Estimating Impacts in Policy Research (PADM-GP 2875)
Spring 2016

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 sampling, 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 for 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 over a period of a few weeks is an excellent 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.

**Textbook.** We will use Angrist and Pischke’s *Mastering Metrics* (Princeton University Press, 2015); hereinafter, MM. Other course readings will be available electronically through the Bobst library. A few readings that aren’t available as hardcopies are at Bobst as photocopies; you will need to plan to take the time to access them.

**Stata.** 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 site houses a number of resources, including our syllabus, powerpoints for each lecture, videos, assignments, datasets, article links and other core course documents. NYU Classes will be used to broadcast urgent matters such as assignment changes or glitches, class cancellations, and changes in office hours.

**Keeping up/missed classes.** This course moves quickly. There is a lot of work – most students spent many hours each week on the course last term. There is a fair bit of informal in-class give-and-take. Students who miss a class should consult a partner student.

**Preparation for class.** So that we can use class time efficiently, I will post a number of resources and exercises for review before class, including non-graded assignments. I will assume that you are prepared; come ready to contribute. I cold call on students, drawing on the non-graded assignments (as is done in law schools). Bring your answers to the non-graded assignments as hardcopies – I will collect some of them, marking them “complete” or “incomplete.” Also bring electronic files or hardcopies of the powerpoints that we will use, so that you can follow along.

**Activity in class.** In addition to lecture and discussion of non-graded assignments, I will provide exercises for you to work in groups during class. These are meant to test and consolidate your understanding of the lecture content. You’ll work in groups, and then we’ll discuss solutions together. Solutions to the in-class exercises will be posted online after class.

**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 gist of all articles. I’ll specify ten of them that you should know in depth.

**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, or .pdf any output, tables, etc. Please don’t send .smcl files, or anything that I can’t read on my phone. 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) by asking 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%) Affordable Care Act and health care use
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. Final Examination (35% of grade)
6. Class preparation and participation (15% of grade)
   - This includes your readiness with non-graded assignments, some of which will be collected.

The Wagner School policy on incomplete grades will be followed.
TOPICS


To prepare:
- Take two 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).
- By Week 3, read Chapters 1 and 2 of MM. For Ch. 1, focus on pp. 1-30; for Ch 2, focus on 47-79.


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).
- Complete
  - The non-graded assignment posted on our course website
- Keep working on the first two chapters of MM


To prepare:
- Watch class video on adding third variables (link posted on our course website)
- Read
  - Chapters 1 and 2 of MM. For Ch. 1, focus on pp. 1-30; for Ch 2, focus on 47-79.

- Complete an “11-points” discussion of the Devaney et al. article.
- Skim, without getting into the details


**Week 4. February 17. In-class lab**  Preparation for Assignment 1

To prepare:
- Review bivariate statistics from Stat 1, by reading chapters 5 and 6; and regression with dummies in Chapter 9 of 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 5. February 24. Dichotomous outcomes, non-linear functions & heterogeneous treatment effects.** The linear probability, logit and probit models. Clarification of what “non-linearity" means. Solidifying your understanding of the models.

To prepare:
- Complete the non-graded assignment on percent change and percentage point change.
- Download, review and print the Master Table that is posted on our course website.
- Bring to class a calculator that can take natural exponents (e^x)
- Read
  - Stock JH, Watson MW. Introduction to Econometrics, Second edition, Chapter 11, “Regression with a binary dependent variable” (on reserve @ Bobst)

**Week 6. March 2. Heterogeneous treatment effects, continued: coding using interaction terms.** 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
- Download and read Assignment 3, and bring it to class.

**ASSIGNMENTS 1 & 2 due**

To prepare:
- Watch the course video on D-in-D (link on course website).
- Read
  - *Chapter 5 in MM. Focus on pp. 178-204.*
- Complete
  - An 11 points discussion of the Currie and Walker paper, and the non-graded assignment on our course website.

**March 16 – Spring Break – No class**


To prepare:
- Read
  - *Stock JH, Watson MW. Introduction to Econometrics, Second edition, Chapter 10 ("Regression with panel data"); on reserve in Bobst, and then*
- Watch
  - The course video (link on course website), and then
- Read
- Complete
  - The non-graded assignment on our course website.


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 10. April 6. The Regression Discontinuity (RD) approach. The paradigm for classic RD: examining the data, analyzing the data.

To prepare:
• Read
  o Chapter 4 in MM. Focus on pp. 147-164.
• Complete
  The non-graded assignment on our course website.

Week 11. April 13. Instrumental Variables (IV) approach. IV as “fuzzy” RD. Assumptions of instrumental variables analyses; consequences of violations of assumptions; interpretation of estimates.

To prepare:
• Read
• Watch
  The course video (link on course website), and then
• Read
  o French MT, Popovici I. That instrument is lousy! In search of agreement when using instrumental variables estimation in substance use research. Health Economics. 2011;20:127-146.
• Complete
  The non-graded assignment on our course website.


To prepare:
• Watch the course video “Different estimates of program impact,” which is intended as an introduction to the chapter from the Bloom chapter, below.
• Read
  o 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.
  o Chapter 3 in MM. Focus on pp. 98-122, which deals with IV analysis of random assignment data.
• Complete
  The non-graded assignment on our course website.

ASSIGNMENT 4 DUE


To prepare:
• Read
  o Buckley C. To test housing program, some are denied aid. NY Times. 12/9/2010, page A1
  o 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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The final exam will be given on Wednesday, May 11th during the usual class period. You may bring a “cheat sheet,” which is an 8.5x11 inch page, with handwritten notes on one side.