

Assignment 5

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1. Experiments on Amazon Mechanical Turk

- (a) The experiment that interests me on MTurk is called “Perceptions of Leadership”, which is requested by Jason J Dahling. The purpose of this experiment is to study the reactions of the participants toward a potential leader.
- (b) The reward of this experiment is \$0.9.
- (c) The qualifications required for this experiment are as following:
 - 1. The location of the participants should be in the US.
 - 2. HIT approval rate is not less than 95%
 - 3. Exc: [114512-113923] has not been granted
 - 4. Inc: [19-113923] has been granted
- (d) This experiment would take about 10 minutes and the hourly rate is about \$5.4 per hour.
- (e) The expiration date of the job is Dec 5, 2018.
- (f) If there are 1 million people participating in this experiment, then the cost would be \$900,000. (\$0.9 per person)

2. Costa and Kahn (2013)

How does environmentalist ideology affect electricity conservation? In order to study the relationship between environmentalist ideology and energy saving, Costa and Kahn (2013) collect and compare various data sets and conduct the HER experiment in their research.

The primary data set used in this study (Costa and Kahn, 2013, p.685) is residential billing data from January 2007 to October 2009, from which the authors obtain the information on kilowatt hours purchased per billing cycle, the length of billing cycle, the usage of electric heat, and whether the household purchase the energy from renewable resources. Besides, the authors link this billing data to treatment and control data, which includes the information on the time that the households start to receive HERs, the square footage of the house, the resources used for house heat, and the age of the house.

In order to understand how ideology influences the outcome of energy conservation, the researchers also merge the individual voter registration and marketing data for March 2009 to the data sets mentioned before. Through voter registration, we can know the individuals' party affiliation and whether they donate to any environmental organizations. What's more, the authors also use an ancillary data set, the survey conducted by electric utility company about the households' opinions towards the HER report in 2009, to examine their attitude about the HER by ideology.

The HER experiment (Costa and Kahn, 2013, p.683) selected the households from 85 census tracts with a high density of single-family home. Both treatment and control households need to live in a house, not apartment, with square foot between 250 and 99,998 square feet, and have a current account with the electric utility that had been active at least one year. In the experiment, the authors randomly assigned the group of contiguous census blocks to treatment and control groups until both of them contain roughly 35,000 households. The difference between two groups is that the treatment households would received the HERs, either on a quarterly or monthly basis.

Compared to the previous work conducted by Schultz et al. (2007), which controls the descriptive norms and injunctive norms to study households' reaction towards energy savings, in order to study how ideology affect energy conservation, Costa and Kahn (2013, p.689) also control the household and month/year fixed effects, the interaction between mean daily temperature with a dummy indicator if the house is electric, party registration (liberal, other party, and not registered), green indicators (whether the households purchase the renewable sources and donate to environmental organizations), individual characteristics, block characteristics, and house characteristics.

From the result of the HER experiment, Costa and Kahn (2013, p.698) find out that liberal households are less likely to drop out of the experiment and have more positive responses towards HERs. Although liberal households already tend to reduce the consumption of electricity, they would still try their best to decrease their electricity usage in this experiment. Therefore, the authors believe that environmental nudges are more effective in relatively liberal communities, rather than conservative communities.

3. Analytical exercise

- (a) When there is a spillover effect, which means that one's decision might be influenced by others, the homogeneity might increase and the precision of the estimation might decrease. Therefore, in order to solve this problem, it is better to increase the number of clinics to decrease the spillover effect. On the other hand, when there is no spillover effect, I can focus my resources on a small number of clinics and spend more money on increasing the number of patients to get a larger sample size, which can increase the accuracy of the estimation.
- (b) The factors that would determine the smallest effect size that I could detect with my budget are the methods used to estimate the effect and the sample size. First, the available approaches of estimating treatment effect are difference-of-means, difference-of-differences, and analysis of covariance. (Salganik, Matthew J., 2018, p.209) However, using different estimator might gain different results, some might estimate better than others in certain situations such as when the data is quite predictive, using difference-of-differences might obtain more precise estimates than using difference-of-means. While obtaining more precise estimation, it would allow me to detect smaller effects. Second, the sample size will also affect the level of the effect size which I can detect. For example, having bigger sample size implies that the estimation is more precise. Therefore, it would be easier for me to observe a small effect.

References

Costa, Dora L. and Matthew E. Kahn, "Energy Conservation Nudges and Environmentalist Ideology: Evidence from a Randomized Residential Electricity Field Experiment," *Journal of the European Economic Association*, June 2013, 11 (3), 680–702.

Salganik, Matthew J., *Bit by Bit: Social Research in the Digital Age*, Princeton University Press, 2018.

Schultz, P. Wesley, Jessica M. Nolan, Robert B. Cialdini, Noah J. Goldsteinand, and Vldas Griskevicius, "The Constructive, Destructive, and Re- constructive Power of Social Norms," *Psychological Science*, 2007, 18 (5), 429–434.