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MACS 30000, Dr. Evans
Assignment 5

Part 1: Introduction to Amazon Mechanical Turk

a. An interesting experiment that I found on Amazon Mechanical Turk is Linguistics Experiment - Reading Sentences - Fall 2018 by X Syn SFU
    [Link: https://worker.mturk.com/requesters/A3VZ3FUI1WE1K/projects?ref=w_pl_prvw]

b. The reward for this experiment is $1.50 and it is paid once the work is approved and accepted. Bonuses can be paid to the workers that do particularly good work. This is the payment to the worker.

c. This experiment has two qualifications – Location is in USA and masters has been granted. A masters qualification is given to workers who exhibit excellence across different HITs. This is monitored by Amazon's statistical monitoring tool.

d. The maximum amount of time allotted is 120 mins and it pays $1.50. So, if all two hours are used, it pays $0.75 per hour.

e. This job expires 6 days from November 11th so it expires on November 17, 2018.

f. For a HIT experiment requestor, the cost breakdown is – determined worker reward, 20% fee on the reward paid to workers or a minimum fee of 0.01 per assignment, an additional fee of 5% for masters qualification and $0.05 additional fee per assignment if premium qualifications are used. For the experiment of interest – the reward is $1.50 and masters qualification is requested, therefore, reward cost for each is $1.50 plus the fee of 20% of 1.50 = $0.30 and 5% of 1.50 = $0.075 is summed and multiplied by million participants, the experiment costs $1,875,000. It is assumed that no bonuses are awarded.

Part 2: Costa and Kahn's Paper

The 2013 Costa and Kahn's paper, "Energy Conservation "Nudges" and Environmentalist Ideology: Evidence from a Randomized Residential Electric Field Experiment" explores the effect of comparative feedback on household electric usage received on different political ideologies. In this study, the difference in political ideology is a way to characterize existing opinion about environmental policy and ideology. The authors believe that a "nudge", such as Household Energy Report (HER) is more effective on those that already follow and support environmentalist agenda. Therefore, they constructed a randomized control experiment to answer the question, "Why Could Ideology Mediate the Response to this Nudge" (Costa and Kahn)?

To conduct this experiment, the authors, use various data sources. They understood the electricity and heat usage pattern of the households that were part of the experimental trial from January 2007 to October 2009 using the main data set of residential bills. The average temperature of during that period was also merged. This was linked to data that held information on time of HER reception for the households and details on the house size and heating conditions. Finally, the authors consolidated the voter registration data to understand the household's party affiliation for those that was possible.

To understand the effects of using nudges, the HER experiment uses the Home Energy Report as a treatment provided to select group of homes and does not send a HER to the control group of individuals. The assignment of treatment was conducted randomly from a broader dataset of selected homes from census tracts that met criteria, such as, being single – family homes and residing in houses of a certain size not apartment for at least a year. Approximately 35000 homes were assigned to each treatment and control by alternating between five adjacent blocks and about 14000 other homes were assigned to the control group. The authors note that the final dataset after removing observations that could not be matched to residential billing data, "the treatment and control data [contained] 81,722, with 48,058 households in the control group" (Costa and Kahn).

The work of Schultz et. al (2007) explores effect how giving "descriptive normative information" had a much more beneficial effect of than the nudge provided by knowing if they are above or below the average (Schultz). The study focuses on different households and different people but Costa and Kahn build upon this study to understand how the treatment can be improve by targeting a narrower population. They used the additional dataset of party affiliation to understand how this treatment varies over different party ideologies. By exploring this heterogeneity of treatment, Costa and Kahn suggest ways to further improve the desired effect of energy consumption.

Through this study, Costa and Kahn were able to show that conforming beliefs of people do influence the reception of nudge. In this case, the response to the knowledge of neighbors' energy usage liberals adjust their usage of electricity consumption and are more likely to be receptive of this usage information than conservatives.

Part 3: Analytical Exercise from Bit by Bit

Problem Statement: To estimate the effect of receiving text message reminders on vaccination uptake, 600 participants from 150 clinics are eligible. The cost is $100 for each clinic and $1 for each text. Any clinic that we work with measures the outcome for free. The budget is assumed to be $1000

Part a.

Conditions where it might be better to focus resources on small number of clinics:

There are two main variable cost – payment to staff and payment to participants. Since $100 is a fixed cost, it is best to limit the number of clinics to allow sending more texts and having more participants in the study. Also, a part of variable cost is also payment to researchers to contact and go to many clinics so less clinics mean less cost.

Conditions where it might be better to spread them more widely

There might be an effect of confounding factors if the same clinic is used. It might be hard to isolate the effect of just sending the text if every other factor is not adjusted for. The study will have more validity as well as it is applicable to more clinics. Having different clinics reduces the possibility of interference or spillover from participant interaction or motivation from others.

Part b.

Factors that would determine the smallest effect size that you will be able to reliably detect with given budget:

To easily detect a small effect in noisy outcome data, use the right estimator, such as difference – of differences versus difference – of - means versus ANCOVCA – based. (Salganik, ch 4).

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.