PLSC 508: Causal Inference and Research Design
Spring 2012
Thursdays 3:30-5:20
Rosenkranz 01

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This class introduces graduate students to several topics of causal inference and research design that are not typically or fully covered in other methods courses in the department. It also exposes students in an in-depth way to research projects of leading scholars and methodologists who study the political economy of development, comparative politics, American politics, and international relations.

The course is divided into two parts. The first consists of readings, lectures, and discussion on selected topics ranging from multi-method research to randomization inference to the analysis of data from cluster-randomized experiments. Working in groups, students will complete weekly problem sets related to these topics.

The second part features thorough discussion of research projects by visiting faculty from other universities. Each week, a pair of student discussants will open the session by commenting on the visitor's paper (visitors will not be expected to prepare formal presentations). Students will engage presenters not just on the data and findings but also on the nuts and bolts of actually doing the work, e.g., the research design process, question selection, identification strategies, measurement decisions, and so forth. Outside speakers will be encouraged to share data in advance so that discussants can replicate and perhaps extend their results. Weekly dinners will allow students the chance to interact with visiting speakers in a more informal environment.

Students should normally have completed PLSC 500, 503, and 504 before taking this course, but exceptions are allowed in consultation with the professor. Students will work in pairs when leading discussion of projects by outside speakers, which may make the course suitable for students with varied backgrounds. Auditors are not encouraged but may be allowed in consultation with the professor.

Course Requirements

There are two main requirements for the course:
- Completion of weekly problem sets (working in groups) and a short take-home exam covering Part I
- Service as discussant for at least one visiting speaker in Part II

Schedule of Meetings and Readings:

January 12: Introduction

Part I: Selected Topics

January 19: Experimental Design and Randomization Inference

Gerber, Alan and Donald P. Green. *Field Experiments: Design, Analysis, Interpretation*. Manuscript. Chapters 1-3. (Available from Whitney Doel, RZK 325).

Freedman, David, Robert Pisani, and Roger Purves. 2007. *Statistics*. Fourth Edition. Chapters 26-27 and A31-34, notes 1,3,10,11 in Appendix.

Edgington, Eugene S., and Patrick Onghena. 2007. *Randomization Tests*. Chapman & Hall/Taylor & Francis. Fourth edition, Chapter 3.

Further reading:

Fisher, Ronald A. 1951. *The Design of Experiments*. London: Oliver and Boyd, 6th edition (1st edition: 1935).

January 26: Regression-Discontinuity Designs

Imbens, Guido W., and Thomas Lemieux. 2007. "Regression Discontinuity Designs: A Guide to Practice." *Journal of Econometrics* 142 (2): 615-635.

Dunning, Thad. *Natural Experiments in the Social Sciences*. Manuscript. Introduction, Chs. 2, 4-5.

Green, Donald P., Terence Y. Leong, Holger L. Kern, Alan S. Gerber, and Christopher W. Larimer. 2009. "Testing the Accuracy of Regression Discontinuity Analysis Using Experimental Benchmarks." *Political Analysis* 17(4): 400-417.

McCrary, Justin. 2007. "Testing for Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test." *Journal of Econometrics* 142 (2): 615-635.

Further reading:

Thistlethwaite, Donald L. and Donald T. Campbell. 1960. "Regression-discontinuity Analysis: An Alternative to the Ex-post Facto Experiment." *Journal of Educational Psychology* 51 no. 6: 309–17.

Caughey, Devin M. and Jasjeet S. Sekhon. 2011. "Elections and the Regression-Discontinuity Design: Lessons from Close U.S. House Races, 1942–2008." *Political Analysis* 19 (4): 385-408.

February 2: Quantitative and Qualitative Methods

Freedman, David A. 2010. "Statistical Models and Shoe Leather," and "On Types of Scientific Inquiry: The Role of Qualitative Reasoning." In David Collier, Jasjeet S. Sekhon, and Philip B. Stark, eds., *Statistical Models and Causal Inference: A Dialogue with the Social Sciences.* New York: Cambridge University Press.

Dunning, Thad. 2012. *Natural Experiments in the Social Sciences*. Chapters 6-9.

Brady, Henry E., David Collier, and Jason Seawright. 2010. "Refocusing the Discussion of Methodology" and "Sources of Leverage in Causal Inference: Towards an Alternative View of Methodology." In Henry E. Brady and David Collier, eds., *Rethinking Social Inquiry: Diverse Tools, Shared Standards*. Rowman & Littlefield, 2nd ed.

February 9: Models for Covariate Adjustment and Extrapolation

Freedman, David A. 2010. "On Regression Adjustments in Experiments with Several Treatments." In David Collier, Jasjeet S. Sekhon, and Philip B. Stark, eds., David Freedman, *Statistical Models and Causal Inference: A Dialogue with the Social Sciences.* New York: Cambridge University Press.

Gerber, Alan and Don Green. *Field Experiments: Design, Analysis and Interpretation*. Manuscript. Chapter 4, 11.

Sekhon, Jasjeet S. 2009. "Opiates for the Matches: Matching Methods for Causal Inference." *Annual Review of Political Science* 12: 487–508.

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

February 16: Analysis of Cluster-Randomized Data

Kish, Leslie. 1965. *Survey Sampling*. John Wiley & Sons. Chapters 5-6 (see Chapters 1-2 for background)

Green, Donald P. and Lynn Vavreck. 2008. "Analysis of Cluster-Randomized Field Experiments: A Comparison of Alternative Estimation Approaches." *Political Analysis* 16 (2): 138-52.

Arceneaux, Kevin, and David Nickerson. 2009. "Modeling Certainty with Clustered
　　　Data: A Comparison of Methods." *Political Analysis* 17 (2): 177-90.

Take-home exam due Feb. 20

Part II: Presentations by visiting speakers

February 23: Rocío Titiunik (Michigan)
　　　Discussants: Dawn Teele, Matto Mildenberger

March 1: Steve Ansolabehere (Harvard)
　　　Discussants: Germán Feierherd, Robert Arnold

(Spring recess: March 8 and 15)

March 22: Jas Sekhon (UC Berkeley)
　　　Discussants: Pia Raffler, Germán Feierherd

March 29: Yotam Margolit (Columbia)
　　　Discussants: Robert Arnold, Nikhar Gaikwad

April 5: Danny Hidalgo (MIT)
　　　Discussants: Steve Rosenzweig, Dawn Teele

April 12: Fotini Christia (MIT)
　　　Discussants: Pia Raffler, Steve Rosenzweig

April 19: Mike Tomz (Stanford)
　　　Discussants: Nikhar Gaikwad, Matto Mildenberger