Learning goals

The aim is for students to master the techniques in the main econometric approach used in labor, public and development economics, namely the estimation of causal effects using natural or randomized experiments. Structural modeling, the main approach in industrial organization, will not be covered, although criticisms of the experimental approach will be discussed, and possible contributions of machine learning considered. Nuts and bolts of designing randomized controlled trials will not be covered. Mastery implies some familiarity with the econometric theory, but especially an understanding of when and how to apply appropriate techniques in one’s own work, as well as the ability to evaluate the quality of the research of others.

Assessment

1. Problem sets (6) 25% Every second Tuesday
2. Exam 1 20% In class, Friday 23 February
3. Exam 2 20% In class, Friday 13 April
4. Final exam 30% In exam period
5. Class participation 5%
6. 100%

Problems sets are due 23 January; 6, 20 February; 9, 27 March; 10 April. These are all Tuesdays except Friday 9 March (since I am out of town Tuesday 6 March you can hand it in later). Problem sets will involve using microdata, which I will post on the web in Stata format. Stata should be available on department computers; the university has a site license if you want to download it onto your own computer for free: https://oit-nb.rutgers.edu/service/university-software-portal. You can use another language if you prefer, though you will have to use software to convert the data.

Class Meetings
I will miss class Tuesday 6 March and possibly Friday 16 February. We will make up these classes.

Integrity
Note Rutgers’ integrity policy at academicintegrity.rutgers.edu/policy-on-academic-integrity.

Readings
The required textbook is Mostly Harmless Econometrics: An Empiricist’s Companion by Angrist and Pischke, available at the bookstore at a low price. An optional text is their undergraduate book Mastering ‘Metrics: The Path from Cause to Effect, also at the bookstore. A textbook covering more topics than the class in more technical detail but with less context and practical guidance is Jeffrey M. Wooldridge Econometric Analysis of Cross Section and Panel Data; this could be a useful reference where Angrist and Pischke are unclear or incomplete.
I. Regression review and the experimental approach to analyzing data

*Mostly Harmless* Chapters 1, 2, 3.1, 3.2


II. Matching, weighting

*Mostly Harmless* Chapters 3.3, 3.4.1


III. Limited dependent variables

*Mostly Harmless* Chapters 3.4.2

IV. Instrumental variables

1. Basic

*Mostly Harmless* Chapters 4.1, 4.2.1, 4.6.1, 4.6.4


2. Interpretation with heterogeneous outcomes (LATE, ITT, TOT)

*Mostly Harmless* Chapter 4.4


3. Other [If time permits]

*Mostly Harmless* Chapters 4.3, 4.5, 4.6.2, 4.6.3

V. Non-experimental approaches to examining data

1. How good is the experimental approach?


2. Structural modeling


3. Machine learning

VI. Panel data, fixed effects and differences in differences
*Mostly Harmless* Chapter 5

VII. Regression discontinuity and regression kink design
*Mostly Harmless* Chapter 6

VIII. Standard Errors
*Mostly Harmless* Chapter 8

IX. Quantile regression [if time permits]
*Mostly Harmless* Chapter 7