

### Reading Introduction

Energy Consumption and Prosocial Behavior  
by Chia-Wen Chen & Josie Chen

#### **a. What is the question (of the paper)?**

This paper focuses on whether there exists some prosocial behavior without external incentives like monetary motive, where it tests the electricity consumption during events like electricity crisis in residential halls.

#### **b. Why should we care about it?**

It is not easy to detect whether extrinsic motives may impact on prosocial behaviors. To take energy consumption as an example. Currently, most of the dorms of campus employ a fixed electricity price rate without dynamic pricing, which fails to reduce the residents' electricity usage during the peak hours due to monetary incentives. If there exists such prosocial behavior during the peak hours to decrease the residents' usage of electricity during the peak hours, this behavior may be counterbalanced by the monetary incentives. The prosocial behavior and monetary incentive should be taken into considerations when the campus administration design the electricity pricing of the students living in the dorms.

#### **Real Word Example:**

For example, Beijing Subway has some discounts for those who enter the subway system earlier than 7 o'clock in the morning. To some degree, this policy motives some people to take the subway earlier before the peak hours and reduces the passenger volume during the peak hours. We can say that the behavior of such passengers benefit both others and themselves, but it may not be considered as prosocial behavior since perhaps it is out of monetary incentives instead of voluntary actions. If the prosocial behavior can be proved to exist, even without the implemented discount policy, people in the society tend not to take a subway during the peak hours.

#### **c. What is your (or the author's) answer?**

- (1) There may exist some prosocial behavior since the usage of the air conditioners were reduced by 13% during critical peak hours.
- (2) If the air conditioners were turn on before the critical peak hours, the students tend not to turn them off during the peak hours.

#### **d. How did you (or the author) get there?**

The authors pay attention to the electricity usage data of 3 dorm buildings of National Taipei University. The results are reached with the comparison of the usage changes between the hours within and out of the "critical days". Weather data are gathered to control the levels of temperature and humidity. The authors establish regressed models of behavior and deliver falsification tests to draw the conclusions.

### **Notations**

$y_{it}$ : a usage variable of interest for an individual room in an hour of week  $i$  during the sample.

$\alpha_i$ : room-hour-of-week fixed effect.

$1(Critical)_t$ : an indicator variable for off-peak hours during the 2-day critical usage window.

$1(Critical\ peak)_t$ : an indicator variable for peak hours during the 2-day critical usage window.

$X_t$ : weather controls at the hourly level and a week of year variable.

$\epsilon_{it}$ : error term.