

1.

- a) The experiment I looked into is “Investment Experiment”.
- b) The flat rate for viewing material and answering related questions is \$0.5 and there are bonus up to \$0.75 for 3 comprehension questions – participants can get \$0.25 per correct answer.
- c) There are four qualifications required by this task: Location is US, HIT approval rate (%) is greater than 95, which requires a high rate of approval of the participants’ previous work, previous participation has not been granted, which means the participant hasn’t participated in this experiment before and Investment Experience is 100, which requires the participant to take a test by the requester to determine their investment experience.
- d) The task takes about 10 minutes so the hourly rate is \$3 per hour and bonus up to \$4.5 per hour.
- e) The task will expire in 21 days, which is 31st Nov.
- f) If 1 million people participated, it would cost the creator half million for fixed rate and up to 0.75 million for bonus.

2.

In Coasta and Kagn’s paper, they looked into an interesting question: what is the role that political ideology plays in the effectiveness of electricity conservation “nudge”?

The data used in this study included residential billing data, treatment and control data, and individual voter registration and marketing data. Residential billing data from January 2007 to October 2009 contains “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” (Costa and Kahn, 2013, p. 685). The treatment and control data include information on “when the household began to receive the HERs, square footage of the house, whether the home heats with electricity or natural gas, and the age of the house” (Costa and Kahn, 2013, p. 685). The individual voter registration data includes information on the individual’s “party affiliation and whether the individual donates to environmental organizations”, “the share of registered voters who were liberal (Democrat, Green, or Peace and Freedom) in 2000 by the census block group and the share of the college-educated in the block group” (Costa and Kahn, 2013, p. 685).

The treatment group is approximately 35000 households who received the Home Electricity Reports (HER) and the control group is about 49000 households who never received a HER. The households in the treatment group has been receiving the Household Energy Report, in which specific information of the household’s “monthly electricity usage over time and relative to neighbors’ usage over the same time period” as well as “energy saving tips” are provided (Costa and Kahn, 2013, p. 683).

Beyond the previous work of Schultz et al. (2007), in which the authors controlled the heterogeneity of participants by whether they were “above or below the average of the energy consumption” (p.430), Costa and Kahn controlled for extra layer of the participant heterogeneity. Firstly, they made sure their selected treatment and control households both had “a current account with the electric utility and the account had been active for at least one year” (Costa and Kahn, 2013, p. 683). In addition, they controlled for the housing type to be not apartment

buildings and the house area to be between 250 and 99,998 square feet. They also assigned groups of five contiguous census blocks to either the treatment or control group as “increased communication among people receiving the HERs in the same community would lead to greater energy saving” (Costa and Kahn, 2013, p. 683). They also controlled for temperature, “whether the home is an electric home”, “household fixed effects”, “year-month fixed effects” and whether the experiment has started (Costa and Kahn, 2013, p. 692).

In this study, Costa and Kahn found that ideology does play a role in the effectiveness of energy conservation “nudges” (Costa and Kahn, 2013). More specifically, political liberals reduced their electricity usage by 3.6% after receiving a HER while political conservatives only reduced 1.1% of their electricity usage. Political liberals were “more likely to turn down the air-conditioning in the summer” and were also more willing to receive the reports than political conservatives (Costa and Kahn, 2013, p. 682).

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. Goldstein, and Vidas Griskevicius, “The Constructive, Destructive, and Reconstructive Power of Social Norms,” *Psychological Science*, 2007, 18 (5), 429–434.

3. (a) According to Salganic (2018, pp. 203-209), randomization ensures that the treatment group and control group will “resemble each other”, thus ensuring “comparison between treatment and control groups is fair”. Therefore, if the characteristics of patients of a single clinic are diverse and could represent the characteristics of our target population, we can focus our resources on a small number of clinics to save our costs. However, if the patients of the same clinic possess similar characteristics, especially some unobserved characteristics, to ensure the randomization within the treatment and control groups and make both representatives of our target population, we have to spread more widely.

(b) The first factor that would determine the smallest effect size would be the precision level. If a researcher pursues a high precision level, which means small standard deviation, they have to increase the sample size. In this case, if we pursue a high precision level, we have to increase our sample size either by increasing our funding or choosing less clinics to cooperate with. In addition, the research design could also influence the smallest effect size by influencing standard error. According to Salganic (2018, p. 206), “a difference-in-differences estimator, which is typically used in a mixed design, can lead to smaller variance than a difference-in-means estimator”. Thus, in this case, if we could obtain the patients’ previous vaccination data, we could reduce the standard deviation through a difference-in-differences estimator in a mixed design.

References

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