Contact Information

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Schedule

- Lectures: TTh 5-6:15pm (T Bunche 4357; Th Humant A40)
- Section: TBD

Course description

This course covers the design, analysis, and implementation of experimental research in the social sciences.

Course objectives

- Learn about important design concerns for experiments, and how to address them by design
- Learn how to implement key components of experimental designs in code
- Learn how to assess design choices in your own experiments through simulation
- Gain experience replicating the design and analysis of prominent experiments

Prerequisites

This course assumes familiarity with the statistics of causal inference at the level of Political Science 200C (Causal Inference for Social Science). Students who did not take the methods sequence in political science should contact me before enrolling in the course to discuss their preparation.
Computation

The course assumes intermediate familiarity with the R statistical environment. The problem sets and the final project must be completed using R and RMarkdown. If you have not used R in a course before, contact me before enrolling in the course.

Section

In section, you will apply what you learned in lecture and build on it by coding functions yourself and conducting simulations. Bring your laptop with RStudio installed and be ready to code.

Course requirements

1. Problem sets. 25% of grade. There will be a short problem set most weeks, many drawing on problems from Gerber and Green.
   - Work in groups is permitted, but you must note the name of each person you collaborated with for each question. Failure to do so will be treated as a violation of the plagiarism policy.
   - Problem sets submitted after the deadline will not be accepted.

2. Attendance. Students are expected to attend each class and section every week.

3. Participate in the Moodle discussion board. Post questions and regularly post answers to your peers’ questions.

4. Mini-experiment. 10% of grade. (Due February 22.) You will design, conduct, and analyze a small experiment that does not use human subjects in the middle of the course. Further details will be provided in Week 2.

5. Midterm exam. 30% of grade. February 15 in-class.

6. Replication project. 35% of grade.
   a. Pick a study and submit to the online form. Due January 15. (5pts).
   b. Replicate the main finding using their data. Due as a “replication proposal” January 30. (25pts).
   c. Replicate their design and evaluate whether it was a good design, and what you would have done differently. Due March 8. (35pts)
   d. Final writeup is the registered report of your replication of the experiment. Due March 23. (35pts).

Auditing: in my experience, auditing a class like this without completing the assignments will not be productive for you, so auditors will not be permitted except by special permission. I encourage you to take the course for credit!

Questions and announcements

In addition to precepts and office hours, please use the Moodle discussion board when asking questions about lectures, problem sets, and other course materials.
This allows all students to benefit from the discussion and to help each other understand the materials. Both students and instructors are encouraged to participate in discussions and answer any questions that are posted.

**Books**

Primary books the course will rely on:


**Lecture topics and readings**

Required readings are noted *.

1. Why experiment?
   - * RRE ch. 2; FEDAI chs. 1-2
2. Assignment procedures
   - * RRE ch. 4; FEDAI ch. 3
3. Analyzing experimental data
   - * FEDAI ch. 4
4. Sampling units and generalizability

5. Outcome measurement
   - * RRE ch. 5

6. Declaring the elements of a research design
   - * Find an experiment that you admire and bring it to class.

7. What is a good experimental design?

8. Moderators and heterogeneous effects
9. Ethics in experimentation

10. Noncompliance and what to do about it
   - * FEDAI chs. 5-6

11. Attrition and what to do about it
   - * FEDAI ch. 7
   - * Coppock, Alexander, Alan S. Gerber, Donald P. Green, and Holger L. Kern. “Combining Double Sampling and Bounds to Address Non-Ignorable Missing Outcomes in Randomized Experiments.” *Political Analysis*.

12. Exploiting interference by design
   - * FEDAI ch. 8

13. Studying causal mechanisms
   - * FEDAI Ch. 10

14. Registration and reporting on experiments


CONSORT guidelines