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Estimating Impacts in Policy Research (PADM-GP 2875)
Spring 2015
-- DRAFT --

This course covers selected analytic and design issues that are relevant to policy research and program evaluation. It applies and extends skills that are developed in other courses offered at the Wagner School. For example, the concepts of experimental and quasi-experimental design that are introduced in Program Evaluation and Analysis (PADM-GP.2171) are applied in understanding and critiquing research reports, and in analyzing data. Multivariate analytic skills introduced in Statistical Data Analysis: Multiple Regression (PADM-GP.2902) are extended to various types of research designs and analytic situations.

Your goals in this course should be to:

> extend your familiarity with methodologic issues in policy research, including study designs, analytic approaches, and ethical matters.
>
> enrich your professional vocabulary. Understand and use terms from program evaluation, econometrics and epidemiology.
>
> get hands-on experience in analyzing and presenting data, including managing data, selecting appropriate analyses, interpreting computer output, and presenting your findings in writing and tables.
>
> improve your skills in reading, understanding, and reporting on journal articles.

The course is not a comprehensive or exhaustive review of the field of policy-relevant research or program evaluation. It is not a statistics course, nor is it a course in how to evaluate a program. The focus is on impact analysis (rather than process evaluation, performance monitoring, cost effectiveness analysis, or evaluation synthesis, all of which are covered in other Wagner courses). There is a substantial amount of data analysis both in and out of class. There is also significant new statistical material presented. All of this is done using real world examples, to solidify the base as you build your career as a practitioner and consumer of the research that informs public policy.

Course prerequisites (neither may be taken concurrently)

1. Program Evaluation and Analysis (PADM-GP 11.2171)
2. Statistical Data Analysis: Multiple Regression (PADM-GP 11.2902)

Skill prerequisites. Stata is used in this course, and I will assume that you are familiar with basic data analysis using that package. If you are not, K.C. Longest's Using Stata for Quantitative Analysis is an excellent primer, and working through it is a good way to get up to speed. In addition, I will assume that you are capable with algebra at the pre-calculus level, are comfortable with algebraic notation, and understand the concept of a function.

Required purchases. There is no textbook for this course. Most of the course readings are available electronically through the Bobst library. A few are hardcopies on reserve at Bobst.

To supplement the required readings, you may want to use online sources or textbooks. Suggestions are listed on the course website.

We will have several in-class labs using Stata. For those sessions, you should bring a laptop to class, or share with one of your classmates. The class website has information on buying/accessing Stata.

Class website. This is managed via NYU Classes. The website includes a number of resources, including our syllabus, scheduling information, datasets, assignments, videos, article links and other core course documents. The website will be also be used to communicate urgent matters such as assignment changes or glitches, class cancellations, and changes in office hours. Check the site frequently.

Keeping up/missed classes. This course moves quickly. There is a lot of work! While the reading is important, there is a fair bit of informal in-class give-and-take. An effort is made to capture class work in handouts, but this is not always feasible. Students who miss a class should consult a partner student for copies of notes and handouts.

Preparation for class. So that we can use class time efficiently, I will post a number of resources and exercises for you to review before class. I assume that you are prepared, and will collect some of the non-graded exercises (noting them as "complete" and "incomplete/missing"). For in-class discussions, I cold call on students, drawing on the non-graded assignments (as is done in law schools). Come to class ready to contribute.

A note on journal articles. Articles used in the course are taken from journals representing an array of sectors and disciplines. There is great variation in emphasis, presentation, and statistical approaches. Some articles are dense and complex, and may take hours to digest. You should keep at it, because reading journal articles is a skill that you can only learn by doing. I have tried to select papers that are accessible and not excessively technical. In some cases these are oldies-but-goodies. Don't worry that the research findings may be obsolete. Your goal is to learn to read and think critically.

During class, we will discuss some of the articles in depth. Other articles will only be mentioned in passing. For the final exam, you will be expected to understand the 11 points, basic tables and set-up for a subset of these articles. I will let you know which ones will be used, a couple of weeks before the exam.

Getting help with assignments. Most of the class assignments use Stata, and students often have questions. If/when you do, you can ask me, either during office hours or via email. I'm happy to take email questions at any time, and can respond efficiently if you ask your questions clearly, attaching as a Word, .txt or .pdf any output, tables, etc. Please don't send .smcl files. Always attach the relevant assignment sheet, so that I have it on hand to see what you're working on – this saves me having to consult the course website.

Other options for getting Stata help are: (a) through the consultants at NYU ITS Data Service Studio (DSS) at Bobst or (b) to ask a fellow student. You're welcome to work together on assignments, though each of you must do your own Stata runs, and write your own papers.

Honor code. The Wagner School Honor Code will be enforced. If you are unclear as to how the code applies to collaboration on assignments, or to any part of the course, please ask.

Course grades will be based on:

1. Assignment 1 (15%) Supplemental insurance and Medicare expenditures
2. Assignment 2 (5%) Estimates of impact with dichotomous data
3. Assignment 3 (15%) Impact of a mentoring program in New York City
4. Assignment 4 (15%) Enterprise zones and employment rates
5. Assignment 5 (5%) TBA
6. Final Examination (30% of grade)
7. Class preparation and participation (15% of grade)
   - This includes your readiness with non-graded assignments, some of which will be collected.

TOPICS

Week 1. January 27. A framework for estimating impacts. Goals of the course, course mechanics. Impacts, outcomes and the counterfactual. Review of estimation concepts with extension to the regression framework.

To prepare:

- Take four hours to review your class notes and textbooks from Stat 1, Stat 2, and Program Analysis & Evaluation.
    - Pay attention to these terms: statistic, parameter, sample, population, estimation, confidence interval (aka "interval estimate"), sampling distribution, standard deviation, standard error (in general; specifically as it applies to means and differences of means), hypothesis test, p-value, OLS regression assumptions, coefficient, unbiased-ness, efficiency, "controlling for," "holding constant," impact, counterfactual.
    - Review the Stata analyses that you did in Stat 2.
- Review the 11 points document (posted under "Core course documents" on our website).

Week 2. February 3. Validity in social research. Internal validity, external validity, validity in measurement, conclusion validity (aka "statistical power"). Discussion of Newcomb paper.

To prepare:

- Take time to review basic study designs and threats to validity from Program Analysis and Evaluation. Pay special attention to internal validity, threats to internal validity (but not in great detail), external validity.
- Watch the course video on statistical power (link posted on our course website)
- Read
  "Measurement: Validity and Reliability," a QMSS e-lesson. (url on course website).
  Newcomb, TM. Conservation program evaluations: The control of self selection bias. Evaluation Review. 1984; 8(3): 425–440.
- Complete
  The non-graded assignment posted on our course website

Week 3. February 10. In-class lab Preparation for Assignment 1

To prepare:

- Review bivariate statistics from Stat 1, by reading chapters 5 and 6 in the Wagner Way (posted under "Course documents").
- Watch three course videos: these will acquaint you with some Stata maneuvers, and introduce you to bivariate analysis with Stata; see links posted on our website.

- Complete
  The non-graded assignment that goes with the videos; bring hardcopy to class.
- Bring your laptop to class.

Week 4. February 17. Cross sectional data. Logic of cross sectional designs. Thinking further about what it means to adjust for or hold constant. Further understanding of: omitted variables bias, selection bias, endogeneity. Strategies beyond regression adjustment: matching, propensity score matching.

To prepare:

- Review material on omitted variable bias from your Stat 2 text.
- Read
  Devaney B, Bilheimer L, Schore J. Medicaid costs and birth outcomes: The effects of prenatal WIC participation and the use of prenatal care. Journal of Policy Analysis & Management. 1992; 11(4): 573-592.
- Complete an "11-points" discussion of the Devaney et al. article.
- Skim, without getting into the details
  Austin PC. An introduction to propensity score methods for reducing the effects of confounding in observational studies. Multivariate Behavioral Research. 2011; 46(3): 399–424.
- Work on Assignment 1, with the goal of completing your data analysis this week.

Week 5. February 24. Dichotomous outcomes (1): The econometrician's perspective. The linear probability, logit and probit models. Clarification of what "non-linearity" means.

To prepare:

- Complete these non-graded assignments – make sure that your math skills are up to par by completing these class Blackboard postings. ** If you don't get this, you won't get what follows **
  - "Percent change and percentage point change"
  - "Review of logarithms" – note that you should perform a calculator check; bring your calculator to class.

Download, review and print the Master Table that is posted on our course website.

Read

- *Stock JH, Watson MW. Introduction to Econometrics, Second edition, Chapter 11, "Regression with a binary dependent variable"* (on reserve @ Bobst)
- *Munnell AH et al. Mortgage lending in Boston: Interpreting the HMDA data. American Economic Review. 1996; 86(1): 25-53* – paying special attention to the tables, and then:

Non-graded assignment: Prepare an 11-points discussion of the Munnell article.

ASSIGNMENT 1 due

Week 6. March 3. Dichotomous outcomes (2): The health researcher's perspective. The fourfold table. Odds versus risk. The RD, RR and OR as measures of the magnitude of association.

To prepare:

- Re-read Stock and Watson's Chapter 11 from last week, and review your class notes, making sure that you understand the structure of the master table.
- Read and complete the non-graded assignment "Fourfold table."
- Read:
  Semba RD, de Pee, S, Sari M, Akhter N, Bloem MW. Effect of parental formal education on risk of child stunting in Indonesia and Bangladesh. Lancet. 2008; Volume 371: 322-328.
  Wen LM, Rissel C. Inverse association between cycling to work, public transport, and overweight and obesity: Findings from a population-based study in Australia. Preventive Medicine. 2007; Vol. 46: 29-32.
- Complete the non-graded assignment on Semba and Wen that is posted on our course website.
- Download and preview Assignment 2, and bring questions to class.

Week 7. March 10. Finishing up dichotomous outcomes and non-linearity; Interaction as another form of non-linearity. Subgroup analysis, heterogeneity of treatment effects. In-class exercises with interactions; preparation for Assignment 3.

To prepare:

- Watch three course videos on interactions (links on course website). Bring your questions to class.
- Read
  Magnuson K, Lahaie C, Waldfogel J. Preschool and school readiness of children of immigrants. Social Science Quarterly. 2006; 87.5(Supp.): 1241-1262.
- Download and read Assignment 3, and bring it to class, along with your laptop + the dataset.

ASSIGNMENT 2 due

March 17. Spring Break.

Week 8. March 24. Difference in differences. Logic of D-in-D: Assumptions; tests of assumptions. In-class exercise.

To prepare:

- Watch the course video on D-in-D (link on course website).
- Read
  Newcomb, TM. Conservation program evaluations: The control of self selection bias. Evaluation Review. 1984; 8(3): 425–440. This is a re-read, posted under Week 2.
  Kenney GM, Long SK, Luque A. Health reform in Massachusetts cut the uninsurance rate among children in half (main paper + appendix; both posted on course website). Health Affairs. 2010;29(6):1242-1247 + appendix pp.1-5.
  Dynarski SM. Does aid matter? Measuring the effect of student aid on college attendance and completion. American Economic Review. 2003. 93:278-288.
  Torche F. The effect of maternal stress on birth outcomes: Exploiting a natural experiment. Demography. 2011; 48:1473–1491.
- Complete
  An 11 points discussion of the Torche paper, and the non-graded assignment on our course website.

Week 9. March 31. Panel data 1 (Theory). The logic of panel data analysis. Following individuals versus pooled cross sections. Two period panel data, multi period panels. Method of first differences; fixed effects estimation. Assumptions, strengths, limitations of the panel data strategy.

To prepare:

- Read
  Stock JH, Watson MW. Introduction to Econometrics, Second edition, Chapter 10 ("Regression with panel data"); on reserve in Bobst,
  Watch
  The course video (links on course website), and then
  Read
  Kowalski-Jones L, Duncan G. Effects of participation in the WIC program on birth weight: Evidence from the National Longitudinal Survey of Youth. American Journal of Public Health. 2002;92(5):799- 804
  Xu Z, Hannaway J, Taylor C. Making a difference? The effects of Teach for America in high school. Journal of Policy Analysis and Management 2011; 30(3):447-469
  Grabowski DC, Morrisey MA. Gasoline prices and motor vehicle fatalities. Journal of Policy Analysis and Management. 2004; 23(3):575-593
  Complete
  The non-graded assignment on our course website.

Week 10. April 7. Panel data 2 (Practice). Characteristics of panel data. Time fixed effects. Analysis with fixed effects – options in Stata.

To prepare:

- Reread from last week
  Chapter 10 of S & W, ("Regression with Panel Data").
- Download and read Assignment 4 before class, and arrive with an analysis plan.
- Bring your laptop to class

ASSIGNMENT 3 due

Week 11. April 14. The Regression Discontinuity (RD) and Instrumental Variables (IV) approaches. The paradigm for classic RD: examining the data, analyzing the data. IV as "fuzzy" RD. Assumptions of instrumental variables analyses.

To prepare

- Read
  Trochim, W. "The regression discontinuity design" followed by "Regression discontinuity analysis" in the Research Methods Knowledge Base (URL on course website); and then
  Niu SX, Tienda M. The impact of the Texas top ten percent law on college enrollment: A regression discontinuity approach. Journal of Policy Analysis and Management. 2010; 29(1) 84-110.
  Doyle JJ. Causal effects of foster care: An instrumental variables approach. Children and Youth Services Review. 2013;35: 1143-1151.
- Complete
  The non-graded assignment on our course website.

Week 12. April 21 Lab. Topic TBA.

Week 13. April 28 Randomized experiments. The logic of random assignment. Methods and logistics in social experimentation. Residual threats to validity. Cluster randomized trials. Three impact estimates that can be extracted from experimental data (ITT, TOT, LATE).

To prepare

- Watch the course video "Different estimates of program impact," which is intended as an introduction to the chapter from the Bloom text, below.
- Read:

Bloom, HS. Constructing instrumental variables from experimental data to explore how treatments produce effects" (Chapter 3) pages 75-88 from H. Bloom, ed. Learning More From Social Experiments.
X Gine and DS Karlan. Peer monitoring and enforcement: Long term evidence from microcredit lending groups. (Working paper, January 2008).
Quint, J. Research advances: Using cluster random assignment. Document posted on MDRC's website.

- Complete:
  The non-graded assignment on our course website.

ASSIGNMENT 4 DUE

Week 14. May 5. Ethics in social research. Overview of issues in social research ethics. Federal regulations to protect human subjects. The Institutional Review Board (IRB). Informed consent. Case discussion: Evaluation of the NYC Homebase program.

- Read:
  Blustein J. Toward a more public discussion of the ethics of federal social program evaluation. Journal of Policy Analysis and Management. 2005; 24 (4): 824-846; and 851-852; and the exchange that followed.
  Oakes JM. Risks and wrongs in social science research: An evaluator's guide to the IRB. Evaluation Review Vol. 26 No. 5, October 2002 443-479.
  Epstein, H. Lead poisoning: The ignored scandal. The New York Review of Books. 2013.
  Pollack J. The lead-based paint abatement repair and maintenance study in Baltimore: Historic framework and study design. J. Health Care Law and Policy. 2002;6: 90 – 110.
  Ericka Grimes v. Kennedy Krieger Institute (Court of Appeals, Maryland; September term, 2000. Nos. 128, 129). Excerpt: pages 25-29.
  Buckley C. To test housing program, some are denied aid. NY Times. 12/9/2010, page A1
  Testimony in favor of the Homebase evaluation. New York City council hearing, Document dated December 9, 2010.
  1/25/14NYC Department of Homeless Services. Findings from the Homebase Evaluation (.pdf of presentation, June 2013)

- Complete:
  The non-graded assignment on our course website.

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Our final exam is tentatively scheduled for Tuesday, May 12th, during class time (I need to confirm that this doesn't conflict with the Capstone end event). **Assignment 5** should be submitted no later than that date as hardcopy, to Prof. Blustein's box at Puck, or handed in at the final exam.