Class 5 — iTV Experiments
Heterogeneous Treatment Effects

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Here are a few of the questions that arose during my reading. You will have others, so this list is not meant to restrict our discussion.

1. Review: Why would an experiment help you answer your question and/or shed light on your theoretical concerns? [What are the key features and benefits of an experiment?]

2. Review: What is randomization inference? How would you do statistical inference for a causal effect or hypothesis/model using randomization inference? Why do Gerber and Green use randomization inference?

3. How does randomization inference relate to the differences of means that arise from regressions of the form $Y_i = a + bZ_i + e_i$ where $Z_i \in \{0, 1\}$ is the treatment assignment and Y_i is the observed outcome?

4. When might one want to avoid using regression for the analysis of experimental data? When might one feel comfortable with regression-based approximations? And what might one do differently when one is using a regression to approximate randomization-based- rather than model-based or infinite-sample-based inferences?

5. Review: Why block (from the perspective of precision of estimation/power of tests)?

6. What are some other benefits of blocking?

7. Why might blocking require some extra work and/or thought?

8. If you can't block, what else can you do to increase precision? What is a prognostic covariate?

9. Why do Gerber and Green talk about "exploration" and urge us to be clear about when we are exploring or not? How do they suggest we work around the problems arising?

10. How is moderation different from mediation?

11. How might one assess claims about mediation?