Green // Experimental Research // 2016

# Final Exam

1. Identification of Terms. Define and state the significance of the following terms or phrases. Be concise, and focus on key issues.
2. Treatment-by-covariate interaction
3. Trimming bounds vs. extreme value bounds
4. Within-subjects design
5. Mediation
6. Meta-analysis
7. Short answer
8. Briefly summarize the implications of clustered random assignment for experimental design and analysis. What complications arise when clusters (e.g., media markets) contain different numbers of subjects?
9. Explain (preferably using a bit of algebra) why rejecting the null hypothesis that implies rejection of the null hypothesis of homogeneous treatment effects (i.e., the hypothesis that )).
10. Modeling and data analysis

The table below shows the results of an experiment in which 630,640 subjects were randomly sent a “social pressure” mailing immediately prior to an election in June of 2012. Social pressure mailings showed voters whether they and their neighbors voted in the last election. The remaining 33,380 subjects were sent nothing. Turnout in that election is indicated by the variable votedS. This variable equals 1 when a subject voted; 0 otherwise. Later that year, a presidential election occurred, and subjects voted or abstained (see the variable votedG).

Suppose you sought to estimate the “downstream” effect of votedS on votedG.

1. Briefly explain why the identification of “downstream” effects is akin to the identification of the CACE in the presence of two-sided noncompliance.
2. Show algebraically how one can identify the average causal effect among those who vote in the June election if and only if they are encouraged by the mailer. Indicate what assumptions you invoke in the course of your identification proof.
3. Explain and critically evaluate the excludability assumption in this particular study.
4. With a hand calculator (or a calculator on your cell phone), use the results below to estimate this average causal effect. (Don’t worry about estimating standard errors.)

Subjects assigned to the control group

| votedS

votedG | 0 1 | Total

-----------+----------------------+----------

abstained | 7,990 1,275 | 9,265

| 69.96 5.81 | 27.76

-----------+----------------------+----------

voted | 3,431 20,684 | 24,115

| 30.04 94.19 | 72.24

-----------+----------------------+----------

Total | 11,421 21,959 | 33,380

Subjects assigned to the treatment (mail) group

| votedS

votedG | 0 1 | Total

-----------+----------------------+----------

abstained | 147,147 24,721 | 171,868

| 70.46 5.86 | 27.25

-----------+----------------------+----------

voted | 61,691 397,081 | 458,772

| 29.54 94.14 | 72.75

-----------+----------------------+----------

Total | 208,838 421,802 | 630,640

1. Interpreting results

Guan and Green (2006) report the results of a canvassing experiment conducted in Beijing on the eve of a local election. Students on the campus of Peking University were randomly assigned to treatment or control groups. Canvassers attempted to contact students in their dorm rooms and encourage them to vote. No contact with the control group was attempted. Of the 2,688 students assigned to the treatment group, 2,380 were contacted. A total of 2,152 students in the treatment group voted; of the 1,334 students assigned to the control group, 892 voted. One aspect of this experiment threatens to violate the exclusion restriction. At every dorm room they visited, even those where no one answered, canvassers left a leaflet encouraging students to vote.

* 1. Estimate the ITT.
  2. Assume excludability (i.e., that the leaflet had no effect on turnout). Estimate the CACE.
  3. Assume that the leaflet raised the probability of voting by one percentage point among both Compliers and Never-Takers. In other words, suppose that the treatment group’s turnout rate would have been one percentage point lower had the leaflets not been distributed. Write down a model of the expected turnout rates in the treatment and control groups, incorporating the average effect of the leaflet.
  4. Given this assumption about the ATE of leaflets, estimate the CACE of canvassing.
  5. Suppose the experimental design had an additional randomized group that received only leaflets (no conversation at the door). Explain whether or not the information furnished by this group would identify the CACE of canvassing.