual employment in general construction increased by 7.7% to 266,400 people.

The Australian Bureau of Statistics compiles two price indexes relating to the construction industry – the Price Index of Output of the General Construction Industry and the Price Index of Materials Used in Home Building. Information on recent trends in these indexes is provided in *Construction industries indexes* in the *Prices* chapter.

### Construction activity

Construction activity is carried out by both private and public sectors. Over the past ten years, public sector construction has remained relatively constant, maintaining an annual value of work done of around \$18,000m (graph 19.3). Private sector construction on the other hand has been more volatile, experiencing a sharp decline in 2000–01 after the introduction of The New Tax

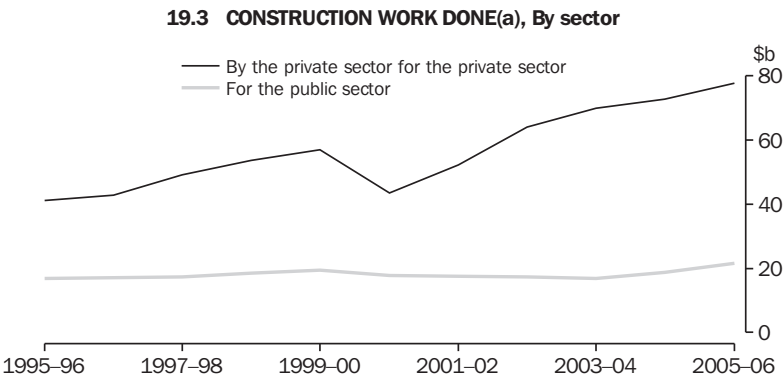
System in July 2000. Between 2004–05 and 2005–06 public sector construction increased by 7% to \$77,798m.

In the three broad areas of construction activity – residential building, non-residential building, and engineering construction – the pattern of construction activity by area of activity has changed significantly over time.

Graph 19.4 shows the acceleration in residential building activity to a high level prior to the introduction of The New Tax System in July 2000, followed by a substantial downturn in 2000–01. In 2005–06 engineering construction activity surpassed residential building in value.

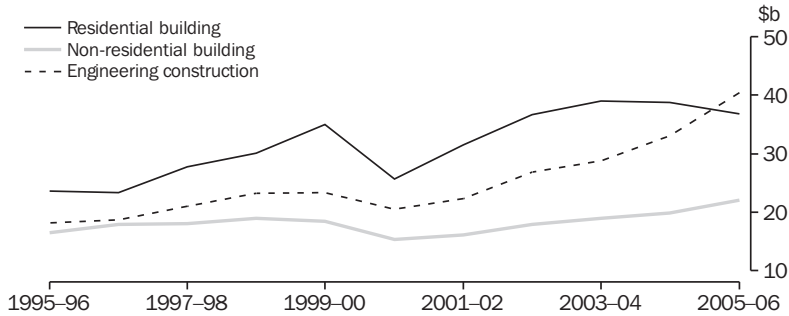
### Residential building

Residential building involves the construction of dwelling units, including new houses, other new residential buildings (flats, apartments, villa units, townhouses, duplexes, etc.), and dwellings created as part of alterations and additions to existing buildings (including conversions to dwelling units). Building approvals are used as a key indicator of future activity, as nearly all building activity must be approved by local and/or other authorities.



(a) Volume measures. Reference year is 2004–05.  
Source: *Construction Work Done, Australia, Preliminary* (8755.0).

#### 19.4 VALUE OF WORK DONE(a), By type of activity(b)



(a) Volume measures. Reference year is 2004-05. (b) Residential building includes alterations and additions.

Source: *Construction Work Done, Australia, Preliminary* (8755.0).

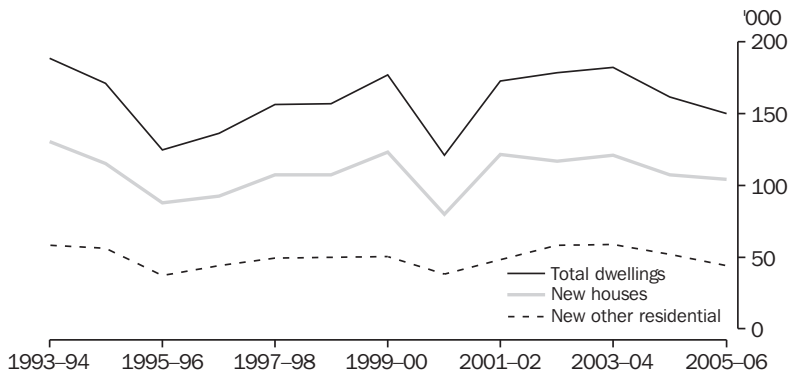
#### Residential building approvals

Graph 19.5 shows that total dwelling unit approvals between 1995-96 and 1998-99 experienced relatively stable growth. Activity brought forward ahead of the introduction of The New Tax System in July 2000 contributed to the increase and decrease between early-1999 and late-2000. In 2005-06 the total number of dwelling unit approvals was 149,913.

#### New other residential building approvals

Other residential building refers to a building other than a house primarily used for long-term residential purposes and which contains (or has attached to it) more than one dwelling unit. This includes buildings such as blocks of flats, units and apartments, and semi-detached houses and townhouses.

#### 19.5 DWELLING UNITS APPROVED



Source: *Building Approvals, Australia* (8731.0).

While they are still the major component of new other residential approvals (contributing 54% of all approvals), in 2005–06 the number of approvals for flats, units and apartments decreased (table 19.6).

**19.6 NEW OTHER RESIDENTIAL DWELLING UNITS APPROVED**

	2004–05	2005–06
New semi-detached, row or terrace houses, townhouses, etc.		
One storey	10 760	9 940
Two or more storeys	12 269	10 405
<i>Total</i>	23 029	20 345
New flats, units or apartments in a building		
One or two storeys	3 868	3 059
Three storeys	5 106	4 990
Four or more storeys	20 074	15 461
<i>Total</i>	29 048	23 510
<b>Total</b>	<b>52 077</b>	<b>43 855</b>

Source: *Building Approvals, Australia* (8731.0).

In 2005–06 new semi-detached, row or terrace houses and townhouses showed decreases in both one storey (7.6%) and two or more storey (15%) approvals. All types of new flat, unit or apartment building approvals decreased in 2005–06 compared with 2004–05, with four or more storeys decreasing the most (23%). Approvals for new flats, units or apartments with four storeys or

more, accounted for 35% of new other residential building approvals in 2005–06, down from 39% in 2004–05.

**New residential building work done**

Between 2004–05 and 2005–06 the value of total building work done (in volume terms) increased by \$291m (less than 1%) to \$58,891m (table 19.7). Total new residential building decreased by \$1,734m (5.3%), with new residential building for houses decreasing by \$385m.

**Non-residential building**

The value of non-residential building work approved in 2004–05 rose 17% to \$19,856m (table 19.8). Over the same period the types of non-residential buildings which experienced the largest relative increases in approvals were other non-residential n.e.c. (91%), accommodation (60%), and industrial agricultural/aquacultural building work (48%). Those that experienced a decline in approvals were health (26%), other industrial n.e.c (16%), and commercial offices (2%).

The total value of non-residential building work done rose 15% to \$19,730m in 2004–05. The largest percentage increases in value of non-residential work done were experienced by commercial transport (68%), industrial warehouses and other non-residential n.e.c (both 31%) and industrial agricultural/aquacultural building work (25%). A decline in work done for non-residential building work occurred in other commercial n.e.c (31%).

**19.7 VALUE OF BUILDING WORK DONE(a), By type of activity**

	New residential building			Alterations and additions	Non-residential building	Total building(b)
	Houses	Other residential buildings	Total			
	\$m	\$m	\$m	\$m	\$m	\$m
2004–05	21 237	11 600	32 838	5 915	19 848	58 600
2005–06	20 852	10 253	31 104	5 693	22 094	58 891

(a) Volume measures. Reference year is 2004–05.

Source: *Construction Work Done, Australia, Preliminary* (8755.0).

## 19.8 VALUE OF NON-RESIDENTIAL BUILDING WORK(a)(b)

	Approved		Work done	
	2003-04	2004-05	2003-04	2004-05
	\$m	\$m	\$m	\$m
<b>Commercial</b>				
Retail/wholesale trade	3 188	4 161	3 321	3 878
Transport	523	610	365	614
Offices	3 355	3 303	3 759	3 988
Other commercial n.e.c.	97	111	136	94
<i>Total</i>	<i>7 163</i>	<i>8 186</i>	<i>7 581</i>	<i>8 574</i>
<b>Industrial</b>				
Factories	1 094	1 346	1 080	1 343
Warehouses	1 456	2 142	1 404	1 836
Agricultural/aquacultural	114	169	114	142
Other industrial n.e.c.	243	204	180	204
<i>Total</i>	<i>2 906</i>	<i>3 860</i>	<i>2 778</i>	<i>3 525</i>
<b>Other non-residential</b>				
Educational	2 317	2 285	2 177	2 320
Religious	86	117	105	122
Aged care facilities	903	919	874	899
Health	908	670	901	936
Entertainment and recreation	1 102	1 137	1 190	1 326
Accommodation	868	1 392	857	1 044
Other non-residential n.e.c.	675	1 291	752	984
<i>Total</i>	<i>6 860</i>	<i>7 810</i>	<i>6 855</i>	<i>7 631</i>
<b>Total non-residential building work</b>	<b>16 929</b>	<b>19 856</b>	<b>17 215</b>	<b>19 730</b>

(a) Valued at \$50,000 or more. (b) In current prices.

Source: *Building Activity, Australia* (8752.0); *Building Approvals, Australia* (8731.0).

## Engineering construction

The total value of engineering construction work done by the private sector and for the public sector between 1990-91 and 2004-05 is shown in graph 19.9. The value of public sector engineering

construction work done (in volume terms) has shown a slight increase over the last year. Since 2001-02 the value of engineering construction work done by the private sector has increased substantially and by 2002-03 was of greater value than work done for the public sector.

19.9 ENGINEERING CONSTRUCTION WORK DONE, By sector(a)(b)



(a) Volume measures. Reference year is 2003-04. (b) Public sector includes private sector work done for the public sector and public sector work.

Source: *Engineering Construction Activity, Australia* (8762.0).

Table 19.10 shows in more detail the contribution of public and private sectors to engineering construction work done (in current prices). The private sector share of the total engineering construction work done in both 2003–04 and 2004–05 was 58%.

Roads, highways and subdivisions accounted for 29% of the total value of engineering construction work done in 2004–05. The private sector

increased its share of construction work done of roads, highways and subdivisions from 52% in 2003–04 to 54% in 2004–05. Total harbours engineering construction increased by 104% between 2003–04 and 2004–05, while total railways and bridges engineering construction both increased by 48%. The value of total pipelines engineering construction fell by 50% over the same period.

**19.10 VALUE OF ENGINEERING CONSTRUCTION WORK DONE(a)**

	2003–04			2004–05		
	For the private sector	For the public sector	Total	For the private sector	For the public sector	Total
	\$m	\$m	\$m	\$m	\$m	\$m
Roads, highways and subdivisions	3 942	3 694	7 636	5 077	4 383	9 460
Bridges	43	215	258	86	296	382
Railways	271	1 237	1 508	484	1 749	2 233
Harbours	285	168	453	759	166	925
Water storage and supply	293	619	912	353	874	1 227
Sewerage and drainage	479	844	1 323	294	830	1 124
Electricity generation, transmission and distribution	1 472	2 095	3 567	2 122	2 493	4 615
Pipelines	1 385	29	1 414	687	15	702
Recreation	1 027	376	1 403	1 292	365	1 657
Telecommunications	767	2 229	2 996	925	2 573	3 498
Oil, gas, coal and other minerals	5 374	11	5 385	6 399	23	6 422
Other heavy industry	268	25	293	519	3	522
Other	231	28	259	217	54	271
<b>Total</b>	<b>15 837</b>	<b>11 570</b>	<b>27 407</b>	<b>19 214</b>	<b>13 823</b>	<b>33 037</b>

(a) In current prices.

Source: *Engineering Construction Activity, Australia* (8762.0).

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## SERVICE INDUSTRIES

This chapter presents an overview and a range of statistical information for a selection of service industries, with a focus on those industries that have recently been surveyed by the Australian Bureau of Statistics (ABS).

For the purposes of this chapter, services-producing industries have been defined as all industries other than goods-producing industries (Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas and water; and Construction). Service industries encompass the following industries: Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Transport and storage; Communication services; Finance and insurance; Property and business services; Government administration and defence; Education; Health and community services; Cultural and recreational services; and Personal and other services.

In 2004–05 the services-producing industries' overall contribution to the total production of goods and services in the Australian economy (gross domestic product) was 56%.

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## Service industries sector

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA).

Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry structure and performance* chapter.

In 2004–05 the largest services-producing industry, in terms of industry GVA (in current prices) was the Property and business services industry, which accounted for 11.6% of GDP, followed by the Finance and insurance services industry (6.8%).

The Transport & storage industry recorded the largest percentage increase in GVA over the period 2000–01 to 2004–05 (22%), or an average annual growth rate of 4.9% per year (in volume terms). The next largest growth rate over the period was recorded by Retail trade (21%), and Health and community services (19%). The smallest growth in industry GVA was that of the Education industry, with an increase of 5.9% (table 20.1).

Average annual total employment in the service industries in 2005–06 was 7,530,600 people (table 20.2), which represented 75% of all employment.

The largest employing service industry was Retail trade, with average annual employment in 2005–06 of 1,499,600 people, accounting for 20% of total employment in the services sector. Other large employing industries were Property and business services (1,196,300 people), Health and community services (1,045,400 people), and Education (720,400 people).

In the period 2001–02 to 2005–06, average annual employment in the service industries increased by 755,600 people or 11%, representing an average annual growth rate of 2.7%. The strongest average annual employment growth occurred in Cultural and recreational services (4.3% per year). The largest increase in employed persons occurred in Property and business services (160,600), followed by Health and community services (136,100).

**20.1 SERVICE INDUSTRIES(a), Gross value added(b)**

	2000–01	2004–05	Average annual growth from 2000–01 to 2004–05
	\$m	\$m	%
Wholesale trade	36 073	41 926	16.2
Retail trade	43 463	52 412	20.6
Accommodation, cafes and restaurants	16 063	18 383	14.4
Transport and storage	31 798	38 701	21.7
Communication services	20 172	23 799	18.0
Finance and insurance services	52 229	58 567	12.1
Property and business services(c)	87 144	99 153	13.8
Government administration and defence	29 740	33 521	12.7
Education	34 919	36 987	5.9
Health and community services	43 474	51 793	19.1
Cultural and recreational services	9 898	11 736	18.6
Personal and other services	13 778	15 033	9.1

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Volume measures. Reference year is 2003–04. (c) Excludes ownership of dwellings.

Source: Australian System of National Accounts (5204.0).

## 20.2 SERVICE INDUSTRIES(a), Employment(b)

	2001-02	2005-06	Average annual growth from 2001-02 to 2005-06
	'000	'000	%
Wholesale trade	431.7	436.2	0.3
Retail trade	1 377.8	1 499.6	2.1
Accommodation, cafes and restaurants	459.3	480.6	1.1
Transport and storage	412.9	461.4	2.8
Communication services	167.7	183.2	2.2
Finance and insurance	346.3	374.2	2.0
Property and business services	1 035.7	1 196.3	3.7
Government administration and defence	394.1	461.0	4.0
Education	645.7	720.4	2.8
Health and community services	909.3	1 045.4	3.5
Cultural and recreational services	232.0	274.7	4.3
Personal and other services	362.6	397.6	2.3
<b>Total</b>	<b>6 775.0</b>	<b>7 530.6</b>	<b>2.7</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Annual average of quarterly data.

Source: Labour Force, Australia, Detailed – Electronic Delivery (6291.0.55.003).

## Selected service industries

The remainder of the chapter presents statistics obtained from regular surveys of retail trade and wholesale trade, and the 2004–05 surveys of clubs, pubs, taverns and bars, sports services and gambling services, conducted by the ABS.

### Retail trade

The Retail trade industry comprises businesses primarily engaged in the sale of new or used goods to final consumers for personal or household consumption, or in selected repair activities such as repair of household equipment or motor vehicles.

The estimate of retail turnover includes the value of turnover from businesses such as supermarkets, clothing and department stores, as well as hospitality and selected service businesses such as cafes and restaurants, hotels and licensed clubs. It excludes motor vehicle retailing and services. In order to measure the actual expenditure of consumers, retail turnover is recorded from 1 July 2000 inclusive of the Goods and Services Tax.

Table 20.3 presents retail turnover for the period 2001–02 to 2005–06. Total retail turnover (in volume terms) increased by 20% between 2001–02 and 2005–06, representing an average annual growth rate of 5%.

## 20.3 RETAIL TURNOVER(a)

	Industry(b)							
	Food retailing	Department stores	Clothing and soft good retailing	Household good retailing	Recreational good retailing	Other retailing	Hospitality and services	Retail turnover(c)
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
2001-02	72 885	13 695	10 838	20 941	7 026	18 174	29 165	172 010
2002-03	75 283	14 528	11 498	23 344	7 199	19 023	30 180	180 636
2003-04	78 360	15 577	12 265	27 180	7 914	20 990	32 284	194 438
2004-05	80 371	16 283	13 242	29 929	8 300	21 279	31 832	201 236
2005-06	82 334	16 305	14 002	31 689	8 172	20 497	33 091	206 089

(a) Volume measures based on quarterly data. Reference year is 2004–05. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (c) Volume measures are not additive for years other than 2004–05 and 2005–06.

Source: Retail Trade, Australia (8501.0).

The group representing the largest component of retail turnover (in current prices) in 2005–06 was Food retailing with 40% of total turnover. The next largest groups were Hospitality and services with 16% of total turnover and Household good retailing with a 15% share of total turnover.

Between 2004–05 and 2005–06 the turnover (in volume terms) of Household good retailing increased by 6%, Clothing and soft good retailing by 6%, Hospitality and services by 4% and Food retailing by 2%. Retail turnover for Other retailing fell by 4% and Recreational good retailing fell by 2%. Department stores had no significant change between these time periods.

Graph 20.4 shows annual growth rates for total retail turnover (in volume terms) from 1995–96 to 2005–06. During this period the four years with the strongest annual growth were 2003–04 (8%),

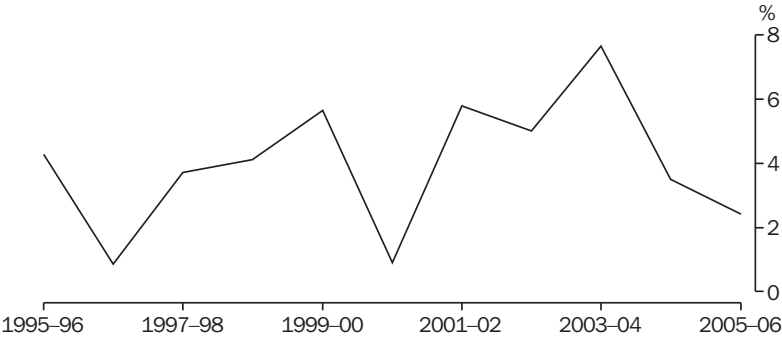
1999–2000 and 2001–02 (6%) and 2002–03 (5%). The three years of weakest growth occurred in 1996–97 and 2000–01 (1%) and 2005–06 (2%). Growth in 2000–01 was affected by the unusual increase in the volume of goods sold in the June quarter 2000 prior to the introduction of The New Tax System on 1 July 2000.

In 2004–05 retail trade industry GVA (in current prices) was \$53,946 million (m) or 6.1% of GDP.

Wholesale trade

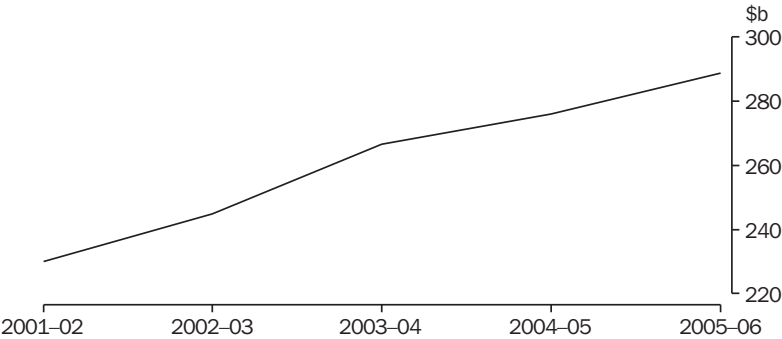
The Wholesale trade industry covers those businesses involved in the sale of new or used goods to businesses or to institutional (including government) users. Graph 20.5 shows annual volume measures of total wholesale trade sales.

20.4 RETAIL TURNOVER(a), Annual growth



(a) Volume measures. Reference year is 2004–05.  
Source: Retail Trade, Australia (8501.0).

20.5 WHOLESALE SALES(a)



(a) Volume measures. Reference year is 2004–05.  
Source: Business Indicators, Australia (5676.0).

## Clubs

An important element of the tourism and hospitality sector, the Clubs industry covers organisations mainly engaged in the provision of hospitality services to members.

At the end of June 2005, there were 2,116 hospitality clubs operating in Australia (table 20.6). They comprised 1,816 clubs with gambling facilities and 300 clubs without gambling facilities. These organisations employed 63,734 people at 30 June 2005.

The total income of hospitality clubs in Australia in 2004–05 was \$7,375m, with gambling the main source of income (\$4,305m or 58% of total industry income). In 2004–05, hospitality clubs incurred total expenses of \$6,764m, with labour costs being the most significant (\$2,122m or 31% of total expenses). The total industry value added by these organisations was \$4,086m, which is the equivalent of 0.5% of Australia's GDP for 2004–05.

### 20.6 CLUBS (HOSPITALITY) AND PUBS, TAVERNS AND BARS INDUSTRIES(a)

	Units	2000–01	2004–05
CLUBS (HOSPITALITY)			
Businesses at 30 June	no.	2 911	2 116
Employment at 30 June	no.	64 990	63 734
Income			
Sale of liquor and other beverages	\$m	1 245.7	1 600.8
Takings from gambling	\$m	3 810.4	4 305.1
Takings from meals and food sales	\$m	529.9	726.4
Other	\$m	450.2	742.4
Total	\$m	6 036.2	7 374.7
Expenses			
Labour costs	\$m	1 702.2	2 121.6
Poker/gaming machine and other gambling taxes and levies(b)	\$m	766.7	1 104.0
Purchases	\$m	902.6	1 132.8
Other	\$m	2 294.3	2 783.0
Total(c)	\$m	5 665.8	6 763.9
Operating profit before tax	\$m	372.1	612.7
Operating profit margin	%	6.2	8.4
Industry value added	\$m	3 097.8	4 086.1
PUBS, TAVERNS AND BARS			
Businesses at 30 June	no.	4 003	3 454
Employment at 30 June	no.	84 158	81 675
Income			
Sale of liquor and other beverages	\$m	5 566.0	6 706.1
Takings from gambling	\$m	2 130.0	2 703.1
Takings from meals and food sales	\$m	815.2	1 200.6
Other income	\$m	371.2	504.5
Total	\$m	8 882.4	11 114.3
Expenses			
Labour costs	\$m	1 760.3	2 268.0
Poker/gaming machine and other gambling taxes and levies(b)	\$m	593.1	940.5
Purchases	\$m	3 732.1	4 476.5
Other	\$m	2 128.1	2 904.9
Total(c)	\$m	8 213.6	10 369.5
Operating profit before tax	\$m	715.2	784.2
Operating profit margin	%	8.1	7.1
Industry value added	\$m	3 497.5	4 394.0

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Includes GST. (c) As total expenses for 2004–05 do not include the GST paid on gambling products, total expenses will not be equal to the sum of the components.

Source: Clubs, Pubs, Taverns and Bars, Australia (8687.0).

Income grew by an average 5.1% per year between the 2000–01 and 2004–05 financial years, while expenditure grew at the rate of 4.5% per year for the same period. Operating profit before tax grew at an average annual rate of 13% per year (from \$372m in 2000–01 to \$613m in 2004–05).

## **Pubs, taverns and bars**

The Pubs, taverns and bars industry covers businesses which mainly sell alcoholic beverages for consumption on the premises.

There were 3,454 businesses in the Pubs, taverns and bars industry at 30 June 2005 (table 20.6). These organisations employed 81,675 persons at 30 June 2005.

Total income for the industry in 2004–05 was \$11,114m. The major sources of income were from the sale of liquor and other beverages (\$6,706m or 60% of total income), and gambling income, which accounted for 24% of all income (\$2,703m).

Total expenses of businesses in the industry were \$10,370m during 2004–05, with the main items of expenditure being purchases of liquor and other beverages of \$3,807m, followed by labour costs of \$2,268m and gambling taxes and levies of \$941m. The total industry value added by these businesses was \$4,394m, which is the equivalent of 0.5% of Australia's GDP for 2004–05.

Income grew by an average 5.8% per year between 2000–01 and 2004–05, while expenditure grew at the rate of 6% per year over the same period. Operating profit before tax grew at an average annual rate of 2.3% per year (from \$715m in 2000–01 to \$784m in 2004–05).

## **Sports and physical recreation services**

The ABS conducted a survey of businesses and organisations mainly engaged in sports and physical recreation services in 2004–05.

At the end of June 2005, there were 9,256 businesses/organisations operating in Australia whose main activity was the provision of

sports and physical recreation services (table 20.7). This included 600 government organisations. 'For profit' businesses accounted for 54% of the total businesses/organisations, while 'not for profit' and government organisations accounted for 39% and 6.5% respectively. Non-employed businesses/organisations comprised 12% of the total.

At the end of June 2005, total employment in sports and physical recreation services was 111,519 people. In addition, there were 181,832 volunteers during the month of June 2005. The 600 government organisations employed 11,051 persons.

During 2004–05, income generated by businesses/organisations engaged in sports and physical recreation services was \$8,821m. The highest single income items were government funding (\$1,564m or 18% of total income), sports membership and competition fees (\$1,306m or 15% of total income) and sponsorship and fundraising (\$806m or 9.1% of total income). Government organisations received \$1,478m in income for the provision of sports and physical recreation services. The majority of this income (\$1,176m or 80%) was received as operational and capital funding from government or as council reimbursements.

Total expenses incurred for the same period were \$8,417m. Overall, labour costs were the highest single item contributing to total expenses, accounting for 29% (\$2,465m) of total expenses, followed by grants, distributions and affiliation fees (\$873m or 10%) and prize money and trophies (\$582m or 6.9%). The total industry value added by sports and physical recreation services was \$2,350m, which is the equivalent of 0.3% of Australia's GDP for 2004–05.

In 2004–05, sports and physical recreation services recorded an operating profit/surplus before tax of \$389m and an operating profit margin of 6.9%.

## 20.7 SPORTS AND PHYSICAL RECREATION SERVICES, By sector — 2004–05

	Units	For profit	Not for profit	Government organisations	Total
Businesses/organisations at 30 June	no.	5 007	3 649	600	9 256
Employment at 30 June	no.	53 917	46 552	11 051	111 519
Volunteers during the month of June	no.	**7 480	174 351	—	181 832
<b>Income</b>					
Government funding	\$m	45.9	341.8	1 175.9	1 563.6
Other grants, distributions and affiliation fees	\$m	*33.1	362.1	—	395.3
Sponsorship and fundraising	\$m	*251.4	548.0	6.6	806.0
Casual playing fees	\$m	330.5	*115.0	—	445.5
Sports membership and competition fees	\$m	702.8	603.0	—	1 305.7
Admissions to sporting events	\$m	*52.6	357.7	191.9	602.2
Rent, leasing and hiring of sports grounds and facilities	\$m	78.5	*85.4	50.6	214.5
Television and other broadcasting rights	\$m	—	292.6	—	292.6
Other	\$m	1 239.4	1 902.8	52.8	3 195.0
<b>Total(a)</b>	\$m	2 734.1	4 608.5	1 477.9	8 820.5
<b>Expenses</b>					
Labour costs(b)	\$m	916.3	1 229.4	318.8	2 464.5
Grants, distributions and affiliation fees	\$m	28.1	340.9	503.7	872.7
Repair and maintenance	\$m	90.6	147.1	172.6	410.3
Rent, leasing and hiring of sporting venues, facilities and equipment	\$m	221.2	81.2	—	302.4
Gambling taxes and levies(c)	\$m	2.7	8.2	—	10.9
Other	\$m	1 312.7	2 584.7	462.7	4 360.1
<b>Total(d)</b>	\$m	2 570.3	4 388.4	1 457.8	8 416.5

(a) Includes capital funding. (b) For government organisations, labour costs include wages and salaries only. (c) Includes GST paid on gambling products. (d) As total expenses do not include the GST paid on gambling products, total expenses will not be equal to the sum of the components.

Source: *Sports and Physical Recreation Services, Australia, 2004–05* (8686.0).

## Gambling services

Table 20.8 shows selected indicators for Gambling services industries. 'Other gambling services' includes businesses involved in the provision of gambling services such as bookmaking and totalisator services, and gambling via the Internet.

There were 806 businesses in the Gambling services industries at 30 June 2005 (table 20.8). These organisations employed 30,094 people at 30 June 2005.

Total income (net of pay-outs to players) for the industry in 2004–05 was \$10,569.8m. Income for casinos was \$3,348.4m (32% of total income), while income for lotteries was \$1,854.4m (18% of total income). Total net takings from gambling was \$9,275.5m, of which casinos accounted for \$2,582.2m and lotteries \$1,690.2m.

In 2004–05, lotteries recorded an operating profit before tax of \$1,680.8m and an operating profit margin of 16.2%.

## 20.8 GAMBLING SERVICES INDUSTRIES(a), Selected industries — 2004–05

	Units	Lotteries	Casinos	Other gambling services	Total
Businesses at 30 June	no.	232	13	561	806
Employment at 30 June	no.	2 243	18 347	9 504	30 094
<b>Gambling</b>					
Net takings	\$m	1 690.2	2 582.2	5 003.1	9 275.5
Commissions	\$m	45.0	2.2	77.3	124.5
<b>Total</b>	\$m	1 735.2	2 584.5	5 080.4	9 400.1
Total income (net of pay-outs to players)	\$m	1 854.4	3 348.4	5 367.0	10 569.8
Operating profit before tax	\$m	151.9	767.3	761.6	1 680.8
Operating profit margin	%	8.4	23.4	14.4	16.2

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Gambling Services, Australia* (8684.0).

## **Bibliography**

### **ABS products**

*Australian and New Zealand Standard Industrial Classification (ANZSIC), 2006* (1292.0)

*Australian System of National Accounts* (5204.0)

*Business Indicators, Australia* (5676.0)

*Clubs, Pubs, Taverns and Bars, Australia* (8687.0)

*Gambling Services, Australia* (8684.0)

*Retail Trade, Australia* (8501.0)

*Sports and Physical Recreation Services, Australia* (8686.0)



## TOURISM

Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited.

The term 'tourism' in the international standards is not restricted to leisure activity. It also includes short-term (less than one year) travel for business or other reasons such as education, provided the destination is outside the person's usual environment. Travel is a broader concept which includes commuting to a place of work, travel for business or leisure and migration.

This chapter outlines the value of tourism production, tourism consumption, international trade in tourism, and tourism employment. International visitor arrivals and Australian resident departures are covered, along with a range of data on visitor travel and tourist accommodation in Australia.

In 2004–05 tourism industry share of Australia's gross domestic product was 3.7%. Three-quarters of this was generated by domestic visitors as distinct from international visitors.

The tourism industry employed 550,100 people in 2004–05.

In 2004–05, international visitors consumed more than \$18 billion worth of goods and services produced by the Australian economy. This represented 11% of Australia's exports of goods and services.

The chapter includes the article *Antarctic tourism*.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Tourism industry

Tourism is not an industry in the conventional sense. In the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 Edition* (1292.0), industries are defined on the basis of the primary goods and services which they produce. Tourism, however, is defined according to the status of the consumer. That is, it is the characteristics of the consumer that determine whether the production is included within the scope of tourism. For example, expenditure on a restaurant meal by a visitor contributes to tourism's share of the economy, whereas expenditure by a local resident does not.

Visitors, in purchasing products outside of their usual environment, have a positive economic impact on their destination by generating additional consumption at the destination over and above that generated by the resident consumers. This additional consumption provides the basis for the economic activity generated by tourism.

Visitors can be classified into national (domestic) and international visitors. National visitors consist of Australian residents who travel outside their

usual environment within Australia. They include both overnight visitors (staying one or more nights at a location) and same day visitors. International visitors are those persons who travel to a country other than that in which they have their usual residence.

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA) and gross domestic product (GDP). Information on the relationship between industry GVA and GDP is provided in the *Industry structure and performance* chapter.

A Tourism Satellite Account (TSA) is recognised internationally as the best method for measuring the economic contribution of tourism. Tourism GVA and GDP are the major economic aggregates derived in the TSA.

The tourism industry share of total GVA in 2004–05 was 3.2% (table 21.1). This represents the lowest share since 1997–98 having declined from its peak of 4.1% in 1997–98 and 1998–99. The tourism industry share for 2004–05 has declined as a result of tourism GVA growing slower (1.8%) than GVA for the whole economy (6.8%).

21.1 TOURISM SHARE OF GROSS VALUE ADDED AND GROSS DOMESTIC PRODUCT

	Units	2000–01	2001–02	2002–03	2003–04	2004–05
Tourism characteristic industries GVA(a)						
Travel agency and tour operator services	\$m	992	966	975	962	961
Taxi transport	\$m	218	207	210	214	210
Air and water transport	\$m	3 727	3 592	3 557	3 521	3 617
Motor vehicle hiring	\$m	284	287	298	293	325
Accommodation	\$m	2 775	2 855	2 917	2 941	3 115
Cafes, restaurants and food outlets	\$m	2 501	2 601	2 689	2 599	2 644
Total(a)	\$m	10 498	10 509	10 646	10 531	10 872
GVA of tourism connected industries(b)	\$m	11 572	11 769	12 152	12 360	12 574
GVA of all other industries(c)	\$m	2 974	2 973	3 140	3 125	3 032
Tourism GVA	\$m	25 044	25 250	25 939	26 016	26 479
Tourism share of GVA	%	4.0	3.8	3.6	3.4	3.2
Net taxes on tourism products	\$m	5 817	5 637	6 041	5 935	6 083
Tourism GDP	\$m	30 861	30 887	31 980	31 952	32 562
Tourism share of GDP	%	4.5	4.2	4.1	3.8	3.7

(a) Tourism characteristic industries have at least 25% of their output consumed by visitors. (b) Tourism connected industries are those industries not classified as characteristic that have products which are consumed by visitors in volumes which are significant. (c) The share of GVA of all industries that provide outputs to visitors not included in characteristic or connected industries.

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

The high tourism share of GDP in 2000–01 was largely due to price increases in tourism services resulting from the introduction of the Goods and Services Tax (GST) and the volume impact arising from the 2000 Olympic and Paralympic Games. During 2001–02 and 2002–03 external events such as terrorism and the Severe Acute Respiratory Syndrome scare caused a decline in both international visitors to Australia and the willingness of Australians to travel overseas. The key factors behind the fall in the tourism share of GDP in 2003–04 and 2004–05 were that Australians travelled less in Australia and more overseas, and that non-tourism related industries grew faster than tourism related industries.

The tourism industry employed 550,100 people in 2004–05 (table 21.2). The number of tourism employed persons grew 2.3% between 2000–01 and 2004–05, slower than the growth in total employed persons (7.4%) over that period. Consequently, the tourism share of total employed persons has fallen from 5.9% in 2000–01 to 5.6% in 2004–05.

Tourism consumption is defined as:

‘...the total consumption made by a visitor or on behalf of a visitor for and during his/her trip and stay at the destination’ (Explanatory Notes, *Australian National Accounts: Tourism Satellite Account* (5249.0)).

In 2004–05 tourism consumption was largest for long distance passenger transportation (16.5%), followed by shopping (including gifts and souvenirs) (15.7%), take away and restaurant meals (14.7%) and accommodation services (10.3%) (table 21.3).

However, there are some marked differences in consumption patterns by type of visitor. Long distance passenger transportation is the dominant tourism product consumed by domestic business/government (39.5%) and international visitors (26.3%). In contrast, domestic household visitor consumption is dominated by expenditure on shopping (including gifts and souvenirs) (19.9%), and takeaway and restaurant meals (19.1%).

## 21.2 TOURISM INDUSTRY EMPLOYMENT

	Units	2000–01	2001–02	2002–03	2003–04	2004–05
Tourism characteristic and connected industries(a)	'000	497.8	493.3	499.3	494.2	506.4
All other industries(b)	'000	39.9	40.5	41.5	42.4	43.7
Total tourism industry	'000	537.7	533.7	540.7	536.6	550.1
Total employed persons	'000	9 074.3	9 207.4	9 441.4	9 528.0	9 743.6
Tourism share of total employment	%	5.9	5.8	5.7	5.6	5.6

(a) Tourism characteristic and connected industries are those industries that have products which are consumed by visitors in volumes which are significant. (b) The share of GVA of all industries that provide outputs to visitors not included in characteristic or connected industries.

Source: *Australian National Accounts: Tourism Satellite Account* (5249.0).

## 21.3 SHARE OF TOURISM CONSUMPTION ON SELECTED TOURISM PRODUCTS, By type of visitor — 2004–05

	Households	Business/ government	International	All visitors
	%	%	%	%
Long-distance passenger transportation	8.6	39.5	26.3	16.5
Shopping (including gifts and souvenirs)	19.9	0.3	12.3	15.7
Take away and restaurant meals	19.1	6.2	7.3	14.7
Accommodation services	6.8	23.2	13.3	10.3
Food products	9.5	0.6	7.4	7.9
Fuel (petrol, diesel)	7.0	15.0	1.3	6.5
Taxi products	0.4	2.9	0.7	0.7
All other tourism products	28.7	12.4	31.5	27.5

Source: *Australian National Accounts: Tourism Satellite Account* (5249.0).

Total tourism consumption during 2004–05 increased by 2.3%. This was driven by a 5.4% increase in international visitor consumption and a 4.7% increase in business/government consumption over this period. Tourism consumption recorded its strongest growth during 2000–01 of 10.7%, which reflected the impact of the GST on the price of services and expenditure on tickets for the 2000 Olympics.

Tourism makes an important contribution to Australia’s export earnings. In 2004–05, international visitors consumed \$18.3 billion worth of goods and services produced by the Australian economy (table 21.4). This represented 11.1% of the total exports of goods and services. This figure is consistent with the growth in export of goods and services for the whole economy in 2004–05 of 13.2%.

21.4 EXPORTS OF TOURISM GOODS AND SERVICES

	Units	2000–01	2001–02	2002–03	2003–04	2004–2005
International visitor consumption	\$m	17 140	17 107	16 656	17 317	18 257
Total exports	\$m	154 669	154 778	149 691	144 676	163 845
Tourism share of exports	%	11.1	11.1	11.1	12.0	11.1
Growth in international visitor consumption	%	17.3	–0.2	–2.6	4.0	5.4
Growth in total exports	%	21.9	0.1	–3.3	–3.4	13.2

Source: Australian National Accounts: Tourism Satellite Account (5249.0).

## Antarctic tourism

*This article is based on information provided by the Department of Industry, Tourism and Resources and the Australian Government Antarctic Division.*

Antarctica is governed by a Treaty System which sets aside Antarctica as a natural reserve, devoted to peace and science. There are currently 45 signatory countries to the Treaty. While scientific endeavour is still the primary motivation for activity in Antarctica, tourism has become a significant presence in recent years and, therefore, a significant issue for treaty countries. The Antarctic tourism season is the southern hemisphere summer, commencing in November and running through to early-March, depending on weather conditions. The vast majority of Antarctic tourism occurs in the Antarctic Peninsula region with ships departing from Argentina or Chile.

Commercial tourism in the Antarctic began in 1957 but only became a serious activity in 1969. Since the late-1980s there has been rapid growth in tourist activity. In 1992–93, around 6,500 passengers were landed. This past season (2005–06) at least 30,875 tourists entered the Treaty area, of which 26,245 were in the traditional category of medium-sized ships

sending passengers ashore on small inflatable boats. The collapse of the Soviet Union released Russian polar research vessels onto the market and visitor numbers have escalated from this point onward. There were more than 250 voyages in 2005–06, that is an overall growth of more than 12% on the previous season. Ship numbers have increased from 11 in 1992–93 to over 45 in 2005–06. There are currently 14 Australian-based or Australian-connected companies involved in Antarctic tourism, offering Antarctic and sub-Antarctic tourist voyages or sightseeing flights, or selling berths aboard Antarctic voyages.

The debate over the merits of Antarctic tourism echoes debates over other wilderness regions. Tourism has allowed many people who might not otherwise have the opportunity, to experience the wonders, and understand the importance of Antarctica. Their experiences have led to a greater recognition in the wider community of the region’s importance to the world. However, as more and more people visit the southern regions, the risks of environmental damage

increase – wildlife disturbance, trampling of slow growing vegetation, diseases, emergencies and incidents such as oil spills, and rubbish and waste pollution are among the concerns. Although

visits are usually short, they occur at a small number of landing sites, which could result in cumulative impacts over time.

### International visitor arrivals

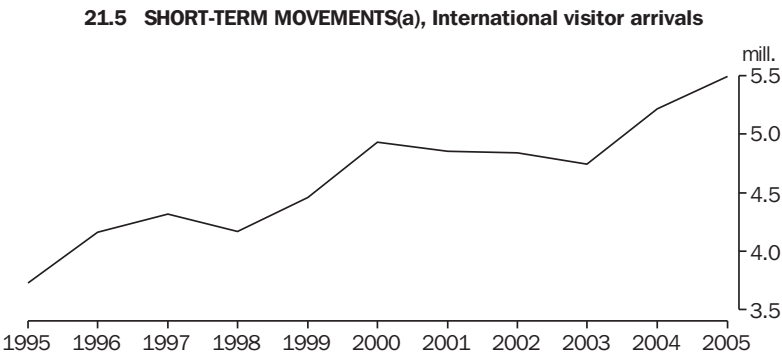
There were 5.5 million short-term international visitor arrivals in 2005 up 5% from 2004. This is the highest number of arrivals ever recorded in a year.

External events such as terrorism and the Severe Acute Respiratory Syndrome scare coincided with the decrease in arrivals between 2001 and 2003.

The top source countries for short-term international visitor arrivals to Australia during 2005 were New Zealand (1,098,700 visitor arrivals), followed by United Kingdom (708,300), Japan (685,500) and the United States of America (446,200) (table 21.6).

Between 2004 and 2005 the number of short-term international visitor arrivals from New Zealand increased by 66,000; from Korea by 38,500; from China by 33,700; and from the United Kingdom by 32,100. Arrivals from Japan and Malaysia decreased by 24,900 and 900 respectively.

In 2005 people whose main purpose for their trip was a holiday accounted for the highest share (57%) and employment accounted for the lowest share (2%) of short-term international visitor arrivals to Australia (graph 21.7).



(a) Statistics on arrivals relate to the number of movements of travellers rather than the number of travellers. Multiple movements of travellers in a given year are counted separately.

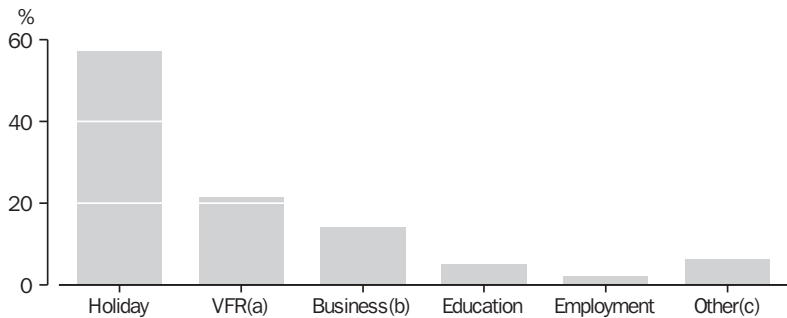
Source: Overseas Arrivals and Departures, Australia (3401.0).

### 21.6 SHORT-TERM INTERNATIONAL VISITOR ARRIVALS, By major source countries

	2001	2002	2003	2004	2005
	'000	'000	'000	'000	'000
New Zealand	814.8	790.2	839.1	1 032.7	1 098.7
United Kingdom	617.3	642.7	673.0	676.2	708.3
Japan	673.6	715.4	627.8	710.4	685.5
United States of America	446.5	434.4	422.2	433.3	446.2
China (excl. SARs and Taiwan Prov.)	158.0	190.1	176.1	251.3	285.0
Singapore	296.1	286.9	253.4	251.2	265.3
Korea, Republic of (South)	175.6	189.7	207.2	211.9	250.4
Malaysia	149.5	159.0	155.6	166.8	165.9
Germany	147.7	134.7	137.8	140.6	146.4
Hong Kong (SAR of China)	154.3	151.0	129.1	137.2	159.5

Source: Overseas Arrivals and Departures, Australia (3401.0).

**21.7 INTERNATIONAL VISITOR ARRIVALS, By main purpose of trip — 2005**



(a) Visiting friends and relatives. (b) Includes visitors who attended a convention or conference.  
(c) Includes visitors who did not state a purpose.

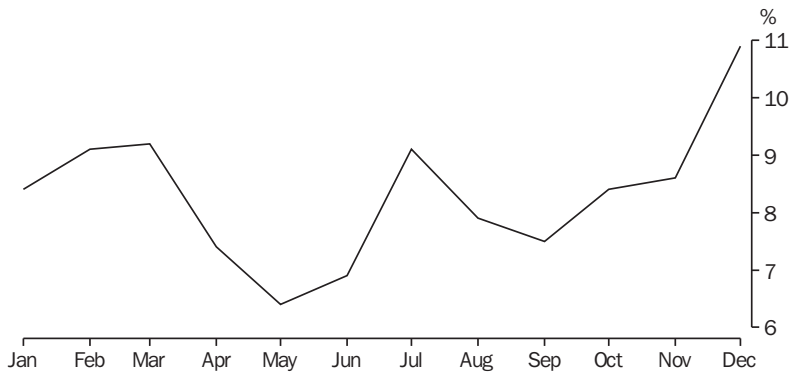
Source: Overseas Arrivals and Departures, Australia (3401.0).

December accounted for the highest number of visitor arrivals (10.9% of total arrivals) in 2005, while May accounted for the lowest (6.4%) (graph 21.8).

International visitor nights refers to the number of nights all international visitors aged 15 years and over spent in Australia.

In 2005, international visitors in Australia spent the most nights in New South Wales (48.7 million or 36.1%), followed by Queensland (30.0 million or 22.3%) and Victoria (20.1 million or 20.1%) (graph 21.9).

**21.8 INTERNATIONAL VISITOR ARRIVALS , By month of visit — 2005**



Source: Overseas Arrivals and Departures, Australia (3401.0).

### 21.9 SHORT-TERM INTERNATIONAL VISITOR NIGHTS(a)(b) — 2005



(a) All visitors aged 15 years and over. Includes backpackers. (b) Total nights are less than visitor nights in Australia because nights spent in transit are excluded.

Source: *Tourism Research Australia, 2006, 'International Visitors in Australia', December quarter 2005, Tourism Australia, Canberra.*

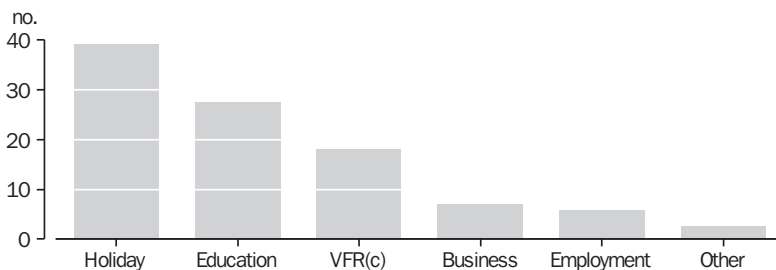
Of all international visitors in 2005, nights spent in Australia by those who travelled for holiday purposes accounted for 39% of short-term international visitor nights; 18% of nights were to visit friends and relatives; and 7% were for business purposes (graph 21.10).

### Australian resident departures

In the year ended December 2005 there were 4.8 million short-term resident departures, which was 743,000 less than the number of short-term visitor arrivals.

The short-term resident departures from Australia in 2005 is the highest number of resident departures ever recorded for a year. In 2004 there were 4.4 million resident departures.

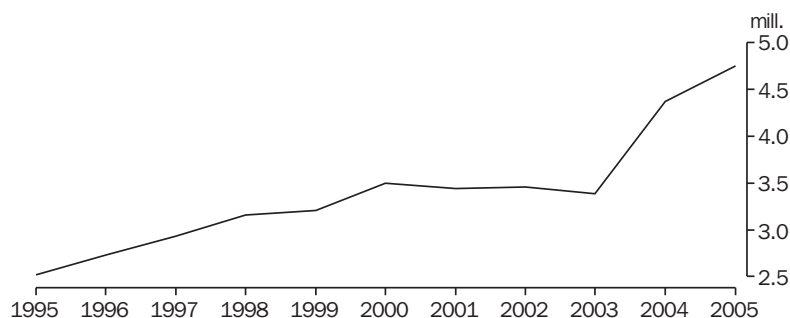
### 21.10 SHORT-TERM INTERNATIONAL VISITOR NIGHTS(a)(b), By main purpose of trip — 2005



(a) All visitors aged 15 years and over. Includes backpackers. (b) Total nights are less than visitor nights because nights spent in transit are excluded. (c) Visiting friends and relatives.

Source: *Tourism Research Australia, 2006, 'International Visitors in Australia', December quarter 2005, Tourism Australia, Canberra.*

## 21.11 SHORT-TERM MOVEMENTS(a), Resident departures



(a) Statistics on arrivals relate to the number of movements of travellers rather than the number of travellers. Multiple movements of travellers in a given year are counted separately.

Source: *Overseas Arrivals and Departures, Australia (3401.0)*.

The top destinations for Australian residents departing short term during 2005 were New Zealand (835,400 departures), United States of America (426,300), United Kingdom (404,200), Indonesia (319,700) and China (235,100) (table 21.12).

Between 2004 and 2005 the number of short-term resident departures increased by 29% to China, 22% to Hong Kong, and 19% to Singapore. Short-term departures to Indonesia decreased by 5%, having recovered strongly from the decline in 2003 which followed the Bali bombing in October 2002 (table 21.12).

## Visitor travel in Australia

### Day visitors

Day visitors are those who travel for a round trip distance of at least 50 kilometres, are away from home for at least four hours, and who do not spend a night away from home as part of their travel. Same-day travel as part of overnight travel is excluded, as is routine travel such as commuting between work/school and home.

In 2005, there were 130.1 million day trips taken in Australia by Australian residents aged 15 years and over, an increase of 552,000 day visitors from 129.6 million day trips in 2004 (table 21.13).

## 21.12 SHORT-TERM RESIDENT DEPARTURES, By major destinations

	2001 '000	2002 '000	2003 '000	2004 '000	2005 '000
New Zealand	599.6	597.4	662.8	815.8	835.4
United States of America	293.4	298.9	296.2	376.1	426.3
United Kingdom	300.8	318.4	312.9	375.1	404.2
Indonesia	288.8	241.8	186.7	335.1	319.7
China (excl. SARs and Taiwan Prov.)	109.4	136.9	114.2	182.0	235.1
Thailand	166.1	169.0	128.3	188.2	202.7
Fiji	94.2	128.2	145.1	175.4	196.9
Singapore	160.3	148.9	124.4	159.0	188.5
Hong Kong (SAR of China)	149.5	140.6	115.1	152.6	185.7
Malaysia	116.4	109.5	100.8	144.4	159.8

Source: *Overseas Arrivals and Departures, Australia (3401.0)*.



### 21.13 DAY VISITORS(a), By state/territory visited

	Destination							
	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000
2001	50 676	38 582	25 735	11 177	12 288	4 863	768	1 920
2002	50 410	35 945	24 707	10 519	12 902	4 514	1 027	2 108
2003	44 988	36 499	27 250	10 546	12 135	4 705	1 049	1 888
2004	40 505	30 655	30 938	9 735	11 448	3 958	908	1 422
2005	41 782	31 604	28 497	9 707	12 079	4 117	904	1 428

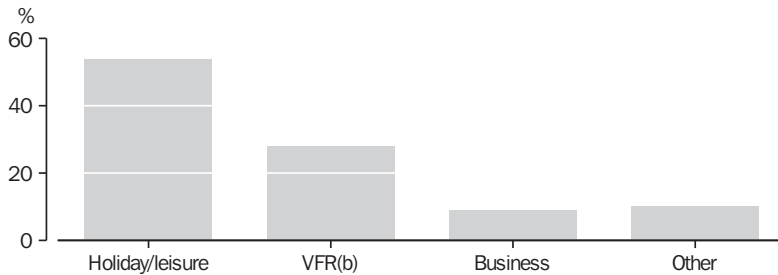
(a) Australian residents aged 15 years and over. (b) Components may not add to total as total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: *Tourism Research Australia, 2006, Travel by Australians, December quarter 2005, Tourism Australia, Canberra.*

In 2005, 54% of day trips were for holiday/leisure purposes, 28% were to visit friends and/or relatives and 9% were for business purposes (graph 21.14).

In 2005, New South Wales received the most day visitors (32%), followed by Victoria (24%) and Queensland (22%) (graph 21.15).

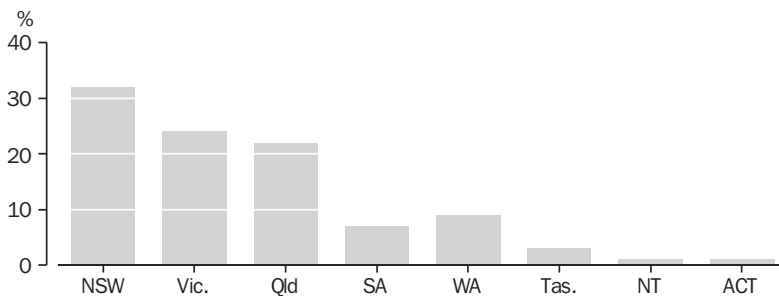
### 21.14 DAY VISITORS(a), By main purpose of visit — 2005



(a) Australian residents aged 15 years and over. (b) Visiting friends and relatives.

Source: *Tourism Research Australia, 2006, Travel by Australians, December quarter 2005, Tourism Australia, Canberra.*

### 21.15 DAY VISITORS(a), By state/territory visited — 2005



(a) Australian residents aged 15 years and over.

Source: *Tourism Research Australia, 2006, Travel by Australians, December quarter 2005, Tourism Australia, Canberra.*

## Visitor nights

Domestic overnight travel involves a stay away from home for at least one night, at a place at least 40 kilometres from home. A person is an overnight visitor to a location if they stay one or more nights in the location while travelling.

Australians spent 275.9 million nights away from home during 2005 (table 21.16) a decrease of 7% compared with 2004.

Overnight travellers who had holiday or leisure as their main purpose of visit accounted for the majority of domestic visitor nights (46%), followed by those travelling to visit friends and/or relatives (32%) and for business purposes (15%) (graph 21.17).

In 2005, overnight visitors spent the highest proportion of nights in New South Wales (30%), followed by Queensland (27%) and Victoria (19%) (graph 21.18).

## Tourist accommodation

At 31 December 2005 there were over 212,750 guest rooms available in hotels, motels, guest houses and serviced apartments (table 21.19), representing an increase of 3.5% in total available accommodation compared with 31 December 2004. Between 2004 and 2005 the number of guest rooms available in serviced apartments increased by 10%, while the number of guest rooms in licensed hotels, and motels and guest houses, both increased by only 2%.

The room occupancy rate for licensed hotels with facilities, motels, guest houses and serviced apartments combined increased slightly from 62% in 2004 to 63% in 2005. In 2001 the room occupancy rate was 57%.

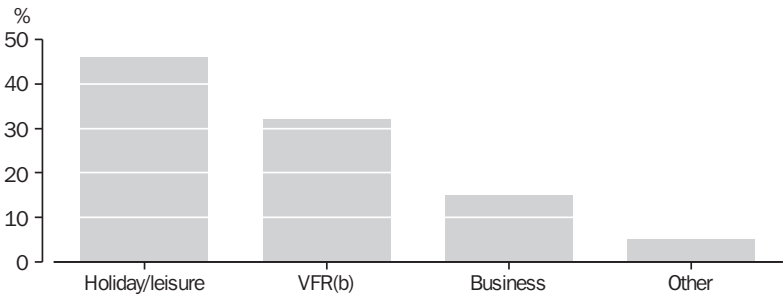
**21.16 VISITOR NIGHTS(a), By state/territory visited**

	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000	Aust.(b) '000
2001	89 447	55 747	75 002	19 508	28 068	7 970	7 174	5 749	289 644
2002	93 269	56 684	76 342	20 424	29 748	8 775	7 518	5 382	298 658
2003	88 188	54 892	78 839	21 146	29 997	9 647	6 141	5 235	294 112
2004	89 179	54 872	78 196	21 680	31 002	10 263	6 522	5 107	296 877
2005	82 450	51 119	74 872	18 653	28 422	8 550	6 329	5 400	275 859

(a) Australian residents aged 15 years and over. (b) Total includes unspecified and offshore visits that could not be allocated to a state or territory.

Source: *Tourism Research Australia, 2006, Travel by Australians, December quarter 2005, Tourism Australia, Canberra.*

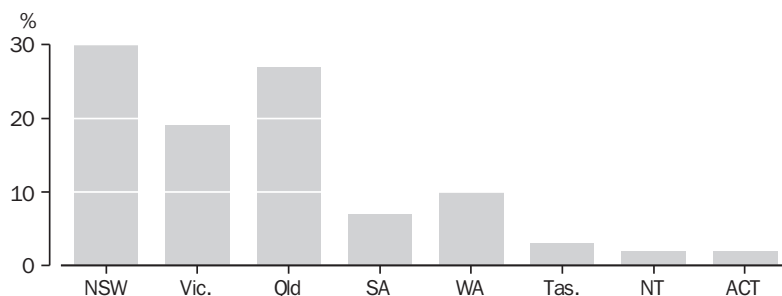
**21.17 VISITOR NIGHTS(a), By main purpose of visit — 2005**



(a) Australian residents aged 15 years and over. (b) Visiting friends and relatives.

Source: *Tourism Research Australia, 2006, Travel by Australians, December quarter 2005, Tourism Australia, Canberra.*

### 21.18 VISITOR NIGHTS(a), By state/territory visited — 2005



(a) Australian residents aged 15 years and over.

Source: *Tourism Research Australia, 2006, 'Travel by Australians', December quarter 2005, Tourism Australia, Canberra.*

### 21.19 HOTELS, MOTELS AND SERVICED APARTMENTS(a)(b)

	Units	2001	2002	2003	2004	2005
LICENSED HOTELS WITH FACILITIES(c)						
Establishments(d)	no.	781	777	796	786	812
Guest rooms(d)	no.	78 574	77 516	78 720	78 574	80 134
Bed spaces(d)	no.	206 592	203 238	202 962	205 304	206 756
Room occupancy rates(e)	%	61.6	62.6	64.6	67.4	68.5
Bed occupancy rates(e)	%	38.8	39.7	40.7	42.7	43.0
Takings from accommodation(e)	\$m	2 446.9	2 442.9	2 599.4	2 790.4	3 011.1
MOTELS AND GUEST HOUSES WITH FACILITIES(c)						
Establishments(d)	no.	2 400	2 382	2 415	2 390	2 485
Guest rooms(d)	no.	84 430	83 565	85 390	85 185	86 798
Bed spaces(d)	no.	247 776	244 156	246 107	246 227	249 385
Room occupancy rates(e)	%	52.0	52.8	53.7	54.6	55.9
Bed occupancy rates(e)	%	31.2	31.8	32.6	33.4	33.8
Takings from accommodation(e)	\$m	1 403.4	1 433.2	1 514.0	1 585.7	1 710.2
SERVICED APARTMENTS(c)						
Establishments(d)	no.	657	675	781	797	872
Guest rooms(d)	no.	35 129	35 350	40 351	41 736	45 852
Bed spaces(d)	no.	117 192	116 385	131 183	134 686	147 051
Room occupancy rates(e)	%	60.7	63.9	65.3	66.7	67.1
Bed occupancy rates(e)	%	39.9	42.2	44.3	45.7	45.5
Takings from accommodation(e)	\$m	915.2	988.9	1 163.6	1 298.7	1 468.2
TOTAL HOTELS, MOTELS AND SERVICED APARTMENTS(c)						
Establishments(d)	no.	3 838	3 834	3 992	3 973	4 169
Guest rooms(d)	no.	198 133	196 431	204 461	205 495	212 784
Bed spaces(d)	no.	571 560	563 779	580 252	586 217	603 192
Room occupancy rates(e)	%	57.3	58.7	60.1	62.0	63.1
Bed occupancy rates(e)	%	35.7	36.8	38.0	39.5	39.8
Room nights occupied(e)	'000	41 176.2	42 148.5	44 244.0	46 306.5	48 262.4
Takings from accommodation(e)	\$m	4 765.5	4 865.0	5 277.0	5 674.8	6 189.5

(a) Comprising establishments with 15 or more rooms or units. (b) Break in time series between the March and June quarters 2003. See 'Tourist Accommodation, Australia' (8635.0) December Quarter 2003 Appendix 1 for details. (c) For definitions see the source below. (d) At 31 December. (e) Twelve months ended December.

Source: *Tourist Accommodation, Australia (8635.0).*

## **Bibliography**

### **ABS products**

*Australian National Accounts: Tourism Satellite Account* (5249.0)

*Overseas Arrivals and Departures, Australia* (3401.0)

*Tourism Accommodation, Australia* (8635.0)

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Australian Government Antarctic Division, last viewed September 2006 <<http://www.add.gov.au>>

Tourism Research Australia, last viewed September 2006 <<http://www.tra.australia.com>>

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World Tourism Organisation, last viewed September 2006 <<http://www.unwto.org>>

## TRANSPORT

Transport activity involves the movement of goods or people from an origin to a destination.

Transport is a fundamental element of developed economies, connecting businesses to markets and to supplies of inputs. For example, building construction is reliant on transport to get materials and labour to sites. Retailers rely on transport to bring items from suppliers, and to bring customers to their shops. Complex and specialised transport services, such as those used for perishable foods, may cross several countries and include corridors of road, rail, sea and air journeys. A substantial part of people's time and income is used for travel to work, school, recreation, and other activities.

Transport has considerable economic, social and environmental impacts. Effective transport systems contribute to economic prosperity, as well as to the social achievements of the community that arise through access to an enlarged range of employment and residential options, and to an increased range of holiday and entertainment options. Information about numerous aspects of transport activity is used by governments, local authorities and industry, to support planning and investment decisions.

In 2004–05 the transport and storage industry's share of the total production of goods and services in the Australian economy (gross domestic product) was 4.5%.

This chapter provides information on Australia's domestic and international transportation system, including statistics on transport activity and the incidence of transport-related accidents, injuries and fatalities. Data are drawn from Australian Bureau of Statistics (ABS) collections and other sources, including the Department of Transport and Regional Services, Australian Transport Safety Bureau, Civil Aviation Safety Authority, Bureau of Transport and Regional Economics and the Australasian Railway Association Inc.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Transport and storage industry

Transport and storage is vital to the Australian economy, underpinning a diverse range of industries and activities. These range from transporting and storing freight, to the movement of people by private and public transport, to vehicle hire and even the use of pipelines.

The contribution of an industry to the overall production of goods and services in an economy is measured by gross value added (GVA). Information on the relationship between industry GVA and gross domestic product (GDP) is provided in the *Industry structure and performance* chapter.

Table 22.1 shows the GVA (in volume terms) for each industry subdivision (as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0)) within the Transport and storage industry. Between 2003–04 and 2004–05, Transport and storage industry GVA rose by 5.0%.

All industry subdivisions except Rail, pipeline and other transport had increases in GVA (in volume terms) between 2003–04 and 2004–05. Air and space transport recorded the greatest increase in GVA (10%), followed by Road transport (6.4%), and Transport services and storage (4.0%). Rail, pipeline and other transport GVA fell by 0.5% between 2003–04 and 2004–05.

**22.1 TRANSPORT AND STORAGE INDUSTRY(a), Gross value added(b)**

ANZSIC Subdivision	2003–04 \$m	2004–05 \$m
Road transport	12 889	13 711
Air and space transport	5 144	5 665
Rail, pipeline and other transport	5 502	5 475
Transport services and storage(c)	13 316	13 850
<b>Total transport and storage</b>	<b>36 851</b>	<b>38 701</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Volume measures. Reference year is 2003–04.

(c) Includes water transport.

Source: Australian System of National Accounts, 2004–05 (5204.0).

Between 2004–05 and 2005–06 Transport and storage total employment increased from 454,400 to 461,400 people (table 22.2). Air and space transport employment rose by 5,900 (13%), Rail transport increased 2,400 (6.5%) and Road transport rose 4,300 (2.0%). Over the same period, employment in Water transport decreased by 11% to 12,100 people.

**22.2 TRANSPORT AND STORAGE INDUSTRY(a), Employment(b)**

	2004–05 '000	2005–06 '000
ANZSIC Subdivision		
Road transport	214.8	219.1
Rail transport	37.2	39.6
Water transport	13.6	12.1
Air and space transport	46.7	52.6
Other transport	*0.7	*0.8
Services to transport	77.1	80.6
Storage	43.5	44.7
Transport and storage n.f.d.(c)	20.8	11.9
<b>Total transport and storage</b>	<b>454.4</b>	<b>461.4</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

(b) Annual average of quarterly data. (c) Not further defined. Insufficient detail collected from survey respondent to allocate them to a specific industry code.

Source: Labour Force, Australia, Detailed – Electronic delivery (6291.0.55.001).

Transport and storage industry production, GVA (in volume terms), more than doubled between 1986–87 and 2004–05 (graph 22.4).

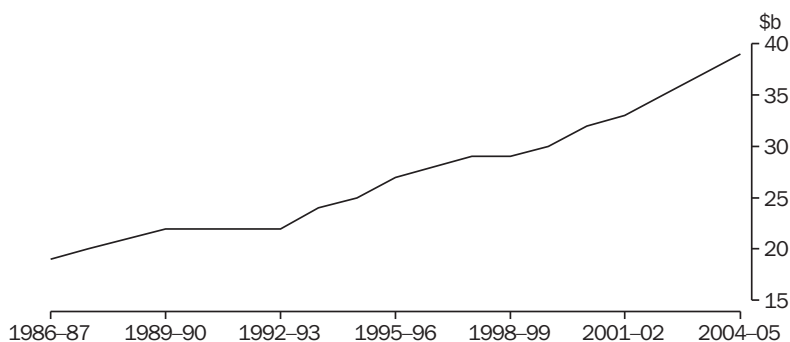
In 2003–04 the Transport and storage industry had 123,071 operating businesses, compared with 115,729 in 2002–03 (table 22.3). These businesses generated \$2,571 million (m) from the sale of goods, and \$77,059m in income from services, an increase of 14% and 11% respectively, compared with 2002–03. Capital expenditure in 2003–04 was \$8,942m, and industry value added \$36,349m. The profit margin for the industry was 4.1% in 2003–04, compared with 5.7% in 2002–03, and 80% of businesses made a profit in 2003–04 while 19% made a loss.

### 22.3 TRANSPORT AND STORAGE INDUSTRY, Selected indicators

	Units	2002–03	2003–04
Operating businesses			
Employing	no.	34 276	36 737
Non-employing	no.	81 453	86 334
Total	no.	115 729	123 071
Sales of goods	\$m	2 261	2 571
Income from services	\$m	69 175	77 059
Capital expenditure	\$m	9 284	8 942
Industry value added	\$m	32 204	36 349
Profit margin	%	5.7	4.1
Business profitability			
Businesses that made a profit	%	79.6	80.2
Businesses that broke even	%	0.8	1.0
Businesses that made a loss	%	19.5	18.8

Source: Australian Industry, 2003–04 (8155.0).

### 22.4 TRANSPORT AND STORAGE PRODUCTION(a)(b)



(a) Industry gross value added. (b) Volume measures. Reference year is 2003–04.

Source: Australian System of National Accounts, 2004–05 (5204.0).

Wages and salaries for the Transport and storage industry in 2003–04 were \$16,836m. Total income was \$86,217m, total paid expenses \$82,628m, while operating profit before tax was \$3,535m (table 22.5). Road transport was the largest

component industry, with 37% of both the industry's total income and wages and salaries, 35% of total expenses, and 77% of operating profit before tax. Rail transport recorded an operating loss before tax of \$2,910m.

### 22.5 TRANSPORT AND STORAGE INDUSTRY(a), Selected performance measures — 2003–04

ANZSIC Subdivision									
Selected indicators	Units	Road transport	Rail transport	Water transport	Air and space transport	Other transport	Services to transport	Storage	Total
Wages and salaries(b)	\$m	6 196	2 748	499	2 466	139	3 877	912	16 836
Total income	\$m	31 573	6 332	2 654	14 393	1 882	24 426	4 956	86 217
Total expenses	\$m	28 863	9 233	2 459	13 134	1 724	22 581	4 634	82 628
Operating profit before tax	\$m	2 725	–2 910	197	1 225	157	1 854	*287	3 535

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Includes capitalised wages and salaries; excludes the drawings of working proprietors.

Source: Australian Industry, 2003–04 (8155.0).

# Transport activity

## Domestic airline activity

The total hours flown and the number of aircraft departures by the major domestic and regional airlines are shown in graph 22.6. Hours flown in 2005 were 7.0% more than in 2001, while aircraft departures were 5.0% lower than in 2001.

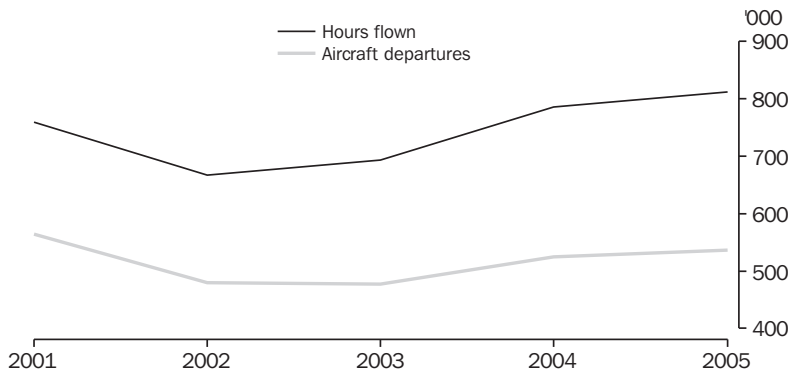
In addition to domestic and regional scheduled services, activities undertaken by the general aviation industry include business flying, aerial agriculture, charter, training and private flying (graph 22.7). Charter, flying training and private/business activity accounted for 75% of general aviation hours flown in 2005.

## Road transport activity

Motor vehicles travelled an estimated total distance of 199,055 million kilometres (km) in the year ended 31 October 2004, at an average of 15,500 km per vehicle (table 22.8). Business use accounted for an estimated 35% of aggregate distance travelled, and private use 65%. Of total private use travel, 34% consisted of travel to and from work, and 66% for personal and other use travel.

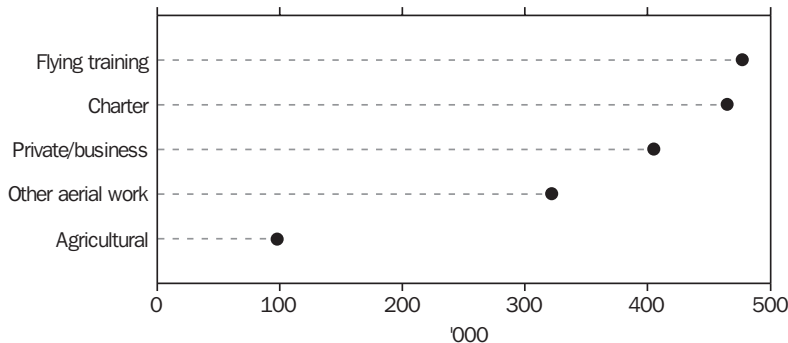
The localities in which motor vehicles travelled are described in table 22.9. Only 4.9% of total distance travelled represented interstate trips, while 55% of trips were within the capital city of the state or territory in which the vehicle was registered.

22.6 DOMESTIC AIRLINE ACTIVITY, Major and regional airlines



Source: Department of Transport and Regional Services.

22.7 GENERAL AVIATION ACTIVITY, Hours flown(a) — 2005



(a) Provisional data.

Source: Department of Transport and Regional Services.



## 22.8 BUSINESS AND PRIVATE VEHICLE USE — Year ended 31 October 2004

Type of vehicle	Business			To and from work	Private	Total
	Laden	Unladen	Total(a)		Personal and other use	
TOTAL KILOMETRES TRAVELLED (mill.)						
Passenger vehicles	..	..	31 618	37 627	78 483	147 728
Motor cycles	..	..	*173	*371	*934	1 478
Light commercial vehicles	15 844	6 044	21 899	*5 467	6 641	34 007
Rigid trucks	5 322	2 045	7 369	*170	*100	7 639
Articulated trucks	4 367	1 632	6 000	*12	*1	6 013
Non-freight carrying trucks	..	..	219	*1	**1	221
Buses	..	..	1 835	*42	*91	1 968
<b>Total</b>	<b>25 533</b>	<b>9 722</b>	<b>69 113</b>	<b>43 690</b>	<b>86 252</b>	<b>199 055</b>
AVERAGE KILOMETRES TRAVELLED(b) ('000)						
Passenger vehicles	..	..	9.5	7.1	8.6	14.4
Motor cycles	..	..	*3.9	*3.3	*3.8	4.9
Light commercial vehicles	14.4	8.6	18.6	8.3	7.3	18.4
Rigid trucks	16.8	8.3	22.9	*5.9	*4.1	22.8
Articulated trucks	71.4	30.8	97.2	*7.5	*1.7	96.6
Non-freight carrying trucks	..	..	13.7	**2.4	**3.7	13.7
Buses	..	..	34.5	*7.1	*10.4	32.6
<b>Total</b>	<b>17.2</b>	<b>9.7</b>	<b>13.8</b>	<b>7.2</b>	<b>8.4</b>	<b>15.5</b>

(a) Includes business travel of non-freight carrying vehicles. (b) Average distance travelled for registered vehicles which were used.

Source: Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2004 (9208.0).

## 22.9 AREA OF OPERATION — Year ended 31 October 2004

TABLE 1. TOTAL KILOMETRES TRAVELLED BY TYPE OF VEHICLE, BY STATE OR TERRITORY, 2001						
	Within state/territory of registration					
Type of vehicle	Capital city	Provincial urban	Other areas of state/territory	Total	Interstate	Australia
TOTAL KILOMETRES TRAVELLED (mill.)						
Passenger vehicles	88 653	22 141	30 365	141 159	*6 569	147 728
Motor cycles	*618	*400	*337	1 355	*123	1 478
Light commercial vehicles	14 236	4 686	14 115	33 036	*971	34 007
Rigid trucks	3 679	1 155	2 499	7 332	*307	7 639
Articulated trucks	1 059	378	2 981	4 419	1 594	6 013
Non-freight carrying trucks	*110	*55	*51	217	**4	221
Buses	963	*397	512	1 871	*96	1 968
<b>Total</b>	<b>109 319</b>	<b>29 211</b>	<b>50 860</b>	<b>189 390</b>	<b>9 665</b>	<b>199 055</b>
AVERAGE KILOMETRES TRAVELLED(a) ('000)						
Passenger vehicles	11.6	7.6	9.3	13.9	*6.5	14.4
Motor cycles	*3.9	*3.6	*3.2	4.5	*4.4	4.9
Light commercial vehicles	15.5	9.7	15.5	18.1	*7.4	18.4
Rigid trucks	22.5	15.6	16.3	22.2	*18.2	22.8
Articulated trucks	31.6	21.4	66.1	73.1	86.9	96.6
Non-freight carrying trucks	18.2	*16.4	*6.8	13.7	**12.1	13.7
Buses	29.4	*20.9	21.9	31.3	*24.7	32.6
<b>Total</b>	<b>12.2</b>	<b>8.1</b>	<b>11.2</b>	<b>14.8</b>	<b>8.0</b>	<b>15.5</b>

(a) Average distance travelled for registered vehicles which were used.

Source: Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2004 (9208.0).

## Transport passenger activity

Personal travel occurs for many reasons, including school, business, recreation and travel to and from work. While road transport accounts for the

majority of domestic passenger trips undertaken, rail services are used by a considerable number of urban commuters. Air services provide for a large proportion of long distance passenger travel.

## Road passenger vehicle activity

In the year ended 31 October 2004 Australia's 10.7 million (mill.) registered passenger vehicles travelled an estimated 148 billion km (table 22.10), each averaging 13,900 km per year. Just over 392,600 motor cycles travelled 1.5 billion km, while the fleet of just under 62,000 buses travelled 2.0 billion km.

## Rail passenger activity

The passenger operations of rail operators are shown in table 22.11. Between 2003–04 and 2004–05 urban heavy rail and tram/light rail passenger numbers increased by 0.4% and 4.0% respectively, while non-urban passenger numbers were unchanged. Heavy rail accounted for 79% of urban rail passenger operations in 2004–05.

## Domestic air passenger activity

At 30 June 2005 three major domestic airlines operated in Australia – Qantas, Virgin Blue and Jetstar. Regional airlines provided connecting services to the regional airports. There are 256 regulated airports in Australia and its external territories.

Passenger departures were 7.6% higher in 2005, compared with 2004 (table 22.12), while the percentage of vacant seat-kilometres was steady at 21%. In 2005 domestic airlines accounted for 88% of total Australian domestic passenger departures, and regional airlines 12%.

### 22.10 MOTOR VEHICLE USE, By state/territory of registration — 2004

	Passenger vehicles	Motor cycles	Buses
TOTAL KILOMETRES TRAVELLED (mill.)			
New South Wales	44 473	*356	603
Victoria	40 151	*319	343
Queensland	29 065	*517	*511
South Australia	11 379	*96	133
Western Australia	15 664	*142	231
Tasmania	3 233	*15	42
Northern Territory	1 002	*9	*73
Australian Capital Territory	2 762	*25	32
<b>Australia</b>	<b>147 728</b>	<b>1 478</b>	<b>1 968</b>
NUMBER OF VEHICLES(a)			
New South Wales	3 273 408	108 071	19 022
Victoria	2 866 027	100 117	13 007
Queensland	1 995 114	86 197	13 510
South Australia	874 533	29 388	3 650
Western Australia	1 127 232	49 817	7 593
Tasmania	260 921	9 045	1 752
Northern Territory	70 369	3 128	2 366
Australian Capital Territory	186 725	6 885	828
<b>Australia</b>	<b>10 654 328</b>	<b>392 648</b>	<b>61 728</b>

(a) The average number of vehicles registered for the twelve months. Includes registered vehicles that did not travel during the reference period.

Source: Survey of Motor Vehicle Use, Australia, 12 months ended 31 October 2004 (9208.0).

### 22.11 RAIL PASSENGER OPERATIONS

	Urban			Non-urban	
	Heavy rail mill. passengers	Tram and light rail mill. passengers	Total mill. passengers	mill. passengers	Total mill. passengers
2003–04	476	125	601	9	610
2004–05	478	130	607	9	616

Source: Australasian Railway Association Inc.

**22.12 DOMESTIC AIRLINE ACTIVITY(a)**

	Units	2004	2005
Passenger departures(b)			
Domestic airlines	'000	33 133	35 895
Regional airlines	'000	4 720	4 841
<i>Total</i>	'000	37 853	40 736
Other activity (domestic airlines only)			
Passenger-kilometres performed(c)	mill.	40 099	43 339
Seat-kilometres available(d)	mill.	50 843	55 059
Percentage of vacant seat-kilometres	%	21.1	21.3

(a) Includes estimates for regional airlines data. (b) The unit of measurement is traffic on board (which includes transit traffic). Includes revenue passengers only. (c) The sum for all flights of the number of passengers on each flight multiplied by the distance travelled. (d) The sum for all flights of the number of seats on a flight multiplied by distance travelled.

Source: Department of Transport and Regional Services.

The number of domestic passengers boarding airlines at the principal airports in Australia is shown in table 22.13. In 2005 all principal airports recorded increases in passenger movements compared with 2004. The strongest growth was recorded in Coolangatta (20%), followed by Launceston (18%) and Hobart (16%). Sydney and Canberra recorded the lowest growth (4%).

**International air passenger activity**

Passengers arriving or departing Australia primarily travel by air.

Of total international passengers (20.9 million) carried to and from Australia in 2005, 4.9 million travelled between Australia and New Zealand and 3.5 million travelled between Australia and Singapore (table 22.14).

Graph 22.15 shows the number of international passengers who travelled through each of Australia's international airports in 2005. Sydney's share of total international passenger traffic was 46%, followed by Melbourne (20%) and Brisbane (17%).

**22.13 DOMESTIC PASSENGER MOVEMENTS(a)**

	2004	2005
Principal airport	'000	'000
Sydney	(b)18 256	(b)18 940
Melbourne	(b)15 815	16 505
Brisbane	(b)11 519	12 103
Adelaide	(b)4 844	(b)5 262
Perth	4 437	4 755
Canberra	(b)2 434	2 525
Hobart	(b)1 381	1 600
Darwin	(b)1 062	(b)1 111
Cairns	(b)2 583	2 843
Coolangatta	2 702	3 243
Townsville	1 057	1 138
Launceston	751	887

(a) The number of passengers on board arriving at or departing from each airport. Includes passengers in transit, who are counted as both arrivals and departures at airports through which they transit. (b) Includes estimates for unreported data.

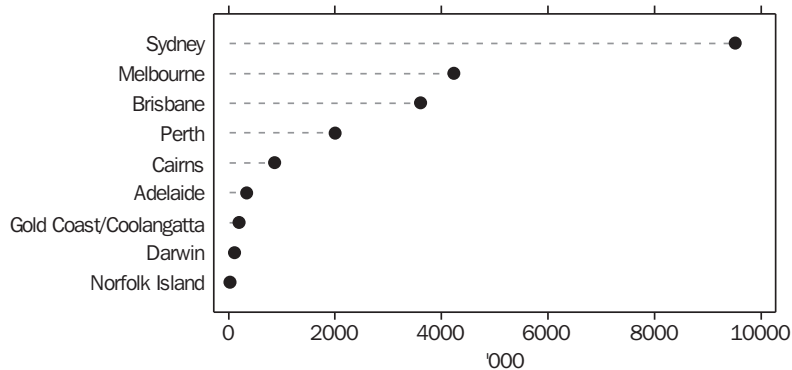
Source: Department of Transport and Regional Services.

## 22.14 SCHEDULED INTERNATIONAL PASSENGER TRAFFIC TO AND FROM AUSTRALIA — 2004

Country to/from	Inbound '000 passengers	Outbound '000 passengers	Total '000 passengers
Argentina	17.7	17.7	35.4
Austria	91.2	96.0	187.2
Bahrain	53.2	54.1	107.3
Brunei	63.7	61.2	124.9
Canada	52.8	57.4	110.2
Chile	25.0	24.2	49.2
China (excl. SARs & Taiwan)	250.2	232.6	482.8
Cook Islands	0.4	0.6	1.0
Fiji	253.3	255.2	508.5
Germany	39.3	41.7	81.1
Guam	12.9	13.7	26.6
Hong Kong (SAR of China)	846.8	802.4	1 649.2
India	37.0	31.9	68.8
Indonesia	359.9	356.9	716.8
Japan	842.8	837.4	1 680.3
Korea, Republic of (South)	202.7	203.2	405.9
Malaysia	591.8	589.1	1 180.9
Mauritius	21.9	21.3	43.1
Nauru	3.9	3.8	7.7
New Caledonia	63.7	63.6	127.3
New Zealand	2 433.3	2 452.3	4 885.6
Papua New Guinea	66.1	67.7	133.8
Philippines	77.8	72.0	149.7
Singapore	1 773.7	1 699.5	3 473.2
Solomon Islands	12.6	12.1	24.7
South Africa	106.5	94.2	200.7
Tahiti	7.5	9.0	16.5
Taiwan	124.0	122.1	246.2
Thailand	429.3	424.9	854.2
Tonga	2.7	4.1	6.8
United Kingdom	370.5	382.1	752.6
United Arab Emirates	371.0	359.6	730.6
United States of America	789.6	787.0	1 576.6
Vanuatu	39.0	38.9	77.8
Vietnam	62.3	76.9	139.2
Western Samoa	6.4	7.7	14.1
<b>Total</b>	<b>10 502.6</b>	<b>10 373.8</b>	<b>20 876.4</b>

Source: Department of Transport and Regional Services.

## 22.15 INTERNATIONAL PASSENGERS, Australian international airports — 2005



Source: Department of Transport and Regional Services.

# Accidents, injuries and fatalities

## Transport accident deaths

Accident costs include loss of life or injury to people, and the destruction of, and damage to equipment and infrastructure. Table 22.16 shows the number of transport-related deaths for each of the transport modes for 2003 and 2004. Transport-related deaths fell from 1,811 in 2003 to 1,689 in 2004. The majority of deaths (68% in 2004) were associated with motor vehicles driven on public roads. Pedestrian deaths rose from 257 in 2003 to 270 in 2004, while the number of pedal cyclist deaths rose from 27 to 41 (52%) over the same period.

22.16 DEATHS(a) FROM TRANSPORT ACCIDENTS

Mode(b)	2003	2004
Motor vehicles(c)	1 257	1 147
Pedestrians	257	270
Pedal cyclists	27	41
Water	51	40
Air	58	49
Other(d)	161	142
<b>Total</b>	<b>1 811</b>	<b>1 689</b>

(a) Based on the International Classification of Deaths, Edition 10 (ICD-10). Data in this table relate to year of registration of death and are based on death occurring up to one year following a transport accident. Data will, therefore, differ from the traffic fatalities shown in tables 22.17 and 22.18 and graphs 22.19 and 22.20, as these data are based on year of occurrence of transport-related deaths which occur within 30 days of an incident. (b) Mode of transport of deceased persons. (c) Involving motor vehicles driven on public roads. (d) Includes riders of animals, agricultural equipment, all-terrain vehicles, industrial and construction vehicles, and unspecified transport accidents.

Source: ABS data available on request, Causes of Death collection.

# Road traffic crashes

## Crashes involving fatalities

The number of fatal road traffic crashes in 2005 (1,481) rose by 37 compared with 2004 (table 22.17). Between 2004 and 2005 fatal crashes in the Australian Capital Territory and the Northern Territory rose by 178% and 50% respectively, while Tasmania and Western Australia recorded falls of 7.7% and 6.8% respectively. All other states recorded either relatively small decreases or increases.

The number of people killed was higher in 2005 (1,636) compared with 2004, increasing by 3.3%. The number of people killed in the Australian Capital Territory rose from 9 in 2004 to 26 in 2005, an increase of 189%. The number of people killed in Tasmania fell from 58 in 2004 to 50 in 2005, a fall of 14%.

## Road traffic fatalities

The number of deaths from road traffic crashes per 100,000 persons rose from 7.9 in 2004 to 8.1 in 2005. In 1970 the rate was 30.4. Road deaths per 100,000 persons in the Northern Territory in 2005 (27.1) was significantly higher than the national rate (table 22.18). Victoria had the lowest rate of road deaths (6.9 per 100,000 persons) in 2005. The Australian Capital Territory recorded the greatest increase in road deaths per 100,000 persons, from 2.8 in 2004 to 8.0 in 2005 (a rise of 186%), while Tasmania recorded a decrease in road deaths per 100,000 persons of 14%, from 12.0 in 2004 to 10.3 in 2005.

The Northern Territory had the highest number of fatalities per 10,000 registered vehicles (5.0) in 2005, an increase of 52% compared with 2004 (3.3). Between 2004 and 2005 fatalities per 10,000 registered vehicles rose in the Australian Capital Territory by 185%.

22.17 ROAD TRAFFIC CRASHES INVOLVING FATALITIES

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
FATAL CRASHES									
2004	458	312	289	128	162	52	34	9	1 444
2005	469	316	294	127	151	48	51	25	1 481
PEOPLE KILLED									
2004	510	343	311	139	178	58	35	9	1 583
2005	518	348	328	148	163	50	55	26	1 636

Source: Australian Transport Safety Bureau.

## 22.18 ROAD TRAFFIC FATALITIES

	2004			2005		
	no.	per 100,000 persons(a)	per 10,000 motor vehicles registered(b)	no.	per 100,000 persons(a)	per 10,000 motor vehicles registered(b)
New South Wales	510	7.6	1.3	518	7.7	1.2
Victoria	343	6.9	1.0	348	6.9	1.0
Queensland	311	8.0	1.2	328	8.3	1.2
South Australia	139	9.1	1.3	148	9.6	1.3
Western Australia	178	9.0	1.2	163	8.1	1.1
Tasmania	58	12.0	1.7	50	10.3	1.4
Northern Territory	35	17.5	3.3	55	27.1	5.0
Australian Capital Territory	9	2.8	0.4	26	8.0	1.2
<b>Australia</b>	<b>1 583</b>	<b>7.9</b>	<b>1.2</b>	<b>1 636</b>	<b>8.1</b>	<b>1.2</b>

(a) Estimated resident population at 30 June. (b) Number of registered motor vehicles and motor cycles (excludes tractors, caravans, plant and equipment) at 31 March.

Source: Motor Vehicle Census, Australia, 31 March 2005 (9309.0); Australian Transport Safety Bureau.

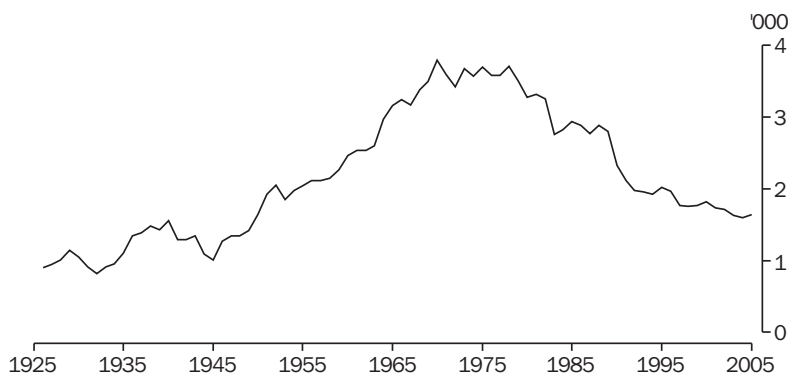
### Road fatalities and fatality rates – 1926 to 2005

Australian road fatalities for the period 1926 to 2005 are shown in graph 22.19. Road fatalities per 10,000 registered vehicles and 100,000 persons for the same period are shown in graph 22.20.

Until 1970, each year other than during the Depression and World War II had seen a steady growth in motor vehicle ownership and a corresponding increase in road deaths. By 1970 the number of vehicles had increased twelve-fold

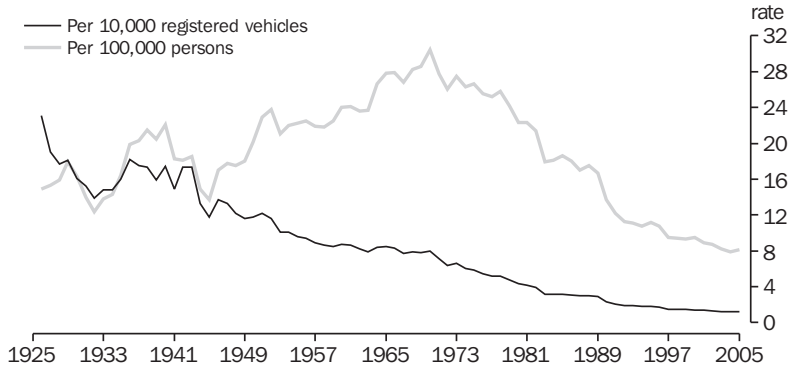
over the number in 1926 and the road toll had increased about four times to reach its highest mark of 3,798 deaths. The number of fatalities per 100,000 people also peaked in 1970 at 30.4. The road toll in 2005 of 1,636 was less than half the 1970 figure (although higher than the 1,583 deaths recorded for 2004), while the number of fatalities per 100,000 people (8.1) for 2005 was less than a third of that of 1970. Also, while there were 8.0 road fatalities per 10,000 registered vehicles in 1970, this rate has decreased to 1.2 in 2005.

## 22.19 ROAD FATALITIES



Source: Australian Transport Safety Bureau.

## 22.20 ROAD FATALITY RATES



Source: Australian Transport Safety Bureau.

### Characteristics of fatal crashes

Two characteristics of fatal crashes for 2000 and 2005 are shown in table 22.21.

In both 2000 and 2005 the majority of fatal crashes occurred on roads where the posted speed limit was 100 kilometres/hour (km/h) and above (47% in 2005), followed by roads with a speed limit of up to 60 km/h (32%). A further 22% of fatal crashes occurred on roads with speed zones of between 65 km/h and 95 km/h.

In both 2000 and 2005 the highest proportion of fatal crashes was single vehicle crashes (42% and 45% respectively). Pedestrian crashes accounted for 18% of crash types in 2000 and 15% in 2005.

### International comparisons of road traffic deaths

Australian road traffic deaths are compared with those for other selected OECD nations in table 22.22. Australia's rate of 7.9 road deaths per 100,000 persons in 2004 is considerably lower than the rates of Poland (15.0), United States of America (14.5), Republic of (South) Korea (13.6) and Portugal (12.3). Australia's rate is, however, markedly higher than Sweden (5.3) and the United Kingdom (5.6).

Australia's rate of road deaths per 10,000 registered vehicles (1.2) was below the OECD median (1.4). For the countries listed, the Republic of (South) Korea has the highest death rate per 10,000 registered vehicles (3.6).

The number of fatalities per 100 mill. vehicle-kilometres travelled in Australia in 2004 (0.8) was the same as the OECD median.

## 22.21 CHARACTERISTICS OF FATAL CRASHES

	2000		2005	
	no.	%	no.	%
Speed limit at crash site				
Up to 60 km/h	528	33.1	449	31.5
65–95 km/h	347	21.7	311	21.8
100 km/h and above(a)	721	45.2	665	46.7
Type of crash				
Pedestrian	287	17.6	221	14.9
Single vehicle	676	41.5	662	44.7
Multiple vehicle	665	40.8	598	40.4

(a) Includes zones of unrestricted speed.

Source: Australian Transport Safety Bureau.

## 22.22 ROAD TRAFFIC FATALITIES, International comparisons — 2004

Country	no.	per 100,000 persons	per 10,000 registered vehicles	People killed	Total population
				per 100 mill. vehicle-km travelled	mill.
<b>Australia</b>	<b>1 583</b>	<b>7.9</b>	<b>1.2</b>	<b>0.8</b>	<b>20.1</b>
France	5 530	9.2	1.5	1.0	59.9
Germany	5 842	7.1	1.1	0.8	82.5
Japan	8 492	6.7	1.0	n.a.	127.7
Korea, Republic of (South)	6 563	13.6	3.6	2.3	48.1
New Zealand	436	10.7	1.5	n.a.	4.1
Poland	5 712	15.0	3.4	n.a.	38.2
Portugal	1 294	12.3	2.4	n.a.	10.5
Spain	4 741	11.0	1.8	n.a.	43.0
Sweden	480	5.3	0.9	0.6	9.0
Switzerland	510	6.9	1.0	0.8	7.4
United Kingdom	3 368	5.6	1.0	n.a.	59.8
United States of America	42 636	14.5	n.a.	n.a.	293.7
OECD median	n.a.	9.5	1.4	0.8	n.a.

Source: Australian Transport Safety Bureau.

## Air accidents

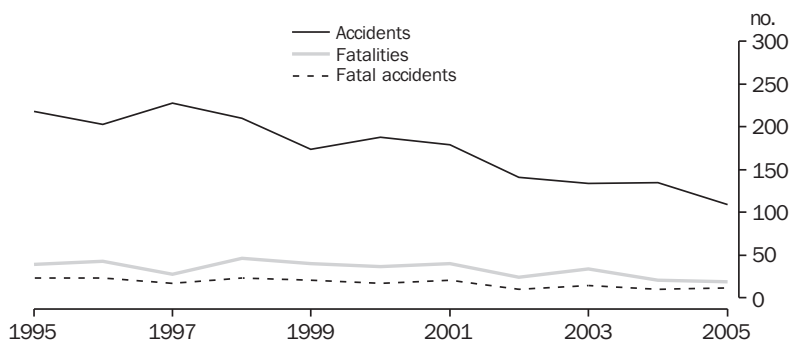
Since 1995 the number of aircraft accidents has declined by 50%, from 218 in 1995 to 109 in 2005 (graph 22.23). The number of fatal accidents fell from 23 to 12 (48%) over the same period. In 2005 there were 19 fatalities involving registered civil aircraft, or just under half the fatalities that occurred in 1995. In 2005 there were 109 accidents of which 12 were fatal, compared with 135 accidents of which 10 were fatal in 2004.

## Transport equipment

### Registered motor vehicles

There were 13.5 mill. motor vehicles (excluding motor cycles, tractors, plant and equipment, caravans and trailers) registered in Australia at 31 March 2005 (table 22.24). This represents an increase of 2.8% since 31 March 2004. Approximately eight out of every ten vehicles are passenger vehicles. Table 22.25 shows registered motor vehicles by state or territory of registration. New South Wales, Victoria and Queensland are the states with the largest number of vehicles with 30%, 26% and 20% of the total vehicle fleet respectively.

22.23 AIR ACCIDENTS, FATALITIES AND FATAL ACCIDENTS(a)



(a) Involving registered civil aircraft.

Source: Australian Transport Safety Bureau.



## 22.24 REGISTERED MOTOR VEHICLES — 31 March

Motor vehicle census years	Passenger vehicles(a) '000	Light commercial vehicles '000	Trucks				Total(b) '000	Motor cycles '000
			Rigid '000	Articulated '000	Non-freight carrying '000	Buses '000		
2004	10 669	1 952	358	66	20	71	13 136	396
2005	10 937	2 030	368	70	20	73	13 498	422

(a) Includes campervans. (b) Excludes motor cycles, tractors, plant and equipment, caravans and trailers.

Source: *Motor Vehicle Census, 31 March 2005* (9309.0).

## 22.25 REGISTERED MOTOR VEHICLES — 31 March 2005

	Passenger vehicles(a) '000	Light commercial vehicles '000	Trucks				Total(b) '000	Motor cycles '000
			Rigid '000	Articulated '000	Non-freight carrying '000	Buses '000		
New South Wales	3 335	571	111	16	3	20	4 056	113
Victoria	2 943	468	89	21	6	16	3 541	108
Queensland	2 066	490	79	15	4	16	2 670	97
South Australia	901	141	26	6	2	4	1 080	31
Western Australia	1 164	242	48	9	4	11	1 478	53
Tasmania	267	72	10	2	1	2	354	10
Northern Territory	71	27	4	1	—	3	105	3
Australian Capital Territory	189	20	2	—	—	1	212	7
<b>Australia</b>	<b>10 937</b>	<b>2 030</b>	<b>368</b>	<b>70</b>	<b>20</b>	<b>73</b>	<b>13 498</b>	<b>422</b>

(a) Includes campervans. (b) Excludes motor cycles, tractors, plant and equipment, caravans and trailers.

Source: *Motor Vehicle Census, Australia, 31 March 2005* (9309.0).

The average age of the Australian motor vehicle fleet at 31 March 2005 was 10 years (table 22.26). Tasmania recorded the highest average age (12 years) while New South Wales and the Northern Territory recorded the lowest average age (9 years). Of the different vehicle types, campervans had the oldest average age (19 years), while motorcycles recorded the lowest (10 years).

The number of motor vehicles registered per person in Australia in 2005 was 686 per 1,000 persons. Western Australia had the most registered vehicles per person in 2005, with 763 per 1,000 persons (graph 22.27).

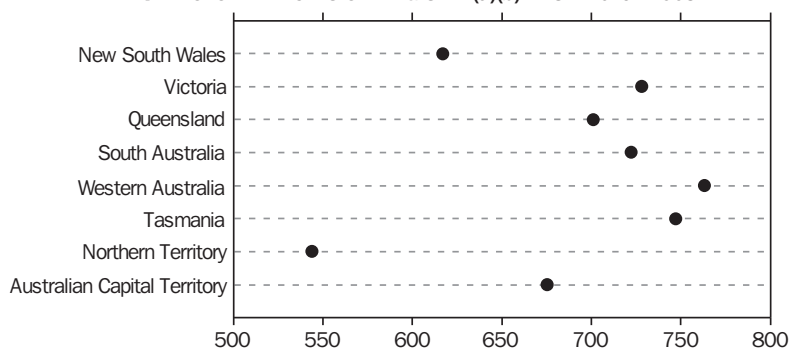
## 22.26 ESTIMATED AVERAGE AGE OF THE VEHICLE FLEET(a) — 31 March 2005

Type of vehicle	State/territory of registration							
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
Passenger vehicles	9.0	10.2	9.8	11.2	10.3	11.5	8.9	9.5
Campervans	17.0	19.7	16.2	20.8	21.5	20.3	19.3	20.0
Light commercial vehicles	10.0	11.7	10.7	11.8	11.7	13.0	9.8	10.0
Light rigid trucks	10.8	12.4	11.1	12.5	12.9	15.7	9.1	11.0
Heavy rigid trucks	14.0	17.5	14.9	17.6	18.3	17.2	13.5	11.5
Articulated trucks	10.4	11.6	11.1	11.3	13.0	10.3	13.1	8.3
Non-freight carrying trucks	13.0	15.0	11.5	15.0	16.8	17.0	14.0	13.2
Buses	10.9	11.0	10.7	12.0	10.6	14.9	8.8	10.7
Motor cycles	8.9	9.5	9.7	(b)9.0	11.7	10.2	8.2	9.0
<b>Total</b>	<b>9.3</b>	<b>10.6</b>	<b>10.1</b>	<b>11.4</b>	<b>10.9</b>	<b>12.0</b>	<b>9.3</b>	<b>9.6</b>

(a) Excludes plant and equipment, caravans and trailers. (b) Year of manufacture is not well reported for South Australian motor cycles. In 2005 it was not reported for 16.4% of motor cycles registered in South Australia.

Source: *Motor Vehicle Census, 31 March 2005* (9309.0).

## 22.27 MOTOR VEHICLES ON REGISTER(a)(b) — 31 March 2005



(a) Excludes tractors, plant and equipment, caravans and trailers. (b) Number per 1,000 persons.

Source: Motor Vehicle Census, 31 March 2005 (9309.0).

## Shipping fleet

The Australian merchant trading fleet increased from 74 ships in 2003 to 82 ships in 2004 (table 22.28). Deadweight tonnes has fallen from 2.14 mill. tonnes in 2003 to 2.05 mill. tonnes in 2004, while gross tonnage remained at 1.6 mill. tonnes.

## 22.28 AUSTRALIAN TRADING FLEET — 30 JUNE

	Units	2003	2004
Ships	no.	74	82
Deadweight(a)	tonnes	2 135 982	2 052 795
Gross tonnage(b)	tonnes	1 628 203	1 643 709

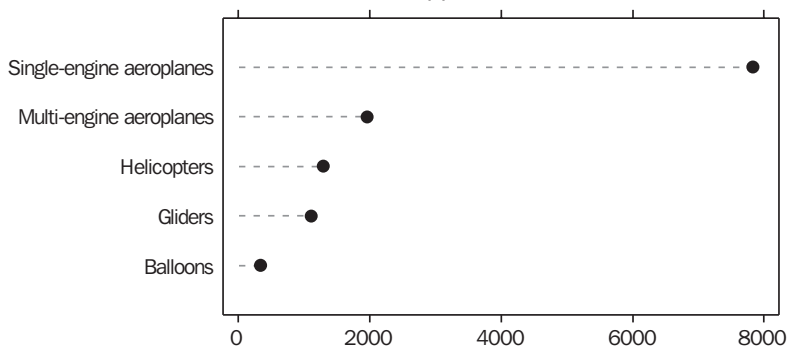
(a) Weight that a vessel can carry, including cargo, bunkers, water and stores. (b) Measure of the internal capacity of a ship (in tonnes) that is available within the hull and enclosed spaces for cargo, stores, passenger and crew.

Source: Bureau of Transport and Regional Economics.

## Aircraft fleet

There were 12,536 aircraft in the Australian Civil Aircraft Register at 31 December 2005, including 9,787 aeroplanes and 1,291 helicopters (graph 22.29).

## 22.29 REGISTERED AIRCRAFT(a) — 31 December 2005



(a) Includes amateur built aircraft. Gliders includes powered and non-powered aircraft.

Source: Civil Aviation Safety Authority, Aircraft Register.

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## INFORMATION AND COMMUNICATION TECHNOLOGY

This chapter presents information on the characteristics and performance of industries involved in the production of information and communication technology goods and services. It also provides statistics on Internet activity in Australia and the use of information technology by businesses, farms, households and government organisations.

Almost 780,000 households, or 9% of all households in Australia, chose the Internet to complete their forms online for the 2006 Census of Population and Housing, conducted by the Australian Bureau of Statistics (ABS) in August 2006. The chapter concludes with the article *Re-engineering the Census* which discusses the use made by the ABS of the Internet and other technology-based innovations in carrying out Australia's largest statistical collection from households.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Telecommunication services industry

The Communication services industry, as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0) consists of the Postal and courier services industry and the Telecommunication services industry. In 2004–05 the Communication services industry contributed 2.8% to Australia’s gross domestic product.

The Telecommunication services industry is made up of businesses mainly providing telecommunication services to the public by wire, cable or radio. The primary activities of the industry include cable and communication channel services, Internet services, network communication services, operation of radio relay stations, satellite communication services, telecommunications, telephone services, teleprinter and telex services, and operation of television relay stations. The ABS classifies the provision of radio and television services (as distinct from the operation of radio and television relay stations) as part of the Cultural and Recreational Services Division of ANZSIC.

The *Telecommunications Act 1997* (Cwlth) allows any person to provide a range of telecommunication services, provided they comply with the provisions of the Act. Providers may use telecommunications capacity acquired from a licensed carrier or, in defined circumstances, from non-carrier infrastructure,

to supply a range of local or national telecommunication services to consumer and commercial markets. Service providers typically purchase network capacity from carriers at discounted rates. In theory this allows them to provide either similar services at competitive prices or a variety of value-adding services. These services include basic telephony services, mobile phone services, data and value-adding services, Internet services and other telecommunication services.

Table 23.1 shows performance indicators by size of businesses for the Telecommunication services industry. Total income for the industry was \$31,796 million (m) in 2002–03. The largest income sources for telecommunication services were the provision of basic telephony services (\$10,946m or 34%), mobile and paging services (\$8,154m or 26%), data and text services (\$2,655m or 8%) and Internet services (\$2,183m or 7%). The industry operating profit before tax was \$4,766m and represented an operating profit margin of 15%.

There were 39 telecommunications businesses with employment of 100 persons or more, accounting for 4% of all telecommunications businesses. These large businesses accounted for 90% of employment and 94% of total income. The operating profit margin for these large businesses was 16%, well above that for smaller-sized businesses.

**23.1 TELECOMMUNICATION SERVICES INDUSTRY(a), Performance indicators — 2002–03**

Indicator	Units	Employment size				Total
		0–4 persons	5–19 persons	20–99 persons	100 or more persons	
Businesses at 30 June	no.	563	^ 270	^ 84	39	956
Employment at 30 June	no.	1 158	^ 2,657	^ 3,132	60 803	67 750
Total income	\$m	^ 338.8	^ 766.4	923.2	29 767.4	31 795.8
Total expenses	\$m	^ 329.6	^ 820.4	^ 921.0	24 884.4	26 955.4
Operating profit before tax	\$m	(b)n.p.	(b)n.p.	(b)n.p.	(b)n.p.	4 766.0
Labour costs	\$m	^ 52.0	^ 192.5	^ 192.0	4 038.1	4 474.5
Income per person employed	\$'000	^ 292.7	^ 288.5	^ 294.7	489.6	469.3
Labour costs per employee	\$'000	45.0	^ 72.4	61.3	66.4	66.0
Operating profit margin	%	*2.8	**–6.7	**—	16.2	15.0

(a) Businesses are classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. Excludes businesses for which telecommunication service provision was a minor part of their business operation, businesses which manufacture telecommunications equipment, businesses engaged in cable laying and transmission line construction, and those providing secretarial services such as answering or message delivery services. (b) Not published separately, included in total.

Source: *Information and Communication Technology, Australia, 2002–03* (8126.0).

## Internet activity

In the September quarter 2000, the ABS commenced a quarterly survey of all businesses in Australia identified as providing Internet connectivity services, with the exception of libraries, Internet kiosks and Internet cafes. The survey includes businesses for which telecommunication service provision was a minor part of their business operation. The collection frequency of the survey was changed from quarterly to biannual from the March quarter 2002, and to annual following the March quarter 2005. Table 23.2 shows summary indicators of Internet activity for the March quarters 2003, 2004 and 2005:

- There were 689 Internet service providers (ISPs) supplying Internet access to 5.98 million active subscribers in Australia at the end of March 2005. While the number of ISPs decreased slightly from 694 at the end of March 2004, the number of subscribers increased by 15% from the end of March 2004.
- The growth in subscriber numbers was driven by the adoption of broadband access technology, as increasing numbers of subscribers are accessing the Internet using non dial-up connections. While non dial-up subscribers represented 16% (861,000) of total subscribers at the end of March 2004, this had increased to 30% (1.8 million) a year later.
- While the majority of subscribers continue to utilise dial-up access technologies (70% of total subscribers at the end of March 2005), this represented the lowest proportion recorded since the survey began. Dial-up subscribers

numbered 4.6 million at the end of March 2003, 4.4 million at the end of March 2004 and 4.2 million at the end of March 2005 (a decrease of 9.3% for the two-year period).

- Digital subscriber lines (DSL) continued to be the most popular broadband technology. The number of subscribers using DSL increased from 512,000 to almost 1.3 million during the year ending March 2005, with 550 ISPs offering this service during the same period.
- The number of access lines rose from 1.5 million at the end of March 2004 to 2.4 million a year later (an increase of 64%). This large increase in access lines is largely attributable to the increase in non dial-up connection subscribers, where there is a 1:1 ratio of subscriber to access line.
- Data downloaded by subscribers during the March quarter 2005 totalled 14,124 million megabytes (MBs). This represented an increase of 120% since the March quarter 2004 when 6,409 million MBs of data were downloaded. On average, each subscriber downloaded 2,435 MBs during the March quarter 2005.

The ABS conducted a survey of all ISPs operating in Australia with 10,000 and over active subscribers as at 30 June 2006. There were 30 such ISPs operating in the June quarter 2006 compared with 35 businesses operating in the March quarter 2005. The main findings of the survey were:

- At the end of the June quarter 2006, there were almost 6 million active Internet subscribers in Australia, comprising 867,000 business and government subscribers and almost 5.1 million household subscribers.

**23.2 INTERNET ACTIVITY, Summary indicators**

	Units	March quarter		
		2003	2004	2005
Total number of Internet service providers(a)	no.	554	694	689
Internet service providers providing DSL services(a)(b)	no.	310	526	550
Internet access lines(a)	'000	857.5	1 474.3	2 416.5
Total number of subscribers(a)	'000	5 076	5 220	5 980
Subscribers using dial-up(a)	'000	4 607	4 359	4 177
Subscribers using non dial-up(a)	'000	470	861	1 802
Subscribers using DSL(a)(b)	'000	209	512	1 256
Data downloaded(c)	mill. MBs	3 046	6 409	14 124
Average data downloaded per subscriber(d)	MBs	616	1 228	2 435

(a) As at the end of the reference quarter. (b) Digital Subscriber Line. (c) During the three months of the reference quarter.

(d) Calculated by dividing data downloaded with an estimate of the number of subscribers at the midpoint of the reference quarter.

Source: *Internet Activity, Australia* (8153.0).

- The number of dial-up subscribers was almost 2.8 million, compared with over 3.1 million non dial-up subscribers recorded at the end of June 2006.
- Non dial-up subscribers increased from almost 1.7 million at the end of March 2005 to over 3.1 million at the end of June 2006. Non dial-up subscribers represented 53% of total Internet subscribers at the end of June 2006 compared with 31% at the end of March 2005.
- Household subscribers comprise the majority of broadband connections of 2.6 million, these technologies were used by 51% of total household subscribers. A higher proportion of business and government subscribers (64%) have taken advantage of faster access speeds.
- There were 36,232 million megabytes (MBs) of data downloaded by subscribers during the three months ended 30 June 2006.
- Digital Subscriber Line remained the predominant access technology used for non dial-up Internet services with almost 76% of total non dial-up subscribers being connected using this means.
- Using the definition adopted by the ABS to define broadband (an 'always on' Internet connection with an access speed equal to or

greater than 256 kilobits per second (kbps)), there were over 3.1 million broadband subscribers at the end of June 2006.

## Information and communication technology (ICT) sector

The ICT sector is that part of the economy which produces information and communication technology goods and services. It includes businesses involved in the Telecommunication services, Computer services, and selected Manufacturing and Wholesale trade industries, as defined in ANZSIC.

Table 23.3 provides statistics for a selection of industries considered to be the prominent contributors to the production and distribution of ICT goods and services. In June 2003 there were 23,950 ICT specialist businesses in the industries surveyed, with 18,524 (77%) of these in the Computer consultancy services industry. ICT specialists are those businesses for which the income from the sale, distribution and provision of ICT goods and services forms the greater part of the total income of the business.

**23.3 ICT SECTOR(a), Summary of industry operations — 2002–03**

Industry	Businesses at end June no.	Employment at end June no.	ICT income \$m	Total income \$m	Total expenses \$m	Operating profit before tax \$m
<b>Manufacturing</b>						
Computer and business machines	233	2 210	808.1	825.6	759.3	45.6
Telecommunication, broadcasting and transceiving equipment	^ 89	4 526	891.2	936.8	876.6	(b)n.p.
Electronic equipment n.e.c.	252	3 403	627.3	658.2	624.7	^ 33.1
Electric cable and wire	^ 27	699	198.8	221.7	216.0	(b)n.p.
<b>Total</b>	<b>602</b>	<b>10 838</b>	<b>2 525.3</b>	<b>2 642.2</b>	<b>2 476.6</b>	<b>107.6</b>
<b>Wholesale trade</b>						
Computers	1 831	29 016	16 625.2	17 338.1	16 918.8	553.0
Business machines	447	6 749	1 625.0	2 282.7	2 181.9	95.9
Electrical and electronic equipment n.e.c.	807	14 249	7 937.5	8 842.4	8 545.8	^ 250.4
<b>Total</b>	<b>3 085</b>	<b>50 013</b>	<b>26 187.7</b>	<b>28 463.2</b>	<b>27 646.5</b>	<b>899.4</b>
<b>Telecommunication services</b>	<b>956</b>	<b>67 750</b>	<b>29 862.1</b>	<b>31 795.8</b>	<b>26 955.4</b>	<b>4 766.0</b>
<b>Computer services</b>						
Data processing	^ 204	^ 1 619	^ 167.8	^ 174.9	^ 164.7	*10.0
Information storage and retrieval	^ 58	932	210.3	212.1	206.7	(b)n.p.
Computer maintenance	521	4 970	639.3	671.0	662.4	(b)n.p.
Computer consultancy	18 524	99 574	15 099.0	15 934.5	15 308.7	^ 585.6
<b>Total</b>	<b>19 307</b>	<b>107 094</b>	<b>16 116.4</b>	<b>16 992.5</b>	<b>16 342.5</b>	<b>^ 619.8</b>
<b>Total</b>	<b>23 950</b>	<b>235 696</b>	<b>74 691.6</b>	<b>79 893.7</b>	<b>73 421.0</b>	<b>6 392.7</b>

(a) The data relates to ICT specialist businesses within the industries in the ICT sector. (b) Not published separately, included in total.

Source: *Information and Communication Technology, Australia, 2002–03* (8126.0).



There were 235,696 persons working in ICT specialist businesses at the end of June 2003, with 99,574 (42%) working in the Computer consultancy services industry and 67,750 (29%) working in the Telecommunication services industry.

During 2002–03 total income of ICT specialist businesses was \$79,894m, with the Telecommunication services industry contributing \$31,796m (40%), the Computer wholesaling industry contributing \$17,338m (22%) and the Computer consultancy services industry contributing \$15,935m (20%).

ICT specialist businesses generated a total operating profit before tax of \$6,393m during 2002–03, with 75% (\$4,766m) coming from the Telecommunication services industry.

Total income from the domestic production of selected ICT goods and services was \$48.8 billion (b) in 2002–03 (table 23.4), and mainly comprised telecommunication services (60%) and computer services (33%). Imports of selected ICT goods and services totalled \$15.1b during 2002–03, and mainly comprised computer and communications hardware, equipment, cables and other computer parts, and consumables (81%).

## ICT-related research and experimental development (R&D)

During 2003–04 expenditure on ICT-related R&D was \$2,296m, 32% of total business industry R&D expenditure (\$7,220m) (table 23.5). In current price terms this expenditure was 2% greater than the level recorded in 2002–03.

Major ICT research fields where R&D expenditure occurred were Computer software (\$815m) and Information systems (\$707m), 35% and 31% respectively of the total.

The bulk of the ICT-related R&D expenditure was in the Computer services industry (\$684m or 30%), followed by the Manufacturing industry (\$287m or 13%) and the Telecommunications service industry (\$242m or 11%).

A more detailed range of R&D statistics collected by the ABS is presented in the *Science and innovation* chapter.

### 23.4 ICT GOODS AND SERVICES, Production, imports and exports — 2002–03

Commodity	Income from domestic production	Imports (custom value)	Exports (f.o.b.)(a)	Re-exports (f.o.b.)
	\$m	\$m	\$m	\$m
Computer and communications hardware, equipment and cables	2 933.8	12 293.0	2 329.4	1 373.4
Packaged software and associated licensing	537.8	506.8	162.9	5.2
Computer services	15 974.7	929.0	1 071.0	n.a.
Telecommunication services	29 332.3	1 407.0	1 083.0	n.a.
<b>Total</b>	<b>48 778.5</b>	<b>15 135.9</b>	<b>4 646.3</b>	<b>1 378.6</b>

(a) Exports include exports of Australian commodities and re-exports of goods of foreign origin.

Source: *Information and Communication Technology, Australia, 2002–03* (8126.0).

### 23.5 ICT-RELATED R&D EXPENDITURE, By industry grouping — 2003–04

	Manufacturing	Wholesale trade	Telecommunication services	Computer services	Other n.e.c.	Total
ICT-related research field	\$m	\$m	\$m	\$m	\$m	\$m
Artificial intelligence and signal and image processing	5	1	—	19	33	58
Communication technologies	91	57	147	20	53	368
Computation theory and mathematics	3	—	—	3	42	48
Computer hardware	9	3	—	7	9	28
Computer software	90	77	9	481	158	815
Data format	2	2	—	13	45	62
Information systems	25	n.p.	n.p.	123	522	707
Other information, computing and communication sciences	61	n.p.	n.p.	18	45	210
<b>Total</b>	<b>287</b>	<b>176</b>	<b>242</b>	<b>684</b>	<b>907</b>	<b>2 296</b>

Source: ABS data available on request, *Survey of Research and Experimental Development — Business industry*.

## Government technology

The ABS has conducted a number of surveys of government expenditure on ICT over the past decade. The most recent survey was conducted in respect of 2002–03 and a summary of results is shown in table 23.6.

Of the 30,733 ICT employees in all levels of government, Australian (Commonwealth) Government (including higher education) accounted for 49%, state and territory governments 43%, and local government 8%. ICT employees accounted for 5% of Australian Government's total employment which compares with 2% for all levels of government.

Total selected ICT operating expenses for all levels of government was \$6.7b. Of this, wages and salaries of ICT employees was 25%, payments to contractors and consultants for ICT services was 25%, telecommunication services was 23% and ICT hardware operating expenses represented 18%.

Total ICT capital expenditure for all levels of government was \$2.3b, with ICT hardware making up 58% and software 42%.

## Business use of information technology (IT)

### Adoption of IT by businesses

For the year ended 30 June 2005, 89% of Australian businesses used a computer, 77% used the Internet and 27% had a web presence.

A strong relationship exists between the employment size of a business and the likelihood that the business is using IT (table 23.7). As employment size increases, so does the proportion of businesses making use of IT. For example, for the year ended June 2005 all businesses with 100 or more people employed used computers, 99% used the Internet and 91% had a web presence. A much lower level of IT adoption existed for businesses with 0–4 people employed: 85% used computers; 77% used the Internet; and only 17% had a web presence.

**23.6 GOVERNMENT ICT EMPLOYMENT AND ICT EXPENDITURE — 2002–03**

Indicator	Units	Commonwealth Government(a)	State/territory government(b)	Local government(c)	Total
ICT employees	no.	15 016	13 180	2 536	30 733
ICT employees as a percentage of total employment	%	4.5	1.4	1.6	2.2
Selected ICT operating expenses					
Wages and salaries of ICT employees	\$m	836	710	143	1 689
Hardware	\$m	515	611	84	1 209
Software	\$m	269	291	71	631
Telecommunication services	\$m	676	755	111	1 542
Contractors and consultants for ICT services	\$m	811	766	101	1 678
<i>Total</i>	<i>\$m</i>	<i>3 106</i>	<i>3 135</i>	<i>509</i>	<i>6 749</i>
Total selected ICT operating expenses as a percentage of total operating expenses	%	7	4	3	5
ICT capital expenditure					
Hardware	\$m	616	633	100	1 349
Software(d)	\$m	485	430	69	985
<i>Total</i>	<i>\$m</i>	<i>1 101</i>	<i>1 063</i>	<i>169</i>	<i>2 333</i>

(a) Includes higher education. (b) Includes state/territory general government, vocational and school education. (c) Includes local government authorities and other administrative bodies such as regional councils. (d) Includes computer software developed in-house.

Source: *Government Technology, Australia, 2002–03* (8119.0).

## 23.7 BUSINESS USE OF SELECTED INFORMATION TECHNOLOGIES(a) — 2004–05

	Businesses with(a)		
	Computer use %	Internet use %	Web presence %
<b>Total businesses</b>	<b>89</b>	<b>77</b>	<b>27</b>
Employment size			
0–4 persons	85	71	17
5–19 persons	95	86	41
20–99 persons	97	92	59
100 or more persons	100	99	91
Industry			
Mining	92	88	38
Manufacturing	88	75	38
Electricity, gas and water supply	97	90	43
Construction	84	66	11
Wholesale trade	95	87	44
Retail trade	84	73	^ 24
Accommodation, cafes and restaurants	77	62	31
Transport and storage	82	67	16
Communication services	84	62	19
Finance and insurance	95	85	28
Property and business services	95	89	33
Health and community services	94	80	19
Cultural and recreational services	97	90	50
Personal and other services	82	60	25

(a) Proportions are of all businesses in each category.

Source: *Business Use of Information Technology, 2004–05 (8129.0)*.

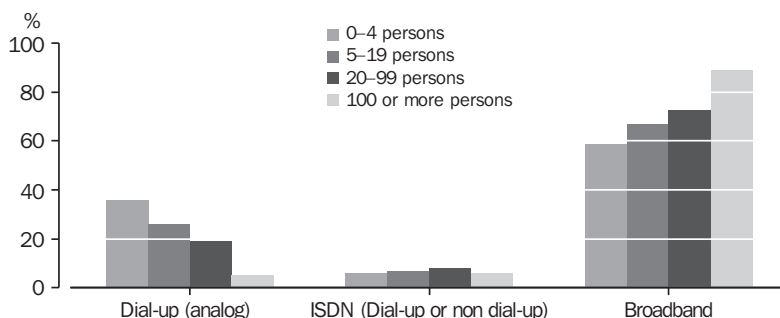
### Business use of the internet

Data was collected on the main type of connection used to access the Internet as at the end of June 2005. A higher proportion of businesses using the Internet were mainly using broadband connections (63%) than non-broadband

connections (37%) (graph 23.8). DSL was the most common main type of Internet connection for businesses connected by broadband (68%).

Broadband connections were the most prevalent main Internet connection type for all four business sizes.

**23.8 MAIN TYPE OF INTERNET ACCESS CONNECTION, By employment size(a)**  
— 30 June 2005



(a) Proportions are of all businesses in each employment size category with Internet use.

Source: *Business Use of Information Technology, 2004–05 (8129.0)*.

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# Re-engineering the Census

Hundreds of thousands of Australians took advantage of the opportunity to use the Internet to respond to the 2006 Census of Population and Housing, conducted by the Australian Bureau of Statistics (ABS) in August 2006. The census has been held every five years since 1961. The introduction of a secure online option was a significant departure from the tradition of physical collection and despatch of completed paper census forms. However, use of the Internet was only one of the many innovative ways advanced technology was adapted in 2006 to bring in the answers in Australia's biggest survey.

The gross figures of the operation alone begged for new and clever ways to capture the data: the details of over 20 million people, on up to 10 million hand-completed forms, collected by a workforce of nearly 30,000 from every occupant of the country's 7.7 million square kilometres – plus the Australian Antarctic Territory and occupied offshore islands – delivered to area supervisors by foot, bicycle or private car, then forwarded under strict security by road transport to one single point on the land mass; and most of this work completed over a period of less than three weeks.

In these beginning years of the 21st century, the scale of the census demands the maximum use of digital data processing and communications technology to help contain labour costs and minimise human error. Yet the constitutional importance of the data alone dictates that any adoption of new techniques or emerging technology can occur only after thorough testing on a scale in keeping with the magnitude and watershed timing of the census.

## Australia's biggest survey

The census is a huge undertaking by national standards. It represents a major investment in time and money for the ABS, in return for which the Bureau – and the country – obtains a vast electronic storehouse of data of exceptional quality: a detailed picture of the circumstances of each of Australia's more than 20 million people on one night every five years.



Apart from its obvious value in government administration and planning, census data forms the basis of the allocation of each state and territory's seats in the House of Representatives, and is used in the distribution by the Australian Government of Goods and Services Tax revenue to the states and territories. It is also invaluable to business and community organisations, researchers and students.

To achieve this outcome, the ABS goes to great lengths to ensure two primary requirements are met – practically nobody is missed, and every completed census form finds its way to the Data Processing Centre (DPC) safely and securely. Security is a matter of overriding importance. Until the data is separated in processing from personally identifiable information – such as the name and address details shown on an original census form – it can be seen only by a restricted number of ABS employees.

The continuous effort required to bring about the 2006 Census is illustrated by the fact that by census night on 8 August 2006, ABS staff had already been working for well over a year on preparations for the next census, scheduled for 2011. Given the six to seven-year preparation time needed, the rate of convergence between the census and current technology may seem to lag behind the take-up of new techniques by the private sector, or even by individuals. But this is to be expected. Put simply, census night

is not the time to trial last week's headline technology development, let alone tomorrow's beta applications.

The established technique of having a form delivered and retrieved in person by a census employee, or collector, has produced a fund of amusing or thought-provoking stories of intrepid collectors going to unusual lengths to reach people in remote or unlikely locations. A more mundane but equally important process is the logistical effort involved in transporting the completed forms securely from all the far-flung corners of Australia.

Hence the question '... how can we do this more easily and cheaply without sacrificing thoroughness and security?' In setting out to develop practical answers, the ABS and its predecessor, the Commonwealth Bureau of Census and Statistics, have established an international reputation for responsible early adoption of technology.

## Advances in 2006

The 2006 Census saw the introduction of important improvements. These included advances in field operations and administration, including advanced mapping techniques; the introduction of the Internet-based version of the census form; utilisation of more advanced processing technology, and improvements to the output of census data.

Producing maps for the census field force involved what might well be the largest individual map production project in Australia. Innovative mapping technology was used to produce individual maps for each of the 39,000 collection districts (CDs). These displayed the CD boundary over a topographic base with a level of detail suited to the size of the individual district. For large rural CDs, inset maps were also included to provide helpful detail. Purpose-designed jurisdiction maps were available to area supervisors together with copies of the individual CD maps. Census district managers had maps covering the larger territory for which they were responsible.

The ground for an innovative census was further prepared using new techniques to recruit the field workforce of 43,000. Instead of paper application forms, recruitment was carried out using call centres or Internet-based application forms. Job applications were uploaded frequently to a database, making it

possible to track the progress of recruitment throughout the country, so that extra resources could be quickly applied in any areas where it was proving difficult to attract enough suitable people.

## The eCensus

The 2006 Census was the first to provide all participants with the option of completing and submitting their census forms via the Internet. This process was known as the 'eCensus'.

An early version of the eCensus had been trialled on a small scale during the 2001 Census, but it was clear from the outset that protecting the privacy of Census responses, coupled with the potential scale of a national Internet census option, called for a great deal of preparation and testing. A census 'dress rehearsal' held in a number of communities in August 2005 included an eCensus option, and resulted in 8% of participants electing to submit their forms online.

ABS's industry surveys have charted the rapid growth in Internet subscribers in recent years, including the very fast growth in the number of higher speed or broadband subscribers (see *Internet activity*). There was reason to believe that a significant number of Australians would take advantage of an Internet census option.

Apart from the convenience for some households of submission via the now familiar medium of the Internet, there were other advantages for users. Many people with visual impairment or other disabilities, who might normally require the assistance of family or friends to complete a paper census form, could use applications such as screen readers to complete a form independently online. In addition, people who were difficult to reach to collect paper forms – for reasons including geographical remoteness or even security provisions in blocks of flats – could more easily lodge their forms via the Internet.

The information technology company IBM Australia was contracted by ABS to build and host the eCensus application, using the strongest available encryption technology. Because of the strict security provisions in the contract, IBM itself did not have access to census responses, with the 'private key' or decryption technology being available only to the ABS.

The resulting Internet census form was highly interactive. Participants electing to complete the online form were able to log in using a unique twelve-digit personal identification number (PIN – the ‘eCensus number’) supplied to householders in a sealed security envelope delivered by hand with each paper census form. This was coupled with the accompanying individual census form number to give access to the eCensus.

Once logged in, participants were able to move through the various ‘pages’ of the form, completing the details, navigating back to make any corrections, or electing to partially complete the form and retrieve the saved data later for finalisation. Printed guidance booklets delivered to every household provided instructions on using the eCensus, and a technical support telephone help line was available. Early reaction to the eCensus on Internet forums, such as the broadband choice forum Whirlpool, was generally positive. Forum participants commented favourably on how quickly they were able to fill out and submit the form.

Shortly after census night it was clear that almost 780,000 households, or 9.0% of all households, had opted to complete their forms online – the Australian Capital Territory recorded the highest take-up (15.9% of households), and the Northern Territory the lowest (6.3%). Expeditioners wintering in Australia’s Antarctic Territory went online to complete their 2006 Census forms. Census information from Australians based at Casey, Davis, Mawson and Macquarie Island stations was collected in a matter of hours; previously the completed paper forms could only be processed once they were physically shipped out on the summer resupply voyages at the end of the year.

Both ABS and IBM expressed satisfaction with the response of the eCensus application to the demands placed on it, particularly on census night. Usage peaked at 72,000 submissions between 8:00 pm and 9:00 pm on the actual night, and at one point 55,000 users were

logged on simultaneously. ‘During the 24-hour period of 8 August, eCensus delivered more than 12.5 million page views,’ a joint statement affirmed.

The eCensus form included a feedback or comment facility, and users were encouraged to comment on their experience. Overall feedback had been very positive, and comments will be examined as part of preparations by the ABS for the next census.

For processing, data from each eCensus form was loaded into the same file format as that used for data extracted from paper forms, and processed in the same way as all other census data. The processing system generated an image of the eCensus data to match that produced from the paper forms.

If participation in the eCensus was dependent on receiving hand-delivered login information, what impact if any did eCensus uptake have on the labour involved in census collection? The answer lay at least partly in the way eCensus submissions were linked to field operations through mobile telephone technology.

## **Field communications**

While the eCensus was a major step forward for Australia, an Internet-based census option had already been trialled successfully in Canada and New Zealand. It was in the area of census field communications that Australia broke new ground in management of the 2006 Census. ABS was aware of keen interest from other national statistical agencies as the system was developed, trialled and put into operation.

The receipt of a completed eCensus form, for example, automatically generated a text message sent to the mobile telephone of the Census collector for the relevant CD, advising that there was no need to call at that particular address to retrieve a paper form. Nearly 1.6 million short message service (SMS) messages were sent to collectors during the census field operation.



As an employer of a large mobile workforce, the census field force, ABS embraced SMS technology in various ways for the 2006 Census, primarily to help manage the 30,000 Census collectors working across the country. Whereas in the past operational developments and essential information had been communicated to collectors through field supervisors, SMS made it possible to advise a collector instantly and directly of any important development in their area, such as the receipt of an eCensus form from a particular address, or a request for a form – for example, through the Census Inquiry Service telephone help line – from a householder who might have been missed in the first distribution. The time and labour-saving benefits of such a system are obvious.

Another innovative use of SMS was in promoting the census to young adult Australians, identified by research as a group requiring targeted advocacy to encourage them to participate. Promotional messages were sent to the mobile phones of 80,000 young subscribers in metropolitan areas shortly before census night.

If SMS was of practical assistance in maintaining 'quality assurance' for the census, an advanced online field management system also played a major role. This system, linking the Census Management Units in each state and territory capital with field supervisors by computer, gave state management teams the ability to track field activity with great immediacy.

## **Processing the forms**

Improvements in the use of intelligent character recognition (ICR), automatic repair and automatic coding proved a major step forward in efficient, accurate and thorough processing of paper forms from the 2006 Census. More efficient techniques for handling of forms and of the captured data itself within the DPC also represented major advances on previous censuses.

Twenty years ago, the 1986 Census DPC employed 1,600 people and took 18 months to complete processing and release the data. At its peak, the 2006 DPC employed half that

number, but expects to finish its job in less than twelve months, with the first release of detailed data scheduled to occur eleven months after census night. Yet from the point of view of DPC management, advances in technology and increased efficiency have enabled better outcomes from the census and better quality data than ever before. Australia boasts the fastest output of census data of any country.

By the morning after census night, information technology experts at the DPC calculated that they had 92 different applications in place to commence processing Census responses. Each of the applications inherited from the 2001 Census had been either replaced or significantly updated, and fresh applications were still being added.

'Flow control' at the DPC employed innovative wireless tracking of paper forms. Forms were received in boxes containing the intake from one CD, a 'rule-of-thumb' measure of the workload of a single census collector. As the boxes were moved around the DPC, logistics staff passed hand-held wireless scanners or 'wands' over bar codes on the boxes and then over similar bar codes at the entrance to each processing section of the centre. In this way every box of forms was accounted for throughout processing, and could be traced instantly if needed.

After checking on arrival to ensure each form was in suitable condition to be scanned, the forms were trimmed. The individual pages were passed in large batches, at the rate of up to 6,000 pages an hour, through 13 high technology scanners which captured an electronic image of each page. These images were stored in a central database, together with similar images derived from eCensus forms, ready for further processing. At a later stage, those images relating to individuals who had elected to have their details stored for 99 years in the Census Time Capsule would be transferred to microfilm for that purpose. For those who submitted paper forms, their descendants will be able to see an image of their ancestor's handwriting.



The major advance in data handling at the DPC for the 2006 Census was the advent of simultaneous processing of different topics from the census forms, allowing far greater flexibility. This was made possible through storage of the individual census records on a highly advanced central database. In the 2001 Census, data had been captured on text files which were then moved through a series of separate databases as topics were completed in a strict sequence. By 2006 the coding workload on any single topic, such as occupation or industry, could be distributed in large tranches to any arrangement of teams, whereas in the past the records had to be processed in CD lots to ensure the orderly progress of the data through the system.

A major challenge in the automatic coding of handwritten responses on census forms is the almost unlimited variety of handwriting styles the computers will encounter in processing millions of images of pages. Major strides had been made in ICR between the 2001 and 2006 Censuses. Improved automatic coding, using much more powerful indexes against which to code responses and more accurate automatic repair processes, greatly reduced the need for manual assessment and correction. Quality assurance processes, that in the past involved manual checking of sample records to ensure a high level of accuracy was being maintained, were largely automated in 2006, with the added benefit that individual coders received direct electronic feedback. Overall, this greatly improved flexibility substantially increased the efficiency and speed of processing.

Most questions on the paper census form called for small horizontal pen marks to indicate householders' responses from a list of possible answers. However, a number of questions required words and figures to be written. The ICR process translated these written submissions – now in the form of electronic images rather than on the original paper or eCensus files – into classification codes. Where the applications could not resolve a word, figure or letter successfully, an image of the problem character could be diverted to a staff member for manual coding, or ultimately a 'snippet' from the image of the original census form could be examined to decide on the meaning of a piece of handwriting.

Processing is divided into two 'runs' to speed up the output of census data. First release processing (FRP) covers topics which are simpler to process, such as age, sex and religion, and which achieve a high degree of automatic coding. Second release processing covers complex topics such as industry, qualifications and occupation, which require more manual intervention to decipher responses. FRP is geared to a release of data as early as possible in 2007.

How accurate is the overall count, and how do we know? The answer is through the post-enumeration survey (PES), which is conducted by the ABS on a selected sample of households to test the accuracy of the original count. In 2001 the PES was conducted using paper forms. In 2006 the PES interviewers used a new application on notebook computers, designed to check on the original data captured from the census forms completed by the test households.

## **New deal for users**

Developments in the release of census data are making it more accessible for users than ever before. The advent of free access to statistical publications and a wide range of other data on the ABS web site since 2005 have been followed by major innovations on the site.

Traditionally census data has been offered to the public on a 'one-size-fits-all' basis, where users were presented with geographical information in batches designed to meet straightforward needs, but which required them to employ the ABS statistical consultancy service to adapt the data for more specialised uses. This was largely because the data was retained in a pre-formatted state. The new system maintains the data in a raw form that can be adapted 'on the fly' to more easily respond to the specific needs of the user.

Users can already access small area census information easily and quickly on the web site in a variety of forms, including through interactive maps, and manipulate the figures online to show desired results. Tables or graphs can be produced online with a few clicks of a mouse.

By the time of the final main release of 2006 Census data in mid-2007, the site will feature a new 'table builder' which will enable users to create their own tables in a variety of forms using multiple variables.

## **The Census of the future**

The success of the first eCensus application has ensured that this option will continue to be available in future censuses. No doubt a greater proportion of households will opt to use the eCensus as the application is further refined and public familiarity with the Internet further expands.

Improved processing and coding techniques offer the real possibility of expanding the actual content of the census. The two main barriers to expansion have been 'respondent load' (the magnitude of the householder's task in completing the census form) and processing cost. New solutions are already reducing the cost of processing. The ABS is already considering possible options for the future. One of these options might be for broadening the content of the census without increasing the load on the householder is to conduct a '50/50' sample-census. This might involve, for example, half the households in Australia providing information on social questions, such

as family details, background and education, and the other half responding to economic questions such as income and employment. Statisticians believe such a census would produce a great deal more information at the same cost, while retaining the advantages of the single-form census: quality small area statistics and a very large sample of population.

Relieved of the burden of asking every householder for the same demographic and economic information, the census could expand into new areas such as the interactions of families across households – for example, where one family provides support for aged parents living independently – or providing data about people with multiple jobs.

However, the ABS believes the one-night 'snapshot' or 'as enumerated' census is here to stay. Where other countries have moved to a census taken over longer periods of time, or 'place of usual residence' counts, the Bureau believes such censuses cost more to run and have resulted in little or no improvement in the quality of the data. The snapshot technique is seen as simpler for respondents to understand while avoiding errors brought about by different conceptions of a 'normal' or 'usual' place of residence.

## ENVIRONMENT AND HERITAGE

Australia's growing economy and its increasing use of energy and other resources have brought prosperity and wellbeing to many Australians. Economic activities and consumption patterns also have environmental consequences. The way natural resources are managed – and the waste products they generate – can impact on the social, economic and environmental options of present and future generations.

It is not possible to cover all of the complex interactions between the economy, society and the environment in this chapter. What follows is a selection of information on the management of land resources; the ongoing loss of biodiversity through the invasion and spread of exotic plants and animals; how Australians manage waste from urban and industrial centres; greenhouse gas emissions and their link to global warming and climate change; water use in Australia; the environmental views and behaviours of Australian households; and information on Australia's total assets and environmental assets.

The article *Managing waste in Antarctica* discusses the recent clean up and new waste management practices implemented in Antarctica.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

# Biodiversity and land

Biodiversity (or biological diversity) is the variety of all life forms on earth – the different plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part. Biodiversity is constantly changing – increased by genetic change and evolution, and reduced by processes such as habitat degradation and extinction.

Australia's biodiversity is unique. Australia is home to more than one million (mill.) species, many of which are endemic, that is, they are found nowhere else in the world. About 85% of flowering plants, 84% of mammals, 45% of birds, and 90% of inshore, temperate-zone fish are endemic. In addition, Australia's coastal waters have some of the most diverse marine fauna in the world due to areas such as the Great Barrier Reef. Its biological diversity is globally significant. Australia is recognised as one of only 17 'mega-diverse' countries, with ecosystems of exceptional variety and uniqueness.

Loss of biodiversity is seen by some as Australia's most serious environmental problem. Changes to the landscape and native habitat as a result of human activity has put many of these unique species at risk. Over the last 200 years, many endemic species of plants and animals have become extinct. For the other species of plants

and animals whose survival is threatened, a range of management and conservation measures are in place.

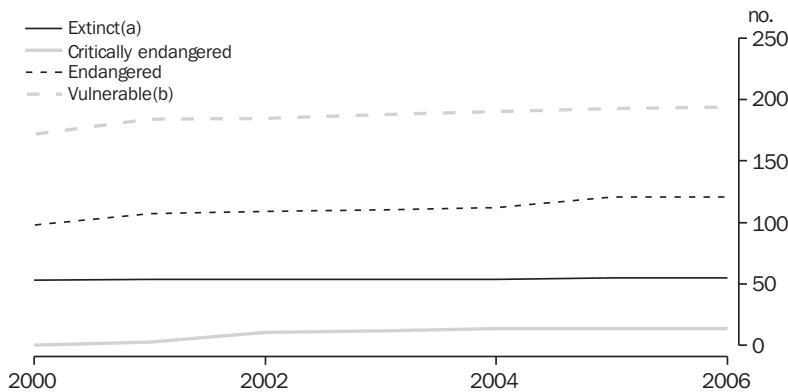
## Evidence of declining biodiversity

### Threatened species

The number of threatened species is one aspect of biodiversity that can be measured with some precision (graph 24.1). The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) classifies listed threatened species into six categories – extinct, extinct in the wild, critically endangered, endangered, vulnerable, and conservation dependent. Since the introduction of this Act, the number of listed threatened fauna rose by nearly 20% from 323 to 384 (of which 130 were birds and 117 were mammals). In June 2006, about half of these species were vulnerable, one-third were more seriously threatened (endangered) and the remainder were presumed extinct. There were increases in the numbers of endangered and vulnerable species, but the rise in species assessed as vulnerable was much lower (12%) than those assessed as endangered (23%).

Table 24.2 details the current list of threatened species, both flora and fauna, as assessed under the EPBC Act.

24.1 THREATENED FAUNA SPECIES — June



(a) Includes the category 'extinct in the wild'. (b) Includes the category 'conservation dependent'.

Source: Department of the Environment and Heritage, Canberra, last viewed June 2006, <<http://www.deh.gov.au/biodiversity>>.

## 24.2 THREATENED FLORA AND FAUNA SPECIES, By category — 2006

	Fishes	Frogs	Reptiles	Birds	Mammals	Other animals	Flora
Extinct	—	4	—	23	27	—	61
Extinct in the wild	1	—	—	—	—	—	—
Critically endangered	2	—	1	5	2	4	57
Endangered	16	15	11	38	34	7	507
Vulnerable	20	12	38	64	53	6	675
Conservation dependent	—	—	—	—	1	—	—
<b>Total</b>	<b>39</b>	<b>31</b>	<b>50</b>	<b>130</b>	<b>117</b>	<b>17</b>	<b>1 300</b>

Source: Department of the Environment and Heritage, Canberra, last viewed September 2006, <<http://www.deh.gov.au/biodiversity>>.

### Extinctions

Over the last 200 years, elements of Australia's biodiversity have declined and some species of mammals, birds, frogs and plants are presumed to have become extinct. Mammals particularly have been affected, with 27 species that lived in continental Australia at the time of European settlement in 1788, now presumed extinct under the EPBC Act. Ten of those species have been lost since 1900.

Table 24.3 lists the mammal species that are believed to have become extinct in continental Australia since 1788. A further seven subspecies are presumed extinct and several other species now survive on offshore islands or Tasmania but are extinct on the mainland. This compares with 23 extinct birds from about 700 species, four extinct frogs from over 200 species, and 61 extinct flowering plants from over 15,000 species. No freshwater fish or reptile species are known to have become extinct.

## Pressures on Australia's land resources and biodiversity

### Land clearing and fragmentation

Australia's population continues to increase, both in numbers and in affluence, putting great pressure on land and resources. The way in which people use the land has significantly changed Australia's natural systems and landscapes. All uses of land exert pressure on the environment. In the last 200 years, vast areas of native vegetation have been cleared or degraded resulting in adverse effects on biodiversity, soil and water quality and assisting in the spread of weeds, feral pests and diseases.

### 24.3 PRESUMED EXTINCTIONS OF MAMMALS SINCE 1788(a)

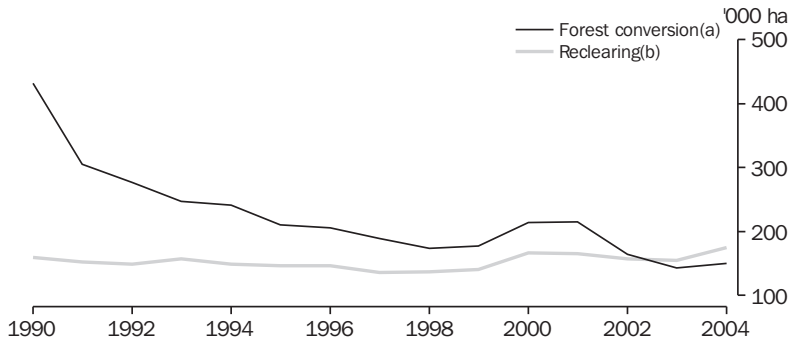
Species	Last record
Darling Downs Hopping Mouse	1840s
Big-eared Hopping Mouse	1843
White-footed Rabbit Rat	1845
Gould's Mouse	1857
Broad-faced Potoroo	1875
Eastern Hare-wallaby	1889
Short-tailed Hopping Mouse	1896
Long-tailed Hopping Mouse	1901
Pig-footed Bandicoot	1901
Lesser Stick-nest Rat	1933
Desert Rat-kangaroo	1935
Thylacine	1936
Toolache Wallaby	1939
Lesser Bilby	1950s
Crescent Nailtail Wallaby	1956
Central Hare-wallaby	1960s
Desert Bandicoot	1960s

(a) Excludes subspecies and extinctions from Christmas and Lord Howe Islands.

Source: *A Gap in Nature, Mammals of Australia and schedules to the Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).

The impact of broad-scale vegetation clearance on the land and its biodiversity is profound and has been of concern for several decades in Australia. Associated with the loss of native vegetation are a broad range of environmental, economic, and social impacts. Environmental impacts can include habitat loss or fragmentation, loss of ecosystem, species and genetic diversity, reduced water quality in inland and marine environments, reduced carbon storage, and soil degradation. Economic impacts can include costs associated with loss of flood control, deterioration of water quality, loss of habitat for economically important species, loss of tourist potential, and loss of production through soil degradation. Social impacts can include loss of heritage values and loss of recreation and tourism values.

## 24.4 FOREST CONVERSION AND RECLEARING



(a) Land cleared for the first time. (b) Clearing of land previously cleared.

Source: Data available on request, Australian Greenhouse Office.

In the decade 1993–2003, although land clearing continued, the rate of clearance decreased by about 40% (graph 24.4). In 2003, 283,000 hectares (ha) of land were cleared, around 50% in Queensland. However, these figures do not distinguish between the type of vegetation (native or non-native) that was cleared.

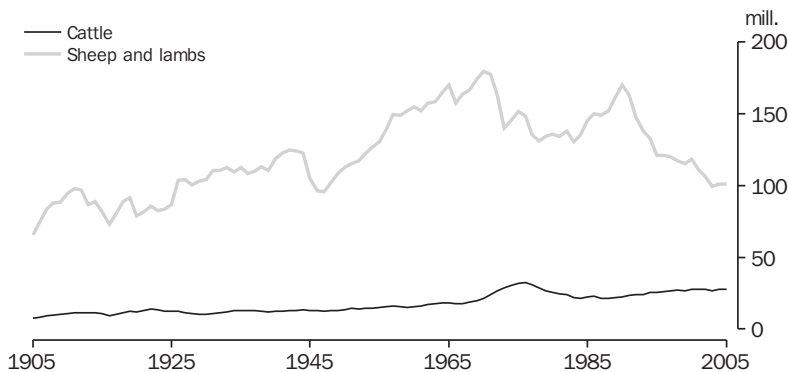
### Grazing pressures

Grazing pressures refers to the effect of grazing by all animals. It not only refers to the impact of domestic livestock such as cattle, sheep and horses but also native and feral grazing animals such as goats, camels, kangaroos and locusts. The combined effect of grazing places significant pressure on Australia's native flora and fauna. Large areas of native grasslands have been lost either as native species have changed as a result of

grazing pressure or as a result of agricultural activity as improved pastures have been introduced to support livestock.

Agriculture is the major form of land use in Australia. In 2005, 58% of the Australian land mass was used for agricultural activity, principally grazing and growing crops. Although numbers of cattle and sheep have not increased in recent times, they still continue to place pressure on the land. The number of cattle increased from about 8 mill. in 1905 to nearly 28 mill. in 2005 – in the period 1995–2005 the number increased by only 2 mill. In 2005 the number of sheep and lambs was 54% higher than in 1905 (about 101 mill. compared with 66 mill.). Sheep and lamb numbers in 2005 were considerably lower than in the 1960s, 1970s and late-1980s. The size of the national flock peaked in 1970 at 180 mill. (graph 24.5) (see the *Agriculture* chapter).

## 24.5 LIVESTOCK



Source: *Historical Selected Agriculture Commodities, by State (1861 to Present)*, 2005 (7124.0).

It is not just the number or type of grazing animals but also the availability of water that places pressure on Australia's biodiversity. In the arid zone, despite lower stock densities, the impact of grazing on biodiversity can be greater than it is in high rainfall zones because low productivity limits forage and stock compete with native animals for limited resources. Where water was formerly limiting, the provision of water through bore holes, earth dams and tanks has resulted in the grazing pressure spread more evenly across the landscape so there is now little land left that is only lightly grazed.

### **Invasive animals, plants and other organisms**

The Australian continent's long isolation from the rest of the world has endowed it with a unique set of plants and animals. Like other islands, isolation has also made the native flora and fauna susceptible to the impact of invasive species. Some introduced species thrive in Australia because the predators and parasites that controlled them at home do not exist in Australia, while some species grow more quickly, breed more prolifically or have more varied diets than their Australian counterparts.

In 2004, 25 mammals, 20 birds, 4 reptiles and 1 amphibian introduced from overseas were recorded as established in Australia. In addition, in 2002 at least 23 exotic freshwater fish species were established.

Introduced predators like the fox and cat have spread over much of Australia and have contributed to the decline or extinction of some native species through predation or the spread of disease. Cane toads have advanced throughout Queensland to Cape York, south to Port Macquarie in New South Wales, and into the Northern Territory, where they have reached Kakadu. They eat mainly insects, but also frogs, small mammals and snakes. Because they are poisonous, cane toads kill many animals that prey on them including goannas, quolls and birds.

Rabbits have at times reached plague proportions over much of Australia, competing with native animals for resources, overgrazing vegetation and digging holes which damage soil structure. Goats strip vegetation, erode slopes and compete with rock wallabies for food and shelter. Donkeys and

pigs cause erosion and spread weeds (pigs also eat rare plant species). Commercial honeybees, found in nearly every habitat, compete for nectar with native insects and take over nesting hollows from birds and mammals.

All states and territories have populations of introduced fish. Thirty-five exotic fish species, including European carp, have become established in inland waters, with eight identified as having a significant effect. This does not include the exotic marine animals, often introduced into coastal waters from ships' ballast or by riding on hulls, which can also be a problem.

A plant which has, or has potential to have, a detrimental effect on economic, conservation or social values, is considered to be a weed. The National Weeds Strategy states that weeds are among the most serious threats to Australia's primary production and natural environment. Weeds are a major problem for farmers as they reduce their agricultural productivity. Weeds were estimated to have cost the Australian economy \$4 billion (b) in 2001–02 in lost agricultural production and control costs. There are also flow-on costs to the environment which have yet to be estimated. Weeds displace native species, and the effects flow on to animals that rely on native plants for food and shelter. Some weeds are either more flammable or more fire retardant than the species they displace and can alter the fire patterns of the communities they invade (which may have effects on native animals living in those communities). Other weeds provide food and shelter for invasive animals. About 350 weed species in Australia have been declared noxious. Table 24.6 provides details of the spread of weeds identified as already causing significant environmental damage, so called 'weeds of national significance'.

Other introduced organisms, such as dieback fungus (*Phytophthora cinnamomi*), invade plant communities, killing selected species, and disrupting ecological processes. Dieback is the most important threat to the biodiversity of the Stirling Range National Park (Western Australia). Some plants (such as banksias and grevilleas) are highly susceptible and 80–100% of infected individuals may die.



## 24.6 WEEDS OF NATIONAL SIGNIFICANCE

Common name	Scientific name	Extent
Alligator Weed	<i>Alternanthera philoxeroides</i>	WA, NT, Qld, NSW, Vic., SA, Tas.
Athel Pine	<i>Tamarix aphylla</i>	WA, NT, Qld, NSW, Vic., SA
Bitou bush/Boneseed	<i>Chrysanthemoides monilifera</i>	WA, Qld, NSW, Vic., SA, Tas.
Blackberry	<i>Rubus fruticosus</i> agg.	WA, Qld, NSW, Vic., SA, Tas., ACT
Bridal Creeper	<i>Asparagus asparagoides</i>	WA, NSW, Vic., SA, Tas.
Cabomba	<i>Cabomba caroliniana</i>	NT, Qld, NSW, Vic.
Chilean Needle Grass	<i>Nassella neesiana</i>	NSW, Vic., SA, ACT
Gorse	<i>Ulex europaeus</i>	WA, Qld, NSW, Vic., SA, Tas., ACT
Hymenachne	<i>Hymenachne amplexicaulis</i>	NT, Qld, SA
Lantana	<i>Lantana camara</i>	WA, NT, Qld, NSW
Mesquite	<i>Prosopis</i> spp.	WA, NT, Qld, NSW, Vic., SA
Mimosa	<i>Mimosa pigra</i>	NT
Parkinsonia	<i>Parkinsonia aculeata</i>	WA, NT, Qld
Parthenium weed	<i>Parthenium hysterophorus</i>	Qld, NSW, Vic.
Pond Apple	<i>Annona glabra</i>	NT, Qld, NSW
Prickly Acacia	<i>Acacia nilotica</i> ssp. <i>indica</i>	Qld, NSW
Rubber Vine	<i>Cryptostegia grandiflora</i>	WA, Qld
Salvinia	<i>Salvinia molesta</i>	WA, NT, Qld, NSW, SA
Serrated Tussock	<i>Nassella trichotoma</i>	NSW, Vic., Tas., ACT
Willows except Weeping Willows, Pussy Willow and Sterile Pussy Willow	<i>Salix</i> spp. except <i>S. babylonica</i> , <i>S. x calodendron</i> and <i>S. x reichardtii</i>	NSW, Vic., ACT

Source: Weeds Australia, last viewed August 2006 <<http://www.weeds.org.au/natsig.htm>>.

### Altered fire regimes

Fire has shaped much of the Australian vegetation. Indigenous Australians have used fire widely to manage the vegetation. Since European settlement, experts believe that fires have tended to be less frequent with more fuel to power them, more intense and, in some areas, more destructive as a result. Some well documented changes include:

- Lower frequency of burning, associated with higher grazing intensity, in arid and tropical rangelands. In the northern tropics, this led to the build up of massive fuel reserves and huge wild-fires. In more arid areas this led to less grassland, more bare soil and more shrubs. In both cases it is more difficult to use fire as a management tool.
- Increase in weed species, such as 'woody weed' regrowth of native species that are inedible to most herbivores.
- Introduction of weeds that require fire for their control, including rubber vine (*Cryptostegia grandiflora*) and prickly acacia (*Acacia nilotica*).

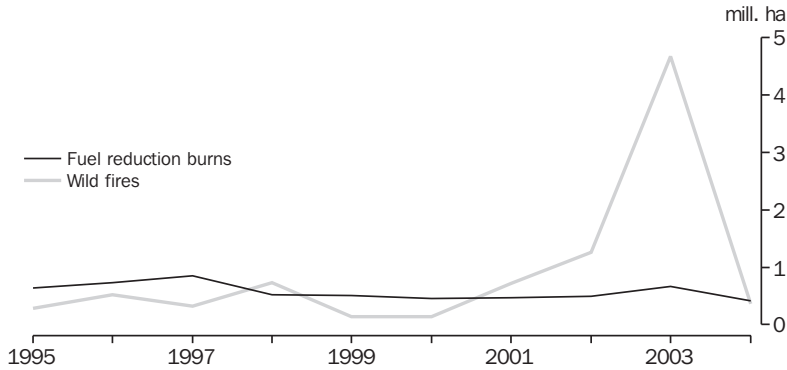
- Very frequent burns in regions surrounding roads, and metropolitan and urban centres.
- Build up of understorey in forests, resulting in massive wild-fires in the period 1900s–1970s. Since then, cool prescribed burns or fuel reduction burns have been introduced by some forestry agencies to reduce wild-fire risk (graph 24.7).
- Regular burning of crop stubbles and cane from the 19th century to 1970s. Regular burning is now partially reduced by the adoption of stubble-mulching in some areas.

### Altered hydrological regimes

The clearance of native vegetation and commercial changes in hydrological cycles have serious implications for land management and biodiversity. Vegetation clearance changes the water balance of an area and this may lead to fundamental changes in the local soils and climate, as well as the local water table and its chemical composition.



## 24.7 FOREST AREA BURNT



Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory, 2003'.

Australia's soils are old and shallow and are susceptible to degradation by agricultural activities. Even in a continent as dry as Australia, salinity occurs when there is too much water. Salinity occurs when the water table rises, bringing natural salts to the surface (in sufficient quantity, these salts are toxic to most plants).

In the quest to prepare Australian soils for agriculture, trees were massively cleared. Yet trees played a crucial role in maintaining the water balance in the ancient soils. It was the success in clearing trees that led to the development of dryland salinity. Irrigated-land salinity is caused by a similar effect – the application of excess water to land causes the water table to rise. European farming practices which replaced native vegetation with shallow-rooted crops and pastures have caused a marked increase in the expression of salinity in land and water resources.

The impacts of salinity are also wider than lost agricultural production and include damage to water resources, biodiversity, pipelines, houses and roads. Salinity harms Australia's biodiversity (primarily through loss of habitat), while saline water damages bitumen and concrete. In 2000, 1,600 kilometres (km) of rail, 19,900 km of road, 68 towns and 80 important wetlands were at risk of damage from salinity (graph 24.8). The National Land and Water Resources Audit in 2001, estimated that about 5.7 mill. ha (not all of it agricultural land) had a high potential for the development of dryland salinity through shallow or rising water tables. In 2002, 20,000 farms and 2.0 mill. ha of agricultural land were reported by farmers as showing signs of salinity.

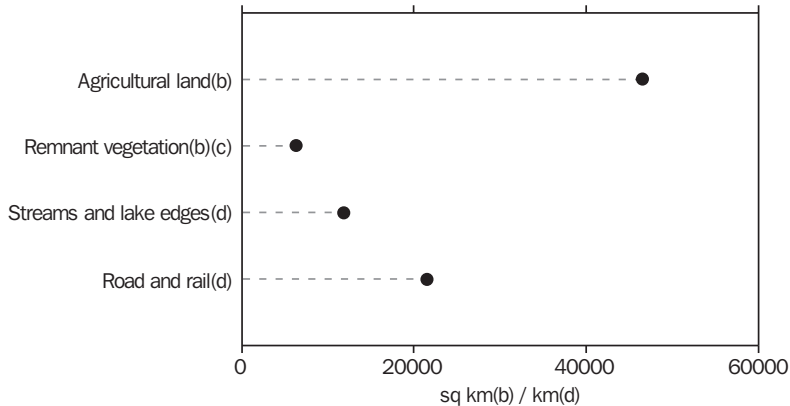
Dryland salinity also threatens biodiversity, through loss of habitat on land and in water. Areas near water are often worst affected because they occupy the lowest parts of the landscape where saline groundwater first reaches the surface. Areas of remnant and rehabilitated native vegetation are under threat in Western Australia, South Australia, New South Wales and Victoria. In the Western Australian wheat belt, salinity has caused a 50% decrease in the number of wetland bird species and 450 plant species are threatened with extinction through salinity.

### Natural resource management

Australia's salinity problems are the focus of the \$1.4b joint Australian Government and State Government National Action Plan for Salinity and Water Quality, endorsed in 2000 by the Council of Australian Governments. Under the plan, 21 priority regions have been targeted and governments and communities are working together to prevent, stabilise and start to reverse trends in dryland salinity, and improve water quality.

Additionally, the Natural Heritage Trust (NHT) was set up by the Australian Government in 1997 to help restore and conserve Australia's environment and natural resources. Its funding has been extended until 2007–08 making it a \$3.0b investment. Thousands of community groups and organisations have received funding for environmental and natural resource management projects. The NHT provides funding for environmental activities at a community level (through the Australian Government Envirofund), a regional level, and a national/state level.

## 24.8 SALINITY, ASSETS AT RISK IN AREAS OF HIGH POTENTIAL(a) — 2000



(a) The National Land and Water Resources Audit (NLWRA) defines land as having a high potential to be affected by salinity if groundwater levels are within two metres of the surface or within two to five metres with well demonstrated rising water tables. (b) Square kilometres. (c) Includes planted perennial vegetation. (d) Kilometres.

Source: NLWRA, 'Australian Water Resources Assessment 2000'; Australian Dryland Salinity Assessment 2000.

More than nine out of ten farmers reported undertaking some form of natural resource management (NRM) activity during 2004–05. Nationally, weed and pest management were the most common NRM activities farmers undertook, with 80% of agricultural establishments undertaking activities to either prevent or manage weeds. Land and soil and native vegetation issues were other natural resource management issues reported by farmers. Native vegetation management also formed an important part of NRM on farms in 2004–05. Approximately 63% of agricultural establishments which reported the presence of native vegetation undertook some form of native vegetation management activities during the year.

Although Australia's biodiversity continues to be threatened by many factors, much is being done to protect native flora and fauna. One such measure is the protection of land and sea areas (and their biodiversity) inside conservation reserves. National parks and other protected areas are areas of land and/or sea especially dedicated to the protection of biodiversity and other natural and cultural resources. They are established under Commonwealth, state or territory laws or other legal means. All governments participate in the development of a comprehensive, adequate and representative national reserve system as part of Australia's obligation under the United Nations Biodiversity Convention established in 1993. Most national parks and other protected areas in

Australia are declared and managed by state and territory governments although, during the last decade, some protected areas have been established which are managed by conservation or other groups. Declaration and management of Indigenous protected areas – Indigenous-owned land that is managed to protect its natural and associated cultural values – commenced in 1998. The Australian Government declares and manages parks and reserves on land owned or leased by the Commonwealth, in Commonwealth waters and on Indigenous land leased to the Commonwealth.

Australia also has international obligations concerning its protected land, such as World Heritage listed sites and Ramsar wetlands. World Heritage sites are nominated areas that have outstanding natural and/or cultural values. Australia has 15 World Heritage sites listed for natural values, with Kakadu National Park, Uluru-Kata Tjuta National Park, Willandra Lakes Region and the Tasmanian Wilderness also listed for cultural values. Ramsar wetlands are wetlands of international importance. They are valued for their ecology, their plants and animals, or for the water bodies themselves and the hydrological functions (such as water filtration) they perform. Australia has 64 Ramsar wetlands and is a signatory to international conventions to protect migratory species that use these wetlands, such as the Japan-Australia Migratory Bird Agreement and the China-Australia Migratory Bird Agreement.

Australia has a series of terrestrial and marine protected areas which are under the control of the Australian, state and territory governments. The area of conservation reserves in each state and territory is recorded in the Collaborative Australian Protected Areas Database (CAPAD) <<http://www.deh.gov.au/parks/nrs/capad>> using the World Conservation Union (IUCN) classification system of protected areas. The classification system comprises seven categories based on the main (or primary) management intent of protected areas as follows:

- IA – Strict nature reserve: managed mainly for science
- IB – Wilderness area: wilderness protection
- II – National park: ecosystem conservation and recreation
- III – National monument: conservation of specific natural features
- IV – Habitat/species management area: conservation through management intervention
- V – Protected landscape/seascape: landscape/seascape conservation and recreation

- VI – Managed resource protected areas: sustainable use of natural ecosystems.

Table 24.9 shows the amount of protected land in each category. Most of the land recorded in CAPAD is public land. Some 10.5% of land is protected on the Australian mainland (including Tasmania).

With 63% of Australian land in private ownership, efforts to protect biodiversity now extend beyond the reserve system into some of this private land. This occurs through community landcare groups and conservation agreements made between landholders and governments. Some companies and community groups also operate conservation reserves. Indigenous communities are also involved in managing land, with Kakadu, Uluru-Kata Tjuta and Booderee National Parks all managed jointly with traditional owners and the Australian Government. This provides an emphasis on maintaining and strengthening traditional ties with the land, which relies heavily on ensuring the land and the ecosystems it supports are in good shape.

**24.9 TERRESTRIAL PROTECTED AREAS, By state and territory — 2004**

	IUCN category							Total
	IA	IB	II	III	IV	V	VI	
AREA ('000 ha)								
New South Wales	775	1 682	3 239	5	208	4	222	6 134
Victoria	263	202	2 849	65	77	139	151	3 746
Queensland	37	—	6 971	44	84	—	1 483	8 619
South Australia	6 248	2 216	2 643	758	1 985	506	10 988	25 344
Western Australia	10 821	—	6 148	74	15	1	10 340	27 400
Tasmania	24	—	1 495	18	187	90	777	2 590
Northern Territory	44	—	6 204	7	263	181	234	6 932
Australian Capital Territory	—	—	129	—	—	—	—	129
<b>Australia</b>	<b>18 213</b>	<b>4 100</b>	<b>29 678</b>	<b>971</b>	<b>2 819</b>	<b>920</b>	<b>24 196</b>	<b>80 895</b>
PROPORTION (%)								
New South Wales	1.0	2.1	4.0	—	0.3	—	0.3	7.7
Victoria	1.2	0.9	12.5	0.3	0.3	0.6	0.7	16.5
Queensland	—	—	4.0	—	—	—	0.9	5.0
South Australia	6.3	2.3	2.7	0.8	2.0	0.5	11.2	25.8
Western Australia	4.3	—	2.4	—	—	—	4.1	10.8
Tasmania	0.4	—	21.9	0.3	2.7	1.3	11.4	37.9
Northern Territory	—	—	4.6	—	0.2	0.1	0.2	5.1
Australian Capital Territory	—	—	54.7	—	—	—	—	54.8
<b>Australia</b>	<b>2.4</b>	<b>0.5</b>	<b>3.9</b>	<b>0.1</b>	<b>0.4</b>	<b>0.1</b>	<b>3.1</b>	<b>10.5</b>

Source: Department of the Environment and Heritage, 2005.

## Managing waste

One of the by-products generated by human activity is waste. Almost everything that people do creates waste and society is producing more waste than ever before. In recent decades there has been a large increase in the number and diversity of products available to Australian consumers. Associated with this has been an increase in waste diversity, toxicity and complexity. This can create threats to public health, the environment and urban amenity. The extent and nature of environmental or health threats from waste depends on the type of waste and the way it is managed.

The three major categories of solid waste in urban regions of Australia are municipal (including household waste), construction and demolition, and commercial and industrial wastes. Most solid waste generated in Australia ends up in landfill sites. Poor waste management practices at landfill sites can lead to land contamination and pollution of surface and groundwater resources. Landfill sites also generate methane, a major greenhouse gas.

The generation and disposal of waste is an environmental issue of increasing importance. Minimising wastes through more efficient production and increasing reuse and recycling of materials has been an objective at all levels of government in Australia for many years. There has been some success towards achieving this. This section outlines some of the issues and achievements in the area of waste management.

## Waste generation and disposal

Both government and non-government organisations frequently describe Australia as one of the highest producers of waste in the world.

The Organisation for Economic Cooperation and Development (OECD) reports Australia as the third highest producer of waste in the OECD countries (after Iceland and the United States of America (USA)).

In 2002–03, Australians generated more than 32 mill. tonnes of solid waste, in excess of 1,600 kilograms of waste per person (table 24.10). Of this amount, approximately 27% of solid waste came from municipal sources, 29% from the commercial and industrial sector, and 42% from the construction and demolition sector.

## Growth in waste generation

Growth in the amount of waste generated per person has been driven by a number of economic, demographic and geographic factors. A consequence of Australia's fast growing, materially intensive economy is the production of large quantities of waste. In general, the data in table 24.11 shows increasing waste generation per person, and a decline in waste to landfill achieved through a large increase in recycling.

Australians are tending to live in smaller household groups, with the average household size shrinking by 14% over the 20 years to 2001. At the same time homes are becoming more luxurious with the ownership of more durable goods per person and an increase in the consumption of smaller-serve goods (which have higher packaging-to-product ratios than larger-serve goods). Similarly, the increasing dispersal of settlement (urban sprawl) and changes in lifestyle may have also contributed to an increase in per person waste generation. Increased distances between home and work (and rising incomes) and increased travel time may reduce the amount of time spent on domestic

**24.10 SOLID WASTE GENERATION — 2002–03**

	Municipal solid waste	Commercial and industrial	Construction and demolition	Total	Per person
	'000 t	'000 t	'000 t	'000 t	kg
New South Wales	3 326	4 196	4 649	12 171	1 820
Victoria	2 291	2 743	3 575	8 609	1 751
Queensland	1 742	959	1 166	3 973	1 046
Western Australia	833	744	1 945	3 522	1 804
South Australia	600	677	2 156	3 433	2 248
Australian Capital Territory	111	150	250	674	2 087
Australia(a)	8 903	9 469	13 741	32 382	1 629

(a) Excludes Tasmania and the Northern Territory.

Source: Productivity Commission, 2006, 'Waste Management', Draft Report, Canberra, p.17.

### 24.11 WASTE GENERATION, Selected indicators(a)

	1996–97	2002–03	Change from 1996–97 to 2002–03
	tonnes	tonnes	%
Waste to landfill	21 220 500	17 423 000	–18
Waste recycled	1 528 000	14 959 000	879
Waste generation	22 748 500	32 382 000	42
Waste to landfill per person	1.15	0.87	–24
Waste to landfill per \$m GDP	41.76	23.47	–44
Waste generation per person	1.23	1.62	32
Waste generation per \$m GDP	44.77	44.07	–2
Recycling per person	0.08	0.75	838
Recycling per \$m GDP	3	20.37	579

(a) Gross Domestic Product (GDP) grew by 4.5% in the 5-year period; total population grew by 7%.

Source: Department of the Environment and Heritage, 'Submission to the Productivity Commission Inquiry into Waste Generation and Resource Efficiency'.

tasks, such as cooking and cleaning (and increase the purchase of prepackaged food and time-saving devices, such as dishwashers).

The Australian population is ageing which changes consumption patterns, influencing the quantity and quality of resources used and waste generated by the community. For example, expenditure on personal travel and health is increasing in Australia, as is the purchase of second homes. Consumption related to housing is expected to increase and the 'life-time' of products will continue to shorten, particularly for electronic and communication goods.

### Waste disposal

In 2002–03, of the total waste generated (32.4 mill. tonnes), almost 54% was disposed to landfill, the remainder was recycled. In 2002–03, 70% of

municipal waste (6.2 mill. tonnes), 56% of commercial and industrial waste (5.3 mill. tonnes), and 43% of construction and demolition waste (5.9 mill. tonnes) went into landfill (table 24.12).

### Recycling and re-use

Recycling has increased over the last 20 years to the point where it is a widely accepted part of waste management activities in Australia. Recycling in 2002–03 accounted for 57% of construction and demolition waste generated (7.8 mill. tonnes), 44% of commercial and industrial waste generated (4.1 mill. tonnes), and 30% of municipal waste generated (2.7 mill. tonnes) (table 24.13). Waste recovered for recycling in 2002–03 was approximately 15 mill. tonnes.

### 24.12 SOLID WASTE DISPOSED TO LANDFILL — 2002–03

	Municipal	Commercial and industrial	Construction and demolition	Total
	'000 t	'000 t	'000 t	'000 t
New South Wales	2 170	2 831	1 340	6 341
Victoria	1 547	1 003	1 630	4 180
Queensland	1 297	747	678	2 722
Western Australia	741	420	1 535	2 696
South Australia	365	208	704	1 277
Australian Capital Territory	82	98	27	207
Australia(a)	6 202	5 307	5 914	17 423

(a) Excludes Tasmania and the Northern Territory.

Source: Productivity Commission, 2006, 'Waste Management', Draft Report, Canberra, p.28.

### 24.13 RECYCLING — 2002–03

	Municipal '000 t	Commercial and industrial '000 t	Construction and demolition '000 t	Total recycled '000 t	Diversion rate %
New South Wales	1 156	1 365	3 309	5 830	48
Victoria	744	1 740	1 945	4 429	51
Queensland	445	212	488	1 251	31
Western Australia	92	324	410	826	23
South Australia	235	469	1 452	2 156	63
Australian Capital Territory	29	52	223	467	69
Australia(a)	2 701	4 162	7 827	14 959	46

(a) Excludes Tasmania and the Northern Territory.

Source: Productivity Commission, 2006, 'Waste Management', Draft Report, Canberra, p.22.

### Recycling rates

The amount of waste recovered for recycling has increased over time both in absolute terms, and as a proportion of total waste generated. For example, in the Australian Capital Territory in 1993–94, about 22% of the total waste generated was recovered for recycling. In 2002–03, this had risen to 69%.

There are a number of reasons why recycling rates have increased over time; access to kerbside recycling has greatly improved in urban regions since the 1990s. Collection methods have become more sophisticated with the provision of 'wheelie bins' almost the norm. The increased provision, and ease of use of 'wheelie bins', have increased yields of recyclable materials; commodity prices for many of the materials recovered, including recovered metals, have increased in recent years

creating incentives for more material to be recovered. Also, landfill levies have increased and many states and territories have created incentives for the commercial and industrial, and construction and demolition sectors to find alternatives to landfill.

### Recycling in households

The proportion of households that recycle and/or re-use waste has increased from 91% in 1996 to 98% in 2003. In 2003 about 95% of all households recycled waste, 83% re-used waste, while only 2% did not recycle or re-use at all (table 24.14). Households in Victoria, the Australian Capital Territory and South Australia had the highest rates (99%) of recycling and/or re-using waste. The Northern Territory had the lowest rate of recycling and re-use (93%).

### 24.14 RECYCLING/RE-USE OF WASTE IN HOUSEHOLDS — March

	NSW %	Vic. %	Qld %	SA %	WA %	Tas. %	NT(a) %	ACT %	Aust. %
2003									
Households that recycle waste	94.5	98.7	94.5	96.8	91.1	95.4	86.8	98.4	95.4
Households that re-use waste	79.5	81.2	87.9	86.6	83.3	86.8	76.4	88.2	82.8
Households not recycling and/or re-using waste	3.7	0.8	2.1	1.4	3.4	2.9	^ 7.3	^ 1.3	2.4
2000									
Households that recycle waste	93.6	97.3	94.0	93.7	89.4	91.9	86.0	99.3	94.2
Households that re-use waste	75.8	81.9	86.3	79.6	80.8	83.7	85.3	82.6	80.5
Households not recycling and/or re-using waste	4.1	1.4	2.3	3.2	5.6	4.7	8.8	0.5	3.2
1996									
Households that recycle waste	88.5	89.4	89.3	88.8	83.6	86.3	71.8	98.9	88.4
Households that re-use waste	32.3	32.0	45.2	42.6	36.8	41.9	54.9	40.9	36.5
Households not recycling and/or re-using waste	10.1	8.7	7.9	8.2	12.6	10.0	20.4	1.0	9.4

(a) Northern Territory data refers to main urban areas only.

Source: Environmental Issues: People's Views and Practices, 2003 (4602.0).

The most common items recycled and/or re-used by households in 2003 were paper/cardboard (88.4% of all households), plastic bottles (87.3%), plastic bags (86.5%), glass (85.2%), and old clothing or rags (82.4%) (table 24.15).

Household waste recycling occurred mostly through a regular kerbside collection service (87% of all households), with the highest use of

this method made in the Australian Capital Territory (97%) and Victoria (95%) (table 24.16). Two-thirds (66%) of all households recycled by taking some of their waste to central collection points. South Australian households (81%) practised this recycling method more than households in other states or territories, while households in the Northern Territory practised this method the least (53%).

**24.15 ITEMS RECYCLED AND/OR RE-USED IN HOUSEHOLDS — March 2003**

	NSW	Vic.	Qld	SA	WA	Tas.	NT(a)	ACT	Aust.
	%	%	%	%	%	%	%	%	%
Paper/cardboard	90.0	93.8	85.1	82.5	81.7	84.0	74.0	97.3	88.4
Glass	85.6	92.5	82.0	81.8	75.3	84.3	65.3	95.7	85.2
Aluminium cans	72.9	86.2	74.8	79.9	70.7	75.7	60.0	83.8	77.0
Steel cans	60.8	78.5	62.8	61.1	54.9	67.6	45.6	77.2	65.3
Plastic bottles	87.5	94.6	84.0	87.5	75.5	84.9	66.6	96.2	87.3
Plastic bags	83.9	87.2	89.0	88.9	85.6	87.5	78.1	92.4	86.5
Motor oil	11.0	9.5	16.2	11.7	10.7	14.1	12.1	18.0	11.8
Kitchen or food waste	41.2	50.9	48.3	46.8	46.5	61.3	40.6	55.3	46.7
Garden waste	60.3	66.3	60.8	65.7	50.3	65.2	51.6	71.7	61.6
Old clothing or rags	80.7	81.3	86.0	84.3	82.2	83.3	68.9	87.9	82.4

(a) Northern Territory data refers to main urban areas only.

Source: *Environmental Issues: People's Views and Practices, 2003 (4602.0)*.

**24.16 METHODS USED TO RECYCLE AND/OR RE-USE WASTE — March 2003**

	NSW	Vic.	Qld	SA	WA	Tas.	NT(a)	ACT	Aust.
	%	%	%	%	%	%	%	%	%
Collection from the house	88.8	94.7	83.1	74.4	76.3	82.1	69.3	97.3	86.6
Special area/s at dump/waste transfer station	8.7	9.5	11.9	11.1	7.9	24.2	19.5	26.2	10.4
Central collection points(b)	67.2	58.2	67.1	80.5	66.1	61.4	52.8	75.1	65.8
Compost or mulch	45.0	51.9	56.2	48.3	43.2	58.5	49.6	60.4	49.6
Re-use within household	82.6	81.8	89.8	87.8	86.2	89.4	82.5	89.4	84.9
Other methods	12.3	13.1	11.6	13.1	11.6	17.3	15.5	12.7	12.5

(a) Northern Territory data refers to main urban areas only. (b) Other than dump/waste transfer station.

Source: *Environmental Issues: People's Views and Practices, 2003 (4602.0)*.

# Managing waste in Antarctica

In Antarctica, as elsewhere, it is not possible for people to visit without leaving some evidence of their presence, no matter how careful they are. The construction and operation of over 50 Antarctic stations on the continent has made an obvious, although localised, impact on the environment.

Like many countries operating in Antarctica, Australia has inherited problems resulting from the way people used to build and operate stations. Until relatively recently, waste disposal

practices in Antarctica were similar to elsewhere in the world with open tips, land fills and burning, as well as the practice of 'sea-icing' – dumping rubbish onto the sea ice during winter to float away and sink during the summer. Sewage was burned or else discharged with little or no treatment straight into the sea. Some areas around stations and field camps became contaminated from oil and chemical spills. Large amounts of packaging that could not be re-used or recycled were dumped.



Rubbish tips at all Australian Antarctic stations were closed in 1985 and a committed clean-up program has seen many tonnes of waste removed. A coordinated remediation and research program of Australia's Antarctic and sub-Antarctic waste and contaminated sites is being undertaken. As part of a comprehensive commitment to protect the environment, hazardous materials, including polystyrene beads, polychlorinated biphenyls (PCBs) and radioactive materials, are now prohibited from import to Antarctica.

In order to trial and evaluate the impacts of differing remediation methods, the Thala Valley tip site near Casey Station is being cleaned up in the first instance. Removal of waste commenced in 2002–03 and continues. When it is completed, work will begin at tip sites near the abandoned former United States of America station of Wilkes.

Between November 2000 and February 2001, an extensive clean-up was also undertaken at the abandoned station site at Atlas Cove on Heard Island. This clean-up removed over 25 tonnes of building debris and waste. This initial clean-up was followed up during the 2003–04 expedition to Heard Island.

Expeditioners now follow specific guidelines when handling waste on stations, in the field and onboard ships. Waste is handled according to several broad categories:

- wastes that are likely to become putrid are incinerated in a two-stage, high temperature incinerator, with the resultant ash returned to Australia;
- metals, plastics, paper, cardboard and glass are separated and returned to Australia for recycling;
- non-recyclable wastes are returned to Australia for appropriate disposal;
- reusable packaging materials are used, wherever possible; and
- biological sewage treatment plants have been installed at all Australian Antarctic stations. (Sludge from the plant is removed to Australia, and ultraviolet sterilisation of the effluent is currently being trialled to ensure that no harmful organisms are released into the environment.)

Table 24.17 shows the composition and quantity of waste returned to Australia from Casey, Davis, Mawson and Macquarie Island stations in 2003–04.

**24.17 WASTE RETURNED TO AUSTRALIA FROM ANTARCTIC STATIONS — 2003–04**

	Units	Casey	Davis	Mawson	Macquarie Island
Aluminium	kg	117	100	141	—
Batteries	kg	49	—	1 376	—
Brass	kg	80	—	124	—
Brown glass	kg	1 688	1 907	852	—
Cardboard/paper products	kg	2 550	—	170	—
Clear glass	kg	338	1 082	427	382
Cooking oil and fat	L	—	—	1 440	—
Copper	kg	373	—	834	—
Glycol	L	—	—	700	—
Green glass	kg	1 105	1 390	980	335
Oil	L	1 600	1 000	6 800	750
Other waste	kg	45 585	28 440	39 090	9 920
Photo waste	kg	—	—	—	180
Plastics	kg	—	1 219	568	136
Sewage sludge/grey water	L	2 000	36 000	4 000	—
Steel – including cans	kg	16 040	492	1 929	160
Total material returned to Australia	kg	71 828	71 630	63 728	11 863

Source: Australian Antarctic Data Centre, Australian Government Antarctic Division, 'Antarctic State of the Environment' Indicator 53 — Waste returned to Australia.



## Greenhouse gas emissions and climate change

### Greenhouse gas emissions – a global problem

Greenhouse gases (GHG) are a natural part of the Earth's atmosphere, acting to absorb and re-radiate the sun's heat and so maintain the Earth's surface temperature at a level which supports life. GHG include carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons, and sulphur hexafluoride. For purposes of measurement, the emissions of these different gases are aggregated and converted to carbon dioxide equivalents (CO<sub>2</sub>-e).

GHG emissions from human actions are contributing to a warming of the Earth's surface and climate change by increasing the concentrations of the gases that trap heat, resulting in an enhanced greenhouse effect and higher Earth surface temperatures. These actions include the burning of fossil fuels (coal, oil and natural gas), agriculture and land clearing.

Global average surface temperatures have increased by approximately 0.6 degrees Celsius over the last 100 years. Climate change effects include increased heatwaves, warming of the deep oceans, melting of glaciers, rising ocean levels and an increased incidence of floods and droughts in some regions. Human activities are estimated to have increased atmospheric concentrations of CO<sub>2</sub> by more than a third, nitrous oxide levels by about 17% and methane levels have doubled.

Recognising climate change as a global problem, the 1997 United Nations Framework Convention on Climate Change (UNFCCC) initiated the Kyoto Protocol, an international treaty designed to limit global GHG emissions. The Kyoto Protocol, which came into effect in February 2005, requires signatory countries to meet mandated targets for emission reductions. Although Australia is not a signatory to the Protocol, the Australian Government has committed to limiting GHG emissions to the internationally agreed target of 108% of 1990 levels between 2008 and 2012.

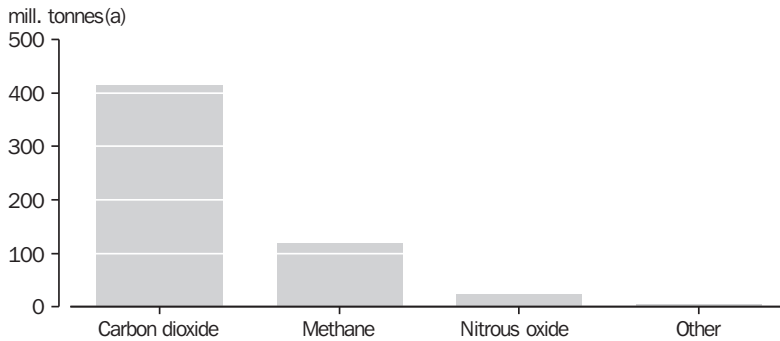
To give effect to its Kyoto commitment, the Australian Government initiated broad ranging measures through the *Safeguarding the Future: Australia's Response to Climate Change* (1997) and the *National Greenhouse Response Strategy* (1998). Overall, Australia appears on track to meet its internationally agreed Kyoto target with national GHG emissions increasing by only 2.3% from 551.9 mill. tonnes of CO<sub>2</sub>-e to 564.7 mill. tonnes CO<sub>2</sub>-e over the period 1990–2004. (More information can be obtained from the web site <<http://www.greenhouse.gov.au>>.)

As a further climate change initiative, the Australian Government announced, in January 2006, its membership of the *Asia-Pacific Partnership on Clean Development and Climate*. The Partnership, which includes China, India, the Republic of (South) Korea and the USA, will promote voluntary joint business and government investment ventures with the aim of delivering sustained economic growth and lower GHG emissions. Since 1997, Australia has invested \$1.8b to address climate change, including \$500 million (m) for low emissions technologies and over \$200m for renewable energy initiatives. Over the period 2006–2011 a further \$100m, including \$25m for renewable energy projects, will be invested under the Partnership.

In 2004, Australia's total net GHG emissions, using Kyoto accounting provisions, were 564.7 mill. tonnes of CO<sub>2</sub>-e. Graph 24.18 shows that CO<sub>2</sub> accounted for 415.0 mill. tonnes of CO<sub>2</sub>-e, or 73.5% of Australia's total net emissions, methane for 119.7 mill. tonnes of CO<sub>2</sub>-e (21.2%), nitrous oxide for 24.8 mill. tonnes of CO<sub>2</sub>-e (4.3%) and the other gases made up 5.2 mill. tonnes of CO<sub>2</sub>-e (1.0%) of total emissions.

Graph 24.19 shows the contribution to total net GHG emissions by sector in 2004. The major source of emissions was the energy sector (including stationary energy, transport and fugitive emissions from fuels) which accounted for 387.2 mill. tonnes of CO<sub>2</sub>-e (68.6%) of total national emissions in 2004. The agriculture sector contributed a further 93.1 mill. tonnes of CO<sub>2</sub>-e (16.5%), land use, land use change and forestry 35.5 mill. tonnes of CO<sub>2</sub>-e (6.3%), industrial processes 29.8 mill. tonnes of CO<sub>2</sub>-e (5.3%) and waste 19.1 mill. tonnes of CO<sub>2</sub>-e or 3.3% of total national emissions.

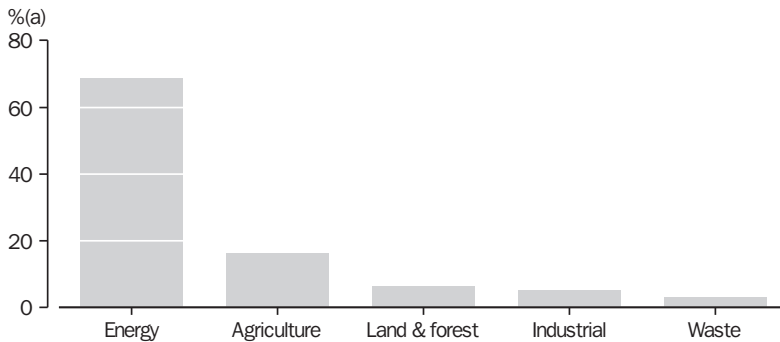
#### 24.18 TOTAL NET EMISSIONS, By gas — 2004



(a) Carbon dioxide equivalent.

Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory 2004'.

#### 24.19 GREENHOUSE GAS EMISSIONS, By sector — 2004



(a) Share of total net national emissions.

Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory 2004'.

Table 24.20 provides details of the change in GHG emissions on a sectoral basis over the period 1990–2004. Emissions from the energy sector (including electricity generation) increased by 34.7% from 287.5 mill. tonnes CO<sub>2</sub>-e in 1990 to 387.2 mill. tonnes CO<sub>2</sub>-e in 2004. While emissions from the agricultural, industrial processing and waste sectors remained relatively constant over this period, emissions from the land use, land use change and forestry sector declined from 128.9 mill. tonnes CO<sub>2</sub>-e in 1990 to 35.5 mill. tonnes CO<sub>2</sub>-e in 2004. This decline reflects the greenhouse sink offset resulting from the afforestation and reforestation in the forestry subsector.

When combined, New South Wales (158.7 mill. tonnes of CO<sub>2</sub>-e), Queensland (158.5 mill. tonnes of CO<sub>2</sub>-e) and Victoria (123.0 mill. tonnes of CO<sub>2</sub>-e) accounted for over 78% of total GHG emissions in 2004. Total emissions from Western

Australia were 68.5 mill. tonnes of CO<sub>2</sub>-e, South Australia 27.6 mill. tonnes of CO<sub>2</sub>-e, Northern Territory 15.6 mill. tonnes of CO<sub>2</sub>-e, Tasmania 10.7 mill. tonnes of CO<sub>2</sub>-e and the ACT 1.2 mill. tonnes of CO<sub>2</sub>-e.

While Australia only accounts for around 1.4% of global GHG emissions, its CO<sub>2</sub> emissions per person are relatively high compared with other OECD countries. In 2003, 17.4 tonnes of CO<sub>2</sub> were emitted for every Australian compared with an OECD country average of 11.1 tonnes of CO<sub>2</sub> per person (graph 24.21). Australia's relatively large emissions per person can be attributed to factors such as the high usage of coal in electricity generation, the energy intensive aluminium smelting sector, and the high dependence on motor vehicles and trucks for transport.

## 24.20 GREENHOUSE GAS EMISSIONS(a)

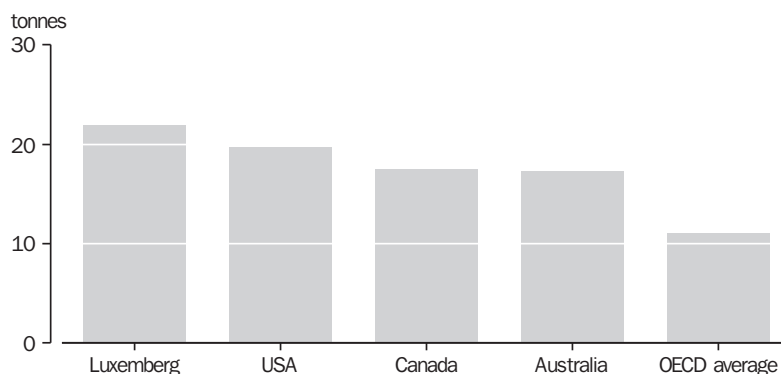
Sector	1990		2004		Change from 1990 to 2004	
	Amount mill. t	Contribution to national emissions %	Amount mill. t	Contribution to national emissions %		
					mill. t	%
Energy	287.5	52.1	387.2	68.6	99.7	34.7
Fuel combustion (sector approach)						
Energy industries	143.1	25.9	216.7	38.4	73.6	51.4
Manufacturing industries and construction	37.0	6.7	42.5	7.5	5.5	14.9
Transport	61.7	11.2	76.2	13.5	14.5	23.5
Other sectors	15.7	2.9	20.8	3.7	5.1	32.5
Fugitive emissions from fuels						
Solid fuel	17.1	3.1	21.3	3.8	4.2	24.6
Oil and natural gas	13.0	2.3	9.8	1.7	-3.2	-24.0
Industrial processes	25.3	4.6	29.8	5.3	4.5	17.8
Mineral products	5.0	0.9	5.5	1.0	0.5	10.0
Metal production	16.2	2.9	14.7	2.6	-1.5	-9.3
Other	4.1	0.8	9.6	1.7	5.5	134.2
Agriculture	91.1	16.5	93.1	16.5	2.0	2.2
Land-use change and forestry	128.9	23.4	35.5	6.3	-93.4	-72.5
Waste	19.2	3.4	19.1	3.3	0.0	-0.7
<b>Total emissions/removals</b>	<b>551.9</b>	<b>100.0</b>	<b>564.7</b>	<b>100.0</b>	<b>12.8</b>	<b>2.3</b>

(a) Carbon dioxide equivalent emissions

Note: Totals may not be additive due to rounding.

Source: Australian Greenhouse Office, 'National Greenhouse Gas Inventory 2004'.

## 24.21 CARBON DIOXIDE EMISSIONS PER PERSON — 2003

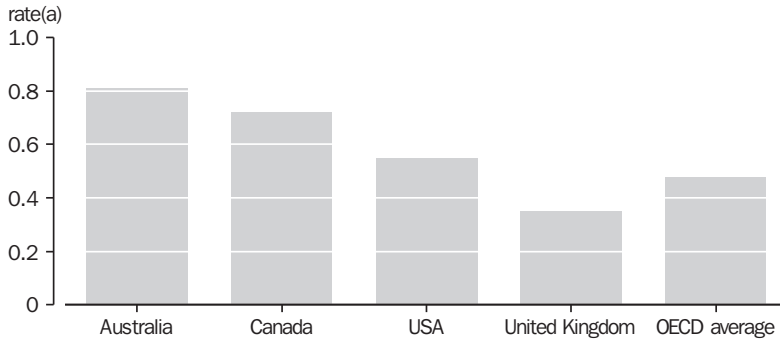


Source: International Energy Agency, 'Key World Energy Statistics 2005'.

Graph 24.22 shows that, in 2003, the emissions intensity of the Australian economy (0.81 kg CO<sub>2</sub> per dollar of GDP) was relatively high compared with the OECD average (0.48 kg CO<sub>2</sub> per dollar of GDP). However, Australia's emissions intensity declined by 35% over the period 1990–2004 from 1.1 to 0.7 kg CO<sub>2</sub> per dollar of GDP. This trend reflects factors such as the large decline in

emissions from agriculture and forestry, structural changes in the Australian economy with a shift away from energy intensive manufacturing to the services sector, and the impact of emissions management across the sectors.

## 24.22 CARBON DIOXIDE EMISSIONS INTENSITY — 2003



(a) Kilogram per dollar of GDP (at 2000 prices).

Source: International Energy Agency, *Key World Energy Statistics* 2005.

## Water use and irrigation

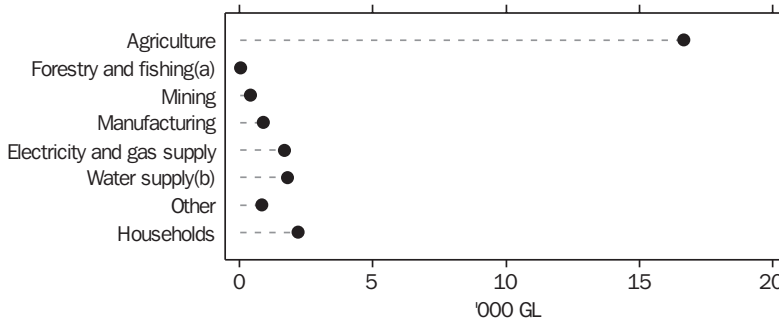
By world standards, Australia is a dry continent with limited freshwater resources, largely due to its variable and unpredictable rainfall. More than two-thirds of the continent is classified as arid or semi-arid, making it the driest inhabited continent – Antarctica is the driest continent. Low population density means Australia has more fresh water available per person than many countries. However, Australia has one of the world's highest levels of water abstractions per person – the fourth highest of the OECD countries after the USA, Canada and New Zealand.

By far the largest consumer of water in Australia is the agriculture industry. Agriculture accounted for about two-thirds (67%) of total water consumption in 2000–01 (graph 24.23). Of the

water used for agricultural production in 2004–05, most was for irrigation of crops and pastures (90%), the remainder was used for other agricultural purposes such as stock drinking water and piggery cleaning.

The second highest consumer of water is households, which accounted for 9% of total water use in 2000–01 (see *Household water conservation practices*). The water supply, sewerage and drainage services industry is also a significant consumer of water, accounting for 7% of total water consumption, followed by the electricity and gas supply industry which consumed 6.8% excluding in-stream water use for hydro-electricity generation. Mining accounted for 1.6% and manufacturing for 3.5% of total water use in 2000–01.

## 24.23 WATER CONSUMPTION, By industry — 2000–01



(a) Includes services to agriculture, hunting and trapping. (b) Includes sewerage and drainage services.

Source: *Water Account, Australia, 2000–01* (4610.0).

In 2004–05, 35,244 farms irrigated, applying a total of 10,085 gigalitres (GL) of irrigation water to 2.4 mill. ha (table 24.24). The area of crops and pastures irrigated is less than 1% of total agricultural land holdings. However, irrigated agriculture represents about 28% of the gross value of agricultural production.

Some crops are almost totally dependent on irrigation, while for others irrigation water supplements natural rainfall or provides moisture at critical periods of plant growth. 'Pasture for grazing' used the most water in 2004–05

(table 24.25). It accounted for nearly one-third of the total volume of irrigation water and also for one-third of the total area irrigated.

The most heavily irrigated crop in terms of the volume of water applied was rice, which had an average application rate of 12.1 megalitres per hectare (ML/ha) in 2004–05. This was almost three times the average rate across all crops and pastures (4.2 ML/ha). Cotton had the next highest application rate (6.7 ML/ha), followed by sugar cane (5.5 ML/ha).

#### 24.24 IRRIGATION WATER USE — 2004–05

	Agricultural establishments irrigating no.	Area irrigated '000 ha	Volume applied '000 ML	Application rate ML/ha(a)
New South Wales(b)	8 606	910	3 716.6	4.1
Victoria	9 828	636	2 363.8	3.7
Queensland	8 258	542	2 613.4	4.8
South Australia	4 739	184	877.8	4.8
Western Australia	2 049	45	267.1	6.0
Tasmania	1 654	86	231.8	2.7
Northern Territory	110	4	14.2	4.0
<b>Australia</b>	<b>35 244</b>	<b>2 405</b>	<b>10 084.6</b>	<b>4.2</b>

(a) Averaged across all irrigated pastures and crops. (b) Includes Australian Capital Territory.

Source: *Water Use on Australian Farms, 2004–05* (4618.0).

#### 24.25 PASTURES AND CROPS IRRIGATED — 2004–05

	Agricultural establishments irrigating no.	Area irrigated '000 ha	Volume applied '000 ML	Application rate ML/ha(a)
Pasture for grazing	12 101	842	2 896.5	3.4
Pasture for seed production	541	33	116.4	3.6
Pasture for hay and silage	4 449	151	579.3	3.8
Cereal crops cut for hay	910	33	80.2	2.4
Cereal crops for grain or seed(b)	2 329	309	814.4	2.6
Cereal crops not for grain or seed	710	19	52.9	2.8
Rice	774	51	619.0	12.1
Sugar cane	2 264	213	1 171.9	5.5
Cotton	668	270	1 819.3	6.7
Other broadacre crops(c)	937	63	177.3	2.8
Fruit trees, nut trees, plantation or berry fruits(d)	6 500	122	608.1	5.0
Vegetables for human consumption	3 791	109	419.2	3.8
Vegetables for seed	416	5	15.1	2.9
Nurseries, cutflowers or cultivated turf	2 656	14	66.3	4.7
Grapevines	6 808	147	591.9	4.0
<b>Total(e)</b>	<b>(f)35 244</b>	<b>2 405</b>	<b>10 085</b>	<b>4.2</b>

(a) Averaged across all irrigated pastures or crops. (b) Excludes rice. (c) Excludes sugar cane and cotton. (d) Excludes grapevines. (e) Totals include other pastures or crops not elsewhere classified. (f) Total does not equal the sum as many establishments grow or irrigate more than one crop.

Source: *Water Use on Australian Farms, 2004–05* (4618.0).

In the period since about the mid-1950s, there has been a rapid increase in the total area irrigated.

The increase in the irrigated area corresponds with the growth in total dam capacity (graph 24.26). Irrigation requires a dependable supply of water, something which cannot be supplied by the majority of Australian rivers because of the great variability in their flows. Dams have been built since the late-1800s to provide a reliable water resource for irrigation, urban water needs and hydro-electric power generation. At the start of the 20th century the combined storage capacity of all large dams was 250 GL, increasing to 9,540 GL by 1950 and 84,793 GL in 2005. Australia now has the highest per capita water storage capacity in the world, more than 4 mill. litres per person.

The Murray-Darling Basin dominates irrigation in Australia and accounts for more than 70% of irrigation water use in Australia. The Basin extends over three-quarters of New South Wales, more than half of Victoria, significant portions of Queensland and South Australia, and the whole of the Australian Capital Territory.

In the last 100 years, the Murray-Darling Basin has been transformed by the construction of major water storages on the Murray and Darling Rivers and their tributaries. The total volume of water storage capacity of major dams in the Basin is nearly 35,000 GL.

Today, the Murray-Darling Basin is Australia's most important agricultural region, accounting for more than 40% of the nation's gross value of agricultural

production. It supports a quarter of the nation's cattle herd, half of the sheep flock, half of the cropland and almost three-quarters of its irrigated land.

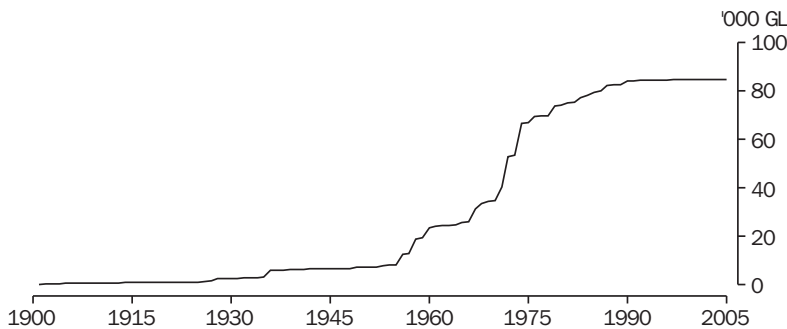
## Environmental views and behaviour in Australian households

### Concern about environmental problems

Notwithstanding recent issues such as drought, bushfires, water reform, climate change and native vegetation featuring prominently in the media, Australians' level of concern about environmental problems has continued to decline. In 2004, 57% of Australians aged 18 years and over reported concern about environmental problems, down from a high of 75% in 1992.

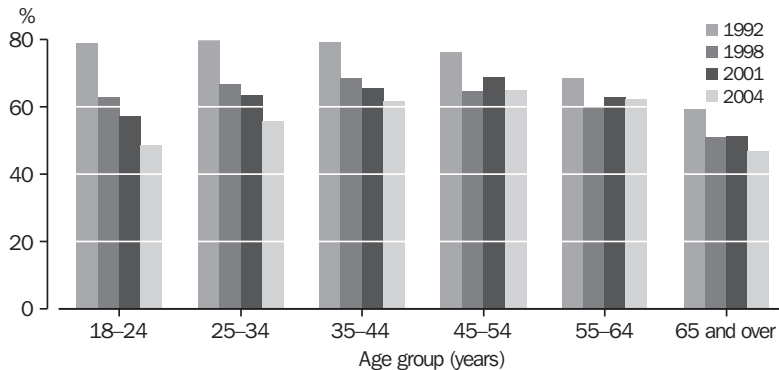
In 2004, those aged 45–54 years expressed the most concern about environmental problems (65%) and those 65 years and over the least (47%). Graph 24.27 shows that, for every age group, the passage of time saw a decline in the proportion of people concerned about environmental problems. This change in attitude comes at a time when evidence suggests that significant environmental degradation continues to occur to land and water systems in Australia.

**24.26 TOTAL WATER STORAGE CAPACITY OF LARGE DAMS**



Source: Australian National Committee on Large Dams Incorporated, last viewed August 2006, <<http://www.ancold.org.au>>.

## 24.27 CONCERN ABOUT ENVIRONMENTAL PROBLEMS



Source: *Environmental Issues: People's Views and Practices, 2004* (4602.0).

## Household water conservation practices

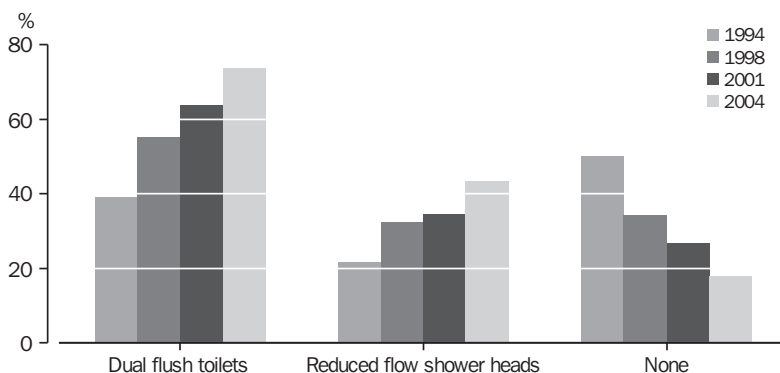
Drought and water restrictions in many parts of Australia have focused attention on the need to conserve household water. Nearly three-quarters of all households (74%) had dual flush toilets in 2004, up from 64% in 2001. Reduced flow shower heads were installed in 44% of households (up from 35% in 2001). Nearly one in five households (18%) had neither a dual flush toilet nor a reduced flow shower head, down from nearly one in three (27%) in 2001 (graph 24.28).

Nearly half of all households (46%) reported using one or more water conservation practice in 2004. The most popular measures adopted included

using full loads when washing dishes and clothes, and taking shorter showers (18% of all households reported doing each of these). Recycling and/or reusing water was reported by 16% of all households, up from 11% in 2001 (graph 24.29). These measures were particularly popular in Victoria, where more than one-quarter of households undertook these activities.

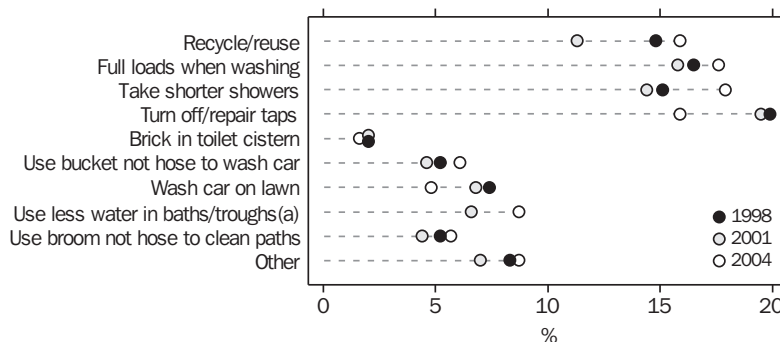
Seeking further reductions in household water use in major cities to ensure availability, a number of state and territory governments have introduced incentives to encourage households to conserve water. This has involved continuing water restrictions into 2006, as well as new schemes that require or reward the installation of water-saving devices such as dual flush toilets.

## 24.28 WATER CONSERVATION DEVICES USED



Source: *Environmental Issues: People's Views and Practices, 2004* (4602.0).

## 24.29 WATER CONSERVATION PRACTICES TAKEN IN HOME



(a) Not collected in 1998.

Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

Australia has the first scheme of its kind in the world for the water efficiency labelling of appliances. Introduced in August 2004, the Water Efficiency Labelling Scheme requires mandatory water efficiency labels on all shower heads, washing machines, toilets, dishwashers, urinals and some types of taps.

Outdoor water use (in gardens and swimming pools) accounted for about 44% of the total household water use in 2000–01. Households in Queensland, South Australia, Western Australia and the Australian Capital Territory reported using more than 50% of the household water outdoors in 2000–01. In New South Wales, a quarter of household water was used for outdoor purposes. Households in Victoria used more than a third of their total water for outdoor purposes. These differences can be partly explained by the smaller individual block sizes and the proportion of households with no outdoor facilities in more densely populated areas of these states, as well as by climatic differences between regions.

In 2004, nine out of ten households with gardens reported conserving water in the garden. Mulching was the most popular water conserving practice, used by nearly six out of ten households.

Nearly one-quarter (23%) of households reported watering either early in the morning or late in the evening to conserve water in the garden (graph 24.30). Also, the use of hand watering instead of a sprinkler system increased from 66%

to 71% from 2001 to 2004. There was a corresponding decrease in the use of fixed and movable sprinklers (from 28% in 2001 down to 15% in 2004 for movable sprinklers, and 31% down to 22% for fixed sprinkler systems). This is likely to be attributable mainly to the introduction of water restrictions on use of sprinklers and restricted watering times.

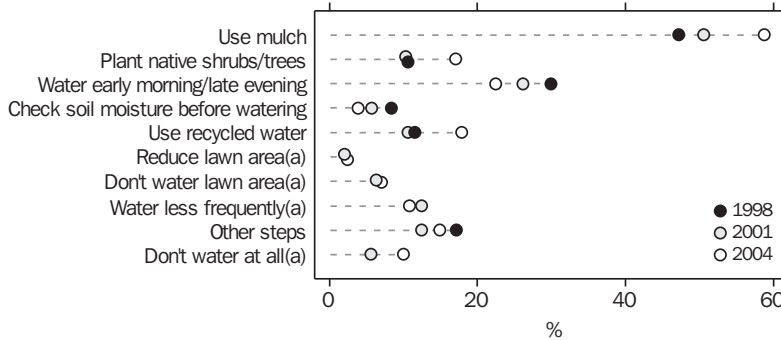
Significantly more households reported using recycled water on the garden in 2004 compared with 2001 (18% in 2004, up from 11% in 2001), planting native shrubs or trees (17%, up from 10%) and not watering the garden at all (10%, up from 6%). States and territories that significantly increased their use of recycled water on the garden since 2001 included New South Wales (9% to 19%), Victoria (13% to 23%) and the Australian Capital Territory (7% to 26%).

Rainwater tanks aid self-sufficiency as they may provide an alternative water source. Most states and territories offered a rebate to householders that install a rainwater tank.

In 2004, 17% of all households had a rainwater tank (graph 24.31). In capital cities, nearly one in ten households sourced water from a rainwater tank, compared with nearly three in ten households not in a capital city. Only 5% of households relied on the tanks as their main source of water for gardening, compared with 85% who used mains or town water as their main source of garden water.



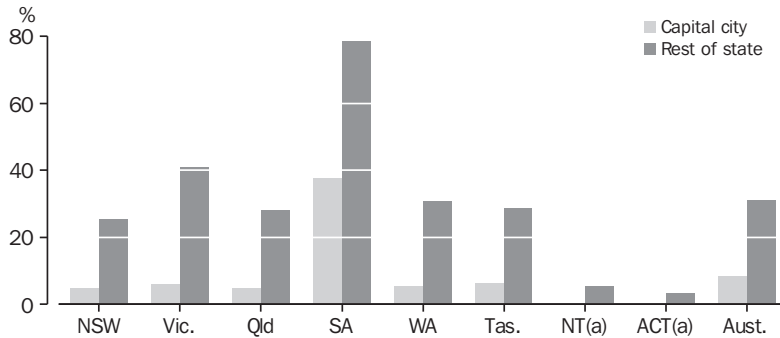
#### 24.30 WATER CONSERVATION MEASURES APPLIED IN GARDEN



(a) Not collected in 1998.

Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

#### 24.31 HOUSEHOLDS WITH RAINWATER TANKS — 2004



(a) NT and ACT data refers to the whole territory.

Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

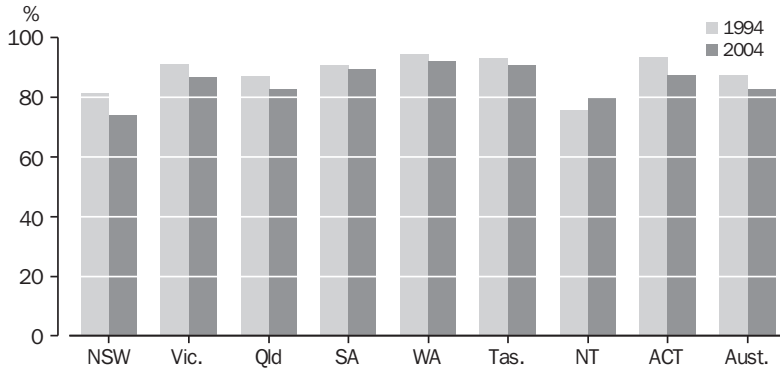
The proportion of households with a garden has declined from 87% in 1994 to 83% in 2004 (graph 24.32). This is consistent with a move towards higher density housing. At the same time there has been a growing trend of building bigger houses on smaller blocks – the so-called ‘McMansion’ phenomenon. The average size of the block of land on which new houses are built has fallen from a site area of 802 square metres (m<sup>2</sup>) in 1993–94 to 735 m<sup>2</sup> in 2003–04. At the same time, the floor size of houses has been increasing, with popular extras such as a fourth bedroom, rumpus

room, and ensuite adding to the overall size of modern homes (see the article *Australian Home Size is Growing* in *Year Book Australia 2005*).

#### Use of transport

The pattern of settlement in Australia has led to a reliance on motor vehicle transport. For urban commuters, private vehicles (i.e. cars, trucks, vans, motorbikes) offer a convenient, reliable and fast means of travel. For industry, road transport offers a flexible means for the delivery of inputs needed for production and the distribution of goods.

### 24.32 HOUSEHOLDS WITH GARDENS



Source: *Environmental Issues: People's Views and Practices, 2004 (4602.0)*.

The flexibility and convenience of road transport comes at an environmental cost. For example, motor vehicles create air pollution and, in particular, greenhouse gas emissions. People who are 18 years and over, and work or study, mostly use private vehicles for transport (graph 24.33). In March 2003, 75% of these people travelled to work or study by private vehicle. Approximately 12% used public transport and 5% walked or cycled. Around 8% did not travel at all as they either worked or studied at home or within an educational institution (e.g. students at university colleges).

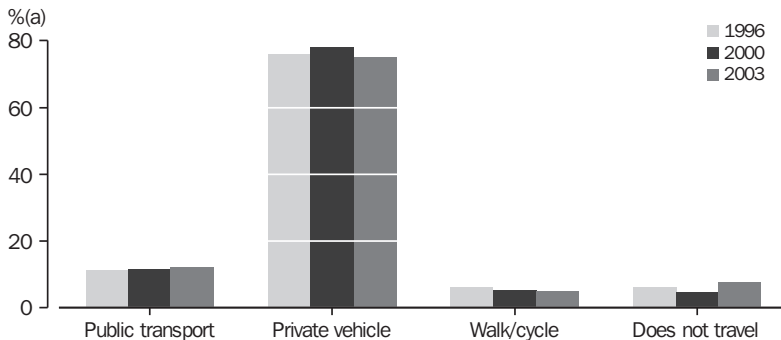
### Energy sources in dwellings

The amount and type of energy used in the home has considerable implications for the environment. The production of energy can

deplete natural resources, generate greenhouse emissions and pollute the air. Increasing awareness of these problems has led to the introduction and use of alternative energy sources (e.g. solar energy). Measures to reduce energy demand such as the use of off-peak electricity are also encouraged.

Natural gas and electricity continue to be the key energy sources for room heating, water heating and cooking (graph 24.34). In 2005, 78% of Australian residences had room heating. However, gas (33%) and electricity (32%) were almost equally preferred for room heating ahead of wood (12%). Households relied more heavily on electricity for room heating in Tasmania (55%), New South Wales (44%) and South Australia (42%).

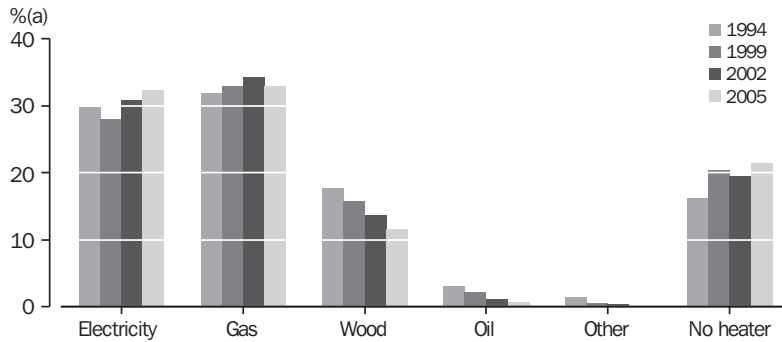
### 24.33 MAIN FORM OF TRANSPORT TO WORK OR STUDY



(a) Proportion of persons 18 years and over.

Source: *Environmental Issues: People's Views and Practices, 2003 (4602.0)*.

#### 24.34 MAIN SOURCE OF ENERGY FOR ROOM HEATING



(a) Proportion of total households.

Source: *Environmental Issues: People's Views and Practices, March 2005 (4602.0)*.

Electricity was the primary energy source for household cooking (54%) throughout Australia (graph 24.35). Use of electricity for this purpose was more pronounced outside of the capital cities (68%) than within them (47%).

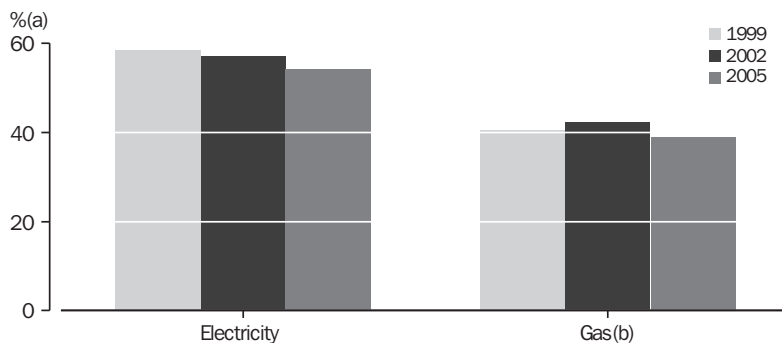
Electricity was also the primary energy source for hot water systems (51%) in households (graph 24.36) and more pronounced outside of the capital cities (68%) than within them (41%).

Solar energy is primarily used in Australia for heating water. It was utilised by 4% of all households in 2005, with the Northern Territory having the largest proportion of households (42%) using solar energy to heat water. Solar energy for water heating was also popular with Western Australia households (16%).

### Environmental assets

The economy has a complex relationship with the environment. The environment provides the raw materials and energy for the production of goods and services that support people's lifestyles. The environment also sustains damage through the activities of households and businesses. While this damage is well documented in the environmental literature, it falls outside the scope of the national accounts. National accounts include the value of goods and services produced and the income generated through the use of environmental assets, but does not reflect the economic cost of

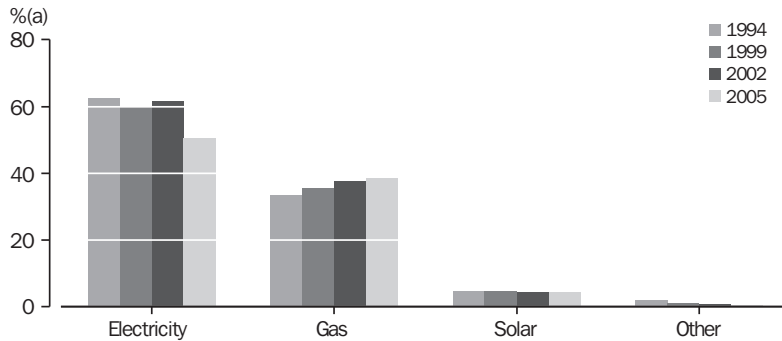
#### 24.35 MAIN SOURCE OF ENERGY FOR COOKING



(a) Proportion of total households. (b) Includes main gas, LPG/bottled gas.

Source: *Environmental Issues: People's Views and Practices, March 2005 (4602.0)*.

## 24.36 SOURCES OF ENERGY FOR WATER HEATING



(a) Proportion of total households.

Source: *Environmental Issues: Peoples Views and Practices*, March 2005 (4602.0).

depleting environmental assets or the damage that arises from economic activity. In recognition of this asymmetry, the Australian Bureau of Statistics (ABS) has completed work to capture the environmental damage sustained in servicing the Australian economy and the longer-term sustainability in exploiting Australia's environmental assets.

This section discusses how the environment is currently treated in the Australian national accounts and gives a broad overview of some environmental accounting that the ABS has done to capture the economic cost to the environment.

### Environmental assets in the Australian national accounts

For an asset to be included in the Australian national accounts, compiled by the ABS, it must have an identifiable owner, and the owner must be able to derive an economic benefit from holding or using the asset. Environmental assets that could be considered economic assets for the purposes of a national account include subsoil assets, land, forests, water, and fish stocks in open seas that are under the control of an economic agent, often the government.

Environmental assets such as the atmosphere are outside the scope of the national accounts, as they do not have an identifiable owner who can derive an economic benefit from their use. This is not to suggest that these assets are of no value. On the contrary, many environmental assets are essential to life itself. However, even if they fell within the

definition of an economic asset, the valuation techniques available to measure such assets tend to be arbitrary and controversial.

There are four environmental assets in the Australian national and sector balance sheets: land; significant subsoil assets; plantation timber; and native standing timber available for exploitation. Land valuations are available through administrative sources and net present value techniques, which take into account current production rates, prices, costs, and discount rates are used to value both subsoil and native forest assets. Plantations are included in the balance sheet as inventories because timber growth is controlled. Water and fish stocks have not been included on the Australian national balance sheet due to a lack of available data.

The Australian national balance sheet recorded \$5,598b worth of assets at 30 June 2005, of which \$2,278b (41%) were economic environmental assets (table 24.37). The value of environmental assets grew strongly over the period 1997–2005, with an average annual growth rate of 13.1%.

Land accounted for 84% of the value of Australia's environmental assets included in the national balance sheet as at June 2005. It almost tripled in the period 1997–2005 – an average annual growth of greater than 10%. Subsoil assets, which account for about 15% of the assets, more than tripled in value over the period and timber (native and plantation), which accounts for less than 1% of Australia's environmental assets, saw relatively modest growth.

**24.37 ASSETS, Current prices — 30 June**

	1997	2005	Average annual change
	\$b	\$b	%
Financial	230	622	13.2
Buildings and structures	1 204	2 146	7.5
Machinery and equipment	288	376	3.4
Other produced	116	166	4.5
Other non-produced	—	10	n.a.
Environmental	851	2 278	13.1
Total assets	2 689	5 598	9.6

Source: Australian System of National Accounts, 2004–05 (5204.0).

**24.38 ENVIRONMENTAL ASSETS, Current prices — 30 June**

	1997	2005	Average annual change
	\$b	\$b	%
Rural land	93	209	10.6
Other land	633	1 715	13.3
Oil and gas	69	148	10.0
Other subsoil	47	195	19.3
Native standing timber	2	3	5.6
Plantation standing timber	6	8	3.8
Total	851	2 278	13.1

Source: Australian System of National Accounts, 2004–05 (5204.0).

The strong growth in Australia's environmental assets (table 24.38) was mainly due to rising prices. Over the period 1997–2005, average annual growth in volume or real terms was only 1.6%. Average annual growth in the volume of land was 1.2% in the period, while subsoil average annual volume growth was 3.7%. Table 24.39 indicates that real growth in the stock of environment assets has been quite modest over the period, and that the strong growth in values can be attributed mainly to price effects.

## Measuring depletion

Depletion is defined in the international *System of National Accounts 1993* (SNA93) as the:

... reduction in the value of deposits of subsoil assets as a result of the physical removal and using up of the assets, ... the depletion of water resources, and the depletion of natural forests, fish stocks in the open seas and other non-cultivated biological resources as a result of harvesting, forest clearance, or other use (SNA93, 12.29 and 12.30).

Depletion in an economic sense results because the value of the resource stock has been lowered through its use in a productive activity, and the use has reduced the asset's ability to produce an income stream in the future. In this sense, depletion is analogous to depreciation of

produced assets whereby the current value of the stock of fixed assets declines through normal use, wear and tear and foreseen obsolescence.

Physical depletion may not necessarily equate to economic depletion in cases where asset values are low or the resource life is long. While the physical dimension of depletion can be fairly readily observed in practice, its value cannot. This is because the mineral or other natural resource product is not what is being valued – rather it is the decline in the value of the mineral asset below the ground or the standing timber in the forest. Generally, one has to resort to capital theory to undertake this valuation. (See *Environment by Numbers: Selected Articles on Australia's Environment*, 2003 (4617.0)).

## Subsoil assets

The depletion of minerals and fossil fuels in any one year is the change in the value of the asset between the beginning and end of the year arising purely from the extraction of these natural resources. An 'addition' occurs when previously unknown stocks of minerals are discovered and delineated, or previously subeconomic stocks become economic because of changes in prices or mineral extraction techniques. An 'addition' can also be negative. For example, if mineral prices fall and previously economic stocks become

### 24.39 ENVIRONMENTAL ASSETS, Volume/Real(a) — 30 June

	1997	2005	Average annual change
	\$b	\$b	%
Land	1 482	1 633	1.2
Subsoil	208	278	3.7
Native standing timber	3	3	3.4
Plantation standing timber	7	8	1.6
Total	1 700	1 923	1.6

(a) Reference year is 2003–04.

Source: Australian System of National Accounts, 2004–05 (5204.0).

subeconomic, the owner can no longer derive an economic benefit from the asset so it is excluded from asset values. In the Australian national accounts, the value of a new discovery is not in itself considered as output or income because it is a 'gift of nature'. Similarly, reclassification of the economic status of known stocks is considered to be an 'other change in volume', not production or income.

Graph 24.40 shows depletions are increasing at a relatively constant rate whereas 'additions' are erratic as subsoil discoveries can be both substantial and sporadic. The result is that in some years more subsoil resources are added than are depleted while in other years, the reverse is true. In some years, depletions and 'additions' are more or less equal in value. Subsoil 'additions' exceeded \$5b in the three years to 2004–05, due mainly to increasing crude oil extractions rather than discoveries. The volume of extraction of crude oil has averaged about 26 GL per year over the last

decade, and at the same time crude oil prices have increased, resulting in the recent strong growth in the value of depletions.

### Land

If land is used sustainably, it has an infinite life and therefore, no adjustment for depletion is required. However, where land is being degraded due to economic activity, an adjustment to income for land degradation is applicable. In the context of economic depletion used here, land degradation represents the year-to-year decline in the capital value of land resulting from economic activity after deducting price rises due to inflation.

Changes in the value of agricultural land can be determined from data on market values or land rates data. However, data for land values are affected by a host of factors other than changes in productive capacity from the impact of land degradation, including inflation, technological advances and changes in land use due to re-zoning, subdivision and 'lifestyle' considerations.

### 24.40 SUBSOIL ADDITIONS AND DEPLETION



Source: ABS data available on request, Australian National Accounts.

Two recent national studies used different approaches to measuring economic losses due to land degradation. One used a farm survey to estimate the extent of land degradation on farms. Combining data from the survey with land value data, regression techniques were used to estimate that the difference in the capital value of farms with and without degradation was approximately \$14.2b in 1999. This represents the total accumulated value of losses in land value due to degradation. The other – the National Land and Water Resources Audit – used models to estimate the ‘yield gap’, that is, the difference between profits with and without soil degradation. Lost profit at full equity due to salinity, sodicity and acidity was estimated as \$2.6b in 1996–97.

In concept, these two approaches can be reconciled because the net present value of future lost profits should be equal to the decline in the capital value of land due to degradation. The ABS has used the data from these studies to produce estimates of the incremental effect of land degradation on the value of land and the lost profits from agricultural production each year. The results are presented in graph 24.41.

### Forest assets

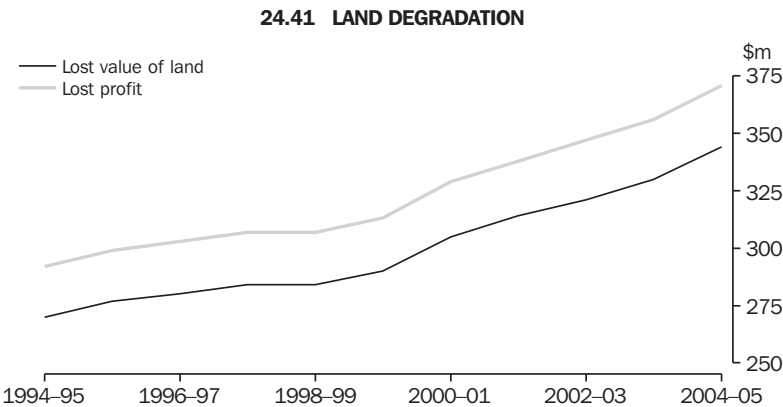
Forests are renewable biological resources. In the national balance sheet, forests are depicted as two types – old growth native forests and plantations. The valuation of the depletion of renewable assets presents a different set of issues to valuation of non-renewable assets as it may be possible to

replace, over time, the part of the asset that is used in the current period. Where a forest is harvested sustainably, no depletion adjustment is required.

Estimates for depletion of native forests are not available. However, given the value of native forests on the national balance sheet is \$3b compared with \$343b for subsoil assets, it is expected that depletion will have a relatively insignificant effect on the overall value of natural resources. This is premised on a narrow economic view that does not account for damage to intrinsic non-monetary values such as ecosystem services, biodiversity and aesthetic/recreational values.

### Adjusting the Australian national accounts

There is currently an asymmetry in the Australian national accounts between the treatment of produced assets, such as buildings and environmental assets. Depreciation of produced assets (termed consumption of fixed capital (COFC) in the national accounts) is deducted to derive various ‘net’ income measures in the national accounts such as net domestic product (NDP), net operating surplus (NOS), net national income and net saving. No similar deduction is made for environmental assets when they are used up or degraded as a result of economic activity. The net measures thus fall short of being sustainable concepts of income, although they are superior to the various ‘gross’ measures in the Australian national accounts in this respect.



Source: ABS data available on request, Australian National Accounts.

The experimental estimates derived for the value of depletions and discoveries of subsoil assets and the degradation of agricultural land are indicative of adjustments that could be made to the national accounts in the context of a satellite account and are shown in table 24.42. Depletion adjustments unambiguously lower the net values. If the value of discoveries is included in income in place of the value of mineral exploration, the net effect of that adjustment can be positive or negative.

The net saving levels are changed by the same amount as for NOS so the nation's net lending position is left unchanged.

Adjusting the Australian national accounts for depletion and additions of subsoil assets also affects growth rates. As table 24.43 shows, the adjustments have the largest impact on the growth rates of NDP and NOS in 2000–01, and 2002–03. The growth rates are changed significantly when the net depletion adjustment swings from positive (a depletion) to negative (an addition). The swing between 2001–02 and 2002–03 exceeded \$2b due to the high increase in subsoil asset additions in 2002–03, resulting in a 0.3 point increase in the growth of NDP.

#### 24.42 PRODUCTION AND CAPITAL INCOME ADJUSTED FOR DEPLETION AND ADDITIONS

	2000–01 \$m	2001–02 \$m	2002–03 \$m	2003–04 \$m	2004–05 \$m
Subsoil depletion	2 388	3 275	3 948	4 490	4 612
<i>plus</i>					
Land degradation	304	313	321	332	344
<i>less</i>					
Subsoil additions	2 040	2 408	5 280	5 277	5 041
<i>plus</i>					
Cost of mineral exploration	1 708	1 523	1 728	1 731	2 074
<i>less</i>					
COFC on mineral exploration	1 572	1 603	1 670	1 717	1 837
<i>equals</i>					
<b>Net depletion adjustment</b>	<b>788</b>	<b>1 100</b>	<b>–953</b>	<b>–441</b>	<b>152</b>
GDP	689 340	735 783	782 798	838 251	891 524
<i>less</i>					
Consumption of fixed capital	107 638	115 794	122 029	128 249	134 771
<i>equals</i>					
NDP	581 702	619 989	660 769	710 002	756 753
<i>less</i>					
Net depletion adjustment	788	1 100	–953	–441	152
<i>equals</i>					
<b>Depletion adjusted NDP</b>	<b>580 914</b>	<b>618 889</b>	<b>661 722</b>	<b>710 443</b>	<b>756 601</b>
GOS and GMI(a)	269 287	295 486	312 860	340 472	363 949
<i>less</i>					
Consumption of fixed capital	107 638	115 794	122 029	128 249	134 771
<i>equals</i>					
NOS	161 649	179 692	190 831	212 223	229 178
<i>less</i>					
Net depletion adjustment	788	1 100	–953	–441	152
<i>equals</i>					
<b>Depletion adjusted NOS</b>	<b>160 861</b>	<b>178 592</b>	<b>191 784</b>	<b>212 664</b>	<b>229 026</b>
Net saving	26 709	33 452	34 405	42 384	41 698
<i>less</i>					
Net depletion adjustment	788	1 100	–953	–441	152
<b>Depletion adjusted saving</b>	<b>25 921</b>	<b>32 352</b>	<b>35 358</b>	<b>42 825</b>	<b>41 546</b>

(a) Gross operating surplus and gross mixed income.

Source: ABS data available on request, Australian National Accounts.



## 24.43 CHANGES IN PRODUCTION AND CAPITAL INCOME GROWTH AFTER ADJUSTMENT FOR DEPLETION AND ADDITIONS

	2000–01	2001–02	2002–03	2003–04	2004–05
	%	%	%	%	%
GDP	6.8	6.7	6.4	7.1	6.4
NDP	6.9	6.6	6.6	7.5	6.6
Depletion adjusted NDP	6.7	6.5	6.9	7.4	6.5
<b>Net change in NDP growth</b>	<b>-0.2</b>	<b>-0.0</b>	<b>0.3</b>	<b>-0.1</b>	<b>-0.1</b>
GOS and GMI(a)	5.7	9.7	5.9	8.8	6.9
NOS	5.0	11.2	6.2	11.2	8.0
Depletion adjusted NOS	4.5	11.0	7.4	10.9	7.7
<b>Net change in NOS growth</b>	<b>-0.6</b>	<b>-0.1</b>	<b>1.2</b>	<b>-0.3</b>	<b>-0.3</b>

(a) Gross operating surplus and gross mixed income.

Source: ABS data available on request, Australian National Accounts.

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## SCIENCE AND INNOVATION

The application of science and innovation to business processes influences the strength and competitiveness of the industry by providing a basis for innovative change and encouraging economic growth and development.

Australia has a range of statistics relating to science and innovation, many of which are compiled by the Australian Bureau of Statistics (ABS). The ABS has released a range of statistics on business innovation in respect of the period January 2001 to December 2003. Statistics on the amount of expenditure and human resources devoted to research and development (R&D) effort in the business sector are collected annually by the ABS, in a survey of all likely R&D performers. Comparable statistics on the higher education, general government and private non-profit sectors are collected biennially.

The ABS surveys of R&D effort and innovation are based on standards developed by the Organisation for Economic Co-operation and Development which enables international comparisons to be made.

A number of additional indicators on science and innovation, not included in this chapter, are compiled by the Australian Government Department of Industry, Tourism and Resources, and the Department of Education, Science and Training.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Innovation

The ABS conducted a survey of businesses in the private industry to gauge innovation undertaken during the period January 2001 to December 2003. For the purposes of the survey, innovation is defined as the process of introducing new or significantly improved goods or services and/or implementing new or significantly improved processes. New goods or services or processes

may involve the development of new technology, an adaptation of existing technology to a new use, or may be non-technological in nature (e.g. organisational and managerial change). These categories are defined as:

- a new good or service means any new good or service or combination of these which is new to a business; its characteristics or intended uses differ significantly from those previously produced

### 25.1 SUMMARY OF INNOVATION, Selected business characteristics(a) — 2001–2003

Indicator	Businesses			Proportion of businesses which introduced/ implemented new or significantly improved		
	As at December 2003	Innovating(b)		Goods or services(b)	Operational processes(b)	Organisational/ managerial processes(b)
	no.	no.	%	%	%	%
Employment size						
5–19 persons	102 009	31 036	30.4	14.3	19.8	17.7
20–99 persons	28 583	13 061	45.7	20.6	29.9	31.3
100 or more persons	5 244	3 186	60.8	38.4	44.8	39.5
Income size						
Less than \$100,000	9 160	^ 1 251	13.7	**3.8	*10.1	*9.7
\$100,000 – less than \$1m	51 902	12 749	^ 24.6	^ 10.6	^ 15.1	^ 12.8
\$1m – less than \$5m	52 257	21 686	41.5	20.5	28.3	27.1
\$5m or more	22 517	11 596	51.5	26.3	33.7	32.9
States and territories						
New South Wales	48 279	17 586	36.4	^ 17.8	^ 23.0	^ 20.9
Victoria	34 807	12 070	34.7	^ 17.1	^ 22.8	^ 21.1
Queensland	24 519	7 519	30.7	^ 14.0	^ 21.7	^ 20.6
South Australia	8 802	4 038	45.9	^ 23.8	^ 30.2	^ 29.8
Western Australia	13 416	4 399	32.8	^ 13.6	^ 22.2	^ 21.3
Tasmania	2 553	676	^ 26.5	*10.1	*17.5	^ 17.0
Northern Territory	1 121	315	^ 28.1	*11.5	^ 15.4	*17.9
Australian Capital Territory	2 339	680	^ 29.0	*9.2	*22.1	^ 20.6
Region						
Capital cities	40 409	33 540	35.1	17.6	^ 21.9	^ 22.2
Other areas	95 426	13 742	34.0	14.1	25.3	19.4
Industry						
Mining	722	223	^ 30.9	^ 10.6	^ 18.5	^ 17.9
Manufacturing	18 940	8 621	45.5	27.1	29.7	24.2
Electricity, gas and water supply	191	97	50.8	21.2	33.5	34.9
Construction	12 554	3 860	^ 30.7	^ 9.8	^ 20.0	^ 22.4
Wholesale trade	13 231	5 670	42.9	^ 26.1	^ 25.2	^ 27.1
Retail trade	30 163	9 471	^ 31.4	^ 10.2	^ 21.6	^ 18.4
Accommodation, cafes and restaurants	11 980	3 175	^ 26.5	^ 10.6	^ 17.8	^ 16.1
Transport and storage	5 008	1 748	34.9	^ 15.4	^ 25.8	^ 21.3
Communication services	428	219	^ 51.1	^ 29.2	^ 40.0	^ 30.4
Finance and insurance	3 821	1 694	^ 44.3	^ 22.2	^ 26.4	^ 31.7
Property and business services	34 368	10 880	^ 31.7	^ 16.6	^ 21.6	^ 20.1
Cultural and recreational services	4 429	1 625	36.7	^ 17.9	^ 20.2	^ 25.4
<b>Total</b>	<b>135 836</b>	<b>47 283</b>	<b>34.8</b>	<b>16.6</b>	<b>22.9</b>	<b>21.4</b>

(a) The scope of the survey excluded all businesses employing less than five employees and those classified to the following Industry Divisions of the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition: Agriculture, forestry and fishing; Government administration and defence; Education; Health and community services; and Personal and other services. (b) Proportions are of businesses reporting innovation in each category.

Source: *Innovation in Australian Business, 2003 (Re-issue 8158.0)*.

- a new operational process means a significant change for a business in its methods of producing or delivering goods or services
- a new organisational/managerial process means a significant change to the strategies, structures or routines of the business which aim to improve performance.

During the three years ended December 2003, innovation was undertaken by 35% of businesses in scope of the survey. Of those businesses innovating, a higher proportion (23%) implemented new or significantly improved operational processes than introduced new or significantly improved goods or services (17%) (table 25.1).

## Expenditure and human resources devoted to R&D

The ABS defines R&D as systematic investigation or experimentation involving innovation or technical risk, the outcome of which is new knowledge, with or without a specific practical application, or new or improved products, processes, materials, devices or services.

Tables 25.2 and 25.3 summarise the latest R&D statistics available.

## International comparisons

The most commonly used indicator for international comparison purposes is the ratio of expenditure on R&D to gross domestic product (GDP). In 2002–03 Australia's R&D expenditure was 1.69% of its GDP, ranking it 15th in the group of Organisation for Economic Co-operation and Development (OECD) member countries (table 25.4).

### 25.2 EXPENDITURE ON R&D(a)

Sector	1999–2000 \$m	2000–01 \$m	2001–02 \$m	2002–03 \$m	2003–04 \$m
Business	4 136.7	4 982.6	6 191.9	6 571.4	7 220.2
Government					
Commonwealth	n.a.	1 404.8	n.a.	1 531.3	n.a.
State and territory	n.a.	951.0	n.a.	950.9	n.a.
Total	n.a.	2 355.8	n.a.	2 482.2	n.a.
Higher education(b)	n.a.	2 789.8	n.a.	3 429.6	n.a.
Private non-profit	n.a.	289.0	n.a.	359.5	n.a.
<b>Total</b>	<b>n.a.</b>	<b>10 417.1</b>	<b>n.a.</b>	<b>12 842.7</b>	<b>n.a.</b>

(a) Statistics on R&D expenditure in the government, higher education and private non-profit sectors are collected biennially.

(b) Data for the calendar year ending within the financial year shown.

Source: Research and Experimental Development, All Sector Summary, Australia (8112.0); Research and Experimental Development, Businesses, Australia (8104.0).

### 25.3 HUMAN RESOURCES DEVOTED TO R&D(a)

Sector	1999–2000 '000 person years	2000–01 '000 person years	2001–02 '000 person years	2002–03 '000 person years	2003–04 '000 person years
Business	26.5	28.4	32.2	35.6	38.1
Government					
Commonwealth	n.a.	9.6	n.a.	10.2	n.a.
State and territory	n.a.	8.6	n.a.	8.4	n.a.
Total	n.a.	18.2	n.a.	18.5	n.a.
Higher education(b)	n.a.	46.3	n.a.	49.6	n.a.
Private non-profit	n.a.	2.8	n.a.	3.1	n.a.
<b>Total</b>	<b>n.a.</b>	<b>95.6</b>	<b>n.a.</b>	<b>106.8</b>	<b>n.a.</b>

(a) Statistics on R&D expenditure in the government, higher education and private non-profit sectors are collected biennially.

(b) Data for the calendar year ending within the financial year shown.

Source: Research and Experimental Development, All Sector Summary, Australia (8112.0); Research and Experimental Development, Businesses, Australia (8104.0).

## 25.4 EXPENDITURE ON R&D AS A PERCENTAGE OF GDP, OECD countries — 2002–03

Country	Business(a) %	Government(a) %	Higher education(a) %	All industries(a)(b) %
Sweden(b)	n.a.	0.12	0.83	4.27
Finland	2.41	0.36	0.66	3.46
Japan	2.12	0.30	0.43	3.12
Iceland	1.55	0.76	0.50	3.09
Korea, Republic of (South)	1.77	0.39	0.30	2.91
United States of America	2.04	0.24	0.42	2.67
Germany	1.75	0.35	0.43	2.52
France	1.36	0.37	0.43	2.20
Belgium(b)	1.48	0.13	0.42	2.17
Austria	n.a.	n.a.	n.a.	1.93
Canada	1.15	0.22	0.63	1.91
Netherlands(b)	1.11	0.27	0.51	1.89
United Kingdom	1.21	0.17	0.42	1.88
<b>Australia</b>	<b>0.74</b>	<b>0.33</b>	<b>0.45</b>	<b>1.69</b>
Norway	n.a.	0.26	0.45	1.67
Czech Republic	0.74	0.30	0.20	1.30
New Zealand(b)	n.a.	0.39	0.36	1.18
Ireland(b)	0.82	0.09	0.26	1.15
Italy(b)	0.53	0.20	0.36	1.11
Spain	0.50	0.16	0.31	1.03
Hungary	0.35	0.34	0.26	1.02
Portugal	0.22	0.18	0.33	0.93
Greece(b)	n.a.	0.14	0.29	0.65
Poland	0.24	0.26	0.20	0.59
Slovak Republic	0.43	0.15	0.05	0.58
Mexico(b)	n.a.	0.15	0.12	0.39

(a) Data for Business sector for 2002–03, other sectors and All industries data for 2001–02. (b) Includes private non-profit.

Source: Organisation for Economic Co-operation and Development 2004.

In terms of business enterprise R&D, Australia's ratio of R&D expenditure to GDP in 2002–03 (0.87%) also ranked 15th in the OECD.

For government sector R&D as a percentage of GDP, Australia ranks higher. A R&D to GDP ratio of 0.33% places it eighth in the group of OECD member countries.

For the higher education sector, Australia ranks seventh with a R&D to GDP ratio of 0.45%,

### Source of funds for expenditure on R&D

In 2002–03 the business sector funded 49% of all Australian expenditure on R&D. This compares with 44% recorded in 1992–93. The Australian (Commonwealth) Government funded 36% of R&D in 2002–03 (down from 41% in 1992–93) and the state and territory governments funded 6% (down from 9% in 1992–93).

In 2002–03, 90% of funding for R&D carried out by businesses came from the business sector (down from 94% in 1992–93). Commonwealth Government organisations provided 4% of funding for business R&D expenditure in 2002–03.

About 82% of Commonwealth Government industry R&D was funded by Commonwealth Government organisations in 2002–03. The Commonwealth Government proportion of self-funding has fallen from 86% in 1992–93.

About 66% of state government expenditure on R&D was funded by state government organisations in 2002–03. This is significantly lower than a decade earlier, when the proportion was 76%.

About 86% of higher education R&D funding in 2002–03 came from the Commonwealth Government (compared with 91% in 1992–93). Business enterprises provided 5% of the funding in 2002–03, up from 3% in 1992–93.

Commonwealth Government organisations funded 29% of the R&D of the private non-profit industry in 2002–03, while the contribution by state governments was 11%.

Tables 25.5 and 25.6 show the data for 2002–03 and 1992–93 respectively.

## 25.5 EXPENDITURE ON R&D, Source of funds — 2002–03

Sector	Commonwealth Government		State government		Businesses		Other Australian(a)		Overseas		Total
	\$m	%	\$m	%	\$m	%	\$m	%	\$m	%	\$m
Business	248.1	3.8	12.0	0.2	5 937.0	90.4	50.4	0.8	324.0	4.9	6 571.0
Government											
Commonwealth	1 255.9	82.0	39.6	2.6	78.0	5.1	123.7	8.1	34.0	2.2	1 531.3
State and territory	67.4	7.1	630.3	66.3	50.3	5.3	189.3	19.9	13.7	1.4	950.9
Total	1 323.3	53.3	669.9	27.0	128.3	5.2	313.0	12.6	47.7	1.9	2 482.2
Higher education(b)	(c) 2 937.9	85.7	104.5	3.0	174.1	5.1	98.5	2.9	114.6	3.3	3 429.6
Private non-profit	103.9	28.9	39.8	11.1	31.6	8.8	147.3	41.0	36.9	10.3	359.5
<b>Total</b>	<b>4 613.2</b>	<b>35.9</b>	<b>826.2</b>	<b>6.4</b>	<b>6 271.0</b>	<b>48.8</b>	<b>609.2</b>	<b>4.7</b>	<b>523.2</b>	<b>4.1</b>	<b>12 842.7</b>

(a) Includes funds provided via government levies. (b) Data for year 2002. (c) Includes \$2,033m of General University funds, the majority of which is funding from the Commonwealth Government.

Source: Research and Experimental Development, All Sector Summary, Australia, 2002–03 (8112.0).

## 25.6 EXPENDITURE ON R&D, Source of funds — 1992–93

Sector	Commonwealth Government		State government		Businesses		Other Australian(a)		Overseas		Total
	\$m	%	\$m	%	\$m	%	\$m	%	\$m	%	\$m
Business	54.0	1.9	8.5	0.3	2 690.8	94.3	15.3	0.5	85.8	3.0	2 854.5
Government											
Commonwealth	988.0	85.8	11.7	1.0	74.7	6.5	62.8	5.5	14.0	1.2	1 151.1
State and territory	56.5	8.5	509.3	76.3	29.0	4.3	69.1	10.4	3.8	0.6	667.6
Total	1 044.5	57.4	521.0	28.6	103.7	5.7	131.0	7.2	17.7	1.0	1 818.8
Higher education(b)	1 544.8	91.1	34.8	2.1	41.7	2.5	63.5	3.7	10.5	0.6	1 695.2
Private non-profit	33.9	33.5	12.8	12.6	6.9	6.8	44.3	43.8	3.3	3.3	101.2
<b>Total</b>	<b>2 677.2</b>	<b>41.4</b>	<b>577.1</b>	<b>8.9</b>	<b>2 843.1</b>	<b>43.9</b>	<b>255.0</b>	<b>3.9</b>	<b>117.4</b>	<b>1.8</b>	<b>6 469.7</b>

(a) Includes funds provided via government levies. (b) Data for year 1992.

Source: Research and Experimental Development, All Sector Summary, Australia, 1994–95 (8112.0).

## Resources devoted to R&D

### Business sector

Business expenditure on R&D (BERD) in 2003–04 was \$7,220 million (m) or 10% higher than that recorded in 2002–03 (table 25.2). This is the highest level recorded and is the fifth successive year of increase following the declines from 1995–96 to 1998–99 and the levelling off between 1998–99 and 1999–2000. In volume terms, with the effect of changes in prices and wages and salaries removed, BERD increased by 7% compared with 2002–03.

Human resources devoted to R&D in 2003–04 totalled 38,093 person years, 7% higher than in 2002–03 (table 25.3).

In 2003–04 Australia's BERD was 0.89% of GDP, subsequent to a levelling off in 2002–03.

Table 25.7 shows Australia's BERD/GDP ratio compared with those of other OECD countries for which comparable data is available.

Manufacturing industry was the largest contributor (46%) to total BERD. Property and business services, Mining and Finance and insurance industries were the next largest contributors to BERD at 23%, 11% and 9% respectively. The net increase in BERD between 2002–03 and 2003–04 was attributable to a 28% increase by the Mining industry, and a 13% increase by the Manufacturing industry. It should be noted that mineral exploration is excluded from the definition of R&D (table 25.8).

Manufacturing and Property and business services industries contributed the highest levels of human resources to R&D at 49% and 30% of total effort respectively. In 2003–04, the Mining and

Manufacturing industries recorded increases in human resources devoted to R&D from 2002–03, of 43% and 6% respectively. Finance and insurance, and Property and business services

industries also showed increases of 17% and 18% respectively. Wholesale trade recorded a decrease of 13%.(table 25.8).

## 25.7 BUSINESS EXPENDITURE ON R&D AS A PERCENTAGE OF GDP, OECD countries

Country	2000–01 %	2001–02 %	2002–03 %	2003–04 %
Sweden	n.a.	3.31	n.a.	2.95
Finland	2.41	2.42	2.41	2.46
Japan	2.12	2.26	2.32	2.36
Korea, Republic of (South)	1.77	1.97	1.90	2.01
United States of America	2.04	2.00	1.87	1.79
Denmark	n.a.	1.65	1.75	n.a.
Germany	1.75	1.75	1.75	1.73
Belgium	1.48	1.60	1.63	1.71
Iceland	1.55	1.80	1.77	1.67
France	1.36	1.41	1.43	1.36
United Kingdom	1.21	1.24	1.26	1.24
Canada	1.15	1.27	1.09	1.03
Norway	n.a.	0.96	0.96	1.00
Netherlands	1.11	1.10	1.02	0.99
<b>Australia</b>	<b>0.74</b>	<b>0.87</b>	<b>0.87</b>	<b>0.89</b>
Ireland	0.82	0.78	0.77	0.80
Czech Republic	0.74	0.74	0.75	0.77
Spain	0.50	0.50	0.56	0.60
Italy	0.53	0.55	0.56	0.55
New Zealand	n.a.	0.42	n.a.	0.47
Slovak Republic	0.43	0.43	0.37	0.32
Hungary	0.35	0.38	0.36	0.35
Portugal	0.22	0.27	0.30	n.a.
Turkey	0.21	0.24	0.19	n.a.
Poland	0.24	0.23	0.12	0.15

Source: Organization for Economic Co-operation and Development 2004.

## 25.8 BUSINESS R&D RESOURCES, By industry(a)

	Businesses		Expenditure on R&D		Human resources devoted to R&D	
	2002–03	2003–04	2002–03	2003–04	2002–03	2003–04
	no.	no.	\$m	\$m	'000 person years	'000 person years
Mining	142	168	612	783	0.7	1.0
Manufacturing	1 929	2 287	2 908	3 294	17.8	18.8
Electricity, gas and water supply	45	42	64	75	0.2	0.2
Construction	96	112	147	128	0.5	0.4
Wholesale trade	298	292	342	290	2.4	2.1
Retail trade	64	74	22	31	0.2	0.2
Accommodation, cafes and restaurants	n.p.	—	n.p.	—	n.p.	—
Transport and storage	28	26	36	38	0.2	0.2
Communication services	39	51	394	247	1.0	0.6
Finance and insurance	56	67	603	625	2.4	2.8
Property and business services	1 498	1 895	1 375	1 650	9.8	11.6
Education	n.p.	13	n.p.	4	n.p.	—
Health and community services	46	52	21	20	0.1	0.2
Cultural and recreational services	17	19	24	21	0.2	0.1
Personal and other services	12	18	18	15	0.1	—
<b>Total</b>	<b>4 279</b>	<b>5 116</b>	<b>6 571</b>	<b>7 220</b>	<b>35.6</b>	<b>38.1</b>

(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZIC), 1993 edition.

Source: Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0).



Engineering and technology, and Information, computing and communication sciences were the research fields with the highest R&D expenditure, at 54% and 26% respectively (table 25.9).

Engineering and technology, and Information, computing and communication sciences research fields recorded the highest proportion of total human resources effort on R&D, contributing 49% and 33% respectively (table 25.9).

In terms of socioeconomic objectives, business directed 90% of R&D expenditure into Economic development (\$6,532m). About 6% was directed towards Society, 3% towards Defence and 1%

towards Environment. Within Economic development, Manufacturing was the subdivision with the highest expenditure (\$2,929m) followed by Information and communication services (\$1,125m) (table 25.10).

The same pattern applied to human resources devoted to R&D, with 88% (33,700 person years of effort) directed towards Economic development, 7% directed towards Society, 4% towards Defence and 1% towards Environment. Within Economic development the subdivisions with the highest proportion of total human resources devoted to R&D were Manufacturing (44%), and Information and communication services (20%) (table 25.10).

## 25.9 BUSINESS R&D RESOURCES, By research field(a) — 2003–04

	Expenditure on R&D				Human resources devoted to R&D '000 person years
	Capital expenditure \$'m	Labour costs \$m	Other current expenditure \$m	Total \$m	
Mathematical sciences	0.6	14.7	7.3	22.6	0.2
Physical sciences	1.9	26.6	17.9	46.5	0.3
Chemical sciences	13.2	86.4	110.0	209.6	1.2
Earth sciences	15.1	26.8	100.0	141.9	0.3
Biological sciences	16.1	110.4	100.1	226.6	1.3
Information, computing and communication sciences	73.7	1 168.7	658.1	1 900.4	12.6
Engineering and technology	311.0	1 422.3	2 185.5	3 918.8	18.6
Agricultural, veterinary and environmental sciences	25.8	83.6	125.8	235.3	1.2
Architecture, urban environment and building	1.9	9.6	21.6	33.1	0.1
Medical and health sciences	30.8	192.5	231.8	455.1	2.1
Education	0.1	2.3	2.7	5.1	—
Economics	0.1	3.2	2.2	5.6	—
Commerce, management, tourism and services	0.8	8.1	6.9	15.8	0.1
Studies in human society	—	0.1	0.1	0.2	—
Behavioural and cognitive sciences	—	0.5	0.3	0.9	—
Law, justice and law enforcement	n.p.	0.1	n.p.	0.5	—
Journalism, librarianship and curatorial studies	n.p.	n.p.	n.p.	n.p.	n.p.
The Arts	—	1.2	0.9	2.2	—
Language and culture	n.p.	n.p.	n.p.	n.p.	n.p.
History and archaeology	n.p.	n.p.	n.p.	n.p.	n.p.
<b>Total</b>	<b>491.3</b>	<b>3 157.2</b>	<b>3 571.7</b>	<b>7 220.2</b>	<b>38.1</b>

(a) Data were subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0).

## 25.10 BUSINESS R&D RESOURCES, By socioeconomic objective(a) — 2003–04

	Expenditure on R&D				Human resources devoted to R&D '000 person years
	Capital expenditure \$m	Labour costs \$m	Other current expenditure \$m	Total \$m	
Defence	4.8	104.0	68.6	177.4	1.4
Economic development					
Plant – production and primary products	10.0	42.5	47.3	99.9	0.6
Animal – production and primary products	8.2	22.6	37.5	68.3	0.3
Mineral resources (excl. energy)	37.6	102.2	511.3	651.1	1.2
Energy resources	23.3	53.9	190.9	268.1	0.6
Energy supply	40.7	49.5	80.5	170.8	0.7
Manufacturing	208.1	1 280.1	1 441.3	2 929.5	16.7
Construction	17.3	85.3	165.0	267.6	1.0
Transport	16.5	56.2	55.0	127.7	0.8
Information and communication services	53.4	648.1	423.4	1 124.9	7.7
Commercial services and tourism	25.9	459.8	323.7	809.4	4.0
Economic framework	0.6	9.8	4.6	15.0	0.1
Total	441.7	2 810.1	3 280.6	6 532.4	33.7
Society					
Health	34.4	184.1	172.0	390.5	2.1
Education and training	0.9	10.1	5.5	16.5	0.2
Social development and community services	2.3	19.8	10.1	32.1	0.3
Total	37.5	214.0	187.6	439.1	2.6
Environment					
Environmental policy frameworks and other aspects	1.0	9.1	8.5	18.6	0.1
Environmental management	6.1	18.4	25.4	49.9	0.3
Total	7.1	27.5	34.0	68.5	0.4
Non-oriented research	0.2	1.5	1.0	2.7	—
<b>Total</b>	<b>491.3</b>	<b>3 157.2</b>	<b>3 571.7</b>	<b>7 220.2</b>	<b>38.1</b>

(a) Data were subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0).

### Biotechnology-related R&D

Information was collected by the ABS in 2003–04 on biotechnology-related R&D. Biotechnology is the application of science and engineering principles to living organisms as well as parts, products or models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

In 2003–04, 304 businesses performed and/or paid another to perform biotechnology-related R&D, totalling \$378m in expenditure. As businesses could both perform and pay another to perform their R&D, the sum of businesses in table 25.11 is

higher than the actual count of businesses (304). There was \$271m (4% of BERD) of biotechnology-related R&D expenditure, which was performed by 227 businesses. There were 155 businesses which paid \$107m to others to perform biotechnology-related R&D (table 25.11).

Property and business services industry reported the highest number of biotechnology R&D active businesses and the highest level of expenditure on both biotechnology-related R&D performed by the business (\$187m) and paid to another (\$81m) (table 25.11).

## 25.11 EXPENDITURE ON BIOTECHNOLOGY-RELATED R&D, By industry — 2003–04

	Units	Manufacturing	Wholesale trade	Property and business services	Industry	
					Other industries n.e.c.	Total
Businesses that						
Performed biotechnology-related R&D	no.	60	13	138	16	227
Paid another to perform biotechnology-related R&D	no.	38	11	101	5	155
Expenditure on biotechnology-related R&D						
Performed by this business						
For own purposes	\$m	n.p.	n.p.	141.5	8.1	223.4
For another	\$m	n.p.	n.p.	45.5	—	47.5
<i>Total</i>	\$m	72.4	3.2	187.1	8.1	270.8
Paid to another organisation to perform who were						
Located within Australia	\$m	n.p.	n.p.	54.0	0.6	76.2
Located overseas	\$m	n.p.	n.p.	27.2	—	30.8
<i>Total</i>	\$m	20.5	4.8	81.2	0.6	107.0
<b>Total</b>	<b>\$m</b>	<b>92.9</b>	<b>8.0</b>	<b>268.3</b>	<b>8.7</b>	<b>377.8</b>

Source: Research and Experimental Development, Businesses, Australia, 2003–04 (8104.0).

Most businesses classified their biotechnology-related R&D to Human health which represented \$263m or 70% of total biotechnology-related R&D. Agricultural biotechnology had the next highest expenditure of \$43m or 11% of total biotechnology-related R&D expenditure.

Of the 304 biotechnology R&D active businesses, approximately half (155) paid others to perform biotechnology-related R&D. There were 145 businesses which paid one or more Australian organisations to perform biotechnology-related R&D on their behalf. Of these 66% paid a university or other higher education institution, 13% paid the Commonwealth Scientific and Industrial Research Organisation, 30% paid another government or private non-profit research institute, 27% paid a contract research organisation and 15% paid another business.

There were 36 businesses which paid overseas organisations to perform biotechnology-related R&D. The locations most frequently reported were the United States of America, England and Canada.

The most common reason cited for outsourcing biotechnology-related R&D was a lack of technical skill/expertise.

### General government sector

Expenditure on R&D carried out by Commonwealth, and state and territory government organisations in 2002–03 was \$2,482m, a 5% increase on expenditure in 2000–01 (table 25.2).

The research fields in which most government R&D expenditure took place were: Agricultural, veterinary and environmental sciences (\$761m, or 31%); Engineering and technology (\$424m, or 17%); Biological sciences (\$263m, or 11%); Earth sciences (\$242m, or 10%); and Medical and health sciences (\$198m, or 8%) (table 25.12).

A slightly different pattern applied to human resources devoted to R&D, with Agricultural, veterinary and environmental sciences accounting for 32%; Engineering and technology 17%; Medical and health sciences 12%; Biological sciences 11%; and Earth sciences 7% (table 25.12).

## 25.12 GOVERNMENT R&D RESOURCES, By research field(a) — 2002-03

	Expenditure on R&D					Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Mathematical sciences	1.4	1.2	22.0	11.5	36.1	0.3
Physical sciences	5.5	9.5	66.5	38.2	119.6	0.8
Chemical sciences	5.4	10.9	64.1	41.3	121.8	0.8
Earth sciences	13.7	16.5	102.1	110.2	242.5	1.3
Biological sciences	19.6	14.9	132.1	96.8	263.4	2.0
Information, computing and communication sciences	3.9	6.0	88.2	83.6	181.7	1.1
Engineering and technology	18.8	24.3	235.2	146.1	424.4	3.1
Agricultural, veterinary and environmental sciences	26.3	21.3	371.4	342.3	761.3	5.9
Medical and health sciences	3.2	9.1	125.9	60.2	198.4	2.2
Economics	0.4	1.0	33.7	22.7	57.7	0.5
Law, justice and law enforcement	0.3	0.3	9.6	5.9	16.1	0.1
Other research fields	1.7	2.6	36.5	18.3	59.1	0.5
<b>Total</b>	<b>100.1</b>	<b>117.5</b>	<b>1 287.3</b>	<b>977.2</b>	<b>2 482.2</b>	<b>18.5</b>
Commonwealth	88.2	92.5	785.5	565.1	1 531.3	10.2
State and territory	11.9	25.0	501.8	412.1	950.9	8.4

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002-03 (8109.0).

In terms of socioeconomic objectives, most government sector R&D expenditure (\$1,341m or 54%) was directed towards Economic development (table 25.13). About 20% was directed towards Environment, 12% towards Society, 11% towards Defence, and 2% to Non-oriented research. Of the amount directed towards Economic development, \$377m (28%) was directed towards Plant production and primary products; \$278m (21%) towards Animal production and primary products; and \$233m (17%) towards Manufacturing (table 25.13).

A slightly different pattern applied to human resources devoted to R&D, with 51% directed towards Economic development, 18% towards Environment, 17% towards Society, 13% towards Defence, and 2% to Non-oriented research (table 25.13).

### Higher education sector

Estimated expenditure on R&D carried out by the higher education sector in 2002 was \$3,430m, an increase of 23% over expenditure in 2000, and 34% over expenditure in 1998 (table 25.2).

The major fields of research in which higher education R&D expenditure took place in 2002 were: Medical and health sciences (\$864m, or 25% of total expenditure); Biological sciences (\$410m, or 12%); Engineering and technology (\$375m, or 11%); and Agricultural, veterinary and environmental sciences (\$235m, or 7%). Direct labour costs accounted for 42% of total R&D expenditure (table 25.14).

A slightly different pattern applied to human resources devoted to R&D, with 19% on Medical and health sciences, 10% on Engineering and technology, 10% on Biological sciences and 6% on Agricultural, veterinary and environmental sciences (table 25.14).

### 25.13 GOVERNMENT R&D RESOURCES, By socioeconomic objective(a) — 2002–03

	Expenditure on R&D					Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Labour costs	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Defence	0.3	12.2	194.2	77.2	283.9	2.4
Economic development						
Plant – production and primary products	11.1	9.4	185.2	171.7	377.4	2.9
Animal – production and primary products	9.1	7.3	133.1	128.0	277.6	2.2
Mineral resources (excl. energy)	5.4	5.5	44.9	41.9	97.7	0.5
Energy resources	2.9	1.9	27.6	26.5	59.0	0.3
Energy supply	2.1	1.0	13.9	9.4	26.4	0.2
Manufacturing	15.1	20.6	109.6	88.1	233.4	1.6
Construction	2.6	1.6	21.4	12.8	38.4	0.2
Transport	0.3	0.4	6.4	8.1	15.3	0.1
Information and communication services	4.9	2.5	31.0	14.4	52.9	0.4
Commercial services and tourism	0.7	2.1	17.1	7.1	27.1	0.2
Economic framework	1.4	1.7	57.9	74.7	135.7	0.7
Total	55.6	54.1	648.1	582.9	1 340.7	9.4
Society						
Health	3.4	10.3	140.6	73.6	228.0	2.5
Education and training	0.2	0.1	8.4	3.0	11.7	0.1
Social development and community services	2.3	2.0	35.2	20.5	59.9	0.5
Total	5.9	12.5	184.3	97.0	299.6	3.1
Environment						
Environmental policy frameworks and other aspects	1.3	1.2	19.2	13.9	35.7	0.3
Environmental management	34.4	32.5	217.7	188.5	473.1	3.0
Total	35.8	33.7	236.9	202.4	508.7	3.3
Non-oriented research	2.7	5.1	23.8	17.7	49.2	0.4
<b>Total</b>	<b>100.1</b>	<b>117.5</b>	<b>1 287.3</b>	<b>977.2</b>	<b>2 482.2</b>	<b>18.5</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002–03 (8109.0)*.

## 25.14 HIGHER EDUCATION R&D RESOURCES, By research field(a) — 2002

	Expenditure on R&D						Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Direct labour costs	Scholarships	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	\$m	
Mathematical sciences	0.9	2.5	30.4	4.1	26.1	64.0	0.8
Physical sciences	1.0	11.1	57.4	6.6	53.3	129.4	1.4
Chemical sciences	18.5	11.1	57.3	12.3	56.1	155.2	1.9
Earth sciences	1.1	11.2	47.4	7.7	46.7	114.1	1.5
Biological sciences	56.2	21.5	146.4	26.1	160.0	410.2	4.8
Information, computing and communication sciences	2.0	11.2	62.3	11.1	57.5	144.1	2.2
Engineering and technology	6.6	28.7	150.3	30.7	158.2	374.5	5.2
Agricultural, veterinary and environmental sciences	3.7	11.0	99.9	18.0	102.6	235.2	3.1
Medical and health sciences	16.0	44.0	353.1	41.2	409.6	863.8	9.4
Education	3.0	3.3	58.0	11.2	52.9	128.4	3.1
Economics	1.7	1.7	38.8	4.3	37.4	83.8	1.2
Commerce, management, tourism and services	3.3	4.0	65.4	7.3	57.2	137.2	2.5
Studies in human society	1.9	2.6	48.9	9.9	48.1	111.4	2.3
Behavioural and cognitive sciences	2.7	4.4	51.2	10.5	44.5	113.3	2.2
Other research fields	12.7	8.5	170.0	36.2	137.7	365.0	8.1
<b>Total</b>	<b>131.2</b>	<b>176.7</b>	<b>1 436.8</b>	<b>237.3</b>	<b>1 447.6</b>	<b>3 429.6</b>	<b>49.6</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Higher Education Organisations, Australia, 2002 (8111.0)*.

In terms of socioeconomic objectives, most higher education R&D expenditure (\$1,474m or 43%) was directed towards Society. About 29% was directed towards Economic development, 21% towards Non-oriented research and 6% towards Environment. The major subdivision within Society was Health with 28% of total R&D expenditure (table 25.15).

A similar pattern applied to human resources devoted to R&D, with 44% directed towards Society, 29% towards Economic development, 20% towards Non-oriented research and 7% to Environment (table 25.15).

### Private non-profit sector

Expenditure on R&D carried out by private non-profit organisations in 2002–03 was \$360m, an increase of 24% on expenditure in 2000–01 (table 25.2).

Medical and health sciences comprised the major research field for R&D expenditure in the private non-profit sector, accounting for \$221m (61%) of the total R&D expenditure in 2002–03. Labour costs continued to be the main component of R&D expenditure (50%) (table 25.16).

Medical and health sciences also comprised the leading research field in terms of human resource use (table 25.16).

**25.15 HIGHER EDUCATION R&D RESOURCES, By socioeconomic objective(a) — 2002**

	Expenditure on R&D						Human resources devoted to R&D '000 person years
	Land and buildings	Other capital expenditure	Direct labour costs	Scholarships	Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	\$m	
Defence	—	1.5	4.3	0.6	4.5	10.9	0.1
Economic development							
Plant – production and primary products	1.1	5.5	47.9	8.2	53.0	115.8	1.5
Animal – production and primary products	1.5	4.2	32.7	6.0	32.3	76.6	1.0
Mineral resources (excl. energy)	0.4	3.7	24.0	3.5	27.3	58.8	0.7
Energy resources	0.8	3.6	14.0	2.2	14.4	35.0	0.5
Energy supply	0.7	3.5	15.8	3.5	17.0	40.6	0.5
Manufacturing	6.7	17.6	78.8	17.3	80.2	200.6	2.7
Construction	1.4	4.8	24.8	5.9	25.3	62.1	1.1
Transport	0.5	1.3	11.9	1.9	12.8	28.5	0.3
Information and communication services	2.1	11.1	70.9	11.9	65.8	161.8	2.4
Commercial services and tourism	1.0	1.5	21.3	2.3	16.5	42.6	0.7
Economic framework	3.2	4.4	79.3	9.2	73.2	169.3	2.8
<i>Total</i>	<i>19.5</i>	<i>61.2</i>	<i>421.4</i>	<i>72.0</i>	<i>417.8</i>	<i>991.8</i>	<i>14.3</i>
Society							
Health	27.0	42.1	398.5	49.2	453.6	970.4	11.2
Education and training	3.4	4.5	71.1	15.4	66.5	160.8	3.5
Social development and community services	11.9	8.2	159.7	32.3	130.9	343.0	7.3
<i>Total</i>	<i>42.3</i>	<i>54.8</i>	<i>629.2</i>	<i>96.9</i>	<i>651.0</i>	<i>1 474.2</i>	<i>22.0</i>
Environment							
Environmental policy frameworks and other aspects	0.6	1.4	15.1	3.2	13.9	34.3	0.5
Environmental management	4.2	10.7	77.1	15.5	79.2	186.7	2.9
<i>Total</i>	<i>4.9</i>	<i>12.1</i>	<i>92.2</i>	<i>18.7</i>	<i>93.1</i>	<i>221.1</i>	<i>3.4</i>
Non-oriented research	64.5	47.1	289.7	49.1	281.2	731.5	9.8
<b>Total</b>	<b>131.2</b>	<b>176.7</b>	<b>1 436.8</b>	<b>237.3</b>	<b>1 447.6</b>	<b>3 429.6</b>	<b>49.6</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information.

Source: *Research and Experimental Development, Higher Education Organisations, Australia, 2002 (8111.0)*.

## 25.16 PRIVATE NON-PROFIT R&D RESOURCES, By research field(a) — 2002–03

	Land and buildings	Other capital expenditure	Labour costs	Type of expenditure		Human resources Person years
				Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Mathematical sciences	0.1	(b)n.p.	(b)n.p.	(b)n.p.	(b)n.p.	(b)n.p.
Physical sciences	(b)n.p.	0.1	(b)n.p.	0.1	(b)n.p.	(b)n.p.
Chemical sciences	0.2	0.7	0.9	2.3	4.0	15
Earth sciences	—	—	—	—	—	—
Biological sciences	3.5	8.1	55.4	37.5	104.6	966
Information, computing and communication sciences	0.1	0.7	1.9	2.1	4.8	32
Engineering and technology	(b)n.p.	(b)n.p.	0.7	0.6	1.5	12
Agricultural, veterinary and environmental sciences	(b)n.p.	(b)n.p.	1.0	0.9	2.1	18
Medical and health sciences	9.2	16.9	108.8	85.9	220.8	1 945
Other research fields	(b)n.p.	0.5	9.1	(b)n.p.	19.4	116
<b>Total</b>	<b>13.7</b>	<b>27.5</b>	<b>178.8</b>	<b>139.6</b>	<b>359.5</b>	<b>3 117</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information. (b) Not available for publication but included in totals where applicable, unless otherwise indicated.

Source: Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002–03 (8109.0).

In the private non-profit sector, Health was the main socioeconomic objective, accounting for 90% or \$324m of total R&D expenditure. Education and training accounted for \$20m (6%), while \$11m (3%) was directed towards Economic development (table 25.17).

A similar pattern applied to human resources devoted to R&D, with 92% directed towards Health, 4% towards Education and training, and 2% towards Economic development (table 25.17).

## 25.17 PRIVATE NON-PROFIT R&D RESOURCES, By socioeconomic objective(a) — 2002–03

	Land and buildings	Other capital expenditure	Labour costs	Type of expenditure		Human resources Person years
				Other current expenditure	Total	
	\$m	\$m	\$m	\$m	\$m	
Defence	—	—	—	—	—	—
Economic development	(b)n.p.	1.4	3.6	(b)n.p.	11.2	65
Society						
Health	12.6	25.3	163.1	123.0	324.0	2 882
Education and training	(b)n.p.	0.6	9.4	(b)n.p.	20.1	119
Social development and community services	(b)n.p.	0.1	1.3	(b)n.p.	1.9	20
Total	13.0	26.0	173.7	133.2	345.9	3 021
Environment	—	(b)n.p.	1.0	(b)n.p.	1.7	21
Non-oriented research	(b)n.p.	(b)n.p.	0.5	0.2	0.8	10
<b>Total</b>	<b>13.7</b>	<b>27.5</b>	<b>178.8</b>	<b>139.6</b>	<b>359.5</b>	<b>3 117</b>

(a) Subjectively allocated by providers at the time of reporting, using OECD/ABS definitions. The ABS makes every effort to ensure correct and consistent interpretation and reporting of these data and applies consistent processing methodologies. Readers using these data should bear in mind the original subjectivity of the information. (b) Not available for publication but included in totals where applicable, unless otherwise indicated.

Source: Research and Experimental Development, Government and Private Non-profit Organisations, Australia, 2002–03 (8109.0).



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## FINANCIAL SYSTEM

The financial system in Australia can be thought of as having three overlapping components. The first consists of financial enterprises (such as banks) and regulatory authorities (the Reserve Bank and the Australian Prudential Regulation Authority). The second consists of financial markets (e.g. the bond market) and their participants (issuers such as governments, and investors such as superannuation funds). The third is the payments system (that is, the cash, cheque and electronic means by which payments are effected) and its participants (e.g. banks). The interaction of these three components enables funds for investment or consumption to be made available from savings in other parts of the national or international economy.

This chapter provides a summary of the structure and activities of the three components of the Australian financial system.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Regulatory framework

From 1 July 1998, a new financial regulatory framework came into effect, in response to the recommendations of the Financial System Inquiry (the Wallis Committee). Under the new structure, a single prudential supervisor, the Australian Prudential Regulation Authority (APRA), was established to take responsibility for the supervision of banks, life and general insurance companies, and superannuation funds. The Australian Securities and Investments Commission (ASIC) assumed responsibility for market integrity and consumer protection across the financial system. The Reserve Bank retained responsibility for monetary policy and the maintenance of financial stability, including stability of the payments system.

From 1 July 1999, regulation of building societies and credit unions transferred from the States to APRA. On 1 July 2000, regulation of self-managed superannuation funds was transferred from APRA to the Australian Taxation Office (ATO).

From September 2001, the *Financial Sector (Collection of Statistics) Act 2001* (Cwlth) provided APRA with powers to collect information previously collected under a range of legislation for which it was responsible, and under the Financial Corporations Act administered by the Reserve Bank. The new legislation enables harmonised and consistent data collection from financial institutions. APRA commenced data collection from registered financial corporations from March 2003.

APRA supervises benefit funds of friendly societies under the *Life Insurance Act 1995* (Cwlth), while health benefit funds of friendly societies are regulated by the Private Health Insurance Administration Council under the *National Health Act 1959* (Cwlth).

## Inter-sectoral financial flows

The data collected by APRA are combined with data from other sources by the Australian Bureau of Statistics (ABS) to compile a set of financial accounts according to the international standard, the *System of National Accounts 1993*. Diagram 26.1 provides an overview of the flows of capital through the financial system and summarises the end result of applying the current statistical framework. It illustrates the net financial flows between sectors during the year 2005–06. The arrows show the net flow from lenders to

borrowers. For example, there was a \$24.3 billion (b) net flow from the financial corporations sector to households, a \$42.5b net flow from financial corporations to non-financial corporations, and a \$24.2b net flow from the general government sector to the financial corporations sector.

## Financial enterprises

Financial enterprises are institutions which engage in acquiring financial assets and incurring liabilities, for example, by taking deposits, borrowing and lending, providing superannuation, supplying all types of insurance cover, leasing, and investing in financial assets.

For national accounting purposes, financial enterprises are grouped into six sectors: Depository corporations; Life insurance corporations; Pension funds; Other insurance corporations; Central borrowing authorities; and Financial intermediaries n.e.c.

*Depository corporations* – are those included in the Reserve Bank of Australia's *broad money* measure (see *Money supply measures*). This includes: the Reserve Bank; authorised depository institutions supervised by APRA, including banks, building societies and credit unions; non-supervised depository corporations registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), including merchant banks, pastoral finance companies, finance companies and general financiers; and cash management trusts.

*Life insurance corporations* – cover the statutory and shareholders' funds of life insurance companies, and similar business undertaken by friendly societies and long-service-leave boards.

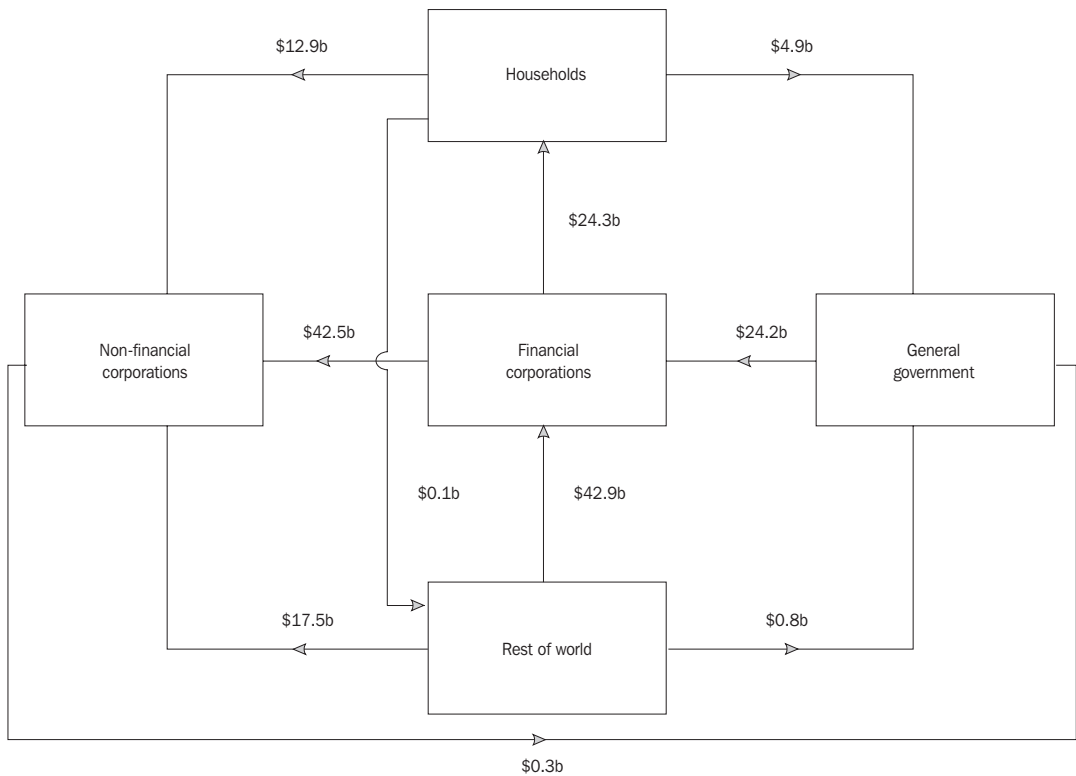
*Pension funds* – cover separately constituted superannuation funds.

*Other insurance corporations* – cover health, export and general insurance companies.

*Central borrowing authorities* – are corporations set up by state and territory governments to provide financial liability and asset management services for those governments.

*Financial intermediaries n.e.c.* – cover common funds, mortgage, fixed interest and equity unit trusts, issuers of asset-backed securities, economic development corporations and cooperative housing societies.

## 26.1 INTER-SECTORAL FINANCIAL FLOWS — 2005–06



Source: Australian National Accounts: Financial Accounts, June 2006 (5232.0).

Table 26.2 shows the relative size of these groups of financial enterprises in terms of their financial assets. This table has been compiled on a consolidated basis, that is, financial claims between institutions in the same grouping have been eliminated. The total is also consolidated, that is, financial claims between the groupings

have been eliminated. For this reason, and because there are a number of less significant adjustments made for national accounting purposes, the statistics in the summary table will differ from those presented later in this chapter and published elsewhere.

## 26.2 FINANCIAL INSTITUTIONS, Financial assets — 30 June

	Depository corporations			Life insurance corporations	Pension funds	Other insurance corporations	Central borrowing authorities	Financial intermediaries n.e.c.	Consolidated financial sector total
	Reserve Bank	Banks	Other						
	\$b	\$b	\$b	\$b	\$b	\$b	\$b	\$b	\$b
2002	54.7	875.6	245.3	190.5	470.1	78.8	93.9	237.6	1 610.8
2003	56.5	991.0	244.7	183.9	492.8	88.1	103.6	246.5	1 725.6
2004	64.7	1126.0	235.3	192.5	590.1	93.9	101.6	320.3	1 986.3
2005	75.1	1237.0	259.9	211.1	688.1	98.2	111.2	393.8	2 212.2
2006	93.5	1423.5	265.8	230.7	840.6	117.2	112.0	521.0	2 612.6

Source: Australian National Accounts: Financial Accounts (5232.0).

## Banks

Between 1940 and 1959, central banking business was the responsibility of the Commonwealth Bank. The *Reserve Bank Act 1959* (Cwlth) established the Reserve Bank of Australia as the central bank, and from 1959 to 1998 the Reserve Bank was responsible for the supervision of commercial banks. From 1 July 1998, APRA assumed responsibility for bank supervision while the Reserve Bank retained responsibility for monetary policy and the maintenance of financial stability, including stability of the payments system.

Banks are the largest deposit-taking and financial institutions in Australia. At the end of June 2006 there were 54 banks operating in Australia. All are authorised to operate by the *Banking Act 1959* (Cwlth). Four major banks: the Australia and New Zealand Banking Group, Commonwealth Bank of Australia, National Australia Bank, and the Westpac Banking Corporation, account for over half the total assets of all banks. These four banks provide widespread banking services and an extensive retail branch network throughout Australia. The remaining

banks provide similar banking services through limited branch networks, often located in particular regions. At 30 June 2006, banking services were provided at 3,188 giroPost locations and 24,616 Automatic Teller Machines (ATMs) throughout Australia.

The liabilities and financial assets of the Reserve Bank are set out in table 26.3. The liabilities and financial assets of the banks operating in Australia are shown in table 26.4.

## Other depository corporations

In addition to banks, financial institutions such as building societies, credit unions and merchant banks play an important part in the Australian financial system. In the Australian financial accounts, other depository corporations are defined as those, apart from banks, with liabilities included in the Reserve Bank's definition of *broad money*. Non-bank institutions included in broad money are other authorised depository institutions (building societies and credit cooperatives), cash management trusts, money market corporations, and finance companies.

### 26.3 RESERVE BANK OF AUSTRALIA, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2004	2005	2006
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Monetary gold and SDRs(a)	1 729	1 719	2 383
Currency and deposits	24 043	33 472	33 067
Bills of exchange	636	615	930
One name paper	3 626	4 103	12 972
Bonds	34 359	34 806	43 719
Derivatives	2	31	7
Loans and placements	23	21	20
Other accounts receivable	261	290	362
<b>Total</b>	<b>64 679</b>	<b>75 057</b>	<b>93 460</b>
<b>LIABILITIES</b>			
Currency and deposits	51 697	63 972	79 570
Unlisted shares and other equity(b)	12 514	11 241	12 685
Other	5 792	7 169	10 577
<b>Total</b>	<b>70 003</b>	<b>82 382</b>	<b>102 832</b>

(a) Special Drawing Rights. (b) Estimates based on net asset values.

Source: *Australian National Accounts: Financial Accounts* (5232.0).

## 26.4 BANKS(a), Financial assets and liabilities

	Amounts outstanding at 30 June		
	2004 \$m	2005 \$m	2006 \$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	34 605	40 540	51 105
Acceptance of bills of exchange	83 398	91 697	105 413
One name paper	15 441	16 094	16 545
Bonds	35 839	39 809	39 479
Derivatives	58 180	53 827	62 981
Loans and placements	801 354	888 305	1 019 856
Equities	91 492	101 575	123 221
Prepayments of premiums and reserves	1 745	1 837	1 900
Other accounts receivable	3 943	3 340	3 000
<b>Total</b>	<b>1 125 997</b>	<b>1 237 024</b>	<b>1 423 500</b>
<b>LIABILITIES</b>			
Currency and deposits	559 595	593 527	666 699
Acceptance of bills of exchange	42 398	49 924	53 607
One name paper	144 764	151 573	188 992
Bonds	149 404	184 477	242 591
Derivatives	52 969	58 444	56 761
Loans and placements	39 789	45 200	37 813
Equity	180 021	214 264	249 359
Other accounts payable	5 373	9 806	12 238
<b>Total</b>	<b>1 174 313</b>	<b>1 307 215</b>	<b>1 508 060</b>

(a) Does not include the Reserve Bank of Australia.

Source: Australian National Accounts: Financial Accounts (5232.0).

The *Financial Corporations Act 1974* (Cwlth) ceased on 1 July 2002. Corporations previously subject to the *Financial Corporations Act 1974* (Cwlth) were then required to report statistical data to APRA as Registered Financial Corporations. From 31 March 2003, following changes to the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), only the following categories of other depository corporations are required to report to APRA:

- *Permanent building societies* are usually organised as financial cooperatives. They are authorised to accept money on deposit. They provide finance principally in the form of housing loans to their members.
- *Credit cooperatives*, also known as credit unions, are similar to building societies. As their name implies, they are organised as financial cooperatives which borrow from and provide finance to their members.
- *Money market corporations* operate similar to wholesale banks and for this reason they are often referred to as merchant or investment

banks. They have substantial short-term borrowings which they use to fund business loans and investments in debt securities.

- *Other registered financial corporations*. This category covers what were pastoral finance companies, finance companies and general financiers categories. These corporations engage in a variety of borrowing and lending activity.

*Cash management trusts* are investment funds which are open to the public. They are not subject to supervision by APRA or registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth). They invest the pooled monies of their unit holders mainly in money-market securities such as bills of exchange and bank certificates of deposit. As with other public unit trusts their operations are governed by a trust deed and their units are redeemable by the trustee on demand or within a short time period.

Table 26.5 shows the total assets of each category of non-bank deposit-taking institution.

## 26.5 OTHER DEPOSITORY CORPORATIONS, Total assets

	Amounts outstanding at 30 June		
	2004 \$m	2005 \$m	2006 \$m
Permanent building societies	14 563	16 053	17 868
Credit cooperatives	31 086	33 097	35 719
Money market corporations	67 689	80 130	78 991
Other registered financial corporations	76 243	86 533	97 265
Cash management trusts	32 452	36 544	38 181
<b>Total</b>	<b>222 033</b>	<b>252 357</b>	<b>268 024</b>

Source: Managed Funds, Australia (5655.0); Australian Prudential Regulation Authority; Reserve Bank of Australia.

## Life insurance corporations

Life insurance corporations offer termination insurance and investment policies. Termination insurance includes the payment of a sum of money on the death of the insured or on the insured receiving a permanent disability. Investment products include annuities and superannuation plans. The life insurance industry in Australia consists of 35 direct insurers, including six reinsurers. As with the banking industry, the

life insurance industry is dominated by a few very large companies holding a majority of the industry's assets.

Life insurance companies are supervised by APRA under the *Life Insurance Act 1995* (Cwlth). APRA also regulates friendly societies which offer services similar to life insurance corporations.

Table 26.6 shows the financial assets and liabilities arising from both policyholder and shareholder investment in life insurance corporations and APRA regulated friendly societies.

## 26.6 LIFE INSURANCE CORPORATIONS, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2004 \$m	2005 \$m	2006 \$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	10 865	12 028	13 490
Bills of exchange	3 404	2 585	2 824
One name paper	15 347	15 819	15 035
Bonds	40 046	42 128	46 216
Derivatives	—	155	—
Loans and placements	3 309	3 596	4 612
Equities	114 418	128 422	142 314
Other accounts receivable	5 142	6 388	6 246
<b>Total</b>	<b>192 531</b>	<b>211 121</b>	<b>230 737</b>
<b>LIABILITIES</b>			
Bills of exchange	49	3	6
One name paper issued in Australia	—	—	—
One name paper issued offshore	967	—	—
Bonds etc. issued in Australia	240	—	—
Bonds etc. issued offshore	289	1 258	1 187
Derivatives	123	64	245
Loans and placements	3 452	4 890	5 258
Listed and unlisted equity	30 412	33 365	42 247
Net equity in reserves	50 184	58 810	60 128
Net equity of pension funds	124 689	137 328	154 071
Other accounts payable	6 056	4 214	4 606
<b>Total</b>	<b>216 461</b>	<b>239 932</b>	<b>267 748</b>

Source: Australian National Accounts: Financial Accounts (5232.0).



# Pension funds

Pension funds have been established to provide retirement benefits for their members. Members make contributions during their employment and receive the benefits of this form of saving in retirement. There are two basic types of contribution – employer contributions in the form of the superannuation guarantee and voluntary contributions. In order to receive concessional taxation treatment, a pension fund must elect to be regulated under the *Superannuation Industry (Supervision) Act 1993* (Cwlth) (SIS Act). These funds are supervised by either APRA or the ATO. Public sector funds, being funds sponsored by a government employer or government controlled business enterprise, are exempt from direct APRA supervision.

The largest number of pension funds comprise self-managed superannuation funds. From 1 July 2000, the ATO assumed responsibility for regulating self-managed superannuation funds.

*Self-managed superannuation funds* are superannuation funds that have less than five members and for which:

- each individual trustee of the fund is a fund member
- each member of the fund is a trustee
- no member of the fund is an employee of another member of a fund, unless they are related
- if the trustee of the fund is a body corporate each director of the body corporate is a member of the fund.

*Corporate funds* are funds sponsored by a single non-government employer, or group of employers. *Industry funds* generally have closed

memberships restricted to the employees of a particular industry and are established under an agreement between the parties to an industrial award.

*Public sector funds* are those funds sponsored by a public sector employer. *Retail funds* are pooled superannuation products sold through an intermediary to the general public. Funds with less than five members, but which do not qualify as self-managed superannuation funds, are known as *small APRA funds*.

In addition to separately constituted funds, the SIS Act also provides for special accounts operated by financial institutions earmarked for superannuation contributions, known as *Retirement Savings Accounts*, that also qualify for concessional taxation under the supervision of APRA. The liabilities represented by these accounts are liabilities of the institutions concerned and are included with the relevant institution in this chapter (e.g. retirement savings accounts operated by banks are included in bank deposits in table 26.4).

The number of pension funds is shown in table 26.7. The assets of pension funds are shown in table 26.8 and include unfunded pension claims by pension funds on the Australian Government where these have been formally recognised in accounting systems. The assets in the table do not separately identify any provision for the pension liabilities of governments to public sector employees in respect of unfunded retirement benefits. At 30 June 2006, the ABS estimate for claims by households on governments for these outstanding liabilities was \$155.4b.

**26.7 PENSION FUNDS — 30 June**

Type of fund	2004	2005	2006
Corporate	1 394	963	557
Industry	115	92	84
Public sector	41	43	42
Retail	235	226	187
Small funds(a)	289 132	306 993	326 839
<b>Total</b>	<b>290 917</b>	<b>308 317</b>	<b>327 709</b>

(a) Small funds include small Australian Prudential Regulation Authority funds, single member approved deposit funds and self managed superannuation funds.

Source: Australian Prudential Regulation Authority.

## 26.8 PENSION FUNDS, Financial assets

	Amounts outstanding at 30 June		
	2004	2005	2006
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	43 282	53 134	64 766
Bills of exchange	15 212	14 712	15 448
One name paper	15 394	14 397	16 169
Bonds	54 487	61 178	75 475
Loans and placements	18 498	21 707	28 343
Equities	308 323	375 989	474 010
Unfunded superannuation claims	1 546	7	5
Net equity of pension funds in life office reserves	124 689	137 328	154 071
Other accounts receivable	8 666	9 631	12 288
<b>Total</b>	<b>590 097</b>	<b>688 083</b>	<b>840 575</b>
<b>LIABILITIES</b>			
Loans and placements	334	405	603
Net equity in reserves	611 102	716 869	871 291
Other accounts payable	6 015	4 562	4 763
<b>Total</b>	<b>617 451</b>	<b>721 836</b>	<b>876 657</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

### Other insurance corporations

This sector includes all corporations that provide insurance other than life insurance. Included are general, fire, accident, employer liability, household, health and consumer credit insurers.

Private health insurers are regulated by the Private Health Insurance Administration Council under the *National Health Act 1959* (Cwlth). At 30 June 2006, there were 39 private health insurers, including health benefit funds of friendly societies. Other private insurers are supervised by APRA under the *Insurance Act 1973* (Cwlth). At 30 June 2006, there were 99 insurers authorised to conduct new or renewal general insurance supervised by APRA. There are 10 separately constituted public sector insurance corporations with significant assets. Table 26.9 sets out the financial assets and liabilities of other insurance corporations at 30 June 2006 and the preceding two years.

### Central borrowing authorities

Central borrowing authorities are institutions established by the state governments and the Northern Territory Government primarily to provide finance for public corporations and quasi-corporations, and other units owned or controlled by those governments. They also

arrange investment of the units' surplus funds.

The central borrowing authorities borrow funds, mainly by issuing securities, and on-lend them to their public sector clientele. However, they also engage in other financial intermediation activity for investment purposes, and may engage in the financial management activities of the parent government.

Table 26.10 shows the financial assets and liabilities held by the central borrowing authorities at 30 June of the most recent three years.

### Financial intermediaries not elsewhere classified (n.e.c.)

This subsector comprises all institutions that meet the definition of a financial enterprise and have not been included elsewhere. It includes:

*Common funds* – are set up by trustee companies and are governed by state Trustee Acts. They allow the trustee companies to combine depositors' funds and other funds held in trust in an investment pool. They are categorised according to the main types of assets in the pool, for example, cash funds or equity funds.

## 26.9 OTHER INSURANCE CORPORATIONS, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2004	2005	2006
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	8 606	8 767	8 580
Bills of exchange	1 899	1 816	2 081
One name paper	4 979	7 043	8 094
Bonds	28 275	27 550	33 885
Derivatives	92	79	112
Loans and placements	8 632	8 253	8 748
Equities	26 393	30 737	40 965
Other accounts receivable	15 025	13 933	14 766
<b>Total</b>	<b>93 901</b>	<b>98 178</b>	<b>117 231</b>
<b>LIABILITIES</b>			
Bills of exchange	25	11	7
One name paper on issue	327	405	445
Bonds on issue	2 241	3 059	3 004
Derivatives	62	54	—
Loans and placements	2 596	2 119	2 613
Listed shares and other equity	22 081	28 072	32 170
Unlisted shares and other equity	18 297	21 731	23 035
Prepayment of premiums	58 115	61 177	63 251
Other accounts receivable	6 465	6 524	6 743
<b>Total</b>	<b>110 209</b>	<b>123 152</b>	<b>131 268</b>

Source: Australian National Accounts: Financial Accounts (5232.0); Australian Prudential Regulation Authority; Private Health Insurance Administration Council.

## 26.10 CENTRAL BORROWING AUTHORITIES, Financial assets and liabilities

	Amounts outstanding at 30 June		
	2004	2005	2006
	\$m	\$m	\$m
<b>FINANCIAL ASSETS</b>			
Currency and deposits	3 560	2 273	3 996
Bills of exchange	6 388	7 864	5 425
One name paper	8 390	12 345	10 546
Bonds	5 471	5 772	6 564
Derivatives	6 386	7 026	6 811
Loans and placements	70 698	74 377	77 205
Other accounts receivable	756	1 522	1 468
<b>Total(a)</b>	<b>101 649</b>	<b>111 179</b>	<b>112 015</b>
<b>LIABILITIES</b>			
Drawings of bills of exchange	—	—	—
One name paper	6 807	6 610	6 083
Bonds	74 741	81 460	81 045
Derivatives	7 169	6 888	7 838
Loans and placements	16 124	17 188	20 706
Equity	30	30	30
Other accounts payable	729	707	661
<b>Total</b>	<b>105 600</b>	<b>112 883</b>	<b>116 363</b>

(a) Excludes non-financial assets (e.g. fixed assets, property, inventories, etc.).

Source: Australian National Accounts: Financial Accounts (5232.0).

*Public unit trusts* – are investment funds open to the Australian public. Their operations are governed by a trust deed which is administered by a management company. Under the *Managed Investments Act 1997* (Cwlth), the management company has become the single responsible entity for both investment strategy and custodial arrangements; the latter previously had been the responsibility of a trustee. These trusts allow their unit holders to dispose of their units relatively quickly. They may sell them back to the manager if the trust is unlisted, or sell them on the Australian Stock Exchange (ASX) if the trust is listed. While public unit trusts are not subject to supervision by APRA or registered under the *Financial Statistics (Collection of Data) Act 2001* (Cwlth), they are subject to the provisions of corporations law which includes having their prospectus registered with ASIC.

*Securitisers* – issue short- and/or long-term debt securities which are backed by specific assets. The most common assets bought by securitisation trusts/companies are residential mortgages. These mortgages are originated by financial institutions such as banks and building societies or specialist mortgage managers. Other assets can also be used to back these securities, such as credit card receivables and financial leases. Securitisers generally pool the assets and use the income on them to pay interest to the holders of the asset-backed securities.

*Cooperative housing societies* – are similar to permanent building societies. In the past they were wound up after a set period, but now they too are continuing bodies. They raise money through loans from members (rather than deposits) and provide finance to members in the form of housing loans. Over recent years many cooperative housing societies have originated mortgages on behalf of securitisers.

*Investment companies* – are similar to equity trusts in that they invest in the shares of other companies. However, investors in investment companies hold share assets, not unit assets.

*Fund managers, insurance brokers and arrangers of hedging instruments* – are classified as financial auxiliaries as they engage primarily in activities closely related to financial intermediation, but they themselves do not perform an intermediation role. Auxiliaries primarily act as agents for their clients (usually other financial entities) on a fee-for-service basis, and as such the financial asset remains on the balance sheet of the client, not the auxiliary.

However, a small portion of the activities of auxiliaries is brought to account on their own balance sheet, and these amounts are included in table 26.11.

*Economic development corporations* – are owned by governments. As their name implies, these bodies are expected to finance infrastructure developments mainly in their home state or territory.

*Wholesale trusts* – are investment funds that are only open to institutional investors – life insurance corporations, superannuation funds, retail trusts, corporate clients, high net worth individuals – due to high entry levels (e.g. \$500,000 or above). They may issue a prospectus, but more commonly issue an information memorandum. Only those which invest in financial assets are included here.

## Financial markets

Financial markets are used by participants to either raise funds (e.g. by issuing securities) or invest savings (by buying securities and other financial assets). The major markets in the Australian financial system include the share market, bond market and money market. Descriptions and tables indicating prices and activity in various financial markets are provided in this section.

A significant influence in financial markets is the participation of institutional investors controlling large pools of investment funds. These pools are accumulated by collective investment institutions and are often managed on a fee-for-service basis by investment managers. A summary of the activities of these institutions is also provided.

## Credit market

Credit may be defined broadly as funds provided to those seeking to borrow. However, analytically useful measures of credit usually exclude borrowings by financial enterprises because their main role is as an intermediary, that is, they borrow in order to lend. Also, lending and borrowing between enterprises which have a special relationship, such as between companies in the same group or between government agencies, are often excluded from credit measures because transactions between these bodies frequently are of a non-market nature. Similarly, some types of financial instrument, such as trade debts, are not considered to be part of an organised market. All of these types of transactions are omitted from table 26.12, which

presents a summary of the demand for credit in Australia by the non-financial sectors. It includes raisings by the issue of both debt and equity securities.

The strong demand for credit by households is a result of borrowing for housing. Table 26.13 shows the components of household borrowings.

### 26.11 FINANCIAL INTERMEDIARIES n.e.c., Financial assets

	Amounts outstanding at 30 June		
	2004	2005	2006
	\$m	\$m	\$m
<i>Public unit trusts(a)</i>	117 162	127, 095	165 253
Equity unit trusts	92 946	102 196	137 610
Other unit trusts	24 216	24 899	27 643
Common funds	9 687	9 954	10 687
Securitisers	163 903	186 658	217 782
Other(b)	29 553	70 050	127 293
<b>Total</b>	<b>320 305</b>	<b>393 757</b>	<b>521 015</b>

(a) Excludes property and trading trusts. (b) Includes investment companies, economic development corporations, fund managers, insurance brokers, hedging instrument arrangers, wholesale trusts, cooperative housing societies and state government housing schemes.

Source: *Assets and Liabilities of Australian Securitisers* (5232.0.55.001); *Australian National Accounts: Financial Accounts* (5232.0); *Managed Funds, Australia* (5655.0).

### 26.12 DEMAND FOR CREDIT(a)

	Net transactions during year		
	2003–04	2004–05	2005–06
	\$m	\$m	\$m
Funds (including equity) raised on conventional credit markets by			
Private non-financial corporations (b)	50 734	–11 030	112 686
National public non-financial corporations	–2 084	385	756
State and local public non-financial corporations	–764	5 402	3 914
National general government	–1 816	373	1 926
State and local general government	–2 027	–522	–1 970
Households	118 884	104 124	107 686
<b>Total</b>	<b>162 927</b>	<b>98 732</b>	<b>224 998</b>

(a) Positive numbers indicate an increase in raisings. Negative numbers indicate repayment or redemption. (b) Aggregates impacted by large corporate restructuring transactions.

Source: *Australian National Accounts: Financial Accounts* (5232.0).

### 26.13 HOUSEHOLD DEMAND FOR CREDIT

	Net transactions during year		
	2003–04	2004–05	2005–06
	\$m	\$m	\$m
<b>Households demand for credit</b>	<b>118 884</b>	<b>104 124</b>	<b>107 686</b>
<i>Housing</i>	101 684	83 792	89 806
Total Authorised Deposit-taking Institutions (ADIs)	69 023	55 136	58 985
Owner-occupied housing	38 243	37 722	42 146
Investment housing	30 780	17 414	16 839
Other lenders	32 661	28 656	30 821
Non-Housing Borrowing	17 200	20 332	17 880

Source: *Australian National Accounts: Financial Accounts* (5232.0); *Housing Finance* (5609.0).

**26.14 AUSTRALIAN STOCK MARKET INDEXES(a)**

	2003–04	2004–05	2005–06
All ordinaries			
Index(b)	3 530.3	4 229.9	5 034.0
High(c)	3 549.0	4 275.6	5 352.1
Low(c)	2 977.5	3 479.3	4 179.8
S&P/ASX 200	3 532.9	4 277.5	5 073.9
Banks	4 932.7	5 570.0	6 522.1
Industrials	5 829.3	6 824.7	7 618.2
Resources	2 016.3	2 861.1	4 282.8

(a) Base 31 December 1979 = 500. (b) Share prices on joint trading floors; June closing value. (c) Over a twelve-month period ending 30 June.

Source: Australian Stock Exchange; Reserve Bank of Australia; Standard and Poor's.

## Stock market

The stock market is a mechanism for trading equities (shares), units in trusts, options, and some fixed-interest securities.

Operated nationally by the ASX, which is responsible for the day-to-day running and surveillance of trading, the Australian system is electronic and conducted using the Stock Exchange Automated Trading System, allowing buyers and sellers to be located anywhere in the country.

The ASX classifies listed companies according to their major activity and produces indexes based on these classifications. Table 26.14 summarises the performance of the major indexes over the last three financial years.

Table 26.15 shows the market value of Australian shares and units in trusts on issue – both listed and unlisted. It shows the amount on issue by sector of issuer and sector of holder of equities and units.

## Money market

Liquidity management by Australian corporations, financial institutions and governments is conducted through an informally arranged market for deposits, loans and placements, and by issuance, purchase and sale of short-term debt securities. Selected rates in the market at end June of the last three financial years are shown in table 26.16.

Money market securities have an original term to maturity of less than one year, often 30, 90 or 180 days. They are issued by borrowers at a discount to face value and carry no income payment other than the repayment of face value at maturity. To enhance liquidity, money market securities conform to standardised attributes concerning risk and discount rates. Because of the standardisation, the securities of different issuers are often combined in the one parcel of securities for trading purposes. There are two types of securities: bills of exchange and one name paper (promissory notes, treasury notes, commercial paper and bank certificates of deposit), both of which are covered by the *Bills of Exchange Act 1909* (Cwlth). The risk of default of a bill of exchange is reduced by an acceptor or endorser adding their name to the security for a fee. Most bills of exchange traded in the market are bank-accepted bills. Promissory notes are issued by institutions whose credit worthiness is equal to or better than banks; they are not accepted by a bank and unlike bills of exchange they are not endorsed by the parties which sell them in the market. The Australian Government issues treasury notes, state governments and large corporations issue commercial paper and banks issue negotiable certificates of deposit. Table 26.17 shows the amount on issue by sector of issuer and sector of holder of the various types of money market securities.

### 26.15 EQUITY MARKET(a), Amounts on issue — 30 June

	2004		2005		2006	
	Listed	Unlisted	Listed	Unlisted	Listed	Unlisted
	\$m	\$m(b)	\$m	\$m(b)	\$m	\$m(b)
<b>Total equities and units in trusts</b>	<b>863 896</b>	<b>918 339</b>	<b>982 645</b>	<b>918 859</b>	<b>1 216 029</b>	<b>1 098 127</b>
ISSUED BY						
Private non-financial corporations	532 633	229 705	588 202	231 159	772 235	262 833
National public non-financial corporations(c)	63 522	5 152	62 963	5 629	45 792	5 781
State and local non-financial corporations(c)	—	100 307	—	94 936	—	85 330
Central bank(c)	—	12 514	—	11 241	—	12 685
Banks	182 703	6 519	216 970	6 496	254 508	7 402
Other depository corporations	321	36 776	415	38 983	634	41 574
Life insurance corporations	17 587	13 383	19 698	14 490	28 041	15 115
Other insurance corporations	22 234	19 108	28 279	22 592	32 290	24 213
Central borrowing authorities	—	30	—	30	—	30
Financial intermediaries	44 896	124 363	66 118	143 749	82 529	188 353
Rest of world	—	370 482	—	349 554	—	454 811
HELD BY						
Private non-financial corporations	12 749	217 475	18 938	173 918	28 130	219 511
National public non-financial corporations	—	3 663	—	4 021	—	3 736
State and local public non-financial corporations	—	280	—	280	—	291
Banks	10 064	90 629	10 791	99 986	15 195	120 577
Other depository corporations	123	15 579	62	15 937	50	18 359
Life insurance corporations	57 472	57 504	69 233	60 012	76 202	67 021
Pension funds	132 378	175 945	166 002	209 987	208 028	265 982
Other insurance corporations	4 851	22 506	7 406	24 399	10 636	31 627
Financial intermediaries	77 806	56 354	101 989	54 611	164 318	75 740
National general government	32 425	17 968	32 618	17 186	23 723	18 797
State and local general government	—	101 940	—	99 000	—	90 178
Households	192 299	70 425	237 519	76 256	294 329	79 874
Rest of world	343 729	88 071	338 087	83 266	395 418	106 434

(a) Includes units in trusts. (b) The unlisted estimated market values are considered to be of poor quality unless based on net asset values. They should be used with caution. (c) Net asset values.

Source: Australian National Accounts: Financial Accounts (5232.0).

### 26.16 SHORT-TERM MONEY MARKET RATES — 30 June

	2004	2005	2006
	% p.a.	% p.a.	% p.a.
11:00 am call	5.25	5.50	5.75
Bank-accepted bills — 90 days	5.49	5.66	5.96

Source: Reserve Bank of Australia.

### Bond market

Bonds are issued with original terms to maturity of one or more years. Usually the investors are paid a set periodic interest, called a coupon, for the life of the bond and receive their initial investment

back at maturity. Some bonds have variable interest rates, some have principal repayments indexed, and there are small amounts of zero-coupon or deep discount securities which are issued at a discount to face value.

Governments, trading enterprises and financial institutions issue bonds to finance long-term requirements. For these entities, the bond market generally provides a cheaper source of funds than borrowing from banks and other financial institutions. Table 26.18 shows selected market yields at the end of June of the last three financial years for a range of bonds.



## 26.17 SHORT-TERM DEBT SECURITIES

	Amounts outstanding at 30 June		
	2004 \$m	2005 \$m	2006 \$m
<b>ISSUED BY</b>			
Private non-financial corporations	74 544	81 644	93 695
National public non-financial corporations	1 051	509	1 546
State and local public non-financial corporations	10	16	33
Banks	179 727	191 903	240 954
Other depository corporations	26 752	32 799	31 585
Life insurance corporations	1016	3	6
Other insurance corporations	352	416	452
Central borrowing authorities	7 162	6 968	6 373
Financial intermediaries n.e.c.	23 893	28 162	31 195
National general government	221	270	252
Households	12 667	15 223	17 618
Rest of world	4 035	2 167	3 605
<b>Total</b>	<b>331 430</b>	<b>360 080</b>	<b>427 314</b>
<b>HELD BY</b>			
Private non-financial corporations	30 477	28 805	27 649
National public non-financial corporations	183	215	240
State and local public non-financial corporations	7	1	—
Central bank	4 262	4 718	13 902
Banks	91 404	98 197	120 313
Other depository corporations	34 301	38 089	32 118
Life insurance corporations	18 751	18 404	17 859
Pension funds	30 606	29 109	31 617
Other insurance corporations	6 878	8 859	10 175
Central borrowing authorities	15 133	20 567	16 261
Financial intermediaries n.e.c.	19 872	25 825	24 726
State and local general government	208	535	512
Households	8 269	8 878	8 701
Rest of world	71 079	77 878	123 241
<b>Total</b>	<b>331 430</b>	<b>360 080</b>	<b>427 314</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

## 26.18 BOND MARKET, Market yields(a) — 30 June

	2004 %	2005 %	2006 %
<b>Treasury bonds</b>			
3 years	5.43	5.10	5.78
5 years	5.67	5.10	5.78
10 years	5.87	5.11	5.79
<b>New South Wales T-corp bonds</b>			
3 years	5.70	5.33	6.01
5 years	5.88	5.36	6.02
10 years	6.05	5.39	6.05
<b>Finance company debentures</b>			
3 years	5.65	5.40	5.90

(a) Per annum.

Source: Reserve Bank of Australia.

Historically, the main issuers of bonds have been the Australian Government and state governments, the latter through their central borrowing authorities. Corporate bonds are issued only by very large private trading and financial enterprises. In recent years banks and asset-backed security trusts have issued increasing amounts as government issuance has decreased. The amounts outstanding on bonds at end June of the last three financial years are shown in table 26.19.



## 26.19 BONDS

	Amounts outstanding at 30 June		
	2004 \$m	2005 \$m	2006 \$m
ISSUED BY			
Private non-financial corporations			
Issued in Australia	34 889	34 988	43 013
Issued offshore	39 115	43 071	49 329
National public non-financial corporations			
Issued in Australia	3 039	3 754	3 244
Issued offshore	9 231	9 658	9 481
State and local public non-financial corporations			
Issued in Australia	178	82	82
Issued offshore	—	—	—
Banks			
Issued in Australia	32 016	49 425	76 904
Issued offshore	125 092	146 674	179 302
Other depository corporations			
Issued in Australia	8 445	9 861	11 381
Issued offshore	24 634	23 449	18 544
Life insurance corporation			
Issued in Australia	273	—	—
Issued offshore	289	1 258	1 187
Other Insurance corporation			
Issued in Australia	117	328	242
Issued offshore	2 227	3 029	2 972
Central borrowing authorities			
Issued in Australia	55 474	59 670	56 204
Issued offshore	23 363	25 409	27 822
Financial intermediaries n.e.c.			
Issued in Australia	64 605	79 352	97 652
Issued offshore	62 045	62 954	67 538
National general government			
Issued in Australia	62 765	63 491	63 796
Issued offshore	1 106	1 074	878
State and local general government			
Issued in Australia	299	285	235
Issued offshore	—	—	—
Rest of the world			
Issued in Australia	29 271	39 795	63 952
Issued offshore	57 928	55 564	72 980
<b>Total</b>	<b>636 401</b>	<b>713 171</b>	<b>846 738</b>
HELD BY			
Private non-financial corporations	7 587	7 892	10 298
National public non-financial corporations	122	20	15
State and local public non-financial corporations	56	81	42
Central bank	34 359	34 806	43 719
Banks	43 543	51 431	53 094
Other depository corporations	21 080	19 603	19 904
Life insurance corporations	40 079	42 128	46 216
Pension funds	54 487	61 178	75 475
Other insurance corporations	28 378	27 848	34 095
Central borrowing authorities	9 567	9 391	9 545
Financial intermediaries n.e.c.	35 849	46 272	63 451
National general government	3	—	13
State and local general government	655	704	2500
Households	6 773	7 169	9 385
Rest of world	353 863	404 648	478 986
<b>Total</b>	<b>636 401</b>	<b>713 171</b>	<b>846 738</b>

Source: Australian National Accounts: Financial Accounts (5232.0).

## Foreign exchange market

The foreign exchange market is the means whereby currencies of different countries can be bought and sold. In October 1983, the Australian Government floated the Australian dollar, allowing its value to be determined by market forces with few exchange controls and little Reserve Bank intervention. Prior to 1983, the Australian dollar was pegged to a basket of currencies. The currencies in the basket were weighted according to their trading significance to Australia. Table 26.20 shows the value of the Australian dollar against major currencies at end June of the last three financial years.

**26.20 VALUE OF AUSTRALIAN DOLLAR, Against major currencies — At last trading day in June**

	2004	2005	2006
United States of America dollar	0.6936	0.7659	0.7440
United Kingdom pound	0.3851	0.4254	0.4099
Japanese yen	75.46	85.04	86.08
Euro	0.5787	0.6379	0.5925

Source: Australian Tax Office.

Currencies are traded for many reasons: because of exporting or importing requirements, investing or borrowing overseas, arbitraging (i.e. taking advantage of short-term discrepancies in rates) or speculating on possible exchange rate movements with a view to making a profit. Table 26.21 shows daily averages of foreign exchange turnover against all currencies.

**26.21 FOREIGN EXCHANGE TURNOVER AGAINST ALL CURRENCIES, Daily averages(a)**

	2003-04	2004-05	2005-06
	\$m	\$m	\$m
Transactions by foreign exchange dealers(b)			
Outright spot(c)	43 759	38 582	53 693
Outright forward(d)	7 614	7 903	11 881
Swaps	82 309	87 179	108 089
Options	7 162	3 199	3 236
<b>Total</b>	<b>140 844</b>	<b>136 863</b>	<b>176 898</b>

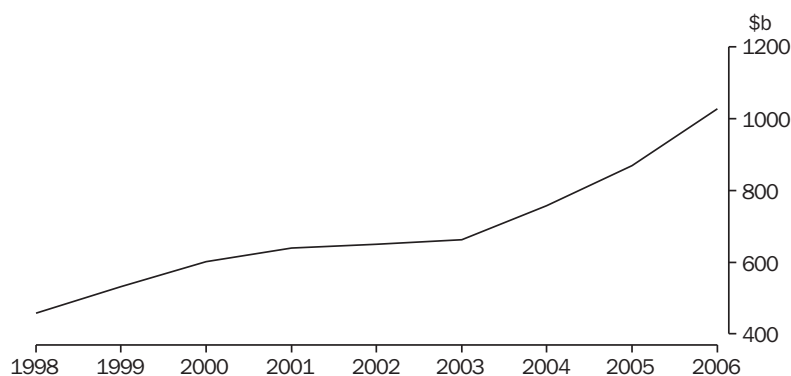
(a) Figures given are the average daily turnover for the financial year. (b) Australian banks and non-bank financial intermediaries authorised to deal in foreign exchange. (c) An outright spot transaction is one for receipt or delivery within two business days. (d) An outright forward transaction is one for receipt or delivery in more than two business days.

Source: Reserve Bank of Australia.

## Managed funds

The term 'managed funds' is used loosely in the financial community to embrace two broad types of institutions. The first are collective investment institutions (such as life insurance companies) which buy assets on their own account. The second are investment or fund managers which act as investment agents for the collective investment institutions as well as others with substantial funds to invest. Investment managers have relatively small balance sheets because most of the assets they acquire are purchased on behalf of clients. The significant growth in managed funds up to 2000 (graph 26.22) eased during the period 2001-03 but then accelerated again during 2003-06. The main influence on this growth pattern has been the price of shares on the stock market.

**26.22 MANAGED FUNDS, Consolidated assets — 30 June**



Source: Managed Funds, Australia (5655.0).

The managed funds industry is a difficult one to measure because of the large amounts of financial interaction between collective investment institutions and fund managers, and between fund managers themselves. Consequently, double counting of funds which are ‘churning’ through the system is a difficulty which needs to be addressed in order to derive a true measure of the funds management industry. One approach is to take the consolidated assets of collective investment institutions (as shown in graph 26.22), add to it those funds managed on behalf of other clients such as governments, corporations, charities, overseas clients and ‘net-off’ funds sourced from other fund managers. Table 26.23 provides a measure of the total funds management industry as at 30 June for the past three years.

### Collective investment institutions

As the name implies, collective investment institutions pool the funds of many small investors and use them to buy a particular type or mix of assets. The asset profile can be structured to satisfy individual investor requirements regarding, for example, the degree of risk, the mix of capital growth and income, and the degree of asset diversification. Collective investment institutions comprise the following:

- life insurance corporations
- pension and approved deposit funds
- public unit trusts
- friendly societies
- common funds
- cash management trusts.

Funds of a speculative nature that do not offer redemption facilities – for example, agricultural and film trusts – are excluded.

To derive the total assets of collective investment institutions in Australia on a consolidated basis, it is necessary to eliminate the cross investment between the various types of institution. For example, investments by superannuation funds in public unit trusts are excluded from the assets of superannuation funds in a consolidated presentation.

Although statistics for each of these institutions were presented earlier in this chapter, the accompanying tables summarise their consolidated position (i.e. after the cross investment between the institutions has been eliminated). Table 26.24 shows their assets by type of institution.

26.23 MANAGED FUNDS INDUSTRY, Total funds under management			
	As at 30 June		
	2004	2005	2006
	\$m	\$m	\$m
Total consolidated assets of collective investment institutions	756 632	869 545	1 027 515
plus			
Total FUM(a) of investment managers sourced from Australian entities other than collective investment institutions	198 909	223 981	242 608
plus			
Total FUM(a) of investment managers sourced from overseas	26 615	30 933	40 537
less			
Total FUM(a) of investment managers sourced from other investment managers	42 465	39 927	24 780
<b>Total</b>	<b>939 691</b>	<b>1 084 532</b>	<b>1 285 880</b>

(a) Total funds under management.  
Source: *Managed Funds, Australia* (5655.0).

## 26.24 ASSETS OF MANAGED FUNDS — 30 June 2006

Type of institution	Total \$m	Cross invested \$m	Consolidated \$m
Life insurance corporations(a)	238 278	34 543	203 736
Pension funds	716 391	171 680	544 710
Public unit trusts	260 176	34 120	226 056
Friendly societies	6 735	2 136	4 599
Common funds	10 687	454	10 234
Cash management trusts	38 181	—	38 181
<b>Total</b>	<b>1 270 448</b>	<b>242 933</b>	<b>1 027 515</b>

(a) Investments by pension funds which are held and administered by life insurance offices are included under life insurance offices.

Source: *Managed Funds, Australia* (5655.0).

## Investment managers

Specialist investment managers are employed on a fee-for-service basis to manage and invest in approved assets on their clients' behalf. They usually act for the smaller collective investment institutions such as public unit trusts. They are not accessible to the small investor. Investment managers provide a sophisticated level of service, matching assets and liabilities. They act in the main as the managers of pooled funds, but also manage clients' investments on an individual portfolio basis.

A considerable proportion of the assets of collective investment institutions, particularly the statutory funds of life insurance corporations and assets of pension funds, is channelled through investment managers. At 30 June 2006, \$689.7b (54.3% of the unconsolidated assets of collective investment institutions) were channelled through investment managers. Table 26.25 shows the total unconsolidated assets of each type of collective investment institution and the amount of these assets invested through investment managers.

Investment managers also accept money from investors other than collective investment institutions. At 30 June 2006, investment managers invested \$283.1b on behalf of government bodies, general insurers and other clients, including overseas clients.

## 26.25 ASSETS OF MANAGED FUNDS, Invested through investment managers — 30 June 2006

Type of fund	Unconsolidated assets of managed funds \$m	Assets invested with investment managers \$m
Life insurance corporations(a)	238 278	140 074
Pension and approved deposit funds	716 391	393 154
Public unit trusts	260 176	113 324
Friendly societies	6 735	2 378
Common funds	10 687	9 357
Cash management trusts	38 181	31 386
<b>Total</b>	<b>1 270 448</b>	<b>689 673</b>

(a) Includes both superannuation and ordinary business.

Source: *Managed Funds, Australia* (5655.0).

## Lending by financial institutions

The lending activities of financial institutions are grouped for statistical purposes into four major types of lending — housing, personal, commercial and leasing. Information regarding housing finance is presented in the *Housing* chapter. Table 26.26 shows the size of commitments by financial institutions for the four types of lending. It should be noted that, although commitments are firm offers of finance made by institutions that have been accepted by borrowers, not all commitments are taken up by borrowers.

## 26.26 FINANCIAL INSTITUTIONS, Lending commitments

	2003-04	2004-05	2005-06
Type of lending activity	\$m	\$m	\$m
Housing finance	127 632	133 666	155 021
Personal finance	79 302	73 702	76 340
Commercial finance	292 467	307 991	363 003
Lease finance	6 371	6 308	6 848
<b>Total</b>	<b>505 772</b>	<b>521 666</b>	<b>601 213</b>

Source: Lending Finance, Australia (5671.0).

## Lease finance

The statistics in tables 26.27 and 26.28 measure lease finance commitments made by significant lenders (banks, money market corporations, finance companies, general financiers, etc.) to trading and financial enterprises, non-profit organisations, governments, public authorities and individuals.

## 26.27 LEASE FINANCE COMMITMENTS, By type of lessor

	2003-04	2004-05	2005-06
	\$m	\$m	\$m
All banks	1 957	2 219	2 409
Finance companies	1 319	1 275	n.p.
General financiers	1 962	1 706	1 956
Other(a)	1 133	1 108	n.p.
<b>Total</b>	<b>6 371</b>	<b>6 308</b>	<b>6 848</b>

(a) Includes money market corporations.

Source: Lending Finance, Australia (5671.0).

## Personal finance

Tables 26.29 and 26.30 present statistics of commitments made by significant lenders (banks, credit cooperatives, finance companies, etc.) to lend to individuals for their own personal (non-business) use. The revolving credit commitments provided in table 26.30 include commitments for overdrafts, credit cards and other personal revolving lines of credit.

## 26.28 LEASE FINANCE COMMITMENTS, By type of good leased

	2003-04	2004-05	2005-06
	\$m	\$m	\$m
Motor vehicles and other transport equipment	3 106	3 192	3 252
Construction and earth moving equipment	294	409	453
Agricultural machinery and equipment	174	157	173
Automatic data processing equipment and office machinery	1 866	1 532	1 830
Shop and office furniture, fittings and equipment	196	236	258
Other goods	736	782	883
<b>Total</b>	<b>6 371</b>	<b>6 308</b>	<b>6 848</b>

Source: Lending Finance, Australia (5671.0).

## 26.29 PERSONAL FINANCE COMMITMENTS, By type of lender(a)

	2003-04	2004-05	2005-06
	\$m	\$m	\$m
All banks	62 194	57 386	60 731
Finance companies	10 902	n.p.	3 278
Credit cooperatives	3 374	n.p.	3 086
Other lenders(b)	2 831	7 981	9 245
<b>Total</b>	<b>79 301</b>	<b>73 702</b>	<b>76 340</b>

(a) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities. (b) Includes permanent building societies, general financiers and retailers.

Source: Lending Finance, Australia (5671.0).

**26.30 PERSONAL FINANCE COMMITMENTS, By type of facility**

	2003-04	2004-05	2005-06
	\$m	\$m	\$m
Fixed loan commitments	33 968	33 435	33 397
Revolving credit commitments			
New and increased credit limits	45 334	40 268	42 943
Cancellations and reductions in credit limits	16 873	18 004	21 929
Credit limits at 30 June			
Total(a)	184 851	206 499	224 894
Used	88 998	100 784	107 281

(a) This figure sometimes reflects a rebasing of the data by one or more lenders without adjustment to earlier periods' commitments advanced or cancelled.

Source: *Lending Finance, Australia* (5671.0).

**Commercial finance**

The statistics in tables 26.31 and 26.32 measure commitments, made by significant lenders (banks, finance companies, money market corporations, etc.) to lend to government, private and public enterprises, non-profit organisations and individuals for investment and business purposes.

**Money and the payments system**

The payments system supports trade and commerce in a market economy. Notes and coin are one means of payment. Liquid balances held at financial institutions are also available potentially for transactions needs, under cheque and other forms of transfer facilities, and thus add to the money supply.

**26.31 COMMERCIAL FINANCE COMMITMENTS, By type of lender(a)**

	2003-04	2004-05	2005-06
	\$m	\$m	\$m
All banks	n.p.	262 163	312 874
Finance companies	6 028	4 608	4 638
Money market corporations	n.p.	4 096	5 431
Other lenders(b)	32 231	37 124	40 060
<b>Total</b>	<b>(c)292 467</b>	<b>307 991</b>	<b>363 003</b>

(a) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities. (b) Includes permanent building societies, general financiers and pastoral finance companies. (c) Components do not add to the total.

Source: *Lending Finance, Australia* (5671.0).

**26.32 FIXED COMMERCIAL FINANCE COMMITMENTS**

	2003-04	2004-05	2005-06
Purpose	\$m	\$m	\$m
Construction	16 014	17 836	17 877
Purchase of real property(a)	84 862	75 070	81 348
Purchase of plant and equipment	13 213	13 770	18 915
Refinancing	16 200	17 070	21 438
Other purposes	64 574	75 340	103 967
<b>Total</b>	<b>194 863</b>	<b>199 086</b>	<b>243 545</b>

(a) Purchase of real property includes those finance commitments to individuals for the purchase of dwellings for rental or resale.

Source: *Lending Finance, Australia* (5671.0).

From 1 July 1998, a new financial regulatory framework came into effect, in response to the recommendations of the Financial System Inquiry. Under these arrangements the Reserve Bank has stronger regulatory powers in the payments system in accordance with the *Payments Systems (Regulations) Act 1998* (Cwlth), to be exercised by a Payments System Board within the Bank.

### Money

Australia has a decimal system of currency, the unit being the dollar, which is divided into 100 cents. Australian notes are issued in the denominations of \$5, \$10, \$20, \$50 and \$100 and coins in the denominations of 5c, 10c, 20c, 50c, \$1 and \$2. \$1 and \$2 notes were replaced by coins in 1984 and 1988 respectively, and 1c and 2c coins ceased to be issued from 1 February 1992. Table 26.33 shows the value of notes on issue on the last Wednesday of June in the last three financial years. Table 26.34 shows the value of coin on issue at the same time points.

<b>26.33 VALUE OF AUSTRALIAN NOTES ON ISSUE — Last Wednesday in June</b>			
	2004	2005	2006
	\$m	\$m	\$m
\$5	533	539	572
\$10	791	837	857
\$20	2 533	2 584	2 690
\$50	15 941	16 740	18 044
\$100	14 224	14 924	15 903
<b>Total</b>	<b>34 022</b>	<b>35 624</b>	<b>38 066</b>

Note: \$2 notes on issue has been written off by the Reserve Bank of Australia.

Source: Reserve Bank of Australia.

<b>26.34 VALUE OF AUSTRALIAN DECIMAL COIN ON ISSUE — Last Wednesday in June</b>			
	2004	2005	2006
	\$m	\$m	\$m
1c	22	22	22
2c	29	29	29
5c	154	163	174
10c	147	158	171
20c	210	226	245
50c	302	319	340
\$1	531	557	576
\$2	832	893	962
<b>Total</b>	<b>2 227</b>	<b>2 368</b>	<b>2 518</b>

Source: Reserve Bank of Australia.

### Money supply measures

The money supply, as measured and published by the Reserve Bank, refers to the amount of cash held by the public plus deposits with specified financial institutions. The measures range from the narrowest category, money base, through to the widest category, broad money, with other measures in between. The measures mainly used are as follows:

*Money base* – comprises holdings of notes and coin by the private sector, deposits of banks with the Reserve Bank, and other Reserve Bank liabilities to the private sector.

*M3* – is defined as currency plus bank deposits of the private non-bank sector.

*Broad money* – is defined as M3 plus borrowings from the private sector by non-bank financial intermediaries (including cash management trusts) less their holdings of currency and bank deposits.

The money supply under each of these measures at 30 June for the last three years is shown in table 26.35.

<b>26.35 MONEY SUPPLY MEASURES — 30 June</b>			
	2004	2005	2006
	\$m	\$m	\$m
Money base	37 194	38 678	41 278
M3	623 049	678 292	747 229
Broad money	686 293	764 400	841 134

Source: Reserve Bank of Australia.

### Payments system

Following recommendations by the Financial System Inquiry, the Payments System Board was established within the Reserve Bank in July 1998. The Payments System Board has responsibility for determining the Reserve Bank's payments system policy, under the powers set out under the *Payment Systems (Regulation) Act 1998* (Cwlth) and the *Payment Systems and Netting Act 1998* (Cwlth). The Reserve Bank also has responsibility for oversight of the stability of clearing and settlement facilities under the *Corporations Act 2001* (Cwlth).

The payments system in Australia has changed significantly in recent years. In part, this has been a response to technological change and consumer behaviour. On average, there are at least 13 million non-cash payments made in Australia each day, the overwhelming majority of which are electronic payments.

Cheques account for 11% of the number of non-cash payments, 52% are debit and credit card payments, with the remaining 37% made up by direct debits and credits.

Table 26.36 shows the number of points of access to the payments system. Branches are access points staffed by employees of financial institutions. Agencies are staffed by other than employees of financial institutions such as postmasters or storekeepers, and exclude school agencies and giroPost agencies. giroPost provides

a limited range of services at Australia Post offices on behalf of participating financial institutions. Electronic points of access include ATM and electronic funds transfer at point of sale (EFTPOS) terminals.

<b>26.36 POINTS OF ACCESS TO THE AUSTRALIAN PAYMENTS SYSTEM — 30 June</b>			
	2004	2005	2006
Branches			
Banks	4 888	4 960	4 853
Building societies and credit unions	1 239	1 235	1 170
giroPost	3 048	3 190	3 188
ATMs	21 550	24 173	24 616
EFTPOS terminals	465 754	518 532	540 189

Source: Australian Prudential Regulation Authority; Australian Payments Clearing Association Limited.

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## GOVERNMENT FINANCE

The main functions of government are the provision of non-market services, the regulation of economic and social conditions, and the redistribution of income between sections of the community. These activities are primarily financed by taxation and are carried out by entities in the general government sector. In addition to this core activity, governments can also own or control enterprises that:

- sell goods or services to the public and which operate largely on a commercial, or market basis (public non-financial corporations); or
- engage in financial intermediation (public financial corporations).

This chapter presents a range of information about the financial activities of the different levels of government in Australia, together with some explanatory material to assist with the use and analysis of this data. The system of Government Finance Statistics (GFS), which is used to derive the statistics presented here, is designed to provide statistical information on public sector entities in Australia, classified in a uniform and systematic way.

The GFS system is based on international standards contained in the *System of National Accounts 1993* and the International Monetary Fund's *Government Finance Statistics Manual 2001*. It enables users to analyse the financial operations and financial position of government in various ways – a specific level of government, jurisdiction (state/territory), institutional sector or set of transactions. Information about the GFS can be found in *Australian System of Government Finance Statistics: Concepts, Sources and Methods, 2005 (5514.0)*.

2007

Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Public sector

The public sector includes all organisations owned or controlled by any of the three levels of government within the Australian political system – Australian (Commonwealth), state (and territory), and local. The responsibilities of each level of government differ and each level has specific sources of revenue with which to fund its activities.

In the GFS, a fourth level of government is also identified – multi-jurisdictional. The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or where classification of a unit to a jurisdiction is otherwise unclear. The main type of units currently falling into the multi-jurisdictional category are the public universities.

The public sector can be divided into three institutional sectors, based on the characteristics of the organisations it comprises:

- *General government* – the main function of general government entities is to provide non-market goods and services (e.g. roads, hospitals, libraries) primarily financed by taxes; to regulate and influence economic activity; to maintain law and order; and to redistribute income by means of transfer payments.
- *Public non-financial corporations (PNFCs)* – the main function of PNFCs is to provide goods and services which are predominantly market, non-regulatory and non-financial in nature, and financed through sales to consumers of these goods and services.
- *Public financial corporations (PFCs)* – PFCs are enterprises which engage in financial intermediation (i.e. trade in financial assets and liabilities), such as central borrowing authorities (the Reserve Bank of Australia), government banks and insurance offices, or home-lending schemes.

The GFS conceptual framework is divided into a number of separate financial statements, each of which is designed to draw out analytical aggregates, or balances of particular economic significance. Taken together, they provide a comprehensive description of the financial positions of jurisdictions individually and collectively. These statements are the Operating Statement, the Cash Flow Statement, and the Balance Sheet.

The Operating Statement presents details of transactions in GFS revenues, GFS expenses and the net acquisition of non-financial assets on an accrual basis for an accounting period. Two key GFS analytical balances in the Operating Statement are GFS Net Operating Balance (NOB) and GFS Net Lending(+)/Borrowing(-). GFS NOB is the difference between GFS revenues and GFS expenses and reflects the sustainability of government operations. GFS Net Lending(+)/Borrowing(-) is equal to NOB minus the total net acquisition of non-financial assets. A positive result reflects a net lending position while a negative result reflects a net borrowing position.

The Cash Flow Statement identifies how cash is generated and applied in a single accounting period. The Cash Flow Statement reflects a cash basis of recording where the information has been derived indirectly from underlying accrued transactions and movements in balances. In effect, this means that transactions are captured when cash is received or when cash payments are made. Cash transactions are specially identified because they allow the compilation of the cash-based Surplus(+)/Deficit(-) measure and because the management of cash is often considered an integral function of accrual accounting.

The Surplus(+)/Deficit(-) is a broad indicator of cash flow requirements. When it is positive (i.e. in surplus), it reflects the extent to which cash is available to government to either increase its financial assets or decrease its liabilities. When it is negative (i.e. in deficit), it is a measure of the extent to which government requires cash, either by running down its financial assets or by drawing on the cash reserves of the domestic economy, or from overseas.

The Balance Sheet is the statement of an entity's financial position at a specific point in time. It shows the entity's stock of assets, liabilities and GFS Net Worth. GFS Net Worth is an economic measure of 'wealth'. For the general government sector it is calculated as assets less liabilities. For the PNFC and PFC sectors, GFS Net Worth is calculated as assets less liabilities less shares and other contributed capital.

## Government financial statements for 2004–05

The general government institutional sector accounts for most of the revenue raised and expenditure incurred in the public sector in any year.

Tables 27.1, 27.2 and 27.3 present a summary of general government sector financial activities in 2004–05, using GFS statements.

Tables 27.4, 27.5 and 27.6 present a summary of financial activities for the total public sector in 2004–05, using GFS statements.

### 27.1 OPERATING STATEMENT: GENERAL GOVERNMENT — 2004–05

	Commonwealth	State(a)	Local	Multi-jurisdictional(b)	All levels of government(c)
	\$m	\$m	\$m	\$m	\$m
GFS Revenue	241 885	131 915	21 399	13 305	335 680
GFS Expenses	230 788	125 171	19 441	12 819	316 260
<b>Net Operating Balance</b>	<b>11 097</b>	<b>6 745</b>	<b>1 958</b>	<b>486</b>	<b>19 419</b>
Net acquisition of non-financial assets	154	2 741	2 417	441	5 754
<b>GFS Net Lending(+)/Borrowing(-)</b>	<b>10 942</b>	<b>4 004</b>	<b>-459</b>	<b>45</b>	<b>13 666</b>

(a) Includes Northern Territory and Australian Capital Territory. (b) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classification of a unit to a jurisdiction is otherwise unclear. The main type of units in this category are the public universities. (c) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.

Source: Government Finance Statistics, Australia, 2004–05 (5512.0).

### 27.2 CASH FLOW STATEMENT: GENERAL GOVERNMENT — 2004–05

	Commonwealth	State(a)	Local	Multi-jurisdictional(b)	All levels of government(c)
	\$m	\$m	\$m	\$m	\$m
<b>CASH FLOW STATEMENT</b>					
Cash receipts from operating activities	235 196	135 351	20 080	13 883	332 345
Cash payments for operating activities	-220 018	-118 468	-15 523	-11 979	-294 436
<b>Net cash flows from operating activities</b>	<b>15 178</b>	<b>16 883</b>	<b>4 556</b>	<b>1 904</b>	<b>37 909</b>
Net cash flows from investments in non-financial assets	-1 660	-8 797	-5 198	-1 330	-16 977
Net cash flows from investments in financial assets for policy purposes	-1 139	-572	2	1	-1 860
Net cash flows from investments in financial assets for liquidity purposes	-11 015	-5 798	-273	-314	-17 400
Net cash flows from financing activities	-1 148	-852	1 272	-439	-412
<b>Net Increase(+)/Decrease(-) in Cash Held</b>	<b>215</b>	<b>863</b>	<b>359</b>	<b>-178</b>	<b>1 259</b>
<b>SURPLUS(+)/DEFICIT(-)</b>					
Net cash flows from operating activities and net cash flow from investments in non-financial assets	13 517	8 086	-642	574	20 931
Acquisitions of assets under financial leases and similar arrangements	-13	-283	-3	—	-299
<b>Surplus(+)/Deficit(-)</b>	<b>13 505</b>	<b>7 803</b>	<b>-645</b>	<b>574</b>	<b>20 632</b>

(a) Includes Northern Territory and Australian Capital Territory. (b) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units in this category are the public universities. (c) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.

Note: Negative figures denote outflows.

Source: Government Finance Statistics, Australia, 2004–05 (5512.0).

### 27.3 BALANCE SHEET: GENERAL GOVERNMENT — 30 June 2005

	Commonwealth	State(a)	Local	Multi-jurisdictional(b)	All levels of government(c)
	\$m	\$m	\$m	\$m	\$m
<b>Assets</b>					
Financial assets	132 180	234 645	12 395	9 844	382 840
Non-financial assets	42 364	279 409	181 820	23 216	526 801
<i>Total</i>	<i>174 544</i>	<i>514 053</i>	<i>194 216</i>	<i>33 061</i>	<i>909 641</i>
<b>Liabilities</b>	<b>200 189</b>	<b>126 721</b>	<b>9 826</b>	<b>6 791</b>	<b>337 293</b>
<b>GFS Net Worth</b>	<b>-25 645</b>	<b>387 333</b>	<b>184 390</b>	<b>26 270</b>	<b>572 347</b>
Net debt(d)	8 688	-21 342	-3 684	-5 310	-21 647
<b>Net financial worth(e)</b>	<b>-68 008</b>	<b>107 924</b>	<b>2 569</b>	<b>3 053</b>	<b>45 547</b>

(a) Includes Northern Territory and Australian Capital Territory. (b) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units in this category are the public universities. (c) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government. (d) Equals deposits held, advances received, Reserve Bank of Australia notes on issue and borrowing less cash and deposits, advances paid, and investments, loans and placements. (e) Equals total financial assets less total liabilities less shares and other contributed capital. While Net financial worth should add across levels of government, small discrepancies may remain due to the difficulties in accurately identifying the parties and counter-parties associated with financial assets and liabilities.

Source: Government Finance Statistics, Australia, 2004–05 (5512.0).

### 27.4 OPERATING STATEMENT: TOTAL PUBLIC SECTOR — 2004–05

	Commonwealth	State(a)	Local	Multi-jurisdictional(b)	All levels of government(c)
	\$m	\$m	\$m	\$m	\$m
GFS Revenue	266 649	163 493	21 418	13 729	391 555
GFS Expenses	253 122	154 046	19 433	13 206	366 779
<b>Net Operating Balance</b>	<b>13 527</b>	<b>9 447</b>	<b>1 985</b>	<b>523</b>	<b>24 774</b>
Net acquisition of non-financial assets	466	7 851	2 460	568	11 345
<b>GFS Net Lending(+)/Borrowing(-)</b>	<b>13 061</b>	<b>1 596</b>	<b>-475</b>	<b>-45</b>	<b>13 431</b>

(a) Includes Northern Territory and Australian Capital Territory. (b) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classification of a unit to a jurisdiction is otherwise unclear. The main type of units in this category are the public universities. (c) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government.

Source: Government Finance Statistics, Australia, 2004–05 (5512.0).

### 27.5 BALANCE SHEET: TOTAL PUBLIC SECTOR — 30 June 2005

	Commonwealth	State(a)	Local	Multi-jurisdictional(b)	All levels of government(c)
	\$m	\$m	\$m	\$m	\$m
<b>Assets</b>					
Financial assets	172 997	127 651	11 445	10 020	306 444
Non-financial assets	72 245	488 224	183 217	24 928	768 605
<i>Total</i>	<i>245 242</i>	<i>615 875</i>	<i>194 662</i>	<i>34 949</i>	<i>1 075 049</i>
<b>Liabilities</b>	<b>289 534</b>	<b>228 531</b>	<b>10 272</b>	<b>7 675</b>	<b>520 333</b>
Shares and other contributed capital	30 344	—	—	816	31 166
<b>GFS Net Worth</b>	<b>-74 635</b>	<b>387 338</b>	<b>184 390</b>	<b>26 457</b>	<b>523 549</b>
Net debt(d)	5 810	-7 316	-3 415	-4 719	-9 640
<b>Net financial worth(e)</b>	<b>-146 880</b>	<b>-100 886</b>	<b>1 173</b>	<b>1 529</b>	<b>-245 055</b>

(a) Includes Northern Territory and Australian Capital Territory. (b) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units in this category are the public universities. (c) The sum of individual levels of government may not agree with All levels of government figures due to transfers between levels of government. (d) Equals deposits held, advances received, Reserve Bank of Australia notes on issue and borrowing less cash and deposits, advances paid, and investments, loans and placements. (e) Equals total financial assets less total liabilities less shares and other contributed capital. While Net financial worth should add across levels of government, small discrepancies may remain due to the difficulties in accurately identifying the parties and counter-parties associated with financial assets and liabilities.

Source: Government Finance Statistics, Australia, 2004–05 (5512.0).

## 27.6 CASH FLOW STATEMENT: TOTAL PUBLIC SECTOR — 2004–05

	Commonwealth \$m	State(a) \$m	Local \$m	Multi- jurisdictional(b) \$m	All levels of government(c) \$m
<b>CASH FLOW STATEMENT</b>					
Cash receipts from operating activities	259 947	170 140	20 096	14 326	391 499
Cash payments for operating activities	-238 168	-144 589	-15 539	-12 261	-338 161
<b>Net cash flows from operating activities</b>	<b>21 779</b>	<b>25 550</b>	<b>4 557</b>	<b>2 066</b>	<b>53 336</b>
Net cash flows from investments in non-financial assets	-5 359	-18 675	-5 261	-1 495	-30 781
Net cash flows from investments in financial assets for policy purposes	-983	437	1	1	-770
Net cash flows from investments in financial assets for liquidity purposes	-24 657	-10 134	-273	-314	-35 823
Net cash flows from financing activities	11 044	2 345	1 333	-427	14 621
<b>Net Increase(+)/Decrease(-) in Cash Held</b>	<b>1 824</b>	<b>-478</b>	<b>357</b>	<b>-170</b>	<b>583</b>
<b>SURPLUS(+)/DEFICIT(-)</b>					
Net cash flows from operating activities and net cash flow from investments in non-financial assets	15 183	6 873	-704	350	21 317
Acquisitions of assets under financial leases and similar arrangements	-13	-284	-3	—	-300
<b>Surplus(+)/Deficit(-)</b>	<b>15 171</b>	<b>6 589</b>	<b>-708</b>	<b>350</b>	<b>21 017</b>

(a) Includes Northern Territory and Australian Capital Territory. (b) The multi-jurisdictional sector contains units where jurisdiction is shared between two or more governments, or classifications of a unit to a jurisdiction is otherwise unclear. The main type of units in this category are the public universities. (c) The sum of individual levels of government may not agree with the All levels of government figures due to transfers between levels of government.

Note: Negative figures denote outflows.

Source: Government Finance Statistics, Australia, 2004–05 (5512.0).

## Taxation revenue

A distinctive feature of the Australian federal system is that the Commonwealth (Australian) Government levies and collects all income tax, from individuals as well as from enterprises. The Commonwealth Government also collects taxes on the provision of goods and services, including: the Goods and Services Tax (GST); taxes on the use of goods and performance of activities; and some taxes on employers' payrolls. The taxation revenue base of state and territory governments consists of taxes on: property; employers' payrolls; and the provision and use of goods and services. The sole source of taxation revenue for local governments is taxes on property.

Total taxation revenue collected in Australia in 2004–05 was \$278,534 million (m), an increase of 8.3% compared with 2003–04 (table 27.7). Of this, \$162,974m (58.5%) was for taxes on income and \$72,861m (26.2%) for taxes on the provision of goods and services.

Commonwealth Government taxation revenue, including taxes from the other levels of government and Commonwealth public corporations, rose from \$209,560m in 2003–04 to

\$229,131m in 2004–05, an increase of 9.3%. In 2004–05, Commonwealth Government taxation represented 82.3% of taxation revenue for all levels of government.

State government taxation revenue increased by 3.1%, from \$40,394m in 2003–04 to \$41,648m in 2004–05. In 2004–05 taxes on property were the single largest taxation revenue source for state governments (38.5%), followed by employers' payroll taxes (28.8%). The revenue base of state and territory governments is supplemented by the distribution of grants from the Commonwealth Government, which includes the allocation of GST revenue.

Australian residents paid an average of \$13,781 in tax in 2004–05, an increase of 7.0% compared with 2003–04 (table 27.8). The amount of Commonwealth Government taxation per person rose by 8.1% from \$10,486 in 2003–04 to \$11,336 in 2004–05. State and territory governments and local councils combined charged residents an average of \$2,462 a year in property taxes, stamp duty, gambling taxes, payroll and other taxes in 2004–05. This was an increase of 2.4 % compared with that collected in 2003–04.

## 27.7 TAXATION REVENUE, By level of government

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
<b>COMMONWEALTH</b>					
Taxes on income	124 602	123 065	134 432	145 709	162 974
Employers' payroll taxes	121	156	253	381	292
Taxes on property	12	12	13	13	14
Taxes on the provision of goods and services	50 186	53 883	59 371	62 646	64 997
Taxes on the use of goods and performance of activities	670	722	757	811	854
<b>Total</b>	<b>175 591</b>	<b>177 838</b>	<b>194 827</b>	<b>209 560</b>	<b>229 131</b>
<b>STATE(a)</b>					
Taxes on income	—	—	—	—	—
Employers' payroll taxes	9 503	9 671	10 163	10 839	11 996
Taxes on property	12 411	12 434	14 166	16 683	16 043
Taxes on the provision of goods and services	5 987	6 548	6 977	7 275	7 865
Taxes on the use of goods and performance of activities	4 776	4 689	5 100	5 597	5 745
<b>Total</b>	<b>32 677</b>	<b>33 342</b>	<b>36 406</b>	<b>40 394</b>	<b>41 648</b>
<b>LOCAL</b>					
Taxes on income	—	—	—	—	—
Employers' payroll taxes	—	—	—	—	—
Taxes on property	6 390	6 758	7 224	7 673	8 146
Taxes on the provision of goods and services	—	—	—	—	—
Taxes on the use of goods and performance of activities	—	—	—	—	—
<b>Total</b>	<b>6 390</b>	<b>6 758</b>	<b>7 224</b>	<b>7 673</b>	<b>8 146</b>
<b>ALL LEVELS</b>					
Taxes on income	124 602	123 065	134 432	145 709	162 974
Employers' payroll taxes	9 336	9 522	10 093	10 865	11 906
Taxes on property	18 812	19 202	21 402	24 368	24 194
Taxes on the provision of goods and services	56 173	60 431	66 348	69 922	72 861
Taxes on the use of goods and performance of activities	5 445	5 411	5 854	6 405	6 598
<b>Total</b>	<b>214 369</b>	<b>217 631</b>	<b>238 129</b>	<b>257 268</b>	<b>278 534</b>

(a) Includes Northern Territory and Australian Capital Territory.

Source: *Taxation Revenue, Australia, 2004-05 (5506.0)*.

## 27.8 TAXATION PER PERSON(a), By level of government

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$	\$	\$	\$	\$
Commonwealth Government	9 106	9 106	9 860	10 486	11 336
State and local government					
New South Wales	2 376	2 339	2 479	2 601	2 645
Victoria	2 123	2 176	2 285	2 457	2 520
Queensland	1 529	1 671	1 864	2 127	2 179
South Australia	1 818	1 836	2 019	2 282	2 387
Western Australia	1 886	1 908	2 139	2 506	2 582
Tasmania	1 499	1 475	1 558	1 698	1 817
Northern Territory	1 307	1 392	1 497	1 593	1 784
Australian Capital Territory	2 014	1 808	2 120	2 328	2 193
All state and local governments	2 025	2 053	2 207	2 404	2 462
<b>All levels of government</b>	<b>11 117</b>	<b>11 143</b>	<b>12 052</b>	<b>12 873</b>	<b>13 781</b>

(a) Average annual estimated resident population.

Source: *Taxation Revenue, Australia, 2004-05 (5506.0)*.

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## PRICES

Prices are a key factor in the operation of an economy. Price indexes, which provide summary measures of the movements in various categories of prices, are used extensively to analyse and monitor price behaviour and to adjust government payments such as pensions.

This chapter provides an outline of the consumer price index, house price indexes, the labour price index, producer price indexes, and the international trade price indexes, and their underlying concepts and methodology.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Concept of a price index

There are many situations where there may be a need to compare two (or more) sets of observations on prices. For example, a household might want to compare the prices of groceries bought today with the prices of the same groceries bought last year; a manufacturer may want to compare movements in the prices of its outputs with movements in its production costs between two points in time; or an employer might be interested in comparing prices of labour inputs today compared with those of five years ago.

In some situations the price comparisons might only involve a single commodity. Here it is simply a matter of directly comparing the two price observations. For example, a household might want to assess how the price of bread today compares with the price at some previous point in time.

In other circumstances the required comparison may be of prices across a range of commodities. For example, a comparison might be required of clothing prices. There is a wide range of clothing types and prices (e.g. toddlers' shoes, women's fashion shoes, boys' shorts, men's suits, etc.) to be considered. While comparisons can readily be made for individual or identical clothing items, this is unlikely to enable a satisfactory result for all clothing in aggregate. A method is required for combining the prices across this diverse range of items allowing for the fact that they have many different units or quantities of measurement. This is where price indexes play an extremely useful role.

A price index is a measure of changes in a set of prices over time. Price indexes allow the comparison of two sets of prices for a common item or group of items. In order to compare the sets of prices over time, it is necessary to designate one set the 'reference' set and the other the 'comparison' set. In the Australian Bureau of Statistics (ABS), the reference price set is used as the base (or first) period for constructing the index and by convention is given an index value of 100.0. The value of the price index for the comparison set provides a direct measure of price difference between the two sets of prices. For example, if the price of the comparison set had

increased by 35% since the base period, then the price index would be 135.0. Similarly, if the price had fallen by 5% since the base year, the index would stand at 95.0.

It is important to note that a price index measures price movements (i.e. percentage changes) and not actual price levels (dollar amounts). For example, if the consumer price index for breakfast cereals in a certain period is 143.4 and the index for bread in the same period is 186.5, it does not mean that bread is more expensive than breakfast cereals. It simply means that the price of bread has increased at about twice the rate of the price of breakfast cereals since the base period.

It should also be noted that price indexes do not measure changes in the quantities of goods or services that underpin the expenditure shares in each price index. These quantities are held constant. The relative expenditure shares of items will change over time in response to changes in relative prices. Presentation of weights in expenditure terms reflects the fact that it is simply not possible to present quantity weights in a meaningful way.

## Consumer price index (CPI)

The description of the CPI commonly adopted by users is in terms of its perceived uses; hence the frequent references to the CPI as a measure of inflation, a measure of changes in purchasing power, or a measure of changes in the cost of living. The concept adopted in Australia for the CPI is a measure of changes, over time, in the prices of a basket of goods and services acquired by households in the eight capital cities in Australia. As such, the CPI has been designed as a general measure of price inflation for the household sector.

The simplest way of thinking about the CPI is to imagine a basket of goods and services of the kind typically acquired by Australian households. As prices vary, the total cost of this basket will also vary. The CPI is simply a measure of the changes in the cost of this basket as the prices of items in it change.

From the September quarter 2005 onwards, the total basket is divided into the following eleven major commodity groups: Food; Alcohol and tobacco; Clothing and footwear; Housing; Household contents and services; Health; Transportation; Communication; Recreation; Education; and Financial and insurance services. These groups are, in turn, divided into 33 subgroups and the subgroups into 90 expenditure classes.

In addition to the aggregate ‘All groups’ index, indexes are also compiled and published for each of the groups, subgroups and expenditure classes for each state capital city, Darwin and Canberra. National indexes are constructed as the weighted average of the indexes compiled for each of the eight capital cities.

The 15th Series CPI is the latest of a number of retail/consumer price indexes that have been constructed for various purposes by the ABS (More information about the CPI can be found in *Australian Consumer Price Index: Concepts, Sources and Methods* (6461.0).)

### Price movements by city

Table 28.1 presents All groups CPI numbers for each of the eight capital cities and for the weighted average of the eight capital cities, together with percentage changes.

The capital city indexes measure price movements over time in each city individually. They can not be used to compare price levels between capital cities. For example, the index for Adelaide in 2005–06 of 155.2, compared with the corresponding index for Perth of 150.1, does not mean that prices in Adelaide are higher than those in Perth. It simply means, since the reference base period (1989–90), prices in Adelaide have increased by a greater percentage than those in Perth (55.2% compared with 50.1%).

### Price movements by broad commodity group

Table 28.2 presents, for the weighted average of the eight capital cities, index numbers for each of the eleven major commodity groups of the 15th Series CPI and for All groups, together with percentage changes.

28.1 CONSUMER PRICE INDEX, Capital cities(a)									
	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER(b)									
2001–02	137.2	135.3	136.3	137.2	133.1	134.7	133.7	135.2	136.0
2002–03	141.1	139.7	140.7	142.7	136.8	139.1	136.8	139.7	140.2
2003–04	144.1	142.8	144.8	147.0	139.6	142.6	138.7	143.4	143.5
2004–05	147.7	145.7	148.5	150.4	144.0	147.1	141.8	146.7	147.0
2005–06	152.1	150.2	153.2	155.2	150.1	151.8	146.5	151.9	151.7
CHANGE FROM PREVIOUS YEAR (%)									
2002–03	2.8	3.3	3.2	4.0	2.8	3.3	2.3	3.3	3.1
2003–04	2.1	2.2	2.9	3.0	2.0	2.5	1.4	2.6	2.4
2004–05	2.5	2.0	2.6	2.3	3.2	3.2	2.2	2.3	2.4
2005–06	3.0	3.1	3.2	3.2	4.2	3.2	3.3	3.5	3.2

(a) All group index numbers. Reference base year is 1989–90 = 100.0. (b) Annual average of the quarterly index numbers.

Source: *Consumer Price Index, Australia* (6401.0).

## 28.2 CONSUMER PRICE INDEX, Major commodity groups(a)

	Food	Alcohol and tobacco	Clothing and footwear	Housing	Household contents and services	Health	Transportation	Communication	Recreation	Education	Financial and insurance services(b)	All groups
INDEX NUMBER(c)												
2001-02	142.7	203.1	112.4	111.1	119.7	169.9	137.3	105.2	128.6	200.0	n.a.	136.0
2002-03	147.9	208.9	113.3	115.1	121.0	181.5	140.6	108.5	131.9	210.0	n.a.	140.2
2003-04	152.3	217.8	112.7	120.2	121.1	193.9	142.0	110.0	130.0	223.3	n.a.	143.5
2004-05	154.8	225.4	110.8	124.8	120.7	204.3	146.8	111.1	130.7	238.7	n.a.	147.0
2005-06	162.3	233.1	109.2	129.3	122.2	213.5	155.5	109.5	132.0	253.2	101.2	151.7
CHANGE FROM PREVIOUS YEAR (%)												
2002-03	3.6	2.9	0.8	3.6	1.1	6.8	2.4	3.1	2.6	5.0	n.a.	3.1
2003-04	3.0	4.3	-0.5	4.4	0.1	6.8	1.0	1.4	-1.4	6.3	n.a.	2.4
2004-05	1.6	3.5	-1.7	3.8	-0.3	5.4	3.4	1.0	0.5	6.9	n.a.	2.4
2005-06	4.8	3.4	-1.4	3.6	1.2	4.5	5.9	-1.4	1.0	6.1	n.a.	3.2

(a) Weighted average of the eight capital cities. Reference base year is 1989-90 = 100.0. (b) The Financial and insurance services group was introduced in September quarter 2005 with a reference base of June quarter 2005 = 100.0. There are no historic data for this series. (c) Annual average of the quarterly index numbers.

Source: Consumer Price Index, Australia (6401.0).

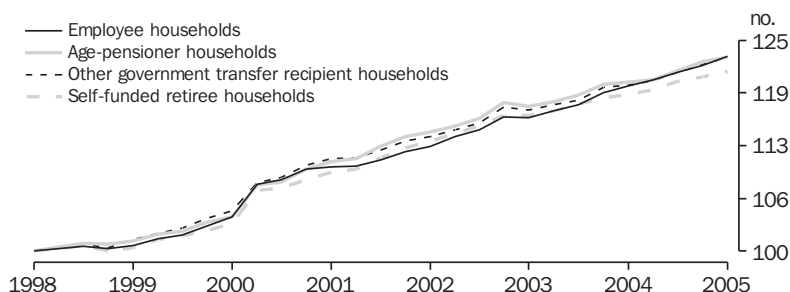
### Price movements for selected household types

Graph 28.3 and table 28.4 present analytical indexes specifically designed to measure changes in living costs for four selected household types: Employee households; Age pensioner households; Other government transfer recipient households; and Self-funded retiree households.

These indexes represent the conceptually preferred measures for assessing the impact of changes in prices on the disposable incomes of households. In other words, these indexes are

particularly suited for assessing whether or not the disposable incomes of households have kept pace with price changes, that is whether living costs are being maintained. The CPI, on the other hand, is designed specifically to measure price inflation for the household sector as a whole and, as such, is not the conceptually ideal measure for assessing the impact of price changes on the disposable incomes of households. The most notable differences are that living cost indexes include interest charges but do not include house purchases, while inflation indexes do not include interest charges but do include house purchases.

### 28.3 ANALYTICAL LIVING COST INDEXES FOR SELECTED HOUSEHOLD TYPES(a) — 30 June



(a) Reference base is June quarter 1998 = 100.0.

Source: ABS data available on request, derived from selected CPI price movements and the expenditure patterns for the relevant households.

## 28.4 ANALYTICAL LIVING COST INDEXES FOR SELECTED HOUSEHOLD TYPES(a)

	Employee	Age pensioner	Other government transfer recipient	Self-funded retiree	CPI(b)(c)
INDEX NUMBER(d)					
2000–01(e)	109.0	109.1	109.5	108.1	109.3
2001–02	111.3	112.7	112.4	111.5	112.4
2002–03	114.9	116.3	115.9	115.2	115.9
2003–04	118.1	119.0	118.6	117.7	118.6
2004–05	121.7	121.8	121.6	120.3	121.5
CHANGE FROM PREVIOUS YEAR (%)					
2000–01(d)	6.2	5.9	5.9	5.8	6.0
2001–02	2.1	3.3	2.6	3.1	2.9
2002–03	3.2	3.2	3.1	3.3	3.1
2003–04	2.8	2.3	2.3	2.2	2.4
2004–05	3.0	2.4	2.5	2.2	2.4

(a) Reference base is June quarter 1998 = 100.0. (b) The CPI has been re-referenced from 1989–90 = 100.0 to June quarter 1998 = 100.0 for ease of comparison with the living cost indexes for household types. (c) The CPI is designed to measure price inflation for the household sector and not changes in living costs. (d) Annual average of quarterly index numbers. (e) The 2000–01 data were affected by the introduction of The New Tax System, in particular, the introduction of the Goods and Services Tax from 1 July 2000.

Source: ABS data available on request, derived from selected CPI expenditure weights and price movements.

For more information about these indexes see the article *Price impacts on the living costs of selected household types*, in *Year Book Australia 2005*.

Over the period 2003–04 to 2004–05 changes in living costs ranged from a low of 2.2% for Self-funded retiree households to a high of 3.0% for Employee households. The CPI rose by 2.4% over the same period. Over the period from 1998–99 to 2004–05, the changes in living costs for all four household types are similar to the change in the CPI over the same period.

### Long-term price series

Although the CPI has only been compiled from 1948, an approximate long-term measure of retail price change has been constructed by linking together earlier selected retail price index series (table 28.5). The index numbers are expressed on the reference base year 1945 = 100.0. The successive series are:

- from 1901 to 1914, the A series retail price index
- from 1914 to 1946–47, the C series retail price index
- from 1946–47 to 1948–49, a combination of the C series index (excluding rent) and the housing group of the CPI

- from 1948–49 onwards, the CPI.

For more information about these former retail price index series see the article *History of retail/consumer price indexes in Australia* in *Year Book Australia 2005*.

Graph 28.6 shows the annual percentage changes derived from this retail/consumer price index series for the period 1905–2005.

### International comparisons

In analysing price movements in Australia, an important consideration is Australia's performance relative to other countries. However, due to the many differences in the structure of the housing sector in different countries and in the way housing is treated in their CPIs, a simple comparison of All groups (or 'headline') CPIs is often inappropriate. In order to provide a better basis for international comparisons, the Seventeenth International Conference of Labour Statisticians (2003) adopted a resolution which called for countries, where possible, to compile and provide for dissemination to the international community an index that excludes housing and financial services.

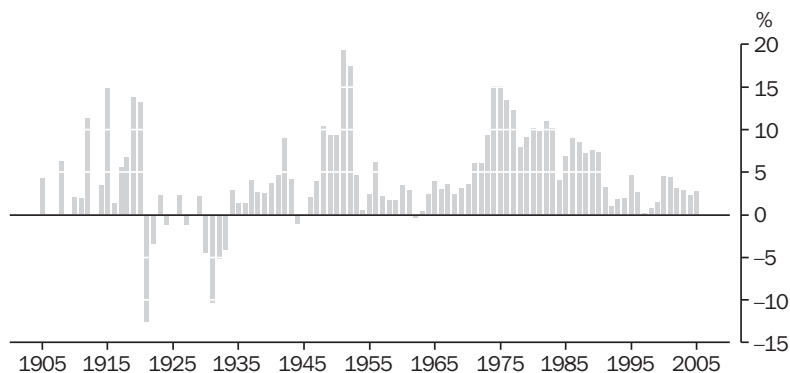
## 28.5 RETAIL/CONSUMER PRICE INDEX NUMBERS(a)(b)

Year	Index no.	Year	Index no.	Year	Index no.	Year	Index no.
1901	47	1931	78	1961	252	1991	1 898
1902	50	1932	74	1962	251	1992	1 917
1903	49	1933	71	1963	252	1993	1 952
1904	46	1934	73	1964	258	1994	1 989
1905	48	1935	74	1965	268	1995	2 082
1906	48	1936	75	1966	276	1996	2 136
1907	48	1937	78	1967	286	1997	2 141
1908	51	1938	80	1968	293	1998	2 159
1909	51	1939	82	1969	302	1999	2 191
1910	52	1940	85	1970	313	2000	2 289
1911	53	1941	89	1971	332	2001	2 389
1912	59	1942	97	1972	352	2002	2 462
1913	59	1943	101	1973	385	2003	2 530
1914	61	1944	100	1974	443	2004	2 588
1915	70	1945	100	1975	510	2005	2 658
1916	71	1946	102	1976	579		
1917	75	1947	106	1977	650		
1918	80	1948	117	1978	702		
1919	91	1949	128	1979	766		
1920	103	1950	140	1980	844		
1921	90	1951	167	1981	926		
1922	87	1952	196	1982	1 028		
1923	89	1953	205	1983	1 132		
1924	88	1954	206	1984	1 177		
1925	88	1955	211	1985	1 257		
1926	90	1956	224	1986	1 370		
1927	89	1957	229	1987	1 487		
1928	89	1958	233	1988	1 594		
1929	91	1959	237	1989	1 714		
1930	87	1960	245	1990	1 839		

(a) Reference base year is 1945 = 100.0. (b) The index numbers from 1901 to 1980 relate to the weighted average of six state capital cities; and from 1981 to the weighted average of eight capital cities. Index numbers are for calendar years.

Source: ABS data available on request, Consumer Price Index.

## 28.6 RETAIL/CONSUMER PRICE INDEX, Annual changes



Source: ABS data available on request.

Table 28.7 presents indexes for selected countries on a basis consistent with the resolution and broadly comparable with the Australian series 'All groups excluding Housing and Financial and insurance services'.

## House price indexes

Tables 28.8 and 28.9 provide estimates of changes in house prices for each of the eight capital cities of Australia. The information is presented in the form of price indexes constructed separately for established houses and project homes. They are calculated on the reference base year 2003–04 = 100.0 for each of the eight capital cities

as well as a weighted average of them. The capital city indexes measure price movements over time in each city individually. They do not measure differences in price levels between cities.

The project homes price index measures the movements in the cost of constructing a dwelling on a client's land. The established house price index covers transactions in detached residential dwellings on their own block of land regardless of age (i.e. including new houses sold as a house/land package as well as second-hand houses). Price changes, therefore, relate to changes in the total price of dwelling and land.

**28.7 CONSUMER PRICE INDEX, International comparisons(a)(b)**

	2001–02	2002–03	2003–04	2004–05	2005–06
INDEX NUMBER					
Australia	140.4	144.6	147.3	150.3	155.2
New Zealand	127.3	129.8	130.4	132.9	136.7
Hong Kong (SAR of China)	162.3	159.0	158.5	161.2	162.6
Indonesia	458.3	495.8	524.4	560.2	646.6
Japan	107.7	106.4	106.1	106.2	106.2
Korea, Republic of (South)	185.0	190.9	197.4	204.9	210.4
Singapore	121.9	122.4	124.2	125.6	126.9
Taiwan	130.6	130.5	131.1	134.7	138.2
Canada	130.3	135.2	136.9	139.3	142.2
United States of America	136.4	138.9	141.8	146.2	152.6
Germany	126.0	127.4	128.9	131.1	133.1
United Kingdom	143.5	145.8	147.9	149.7	152.8
CHANGE FROM PREVIOUS YEAR (%)					
Australia	2.7	3.0	1.9	2.0	3.3
New Zealand	2.9	2.0	0.5	1.9	2.9
Hong Kong (SAR of China)	–1.3	–2.0	–0.3	1.7	0.9
Indonesia	13.8	8.2	5.8	6.8	15.4
Japan	–3.0	–1.2	–0.3	0.1	0.0
Korea, Republic of (South)	3.2	3.2	3.4	3.8	2.7
Singapore	–0.2	0.4	1.5	1.1	1.0
Taiwan	–0.2	–0.1	0.5	2.7	2.6
Canada	1.7	3.8	1.3	1.8	2.1
United States of America	0.8	1.8	2.1	3.1	4.4
Germany	1.9	1.1	1.2	1.7	1.5
United Kingdom	1.5	1.6	1.4	1.2	2.1

(a) Reference base year is 1989–90 = 100.0. (b) All groups excluding Housing and Financial and insurance services.

Source: Consumer Price Index, Australia (6401.0).

## 28.8 ESTABLISHED HOUSE PRICE INDEX(a)(b)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER									
2002-03	89.3	89.9	75.5	83.1	84.4	69.0	87.7	82.7	86.6
2003-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004-05	96.1	101.9	104.2	106.5	114.4	111.8	115.9	99.9	101.2
2005-06(b)	93.1	106.2	107.9	111.9	144.8	119.2	137.4	103.4	104.8
CHANGE FROM PREVIOUS YEAR (%)									
2003-04	12.0	11.2	32.5	20.3	18.5	44.9	14.0	20.9	15.5
2004-05	-3.9	1.9	4.2	6.5	14.4	11.8	15.9	-0.1	1.2
2005-06(b)	-3.1	4.2	3.6	5.1	26.6	6.6	18.6	3.5	3.6

(a) Reference base year is 2003-04 = 100.0. (b) Preliminary – see latest release of House Price Indexes: Eight Capital Cities (6416.0).

Source: House Price Indexes: Eight Capital Cities (6416.0).

## 28.9 PROJECT HOME PRICE INDEX(a)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Darwin	Canberra	Weighted average of eight capital cities
INDEX NUMBER(b)									
2003-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004-05	105.3	103.3	105.5	103.6	111.9	111.6	109.5	102.0	106.1
2005-06	107.7	105.9	107.4	106.2	130.3	116.8	119.8	105.4	110.3
CHANGE FROM PREVIOUS YEAR (%)									
2003-04	4.1	4.0	13.1	6.4	9.4	8.5	5.5	9.2	7.4
2004-05	5.3	3.3	5.5	3.6	11.9	11.6	9.5	2.0	6.1
2005-06	2.3	2.5	1.8	2.5	16.4	4.7	9.4	3.3	4.0

(a) Reference base year is 2003-04 = 100.0. (b) Annual average of quarterly index numbers.

Source: House Price Indexes: Eight Capital Cities (6416.0).

## Labour price index

The Labour Price Index (LPI) measures changes in the price of labour services resulting from market forces. The LPI is unaffected by changes in the quality or quantity of work performed, that is, it is unaffected by changes in the composition of the labour force, hours worked, or changes in characteristics of employees (e.g. work performance). The LPI is produced annually on a financial year basis and consists of two components: a wage price index (WPI), published quarterly; and non-wage price index, which is available for each financial year.

Indexes are compiled using information collected from a representative sample of employee jobs within a sample of employing organisations. The

ABS constructs four WPIs on a quarterly basis: ordinary time hourly rates of pay excluding bonuses; ordinary time hourly rates of pay including bonuses; total hourly rates of pay excluding bonuses; and total hourly rates of pay including bonuses. Four non-wage indexes are constructed on a financial year basis: annual and public holiday leave; superannuation; payroll tax; and workers' compensation. From these wage and non-wage components, two LPIs are constructed, also on a financial year basis, one including bonuses and one excluding bonuses. Only those indexes which exclude bonuses are pure price indexes because bonuses tend to reflect changes in the quality of work performed.

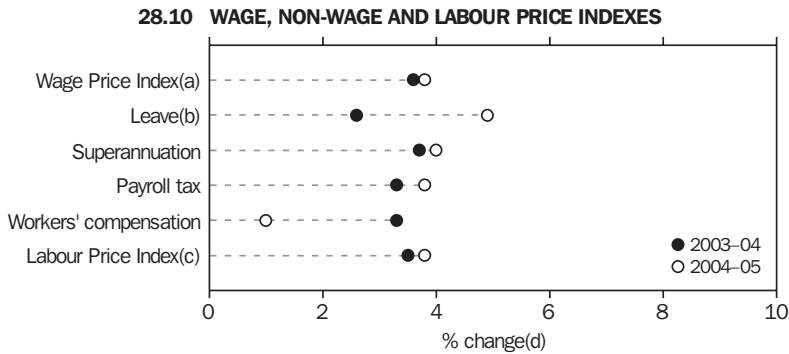


Graph 28.10 shows percentage changes from the previous financial year for several LPI series. The WPI (total hourly rates of pay excluding bonuses) and the LPI (excluding bonuses) for 2004–05, show almost the same rates of change from the previous year. The annual and public holiday leave index showed the biggest increase in the rate of change from the previous financial year for 2004–05. This was because in 2003–04 Victoria and Tasmania did not provide an additional day off in lieu when ANZAC Day fell on a Sunday.

As shown in table 28.11, increases from the previous year for total hourly rates of pay excluding bonuses varied across states and

territories. For Australia, the change from 2004–05 to 2005–06 was 4.1%. For the states and territories, the highest annual growth was recorded by Western Australia (4.5%) and the lowest by Victoria and South Australia (both 3.8%).

Graph 28.12 compares the rate of increase in the total hourly rates of pay excluding bonuses across all major occupation groups from 2004–05 to 2005–06. Tradespersons and related workers (4.6%), Intermediate production and transport workers (4.4%) and Professionals (4.4%) recorded the highest growth from the previous year, while Elementary clerical, sales and service workers recorded the lowest annual growth (3.4%).



(a) Total hourly rates of pay excluding bonuses. (b) Annual leave and public holiday leave. (c) Excluding bonuses. (d) Percentage change from previous year.

Source: Labour Price Index, Australia, June Quarter 2006 (6345.0).

**28.11 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, All sectors**

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australian Capital Territory	Australia
INDEX NUMBER(a)									
2001–02	93.0	93.5	93.6	92.7	93.5	93.7	94.0	92.8	93.3
2002–03	96.3	96.9	96.5	96.3	96.9	96.8	96.8	95.9	96.5
2003–04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2004–05	103.6	103.9	103.8	103.5	104.3	104.1	103.7	104.3	103.8
2005–06	107.8	107.9	108.4	107.4	109.0	108.4	108.2	108.6	108.1
CHANGE FROM PREVIOUS YEAR (%)									
2002–03	3.5	3.6	3.1	3.9	3.6	3.3	3.0	3.3	3.4
2003–04	3.8	3.2	3.6	3.8	3.2	3.3	3.3	4.3	3.6
2004–05	3.6	3.9	3.8	3.5	4.3	4.1	3.7	4.3	3.8
2005–06	4.1	3.8	4.4	3.8	4.5	4.1	4.3	4.1	4.1

(a) Reference base year is 2003–04 = 100.0.

Source: Labour Price Index, Australia, June Quarter 2006 (6345.0).

## 28.12 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By occupation(a)



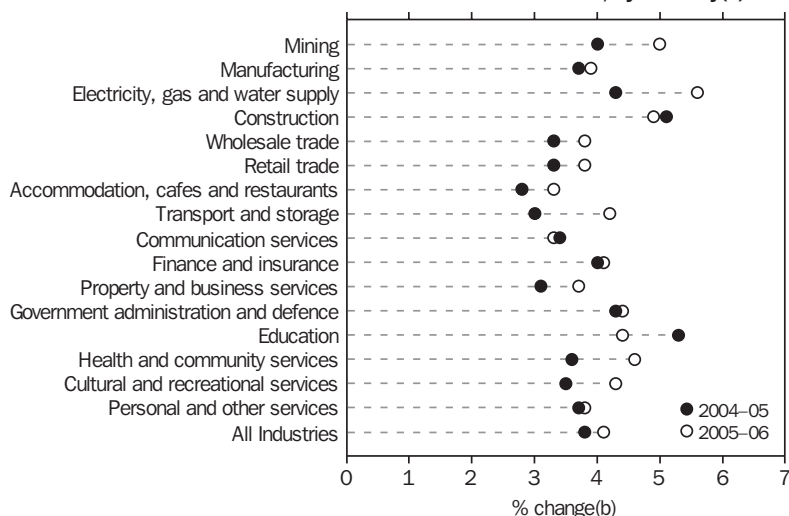
(a) Classified according to the Australian Standard Classification of Occupations (ASCO), Second Edition, 1997.  
 (b) Percentage change from the previous year.

Source: Labour Price Index, Australia, June Quarter 2006 (6345.0).

Yearly increases in the total hourly rates of pay excluding bonuses, by industry, are shown in graph 28.13. Changes from 2004-05 to 2005-06 ranged from 3.3% for Accommodation, cafes and

restaurants and Communication services industries, to 5.6% for the Electricity, gas and water supply industry.

## 28.13 TOTAL HOURLY RATES OF PAY EXCLUDING BONUSES, By industry(a)



(a) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (b) Percentage change from previous year.

Source: Labour Price Index, Australia, June Quarter 2006 (6345.0).

## Producer price indexes

Producer price indexes measure changes in the prices received, or paid, by producers of commodities and providers of services. In Australia they generally relate to prices for goods and services as they affect businesses for example, the price of goods used as input to the manufacturing sector and the price of services provided by the property and business services industry. This contrasts with the CPI which measures changes in the retail prices paid by consumers, as explained earlier in this chapter. (More information about producer price indexes can be found in *Producer and International Trade Price Indexes: Concepts, Sources and Methods*, 2006 (6429.0).)

## Stage of production indexes

These producer price indexes are compiled using the 'stage of production' concept. Under this concept, flows of commodities are categorised according to their economic destination on a sequential basis along the production chain. The basis for the categorisation of commodities is the 1996–97 Australian input-output tables (see the *National accounts* chapter). The principal categorisation is between final commodities (i.e. commodities destined for final consumption, capital formation or export) and those commodities that will be processed further (referred to as 'non-final' commodities).

The initial breakdown of commodity flows into final and non-final represents a useful economic dissection of producers' transactions. However, the non-final commodities can flow into the production of either final commodities or other non-final commodities. Therefore, to aid analysis, the non-final commodity flows have been divided on a sequential basis between stage 1 (or preliminary) commodities and stage 2 (or intermediate) commodities. This approach results in three separate stages of production.

In order to avoid multiple counting of transactions, the three stages are not aggregated.

Under this framework, preliminary (stage 1) commodities are used in the production of intermediate (stage 2) commodities which, in turn, flow into the production of final (stage 3) commodities.

The framework allows for analyses of price change as commodities flow through production processes. Price changes for earlier stages of production may be indicators of possible future price changes for later stages.

The same commodity can be assigned to any of the stages of production depending on its destination. For example, bauxite is a preliminary good when it is used to produce alumina that is in turn used in the production of aluminium by an Australian producer. Where the alumina is exported the bauxite used in its production will be considered an intermediate good. Where the bauxite is exported it is deemed to be a final (stage 3) good.

## Market transactions approach

The ABS has adopted a market transactions approach in disaggregating commodity supply into the various production stages. Under this approach, the individual transactions in a given commodity are assigned to the relevant stage, based on identification of the market(s) in which that commodity is transacted, which in turn is determined by the usage pattern of that commodity. A particular 'commodity', within the index classification system, can be assigned to more than one stage of production, on the basis of its usage pattern as identified in the Input-Output tables.

## Index coverage

In concept, the scope of the stage of production indexes is economy-wide, relating to the output of all the goods and services industries. However, there are limits on the availability of price indexes for service industries, and coverage is currently restricted to the output of the accommodation, transport (freight) and storage, and property and business services sectors. Similarly, coverage of the construction sector is confined to indexes for the output of the following industries: house construction, residential building construction not elsewhere classified (n.e.c.), non-residential building construction, and road and bridge construction. Coverage of the stage of production indexes will be progressively extended as additional service and construction industry collections are established. Table 28.14 shows stage of production producer price indexes.

**28.14 STAGE OF PRODUCTION PRODUCER PRICE INDEXES(a), By stage and source**

	Preliminary			Intermediate			Final (excl. exports)		
	Domestic	Imports	Total	Domestic	Imports	Total	Domestic	Imports	Total
2001–02	111.8	120.3	112.9	111.3	115.9	111.9	110.0	103.7	108.8
2002–03	114.3	117.4	114.6	113.6	112.1	113.3	113.7	97.5	110.5
2003–04	115.3	105.6	113.8	114.9	99.9	112.7	118.5	86.7	112.0
2004–05	121.1	115.4	120.2	119.8	104.4	117.5	124.1	84.6	116.1
2005–06	129.5	129.5	129.4	126.7	112.6	124.7	129.5	84.5	120.4

(a) Reference base year is 1998–99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

**Manufacturing industries indexes**

Manufacturing industries producer price indexes relate to the outputs (i.e. articles produced) and inputs (i.e. materials used) of establishments classified to designated sectors of the Australian manufacturing industry.

**Net sector basis**

The manufacturing industries indexes are constructed on a net sector basis with intra-sector transactions netted out. The scope of the output index is, therefore, restricted to transactions in articles produced by the defined sector of Australian manufacturing industry that are sold or transferred to domestic establishments outside that sector, or used as capital equipment, or exported. The scope of the input index relates to transactions in materials used in the defined sector of Australian manufacturing industry that are produced by domestic establishments outside that sector or imported.

An advantage of the net sector approach over the alternative gross sector approach (under which the intra-sector transactions would be in-scope) is that it avoids the potential distorting effects that may result from multiple counting of changes in transaction prices as commodities flow through different production processes. On the other hand, although conceptually valid, the exclusion of the internal intermediate transactions from the net sector manufacturing division indexes results in incomplete coverage of the targeted sector of the economy. In order to increase coverage, while still avoiding the multiple counting issue, independent net sector measures have been constructed for manufacturing subdivisions and groups as defined in the *Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition* (1292.0). While having intermediate transactions between different manufacturers within a given subdivision or group netted out, intermediate transactions with manufacturers in other subdivisions/groups are in-scope.

It is important to note that the manufacturing division output and input indexes, and the corresponding subdivision/group indexes, are independent constructs. As such, a division index cannot be derived by simply weighting together the separate subdivision and group indexes as the latter net sector indexes are not a straightforward decomposition of the broader net sector index.

**Price indexes of articles produced by manufacturing industries**

The manufacturing division output index measures changes in prices of articles produced by establishments classified to ANZSIC Division C, Manufacturing, that are sold or transferred to domestic establishments outside the manufacturing division for intermediate use, or used as capital equipment, or exported. It excludes intermediate transactions in articles produced by establishments within the manufacturing division and sold or transferred to other establishments within the manufacturing division for further processing.

The price of articles produced by manufacturing, as measured by the manufacturing division output index, increased by more than 16% between 2001–02 and 2005–06 (table 28.15).

**28.15 MANUFACTURING DIVISION OUTPUT INDEX(a)(b)(c)**

2001–02	128.8
2002–03	130.3
2003–04	130.4
2004–05	139.3
2005–06	149.4

(a) Reference base year is 1989–90 = 100.0. (b) As defined in the Australian and New Zealand Standard Industrial Classification (ANZIC), 1993 edition. (c) The index is on a net basis and relates in concept only to transaction in articles produced that are sold outside the Australian Manufacturing industry.

Source: *Producer Price Indexes, Australia* (6427.0).

The output price indexes for ANZSIC manufacturing subdivisions and groups (table 28.16) measure changes in prices of articles produced by establishments classified to each defined ANZSIC manufacturing sector which are sold or transferred to establishments outside that sector. These exclude intermediate transactions in articles produced by establishments within the specific sector and sold or transferred to other establishments in the same sector for further processing.

In 2005–06, the largest increase in the price of articles produced was in the petroleum and coal products industry at 31%, followed by increases in the price of basic metal products manufacturing (18%).

### Price indexes of materials used in manufacturing industries

The manufacturing division input index (table 28.17) measures changes in prices of materials used by establishments classified to ANZSIC Division C, Manufacturing, that have been purchased or transferred in from domestic establishments outside the manufacturing division or imported. It excludes intermediate transactions in materials produced by establishments within the manufacturing division and sold or transferred to other establishments within the manufacturing division for further processing.

The price of materials used in manufacturing, as measured by the manufacturing division input index, increased by more than 16% between 2001–02 and 2005–06, driven mainly by increases in the price of domestic materials. In 2005–06, the price of domestic materials was 28% higher than the price in 2001–02, while the price of imported materials had fallen by more than 2%.

#### 28.16 PRICE INDEX OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES(a)(b)

ANZSIC Subdivision(c)	2000–01	2004–05	2005–06	Change from 2000–01 to 2005–06	Change from 2004–05 to 2005–06
	Index	Index	Index	%	%
Food, beverages and tobacco	131.4	146.2	150.3	14.4	2.8
Textiles and textile products	108.6	116.3	116.2	7.0	0.1
Knitting mills, clothing, footwear and leather	120.7	123.9	124.9	3.5	0.8
Log sawmilling and other wood products	130.7	140.5	143.8	10.0	2.3
Paper and paper products	114.9	117.4	118.5	3.1	0.9
Printing, publishing and recorded media	152.4	157.3	159.05	4.4	1.1
Petroleum and coal products	190.2	226.8	297.4	56.4	31.1
Chemicals	115.8	120.8	123.4	6.6	2.2
Rubber and plastics	119.1	130.8	136.4	14.5	4.3
Non-metallic mineral products	117.8	131.2	134.1	13.8	2.2
Basic metal products	115.4	129.4	152.9	32.5	18.2
Fabricated metal products	116.7	133.6	140.6	20.5	5.2
Transport equipment and parts	124.1	126.1	126.3	1.8	0.2
Electronic equipment and other machinery	112.3	115.9	118.6	5.6	2.3
Other manufacturing	128.8	131.6	138.5	7.5	5.2

(a) Reference base year is 1989–90 = 100.0. (b) These indexes are on a net basis and relate in concept only to transactions in articles produced that are sold outside the particular subsector of the Australian Manufacturing industry. (c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Producer Price Indexes, Australia*, (6427.0).

#### 28.17 MANUFACTURING DIVISION INPUT INDEX(a)(b)

	Materials used		
	Domestic	Imported	Total
2001–02	134.1	130.3	132.4
2002–03	136.7	125.4	131.9
2003–04	134.1	115.2	125.9
2004–05	149.7	120.8	137.1
2005–06	172.3	127.2	154.5

(a) Reference base year is 1989–90 = 100.0. (b) The index is on a net basis and relates in concept only to transaction in articles produced that are produced outside the Australian Manufacturing industry.

Source: *Producer Price Indexes, Australia* (6427.0).

The input price indexes for ANZSIC manufacturing subdivisions and groups (table 28.18) measure changes in prices of materials used by establishments classified to each defined ANZSIC manufacturing sector which are purchased or transferred in from establishments outside that sector. These exclude intermediate transactions in materials produced by establishments within the specific sector and sold or transferred to other establishments in the same sector for further processing.

In 2005–06 the price of materials used in manufacturing, as measured by the manufacturing division input index, increased by almost 13%. Increases occurred for the materials used in the majority of constituent manufacturing industries. The largest increase in price was for the materials used in petroleum and coal products manufacturing (37%), followed by the materials used for basic metal products (27%), fabricated metal products (10%) and electronic equipment and other machinery (7%) industries.

## Construction industries indexes

### Price index of the output of the construction industry

The producer price index of the output of the general construction industry (table 28.19) measure changes in prices of the output of

ANZSIC Subdivision 41 – General construction and in the output of the constituent groups and classes of this subdivision. These include house construction (measured using the CPI project home series, excluding sponsored government home buyers' schemes), other residential building construction, non-residential building construction and non-building construction.

Between 2004–05 to 2005–06 the price indexes for output of the building construction and the non-building construction components of the general construction industry increased by 4.7% and 5.9% respectively (table 28.19). The price index for the output of the general construction industry increased by 4.8% in the period.

### Price index of materials used in house building

The producer price index of materials used in house building measures changes in the prices of selected materials used in the construction of houses in the Statistical Division containing each state capital city.

Table 28.20 shows price index series for each of the six state capital cities and for the weighted average of the six state capital cities.

**28.18 PRICE INDEX OF MATERIALS USED IN MANUFACTURING INDUSTRIES(a)(b)**

ANZSIC Subdivision(c)	2000–01	2004–05	2005–06	Change from 2000–01 to 2005–06	Change from 2004–05 to 2005–06
	Index	Index	Index	%	%
Food, beverages and tobacco	121.0	141.8	143.8	18.8	1.4
Textiles and textile products	102.3	101.0	100.1	–2.2	–1.0
Knitting mills and clothing	106.5	104.4	104.3	–2.1	–0.1
Footwear	120.3	122.2	121.4	0.9	–0.6
Leather and leather products	107.2	87.6	86.2	–19.6	–1.6
Log sawmilling and other wood products	132.8	126.6	133.5	0.5	5.5
Paper and paper products	110.0	103.1	105.8	–3.9	2.5
Printing, publishing and recorded media	116.5	108.0	108.6	–6.8	0.6
Petroleum and coal products	217.7	216.9	296.1	36.0	36.5
Chemicals	126.3	121.3	124.7	–1.2	2.8
Rubber and plastics	123.9	134.4	135.9	9.7	1.1
Non-metallic mineral products	111.5	135.9	139.1	24.8	2.4
Basic metal products	101.7	116.0	147.0	44.5	26.7
Fabricated metal products	111.7	127.4	140.1	25.5	10.0
Transport equipment and parts	125.2	126.2	132.6	5.9	5.1
Electronic equipment and other machinery	108.0	117.1	125.1	15.9	6.8
Other manufacturing	125.6	132.5	141.2	12.4	6.6

(a) Reference base year is 1989–90 = 100.0. (b) The index is on a net basis and relates in concept only to transactions in materials used in the industry that are produced outside that particular subsector of the Australian Manufacturing industry, or imported from overseas. (c) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition.

Source: *Producer Price Indexes, Australia*, (6427.0).

**28.19 PRICE INDEX OF THE OUTPUT OF THE GENERAL CONSTRUCTION INDUSTRY(a)**

ANZSIC Subdivision(b)	2001-02	2002-03	2003-04	2004-05	2005-06
General construction Subdivision (41)	107.9	112.7	121.1	130.2	136.5
Building construction (411)	107.8	112.4	121.2	130.6	136.8
House construction (4111)	112.0	116.5	123.7	130.6	136.1
Residential building construction n.e.c. (4112)	105.1	110.4	121.0	132.1	138.7
Non-residential building construction (4113)	105.1	109.6	119.5	131.3	138.2
Non-building construction(c) (412)	109.7	116.0	120.8	125.8	133.2
Road and bridge construction (4121)	109.7	116.0	120.8	125.8	133.2

(a) Reference base year is 1998-99 = 100.0. (b) Classified according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. (c) Road and bridge construction is the sole contributor to Non-building construction.

Source: *Producer Price Indexes, Australia* (6427.0).

**28.20 PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING(a)(b)**

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hobart	Weighted average of six state capital cities
2001-02	132.0	125.0	122.0	130.6	119.4	128.4	126.0
2002-03	137.2	128.4	127.6	135.7	123.0	133.7	130.5
2003-04	142.3	131.1	132.1	138.4	125.8	139.4	134.3
2004-05	146.6	134.6	137.3	143.4	131.1	148.0	138.8
2005-06	149.5	137.0	140.8	145.8	136.0	151.0	142.0

(a) Reference base year is 1989-90 = 100.0. (b) The separate city indexes measure price movement within each city individually. They do not compare price levels between cities.

Source: *Producer Price Indexes, Australia* (6427.0).

**Service industries price indexes**

In recognition of the increasing contribution of service industries to the Australian economy, the ABS has progressively extended the scope of the producer price indexes into the service sectors of the economy. Service industry price indexes are an important part of a broader ABS plan to provide a range of statistics that will improve the measurement of various aspects of service industries in the Australian economy.

The ABS publishes producer price indexes for the output of the Transport (freight) and Storage Division, and the Property and Business Services Division of ANZSIC. The index for Transport (freight) and storage industries contains important freight transport industries such as road, rail, sea and air. The index for Property Services industries contains services such as real estate agents and the hire and lease of machinery and equipment. The index for Business Services industries contains a range of services including surveying, computer services, legal and accounting services, employment placement, pest control and security services.

Tables 28.21, 28.22 and 28.23 provide broad level, summary index series.

**International trade price indexes**

International trade price indexes measure the change in prices of goods either as they cross the customs frontier entering Australia (i.e. the imports) or leaving Australia bound for another country (i.e. exports).

As the prices used in these indexes are expressed in Australian currency, changes in the relative value of the Australian dollar against overseas currencies (in particular, the major trading currencies) can have a direct and significant impact on the price movements of the many commodities that are bought or sold in terms of prices expressed in overseas currencies. Forward exchange cover is excluded from the prices used in the indexes.



**28.21 PRICE INDEX FOR TRANSPORT (FREIGHT) AND STORAGE INDUSTRIES(a)**

	Road transport	Rail transport	Water transport	Air and space transport	Other transport	Services to transport	Storage	Transport (freight) and storage Division
2001-02	105.0	94.9	109.4	103.5	102.9	97.0	102.2	103.2
2002-03	107.3	94.8	106.3	111.4	103.4	100.2	103.3	105.2
2003-04	110.2	95.7	105.2	114.4	101.7	101.4	104.9	107.1
2004-05	115.8	96.7	114.3	111.1	107.8	104.2	107.6	111.2
2005-06	123.0	98.0	111.2	119.5	107.5	106.6	113.6	115.9

(a) Reference base year is 1998-99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

**28.22 PRICE INDEX FOR PROPERTY SERVICES INDUSTRIES(a)**

	Property operators and developers	Real estate agents	Machinery equipment hiring and leasing	Property services Subdivision
2001-02	111.8	133.9	98.8	111.5
2002-03	111.2	149.7	100.0	113.3
2003-04	111.6	169.0	104.0	116.9
2004-05	115.6	175.7	106.9	121.0
2005-06	122.3	186.8	109.2	127.6

(a) Reference base year is 1998-99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

**28.23 PRICE INDEX FOR BUSINESS SERVICES INDUSTRIES(a)**

	Scientific research	Technical services	Computer services	Legal and accounting services	Marketing and business management services	Other business services	Business services Subdivision
2001-02	107.0	106.7	112.6	113.2	114.4	105.7	110.1
2002-03	113.5	113.4	114.7	117.7	117.0	108.9	113.6
2003-04	114.3	119.7	115.4	124.4	120.1	113.3	117.5
2004-05	117.4	124.2	115.1	129.0	120.6	116.8	119.9
2005-06	124.1	134.0	117.2	136.9	123.7	119.7	124.4

(a) Reference base year is 1998-99 = 100.0.

Source: *Producer Price Indexes, Australia* (6427.0).

The prices collected and used in compiling the indexes relate to specified standards, grades, types, etc., of each commodity with the aim of incorporating in the index the price changes of representative goods of constant quality. Wherever possible, prices to or from specific major markets are used for each of the goods priced, in order to lessen the impact of price variations attributable solely to changes in market origins or destinations. In most cases, prices are combined using fixed weights between markets. Weights between markets are reviewed periodically and revised where necessary. (For more information on the international trade price indexes, refer to *Producer and International Trade Price Indexes: Concepts, Sources and Methods*, 2006 (6429.0).)

**Import price index**

The import price index measures changes in the prices of imports of merchandise landed in Australia, based on their 'free-on-board' (f.o.b.) prices in the country of origin. The index numbers for each quarter relate to prices of imports landed in Australia during the period.

The main uses of the import price index are as deflators for the production of chain volume estimates of imports, as a guide to future inflationary trends for macro-economic purposes and the indexation of business contracts.

The commodities represented in the price index cover about 95% of merchandise imports.

This series has a reference base year of 1989-90 = 100.0.



Table 28.24 provides import price index numbers for major community groups based on the *UN Standard International Trade Classification, Revision 3* (SITC Rev. 3), and the All groups index numbers, for the period 2002–03 to 2005–06.

## Export price index

The export price index measures changes in the prices of all exports of merchandise from Australia, including re-exports (goods which are imported into Australia then exported without alteration). The index numbers for each quarter relate to the prices of exports actually shipped during that quarter.

This series has a reference base year of 1989–90 = 100.0.

The commodities represented in the price index constitute approximately 95% of the total value of exports of merchandise from Australia.

In general, prices are obtained from the major exporters of the selected commodities included in the index. The prices used in the index are the prices at which the goods physically leave Australia, that is, the prices are f.o.b. at the main Australian ports of export.

Table 28.25 provides export price index numbers for major community groups based on the SITC Rev. 3, and the All groups index numbers, for the period 2002–03 to 2005–06.

### 28.24 IMPORT PRICE INDEX(a)

Community group (SITC section)(b)	2002–03	2003–04	2004–05	2005–06
Food and live animals chiefly for food (0)	125.1	116.9	120.0	125.9
Beverage and tobacco (1)	139.9	134.1	128.2	132.5
Crude materials, inedible, except fuels (2)	123.1	112.2	115.1	121.4
Minerals fuels, lubricants and other related materials (3)	174.9	156.2	202.3	288.0
Animals and vegetable oils, fats and waxes (4)	141.0	134.9	142.2	160.9
Chemical and other related products n.e.s. (5)	120.2	113.2	116.8	117.9
Manufactured goods classified chiefly by material (6)	129.2	118.9	123.2	126.7
Machinery and transport equipment (7)	118.7	103.3	98.3	95.4
Miscellaneous manufactured articles (8)	132.1	114.4	111.8	112.3
Commodities and transactions n.e.s. (9)	115.4	110.2	113.3	142.3
All groups	126.0	112.3	112.8	117.0

(a) Reference base year is 1989–90 = 100. (b) Classified according to the UN Standard International Trade Classification, Revision 3 (SITC Rev. 3).

Source: *International Trade Price Indexes, Australia, June Quarter 2006* (6457.0).

### 28.25 EXPORT PRICE INDEX(a)

Community group (SITC section)(b)	2002–03	2003–04	2004–05	2005–06
Food and live animals chiefly for food (0)	109.3	100.7	106.8	112.0
Beverage and tobacco (1)	143.8	124.4	126.4	124.8
Crude materials, inedible, except fuels (2)	97.0	90.0	103.1	121.3
Minerals fuels, lubricants and other related materials (3)	160.9	139.4	184.9	254.0
Chemical and other related products n.e.s. (5)	100.4	97.2	108.3	118.8
Manufactured goods classified chiefly by material (6)	102.1	100.6	121.1	139.8
Machinery and transport equipment (7)	100.6	89.8	88.4	89.8
Miscellaneous manufactured articles (8)	104.5	90.8	89.2	94.4
All groups	111.7	102.5	116.4	136.0

(a) Reference base year is 1989–90 = 100. (b) Classified according to the UN Standard International Trade Classification, Revision 3 (SITC Rev. 3).

Source: *International Trade Price Indexes, Australia, June Quarter 2006* (6457.0).

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## NATIONAL ACCOUNTS

National accounts are designed to provide a systematic summary of national economic activity and have been developed to assist in the practical application of economic theory.

The Australian system of national accounts includes national income, expenditure, and product accounts, financial accounts, the national balance sheet, input-output tables and satellite accounts. At their summary level, the national accounts reflect key economic flows – production, the distribution of incomes across sectors, consumption, saving and investment. At their more detailed level, they are designed to present a statistical picture of the structure of the economy and the detailed processes that make up domestic production and its distribution.

The financial accounts show the financial assets and liabilities of the nation and of each institutional sector and inter-sectoral financial transactions. The balance sheet is a comprehensive statement of produced and non-produced assets, liabilities to the rest of the world and net worth. Satellite accounts allow the development of an integrated set of statistics about a particular sector which crosses a number of industries or sectors. Input-output tables show the structure of a country's production system for a particular period. They show which goods and services are produced by each industry and how they are used.

The national accounts also include many detailed classifications (e.g. by industry, by purpose, by commodity, by state and territory, and by asset type) relating to major economic aggregates.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## Defining and measuring GDP

Australia's national accounts statistics are compiled in accordance with international standards contained in the *System of National Accounts 1993*. Australia's application of these standards is described in *Australian System of National Accounts: Concepts, Sources and Methods* (5216.0).

The main output from the national accounts is a measure of the overall value of economic production in Australia in a given period, but without any double counting of the goods and services being produced. Many goods and services are bought by businesses for use in their own productive activities (e.g. steel is bought by car manufacturers). If the value of all goods and services produced were simply added together there would be serious duplication because some goods and services would be added in several times at various stages of production. The overall measure of production, excluding double counting, is called 'gross domestic product', which is commonly referred to as GDP. It is formally defined as:

The total market value of goods and services produced in Australia after deducting the cost of goods and services used up (intermediate consumption) in the process of production, but before deducting allowances for the consumption of fixed capital (depreciation).

The performance of the Australian economy is represented in the national accounts by such measures as growth in GDP. While movements in the volume measure of GDP (from which the direct effects of price changes have been removed) are an important indicator of economic growth, there is no single measure which can describe all aspects of the wellbeing of Australians. (The article *Life satisfaction and measures of progress*, in the *Health* chapter, discusses aspects of the relationship between people's level of satisfaction with their lives and national wellbeing.)

The national accounts provide important information for a range of purposes. The system of national accounts also provides a framework or structure which can be, and has been, adapted and extended to facilitate the examination of many economic, environmental and social policy issues.

There are three ways of measuring GDP.

*Income approach* – Measures income generated by the economy: compensation of employees (wages and salaries, and employers' social contributions); gross operating surplus (profits); gross mixed income (income from unincorporated businesses); and taxes less subsidies.

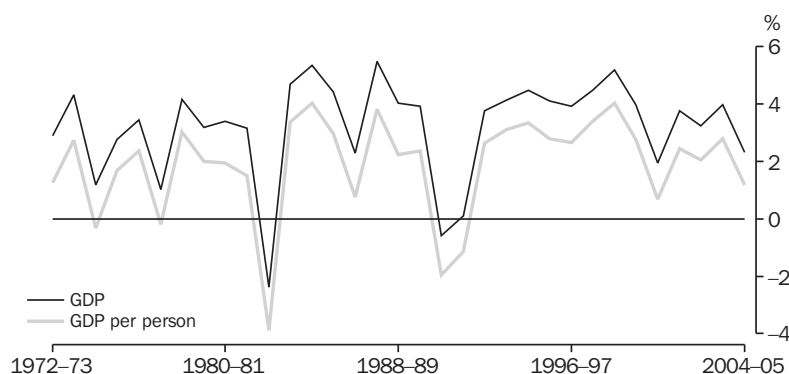
*Expenditure approach* – Measures final expenditures on goods and services (i.e. those goods and services which are not processed any further), adding on the contributions of changes in inventories and the value of exports, and deducting the value of imports.

*Production approach* – Calculates the sum of the value of goods and services produced by each industry (its output at basic prices, which implicitly includes taxes less subsidies on production) and deducting the cost of goods and services used up by the industry in the productive process (intermediate consumption), which leaves the value added by the industry. In the production approach, taxes less subsidies on products are separately identified and are not included in the output of industries at basic prices. (For more information on the distinction between taxes and subsidies on products and taxes and subsidies on production see *Australian System of National Accounts: Concepts, Sources and Methods* (5216.0).)

While each approach should, conceptually, deliver the same estimate of GDP, if the three measures are compiled independently using different data sources then different estimates of GDP result. However, the Australian national income, expenditure and product estimates have been integrated within annual balanced supply and use tables which are available for 1994–95 to 2003–04. Integration with balanced supply and use tables ensures that the same estimate of GDP is obtained from the three approaches, and thus annual estimates using the income, expenditure and production approaches are identical for the years for which supply and use tables are available.

Prior to 1994–95, and for the latest financial year, the estimates using each approach are based on independent sources, and there are differences between the income, expenditure and production estimates. Nevertheless, for these periods, a single estimate of GDP has been compiled.

## 29.1 GDP AND GDP PER PERSON



Source: Australian System of National Accounts, 2004-05 (5204.0).

The volume measure (for a discussion of volume measures, see *Volume or 'real' GDP*) of GDP increased by 2.3% in 2004-05, following an increase of 4.0% in 2003-04. For some analytical purposes, it is important to allow for the impact of population growth on movements in GDP. Annual growth in GDP per person has been about one to two percentage points lower than that for GDP since the mid-1970s and was negative in 1977-78, 1982-83, 1990-91 and 1991-92 (graph 29.1). In 2004-05, GDP per person increased by 1.2%.

Compared with many developed economies, Australia has experienced relatively strong growth over the past ten years. With an average annual growth rate of 3.2% for GDP volumes from 1996 to 2005, it is higher than the 'G7' countries (table 29.2).

## Volume or 'real' GDP

The reason for having volume estimates in the national accounts is to provide time series of expenditure and production aggregates which are free of the direct effects of price change. All the current price aggregates of expenditure and production appearing in the national accounts are estimates of the sums of the values of individual transactions. Each of these transactions has two components: a price and a quantity. From one period to another the quantities and prices comprising the transactions change. This means that when the current price value of an aggregate, such as GDP, in one period is compared with the current price value in another period, the difference between them usually reflects both changes in quantity and changes in price of the constituent transactions. In order to estimate by how much the 'volume' of GDP has changed between the two periods we need to measure the value of GDP in each period using the same unit prices.

For many years the Australian Bureau of Statistics (ABS) derived constant price estimates as a means of measuring changes in the volumes of aggregates. Constant price estimates are derived by fixing the unit prices of goods and services to those of some base year. These base year unit prices are effectively the weights used to combine

## 29.2 GDP VOLUMES, International comparison — 1996 to 2005

	Average annual growth rate %
<b>Australia</b>	<b>3.2</b>
'G7' countries	
Canada	3.2
France	2.1
Germany	1.3
Italy	1.2
Japan	1.0
United Kingdom	2.5
United States of America	2.9
Total 'G7'	2.2
New Zealand	2.9

Source: Organisation for Economic Co-operation and Development, *Quarterly National Accounts*, Vol. 2006/1.

the quantities of the different goods and services purchased or produced. The unit prices of different goods and services tend to grow at different rates – some at dramatically different rates. For example, the prices of computer equipment are estimated to have declined by about 92% between 1989–90 and 2003–04, while the prices of most other goods and services have increased. Therefore, over time, the price relativities of some goods and services change appreciably. This adversely affects the usefulness of constant price estimates for periods distant from the base year, and implies that the base year used to derive constant price estimates needs to be changed from time to time. It was ABS practice, in common with many other national statistical agencies, to change the base year every five years. However, it has been found that rebasing every five years is commonly insufficient, and hence the latest international standards recommend rebasing every year and linking the resulting indexes to form annually reweighted chain volume measures.

Volume estimates, formed through annual reweighting are not generally additive. In other words, component volume estimates do not usually sum to a total in the way original current price components do. In order to minimise the impact of this characteristic, the ABS uses the latest base year as the reference year (i.e. the year when the annual volume estimate equals the current price value). Re-referencing changes the level of the volume estimates, but does not of itself change the growth rates. By adopting this approach, non-additivity does not apply to the reference year or the following year.

The decision to replace all ABS constant price estimates with chain volume measures was announced in March 1998 in *Information Paper: Australian National Accounts, Introduction of Chain Volume and Price Indexes* (5248.0). That paper describes chain volume measures, their advantages and disadvantages with respect to constant price estimates, the advantages and disadvantages of different chain volume formulae, and the results of an empirical analysis.

## Chain price indexes and implicit price deflators

A by-product of the calculation of volume measures is the implicit price deflator (IPD). An IPD is the price index obtained when a current price estimate is divided by the corresponding volume measure. The ABS publishes a time series of IPDs for each of the expenditure components of GDP (excluding the changes in inventories).

Chain price indexes are also published for the major expenditure aggregates. They are the prices equivalent of chain volume estimates. Quarterly chain price indexes are generally superior to IPDs for measuring price change, because the quarter-to-quarter growth rates calculated from the IPDs reflect changes in composition of the expenditure aggregate as well as pure price change. For example, it is possible for an IPD to increase or decrease from one-quarter to another without there being any change in price. Changes in chain price indexes, on the other hand, only reflect pure price change.

## National income, expenditure and product accounts

The Australian national income, expenditure and product accounts are compiled and published in some detail every quarter, in *Australian National Accounts: National Income, Expenditure and Product* (5206.0), and in greater detail once a year, in *Australian System of National Accounts* (5204.0).

### GDP account

The GDP account indicates changes in Australian economic activity over time. Table 29.3 shows annual time series from 2000–01 to 2004–05. Table 29.4 shows expenditure on GDP in volume terms.

### 29.3 GDP ACCOUNT, Current prices

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
General government	125 264	132 301	141 564	150 328	162 993
Households	411 024	434 552	462 095	493 287	522 551
<i>Total final consumption expenditure</i>	536 288	566 853	603 659	643 615	685 544
Gross fixed capital formation					
Private	126 443	141 152	165 081	181 019	193 320
Public	25 031	27 679	28 708	30 704	33 590
<i>Total gross fixed capital formation</i>	151 474	168 831	193 788	211 722	226 910
Changes in inventories	818	-102	2 829	5 944	2 123
Gross national expenditure	688 580	735 582	800 276	861 282	914 577
Exports of goods and services	154 669	154 778	149 691	144 676	163 845
less Imports of goods and services	153 910	154 580	167 170	167 706	189 156
Statistical discrepancy(a)	—	—	—	—	2 258
<b>Gross domestic product</b>	<b>689 340</b>	<b>735 783</b>	<b>782 798</b>	<b>838 251</b>	<b>891 524</b>
Compensation of employees	339 301	356 095	377 268	398 662	426 419
Gross operating surplus	210 199	225 841	242 162	263 623	286 978
Gross mixed income	59 088	69 645	70 698	76 849	76 971
Total factor income	608 588	651 581	690 128	739 134	790 368
Taxes less subsidies on production and imports	80 752	84 202	92 670	99 117	103 281
Statistical discrepancy(b)	—	—	—	—	-2 125
<b>Gross domestic product</b>	<b>689 340</b>	<b>735 783</b>	<b>782 798</b>	<b>838 251</b>	<b>891 524</b>

(a) Expenditure-based. (b) Income-based.

Source: Australian System of National Accounts, 2004-05 (5204.0).

### 29.4 EXPENDITURE ON GDP, Volume measures(a)(b)

	2000-01	2001-02	2002-03	2003-04	2004-05
	\$m	\$m	\$m	\$m	\$m
Final consumption expenditure					
General government	136 601	140 386	145 139	150 329	155 940
Households	438 348	451 190	467 551	493 287	514 349
<i>Total final consumption expenditure</i>	574 915	591 545	612 663	643 615	670 289
Gross fixed capital formation					
Private	130 842	143 672	167 019	181 019	189 283
Public	25 429	27 704	28 630	30 704	33 071
<i>Total gross fixed capital formation</i>	156 317	171 424	195 653	211 722	222 354
Domestic final demand	730 552	762 580	808 291	855 338	892 644
Changes in inventories	2 195	31	1 030	5 944	2 485
Gross national expenditure	732 193	763 405	810 358	861 282	895 129
Exports of goods and services	144 862	143 763	142 674	144 676	148 587
less Imports of goods and services	129 787	131 621	148 809	167 706	188 216
Statistical discrepancy(c)	—	—	—	—	2 264
<b>Gross domestic product</b>	<b>752 434</b>	<b>780 817</b>	<b>806 161</b>	<b>838 251</b>	<b>857 765</b>

(a) Reference year is 2003-04. (b) Volume measures for years other than 2003-04 and 2004-05 are not additive.

(c) Expenditure-based.

Source: Australian System of National Accounts, 2004-05 (5204.0).

In volume terms (i.e. after the effects of price change are removed from the dollar value of Australia's production) GDP recorded a growth rate of 2.3% in 2004–05. This was lower than the 4.0% recorded in the previous year.

The GDP account can also be used to show changes in the share of income accruing to labour (i.e. compensation of employees) compared with the share accruing to capital (i.e. profits, defined as the gross operating surplus of non-financial and financial corporations). Graphs 29.5 and 29.6 show how the shares of total factor income

accruing to wages and to profits have changed since 1968–69. (Total factor income is equal to the sum of compensation of employees, gross operating surplus and gross mixed income.)

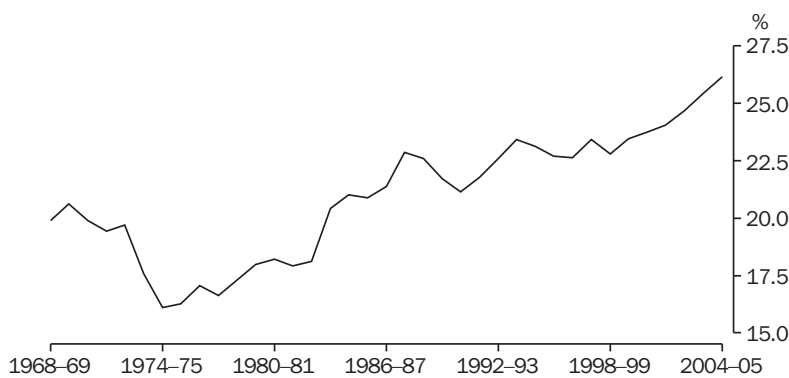
The highest recorded value of the wages share of total factor income was 62.6% in 1974–75. The wages share in 2004–05 was 54.0%, relatively unchanged from the previous year. The wages share has not been at this level since 1988–89. The profits share of total factor income has been growing steadily since 1998–99. In 2004–05 profits share was 26.2%, the highest share recorded.

**29.5 WAGES SHARE OF TOTAL FACTOR INCOME**



Source: Australian System of National Accounts, 2004–05 (5204.0).

**29.6 PROFITS SHARE OF TOTAL FACTOR INCOME**



Source: Australian System of National Accounts, 2004–05 (5204.0).



## National income account

The national income account shows the sources of national income and how much of this income is spent on final consumption. That part of income which is not spent in this way is saving. Table 29.7 shows annual time series from 2000–01 to 2004–05.

Graph 29.8 shows net saving by institutional sector as a proportion of GDP for the years 1968–69 to 2004–05. Household net saving as a

percentage of GDP generally rose between 1968–69 and 1974–75. Since then it has fallen from a high of 11.4% in 1974–75 to a position in 2002–03 where consumption by households exceeded income and, consequently, household net saving was negative for the first time. In 2004–05 consumption exceeded household income, by \$18.4 billion (b) (table 29.9).

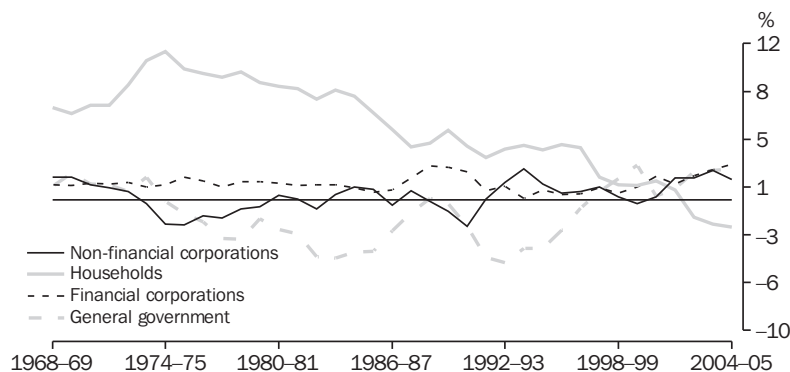
**29.7 NATIONAL INCOME ACCOUNT, Current prices**

	2000–01	2001–02	2002–03	2003–04	2004–05
	\$m	\$m	\$m	\$m	\$m
<b>INCOME</b>					
Compensation of employees	339 301	356 095	377 268	398 662	426 419
Gross operating surplus	210 199	225 841	242 162	263 623	286 978
Gross mixed income	59 088	69 645	70 698	76 849	76 971
Taxes less subsidies on production and imports	80 752	84 202	92 670	99 117	103 281
Net primary income from non-residents	–18 737	–19 667	–22 491	–23 734	–31 216
Gross national income	670 603	716 116	760 307	814 517	862 433
Net secondary income from non-residents	32	–17	–214	–269	–420
<b>Gross disposable income</b>	<b>670 635</b>	<b>716 099</b>	<b>760 093</b>	<b>814 248</b>	<b>862 013</b>
<b>USE OF DISPOSABLE INCOME</b>					
Final consumption expenditure					
General government	125 264	132 301	141 564	150 328	162 993
Households	411 024	434 552	462 095	493 287	522 551
Total final consumption expenditure	536 288	566 853	603 659	643 615	685 544
Net saving(a)	26 709	33 452	34 405	42 384	41 698
Consumption of fixed capital	107 638	115 794	122 029	128 249	134 771
<b>Total use of gross disposable income</b>	<b>670 635</b>	<b>716 099</b>	<b>760 093</b>	<b>814 248</b>	<b>862 013</b>

(a) Net saving is derived as a balancing item.

Source: Australian System of National Accounts, 2004–05 (5204.0).

**29.8 NET SAVING, Relative to GDP**



Source: Australian System of National Accounts, 2004–05 (5204.0).

General government net saving was negative from 1974–75 to 1996–97 (except for 1988–89). In 2004–05 it was positive at 2.4% of GDP (\$21.4b). In 2004–05 net saving of non-financial corporations was 1.6% of GDP (\$14.1b). Net saving of financial corporations was negative from 1981–82 to 1986–87, the only period for which this sector has recorded negative net saving. In 2004–05 net saving of financial corporations was 2.8% of GDP (\$24.6b).

## National capital account

The national capital account shows how the saving from the national income account and consumption of fixed capital (depreciation) are used to finance gross fixed capital formation. If, as is currently the case for Australia, the nation's saving and consumption of fixed capital are not sufficient to pay for all the fixed capital needed for Australian production, the shortfall must be borrowed from overseas. The amount borrowed from overseas is shown in the national capital

account as a negative entry for net lending to non-residents. Table 29.9 shows annual time series from 2000–01 to 2004–05.

Graph 29.10 shows gross fixed capital formation (investment) by institutional sector as a proportion of GDP. For non-financial corporations this proportion has generally been in the range 10–12% of GDP since 1968–69. In 2004–05 investment by non-financial corporations was 11.5% of GDP. Household investment has generally remained at around 9% of GDP since the mid-1970s. However, over the past three years household investment has risen to over 10% of GDP. In 2004–05 the ratio of household investment to GDP was 10.8%. General government investment as a proportion of GDP peaked at 4.6% in 1975–76. It has generally fallen since and was 2.2% of GDP in 2004–05. Financial corporations investment peaked in 1989–90 at 2.0% of GDP, and was 0.9% of GDP in 2004–05.

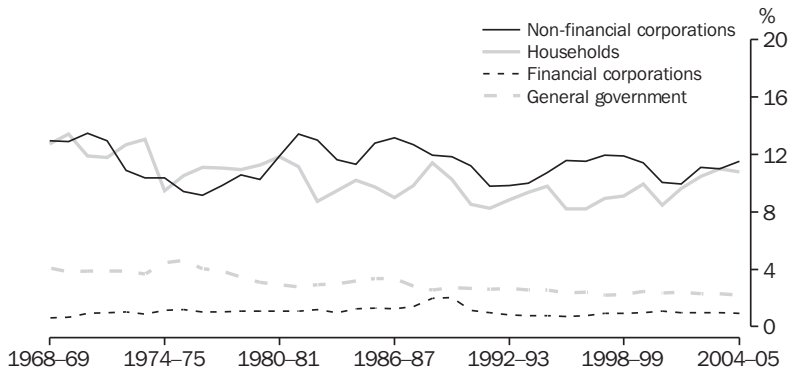
**29.9 NATIONAL CAPITAL ACCOUNT, Current prices**

	2000–01	2001–02	2002–03	2003–04	2004–05
	\$m	\$m	\$m	\$m	\$m
Net saving					
Non-financial corporations	1 788	12 275	13 190	19 095	14 135
Financial corporations	12 413	9 040	14 579	19 667	24 557
General government	2 206	6 652	16 870	18 951	21 413
Households	10 303	5 486	–10 235	–15 329	–18 416
<i>Total net saving</i>	26 709	33 452	34 405	42 384	41 698
Consumption of fixed capital	107 638	115 794	122 029	128 249	134 771
Net capital transfers receivable from non-residents	1 182	1 186	1 103	1 167	1 203
<b>Gross saving and capital transfers</b>	<b>135 529</b>	<b>150 432</b>	<b>157 537</b>	<b>171 800</b>	<b>177 672</b>
Gross fixed capital formation					
Private	126 443	141 152	165 081	181 019	193 320
Public corporations	8 763	10 126	10 939	11 655	13 917
General government	16 268	17 553	17 769	19 048	19 673
<i>Total gross fixed capital formation</i>	151 474	168 831	193 788	211 722	226 910
Changes in inventories					
Private non-farm	1 342	–300	3 347	6 281	1 940
Farm and public authorities	–524	198	–518	–337	182
<i>Total changes in inventories</i>	818	–102	2 829	5 944	2 123
Acquisitions less disposals of non-produced non-financial assets	73	170	112	72	3
Statistical discrepancy(a)	—	—	—	—	4 383
Net lending to non-residents	–16 837	–18 470	–39 193	–45 938	–55 747
<b>Total capital accumulation and net lending</b>	<b>135 529</b>	<b>150 432</b>	<b>157 537</b>	<b>171 800</b>	<b>177 672</b>

(a) Expenditure-based discrepancy less income-based discrepancy.

Source: Australian System of National Accounts, 2004–05 (5204.0).

### 29.10 INVESTMENT, Relative to GDP



Source: Australian System of National Accounts, 2004-05 (5204.0).

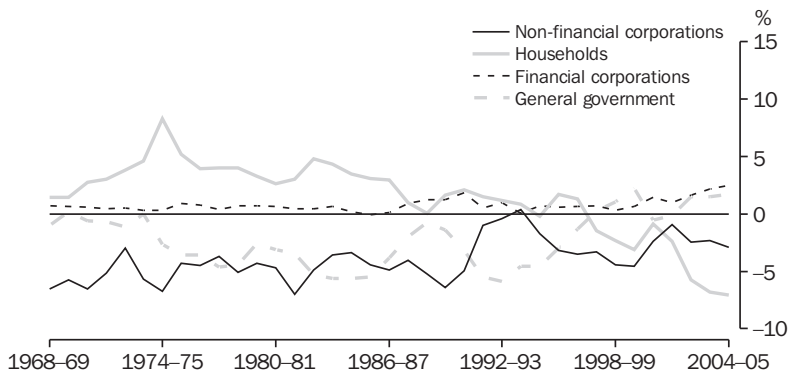
Graph 29.11 shows net lending by institutional sector as a proportion of GDP. A positive percentage for a sector indicates that it is a net lender to other sectors; a negative percentage indicates that it is a net borrower.

The household sector has been a net lender for most years. As a proportion of GDP, net lending by households peaked in 1974-75 at 8.3%. Since then it has trended downwards and the household sector has changed from a net lender to a net borrower. In 2004-05 household lending was -7.1%. Non-financial corporations have been net borrowers over the whole period from 1967-68 to 2004-05 (except for 1993-94), and the amounts

borrowed have fluctuated significantly from year to year. As a proportion of GDP, their net borrowing was 2.9% in 2004-05.

In 2004-05 financial corporations net lending represented 2.5% of GDP, the highest recorded level. After recording a record level of borrowing as a proportion of GDP in 1992-93 (5.9%), general government borrowing steadily declined. From 1997-98 to 1999-2000 the sector was a net lender and in 2000-01 and 2001-02 general government was a net borrower before returning to being a net lender in 2002-03. In 2004-05 general government net lending represented 1.7% of GDP.

### 29.11 NET LENDING, Relative to GDP



Source: Australian System of National Accounts, 2004-05 (5204.0).

## External account

The external account is derived from the detailed balance of payments current and capital accounts (see the *International accounts and trade* chapter). It shows Australia's exports and imports, incomes and transfers received by Australian residents from non-residents, and incomes and transfers payable to non-residents by Australian residents. The balance on the external account is net lending to non-residents. This is the same as

the balance in the national capital account.

Table 29.12 shows the external account for the last five years.

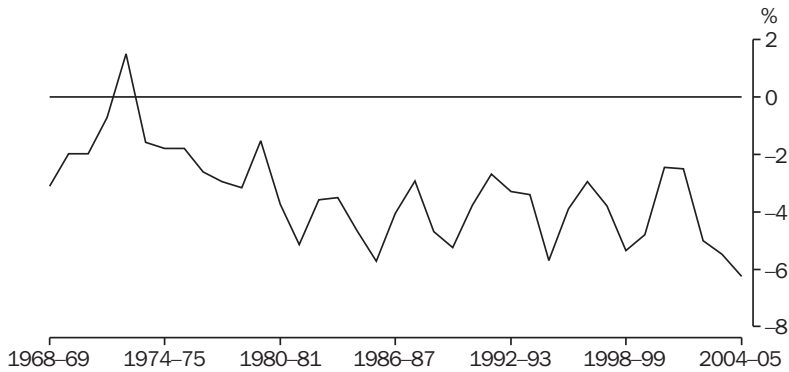
Australia has generally been a net borrower of funds from overseas. The only exception to this pattern was in 1972–73. Net borrowing from non-residents (i.e. negative net lending to non-residents), expressed as a proportion of GDP, increased significantly during the early-1980s and has remained at relatively high levels since then. Graph 29.13 shows net lending to non-residents as a proportion of GDP since 1968–69.

**29.12 EXTERNAL ACCOUNT, Current prices**

	2000–01	2001–02	2002–03	2003–04	2004–05
	\$m	\$m	\$m	\$m	\$m
<b>INCOME ACCOUNT</b>					
Income of non-residents					
Imports of goods and services	153 910	154 580	167 170	167 706	189 156
Primary income receivable					
Compensation of employees	1 057	1 196	1 324	1 619	1 743
Property income receivable	33 958	34 057	36 666	38 901	49 991
Total primary income receivable	35 015	35 253	37 990	40 520	51 734
Secondary income receivable	4 421	4 297	4 447	4 542	4 689
<b>Total income of non-residents</b>	<b>193 346</b>	<b>194 130</b>	<b>209 607</b>	<b>212 768</b>	<b>245 579</b>
Uses of income of non-residents					
Exports of goods and services	154 669	154 778	149 691	144 676	163 845
Primary income payable					
Compensation of employees	912	902	900	989	1 108
Property income payable	15 366	14 684	14 599	15 797	19 410
Total primary income payable	16 278	15 586	15 499	16 786	20 518
Secondary income payable	4 453	4 280	4 233	4 273	4 269
Balance on external income account	17 946	19 486	40 184	47 033	56 947
<b>Total use of income of non-residents</b>	<b>193 346</b>	<b>194 130</b>	<b>209 607</b>	<b>212 768</b>	<b>245 579</b>
<b>CAPITAL ACCOUNT</b>					
Balance on external income account	17 946	19 486	40 184	47 033	56 947
Capital transfers receivable	1 260	1 357	1 301	1 404	1 546
less Capital transfers payable	2 442	2 543	2 404	2 571	2 749
Total net capital transfers	-1 182	-1 186	-1 103	-1 167	-1 203
<b>Gross saving and capital transfers</b>	<b>16 764</b>	<b>18 300</b>	<b>39 081</b>	<b>45 866</b>	<b>55 744</b>
Acquisitions less disposals of non-produced non-financial assets	-73	-170	-112	-72	-3
Net lending (+) / net borrowing (-)	16 837	18 470	39 193	45 938	55 747
<b>Total capital accumulation and net lending (+) / net borrowing (-)</b>	<b>16 764</b>	<b>18 300</b>	<b>39 081</b>	<b>45 866</b>	<b>55 744</b>

Source: Australian System of National Accounts, 2004–05 (5204.0).

### 29.13 NET LENDING TO OVERSEAS, Relative to GDP



Source: Australian System of National Accounts, 2004-05 (5204.0).

The importance of foreign trade to the Australian economy is illustrated by graph 29.14, which shows the ratios of imports and exports of goods and services to GDP. In 2004-05 the import ratio was 21.2% and the export ratio, which had fallen for the previous three years, was 18.4%.

### State accounts

As well as Australia's national accounts, the ABS produces annual accounts for each of Australia's states and territories. These provide estimates of state final demand and gross state product (GSP). GSP is produced by summing the incomes generated in the production process (the income

approach to measuring total production). State final demand is equal to the sum of government and household final consumption expenditure and public and private gross fixed capital formation.

An important use of state accounts is to compare the performance of each state and territory. The volume measure of GSP in 2004-05 increased in all states. Tasmania and Queensland experienced the strongest growth (up 4.0%) followed by the Northern Territory (up 3.6%) (table 29.15). New South Wales showed the weakest growth rate in 2004-05 of 1.1% and was the only state to have a growth rate below the Australian GDP growth rate of 2.3%.

### 29.14 EXPORTS AND IMPORTS, Relative to GDP



Source: Australian System of National Accounts, 2004-05 (5204.0).

## 29.15 GROSS STATE PRODUCT(a)

	Growth rate	
	2003-04 to 2004-05	1994-95 to 2004-05(b)
	%	%
New South Wales	1.1	3.2
Victoria	2.3	3.8
Queensland	4.0	4.8
South Australia	2.6	3.1
Western Australia	2.7	4.1
Tasmania	4.0	2.1
Northern Territory	3.6	2.8
Australian Capital Territory	3.0	2.7
<b>Australia(c)</b>	<b>2.3</b>	<b>3.7</b>

(a) Volume measures. (b) Average annual compound rate.  
(c) Gross domestic product.

Source: *Australian National Accounts: State Accounts* (5220.0).

For some analytical purposes it is important to allow for the impact of population growth on movements in GSP. The annual growth in GSP per person was lower than GSP growth for all states. Most states showed growth rates in GSP per person that were stronger than the Australian growth rate of 1.2%. Tasmania (up 3.2%), the Australian Capital Territory (up 2.7%) and the Northern Territory (up 2.5%) showed the strongest growth while New South Wales had the weakest growth in GSP per person of 0.4% (graph 29.16).

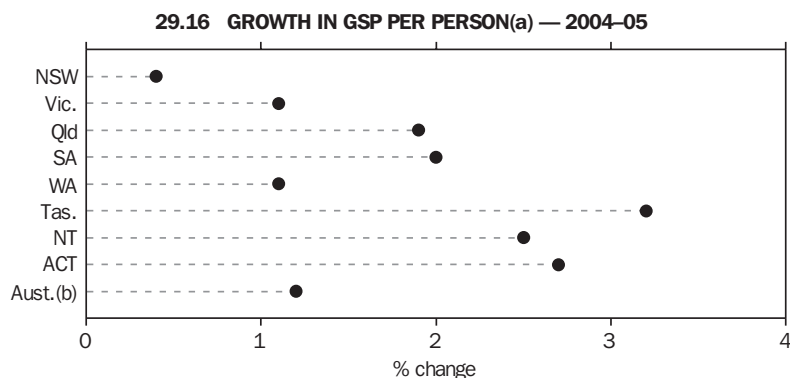
## National balance sheet

The national balance sheet provides estimates of the value of Australia's produced, non-produced and financial assets, its liabilities to the rest of the

world, and the net worth (defined as the difference between total assets and liabilities, including the value of equity in Australian enterprises owned by non-residents) of the total economy. The major national and sectoral balance sheet tables are published in *Australian System of National Accounts* (5204.0). Balance sheets are provided for each of the four domestic sectors: non-financial corporations, financial corporations, general government and households (including unincorporated enterprises and non-profit institutions serving households).

The non-produced assets included in the balance sheet cover experimental estimates of the value of some of Australia's natural resources: subsoil assets, timber available for log production and land. The monetary estimates of natural resources contained in the balance sheet are underpinned by physical estimates of particular natural resources. Further, since valuation of natural resources is a difficult and contentious undertaking, the monetary estimates of these natural resources should be considered in conjunction with the physical estimates.

The natural resource estimates are used to monitor the availability and exploitation of these resources and to assist in the formulation of environmental policies. More generally, data on the level, composition and change in assets and liabilities shown in the balance sheet indicate the extent of economic resources available to, and claims on, a nation and each of its institutional sectors.



(a) Volume measures. (b) Gross domestic product.

Source: *Australian National Accounts: State Accounts* (5220.0).

Sectoral balance sheets provide information necessary for analysing a number of topics; for example, the estimation of household liquidity; and the computation of widely used ratios, such as assets to liabilities, net worth to total liabilities, non-financial to financial assets, and debt to income. In a period of concern about the level of saving in Australia, national and sector balance sheets provide additional information on the relationships between consumption, saving and wealth accumulation.

## Real/volume balance sheets

An article introducing experimental real/volume balance sheets for Australia was published in the March quarter 2001 issue of *Australian National Accounts: National Income, Expenditure and Product* (5206.0). The real/volume balance sheet is designed to remove the effect of price changes, in much the same way as for other real and volume estimates, and allow for comparisons of changes in the value of Australia's assets and liabilities over time, free of the direct effects of inflation.

Volume estimates for the major categories of fixed asset stocks described as 'produced assets' – such as dwellings, non-dwelling construction, and machinery and equipment – have been available for many years in the Australian national accounts. However, volume estimates for stocks of non-produced, non-financial assets (land and other natural resources, etc.) and real estimates of financial assets, liabilities and net worth (wealth) have only recently become available. The calculation of volume and real estimates for some of these components is subject to some practical and conceptual difficulties, and therefore the term 'experimental' has been attached to these initial estimates.

The values of non-financial assets, such as dwellings, equipment and standing timber, can be decomposed into prices and volumes. Volume indexes, which measure the volume change of an aggregate between one period and another, can thus be derived by holding prices the same in the two periods.

Financial assets and liabilities cannot be decomposed into prices and volumes, and so it is impossible to derive volume indexes for them. The same is true of gross operating surplus and other income flows, and is the reason why volume estimates of GDP cannot be derived by aggregating volume indexes of its income components. However, it is possible to deflate income flows, financial assets and liabilities by a price index in order to measure the purchasing power of the aggregate in question over a designated numeraire set of goods and services. Such measures are called 'real' estimates.

Real net worth has been derived by aggregating the volume estimates of the non-financial assets with the real estimates of financial assets less liabilities.

The ABS will continue to develop estimates of the value and volume of Australia's assets for inclusion in national balance sheets as additional data become available. Estimation techniques will be refined as research in Australia and abroad explores issues relating to the valuation of natural resources.

## Current price balance sheet estimates

Australia's net worth at 30 June 2005 was estimated at \$4,458.9b (table 29.17), an increase of 10.1% since 30 June 2004. This was lower than the 13.2% growth over the previous period. Graph 29.18 shows that net worth has exhibited especially strong growth in the years since 1999–2000 during which annual rates of over 8% were achieved.

Total produced assets at 30 June 2005 were estimated at \$2,695.9b, an increase of 8.9% from the level at the end of June 2004. The estimated value of produced assets rose at an average annual rate of 5.5% between 30 June 1992 and 30 June 2005 and consistently accounted for over 60% of net worth. At 30 June 2005, dwellings, non-dwelling construction, and machinery and equipment represented 94% of total produced assets.

**29.17 NATIONAL BALANCE SHEET, Current prices — 30 June**

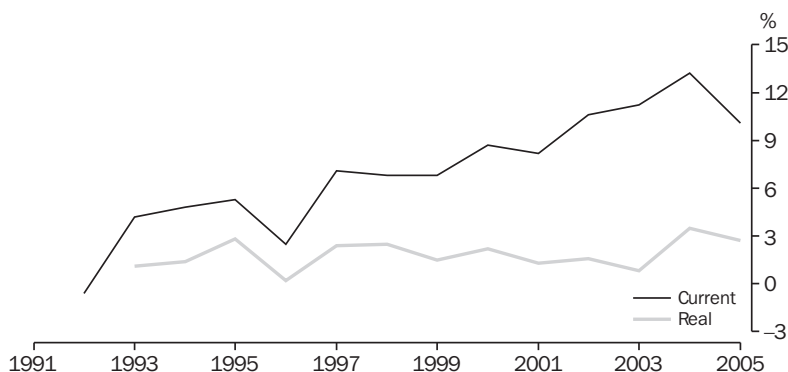
	2001	2002	2003	2004	2005
	\$b	\$b	\$b	\$b	\$b
<b>TOTAL ASSETS</b>	<b>3 765.7</b>	<b>4 102.3</b>	<b>4 527.1</b>	<b>5 144.4</b>	<b>5 597.7</b>
Non-financial assets	3 277.6	3 583.8	4 007.2	4 521.0	4 975.9
Produced assets	2 054.3	2 146.1	2 288.1	2 476.2	2 695.9
Fixed assets	1 945.1	2 036.6	2 175.7	2 358.0	2 571.1
Tangible fixed assets	1 917.6	2 007.3	2 144.9	2 325.8	2 537.8
Machinery and equipment	336.3	346.8	351.0	358.2	375.5
Non-dwelling construction	803.1	834.3	888.8	963.9	1 058.9
Livestock – fixed assets(a)	16.3	16.7	15.5	15.6	16.1
Dwellings	762.0	809.6	889.6	988.2	1 087.3
Intangible fixed assets	27.4	29.3	30.8	32.2	33.3
Computer software	26.7	28.5	29.9	31.3	32.3
Entertainment, literary or artistic originals	0.8	0.8	0.8	0.9	1.0
Inventories	109.2	109.5	112.4	118.2	124.8
Private non-farm(b)	88.0	86.9	90.7	95.9	101.9
Farm	7.1	7.4	7.0	6.9	7.1
Public authorities	3.0	3.0	2.9	2.6	2.6
Livestock – inventories	3.9	4.6	4.0	4.4	4.7
Plantation standing timber(c)	7.1	7.6	7.9	8.4	8.5
Non-produced assets(c)	1 223.3	1 437.7	1 719.1	2 044.8	2 280.0
Tangible non-produced assets	1 219.8	1 434.2	1 715.6	2 041.3	2 276.5
Land	1 010.2	1 181.7	1 450.0	1 753.3	1 923.4
Subsoil assets	202.6	245.0	257.3	278.8	343.8
Native standing timber	2.6	2.8	3.0	3.4	3.4
Spectrum	4.4	4.7	5.3	5.7	6.0
Intangible non-produced assets	3.5	3.5	3.4	3.5	3.5
Spectrum licences	3.5	3.5	3.4	3.5	3.5
Financial assets with the rest of the world	488.1	518.5	519.9	623.4	621.7
Monetary gold and SDRs	1.6	1.7	1.6	1.7	1.7
Currency and deposits	24.2	27.0	26.4	41.4	48.5
Securities other than shares	84.1	95.5	113.9	128.2	125.3
Loans and placements	57.2	61.4	59.2	70.4	79.4
Shares and other equity	294.3	309.2	294.8	358.0	342.6
Other accounts receivable	26.8	23.7	24.1	23.6	24.3
<b>LIABILITIES TO THE REST OF THE WORLD</b>	<b>854.6</b>	<b>883.7</b>	<b>948.0</b>	<b>1 093.9</b>	<b>1 138.6</b>
Currency and deposits	56.8	57.7	65.4	78.8	64.4
Securities other than shares	332.6	349.6	378.7	449.6	503.1
Loans and placements	96.7	112.0	120.9	113.0	123.2
Shares and other equity	358.1	350.3	365.1	433.8	429.4
Other accounts payable	10.3	14.1	18.0	18.7	18.6
<b>NET WORTH</b>	<b>2 911.2</b>	<b>3 218.6</b>	<b>3 579.1</b>	<b>4 050.5</b>	<b>4 458.9</b>
Memorandum items					
Consumer durables	171.3	180.5	187.4	196.1	205.0
Direct investment					
Foreign investment in Australia	215.2	225.6	252.4	272.4	275.4
Australian investment abroad	187.2	193.1	178.1	216.5	187.4
Non-rateable land	48.0	55.6	79.3	83.4	96.2

(a) Livestock – fixed assets included in the balance sheet include all animals and not just sheep and cattle as shown in the capital stock tables. (b) Includes for all periods the privatised marketing authorities. (c) Experimental estimates.

Source: Australian System of National Accounts, 2004–05 (5204.0).



## 29.18 CHANGE IN TOTAL NET WORTH — 30 June



Source: Australian System of National Accounts, 2004–05 (5204.0).

The difference between Australia's assets and liabilities with the rest of the world represents the net international investment position. Australia's net liabilities stood at \$516.9b at 30 June 2005, a rise of 9.9% on the position at the end of June 2004. Net liabilities as a proportion of net worth have increased steadily from 12.0% at 30 June 1992 to a peak of 13.6% at 30 June 1996. At 30 June 2005 the proportion was 11.6%.

### Real/volume balance sheet estimates

Australia's real net worth (total assets less total liabilities to the rest of the world) increased by 2.7% over the year ended 30 June 2005 compared with the average annual growth over the period 30 June 1992 to 30 June 2005 of 1.9%. In 2004–05 the real value of non-financial assets grew by 3.3%, the real value of financial assets fell by 2.3% and the real value of liabilities grew by 2.0% (table 29.19).

### Additional national accounts measures

In addition to the core set of Australian national accounts statistics, the ABS compiles and publishes more detailed and specialised products which enable a better understanding of particular economic entities or processes. This section briefly outlines the following: Financial accounts; Input-Output tables; satellite accounts; and productivity measures.

### Financial accounts

The ABS produces quarterly and annual information on the levels of financial assets and liabilities of each institutional sector of the economy, the market for financial instruments, and inter-sectoral transactions in financial assets and liabilities classified by financial instrument. The financial accounts provide an insight into the borrowing and lending activities of each sector within the economy. The financial accounts also provide information on the composition of financial instruments issued by the various sectors during a particular period. National and sectoral financial accounts, which show major financial aggregates, are published annually in *Australian System of National Accounts* (5204.0). For more information see the *Financial system* chapter and *Australian National Accounts: Financial Accounts* (5232.0).

### Input-Output tables

Input-Output tables show the structure of a country's entire production system for a particular period, usually one year. They show which goods and services are produced by each industry and how they are used (e.g. some goods, such as cars, are sold to final consumers while others, such as steel, are used as inputs by other industries in producing more goods and services). The tables are based on the principle that the value of the output of each industry can be expressed as the sum of the values of all the inputs to that industry. These inputs include the use of the outputs of other industries; any profits made from production; compensation of employees; and any taxes on production paid less any subsidies received.

**29.19 NATIONAL BALANCE SHEET, Real/volume(a)(b) — 30 June**

	2001	2002	2003	2004	2005
	\$b	\$b	\$b	\$b	\$b
<b>TOTAL ASSETS</b>	<b>4 502.5</b>	<b>4 570.5</b>	<b>4 654.9</b>	<b>4 913.3</b>	<b>5 038.9</b>
Non-financial assets	3 994.4	4 042.1	4 133.9	4 297.2	4 437.0
Produced assets	2 177.4	2 220.0	2 284.6	2 421.6	2 513.3
Fixed assets	2 066.7	2 110.3	2 172.5	2 299.2	2 388.3
Tangible fixed assets	2 044.3	2 083.6	2 141.8	2 266.2	2 351.9
Machinery and equipment	307.6	319.9	338.0	361.4	387.0
Non-dwelling construction	877.6	890.8	910.5	931.8	957.0
Livestock – fixed assets(c)	15.7	15.8	15.2	15.2	15.5
Dwellings	858.9	886.9	921.6	957.8	992.5
Intangible fixed assets	23.7	27.1	30.7	33.1	36.4
Computer software	22.6	25.4	28.7	32.2	35.5
Entertainment, literary or artistic originals	0.8	0.8	0.9	0.9	0.9
Inventories	110.4	109.7	112.1	122.4	125.0
Private non-farm(d)	90.5	90.3	91.6	98.4	100.9
Farm	8.6	9.0	8.7	8.8	8.7
Public authorities	3.0	3.1	2.9	2.6	2.6
Livestock – inventories	4.3	4.8	4.2	4.4	4.4
Plantation standing timber(e)	7.6	7.9	8.0	8.3	8.4
Non-produced assets(e)	1 813.9	1 822.8	1 855.3	1 875.6	1 923.7
Tangible non-produced assets	1 810.5	1 819.5	1 852.1	1 872.3	1 920.6
Land	1 540.8	1 554.8	1 572.5	1 591.6	1 633.2
Subsoil assets	247.7	255.5	264.3	271.7	278.1
Native standing timber	2.7	2.9	3.1	3.3	3.4
Spectrum	4.6	4.8	5.3	5.6	5.7
Intangible non-produced assets	3.4	3.3	3.2	3.2	3.1
Spectrum licences	3.4	3.3	3.2	3.2	3.1
Financial assets with the rest of the world	510.0	529.8	523.0	616.1	602.0
Monetary gold and SDRs	1.6	1.7	1.6	1.7	1.7
Currency and deposits	25.2	27.6	26.5	40.9	46.9
Securities other than shares	87.9	97.6	114.6	126.7	121.3
Loans and placements	59.7	62.7	59.6	69.6	76.9
Shares and other equity	307.5	316.0	296.5	353.8	331.7
Other accounts receivable	28.0	24.2	24.2	23.3	23.5
<b>LIABILITIES TO THE REST OF THE WORLD</b>	<b>892.8</b>	<b>902.9</b>	<b>953.6</b>	<b>1 081.0</b>	<b>1 102.5</b>
Currency and deposits	59.3	59.0	65.8	77.9	62.3
Securities other than shares	347.5	357.2	380.9	444.4	487.1
Loans and placements	101.1	114.5	121.6	111.7	119.3
Shares and other equity	374.2	357.9	367.2	428.7	415.8
Other accounts payable	10.8	14.4	18.1	18.5	18.0
<b>NET WORTH</b>	<b>3 615.8</b>	<b>3 675.2</b>	<b>3 703.5</b>	<b>3 832.2</b>	<b>3 936.5</b>

(a) Reference year for volume and real measures is 2003–04. (b) Volume measures for years other than 2003–04 and 2004–05 are not additive. (c) Livestock – fixed assets included in the balance sheet include all animals and not just sheep and cattle as shown in the capital stock tables. (d) Includes for all periods the privatised marketing authorities. (e) Experimental estimates.

Source: *Australian System of National Accounts, 2004–05 (5204.0)*.

The tables presented are the core transaction tables of the suite of Input-Output tables compiled by ABS. The most recent set of Input-output tables are for 2001–02. This is the first set of Input-Output tables that reflect the structure of the Australian economy following the changes to

the indirect tax system, including the introduction of the goods and services tax on 1 July 2000. For more information see *Australian National Accounts: Input-Output tables – Electronic Publication (5209.0.55.001)*.

## Satellite accounts

The concept of a satellite account was introduced in the *System of National Accounts 1993* to expand the core national accounts for selected areas of interest, while using relevant concepts and structures from the core national accounts. Satellite accounts allow the development of an integrated set of statistics about a particular sector which crosses a number of industries or sectors.

### Tourism satellite account

The Tourism Satellite Account (TSA) measures the contribution of tourism to the Australian economy. The emphasis in the TSA is on the measurement of tourism consumption and the size of the tourism industry, including its contribution to GDP. Within the TSA, a number of key economic measures associated with tourism are able to be identified. These include: tourism gross value added; tourism GDP; the tourism share of the value-added of major tourism-related industries (such as accommodation, restaurants and cafes, air and water transportation); total household and business tourism consumption by type of products; consumption by overseas visitors; and employment generated by tourism. Together, these data form an integrated set of statistics on tourism products within the framework of the international standards. For more information refer to the *Tourism* chapter and *Tourism Satellite Account* (5249.0).

### ICT satellite account

The Information and Communication Technology (ICT) Satellite Account measures the contribution of ICT to the Australian economy in 2002–03, in particular, the contribution of ICT to key macro-economic variables such as GDP. It provides details on Australian production of various ICT products, as well as related imports,

exports, household consumption, business spending and investment. Together, these data form an integrated set of statistics on ICT products within the framework of the international standards. For more information refer to *Information and Communication Technology Satellite Account* (5259.0).

### NPIs satellite account

Non-profit institutions (NPIs) play an important role in the provision of welfare, social and other services in Australia. The NPIs Satellite Account for Australia provides information on the economic impact of NPIs for 1999–2000. This publication represents the first ABS estimates of the direct contribution that NPIs make to the Australian economy and, in particular, the contribution of NPIs to key macro-economic variables such as GDP. As this satellite account is an integrated set of statistics on NPIs within the internationally recognised *System of National Accounts 1993*, it provides a valuable policy and research tool with a wide range of applications. For more information refer to *Australian National Accounts: Non-Profit Institutions Satellite Account* (5256.0).

## Productivity estimates

Measures of productivity growth are important in understanding long-term improvements in Australia's living standards and changes in Australia's international competitiveness. At the most basic level, productivity growth occurs when the volume of output rises faster than the volume of inputs. A limited selection of productivity estimates are published as part of *Australian National Accounts: National Income, Expenditure and Product* (5206.0) with a more detailed range of statistics and analysis of productivity estimates published in *Australian System of National Accounts* (5204.0).

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*Information and Communication Technology Satellite Account* (5259.0)

### **Reference**

Organisation for Economic Co-operation and Development (OECD), *Quarterly National Accounts*, Vol. 2006/1

### **Web sites**

Organisation for Economic Co-operation and Development, last viewed August 2006  
<<http://www.oecd.org>>

United Nations Statistics Division, System of National Accounts, 1993 (SNA93) last viewed August 2006  
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## INTERNATIONAL ACCOUNTS AND TRADE

This chapter presents statistics on Australia's international accounts, covering exports and imports of goods, international trade in services, international investment transactions, and levels of Australia's foreign financial assets and liabilities. Statistics are also provided on foreign ownership of equity in Australian enterprises.

These statistics are used by economic analysts and policy advisers to monitor, evaluate and forecast developments in Australia's external trade and external sector accounts for the purposes of domestic and international macroeconomic analysis and policy determination. They are used by governments, government agencies, businesses, industry associations, research institutions and others to analyse patterns of trade and assess particular types of transactions and financial claims and liabilities between Australian residents and non-residents, for purposes such as trade promotion and negotiations, and market and industry performance studies.

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Statistics contained in this chapter are the most recent available at the time of preparation. Where available, the ABS web site <<http://www.abs.gov.au>> provides access to more recent data.

Users can browse tables, time-series spreadsheets, data cubes, information papers, associated products and media releases that relate to topics covered in the Year Book and download the information from the ABS web site at no cost.

## International accounts

International accounts cover the closely related and integrated balance of payments and international investment position statistics. Diagram 30.1 presents the broad structure and relationship of these statistics.

Australia's balance of payments provides a statistical statement that systematically summarises the economic transactions between residents of Australia and residents of other countries. Residents, who may be people or businesses, need not be Australian nationals. Transactions cover the provision (changes in ownership) of goods, services and income, financial claims on and liabilities to the rest of the world, and transfers without anything provided in exchange (such as gifts).

Australia's international investment position is a balance sheet of the stock of foreign financial assets and liabilities of Australian residents. International investment statistics integrate the balance sheet positions at two points in time with information on increases and decreases in the levels of these assets and liabilities as a result of the changes due to transactions (investment flows, including reinvestment of earnings) as shown in the financial account of the balance of payments, together with the other changes that affect either the value of the stock (price, exchange rate) or the volume of the stock (other adjustments) of financial assets and liabilities.

## Conceptual framework

Australia's international accounts statistics, which cover both the balance of payments and the international investment position, are compiled in accordance with international statistical standards as defined in the fifth edition of the International Monetary Fund's *Balance of Payments Manual (BPM5)*. The concepts of residency, transactions, valuation and time of recording are common to the balance of payments and international investment position statistics.

The balance of payments accounts, which present systematically the economic transactions between Australia and the rest of the world, incorporate four types of economic transactions. The first involves the provision of real resources, that is, transactions in goods, services and income. The second involves the provision of financial resources, that is, financial assets and liabilities. The third covers those one-sided transactions of a current nature (described as current transfers)

that are offsets to transactions in current real or financial resources undertaken without an exchange. Current transfers are not associated with, nor do they finance, fixed assets. For example, famine relief, whether in cash or in kind, would have its offset in current transfers. The fourth type is capital transfers that offset transactions undertaken, without exchange, in fixed assets or in their financing. For example, the provision of foreign aid funds to build roads is classified as a capital transfer.

The first and third of these types of transactions make up the current account, while the second type makes up the financial account. The fourth type (capital transfers), together with a minor item for the acquisition and disposal of non-produced, non-financial assets (such as patents), make up the capital account.

The double entry accounting system is used for recording balance of payments transactions. Under the conventions of the system, the compiling economy records credit entries for (a) exports of goods, provision of services, provision of the factors of production to another economy and (b) financial items reflecting a reduction in the economy's external assets or an increase in external liabilities. Conversely, the compiling economy records debit entries for (a) imports of goods, acquisition of services, use of production factors provided by another economy and (b) financial items reflecting an increase in assets or a decrease in liabilities. In other words, for real or financial assets, a positive figure (credit) indicates a decrease in holdings, and a negative figure (debit) indicates an increase. For liabilities in the form of financial instruments, the rule is reversed; a positive figure indicates an increase and a negative one, a decrease.

Transactions in a double entry accounting system are reflected in pairs of equal credit and debit entries. For example, an export transaction for which payment is received through the banking system involves a credit entry for providing the good to a non-resident and a debit entry for being provided with foreign exchange assets as payment for the export. Any entries for which there is no *quid pro quo* are matched by special offsetting entries. Such offsetting entries are made in the categories 'current transfers' (when offsetting the provision of current resources such as food for famine relief) and 'capital transfers' (when offsetting the provision of capital resources such as development aid to build a new dam).

### 30.1 RELATIONSHIP BETWEEN THE BALANCE OF PAYMENTS AND INTERNATIONAL INVESTMENT POSITION STATEMENTS

Balance of Payments				
		<div>← Investment income from International Investment</div>		

Source: *Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods (5331.0)*.

In principle, the net sum of all credit and debit entries is zero. In practice, some transactions are not measured accurately (errors), while others are not measured at all (omissions). Equality between the sums of the credit and debit entries is then brought about by the inclusion of a 'net errors and omissions' item which balances the accounts.

Transactions should be valued in the balance of payments at market prices. However, for practical reasons, transactions are generally valued in the statistics at transaction prices as this basis provides the closest practical approximation to the market price principle.

Transactions recorded in the balance of payments should be recorded at the time of change of ownership. For current account transactions, this occurs when ownership of goods changes, or services are provided. Investment income is recorded on a full accrual basis, that is, when it is earned. Reinvested earnings are calculated for the earnings of the period of account, using current replacement cost estimates of depreciation and excluding holding gains and losses. Current and capital transfers should be recorded when the goods, services, cash, etc., to which they are offsets, change ownership. Those transfers, such as taxes and fines, which are imposed by one party on another, should ideally be recorded at the time of occurrence of the underlying transactions or other flows or events that give rise to the liability to pay. For financial account transactions, the time of recording is at the change of ownership of the financial claims, which by convention is the time at which transactions are entered in the books of the transactors.

In practice, the nature of the available data sources is such that the time of recording of transactions will often differ from the time of change of ownership. Where practical, timing adjustments are made for transactions to ensure that they are recorded in the time period in which change of ownership occurs.

International investment position statistics are the balance sheet of the levels (stock) of Australia's foreign financial assets and liabilities. The investment position at the end of a specific period reflects the financial transactions (investment flows) and other changes (non-transaction changes) due to exchange rate effects, other price effects and changes in the volume of these assets and liabilities, all of which affect the level of assets and liabilities, that occurred during the period.

While the international investment position statistics form an integral part of Australia's international accounts (diagram 30.1), they are also useful in their own right, for example, in determining the impact of foreign investment policies and the level of Australia's foreign assets and liabilities, including foreign debt. They are also useful when analysing the behaviour of financial markets.

As with the balance of payments, market price is the principal method of valuation in international investment position statistics, and financial assets and liabilities are recognised on a change of ownership basis, that is, at the time when the foreign financial asset or liability is acquired, sold,

repaid or otherwise disposed of. By convention, this is generally taken to be the time at which the event is recorded in the books.

## Classifications

In the following tables, estimates are presented of the current, capital and financial accounts of Australia's balance of payments. Current and capital account transactions are generally recorded gross. This means that, for each item in the current and capital accounts, the credit entries are recorded separately from the debit entries. For example, goods credits are shown separately from goods debits. For each item in the financial account, however, debit and credit transactions are combined to produce a single result for the item which may be either a net credit or a net debit. For example, in a given period, non-resident purchases of shares issued by companies in Australia (credit) are netted against sales of Australian shares to residents by non-residents (debit) and the net result is recorded in the financial account as either a net credit or a net debit.

The current account records transactions between Australian residents and non-residents in goods, services, income and current transfers. Goods are classified into five main components: general merchandise; goods for processing; goods procured in ports by carriers; repairs on goods; and non-monetary gold. Changes of ownership from residents to non-residents are recorded as credits (also referred to as exports), and changes from non-residents to residents are recorded as debits (also referred to as imports). Services, comprising eleven primary components, cover services provided by Australian residents to non-residents (credits) and by non-residents to residents (debits), together with transactions in a few types of goods (e.g. goods purchased by travellers). Income, comprising investment income (e.g. dividends and interest) and compensation of employees (e.g. wages), covers income earned by Australian residents from non-residents (credits) or earned by non-residents from residents (debits). Current transfers cover the offsetting entries required when resources are provided, without something of economic value being received in return. When non-residents provide something to Australian residents, offsetting credits are required; when residents provide resources to non-residents, offsetting debits are required. General government transfers (e.g. official foreign aid) are distinguished from transfers by other sectors.



The capital account covers capital transfers (such as migrants' funds), with general government distinguished from other sectors, and the acquisition/disposal of non-produced, non-financial assets.

The financial account shows transactions in foreign financial assets and liabilities. The primary split is by functional type of capital, (direct investment, portfolio investment, financial derivatives, other investment and reserve assets) further split into assets and liabilities where appropriate. Within the asset and liability categories, details are presented of instruments of investment and resident sectors (for other than direct investment), and in some cases the contractual maturity of the instruments.

The primary distinction used in international investment position statistics is between assets and liabilities. Assets primarily represent Australian investment abroad, and liabilities primarily represent foreign investment in Australia. The difference between the two represents the net international investment position (graph 30.8 and table 30.9). Australian investment abroad refers to the stock of foreign financial assets owned by Australian residents, after netting off any debt liabilities of Australian direct investors to their direct investment enterprises abroad. Conversely, foreign investment in Australia refers to the stock of financial assets in Australia owned by non-residents, after netting off any debt claims of Australian direct investment enterprises on their foreign direct investors. The breakdown below this asset/liability presentation is by functional type of capital (table 30.11).

While many types of instruments of investment can be identified, similar instruments are combined for analytical reasons and ease of reporting. Some of those instruments are:

*Equity capital* – which includes ordinary and participating preference shares, units in trusts and net equity in branches

*Reinvestment of earnings of direct investors* – which refers to income retained within the enterprise from after-tax profits that is attributable to direct investors

*Debt securities* – which include longer term, generally tradeable security instruments such as bonds and debentures, with a contractual maturity

of more than one year after issue, together with money market instruments (e.g. bills, commercial finance paper, negotiable certificates of deposit) with a contractual maturity of one year or less

*Trade credits* – which cover the direct extension of credit by suppliers and buyers for goods and services, including advances for work in progress or to be undertaken

*Loans* – which cover the direct lending of funds either without a security evidencing the transaction, or with non-negotiable documentation – they include financial leases

*Deposits* – which comprise both transferable and other deposits

*Other assets and liabilities* – which consist of miscellaneous accounts in respect of interest, dividends, etc.

## Statistical overview

The balance on current account for 2005–06 was a deficit of \$54.4 billion (b), a decrease of \$2.9b (5%) on the previous year (table 30.2). The net income deficit rose \$5.0b (15%) with an increase in income debits of \$9.0b (17%) partly offset by an increase in income credits of \$4.0b (19%). The deficit on goods and services was \$16.5b, a decrease of \$8.0b (33%) on the 2004–05 deficit of \$24.5b. The net goods deficit fell by \$7.2b (31%) and the net services deficit fell by \$0.8b (54%) on the previous year.

The surplus on capital account decreased by \$0.1b (7%) to \$1.1b in 2005–06.

The balance on financial account recorded a net inflow of \$53.4b, down \$0.1b on the previous year. Direct investment recorded a net outflow of \$7.6b, a \$52.4b turnaround on the net inflow of \$44.8b in 2004–05. Comprising the net outflow was a turnaround in Australian direct investment abroad of \$80.5b to \$26.3b partially offset by a turnaround of \$28.1b to an inflow of direct investment into Australia. The net inflow on portfolio investment increased \$60.7b, while other investment recorded a fall of \$7.5b to record a net inflow of \$2.7b in 2005–06. Reserve assets fell \$2.5b, while financial derivatives recorded a turnaround of \$3.4b to an outflow of \$1.1b in 2005–06.

### 30.2 BALANCE OF PAYMENTS, Summary

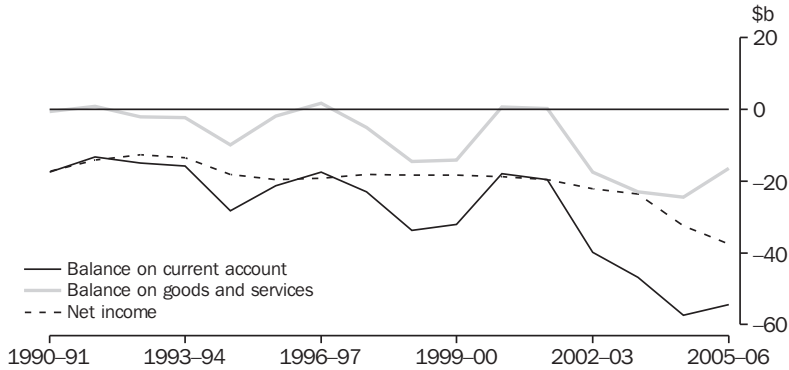
	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
<b>Current account</b>	<b>-19 486</b>	<b>-39 883</b>	<b>-46 828</b>	<b>-57 355</b>	<b>-54 420</b>
Goods and services	198	-17 479	-23 030	-24 491	-16 516
Credits	154 778	149 691	144 676	164 390	192 149
Debits	-154 580	-167 170	-167 706	-188 881	-208 665
Goods	-992	-18 478	-23 522	-22 967	-15 813
Credits	120 950	115 800	109 504	127 903	153 946
Debits	-121 942	-134 278	-133 026	-150 870	-169 759
Services	1 190	999	492	-1 524	-703
Credits	33 828	33 891	35 172	36 487	38 203
Debits	-32 638	-32 892	-34 680	-38 011	-38 906
Income	-19 667	-22 190	-23 529	-32 444	-37 467
Credits	15 586	15 739	16 993	20 981	24 960
Debits	-35 253	-37 929	-40 522	-53 425	-62 427
Current transfers	-17	-214	-269	-420	-437
Credits	4 280	4 233	4 273	4 269	4 273
Debits	-4 297	-4 447	-4 542	-4 689	-4 710
<b>Capital and financial account</b>	<b>20 165</b>	<b>38 460</b>	<b>45 878</b>	<b>54 730</b>	<b>54 552</b>
Capital account	1 016	991	1 095	1 212	1 132
Capital transfers	1 186	1 103	1 167	1 141	1 136
Credits	2 543	2 404	2 571	2 674	2 648
Debits	-1 357	-1 301	-1 404	-1 533	-1 512
Net acquisition/disposal of non-produced, non-financial assets	-170	-112	-72	71	-4
Financial account	19 149	37 469	44 783	53 518	53 420
Direct investment	1 336	10 739	-15 978	44 774	-7 641
Abroad	-21 775	-9 636	-25 828	54 230	-26 288
In Australia	23 111	20 375	9 850	-9 456	18 647
Portfolio investment	8 944	17 498	81 028	4 418	65 111
Financial derivatives	204	-1 036	-1 097	2 261	-1 128
Other investment	7 888	15 888	-14 043	10 188	2 683
Reserve assets	777	-5 620	-5 127	-8 123	-5 605
<b>Net errors and omissions</b>	<b>-679</b>	<b>1 423</b>	<b>950</b>	<b>2 625</b>	<b>-132</b>

Source: Balance of Payments and International Investment Position, Australia (5302.0).

Graph 30.3 shows the differing influences of the trade balance and the net income deficit on the balance on current account. The net income deficit rose from \$17.2b in 1990-91 to \$37.5b in 2005-06. The underlying level of net income drives the level and direction of the current account deficit, as Australia continues to service its external liabilities. The trade deficit moved from a deficit of \$0.7b in 1990-91 to a deficit of \$16.5b in 2005-06 but fluctuated quite significantly over this period.

Table 30.4 describes the annual levels of Australia's official reserve assets and both the end of year and period average exchange rates for the major currencies, special drawing rights, and the trade weighted index.

### 30.3 BALANCE ON CURRENT ACCOUNT COMPARED TO NET INCOME



Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

### 30.4 RESERVE ASSETS AND EXCHANGE RATES

	2001-02	2002-03	2003-04	2004-05	2005-06
<b>RESERVE ASSETS(a) (\$m)</b>					
<b>Total reserve assets</b>	<b>-37 435</b>	<b>-40 760</b>	<b>-50 342</b>	<b>-56 170</b>	<b>-63 815</b>
Monetary gold	-1 445	-1 329	-1 473	-1 468	-2 117
Special drawing rights	-216	-226	-256	-251	-267
Reserve position in IMF	-2 992	-3 185	-2 497	-1 734	-796
Foreign exchange	-32 782	-36 020	-46 117	-52 717	-60 636
Currency and deposits	-11 761	-10 254	-23 420	-32 464	-32 492
Securities	-21 137	-25 758	-22 695	-20 222	-28 137
Financial derivatives (net)	116	-8	-2	-31	-7
<b>EXCHANGE RATES – UNITS OF FOREIGN CURRENCY PER A\$</b>					
End of period(a)					
United States dollar	0.5648	0.6674	0.6889	0.7637	0.7433
United Kingdom pound sterling	0.3700	0.4038	0.3815	0.4224	0.4049
Euro	0.5715	0.5840	0.5702	0.6315	0.5841
Japanese yen	67.48	79.99	74.82	84.14	85.11
Special drawing rights	0.4277	0.4761	0.4694	0.5234	0.5066
Period average(b)					
United States dollar	0.5239	0.5847	0.7136	0.7529	0.7474
United Kingdom pound sterling	0.3632	0.3685	0.4102	0.4052	0.4205
Euro	0.5850	0.5577	0.5981	0.5918	0.6143
Japanese yen	66.10	70.01	78.91	80.45	85.90
Special drawing rights	0.4135	0.4313	0.4933	0.5024	0.5147
<b>TRADE-WEIGHTED INDEX OF VALUE OF THE A\$(c)</b>					
End of period(a)	50.4	54.2	61.4	64.5	62.2
Period average(b)	50.7	53.5	61.5	62.7	63.3

(a) At 30 June. (b) Exchange rates and the trade-weighted index are provided by the Reserve Bank of Australia in respect of each trading day. Period averages are derived from these rates. (c) May 1970 = 100.0. The trade-weighted index is reweighted annually and on special occasions as required.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

## International trade in goods and services (balance of payments basis)

Australia's international trade in goods and services (chain volume measures) for the five years to 2005–06 is shown in tables 30.5 (exports or credits) and 30.6 (imports or debits).

The components of goods shown in tables 30.5 and 30.6 are defined in terms of groupings of items in the United Nations Broad Economic Categories (BEC) for credits, and a modified version of the BEC for debits.

Chain volume measures of exports and imports remove the effects of price changes. They provide measures, in dollar values, which indicate changes in the actual volume of exports and imports.

More detailed information on exports and imports of goods, on a merchandise trade basis without adjustment to a balance of payments basis, and trade in services, is shown later in this chapter.

The chain volume measures of Australia's exports of goods and services increased by \$3.1b (2%) between 2004–05 and 2005–06. By contrast, the current price value of those exports, which incorporates both volume and price changes, as shown in the data in table 30.2, increased by \$27.8b (17%). This indicates that, on average, the prices of Australia's exports increased more rapidly than their volumes over the period.

The chain volume measures of Australia's imports of goods and services increased by \$13.1b (7%) between 2004–05 and 2005–06.

**30.5 GOODS AND SERVICES CREDITS, Chain volume measures(a)(b)**

	2001–02	2002–03	2003–04	2004–05	2005–06
	\$m	\$m	\$m	\$m	\$m
<b>Goods and services credits</b>	<b>159 269</b>	<b>158 041</b>	<b>160 278</b>	<b>164 390</b>	<b>167 522</b>
Goods credits	122 777	122 420	123 968	127 903	130 602
General merchandise	114 619	113 496	115 499	120 050	122 091
Rural goods	27 009	23 557	24 603	25 688	25 219
Meat and meat preparations	6 436	6 510	6 239	6 937	6 780
Cereal grains and cereal preparations	5 174	3 520	4 776	5 159	4 877
Wool and sheepskins	3 067	2 457	2 495	2 837	2 694
Other rural	12 400	11 390	11 112	10 753	10 869
Non-rural goods	87 211	90 081	90 917	94 364	96 872
Metal ores and minerals	16 574	17 519	18 321	19 854	20 619
Coal, coke and briquettes	14 756	15 445	16 279	17 235	17 139
Other mineral fuels	13 586	12 721	11 010	11 151	10 721
Metals (excl. non-monetary gold)	11 463	10 664	9 061	8 668	9 458
Machinery	6 745	6 582	6 739	7 488	7 805
Transport equipment	4 882	5 551	5 131	4 942	5 232
Other manufactures	12 739	13 058	13 825	14 042	14 878
Other non-rural (incl. sugar and beverages)	6 932	8 620	10 454	10 981	11 020
Beverages	1 919	2 301	2 519	2 833	2 940
Sugar, sugar preparations and honey	1 159	1 232	1 232	1 293	605
Other	3 652	4 997	6 758	6 857	3 514
Goods for processing	65	113	103	240	270
Repairs on goods	74	80	78	67	69
Goods procured in ports by carriers	1 164	1 142	990	1 072	1 136
Non-monetary gold	6 752	7 490	7 198	6 473	7 034
Services credits	36 464	35 557	36 244	36 487	36 920

(a) Reference year is 2004–05. (b) Chain volume measures for years other than 2004–05 and 2005–06 are not additive.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

### 30.6 GOODS AND SERVICES DEBITS, Chain volume measures(a)(b)

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
<b>Goods and services debits</b>	<b>-132 386</b>	<b>-149 662</b>	<b>-168 662</b>	<b>-188 881</b>	<b>-202 001</b>
Goods debits	-103 251	-119 739	-133 655	-150 870	-163 679
General merchandise	-99 721	-115 612	-129 768	-146 837	-158 697
Consumption goods	-32 116	-36 819	-41 841	-47 141	-50 914
Food and beverages, mainly for consumption	-4 497	-4 794	-5 211	-5 767	-5 859
Household electrical items	-2 299	-2 903	-3 441	-4 021	-4 465
Non-industrial transport equipment	-8 944	-10 444	-11 978	-13 003	-13 945
Textiles, clothing and footwear	-3 689	-4 263	-4 883	-5 812	-6 351
Toys, books and leisure goods	-2 748	-3 171	-3 499	-3 739	-4 050
Consumption goods n.e.s.	-10 045	-11 272	-12 839	-14 797	-16 246
Capital goods	-19 846	-25 328	-30 274	-35 960	-41 976
Machinery and industrial equipment	-7 868	-9 751	-10 974	-13 405	-14 423
ADP equipment	-2 493	-3 099	-4 467	-5 762	-7 036
Telecommunications equipment	-2 171	-2 414	-3 449	-4 567	-6 136
Civil aircraft	-1 273	-3 472	-3 073	-2 496	-2 786
Industrial transport equipment n.e.s.	-3 229	-3 548	-4 094	-4 976	-5 593
Capital goods n.e.s.	-3 070	-3 567	-4 336	-4 753	-6 003
Intermediate and other merchandise goods	-48 620	-53 931	-57 832	-63 737	-65 807
Food and beverages, mainly for industry	-624	-658	-634	-659	-638
Primary industrial supplies n.e.s.	-1 055	-1 151	-1 095	-1 052	-1 126
Fuels and lubricants	-11 794	-12 415	-13 021	-14 722	-14 575
Parts for transport equipment	-5 520	-6 194	-6 363	-7 008	-7 230
Parts for ADP equipment	-1 081	-1 280	-1 582	-1 787	-2 152
Other parts for capital goods	-6 135	-6 974	-8 271	-9 490	-10 285
Organic and inorganic chemicals	-3 066	-3 117	-3 223	-3 622	-4 205
Paper and paperboard	-1 713	-1 923	-2 077	-2 314	-2 326
Textile yarn and fabrics	-1 645	-1 731	-1 702	-1 452	-1 340
Iron and steel	-2 130	-2 319	-2 418	-3 008	-3 319
Plastics	-1 897	-2 290	-2 302	-2 428	-2 367
Processed industrial supplies n.e.s.	-11 171	-12 553	-13 830	-15 143	-15 126
Other merchandise goods	-1 274	-1 499	-1 235	-1 054	-1 116
Goods for processing	-42	-72	-65	-242	-304
Repairs on goods	-260	-263	-225	-181	-112
Goods procured in ports by carriers	-940	-936	-910	-1 050	-1 156
Non-monetary gold	-2 367	-2 944	-2 693	-2 558	-3 408
<b>Services debits</b>	<b>-29 279</b>	<b>-29 906</b>	<b>-35 011</b>	<b>-38 011</b>	<b>-38 322</b>

(a) Reference year is 2004-05. (b) Chain volume measures for years other than 2004-05 and 2005-06 are not additive.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

Table 30.7 presents various price indexes for Australia's trade in goods and services. The implicit price deflators (IPDs) are derived by dividing the current price measures (table 30.2) by the corresponding chain volume measures (tables 30.5 and 30.6). These IPDs reflect not only price change, but also compositional effects from year to year.

Unlike IPDs, chain price indexes measure only the impact of a price change. The chain Laspeyres price index for goods and services credits rose 15.0% in 2005-06. The chain Laspeyres price index for goods and services debits rose 3.7%.

### 30.7 IMPLICIT PRICE DEFLATORS, Price indexes and terms of trade(a)

	2001-02	2002-03	2003-04	2004-05	2005-06
Implicit price deflators (IPDs)(b)					
Goods and services credits	97.2	94.7	90.3	100.0	114.7
Goods credits	98.5	94.6	88.3	100.0	117.9
Services credits	92.8	95.3	97.0	100.0	103.5
Goods and services debits	116.8	111.7	99.4	100.0	103.3
Goods debits	118.1	112.1	99.5	100.0	103.7
Services debits	111.5	110.0	99.1	100.0	101.5
Chain Laspeyres price indexes					
Goods and services credits	95.9	93.9	89.9	100.0	115.0
Goods credits	96.9	93.6	87.9	100.0	118.2
Services credits	92.6	95.2	96.9	100.0	103.6
Goods and services debits	115.6	111.1	99.2	100.0	103.7
Goods debits	116.7	111.3	99.3	100.0	104.2
Services debits	111.4	110.1	99.1	100.0	101.6
Terms of trade(c)					
Goods and services	83.2	84.8	90.8	100.0	111.0
Goods	83.4	84.3	88.8	100.0	113.7
Services	83.2	86.7	98.0	100.0	101.9

(a) Reference year for price and terms of trade indexes is 2004-05. (b) Derived by dividing the estimates at current prices by the equivalent chain volume measures. (c) Derived by dividing the IPDs for credits by the IPDs for debits.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

Australia's terms of trade, which is a measure of the purchasing power of its exports over imported goods and services (derived by dividing the IPD for credits by the IPD for debits) rose by 11.0% in 2005-06, reflecting a 14.7% rise in the IPD for goods and services credits and a 3.3% rise in the IPD for goods and services debits.

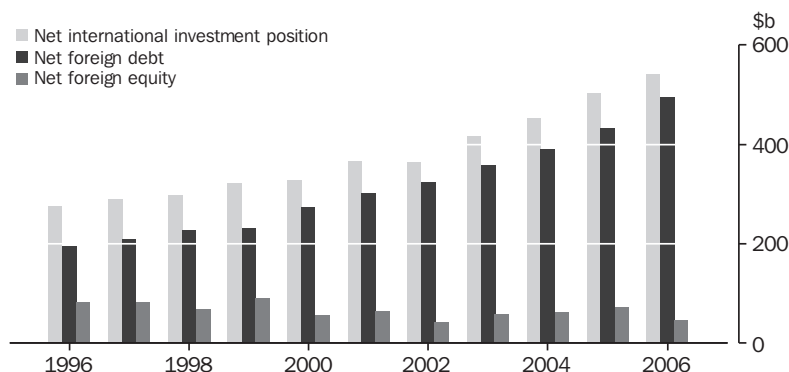
### International investment position

Australia's net international investment position is the difference between the levels of Australia's foreign financial liabilities and the levels of its foreign financial assets. Historically, Australia has had a net liability position with the rest of the world.

Australia's net international investment position at 30 June 2006 was a net foreign financial liability of \$540.9b. This was up \$37.1b (7.4%) on the position a year earlier and resulted from a net decrease of \$24.8b in the level of foreign equity and an increase of \$61.9b in the level of foreign debt.

Graph 30.8 shows the components of Australia's international investment position between 30 June 1996 and 30 June 2006. It shows that the increase in net foreign liabilities reflects an increase in net foreign debt liabilities.

30.8 NET INTERNATIONAL INVESTMENT POSITION — 30 June



Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

Table 30.9 provides a reconciliation between opening and closing levels for foreign financial assets, foreign financial liabilities and Australia's net international investment position. Increases or decreases in these assets and liabilities are due to

financial transactions (investment flows), price changes, exchange rate changes and other adjustments.

### 30.9 INTERNATIONAL INVESTMENT POSITION

		Changes in position reflecting				
	Position at beginning of period	Transactions	Price changes	Exchange rate changes	Other adjustments	Position at end of period
	\$m	\$m	\$m	\$m	\$m	\$m
NET INTERNATIONAL INVESTMENT POSITION						
Total						
2003–04	415 905	44 783	–1 894	–8 295	1 383	451 882
2004–05	451 882	53 517	–5 946	4 285	5	503 744
2005–06	503 744	53 418	–19 841	5 441	–1 893	540 869
Equity						
2003–04	58 910	–2 949	7 532	–1 978	–194	61 317
2004–05	61 317	–7 691	–5 459	24 021	–385	71 802
2005–06	71 802	–14 733	–6 333	–4 358	661	47 041
Debt						
2003–04	356 995	47 732	–9 425	–6 316	1 579	390 565
2004–05	390 565	61 207	–487	–19 735	391	431 941
2005–06	431 941	68 151	–13 510	9 798	–2 555	493 828
FOREIGN ASSETS(a)						
Total						
2003–04	–529 797	–46 642	–44 350	–17 372	1 160	–637 003
2004–05	–637 003	40 506	–51 738	15 081	165	–632 991
2005–06	–632 991	–84 023	–68 212	–9 070	–136	–794 434
Equity						
2003–04	–304 140	–31 994	–32 697	–1 978	328	–370 483
2004–05	–370 483	44 156	–47 947	24 021	702	–349 551
2005–06	–349 551	–46 274	–54 564	–4 358	–64	–454 811
Debt						
2003–04	–225 657	–14 648	–11 654	–15 394	832	–266 521
2004–05	–266 521	–3 650	–3 793	–8 941	–536	–283 440
2005–06	–283 440	–37 749	–13 649	–4 712	–74	–339 623
FOREIGN LIABILITIES(b)						
Total						
2003–04	945 701	91 426	42 457	9 079	225	1 088 886
2004–05	1 088 886	13 009	45 794	–10 795	–159	1 136 735
2005–06	1 136 735	137 442	48 371	14 511	–1 755	1 335 303
Equity						
2003–04	363 050	29 044	40 229	—	–524	431 800
2004–05	431 800	–51 847	42 488	—	–1 086	421 354
2005–06	421 354	31 541	48 231	—	724	501 852
Debt						
2003–04	582 651	62 381	2 228	9 079	747	657 086
2004–05	657 086	64 857	3 306	–10 795	927	715 382
2005–06	715 382	105 900	139	14 511	–2 481	833 451

(a) Assets include claims of Australian direct investment enterprises on direct investors abroad, which are classified as part of direct investment in Australia. (b) Liabilities include liabilities of Australian direct investors to direct investment enterprises abroad, which are classified as part of direct investment abroad.

Source: *Balance of Payments and International Investment Position, Australia* (5302.0).

## Foreign debt

Foreign debt is a subset of the financial obligations that make up a country's international investment position. It includes all the non-equity components of the net international investment position, that is, all recorded assets and liabilities other than equity securities and direct investment equity capital, including reinvested earnings.

The level of borrowing and other non-equity liabilities of Australian residents at a particular date make up Australia's foreign debt liabilities. The level of Australian lending abroad and other non-equity assets at the same date are deducted from the level of borrowing to arrive at Australia's net foreign debt.

The level of net foreign debt at 30 June 2006 was \$493.8b, up \$61.9b (14.3%) on 30 June 2005. The increase during 2005–06 resulted from a \$118.1b (16.5%) increase in foreign debt liabilities partly offset by an increase of \$56.2b (19.8%) in foreign debt assets.

At 30 June 2006 the net foreign debt of the public sector (general government plus public financial and non-financial corporations) was \$5.2b, which accounted for 1.0% of total net foreign debt. Net foreign debt levels of private financial corporations and private non-financial corporations were \$397.7b (80.5% of total net foreign debt) and \$90.9b (18.4%) respectively.

## Levels of foreign investment in Australia and Australian investment abroad

In table 30.11, levels of investment are categorised by direction (Australian investment abroad and foreign investment in Australia) and functional category (direct, portfolio, financial derivatives, other and reserve assets).

Direct investment is a category of international investment that reflects the objective of obtaining a lasting interest by a resident in one economy in an enterprise in another economy, and implies a significant degree of influence by the investor in the management of the enterprise. A foreign direct investment relationship is established when an investor, who is a resident in one economy, holds 10% or more of the ordinary shares or voting stock of an enterprise (direct investment enterprise) in another economy. The portfolio investment category covers investment in equity and debt securities other than direct investment, financial derivative assets, other investment assets and reserve assets.

The items 'Australian investment abroad' and 'Foreign investment in Australia' in table 30.11 do not equate with foreign assets and liabilities respectively in table 30.9. The difference is due to netting of assets and liabilities in regard to direct investment, both abroad and in Australia. Debt claims by direct investment enterprises on their direct investors, separately identified in table 30.11, are netted off in that table against liabilities to direct investors. These items are not netted off in table 30.9.

**30.10 LEVELS OF FOREIGN DEBT — 30 June**

	2002	2003	2004	2005	2006
	\$m	\$m	\$m	\$m	\$m
<b>Foreign debt assets(a)</b>	<b>-209 269</b>	<b>-225 657</b>	<b>-266 521</b>	<b>-283 440</b>	<b>-339 623</b>
Public sector	-56 049	-55 337	-66 395	-73 023	-83 034
Private sector	-153 220	-170 320	-200 126	-210 417	-256 589
<b>Foreign debt liabilities(a)</b>	<b>533 416</b>	<b>582 651</b>	<b>657 086</b>	<b>715 382</b>	<b>833 451</b>
Public sector	67 310	63 576	71 470	83 606	88 210
Private sector	466 106	519 075	585 616	631 775	745 240
<b>Net foreign debt</b>	<b>324 147</b>	<b>356 995</b>	<b>390 565</b>	<b>431 941</b>	<b>493 828</b>
Public sector	11 261	8 240	5 075	10 583	5 177
Private sector	312 886	348 755	385 490	421 358	488 651

(a) Foreign debt levels between direct investors and direct investment enterprises are recorded on a gross basis for assets and liabilities.

Source: *Balance of Payments and International Investment Position, Australia* (5302.0).



### 30.11 LEVELS OF AUSTRALIAN INVESTMENT ABROAD AND FOREIGN INVESTMENT IN AUSTRALIA — 30 June

	2002	2003	2004	2005	2006
	\$m	\$m	\$m	\$m	\$m
<b>Levels of Australian investment abroad</b>	<b>-496 182</b>	<b>-502 663</b>	<b>-607 463</b>	<b>-604 661</b>	<b>-764 892</b>
Direct investment abroad(a)	-193 084	-189 590	-231 578	-201 220	-274 920
Portfolio investment assets	-161 069	-160 685	-198 778	-221 698	-277 514
Financial derivative assets	-30 250	-40 735	-42 058	-38 790	-45 819
Other investment assets	-74 345	-70 894	-84 706	-86 784	-102 825
Reserve assets	-37 435	-40 760	-50 342	-56 170	-63 815
<b>Levels of foreign investment in Australia</b>	<b>861 363</b>	<b>918 568</b>	<b>1 059 345</b>	<b>1 108 405</b>	<b>1 305 761</b>
Direct investment in Australia(b)	225 581	252 561	271 825	268 083	287 773
Portfolio investment liabilities	474 766	481 212	609 251	651 843	811 258
Financial derivative liabilities	32 096	45 251	37 683	42 009	40 966
Other investment liabilities	128 920	139 544	140 587	146 470	165 764

(a) Net direct investment abroad, after deduction of liabilities to direct investment enterprises abroad. (b) Net direct investment in Australia, after deduction of claims of Australian direct investment enterprises on direct investors.

Source: *Balance of Payments and International Investment Position, Australia (5302.0)*.

At 30 June 2006 Australian investment abroad totalled \$764.9b, up \$160.2b (26.5%) on the level a year earlier. This rise was the net effect of a \$73.7b increase in direct investment abroad, a \$55.8b increase in portfolio investment assets, a \$7.0b increase in financial derivative assets, a \$16.0b increase in other investment assets and a \$7.6b increase in reserve assets.

Foreign investment in Australia totalled \$1,305.8b at 30 June 2006, up \$197.4b (17.8%) on June 2005. This rise was due to a \$19.7b increase in direct investment in Australia, a \$159.4b increase in portfolio investment liabilities, a \$1.0b decrease in financial derivative liabilities and a \$19.3b increase in other investment liabilities.

### Ratios

Table 30.12 and graph 30.13 show that the ratio of the current account deficit to gross domestic product (GDP) was 5.8% in 2005–06, a decrease on the previous year.

Graph 30.14 shows the ratio of Australia's net foreign liabilities (Australia's net international investment position) to GDP has risen for most years since 1994 and reached its highest level of 57.2% at 30 June 2006. The ratio of net foreign debt to GDP was 52.2% at 30 June 2006, an increase over the 48.3% recorded the previous year. The ratio of net foreign equity to GDP was 5.0% at 30 June 2006, down on the ratio at 30 June 2005.

### 30.12 RATIOS

	2001–02	2002–03	2003–04	2004–05	2005–06
	%	%	%	%	%
<b>To Gross domestic product</b>					
Current account	-2.6	-5.1	-5.6	-6.4	-5.8
Goods and services	0.0	-2.2	-2.7	-2.7	-1.7
Credits	21.0	19.1	17.3	18.4	20.3
Debits	-21.0	-21.4	-20.0	-21.1	-22.1
Income	-2.7	-2.8	-2.8	-3.6	-4.0
Net international investment position(a)	49.6	53.1	53.9	56.4	57.2
Net foreign equity	5.6	7.5	7.3	8.0	5.0
Net foreign debt	44.1	45.6	46.6	48.3	52.2
<b>To Goods and services credits</b>					
Net investment income	-12.5	-14.5	-15.8	-19.4	-19.2
Net income on foreign equity	-3.7	-6.7	-7.2	-10.0	-9.7
Net income on foreign debt	-8.8	-7.8	-8.6	-9.4	-9.5

(a) These ratios are derived by expressing net foreign liabilities at end of year as a percentage of GDP at current prices for that year; for 2005–06, GDP is for the year ended March quarter 2006.

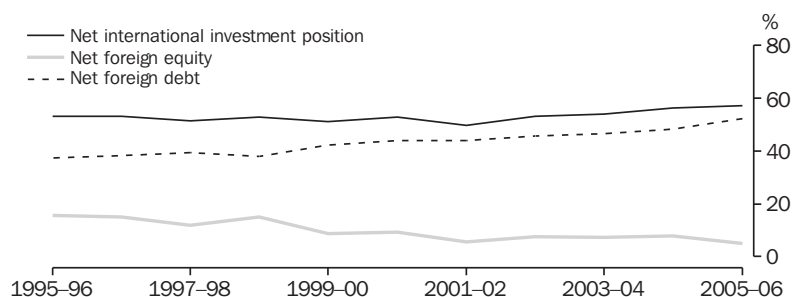
Source: *Australian National Accounts: National Income, Expenditure and Product (5206.0)*; *Balance of Payments and International Investment Position, Australia (5302.0)*.

### 30.13 RATIO OF BALANCE ON CURRENT ACCOUNT TO GDP



Source: Australian National Accounts: National Income, Expenditure and Product (5206.0);  
Balance of Payments and International Investment Position, Australia (5302.0).

### 30.14 RATIOS OF NET INTERNATIONAL INVESTMENT POSITION TO GDP(a)



(a) These ratios are derived by expressing net foreign liabilities at end of year as a percentage of Gross domestic product at current prices for that year.

Source: Australian National Accounts: National Income, Expenditure and Product (5206.0);  
Balance of Payments and International Investment Position, Australia (5302.0).

Table 30.12 shows the net investment income payable on net foreign debt as a percentage of goods and services credits was 9.5% in 2005-06. The ratio of net investment income payable on equity to goods and services credits was 9.7% in 2005-06, down from 10.0% the previous year.

### Foreign ownership of equity in Australia

The total value of equity on issue by Australian enterprise groups at 30 June 2006 stood at \$1,859b (table 30.15). Of this total, 63% related to shares or equivalent equity instruments issued by non-financial corporations. Banks accounted for a further 14% of total equity issued, and other financial enterprises, including life offices and superannuation funds (but excluding non-bank deposit taking institutions and the central bank),

accounted for 20%. Lesser amounts were issued by non-bank deposit taking institutions (2% of the total) and the central bank (1%).

Of the total equity on issue by Australian enterprise groups at 30 June 2006, non-residents held equity valued at \$502b (27%), while residents held \$1,357b (73%).

Although the proportion of equity held by non-residents remained relatively stable, the total value of equity on issue increased by 57%, from \$1,186b to \$1,859b, over the period from 30 June 2002 to 30 June 2006.

Analysed by sector, the value of equity on issue by non-financial corporations rose 53% to \$1,172b over the period 30 June 2002 to 30 June 2006, while the proportion held by non-residents decreased slightly from 33% to 31%.

### 30.15 FOREIGN OWNERSHIP OF EQUITY(a), By sectoral components — 30 June

	Units	2002	2003	2004	2005	2006
Non-financial corporations(b)						
Amount issued(c)	\$b	764.8	774.0	931.3	982.9	1 172.0
Amount held by rest of world	\$b	255.1	275.0	329.9	302.1	364.8
Proportion of foreign ownership	%	33.3	35.5	35.4	30.7	31.1
Banks						
Amount issued(c)	\$b	189.9	180.9	189.2	223.5	261.9
Amount held by rest of world	\$b	53.4	46.8	48.6	55.2	62.8
Proportion of foreign ownership	%	28.1	25.9	25.7	24.7	24.0
Non-bank deposit taking institutions						
Amount issued(c)	\$b	25.6	34.2	37.1	39.4	42.2
Amount held by rest of world	\$b	4.9	7.4	12.5	13.6	14.3
Proportion of foreign ownership	%	19.2	21.7	33.6	34.6	33.9
Other financial enterprises(d)						
Amount issued(c)	\$b	194.6	200.5	241.6	295.0	370.6
Amount held by rest of world	\$b	36.9	33.8	40.9	50.4	60.0
Proportion of foreign ownership	%	19.0	16.9	16.9	17.1	16.2
Central Bank						
Amount issued(e)(f)	\$b	11.4	11.7	12.5	11.2	12.7
Total amount issued	\$b	1 186.4	1 201.3	1 411.8	1 552.0	1 859.3
Total amount held by rest of world	\$b	350.3	363.1	431.8	421.4	501.9
Proportion of foreign ownership	%	29.5	30.2	30.6	27.1	27.0

(a) Equity includes units in trusts. (b) Includes private non-financial corporations, and Commonwealth, state and local public non-financial corporations. (c) These estimated market values are considered to be of poor quality. They should be used cautiously. (d) Includes life offices and superannuation funds, central borrowing authorities, and other financial enterprises. (e) Net asset values. (f) There is no foreign ownership in this component.

Source: Australian National Accounts: Financial Accounts (5232.0); Balance of Payments and International Investment Position, Australia (5302.0).

The amount issued by banks increased by 38% between 30 June 2002 to 30 June 2006, while the proportion of non-resident holdings of the total equity issued by banks decreased from 28% to 24% over the same period.

The value of equity issued by other financial enterprises, which includes life offices and superannuation funds, increased by 90% over the period from 30 June 2002 to 30 June 2006, with foreign ownership of this equity falling from 19% to 16% over the same period.

## International merchandise trade

International merchandise trade statistics cover all movable goods which add to (imports) or subtract from (exports) Australia's stock of material resources. The statistics are compiled from information submitted by importers and exporters to the Australian Customs Service. Some goods are excluded for conceptual or practical reasons, for example, those goods temporarily brought to

Australia for subsequent forwarding to foreign destinations, and low-value imports and exports in the parcel post system.

The merchandise exports and imports data are used in the compilation of the balance of payments. However, various adjustments relating to coverage, timing, classification and valuation are necessary to put international merchandise trade statistics on a balance of payments basis. Consequently, the merchandise exports and imports statistics, and the excess of exports (+) or imports (–), shown in this section differ from those shown in the *International accounts* section.

Australia's international merchandise trade statistics are compiled in broad agreement with the United Nations (UN) recommendations for the compilation of international merchandise trade statistics. More information on the concepts, sources and methods used is included in *International Merchandise Trade, Australia: Concepts, Sources and Methods* (5489.0).

## Classification

International merchandise trade is classified by commodity, by country of origin/destination, by Australian state of production/destination, and by industry of origin.

The international standard for the classification of internationally traded goods by commodity is the Harmonized System, a World Customs Organization classification which groups goods according to their component materials, from raw materials through to processed and manufactured products.

The Harmonized system is the basis of the exports classification, the Australian Harmonized Export Commodity Classification, and the imports classification, the Combined Australian Customs Tariff Nomenclature and Statistical Classification (Customs Tariff).

The ABS also classifies export and import statistics according to:

- the UN Standard International Trade Classification (SITC Rev. 3) which groups goods according to the degree of processing they have undergone, from food and crude raw materials through to highly transformed manufactures
- the UN classification Broad Economic Categories which classifies international trade for the purposes of general economic analysis according to the main end use of the commodities traded.

Commodity statistics in this section are presented according to SITC Rev. 3.

## Valuation

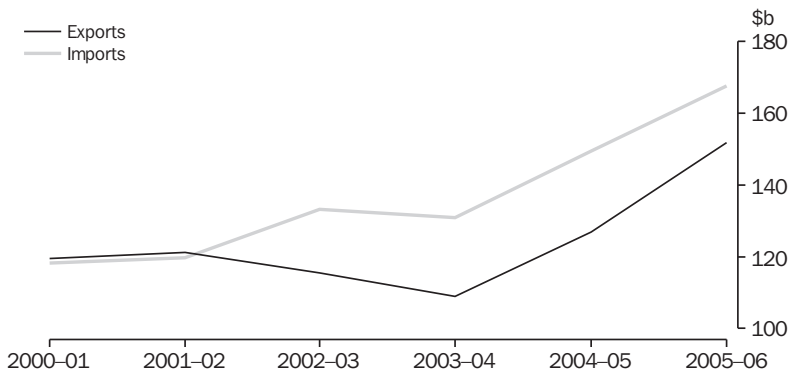
For exports, the point of valuation adopted is free-on-board (f.o.b.) at the Australian port of shipment, while the basis of valuation is 'transactions value', that is, the actual price at which the goods are sold.

For imports, the point of valuation is the point of containerisation (in most cases), or f.o.b. at the customs frontier of the exporting country or the port of loading, whichever comes first. The basis of valuation is the customs value. For transactions between independent buyers and sellers, this will generally be the price actually payable. Where traders are not independent (e.g. if they are related or affiliated in some way), an appropriate customs value may be determined.

## Total merchandise exports and imports

In 2005–06 Australia's imports of goods were worth more than goods exported. This resulted in a \$15.8b deficit. However, as the value of exports grew faster than imports, the deficit in 2005–06 was less than 2004–05 when there was a record deficit of \$22.6b (graph 30.16).

**30.16 TOTAL MERCHANDISE EXPORTS AND IMPORTS**



Source: *International Trade in Goods and Services, Australia* (5368.0).

## Merchandise exports and imports by commodity

Graph 30.17 shows the proportion of exports and imports in 2005–06 attributed to broad categories of goods. It shows Crude materials, inedible, except fuels and Mineral fuels, lubricants and related materials represented a higher proportion of exports than imports while Machinery and transport equipment represented a higher proportion of imports than exports.

In 2005–06 exports increased by \$25.0b (20%) to \$151.8b. The largest increases were:

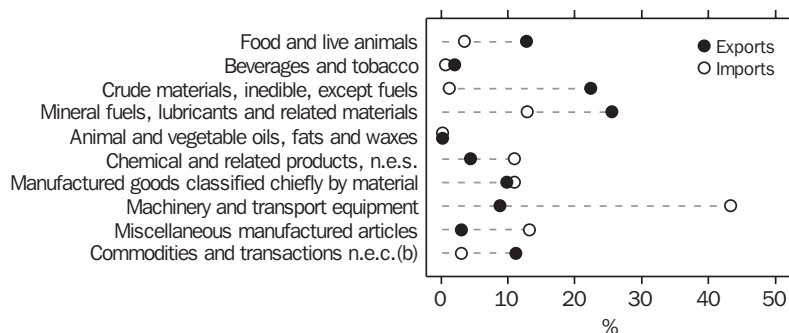
- Coal, not agglomerated, up \$7.2b (42%)
- Iron ore and concentrates, up \$4.4b (54%)

- Gold, non-monetary, up \$1.6b (29%)
- Natural gas, up \$1.1b (36%)
- Aluminium, up \$1.1b (26%).

In 2005–06 imports increased by \$18.1b (12%) to \$167.6b. The largest increases were:

- Refined petroleum oils, up \$3.5b (72%)
- Crude petroleum oils, up \$2.8b (29%)
- Gold, non-monetary, up \$2.3b (95%)
- Telecommunications equipment, up \$0.8b (16%)
- Aircraft and associated equipment, up \$0.6b (16%).

**30.17 SHARE OF MERCHANDISE EXPORTS AND IMPORTS, By commodity group(a) — 2005–06**



(a) Based on the UN Standard International Trade Classification, Revision 3 (SITC Rev 3). (b) Not elsewhere classified in SITC Rev 3.

Source: *International Trade in Goods and Services, Australia* (5368.0).

## 30.18 MERCHANDISE EXPORTS OF MAJOR COMMODITIES

Commodity group(a)	2003–04	2004–05	2005–06
	\$m	\$m	\$m
Meat of bovine animals (011)	3 926	4 879	4 541
Wheat (041)	3 399	3 396	3 213
Wool and other animal hair (268)	2 490	2 490	2 258
Iron ore and concentrates (281)	5 277	8 120	12 511
Aluminium ores and concentrates (285)	3 722	4 434	5 294
Coal, not agglomerated (321)	10 916	17 144	24 350
Crude petroleum oils (333)	4 643	5 693	6 004
Refined petroleum oils (334)	1 994	2 388	3 096
Natural gas (343)	2 174	3 199	4 347
Aluminium (684)	3 809	4 139	5 206
Passenger motor vehicles (781)	2 927	2 780	3 193
Gold, non-monetary (971)	5 652	5 642	7 274
All other commodities(b)	58 120	62 519	70 505
<b>Total</b>	<b>109 049</b>	<b>126 823</b>	<b>151 792</b>

(a) Based on the UN Standard International Trade Classification, Revision 3 (SITC Rev 3), 3-digit code. (b) Includes commodities subject to a confidentiality restriction.

Source: *International Trade in Goods and Services, Australia* (5368.0).

### 30.19 MERCHANDISE IMPORTS OF MAJOR COMMODITIES

Commodity group(a)	2003-04 \$m	2004-05 \$m	2005-06 \$m
Crude petroleum oils (333)	6 322	9 687	12 464
Refined petroleum oils (334)	3 318	4 832	8 322
Medicaments (542)	4 898	5 718	5 942
Paper and paperboard (641)	2 029	2 071	2 043
Automatic data processing machines (752)	5 127	5 792	6 081
Parts and accessories of office machines (759)	2 149	2 141	2 215
Telecommunications equipment (764)	4 360	5 031	5 838
Passenger motor vehicles (781)	11 216	11 597	11 998
Motor vehicles for the transport of goods (782)	3 111	4 036	4 353
Parts and accessories of motor vehicles (784)	2 108	2 285	2 261
Aircraft and associated equipment (792)	3 817	3 685	4 293
Gold, non-monetary (971)	2 562	2 466	4 804
All other commodities(b)	79 980	90 128	96 989
<b>Total</b>	<b>130 997</b>	<b>149 469</b>	<b>167 603</b>

(a) Based on the UN Standard International Trade Classification, Revision 3 (SITC Rev 3) 3-digit code. (b) Includes commodities subject to a confidentiality restriction.

Source: *International Trade in Goods and Services, Australia* (5368.0).

### Merchandise exports and imports by country

For exports, country refers to the country to which the goods were consigned at the time of export. For imports, country refers to the country of origin of the goods, that is, where the majority of processing of the goods took place.

In 2005-06 Australia recorded a merchandise trade deficit of \$15.8b. The following major trading partners were the main contributors to the deficit:

*United States of America* – trade deficit of \$13.0b, an increase of \$1.2b on the previous year's deficit due to \$1.5b increase in imports partially offset by \$0.3b increase in exports. The main commodities contributing to the increase in imports were organo-inorganic and heterocyclic compounds (up \$0.5b) and motor vehicles for the transport of goods and special purpose motor vehicles (up \$0.3b).

*Germany* – trade deficit of \$7.3b, which was similar to the previous year's deficit. The main commodity imported from Germany was passenger motor vehicles.

*Singapore* – trade deficit of \$6.4b, an increase of \$2.5b on the previous year's deficit due to a \$3.3b increase in imports partially offset by a \$0.8b increase in exports. The main commodities contributing to the increase in imports were refined petroleum oils (up \$2.1b), non-monetary gold (up \$0.6b) and medicaments (up \$0.2b). The increase in exports was spread across a number of commodities.

*China* – trade deficit of \$5.3b, a decrease of \$1.5b on the previous year's deficit due to a \$4.9b increase in exports and offset by a \$3.4b increase in imports. The main commodities contributing to the increase in exports were, iron ore and concentrates (up \$2.8b), copper ores and concentrates (up \$0.6b), and cotton (up \$0.4b). The commodities with the largest increase in imports were automatic data processing machines (up \$0.4b) and telecommunication equipment (up \$0.3b).

In 2005–06 Australia recorded a merchandise trade surplus with a number of countries, the largest of which were:

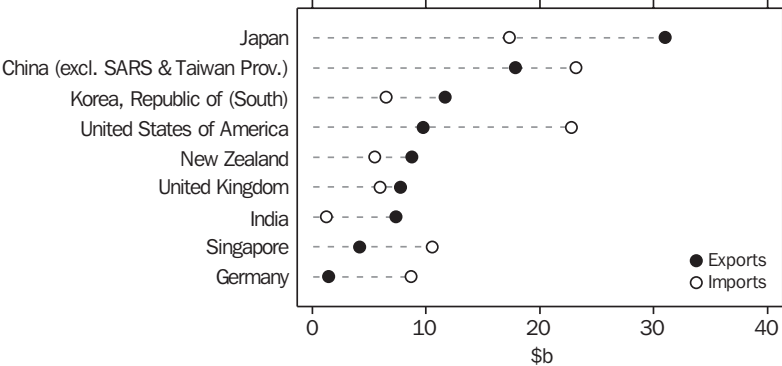
*Japan* – trade surplus of \$13.6b, up \$5.9b due to a \$6.0b increase in exports partially offset by a \$0.2b increase in imports. Contributing to the increase in exports were coal, not agglomerated (up \$3.0b), iron ores and concentrates (up \$1.1b) and copper ores and concentrates (up \$1.0b). Partly offsetting the increase in exports was an increase in imports of refined petroleum oils (up \$0.5b) and non-monetary gold (up \$0.3b).

*India* – trade surplus of \$6.1b, up \$1.3b due to a \$1.3b increase in exports. Contributing to the increase in exports were coal, not agglomerated (up \$0.9b) and copper ores and concentrates (up \$0.3b).

Graph 30.20 shows Australian merchandise exports and imports by value for Australia’s top trading partners.

Table 30.21 provides details of total merchandise exports and imports for the last two financial years and the merchandise trade balance for 2005–06 for Australia’s top trading partners. Statistics are also provided for selected country groupings.

30.20 MERCHANDISE EXPORTS AND IMPORTS, Selected countries — 2005–06



Source: *International Trade in Goods and Services, Australia* (5368.0).

### 30.21 MERCHANDISE EXPORTS AND IMPORTS, By country and country group

	Exports		Imports		Balance of trade(a)
	2004-05	2005-06	2004-05	2005-06	2005-06
	\$m	\$m	\$m	\$m	\$m
Belgium	882	1 032	1 179	1 479	-446
Brazil	635	960	643	784	176
Canada	1 880	1 683	1 905	1 993	-311
China (excl. SARs and Taiwan Prov.)	13 003	17 889	19 812	23 206	-5 317
Denmark	170	200	1 044	893	-693
Egypt(b)	286	503	14	16	488
Fiji	394	460	211	175	285
Finland	571	815	815	819	-4
France	1 012	1 170	4 437	5 348	-4 178
Germany	1 315	1 416	8 646	8 680	-7 263
Hong Kong (SAR of China)	2 709	2 897	1 210	1 652	1 245
India	6 055	7 333	1 220	1 240	6 093
Indonesia	3 407	3 979	3 311	4 557	-577
Iran	171	349	24	42	307
Iraq	383	171	6	—	171
Ireland	179	157	1 917	1 847	-1 690
Israel	173	158	584	615	-457
Italy	1 544	1 560	4 494	4 187	-2 627
Japan	24 955	30 982	17 161	17 337	13 645
Korea, Republic of (South)	9 720	11 691	5 006	6 491	5 200
Kuwait	462	515	160	242	273
Malaysia	2 581	2 528	5 920	6 750	-4 223
Mexico	687	834	776	940	-107
Netherlands	1 794	2 578	1 261	1 314	1 263
New Zealand	9 163	8 728	5 337	5 481	3 247
Pakistan	587	317	146	147	170
Papua New Guinea	1 196	1 398	1 737	2 315	-918
Philippines	869	877	699	805	72
Saudi Arabia	1 808	2 179	1 406	1 209	970
Singapore	3 362	4 200	7 245	10 562	-6 362
South Africa	1 652	2 210	1 330	1 620	591
Spain	914	890	1 327	1 317	-427
Sweden	280	422	1 963	2 395	-1 973
Switzerland	222	260	1 481	1 572	-1 312
Taiwan	4 886	5 865	3 612	3 810	2 055
Thailand	3 900	4 219	4 202	5 390	-1 170
Turkey	279	389	365	354	34
United Arab Emirates	1 274	1 646	820	662	984
United Kingdom	4 821	7 787	5 935	5 972	1 815
United States of America	9 462	9 781	21 270	22 776	-12 995
Vietnam	708	914	3 096	4 161	-3 247
Other countries(c)	6 472	7 847	5 744	6 446	1 401
<b>Total</b>	<b>126 823</b>	<b>151 792</b>	<b>149 469</b>	<b>167 603</b>	<b>-15 811</b>
APEC	93 027	109 280	103 716	120 166	-10 885
ASEAN	14 967	16 844	25 152	33 296	-16 452
Developing countries	62 362	75 477	63 746	77 339	-1 862
Least developed countries	1 487	1 537	223	341	1 197
European Union	13 816	18 541	35 086	36 267	-17 725
OECD	70 182	82 818	88 896	93 817	-10 999

(a) A negative sign indicates that merchandise imports exceed merchandise exports. (b) Exports of alumina to Egypt are excluded from its country total and included in the 'Other countries' category. (c) Other countries include: all countries not displayed in the table; Zone of Co-op A-Timor Gap; Destination or Origin Unknown; International Waters; No country details; Confidentialised alumina exports; and Ship and aircraft stores.

Source: *International Trade in Goods and Services, Australia* (5368.0).



## International trade in services

International trade in services covers all services rendered by Australian residents to non-residents (exports) and by non-residents to residents (imports), where services are broadly defined as products other than tangible goods. As international trade in services covers a diverse range of activities, a variety of data sources and methods is used to compile estimates of the different service types.

### Conceptual framework

Australia's international trade in services statistics are compiled in accordance with the International Monetary Fund's *Balance of Payments Manual, fifth edition* (BPM5). More information on the concepts, sources and methods used to produce Australia's international trade in services statistics is included in *Balance of Payments and International Investment Position, Australia: Concepts, Sources and Methods, 1998* (5331.0).

### Classification

The international standard for the classification of international trade in services is defined in the BPM5 framework. This framework has been further elaborated in the 'Extended Balance of Payments Services Classification', as detailed in the UN publication *Manual on Statistics of International Trade in Services, 2002*.

International trade in services statistics are compiled for transportation, travel, communications, construction, computer and information services, royalties and licence fees, other business services, personal, cultural and recreational services and government services. Some information is also available by partner country and state.

### Statistical overview

In current price terms, Australia's international trade in services balance in 2005–06 recorded a deficit of \$0.7b, a decrease of \$0.8b on the \$1.5b deficit recorded in 2004–05. Services exports (credits) rose \$1.7b (4.7%) to \$38.2b and services imports (debits) rose \$0.9b to \$38.9b (2.4%). Table 30.22 provides details of Australia's international trade in services by service type.

The largest country contributor to the overall deficit in 2004–05 on services was the United States of America, with a deficit of \$2.0b. Deficits were recorded for most European trading partners, with Switzerland the largest at \$0.6b. Australia recorded a net surplus with a number of its Asian trading partners, the largest being with Japan at \$1.3b. Australia also recorded a net surplus of \$0.6b with New Zealand. Table 30.23 provides details of Australia's international trade in services by partner country and country groups.

### 30.22 INTERNATIONAL TRADE IN SERVICES, By service type

	2001-02	2002-03	2003-04	2004-05	2005-06
	\$m	\$m	\$m	\$m	\$m
<b>EXPORTS</b>					
Transportation services	7 665	7 458	7 602	8 074	8 313
Passenger(a)	6 664	6 538	6 772	7 298	7 693
Freight	1 001	920	830	776	620
Other(a)	n.p.	n.p.	n.p.	n.p.	n.p.
Travel services	17 223	16 850	18 300	19 068	20 099
Business	1 234	1 196	1 339	1 316	1 436
Personal	15 989	15 654	16 961	17 752	18 663
Communications services(b)	927	1 082	834	768	737
Construction services	101	85	84	83	137
Insurance services	673	673	686	684	704
Financial services	966	984	995	1 004	1 004
Computer and information services	981	1 091	1 125	1 149	1 028
Royalties and licence fees	515	618	622	652	711
Other business services	3 391	3 638	3 566	3 710	4 075
Merchanting and other trade-related	549	509	632	652	737
Operational leasing	26	27	23	19	34
Miscellaneous business, professional and technical	2 816	3 102	2 911	3 039	3 304
Personal, cultural and recreational services	598	610	523	428	521
Government services n.e.i.	788	802	835	867	874
<b>Total</b>	<b>33 828</b>	<b>33 891</b>	<b>35 172</b>	<b>36 487</b>	<b>38 203</b>
<b>IMPORTS</b>					
Transportation services	-10 776	-10 960	-11 634	-13 203	-13 728
Passenger	-4 182	-4 248	-4 790	-4 827	-5 153
Freight	-5 626	-5 808	-6 056	-7 500	-7 779
Other	-968	-904	-788	-876	-796
Travel services	-10 925	-11 013	-12 581	-14 585	-14 678
Business	-1 986	-1 990	-2 143	-2 206	-2 094
Personal	-8 939	-9 023	-10 438	-12 379	-12 584
Communications services(b)	-1 451	-1 407	-879	-694	-648
Construction services	—	—	—	—	—
Insurance services	-856	-856	-874	-872	-900
Financial services	-612	-585	-587	-584	-600
Computer and information services	-884	-967	-1 009	-1 043	-992
Royalties and license fees	-1 791	-1 828	-1 978	-2 050	-2 220
Other business services	-3 812	-3 746	-3 499	-3 222	-3 357
Merchanting and other trade-related	-334	-369	-192	-217	-208
Operational leasing	-948	-955	-916	-698	-703
Miscellaneous business, professional and technical	-2 530	-2 422	-2 391	-2 307	-2 446
Personal, cultural and recreational services	-882	-846	-883	-998	-982
Government services n.e.i.	-649	-684	-756	-760	-801
<b>Total</b>	<b>-32 638</b>	<b>-32 892</b>	<b>-34 680</b>	<b>-38 011</b>	<b>-38 906</b>

(a) Passenger transportation exports includes other transportation services. (b) Communication services includes other services n.e.i.

Source: Balance of Payments and International Investment Position, Australia (5302.0).

### 30.23 SERVICE EXPORTS AND IMPORTS, By country and country group(a)

	Exports		Imports		Balance of trade(b)
	2003-04	2004-05	2003-04	2004-05	2004-05
	\$m	\$m	\$m	\$m	\$m
Belgium and Luxembourg	149	177	36	41	136
Brunei Darussalam	38	45	50	61	-16
Canada	461	491	480	639	-148
Central America and Caribbean	47	40	204	218	-178
Chile	16	19	45	57	-38
China (excl. SARs and Taiwan Prov.)	1 883	2 303	892	1 212	1 091
Fiji	128	131	614	710	-579
France	429	417	536	700	-283
Germany	893	924	1 228	1 305	-381
Greece	73	34	208	261	-227
Hong Kong (SAR of China)	1 423	1 385	1 408	1 582	-197
India	596	851	208	276	575
Indonesia	819	715	820	989	-274
Ireland	412	366	292	246	120
Italy	223	239	470	521	-282
Japan	3 170	3 268	1 924	1 935	1 333
Korea, Republic of (South)	1 069	1 141	400	294	847
Malaysia	977	1 019	656	797	222
Mexico	26	38	20	25	13
Netherlands	404	489	576	526	-37
New Zealand	2 405	2 686	1 997	2 118	568
Norway	257	193	178	163	30
Papua New Guinea	313	362	156	190	172
Peru	5	6	15	15	-9
Philippines	115	150	263	273	-123
Russian Federation	45	41	31	49	-8
Singapore	2 080	2 310	2 543	2 666	-356
South Africa	291	230	212	250	-20
Sweden	200	226	76	78	148
Switzerland	370	439	918	1 033	-594
Taiwan	431	398	236	221	177
Thailand	525	528	758	861	-333
United Kingdom	4 275	4 232	3 896	4 235	-3
United States of America	4 370	4 412	6 279	6 369	-1 957
Vietnam	188	203	316	388	-185
Africa n.e.s.	299	308	161	188	120
America n.e.s.	177	198	159	139	59
Asia n.e.s.	1 563	1 659	2 078	2 150	-491
Europe n.e.s.	920	957	1 423	1 831	-874
Oceania n.e.s.	286	287	461	418	-131
Unallocated	2 821	2 571	1 454	1 981	590
<b>Total</b>	<b>35 172</b>	<b>36 487</b>	<b>34 680</b>	<b>38 011</b>	<b>-1 524</b>
APEC	20 358	21 522	19 291	20 743	779
ASEAN	4 771	5 011	5 457	6 091	-1 080
EU	7 562	7 827	8 072	9 159	-1 332
OECD	19 873	20 460	20 441	21 699	-1 239

(a) At the time of compilation, final country data for 2005-06 were not available for inclusion. (b) A negative sign indicates that services imports exceed services exports.

Source: *International Trade in Goods and Services, Australia* (5368.0).

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- Bureau of Transport and Regional Economics
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- Department of Environment and Heritage
- Department of Families, Community Services and Indigenous Affairs
- Department of Foreign Affairs and Trade
- Department of Health and Ageing
- Department of Industry, Tourism and Resources
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The volunteer surf lifesaving movement is celebrating 100 years of continuous service to the community by patrolling Australia's surf beaches and protecting the lives of those who use them. The Australian Government has recognised this contribution by declaring 2007 the Year of the Surf Lifesaver.



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