The Logic of Randomized Experiments in Political Science

Spring 2017

Professor:	Alexander Coppock	**Time:**	MW 1:00 - 2:15 pm
Email:	alex.coppock@yale.edu	**Place:**	RKZ 04

Objectives: Randomized experiments have become an indispensable tools for businesses, nonprofits, and social scientists for assessing causal effects. Companies like Facebook and OKCupid subject nearly every element of their interfaces to intense testing via randomized experimentation in order to optimize engagement. Political organizations randomize the type and frequency of voter contacts in order to maximize their chances of electoral and legislative success. Social scientists use the results of randomized experiments to develop and test theories of human behavior.

At the end of this course, all students will be able to design, execute, and analyze randomized experiments. The goal is to enable students to evaluate the impact of real-world interventions on well-defined political, economic, and social outcomes. We will cover field experiments exclusively, though nearly all of the design and analysis principles will extend to survey, lab, and so-called "natural" experiments. While some research methods classes (rightly) cover a wide variety of research tools, this course will focus narrowly on the strengths and weaknesses of a single method: randomized field experimentation.

Eligibility: This course is open to undergraduate and masters students only. Doctoral students from any department may enroll in the graduate-level field experiments course also being taught this Spring (Course number PLSC 512).

Prerequisites: The only course requirement is any introductory probability or statistics course. If you have conducted a formal hypothesis test of any kind, you are probably prepared for this course. We will not be using any mathematics (with one exception) more complicated than addition, subtraction, multiplication, and division, though we will be doing those operations frequently – and in combination!

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: I will hold office hours from 9am to 12pm on Wednesday mornings in room D233 of ISPS (77 Prospect Street). My office is at the top of a maze, so plan to spend a few extra minutes finding it the first time you come by. I am also happy to meet outside of office hours (mornings are best). Please email me to set up times that are mutually convenient. It would be weird and probably a bad sign if we never met during office hours over the course of term, so please come early and often.

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 Chapters 1-5 and 9 over the course of the term. 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`. While other statistical software pacakges such as SPSS, Stata, or even Excel can of course be used for experimental analysis, `R` has many advantages. First, (with apologies to Python) it is the programming language of choice of many (most?) data scientists and

statisticians. Second, it makes writing loops and functions very easy, tasks that are nearly impossible in Excel. Third, there is a large community of developers who have contributed a huge number of add-ons for R that you will find invaluable. Finally, it's free, and always will be, which is not true of other software. In addition to R, please also download and install RStudio, the top-of-the-line script editor.

- 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 divided among three ongoing tasks:

- Weekly problem sets (5-8 hours a week)

- Weekly readings from the textbook FEDAI (1 hour a week)

- Weekly experimental articles. (2 hours a week) For most classes, we will discuss only one experiment in depth, but you are really, truly, and actually required to read them thoroughly. Failure to do so will be obvious to me (and your fellow classmates!), so please do the readings.

In addition to these ongoing tasks, this course will feature **two exams** and a **final** project. The exams will be **easy** for you if you keep up with the problem sets. The final 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.

Grading Policy: Problem Sets (40%), Midterm Exam (15%), Final Exam (15%), Final Project (30%).

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.

Class Policy:

- Regular attendance is essential and expected.

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

I would like to emphasize that it is a violation of the honesty policy to:

- Copy another student's problem set, just changing a few words here and there. Collaboration is encouraged, but at some point relying too much on your partner becomes a violation of academic integrity. Most cases are clear-cut; for cases that are ambiguous, ask.

- Copy and paste whole blocks of code from your partner that you didn't have a hand in writing.

- Copy whole sentences from the internet.

It is *not* a violation of the honesty policy to:

- Copy code from websites like stackoverflow or other online forums. This is not cheating, it's learning. Part of what makes it learning is that understanding code off the internet well enough to use it usually means that you at least sort of understand it. If you do copy such code, please include a link to the forum or site where you obtained the code in the comments. This is good practice anyway, as you will often forget where code came from!

- Discuss the problem sets with your partners and compare answers.

- Read others' final projects and offer/receive advice.

Course Outline, subject to change:

Wednesday, January 18

– No readings

Friday, January 20 *Special make up class

– Reading: FEDAI Chapter 1
– 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.

Monday, January 23

– Assignment: Problem Set 1 Due
– Reading: FEDAI Chapter 2

Wednesday, January 25

– Reading: Karpowitz et al. (N.d.)

Monday, January 30

– Assignment: Problem Set 2 Due
– Reading: TBA

Wednesday, Feburary 1st

– Reading: Gerber et al. (2008)

Monday, February 6th

– Assignment: Problem Set 3 Due
– Reading: FEDAI Chapter 3

Wednesday, Feburary 8th

– Reading: Kalla and Broockman (2015)

Monday, February 13th

– Assignment: Problem Set 4 Due
– Reading: Bertrand and Mullainathan (2004)

Wednesday, February 15th

– Reading: White et al. (2015)
– Reading: McClendon (2016)

Monday, February 20th

– Assignment: Problem Set 5 Due

- Reading: FEDAI Chapter 4

Wednesday, February 22nd

- Reading: Barnes et al. (2016)

Monday, February 27th

- Assignment 6 Due

Wednesday, March 1st

- Reading: Ashraf et al. (2010)

Monday, March 6th

- No Assignment Due
- In class review session for exam

Wednesday, March 7th (Spring Recess begins Friday)

- In Class Midterm Exam

Monday, March 27th

- Reading: FEDAI Chapter 9
- Reading: Rind and Bordia (1996)

Wednesday, March 29th

- Reading: Chong et al. (2015)

Monday, April 3rd

- Assignment 7 Due
- Proposal for Practicum Experiment Due

Wednesday, April 5th

- Reading: Paluck et al. (2016)

Monday, April 10th

- Assignment: Problem Set 8 Due
- Assignment: Preanalysis Plan for Practicum Experiment (with simulated data and analysis) due
- Reading: FEDAI Chapter 5

Wednesday, April 12th

- Reading: Gerber and Green (2000)
- Reading: Michelson et al. (2009)

Monday, April 17th

- Assignment: Problem Set 9 Due

– Assignment: Practicum Experiment Write-ups Due

Wednesday, April 19th

– Reading: McClendon (2014)
– Reading: Broockman and Kalla (2016)

Monday, April 24th

– Share Practicum Experiments in class

Wednesday, April 26th

– Share Practicum Experiments in class / Review session

Saturday, May 6th

– Final Exam, 2:00pm Location TBD. Ensure that your travel plans do not conflict with this university-set date and time.

References

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Barnes, Katherine, Alexander Coppock, Anita Ravishankar and David Yokum. 2016. "Preanalysis Plan for A Randomized Controlled Trial of the Police Body-Worn Camera Program in the District of Columbia.". **URL:** *https://osf.io/p6vuh/* 5

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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. 5

Rind, Bruce and Prashant Bordia. 1996. "Effect on Restaurant Tipping of Male and Female Servers Drawing a Happy, Smiling Face on the Backs of Customers' Checks." *Journal of Applied Social Psychology* 26(3):218–225. 5

White, Ariel R, Noah L Nathan and Julie K Faller. 2015. "What Do I Need to Vote? Bureaucratic Discretion and Discrimination by Local Election Officials." *American Political Science Review* 109(01):129–142. 4