

ESTIMATING IMPACTS IN POLICY RESEARCH

Fall 2016

Instructor:	Emily A. West	Time:	Thurs 6:45pm – 8:25pm
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Office Hours:	Thurs. (sign up)	Office:	19 W. 4th St., 419

Course Pages:

1. [NYU Classes](#)
2. [Sign Up Sheet for Office Hours](#)

Office Hours: After class, or by appointment on Thursdays using the Google Sign Up Sheet linked above (also on my website (www.emilyannewest.com) under “Teaching”). If you are not available on Thursdays, email me for an appointment. I usually need a couple of days notice (but always just email me and we will figure something out!).

19 W. 4th St., 4th Floor, Office 419.

Main References: We will use Angrist & Pischke’s *Mastering Metrics* (henceforth *MM*) as our primary text. We will also read selections from the following *Supplemental* books.

Required:

- Joshua D. Angrist and Jörn-Steffen Pischke, *Mastering Metrics: The Path from Cause to Effect*, Princeton University Press, 2015.

Supplemental:

- Stephen L. Morgan and Christopher Winship, *Counterfactuals and Causal Inference: Methods and Principles for Social Research*, Cambridge University Press, 2007.
- Lawrence C. Hamilton, *Statistics with STATA*, Cambridge University Press, 2007.
- David A. Freedman, *Statistical Models: Theory and Practice, Revised Edition*, Cambridge University Press, 2009.
- Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach*, South-Western Cengage Learning, 2009.
- Alan S. Gerber and Donald P. Green, *Field Experiments: Design, Analysis, and Interpretation.*, W.W. Norton and Company, 2012.

Objectives:

- Develop a deep understanding of causality, challenges to estimating causal relationships, and the importance of causality for understanding policy impacts.
- Familiarity with both consuming (reading, comprehending and analyzing) academic papers/policy research as well as executing your own data analysis
- Enrich your professional vocabulary—learn how to use terms from program evaluation and econometrics

Skill Prerequisites: STATA is used, and I assume you are familiar with basic data analysis using STATA. You are welcome to use R if you wish, but not SPSS. For assistance, I recommend Lawrence C. Hamilton’s *Statistics with STATA* (I have version 12, but we use STATA 14). I also assume you are capable with algebra and pre-calculus (i.e. you understand algebraic notation, understand what a function is, etc.).

Course Prerequisites:

- Program Evaluation and Analysis (PADM-GP 11.2171)
- Statistical Data Analysis (PADM-GP 11.2902)

Tentative Course Outline:

What is causality? What parameters do we generally “estimate”? Why? How? What is an RCT? How do we estimate a causal impact in a perfect world? What is validity (internal, external, ecological)? What is sampling?

What is a regression? Anatomy of a regression? How do we use it? *Ceteris Paribus*? Observables? Unobservables? Problems with “matching”?

In an imperfect world, how can we get closer to a causal estimate? Instrumental Variables? Regression Discontinuity Design? Differences-in-Differences?

What are the main ethical issues to consider in social science research? What is IRB? What defines a human subject? What is a pre-analysis plan? What does it mean to “pre-register”?

Grading Policy:

- Assignment 1: Regression Basics, Omitted Variables Bias (15%)
- Assignment 2: Limited Dependent Variables (5%)
- Assignment 3: Heterogeneity and Diff-in-Diff (15%)
- Assignment 4: Putting it all together, Panels, FEs (15%)
- Final Exam (35%)
- Class Preparation, Participation and Quizzes (15%):

Grades will be docked 1/2 letter grade (A becomes A-, e.g.) for each **day** that anything is late.

Important Dates:

Assignment # 1	October 4th
Assignment # 2	October 18th
Assignment # 3	November 15th
Assignment # 4	November 29th
Final Exam (Take Home)	Dec. 13th

Getting Help with Assignments: I am happy to take email questions at any time, please attach as a Word, or .pdf any output, tables, etc. that I need to reference in order to answer your question. Please don’t send anything that I cannot read on my phone. Always attach the relevant assignment sheet, so that I have it for reference in answering your question.

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 are welcome to work together on assignments, though each of you must do your own STATA runs (i.e. your do files need to be your own), and write your own papers.

Activity in Class: *Please bring a laptop if at all possible.* In addition to lecture and discussion of non-graded assignments, we will do exercises in groups during class. These test and consolidate your understanding of the lecture content, and prepare you for your graded assignments.

I will also ask you to take quizzes at the start of some classes. These are graded, but mostly based on your effort in trying to understand the material (not 10/10, e.g.). The purpose of quizzes is less for the grade (they will contribute less than 10% to your overall grade) but more for me to gauge how well you are keeping up with material. That being said, they only work if you take them seriously, so please try to keep up with all readings!

A Note on Journal Articles: Articles used in the course are taken from journals representing an array of sectors and disciplines. They are available via Bobst Online Journal access. There is 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. The primary purpose of these readings is to introduce you to the methods used, and get comfortable analyzing them in terms of causal inference.

Keeping Up/Missed Classes: Please keep up with all readings and material, as the course moves quickly. I will cover a lot of material in each class. Students who miss a class should consult a partner student.

Class Policy: Regular attendance is essential and expected.

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. Bring your answers to the non-graded assignments as hardcopies.

Academic Honesty: Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation.

The schedule below is subject to change!

Please complete all readings listed for any given day **before** coming to class that day.

Week 1 Tuesday 9/6:

- **Class:** Introductions, Goals of the Course, Impacts, Outcomes, and the Counterfactual, Causality and Obstacles to Estimating Causality. Review 11 Points document (under *Resources* – > *Core Course Documents* on NYU Classes).
- **Review:** Take two hours to review your class notes and textbooks from Stat 1, Stat 2, and Program Analysis and Evaluation. Pay attention to (and study!):
 - parameter, sample, population, estimate, confidence intervals, sampling distribution, standard deviation, standard error
 - Review these things with reference to *MM* Ch. 1 Appendix (I will expect you to come to Class 2 with full knowledge of everything in that Appendix).

Week 2 Tuesday 9/13:

- **Class:** RCTs, Treatment effects, potential outcomes framework, validity (internal, external, ecological).
- **Readings:** *MM* Chapter 1 (**including Appendix**); Chapter 1 *Morgan & Winship*; Newcomb, TM. “Conservation program evaluations: The control of self-selection bias.” *Evaluation Review*. 1984; 8(3): 425-440.
- **To Prepare:** Study Appendix to *MM* Chapter 1!

Week 3 Tuesday 9/20:

- **Class:** *Ceteris Paribus*, Regression Framework (what does a regression do, what does a regression *not* do), Propensity Score, Matching, and what they do (and *do not*) accomplish.
- **Readings:** *MM* Chapter 2;
Devaney B, Billheimer 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.
Aronow and Samii. “Does Regression Produce Representative Estimates of Causal Effects?” *American Journal of Political Science*. 2016.
- **To Prepare:** Complete 11 points review of Devaney et al article.

Week 4 Tuesday 9/27:

- **Class:** In class lab to prepare for Assignment # 1
- **To Prepare:**
 - Review bivariate statistics from Stat 1 (also Ch. 2 of *MM* and/or Ch. 2 of *Freedman*).
 - Complete non-graded assignment #1 (posted on NYU Classes Friday before at 5pm); bring to class.
 - Bring your laptop!

Week 5 Tuesday 10/4: Data Assignment # 1 (Intro Regression/OVB) Due at 11:59pm! (posted Friday before at 5pm).

- **Class:** Instrumental Variables (IV) approach.
- **Readings:** *MM* Ch. 3
Doyle, Jr. Joseph J. “Causal effects of foster care: an instrumental variables approach. *Children and Youth Services Review*. 2013; 35: 1143-1151.
Figlio D et al. “Does Prenatal WIC participation improve birth outcomes? New evidence from Florida. *Journal of Public Economics*. 2008; 93: 235-254.
- **To Prepare:** Watch the course video (link on NYU Classes).

Week 6 Tuesday 10/11:

- **Class:** Limited DVs, Heterogenous Treatment Effects, Interaction Terms.
- **Readings:** Angrist et. al. “Explaining Charter School Effectiveness.” *NBER Working Paper*. 2011.
Magnuson K, Lahaie C, Waldfogel J. “Preschool and school readiness of children of immigrants.” *Social Science Quarterly*. 2006; 87.5(Supp): 1241-1262.
- **To Prepare:** Watch three course videos on interactions (links on NYU Classes).
Bring laptop to class!

Week 7 Tuesday 10/18: Data Assignment # 2 (Limited DVs) Due at 11:59pm (posted Friday before at 5pm)!

- **Class:** The Regression Discontinuity Design (RDD) approach
- **Readings:** *MM* Ch. 4; Angrist, Joshua D., Miikka Rokkanen. “Wanna Get Away? Regression Discontinuity Estimation of Exam School Effects Away from the Cutoff.” *Journal of the American Statistical Association*. 2015.
Dee TS, Wykoff J. “Incentives, selection, and teacher performance: Evidence from IMPACT.” *Journal of Policy Analysis and Management*. 2015; 34(2): 267-297.
- **To Prepare:** Take a look at the “RD Porn” link on NYU Classes

Week 8 Tuesday 10/25:

- **Class:** Panel Data, True Panels vs. Pooled Cross Sections, Periods, Fixed Effects.
- **Readings:** Wooldridge Ch. 10
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.
- **To Prepare:** Watch the course video on NYU Classes.
Bring your laptop to class!

Week 9 Tuesday 11/1:

- **Class:** Logic of Differences-in-Differences: Assumptions; Tests of Assumptions; Parallel Trends.
- **Readings:** *MM* Ch. 5, David Card and Alan B. Krueger. “Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania.” *American Economics Review*. 1994; 84(4): 772-793.
Currie J, Walker R. “Traffic congestions and infant health: Evidence from EZ-Pass.” *American Economic Journal: Applied Economics*. 2011; 3:65-90.
- **To Prepare:** Complete an 11 points analysis of the Currie and Walker paper, and the non-graded assignment on NYU Classes.

Week 10 Tuesday 11/8:

- **Class:** Panel Data Workshop, Implementing Fixed-Effects.
- **To Prepare:** Review class notes from Week 8, as well as readings (*Wooldridge* Ch. 10 and Xu et. al. paper).
Complete non-graded assignment
Bring your laptop to class!

Week 11 Tuesday 11/15: Data Assignment # 3 Due at 11:59pm!

- **Class:** Randomized Experiments, Sampling Theory, Clustering, Spillover.
- **Readings:** Gerber and Green (2012) Chs. 1-3 and 8
McConnell, B. and M. Vera-Hernandez (2015). “Going beyond simple sample size calculations: A practitioners guide.” IFS Working Paper W15/17.
Cilliers et al. “Reconciling after civil conflict increases social capital but decreases individual well-being.” *Science*. 2016; 352 (6287): 787-794.

Week 12 Tuesday 11/22:

- **Class:** In-class Data Workshop
- **To Prepare:** Bring laptop to class!

Week 13 Tuesday 11/29: Data Assignment # 4 Due at 11:59pm!

- **Class:** Ethics, IRB, Pre-Analysis Plans, Pre-Registration, Replication (and failure to replicate).
- **Readings:** Oakes, JM. “Risks and wrongs in social science research: An evaluator’s guide to the IRB.” *Evaluation Review*.
[This Atlantic article on replication](#) (link also on NYU Classes)
- **To Prepare:** Complete the Required Human Subjects Training Program via Citiprogram through NYU ([NYU website with instructions and link to Citiprogram here](#)).
Bring your laptop to class!

Week 14 Tuesday 12/6:

- **Class:** Review

- **Readings:** *MM* Ch. 6

Tuesday 12/13:

- **Class:** No Class; Take-home final posted on NYU Classes.