The Design and Analysis of Randomized Field Experiments in Political Science

Spring 2020

Professor:	Alexander Coppock	**Class Time:**	Tuesdays and Thursdays 4:00 - 5:15 pm
Email:	alex.coppock@yale.edu	**Class Place:**	Rosenkranz Hall Room 05
TF:	Trevor Incerti	**Lab Time:**	TBA
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Objectives

Randomized field experiments are deployed across the social sciences to answer well-posed theoretical questions and to generate new information from which to build fresh theories of social interaction and behavior. Experiments are attractive because they enable the researcher to (mostly) ground statistical and causal inferences in features of the research design rather than assumptions about the world. This graduate-level course will cover the design and analysis of both introductory and advanced experimental designs, using the textbook by Gerber and Green (2012) as our main guide. Strong emphasis will be placed on developing practical skills for real research scenarios. Given resources, how should subjects be assigned to conditions? How many treatment arms should we include? How do we plan to analyze the resulting data? This course will feature a relatively heavy workload: weekly problem sets in R that (I promise) will prepare students for 95% of experimental research tasks they will encounter in the field.

Eligibility

This course is taught at a graduate level. I am also teaching a similar course at an undergraduate level this spring, PLSC 341. Doctoral students may not enroll in the undergraduate level course. Students (doctoral or otherwise) may not audit the class, mostly because I think that without struggling with the problem sets, relatively little is gained from sitting in lecture.

Prerequisites

The only pre-requisite is any course covering (at any level of detail) linear regression. We will build the statistical foundations for randomized experiments from the ground up, so there is relatively little assumed knowledge.

Lab Section

A weekly lab section will be held to teach the computational skills needed to complete the problem sets. These lab sections are mandatory.

Course Pages

We will use our canvas.yale.edu page. Readings will be distributed on canvas and all assignments will be submitted via canvas.

Office Hours

My office hours will be held from 1:30 to 3:30 on Wednesday afternoons in RKZ 135. Sign up via calendly: https://calendly.com/acoppock/30min. If all slots are taken, please email me for a time, I'm **always** happy to meet and it is an expectation that we will meet at least once or twice over the course of the semester.

Textbook

Gerber, Alan and Green, Donald P. *Field Experiments: Design, Analysis, and Interpretation*, W.W. Norton, 2012. FEDAI will serve as our main textbook and source of weekly problem sets. We will read the entire book over the course of the term and will do (almost) every exercise. Copies are available at the bookstore or on Amazon.com. Please do purchase a physical copy for yourself rather than using a library copy or sharing, as it is A) a fantastic reference and B) a course requirement.

Software

We will be using the open-source statistical software `R`. I have preferences about what particular packages you use. Please give in to the life-changing magic of the `tidyverse` We'll also be using some packages that I wrote or co-wrote, including the `DeclareDesign` suite (see Blair et al. (2019)) and `ri2`.

- Download `R` here: www.r-project.org
- Download RStudio here: www.rstudio.org

Workload

This course will involve a relatively heavy workload, and students considering enrolling should be aware that maintaining a high grade in this class will require sustained, serious effort all throughout the term. Your effort will be directed towards:

- Weekly problem sets (15-20 hours a week)
- Weekly readings from the textbook FEDAI (1 hour a week)
- Occassional experimental articles. (1 hour a week)

In addition to these ongoing tasks, this course will feature a **midterm exam** and **two projects**. The exam will be **easy** and is worth the same number of points as a problem set. The first project is a "practicum" experiment in which you will design, conduct, and analyze a randomized experiment. This project is typically a blast and I expect that you will have a great time doing it. We'll hold a poster session so you can share the results of your experiments with each other and my undergraduate class. The second project is a replication/reanalysis of an existing experimental article. This project sometimes leads to published papers.

You must use rmarkdown or LaTeXwith knitr to prepare your problem sets. Your TA and I will be on hand to assist you in getting this set up. It's best to practice using these tools now on something low stakes like problem sets rather than when you're writing your dissertation or finalizing an article for submission to a journal.

Grading Policy

Problem Sets (plus midterm) (60%), Practicum Experiment (20%), Replication Project (20%).

Problem Sets Policy

All students must write up their problem sets individually. However, you may work in groups of up to three, though you are not required to work in groups at all. Please indicate at the top of your homework the names of the other students you worked with that week. Do not "share" members across groups. Do not copy and paste the answers across group members.

Academic Honesty

To ensure that you do not accidently violate Yale's academic honesty policies, please review these sites:

- Academic Honesty: http://bit.ly/2a6uTC5
- Understanding and Avoiding Plagiarism: http://bit.ly/29VnoN1

Course Outline, subject to change

Week 1

Tuesday, January 14

- Reading: FEDAI Chapter 1

Thursday, January 16

- Reading: FEDAI Chapter 2
- Reading: Page (1998)
- Assignment: Install R (www.r-project.org), Rstudio (www.rstudio.com), and ensure that you can type `2+2` into the console and get back `4`.

Week 2

Tuesday, January 21

- Reading: FEDAI Chapter 3
- Assignment: FEDAI Chapters 1 and 2 problem sets due at 9am

Thursday, January 23

- Reading (suggested): Imai et al. (2009)

Week 3

Tuesday, January 28

- Reading: FEDAI Chapter 4
- Assignment: FEDAI Chapter 3 problem set due at 9am

Thursday, January 30

- Lin (2013)

Week 4

Tuesday, February 4

- Reading: FEDAI Chapter 9 **NOTE THAT WE'RE OUT OF ORDER!**
- Assignment: FEDAI Chapter 4 problem set due at 9am

Thursday, Feburary 6

- Reading: Karpowitz et al. (N.d.)

Week 5

Tueday, February 11

- Reading: FEDAI Chapter 5
- Assignment: FEDAI Chapter 9 problem set due at 9am (do not do Q9)

Thursday, February 13

- Gerber and Green (2000)
- Broockman (2016)

Week 6

Tuesday, February 18

- Reading: FEDAI Chapter 6
- Assignment: FEDAI Chapter 5 Problem Set Due (do not do Q1b)
- Assignment: Practicum Experiment Proposal due (max 1 page)

Thursday, February 20

- Reading (skim): Coppock and Green (2016)

Week 7

Tuesday, February 25

- Assignment: Practicum Experiment Preanalysis plan due

Thursday, February 27

- Assignment: FEDAI Chapter 6 Problem Set Due

Week 9

Tuesday, March 3

- Assignment: Practicum Experiment Writeup due (please refer to FEDAI Chapter 13 for a guide to writing up your experiment)
- In Class Review Session

Thursday, March 7th (Spring Recess begins Friday)

- In Class Midterm Exam

Week 10

Tuesday, March 24

- Reading: FEDAI Chapter 7

Thursday, March 26

- Reading: Aronow et al. (2017)
- Reading: Coppock (2019)

Week 11

Tuesday, March 31

- Reading: FEDAI Chapter 8
- Assignment: FEDAI Chapter 7 Problem Set Due

Thursday, April 2

- Reading: Paluck et al. (2016)

Week 12

Tuesday, April 7

- Reading: FEDAI Chapter 10
- Assignment: FEDAI Chapter 8 Problem Set Due

Thursday, April 9

- Young (2019)

Week 13

Tuesday, April 14

- Reading: FEDAI Chapter 11
- Assignment: FEDAI Chapter 10 Problem Set Due

Thursday, April 16

- Reading (skim): Green et al. (2016)
- Reading: Dunning et al. (2019)

Week 14

Tuesday, April 21

- Topic: Something about transparency and open science
- Assignment: FEDAI Chapter 11 Problem Set Due

Thursday, April 23

- Replication Proposal Due (must demonstrate that data are in hand and that you can reproduce main result)

Monday, May 4

- Topic TBD
- Replication Paper Due

References

Aronow, Peter M., Jonathon Baron and Lauren Pinson. 2017. "A Note on Dropping Experimental Subjects who Fail a Manipulation Check." *Political Analysis* . Forthcoming. 6

Blair, Graeme, Jasper Cooper, Alexander Coppock and Macartan Humphreys. 2019. "Declaring and Diagnosing Research Designs." *American Political Science Review* 113(3):838–859. 2

Broockman, David E.and Kalla, Joshua. 2016. "Durably Reducing Transphobia: A Field Experiment on Door-to-door Canvassing." *Science* 352(6282):220–224. 5

Coppock, Alexander. 2019. "Avoiding Post-Treatment Bias in Audit Experiments." *Journal of Experimental Political Science* 6(1):1–4. 6

Coppock, Alexander and Donald P. Green. 2016. "Is Voting Habit Forming? New Evidence from Experiments and Regression Discontinuities." *American Journal of Political Science* 60(4):1044–1062. 5

Dunning, Thad, Guy Grossman, Macartan Humphreys, Susan D. Hyde, Craig McIntosh, Gareth Nellis, Claire L. Adida, Eric Arias, Clara Bicalho, Taylor C. Boas, Mark T. Buntaine, Simon Chauchard, Anirvan Chowdhury, Jessica Gottlieb, F. Daniel Hidalgo, Marcus Holmlund, Ryan Jablonski, Eric Kramon, Horacio Larreguy, Malte Lierl, John Marshall, Gwyneth McClendon, Marcus A. Melo, Daniel L. Nielson, Paula M. Pickering, Melina R. Platas, Pablo Querubín, Pia Raffler and Neelanjan Sircar. 2019. "Voter information campaigns and political accountability: Cumulative findings from a preregistered meta-analysis of coordinated trials." *Science Advances* 5(7). 6

Gerber, Alan S. and Donald P. Green. 2000. "The Effects of Personal Canvassing, Telephone Calls, and Direct Mail on Voter Turnout: A Field Experiment." *American Political Science Review* 94. 5

Green, Donald P., Jonathan S. Krasno, Alexander Coppock, Benjamin D. Farrer, Brandon Lenoir and Joshua N. Zingher. 2016. "The Effects of Lawn Signs on Vote Outcomes: Results from Four Randomized Field Experiments." *Electoral Studies* 41:143–150. 6

Imai, Kosuke, Gary King and Clayton Nall. 2009. "The Essential Role of Pair Matching in Cluster-randomized Experiments, with Application to the Mexican Universal Health Insurance Evaluation." *Statistical Science* 24(1):29–53. 4

Karpowitz, Christopher, Quin Monson and Jessica Preece. N.d. "How to Elect More Women: Gender and Candidate Success in a Field Experiment." *American Journal of Political Science*. Forthcoming. 4

Lin, Winston. 2013. "Agnostic Notes on Regression Adjustments to Experimental Data: Reexamining Freedman's Critique." *The Annals of Applied Statistics* 7(1):295–318. 4

Page, Stewart. 1998. "Accepting the Gay Person: Rental Accommodation in the Community." *Journal of Homosexuality* 36(2):31–39. 4

Paluck, Elizabeth Levy, Hana Shepherd and Peter M. Aronow. 2016. "Changing Climates of Conflict: A Social Network Experiment in 56 Schools." *Proceedings of the National Academy of Sciences* 113(3):566–571. 6

Young, Lauren E. 2019. "The psychology of state repression: Fear and dissent decisions in Zimbabwe." *American Political Science Review* 113(1):140–155. 6