Causal Inference & Quasi-Experimental Methods

POLS 5385
Professor Kevin Grier
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Class meets 3:00 pm - 5:50 pm on Wednesdays in Holden Hall 00119A
Office Hours by appointment and Thursdays from 1-3.

Course description:

In this class we will study the problem of causal inference, the experimental ideal, and methods that attempt to produce causal estimates of policies / treatments from observational data. A basic knowledge of linear regression and stats is assumed. We will study selection bias and internal vs. external validity. We will study some underappreciated problems with regression analysis in general and fixed effects in particular, then cover the 4 main quasi-experimental methods which are: Difference in Difference, Propensity Score Matching, Synthetic Control, and Regression Discontinuity.

Learning objectives

After taking this class, students will be able to identify studies with problematic identification, and be able to implement valid causal inference in their own research using the methods learned in the class. This is crucial for achieving high quality publications in the social sciences.

Grading

Grades will be based on 4 statistical homework assignments (10% each), Class participation in discussions and presentations (20%) and a semester long research project (40%). See the final page of this document for a timeline on the project.

Class Materials

IBeyond the articles listed in the course outline, we will use a free, online book from the World Bank, called Impact Evaluation in Practice. Here is the link:

http://www.worldbank.org/en/programs/sief-trust-fund/publication/impact-evaluation-in-practice

I have recorded a set of videos on these topics, aimed at a master's level audience that you all might find useful or amusing. They cover at an introductory level, much of what we will cover intensively in the class. You can access them from here:

https://www.youtube.com/watch?v=MWFiwCBh6h0&list=PLTve54sz-eh_B8tR8ZGoPWgVKwiOMC0jK

Finally, the homework and statistical analysis in the project can be done with any software you choose. However, Stata is the software that will be discussed in the class and sample Stata code to help you get started can often be provided and explained.

Course outline:

Week 1 & 2: Overview of causal inference

The problem of causality and the potential outcomes approach to causal inference.

C Samii, "Causal empiricism in quantitative research", The Journal of Politics 78 (3), 941-955, 2016

Week 3 & 4: Regression and its complaints

PM Aronow, C Samii, "Does regression produce representative estimates of causal effects?" American Journal of Political Science 60 (1), 250-267, 2016

CE Gibbons, JCS Serrato, MB Urbancic , "Broken or fixed effects?" NBER, 2014

King, Gary and Langche Zeng. "The dangers of extreme counterfactuals." Political Analysis 14(2):131–159 2006.

CH Achen , "Let's put garbage-can regressions and garbage-can probits where they belong" Conflict Management and Peace Science, 2005

L Pritchett , "Understanding patterns of economic growth: searching for hills among plateaus, mountains, and plains", The World Bank Economic Review, 2000

Week 5 & 6 Difference in Differences

EJ Malesky, CV Nguyen, A Tran, "The impact of recentralization on public services: A difference-in-differences analysis of the abolition of elected councils in Vietnam" American Political Science Review, 2014

A Fowler, "Electoral and Policy Consequences of Voter Turnout: Evidence from Compulsory Voting in Australia" Quarterly Journal of Political Science, 2013

JG Montalvo, "Voting after the bombings: A natural experiment on the effect of terrorist attacks on democratic elections" Review of Economics and Statistics, 2011

KB Grier, DL Hicks, W Yuan, "Marriage Market Matching and Conspicuous Consumption in China" Economic Inquiry 54 (2), 1251-1262, 2016

Week 7: progress reports on research projects

Week 8 & 9: Propensity Score Matching

DE Ho, K Imai, G King, EA Stuart, "Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference" Political analysis, 2007

CD Kam, CL Palmer, "Reconsidering the effects of education on political participation" The Journal of Politics, 2008

CL Boyd, L Epstein, AD Martin, "Untangling the causal effects of sex on judging" American journal of political science, 2010

M Caliendo, S Kopeinig, "Some practical guidance for the implementation of propensity score matching" Journal of economic surveys, 2008

RH Dehejia, S Wahba, "Propensity score-matching methods for nonexperimental causal studies" The review of economics and statistics, 2002

Gilligan, Michael J. and Ernest J. Sergenti. "Does Peacekeeping Cause Peace? Using Matching to Improve Causal Inference." Quarterly Journal of Political Science 3:89–122. 2008

Week 10 & 11: Synthetic Control

Alberto Abadie, Alexis Diamond,Jens Hainmueller, "Comparative Politics and the Synthetic Control Method" AJPS April 2015

Alberto Abadie, Alexis Diamond & Jens Hainmueller, "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program" JASA 2010

K Grier, N Maynard , "The economic consequences of Hugo Chavez: A synthetic control analysis" Journal of Economic Behavior & Organization, 2016

Ashok Kaul, Stefan Klossner, Gregor Pfeifer, Manuel Schieler , "Synthetic Control Methods: Never Use All Pre-Intervention Outcomes as Economic Predictors" Working Paper, June 3, 2017

A Billmeier, T Nannicini, "Assessing economic liberalization episodes: A synthetic control approach" Review of Economics and Statistics, 2013

Week 12 & 13: Regression Discontinuity

D Caughey, JS Sekhon, "Elections and the regression discontinuity design: Lessons from close US house races, 1942–2008" Political Analysis, 2011

AC Eggers, A Fowler, J Hainmueller, "On the validity of the regression discontinuity design for estimating electoral effects: New evidence from over 40,000 close races" American Journal of Political Science, 2015

P Pettersson-Lidbom, "Do parties matter for economic outcomes? A regression‐discontinuity approach" Journal of the European Economic Association, 2008

GW Imbens, T Lemieux, "Regression discontinuity designs: A guide to practice"-Journal of econometrics, 2008

J McCrary, "Manipulation of the running variable in the regression discontinuity design: A density test" Journal of econometrics, 2008

DS Lee, T Lemieux, "Regression discontinuity designs in economics" Journal of economic literature, 2010

Week 14 & 15: Student presentations of their research projects

Timeline and suggestions for the research project

Topics submitted by September 12 (email, as much detail as you can)
Topic approved by September 18th
Data search completed to confirm viability of topic by September 27th
Data Collected and Cleaned by October 18
Literature Review by October 27
Preliminary Results submitted by November 14
Revised Results submitted by November 30
Rough Draft due December 6
Final Turn in, December 14th

There is no restriction on topic, just on technique (D in D, Matching, Synthetic Control or Regression Discontinuity). You can double submit in another class if that class's instructor also agrees. Feel free to consult with your primary advisor about a topic and how you can use this assignment to further your publishing / dissertation goals.