Overview

This course explores econometric methods widely used in applied economics and policy research, with a focus on “reduced form” applications. The overriding objective is for you make significant progress in your ability to conduct high-quality empirical analysis. Concepts, applications, and practice are emphasized, as opposed to technical derivations of estimators and their properties. Methods covered include difference-in-difference and IV methods; models with qualitative and count dependent variables; models of health care expenditures/utilization, including two-part, sample selection, and GLM models; survival/duration models; regression discontinuity models; and matching / propensity score methods.

Readings

The reading list consists of published articles and a few working papers, which should be read prior to class (approximately two papers per week). The papers have been chosen to illustrate the application, generally recent, of different empirical methods and strategies and to minimize overlap with your other classes. They are available on-line through PennText and will be posted on Canvas. You should also read selected chapters in Andrew Jones’ primer, *Applied Econometrics for Health Economists: A Practical Guide* (OHE Research, 2nd ed., 2007). A pre-print version is available online and will be posted to Canvas, or you can buy a paperback copy.


Other Requirements and Grading

In addition to reading the assigned papers prior to class, you are required to:

- Attend selected LDI and AEW seminars as requested and possible.
- Complete several hands-on data analysis assignments using a supplied data set drawn from the Medical Expenditure Panel Survey, using *STATA* or *R*.
- Conduct an econometric analysis of health-related data and present the results to the class (replications, extension, new analysis, or simulation).
- Present to the class a paper (choose by March 13th)
- Take the final exam.

Grading: Project – 35%; participation, assignments, and presentation – 40%; final – 25%
I. **Introduction and background (Jan. 16)**
   A. Structural, reduced form, and treatment effects approaches
   B. Classical estimation and testing

II. **Introduction to dealing with selection, standard errors, weighting, and identifying ill-conditioned data (Jan. 23, Jan. 30, Feb. 6)**
   A. The fundamental problem in inference
   B. Difference-in-difference (D-D), D-D-D analysis
   C. Instrumental variables estimation
   D. Getting standard errors right
   E. Weighted Least Squares
   F. Should we care about collinearity?


Gary Solon, Steven Haider, and Jeffrey Wooldridge, What are We Weighting For? NBER w18859, Feb. 2013.


III. **Qualitative dependent variables (Feb. 13, 20)**
   A. Linear probability, probit, and logit models
   B. Ordered probit / logit models
C. Unordered multinomial response models

IV. Count data (Feb. 27)
A. Poisson and negative binomial models
B. Zero inflated models
Jones, Chapter 9.

Spring Break (March 6)

V. Density based methods (Mar. 13, 20)
A. RDD, RD-DD
B. RKD
C. Bunching
VI. Modeling health expenditures (Mar. 27)
A. Two-part models vs. sample selection models
B. GLM
C. Nonlinear models with endogeneity
D. Quantile regression
Jones, Chapters 6-8, 11.


David Powell and Dana Goldman, Disentangling Moral Hazard and Adverse Selection in Private Health Insurance, NBER working paper 21858, January 2016.

VII. Survival/duration analysis (April 3)
A. Survival, hazard, and cumulative hazard functions
B. Proportional hazard models
Jones, Chapter 10.


VIII. Other methods and student article presentations (April 10, 17)
A. Randomization in health care / medical research – Mark Neuman (April 10)
B. Matching and propensity score methods
C. Each student presents a paper he or she chooses


IX. Data analysis presentations (April 24)

X. Final Exam, date and time to be arranged