Advanced Issues in Quantitative Methods for Public Policy Analysis

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Overview

Whether they should or they shouldn't, numbers, data and quantitative methods matter in policy and in policy analysis. Policy and political analysts use numbers treated with quantitative methods in evidence-based research about whether policy interventions are successful. Policymakers use numbers to support (sometimes normative) arguments about whether government should (or should not) provide particular services or engage in policy change and reforms. This is the second course in a two-course sequence (Module 2 and Module 3) designed to teach you the quantitative methods that you need for a career in public policy and also to be able to read publications using these methods. By this we mean the application of statistical methods to problems in political science and public policy

Description

Building on the first course which covered basic concepts, notions and introduction to regression based reasonings, this second module provides a survey of more advanced empirical tools for political science and public policy research. The focus is on statistical methods for causal inference, i.e. methods designed to address research questions that concern the impact of some potential cause (an intervention, a change in institutions, economic conditions, or policies) on some outcome (vote choice, income, election results, crime rates, etc).

We cover a variety of causal inference designs, including quasi-experiments, advanced regression, panel methods (fixed and random effects), difference-in-differences, instrumental variable estimation, regression discontinuity designs, quantile regression. We will analyze the strengths and weaknesses of these methods. Applications are drawn from various fields including political science, public policy, economics, and sociology.

We begin by discussing the strengths and limitations of multiple regression analysis and the relationship between regression and causal modeling. We then develop a sequence of extensions and alternatives, including : regression discontinuity, difference-in-differences, panel data, instrumental variables. The course will conclude with an introduction to some limited dependent variables techniques that are now common in political and policy analysis due to the categorical nature of many phenomenons treated by political and policy analysis (binary and ordinal logit analysis).

We will learn both the techniques and how to apply them using data sets. Skills students will acquire in this course include: the capacity to reason causally and empirically, the ability critically to assess empirical work, knowledge of advanced quantitative tools, and experience in working with data sets.

Prerequisites

Background knowledge of multiple regression models, such as the Basics of Quantitative Methods for Public Policy Analysis course offered in Module 2, or the equivalent. As the course will use Stata as the software, a background in using this software is helpful, but not required. Lab sessions will include replication of some published papers that will permit participant to acquire practical skills for working with empirical data.

Nota bene: *** indicates a very important reading; ** an important one
Most of the readings will be made available through the web of summer school.
Students does not need to buy a book, unless some introduction to basic statistics.

Day 1 - Difference in Differences : natural experiments for exogenous treatment

Required readings

***Dynarski, Susan M. 2003. *"Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion. The American Economic Review, 93(1): 279-288*

**David Card and Alan B. Krueger. *Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania. The American Economic Review, 90(5):1397–1420, 1994*

Supplementary readings

Esther Duflo (2001), *"Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," American Economic Review, 91(4): 795-913.*

Alberto Abadie and Javier Gardeazabal. *The Economic Costs of Conflict: A Case Study of the Basque Country. The American Economic Review, 93(1):113–132, 2003.*

Day 2 - Instrumental Variables

Required readings

***Angrist, J D., Imbens, G W. and D B. Rubin, (1996). Identification of Causal Effects Using Instrumental Variables," Journal of the American Statistical Association, 91: 444-472

***Dee, Thomas S. 2004. "Are there Civic Returns to Education?". Journal of Public Economics 88:1697-1720.

**Levitt, Steven D. 1996. "The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation." Quarterly Journal of Economics, 111(2): 319-51

Supplementary readings

Sovey, Allison J., Donald P. Green (2011). *Instrumental Variables Estimation in Political Science: A Readers' Guide. American Journal of Political Science 55(1):* 188-200

Angrist, J D., Imbens, G W. and D B. Rubin, (1996). *Identification of Causal Effects Using Instrumental Variables," Journal of the American Statistical Association, 91:* 444-472

Newhouse JP, McClellan M. *Econometrics in Outcomes Research: The Use of Instrumental Variables. Annual Review of Public Health, 1998;19:17-34.*

Greenland S. *An introduction to instrumental variables for epidemiologists. International Journal of Epidemiology, 2000;29:722-729*

Michael Foster. (2000) *"Is more better than less? An analysis of children's mental health*

services" Health Services Research. Chicago: Vol. 35, Iss. 5; p. 1135

Day 3 - Regression discontinuity designs

**Angrist, J. D. and V. Lavy, 1999, "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Economics*, 114(2): 533-775.

** Lee, D. S., and T. Lemieux, 2009, "Regression Discontinuity Designs in Economics," Journal of Economic Literature, 2010, no. 48 http:www.aeaweb.org/articles.php?doi=10.1257/jel.48.2.281

Supplementary readings

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

Jens Ludwig and Douglas L. Miller (2007), *"Does Head Start Improve Children's Life Chances? Evidence from a Regression Discontinuity Design," The Quarterly Journal of Economics, 122(1):159-208.*

Brian A. Jacob, Lars Lefgren (2004) *"Remedial Education and : A Regression-Discontinuity Analysis" Review of Economics and Statistics 86(1)*

Shadish, Cook & Campbell (2002) *"Regression Discontinuity Designs" Chapter 7 in Experimental and Quasi-Experimental Designs Boston: Houghton Mifflin Co.*

Day 4 - Analyzing categorical policy preferences and utilities: binomial logistic regression

*** Menard, Scott. *Applied logistic regression analysis (second edition). Sage Publications, (Quantitative Applications in the Social Sciences, 106), p. 1-24, 41-61*

** DeMaris, Alfred. *A Tutorial in Logistic Regression. Journal of Marriage and Family, Vol. 57, No. 4 (Nov., 1995), pp. 956-968*

Day 5 - Analyzing ordered policy preferences and utilities : latent preferences measured by ordinal and multinomial logits

*** O'Connell, Ann. *Logistic regression models for ordinal responses variables. Sage Publications, 2006.* (Quantitative Applications in the Social Sciences, 146), p. 27-54
Supplementary readings

Agresti, Alana. *Analysis of Ordinal Categorical Data (second edition)*, New York, John Wiley, 2010, chapter 4

Course Schedule

	Morning	Afternoon
Monday, February 1st	Lecture 1	Laboratory activities
Tuesday, February 26	Lecture 2	Laboratory activities
Wednesday, February 27th	Lecture 3	Laboratory activities
Thursday, February 28th	Lecture 4	Laboratory activities
Friday, February 29th	Lecture 5	Closing Ceremony

Please, check detailed scheduled at IPSA-USP Summer School website:
http://summerschool.fflch.usp.br/schedule/detailed-schedule