Impact Evaluation: design social interventions and measuring their impact

Tuesday and Thursday: 07:00pm – 10:00pm
Starting: 08/10 – Ending: 07/11
Semester/Year: 2º/2019
Credits: 2

> INSTRUCTOR

Umberto Mignozzetti
Assistant Professor
School of International Relations – FGV
Office hours: every Monday, from 4:00 to 6:00 PM
Class GitHub:
https://github.com/umbertomig/impactEvaluationClass
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Objectives

Introduce the concepts and techniques of experimental impact evaluation, with applications in social sciences and international relations. We will discuss all the steps involved in impact evaluation of social programs, since the very beginning of formalizing the idea, until the most complicated issues, such as designing A/B tests and field experiments. After this class, the student will be prepared to design, plan, implement, and evaluate a social policy of her interest. We will illustrate the field implementation details with the project *Incentives for Preventive Health Care Provision*, run by the professor and funded by FGV.

Class summary

The science of cause and effect. Causal inference and other methods for social sciences evaluation. Formulating a question that has a cause-effect component. Sampling and hypothesis testing in experiments. Power issues and how to solve it. Non-compliance: examples and solutions. Attrition. Mediation, heterogeneous effects, dosage, and embedding knowledge from other experiments. Ethical concerns. Field implementation. Evaluating the results and best practices of the fieldwork. Other topics, such as grant writing, proposals, research design writing, and pre-registering.

Methodology

There will be two classes per week. Classes will run for three hours. In each lecture, I will present an applied problem that we will discuss. Then, we will talk about the theoretical solutions for the running example. At the end of the class, I will provide an R code for running the code independently.

Grading

Problem Sets: We will have five problem-sets during this entire class. Each problem-set will consist of two questions about the topics studied during the given week. Each problem-set comprises 20% of the final grade.

The final grade: is the sum of all problem-sets grades. To pass the class, the student should get more than 6.0 points in the final grade, and at least 75% percent of attendance.

Requirements

The requirements for the class are basic statistics and knowledge of R, Stata, SPSS, or other statistical software.

Honor code

I strongly encourage you to solve the problem sets with your friends. However, you have to hand in your own work.

Instructor

My name is Umberto Mignozzetti, and I am a professor at the FGV School of International Relations. I study Comparative Political Economy, with a focus on how institutions mediate the development in weakly institutionalized democracies. If you want to talk about your research interests, please feel free to come by the office hours!

Office hours

My office hours are from 4:00 to 6:00 PM on Mondays. If you cannot make it at this timing but want to talk to me, please feel free to send me an email so we could schedule some time that would work for both of us.

Bibliography

Main bibliography:

[GerberGreen] Gerber, Alan S., and Donald P. Green. *Field experiments: Design, analysis, and interpretation*. WW Norton, 2012.

Related material and other valuable books:

Experiments:
- Morton, Rebecca B., and Kenneth C. Williams. *Experimental political science and the study of causality: From nature to the lab*. Cambridge University Press, 2010.

Causal inference:
- Morgan, Stephen L., and Christopher Winship. *Counterfactuals and causal inference*. Cambridge University Press, 2015.

Statistics and econometrics for experimental and quasi-experimental research:
- Angrist, Joshua D., and Jörn-Steffen Pischke. *Mastering'metrics: The path from cause to effect*. Princeton University Press, 2014.
- Angrist, Joshua D., and Jörn-Steffen Pischke. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press, 2008.

Lab experiments and formal theory:
- Morton, Rebecca B. *Methods and models: A guide to the empirical analysis of formal models in political science*. Cambridge University Press, 1999.

Survey experiments:
- Mutz, Diana C. *Population-based survey experiments*. Princeton University Press, 2011.

Class schedule

Class	Subject	Bibliography
1 08/10	**Experimental Social Sciences and Field Experiments** Why experiments. Correlation x causation. Rubin causal model. Experiments and other types of social sciences research	[GerberGreen]: Chapters 1 and 2.
2 10/10	**Sampling distribution, inference, and hypothesis testing** Sampling distributions and random variables in R. Hypothesis testing. Power calculations. Block randomization. Cluster random assignment.	[GerberGreen]: Chapter 3.
3 15/10	**Declare design software and reproducible research** What is Declare Design and how to use it. Introduction with examples. Reproducibility and R Markdown for report writing.	Blair, G., Cooper, J., Coppock, A., & Humphreys, M. (2016). Declare-Design Version 1.0. *Software package for R, available at* http://declaredesign.org. Blair, Graeme, et al. "Declaring and diagnosing research designs." *American Political Science Review* (2018): 1-22. Peng, Roger. *Report Writing for Data Science in R.* Lulu. com, 2015. Problem set 1 is due.
4 17/10	**Covariates** Scaling for covariates. Pre-treatment imbalance testing. Block and cluster randomization. Examples.	[GerberGreen]: Chapter 4.
5 22/10	**Non-compliance I** One-sided non-compliance. Complier Average Causal Effect. Partial treatment and estimation. Strategies and solutions for common problems.	[GerberGreen]: Chapter 5. Problem set 2 is due.

6 24/10	**Non-compliance II** Two-sided non-compliance. Monotonicity and Assumptions CACE estimation. Solutions and strategies.	[GerberGreen]: Chapter 6.
7 29/10	**Attrition** Attrition and bias. Sampling under the possibility of attrition. Examples.	[GerberGreen]: Chapter 7. Problem set 3 is due.
8 31/10	**Interference between experimental units and heterogeneous treatment effects** Spillover: definition and examples. Spatial spillover and within-subject designs. Time-series and stepped wedge designs. Heterogeneous effects.	[GerberGreen]: Chapters 8 and 9.
9 05/11	**Mediation and treatments that integrate other researchers findings** Mediation: definition and examples. Ruling out mediators. Interpreting research findings. Treatment that varies intensity.	[GerberGreen]: Chapters 10 and 11. Problem set 4 is due.
10 07/11	**Getting your experiment done** Example of experiments. Experimental designs. Writing a grant proposal. Writing a research report. Ethical research and IRB approval. Data archiving and reproducibility. Use of *declare design* to design your field experiments successfully. Anecdotes from a Field Experiment: Incentives for Preventive Health Care Provision.	[GerberGreen]: Chapters 12 and 13. Appendix A. Problem set 5 is due on Nov 19.