

FLS6441: Métodos Quantitativos III: Explicação, Contrafactuais e Causação

Quantitative Methods III: Explanation, Counterfactuals and Causation

1st December, 2018

First Semester 2019, DCP, FFLCH, USP

Thursdays, 14:00 - 17:30

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Objectives

This course is the third course in a three course sequence, following Quantitative Methods I (Introductory Statistics) and Quantitative Methods II (Multivariate Regression). This is an applied course in how to *explain* the outcomes – public policies, democracy, peace, governance, corruption, inequality – we study in political science. It provides students with the skills, tools and confidence to implement a wide range of analyses commonly used in leading political science studies. By the end of this course you will be able to:

1. Describe research questions in terms of counterfactual observations;
2. Critique the assumptions, accuracy and generalizability of *any* quantitative research design;
3. Replicate the core analysis of papers published in major political science journals;
4. Apply (in R or Stata) empirical analyses using experimental, instrumental variables, difference-in-differences, regression discontinuity, matching, comparative case study and process tracing methods.
5. Design compelling research projects that effectively answer important political science questions;

Lots of these words are probably unfamiliar and intimidating. Don't worry - the aim of this course is to overcome these barriers and give students the intuition, experience and confidence to regularly use these tools. You will get lots of hands-on practice in how to replicate major studies using their original datasets, so the techniques will make much more sense and you will understand what they can and cannot help us explain.

More practically, this course is excellent preparation for students who want to understand and critique papers, develop their own research designs for dissertations, or be able to engage more in sandwich programs or at conferences.

Justification

All good political science research projects are causal - they do not just describe the world but seek to *explain* it: Do women govern better than men? Can corrupt politicians influence local media to get re-elected? How do authoritarian regimes survive during economic crises?

But explanation is hard because societies are extremely complex and lots of processes are happening all at the same time. We simply do not - cannot - know what the alternative outcome would have been if Angela Merkel had lost at the last election or if Hilary Clinton had won.

Even if we throw huge amounts of data and lots of control variables into a regression we would not be able to explain these outcomes convincingly. A range of problems prevent us saying that X causes Y - an omitted variable, some reverse causation, or a selection bias. Regression on its own cannot solve any of these problems. Instead, we need an alternative - smarter - strategy, which carefully selects the data we are comparing and identifies the most likely *counterfactual* observations.

For example, instead of comparing all women and men in politics we could focus on India where some government positions are randomly-allocated by gender; instead of asking all voters what they think of

corrupt politicians we could ask only those who live in places which are on the border of receiving local radio stations those politicians control; instead of comparing all authoritarian regimes we could focus on a paired comparison between two neighbouring countries which share similar histories, economies and institutions.

The essential toolkit for empirical research in political science therefore includes being able to describe and identify appropriate counterfactuals, choose appropriate research designs to maximize causal inference, apply these research designs to real data, and provide compelling *explanations* for the patterns in the data.

Prerequisites

Students are required to have completed FLS 6183, Quantitative Methods II.

Content

Part I focuses on reviewing the core tools and ideas for understanding the variation in our data.

1. Review: What regression does and does not do. (21/03/19)
2. Causation, potential outcomes, counterfactuals and the fundamental problem of causal inference. (28/03/19)

Part II practices implementing key causal methodologies. Each week we discuss the methodology, read a high-profile paper that uses the methodology, and replicate the analysis ourselves using the raw data in R or Stata.

3. Field Experiments (04/04/19)
4. Survey and Lab Experiments (11/04/19)
5. Randomized Natural Experiments (18/04/19)
6. Instrumental Variables (25/04/19)
7. Discontinuities (02/05/19)
8. Difference-in-Differences (09/05/19)
9. Controlling for Confounding (16/05/19)
10. Matching (23/05/19)
11. Comparative Cases (30/05/19)
12. Process Tracing (06/06/19)

Evaluation

1. **Replication Tasks (40%)** - Each week I will provide you with a pre-prepared dataset from a well-known political science paper that uses the methodology we are studying that week, and you will replicate the core analysis of the paper in R or Stata.
 - I will provide clear instructions and examples of how to do this in class so this will be accessible for all students.
 - Note that the emphasis is not on using precisely the same specification or reproducing identical standard errors, but implementing the core methodology to understand what is happening.
 - You should submit two files each week - the analysis code and a short write-up (in English, for practice!) containing your final graphs/tables and interpreting and explaining your results (no more than 400 words written). You are encouraged to use R markdown to simplify this task, but it is not required.
 - Students are required to submit at least 8 out of 10 replication tasks (your grade will be based on your 8 best submissions).
2. **Short Research Paper (40%)** - To apply your new skills you will pick a research question of interest to you (possibly your thesis/dissertation) and suggest a research design that would be effective at answering that question.

- This should be a question for which data is available and you can provide a first attempt at applying the methodology - the results themselves don't matter.
 - Papers should be no more than 15 pages.
 - The deadline for submission will be three weeks after the last class of the semester, and can be in English or Portuguese.
3. **Participation (20%)** - Presence and constructive contribution in class.

Bibliography

- Mandatory reading is marked in *italics*.
- The paper we will replicate is marked with a (R*), though some of these are still provisional.

Week 1 - Concepts

[No readings]

Week 2 - Concepts

Guido W. Imbens and Donald B Rubin. Causal Inference for Statistics, Social, and Biomedical Sciences. 2015. Chs. 1 & 3

Week 3 - Field Experiments

Alan S. Gerber and Donald P Green. Field Experiments: Design, Analysis and Interpretation. W.W. Norton & Company, 2012. Chs. 1-2.

(R*) Benjamin A. Olken. Direct Democracy and Local Public Goods: Evidence from a Field Experiment in Indonesia. *American Political Science Review*, 104(02):243-267, May 2010.

Week 4 - Survey and Lab Experiments

Steven D Levitt and John A List. What Do Laboratory Experiments Tell Us About the Real World? 2006.

(R*) Sam Whitt. Social Norms in the Aftermath of Ethnic Violence : Ethnicity and Fairness in Non-costly Decision Making. *Journal of Conflict Resolution*, 58(1):93-119, 2014

Week 5 - Natural Experiments

Thad Dunning. Natural Experiments in the Social Sciences: A Design-Based Approach. Yale University Press, 2012. Chapters 1, & 2

(R*) Ana L. De La O. Do Conditional Cash Transfers Affect Electoral Behavior? Evidence from a Randomized Experiment in Mexico. *American Journal of Political Science*, 57(1):1-14, Jan 2013.

Week 6 - Instrumental Variables

Thad Dunning. Natural Experiments in the Social Sciences: A Design-Based Approach. Yale University Press, 2012. Chapter 4

(R*) Jakob Svensson and Ritva Reinikka. Fighting Corruption to Improve Schooling: Evidence from a Newspaper Campaign in Uganda. *Journal of the European Economic Association*, 3(2), 2005.

Week 7 - Discontinuities

Joshua D Angrist and Steve Pischke. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press, 2009. Chapter 6

(R*) Rocio Titiunik. Incumbency Advantage in Brazil: Evidence from Municipal Mayor Elections. 2011.

Week 8 - Difference-in-Differences

Joshua D Angrist and Steve Pischke. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press, 2009. Chapter 5

(R*) Oeindrila Dube and Juan Vargas. Commodity Price Shocks and Civil Conflict: Evidence from Colombia. 2008.

Week 9 - Controlling for Counterfactuals

Stephen L Morgan and Christopher Winship. Counterfactuals and Causal Inference: Methods and Principles for Social Research. Cambridge University Press, 2007. Chapters 3 & 5 - 5.2

(R*) Kate Baldwin. Why Vote with the Chief? Political Connections and Public Goods Provision in Zambia. American Journal of Political Science, 57(4):794-809, 2013.

Week 10 - Matching

Stephen L Morgan and Christopher Winship. Counterfactuals and Causal Inference: Methods and Principles for Social Research. Cambridge University Press, 2007. Chapter 4

(R*) Taylor C. Boas and Daniel F. Hidalgo. Controlling the Airwaves: Incumbency Advantage and Community Radio in Brazil. American Journal of Political Science, 55(4):869-885, oct 2011.

Week 11 - Comparative Cases

David Collier. The Comparative Method, 1993.

(R*) Steven Levitsky and Lucan A Way. Beyond Patronage: Ruling Party Cohesion and Authoritarian Stability. 2010.

Week 12 - Process Tracing

David Collier. Understanding Process Tracing. Political Science and Politics, 44(04):823-830, oct 2011.

(R*) Tulia Falleti. Infiltrating the State: The Evolution of Health Reforms In Brazil, 1964-1988. In James Mahoney and Kathleen A. Thelen, editors, Explaining Institutional Change: Ambiguity, Agency and Power. 2009.