Field Experiments

ICPSR Summer Program 2018

June 25, 2018 - June 29, 2018 ≻ European University Institute

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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 new 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 five-day course will cover the design and analysis of many 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?

Each day will be broken up into three to four sessions that will provide a mix of statistical theory, practical tips for implementing field experiments, and computer practice. Each evening, students will complete short problem sets that will reinforce the day's material. The last day will be focused on workshopping students' own field experimental designs.

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. If you have conducted a hypothesis test of any kind, you probably have the requisite skills. For those with a deeper statistical background, there will be opportunities for exploration of more advanced topics as well.

Course Pages: Our course site is set up at `https://canvas.instructure.com`. Readings and short problem sets will be distributed via this site.

Required Textbook: Gerber, Alan and Donald P. Green *Field Experiments: Design, Analysis, and Interpretation*, W.W. Norton, 2012.

Recommended Texts on Field Experiments:
Glennerster, Rachel and Kudzai Takavarasha. *Running Randomized Evaluations: A Practical Guide*, Princeton University Press. 2013.

John, Peter. *Field Experiments in Political Science and Public Policy: Practical Lessons in Design and Delivery*, Routledge, 2017.

Karlan, Dean and Jacob Appel. *Failing in the Field*, Princeton University Press, 2016.

Software: Students will have a choice between using STATA or R. If you are unfamiliar with both languages, we would suggest using R, as it is free and open source. All analyses that we will consider are easily done in either language.

Monday, June 25th

Readings in Gerber and Green: Chapters 1 through 3.

Session 1: 10:00 - 11:30 (Led by Florian, Eline and Alex)

- Welcome and introductions

Session 2: 11:30 - 12:30 (Led by Eline)

- Motivating examples of field experiments
- Stewart Page 1998 - Accepting the Gay Person (this is a housing discrimination audit study)

Lunch: 12:30 - 1:30

Session 3: 13:30 - 15:30 (Led by Florian)

- Potential Outcomes Framework
- Three core assumptions
- Difference-in-means estimator of the ATE
- Sampling distribution of the difference-in-means estimator

Coffee Break: 15:30 - 16:00

Session 4: 16:00 - 17:30 (R session led by Alex, STATA section led by Eline)

- Load in a simulated dataset that includes $Y(0)$ and $Y(1)$.
- Simulate a random assignment
- Generate a sampling distribution

Short Practice

- Gerber and Green Chapter 1, Question 4
- Gerber and Green Chapter 2, Question 12
- To get feedback on your practice, please upload your answers by 9:00 am

Tuesday, June 26th

Readings in Gerber and Green: Chapter 4.

Session 1: 9:00 - 10:30 Led by Alex

- Hypothesis testing via Randomization inference

Coffee Break: 10:30 - 11:00

Session 2: 11:00 - 12:30 Led by Eline

- Failures in the field.

Lunch: 12:30 - 13:30

Session 3: 13:30 - 15:00 Led by Alex

- Use of covariates in an experimental design

  - Blocks
  - Clusters

- Use of covariates in an experimental analysis

  - Controlling for pre-treatment covariates
  - Avoiding post-treatment bias

Coffee Break: 15:00 - 15:30

Session 4: 15:30 - 17:30 (R session led by Florian, STATA section led by Eline)

- Learn to obtain a p-value via randomization inference

- Learn how blocking can tighten a sampling distribution

- Learn how covariate adjustment can tighten a sampling distribution

Short Practice

- Gerber and Green Chapter 3, Question 6

- To get feedback on your practice, please upload your answers by 9:00 am

Wednesday, June 27th

Readings in Gerber and Green: Chapter 9.

Session 1: 9:00 - 10:00 Led by Alex

- Presentation on Preanalysis Plans and Design Diagnosis (a.k.a. power analysis)

Coffee Break: 10:00 - 10:30

Session 2: 10:30 - 12:30 Led by Florian

- Treatment Effect Heterogeneity

- Treatment by covariate interactions

- Treatment by treatment interactions

- Dangers of multiple comparisons

- Discussion of Karpowitz, Monson and Preece (2017)

Lunch: 12:30 - 13:30

Session 3: 13:30 - 15:00 (R session led by Alex, STATA section led by Eline)

- Replicate Karpowitz, Monson and Preece (2017)

Coffee Break: 15:00 - 15:30

Session 4: 15:30 - 17:30 Led by Peter John

- Conducting field experiments with partner organisation

- Lessons learned in the field

- Implications for experimental design

Short Practice

- Gerber and Green Chapter 9, Question 6

- To get feedback on your practice, please upload your answers by 9:00 am

Thursday, June 28th

Readings in Gerber and Green: Chapters 5 and 6, skim chapters 7 and 8.

Session 1: 9:00 - 10:30 Led by Alex

- Noncompliance (the CACE)

- Design-based solutions (placebo-controlled design)

Coffee Break: 10:30 - 11:00

Session 2: 11:00 - 12:30 Led by Eline

- Discussion of Foos and de Rooij (2017)

Lunch: 12:30 - 13:30

Session 3: 13:30 - 15:00 lead by Florian

- How to deal with attrition

- Spillover (or, how to restablish stable potential outcomes)

Coffee Break: 15:00 - 15:30

Session 4: 15:30 - 17:00 (R session led by Alex, STATA section led by Eline)

- How to estimate the CACE

Friday, June 29th

Session 1: 10:00 - 12:30 Led by Eline, Florian and Alex

- Feedback on experimental designs in small groups (Please come prepared with a 2-page design proposal uploaded to the course website)

Lunch: 12:30 - 13:30

Session 2: 13:30 - 15:00 Led by Alex

- Power analysis and simulation of designs

Coffee Break: 15:00 - 15:30

Session 3: 15:30 - 17:00

- Each group presents on a few designs what was learned from simulations.