

## Assignment #5

MACS 30000, Dr. Evans

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### 1. Experiments on Amazon Mechanical Turk

- (a) The title of the experiment: "Object recognition --- report what you see."
- (b) The full payment structure: \$0.33 for completing the visual object recognition task
- (c) Qualifications Required: HIT approval rate (%) is greater than 90
- (d) The expected time to finish this HIT is about 10 minutes or less and it must be finished in under 25 minutes. Using 10 min as the expected time, we can see the implied hourly rate is  $\$1.98(0.33/10*60)$ .
- (e) The job expires on November 23.
- (f) \$330,000 is the most this project would cost the HIT experiment creator if 1 million people participated in the task

### 2. Assessment of Costa and Kahn (2013)

The basic research question of this paper is: What is the role that ideology plays in determining the effectiveness of energy conservation "nudges"?

The primary data set of this research consists of residential billing data from January 2007 to October 2009 (Costa and Kahn, 2013, p685). This dataset includes the information of kilowatt hours purchased per billing cycle, the length of the billing cycle, the usage of electric heat and the enrollment in the electric utility's program. Besides, the experiment data with the information on when the household began to receive the HERs, square footage of the house and the age of the house is also utilized. Moreover, the authors purchased "individual voter registration and marketing data for March 2009" and merged it with the above two datasets (Costa and Kahn, 2013, p685). An ancillary data set serves as a reference for them to discover household attitudes about the HER by ideology (Costa and Kahn, 2013, p686).

In the HER experiment, the treatment group consists of around 35,000 households who received and are still receiving the Home Electricity Reports. The control group is comprised of roughly 49,000 households who have never received a HER. Thus, the treatment is receiving the quarterly or monthly reports including information about the household's electricity consumption compared with that of 100 neighbors living in similar-sized homes (Costa and Kahn, 2013, p683).

Schultz et al.(2007) only controlled "above or below average energy consumption dummy" (Schultz et al., 2007, p430). Costa and Kahn(2013) further included control variables, such as whether the house is an electric house, block characteristics, mean daily temperature within the billing cycle, the age of the head of the household, etc.

The result of the experiment shows that the liberal households are more willing to receive the HER and accordingly reduce their electricity consumption by a higher proportion as compared with conservatives. Therefore, environmental "nudges" are more effective in relatively liberal communities.

## **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.

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

### 3. Analytical exercise

(a) The basic constraint of this experiment is the \$1000 budget. There is one option for the researchers to focus on a small number of clinics so that they could collect more observations within each clinic. In this way, they could better reduce the Average Treatment Effect (Salganik, 2018, p203-209). However, to satisfy the “no interference” and “excludibility” for “Stable Unit Treatment Value Assumption” (Salganik, 2018, p203-209), there should be underlying conditions behind this option. To be more specific, the systematic difference between each clinic must be small. When there are large number of unobserved factors under the heterogeneity among clinics, we should consider spreading the experiment widely so as to get a more unbiased and convincing estimate.

(b) Under the budget constraint, the smallest effect size that we will be able to reliably detect highly depends on the variability of the potential outcomes of the control and treatment group. If the variability is large, then we should set a higher smallest effect size. Besides, the precision level we expect and the research method we use are also factors influencing the smallest effect size. The higher precision level we expect, the higher size we might need. If the method we take could serve as a way to eliminate some unobserved variable bias, then a lower threshold is required.

### References

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