

Field Experiments
[Randomized Controlled Evaluations in Economics]

MF 1.00-3.30pm, W 8.30-9.30am
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Course Description

This course is thought for doctoral students who want to learn how to design and run field experiments. It introduces the concept of field experiment as a research methodology, with the main goal of providing students with practical and technical skills to design and implement their own field experiments.

The course provides historical background, it discusses the use of field experiments to test theory as opposed to as impact evaluation tool, and it highlights advantages and main drawbacks of the use of field experiments compared to other methodologies. It also describes the time-horizon of an experiment, from finding the right research question to writing an academic paper. We will discuss in practice how to randomize, run power calculations, piloting, and analyze the data collected in the field. We will talk about finding implementing partners, getting ethical approval, and all possible associated pitfalls.

The course is mainly based on in-depth reading of research articles and other practical material on experiments. We will read about examples (depending on students' interest) of how field experiments are designed, implemented and analyzed. The course also facilitates students' presentations of their own research ideas.

The course assignments will be a short proposal outlining the theory, design, and proposed analysis for the field experiment, and a presentation.

Presentation Guidelines: Each student will be expected to make a presentation on his/her proposed field experiment. The presentation should include information on hypotheses being tested, context, preliminary data (if applicable) and experimental design. Presentations can be on projects at any stage. The presentation should be approximately 10-15 minutes, with an additional 5-10 minutes for questions and feedback. Student presentations will be scheduled in the last class.

Proposal Guidelines: The proposal should be about 2-3 pages, and due the last day of class. It will build on the assignments due during the course and the presentation above and should include an emphasis on motivation, theory tested, and experimental design.

Main References (for the entire course):

- Handbook of Field Experiments (2016) <https://www.povertyactionlab.org/handbook-field-experiments>
- Duflo, Esther, Abhijit Banerjee, Rachel Glennerster, and Michael Kremer. 2007. "Randomization in Development Economics: A Toolkit." Handbook of Development Economics 4: 3895-3962.
- Glennerster and Takavarasha (2013), Running randomized evaluations a practical guide, book or website <http://runningres.com/>

Week 1

1. Monday 25th July

Session 1: Why do field experiments?

In this class, we discuss the evolution of field experiments as policy evaluation tools and as a methodology for testing economic theory, describing the history of field experiments. We also discuss which are the main reasons to randomize, which are the main type of experiments implemented, and about the main challenges of carrying out a randomized experiment in the field. Examples are drawn from main welfare programs in US and anti-poverty programs in low-income countries.

Main readings

*Levitt, Steve and John List. 2009. "Field Experiments in Economics: the Past, the Present and the Future." European Economic Review, 53(1): 1- 18.

*Harrison, Glenn and John A. List. 2004. "Field Experiments." Journal of Economic Literature, XLII: 1013-1059.

*List, John A., and Steven Levitt. 2007. "What Do Laboratory Experiments Tell Us About the Real World?" Journal of Economic Perspectives, 21(2): 153 – 174.

*Glennerster and Takavarasha, Running randomized evaluations a practical guide Chapter 1 -2 -3 (The experimental approach, why to randomize, asking the right questions)

Extra References

Handbook of Field Experiments (2016) The Politics and Practice of Social Experiments: Seeds of a Revolution - Judy Gueron

Card, David, Stefano Della Vigna and Ulrike Malmendier. 2011. "The Role of Theory in Experiments." *Journal of Economic Perspectives*, 25(3): 39 – 62.

Methods

Angrist, Joshua D. & Alan B. Krueger. 2001. "Instrumental Variables and Search for Identification: From Supply and Demand to Natural Experiments." *Journal of Economic Perspectives*, 15 (4): 69-85.

LaLonde, Robert J. 1986. "Evaluating the Econometric Evaluations of Training Programs with Experimental Data." *American Economic Review*, 76: 604-20.

Arceneaux, Kevin, Ian Gerber, and Donald Green. 2006. "Comparing Experimental and Matching Methods using a Large-Scale Field Experiment on Voter Mobilization." *Political Analysis*, 14 (1): 37-62.

Lab experiments vs field experiments:

Roth, Al. 1988. "Laboratory Experimentation in Economics: A Methodological Overview." *Economic Journal*, 98(393): 974-1031.

2. Wednesday 27th July

Session 2: Anatomy of a Field Experiment: Generating a Hypothesis, Designing a Treatment, and Convincing Practitioners

In this class, we will discuss the time horizon of a field experiment, from conception to implementation to results. This will include:

- Using qualitative work to find and develop testable hypotheses
- Finding field partners
- Convincing and training practitioners within the partner institution
- Keeping the field partner from bailing/not following the randomization
- Pilot testing
- Implementation
- Data analysis
- Disseminating results

Main readings

*List, John A. 2011. "Why Economists Should Conduct Field Experiments and 14 Tips for Pulling One Off." *Journal of Economic Perspectives*, 25(3): 3 – 16

*Handbook of Field Experiments (2016) The Practicalities of Running Randomized Evaluations: Partnerships, Measurement, Ethics, and Transparency Rachel Glennerster

Extra References

Ashraf, Nava, James Berry, and Jesse M. Shapiro. 2010. "Can Higher Prices Stimulate Product Use? Evidence from a Field Experiment in Zambia." *American Economic Review*, 100(5): 2383-2413.

Assignment 1: Write a half page summary of the field experiment you would like to base the class around. Include information on the hypotheses you want to test, the context, and potential partners. Due: Monday August 1st. Send by email or bring in class.

3. Friday 29th July

Session 3: What can field experiments tell us about the real world? Designing Field Experiments to test theory and have external validity.

This lecture will discuss the main critiques to experiments.

Main readings

Critiques and Responses on Field Experiment Methodology

*Rodrik, Dani. 2009. "The New Development Economics: We shall experiment, but how shall we learn?" in *What works in development: Thinking Big and Thinking Small*. Brookings Institute Press, Chapter 2. Comment by Sendhil Mullainthan.

*Deaton, Angus. 2010. "Instruments, Randomization, and Learning about Development." *Journal of Economic Literature*.

*Response to Deaton: Imbens, Guido W. 2009. "Better LATE than Nothing: Some Comments on Deaton (2009) and Heckman and Urzua (2009)." Working Paper.

Learning From Field Experiments

*Cohen, Jessica and Pascaline Dupas. 2010. "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment." *Quarterly Journal of Economics*, 125(1): 1 – 45. [Example of RCT – testing theory]

Extra References

Heckman, J., and S. Urzua., (2009), "Comparing IV With Structural Models: What Simple IV Can and Cannot Identify," NBER Working Paper, # 14706.

Freedman, David A. 2008. "On Regression Adjustments to Experimental Data." *Advances in Applied Mathematics*, 40(2): 180–93.

WEEK 2

4. Monday 1st August

Session 4: Policy Field Experiments vs Testing theory

This lecture will discuss when to use RCTs for policy evaluation and when we test theory from running an experiment. It will also touch base on using experiments vs using structural models to provide policy implications. Evidence is drawn from social protection programs.

Main readings

*Ludwig, Jens, Jeffrey R. Kling, and Sendhil Mullainathan. 2011. "Mechanism Experiments and Policy Evaluations." *Journal of Economic Perspectives*, 25(3): 17-38.

*Heckman, James J. (2010) "Building bridges between structural and program evaluation approaches to evaluating policy." *Journal of Economic Literature*. 48(2): 356-398.

* Todd, Petra and Ken Wolpin. 2006. Using experimental data to validate a dynamic behavioral model of child schooling: assessing the impact of a school subsidy program in Mexico. *American Economic Review* 96 (5), 1384–1417.

*Handbook of Field Experiments (2016) *Designing Social Protection Programs: Using Theory and Experimentation to Understand how to Help Combat Poverty* Hanna and Karlan

Extra References

Handbook of Field Experiments (2016) *Social Policy: Mechanism Experiment and Policy* Jeffrey Kling, Jens Ludwig, Bill Congdon and Sendhil Mullainathan

Handbook of Field Experiments (2016) *Decision Theoretic Approaches to Experiment Design and External Validity* Sylvain Chassang, Abhijit Banerjee and Erik Snowberg

5. Wednesday 3rd August

Session 5: Qualitative Methods

We will discuss about focus group discussions: when qualitative data collection might be necessary, the purposes, methodology and how practically to conduct them.

Main readings

*Charmaz, Kathy. 2006. "Gathering Rich Data." Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis. Sage Publications, Chapter 2.

Session 6: Ethics of Randomization and Human Subjects Review

We will also discuss how to get ethical clearance to running a RCT, both from researcher's university and locally, and which practical problems you may encounter. We will discuss in details informed consent as well.

Main readings

*Beecher, Henry K. "Ethics and Clinical Research." New England Journal of Medicine (1966). <http://www.scielo.org/pdf/bwho/v79n4/v79n4a13.pdf>

*List, John A. "Informed Consent in the Social Sciences." Science, (2008), 322(5902), p. 672.

Review:

- Duke Ethics Training <https://irb.duhs.duke.edu/training-and-education>
- IRB Application <https://ors.duke.edu/research-with-human-subjects>

Assignment 2: Prepare focus group questions to address elements of your research that will be hard to capture through quantitative data. Describe the protocol you would use to collect the qualitative data. Due Friday 5th August. Send by email or bring in class.

6. Friday 5th August

Session 7: Experiment Mechanics: How to Actually Randomize, Measurement of Outcomes, and Power and Sample Size

In this class, we will discuss:

1. How to randomize (which opportunities to take, the level of randomization, which aspects of the program to randomize, and different standard RCT designs)
2. How to design appropriate and innovative behavioral indicators to measure the outcomes of field experiments, and how to design household surveys, when they are necessary.
3. How to do sample size and power calculations [We will be using Stata and/or the software Optimal Design]

Main readings

*Handbook of Field Experiments (2016) The Econometrics of Randomized Experiments Guido Imbens and Susan Athey

*Glennester and Takavarasha, Running randomized evaluations a practical guide: Chapter 4-5-6 (Randomizing, Outcomes and Instruments, Statistical Power)

*List, John A., Sally Sadoff, and Mathis Wagner, "So you want to run an experiment, now what? Some Simple Rules of Thumb for Optimal Experimental Design," Experimental Economics, (2010)

*Bruhn, Miriam and David McKenzie. 2009. "In Pursuit of Balance." American Economic Journal: Applied Economics, 1(4): 200 – 232.

Extra references

Designing Behavioral Indicators and Survey Questions:

Olken, Ben. 2007. "Monitoring Corruption: Evidence from a Field Experiment in Indonesia" Journal of Political Economy, 115 (2): 200-249.

Deaton, Angus. 1997. The Analysis of Household Surveys. Baltimore: John Hopkins University Press for the World Bank.

Assignment 3: Calculate sample size needed to detect sizable effects. Submit Stata code, and describe in a short paragraph the rationale for your chosen strategy. Due Monday 8th. Send by email or bring in class.

Week 3

7. Monday 8th August

Session 8: Methodological Considerations and Threats

This section will discuss methodological concerns when running RCTs, and the main threats to the validity of the results (compliance, attrition, spillovers and evaluation-driven effects).

Main readings

*Handbook of Field Experiments (2016) The Econometrics of Randomized Experiments Guido Imbens and Susan Athey

*Chassang, Sylvain, Gerard Padró i Miquel and Erik Snowberg. 2012."Selective Trials: A Principal-Agent Approach." American Economic Review, 102(4): 1279 – 1309.

*Aldashev, Gani, Georg Kirchsteiger, and Alexander Sebald Aldashev. "Assignment procedure biases in randomized policy experiments." Working Paper, November 2012.

*Glennester and Takavarasha, Running randomized evaluations a practical guide: Chapter 7 (Threats)

*Angelucci, Manuela and Vincenzo Di Maro. "Program Evaluation and Spillover Effects."

8. Wednesday 10th August

Session 9: Analysis and Policy Implications

This section will discuss how to analyze the data collected through the RCT, how to draft a Pre-Analysis Plan, how to evaluate and share results especially with policy makers. We will also touch base on how to draw policy lessons from experimental research.

Main readings

*Glennester and Takavarasha, Running randomized evaluations a practical guide: Chapter 8 and 9 (Analysis, Policy Implications)

Review:

- Pre-Analysis Plan (PAP) example

Other References

Inter-American Development Bank. Impact-Evaluation Guidelines. Technical Note No.IDB-TN-136.

Assignment 4: Submit 2-3 pages proposal developed over the course. This should include: research question, testable hypothesis (and mechanisms), description of FGDs, experimental design, power and sample size calculations, list of data you would like to collect, 3 main potential pitfalls in your study.

Assignment 5: Prepare a short presentation.

READING ABOUT RCTS...

<http://blogs.worldbank.org/impactevaluations/>

<http://runningres.com/blog/>

<https://www.povertyactionlab.org/>

<http://www.poverty-action.org/blog>