SFU SIMON FRASER UNIVERSITY
ENGAGING THE WORLD

Monday June 25, Session 2:
FIELD EXPERIMENTS

CAUSAL QUESTIONS

Many questions in the social sciences are questions about causes, e.g.:

- Does candidates' gender affect their chances of winning elections?
- Is civil war more likely in ethnically heterogeneous societies?
- Does lowering the voting age to 16 decrease the overall turnout rate?
- What is the impact of Iran possessing nuclear weapons on political stability in the Middle East?
- To what extent are people responsive to appeals based on social norms?
- Do increased employment opportunities and wider availability of low-cost housing decrease substance abuse?

But how do we confidently establish a cause?

ANSWERING CAUSAL QUESTIONS - Observational Studies

- Observational studies rely on the use of observational data on a number of cases ('N')

- Such studies are vulnerable to the issue of 'unobserved confounders' and they rely on the assumption of 'conditional independence' (of assignment and outcome) to make causal claims

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  > "that the observed *and unobserved* factors that affect outcomes are equally likely to be present in the treatment and control groups. Any given experiment may overestimate or underestimate the effect of the treatment, but if the experiment were conducted repeatedly under similar conditions, the average experimental result would accurately reflect the true treatment effect" (Gerber & Green, 2012: 8)

WHY DO EXPERIMENTS?

- One major advantage of experiments is that important assumptions we commonly make when estimating causal effects are justified by the experimental design
- Experiments also involve transparent and reproducible procedures
- Experiments can provide a benchmark for evaluating other forms of research

EXPERIMENTS

- Experiments are studies in which subjects are assigned to conditions with known probabilities between 0-1
- This random assignment can take different forms:
  - Simple
  - Complete
  - Blocked
  - Clustered
- Importantly though, random assignment should not be confused with random sampling

FIELD EXPERIMENTS

- Field experiments are randomized trials that are conducted in a real-world setting
- In contrast, laboratory ('lab') experiments are experiments that are conducted in an experimental lab
- Lab experiments typically allow for greater control of the context and in the delivery of treatments. They also tend to be easier to execute than field experiments
- However, in lab experiments subjects are often aware they are a part of an experiment and might change their behavior
- Because of this and because both subjects and the setting are often atypical, some argue that lab experiments tend to be lower on 'external validity' – that their results are less generalizable to real-world situations

FIELD EXPERIMENTS

- The motivation for choosing a real-world setting for an experiment is often to ensure a more *realistic* and *unobtrusive* intervention
- What we consider to be 'real-world' depends on the authenticity of:
  - The interventions (treatments)
  - The participants
  - The contexts
  - The outcome measures

WHAT IS AN EXPERIMENT - EXAMPLE

- Alternative research designs for assessing the effects of election monitors on vote fraud (Hyde 2006):
  - Randomized experiment: Researcher randomly assigns election monitoring teams to polling locations
  - "Natural"/quasi experiment: Researcher compares polling locations visited by monitoring teams to polling locations not visited because some monitoring team leaders were sick and unable to travel
  - Observational study: Researcher compares polling locations visited by monitoring teams to polling locations not visited

RANGE OF EXPERIMENTS

Behavioral research:

- Discrimination/audit studies (Bertrand and Mullainathan 2004)
- Mobilization (Gerber and Green 2000; Foos and de Rooij 2017)
- Persuasion (Broockman and Kalla 2016)
- Interpersonal influence (Nickerson 2008)
- Media (Panagopoulos and Green 2008; de Rooij and Green 2017)

RANGE OF EXPERIMENTS

- Public policy or program evaluation:
  - Aid programs, health programs, diversity training, virginity pledging, vouchers, job training, health insurance subsidies, recycling programs
  - E.g. work by Peter John and Dean Karlan
- Institutions:
  - Rules for deliberation, representation, monitoring performance, elite training
  - E.g. work by Jacobsen and Anderson with leaders in Denmark (2015); Grose's experiment on monitoring legislators (2010)

WHY (NOT) TO DO AN EXPERIMENT

- When doing experiments the important assumptions we commonly make when estimating causal effects are justified by the experimental design
- The advantage of *field* experiments is that they tend to be more realistic and unobtrusive than lab experiments; a disadvantage is that they can be difficult to execute: many obstacles can be encountered in the field
- Typical critiques of field experiments are that:
  - compared to (large-N) observational studies, results tend to be low on external validity
  - 'big questions' cannot be addressed using the field experimental method, and the range of topics that can be studied using the field experimental method is limited
- But is this really true?

GENERALIZABILITY

- Replication studies assess whether findings apply when:
  - Subjects (and their potential outcomes) change
  - (Administration of) treatments change
  - Setting of the treatment changes
  - Outcome measures change
- Replications are important, but the degree to which our findings extend to other contexts/pools of subjects will always remain to some extent a theoretical argument

TESTING THEORIES WITH EXPERIMENTS

- Experiments are a great way to test theories and to test different theories against each other
- They are not *always* necessary or feasible (although more often than you think!)
- Findings often lead to new questions and the development of new interventions
- Beware though to connect your treatment to your theory: are you testing what you want to be testing?

THREE EXAMPLES

- Broockman, David, and Joshua Kalla. "Durably reducing transphobia: A field experiment on door-to-door canvassing." *Science* 352.6282 (2016): 220-224
- Chattopadhyay, Raghabendra, and Esther Duflo. "Women as policy makers: Evidence from a randomized policy experiment in India." *Econometrica* 72.5 (2004): 1409-1443
- Yokum, David, Anita Ravishankar, and Alexander Coppock. "Evaluating the Effects of Police Body-Worn Cameras: A Randomized Controlled Trial." *Washington, DC: The Lab@ DC* 2100 (2017)

IN THIS COURSE…

- Some practical advice on designing and conducting experiments
- Randomization inference
- Using covariates in experimental design and analysis
- Heterogeneous treatment effects
- Non-compliance - one-sided and two-sided
- Attrition – missing outcomes
- Spillover – interference between experimental units