Reminder: Homework #1 is due on Tuesday by 5pm.
Class Survey

Please answer this survey question and then pass the sheet to either aisle.
Political Science 15

Lecture 4:
Experiments
Example: Framing Experiment

- That class survey was actually an experiment.
- One version of the survey says (A) 200 saved, (B) 1/3 chance that 600 saved.
- The other version says (A) 400 die, (B) 2/3 chance 600 die.
- A and B are equivalent in both versions.
- Does asking the question in different ways lead to different answers?
- Past work: 78% prefer 200 saved, only 22% prefer 400 die.
A Standard Experimental Design

Random assignment

Treatment group

Control group

Treatment outcome

Control outcome

The difference between the treatment and control outcomes is the *treatment effect*. 
Experimental Designs

- The previous diagram shows a **posttest** experimental design.
- The **classic** experimental design tests subjects on the dependent variable before and after the treatment. Useful for measuring change over time.
- A **multiple-group** design creates more than one treatment group. Useful for testing different levels of the treatment.
Characteristics of Experiments

- **Treatment and Control Groups:** One group is exposed to some treatment, the other is not.

- **Randomization:** Subjects are assigned to the treatment and control groups randomly. This helps rule out alternative explanations.

- **Control over the independent variable:** The researcher manipulates the treatment (the independent variable) directly.
Internal vs. External Validity

- **Internal Validity**: The study is properly set up to determine if the independent variable has a causal effect on the dependent variable.

- **External Validity**: The results of the study can be generalized to the real world.

- We will usually face a tradeoff between internal and external validity in our research designs.

- Experiments are high on internal validity, low on external validity. Randomization and standardization are powerful!
Threats to Internal Validity

- **History**: Something uncontrolled happens between the treatment and the measurement of the dependent variable.

- **Maturation**: The subjects are changing over time. Changes between the treatment and measuring the dependent variable.

- **Testing**: The experiment itself might change behavior.

- **Demand characteristics**: Subjects learn or try to guess what the experiment is about, and change their behavior.
Threats to External Validity

- **Testing interaction effects (the “Hawthorne effect”)**: People change their behavior because they are being observed.

- **Unrepresentative subjects**: Is a class of undergraduate students representative of all voters?

- **Spurious measures**: The treatment only works in the experimental setting. Treatment is applied in a way we wouldn’t see in the real world.
Ethics in Experiments

- The infamous “Stanford Prison Experiment.”
- Most universities now have human subjects committees to review experiments.
- Is deception in experiments permissible? Economists versus psychologists.
Types of Social Science Experiments

- **Laboratory Experiments**: Takes place in a controlled setting (a lab, classroom, etc.). Good control over the experiment, but less obvious ties to the real world.

- **Field Experiments**: Takes place in the real world. More obvious tie to situations we care about, but less experimental control.
Experiment Example #1
(Iyengar and Kinder)

- Laboratory experiments with 1000 people recruited in newspapers.
- Control group watched regular newscast, treatment group watched altered newscast with extra story on an issue.
- Treatment group more likely to rate the treatment issue most important in a survey a week later.
Experiment Example #2
(Gerber and Green)

- Field experiment in New Haven, CT.
- Flyers reminding people to vote delivered to randomly selected homes.
- Control group received no flyers.
- Treatment group (people in homes that received flyers) more likely to vote than people in the control group.
Experiment Example #3
(New York City)

- NYC randomly selected 2500 low-income families to receive cash incentives for meeting certain criteria (child’s school attendance, medical checkups, looking for job, etc.)
- Control group of 2500 low-income families will be tracked, but not offered assistance.
- Testing to see if bonuses for “smart” decisions help alleviate poverty. This and similar programs (*Bolsa Familia*) seem to reduce some of the negative effects of poverty.
“Natural Experiments”

- Observing an “experiment” run by nature.

- In a controlled randomized experiment (a “true” experiment) we have:
  - Treatment and control groups
  - Randomization
  - Control over the treatment

- In a natural experiment we have:
  - Treatment and control groups
  - “As-if” randomization
  - No control over the treatment
“As-if” Random Assignment

- Subjects do not self-select into treatment and control groups.

- Assignment to treatment and control groups is plausibly uncorrelated with alternative explanations.

- Lower on internal validity than if we had truly random assignment.
Natural Experiment Example #1: (John Snow and Cholera in London)

- Two water companies serve the same neighborhood. Next door houses can have different water sources ("as-if" random assignment).

- One company draws from a clean source (control), the other from a polluted source (treatment).

- Rate of cholera deaths 10 times higher in treatment group (treatment effect).
Natural Experiment Example #2: (Anti-Communism and reception of West German TV broadcasts in East Germany)

- Local geography determines if East German neighborhoods can receive West German TV signals ("as-if" random assignment).
- Some neighborhoods are blocked (control), some are not (treatment).
- People with access to West German TV turn out to be no more anti-Communist that those without access (treatment effect).
Natural Experiment Example #3: (Voting in the 2003 California Recall Election)

- Polling places in LA County consolidated from 5,231 to 1,885 (“as-if” random assignment”).

- Polling place the same as 2002 (control), or changed (treatment).

- Changing the polling place reduces the probability of voting by 12% (treatment effect).