Assignment #5

MACS 30000, Dr. Evans

Due Wednesday, Oct. 31 at 11:30am

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1. Experiments on Amazon Mechanical Turk

a) Experiment: "Linguistics Experiment - Reading Sentences - Fall 2018"
b) The reward is $1.50 for completing the whole survey.
c) There are two qualifications. One is that location is US and the other is that Masters has not been granted.
d) The expected time is 2 hours. Hourly rate is $3.
e) It expires on Nov 17th.
f) The most this project would cost the HIT experiment creator if 1 million people participated is 1.5 million dollars.

2. Costa and Kahn (2013)

The research question in Costa and Kahn(2013) is what the role of ideology play in energy conservation "nudges".

The data of this study come from many resources. The primary one "consists of residential billing data from January 2007 to October 2009". "These data provide us with information on kilowatt hours purchased per billing cycle, the length of the billing cycle (measured in days), whether the house uses electric heat, and whether the household is enrolled in the electric utility's program to purchase energy from renewable sources." Another data the authors used is the data "individual voter registration and marketing data for March 2009". By merging it to the primary data set, it is able to identify the party affiliation and individual donation to environmental organizations.

In the Home Energy Report (HER) experiment, the assigning of

treatment and control group is as follows. (Costa and Kahn, 2013) As for the sample selection, this experiment chose households from 85 census tracts. Those tracts are dense with single family. There are some conditions for choosing household. First, the household should have an active account for at least one year. Second, the household "could not be living in apartment buildings". Third, the household should live in "a house with square footage between 250 and 99,998 square feet". When assigning treatment and control group, "groups of contiguous census blocks were randomly assigned to either the treatment or control group" and "the process continued until roughly 35,000 households were assigned to both the treatment and control groups". As for the remaining household, they "were assigned to the control group". Treatment is that households in the treatment group receive monthly or quarterly HER containing their own and peers' electricity usage, while households in the control group don't receive HER.

To control participant heterogeneity, Schultz et al. (2007) included a binary dummy which represents whether the household is "above or below the average of the energy consumption". To add an extra layer of controlling heterogeneity, Costa and Kahn (2013) looked further by including month/year fixed effects, "mean daily temperature within the billing cycle", "whether the house is an electric house", block features, house features, the household's electricity consumption in 2006, and the age of the homeowner of the household.

This paper found that liberals reduce a larger proportion of their electricity usage with treatment of HER than conservatives, which proves that the ideology did influence the energy conservation decision.

3. Analytical exercise

a) The conditions that it might be better to focus the resources on a small number of clinics is that all the patients are the same or there are few unobservable factors across one hundred and fifty clinics. For example, healthy awareness is hard to observe. In a specific neighborhood, the committee cares a lot about health and promotes the idea by sending spreadsheet and put up posters. If we choose the clinic in this neighborhood, our participants are more motivated to take the vaccination than the average patients, and the biased estimate is resulted in the differences. In this case, by spreading experiment more widely and including more patients from different neighborhood, we can add the randomness of the experiment and balance the group's unobserved factors.

b) There are many factors that determine the smallest effect size. One is precision level of the result the we want. If we want a high precision, we need to increase the sample size to reduce the standard error of average treatment effects(ATE). Another is how balance between treatment and control group. If the treatment and control group is imbalanced, we need to enlarge the sample size to include more patients in order to achieve a balanced sample.

References

Alcott, Hunt and Todd Rogers, "The Short-run and Long-run Effects of Behavioral Interventions: Experimental Evidence from Energy Conservation," American Economic Review, 2014, 104 (10), 3003–3037.

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 Vladas Griskevicius, "The Constructive, Destructive, and Reconstructive Power of Social Norms," Psychological Science, 2007, 18 (5), 429–434.