

ECON 345
Introduction to Econometrics
Summer 2017
Department of Economics
George Mason University

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Classes: Tuesdays & Thursdays, Robinson Hall A101, 7:00 pm - 10:00 pm, and Saturdays 8:30 am - 11:30 am - No Saturday class on Memorial Day Weekend.

Office Hours: Arlington, Metropolitan Bldg. Tuesday 10 am – 11 am and by appointment

Economics 345 provides students with modern statistical techniques in estimating economic relations. The formal prerequisites for the course are ECON 306, ECON 311, STAT 250 and STAT 350 or STAT 344 and STAT 354. Fundamentally, the course requires basic knowledge of probability and statistics, as well as some algebra.

Textbooks

Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach*, 5th or 6th Edition, South-Western, Cengage Learning, 2013.

David Diez, Christopher Barr, Mine Çetinkaya-Rundel, *OpenIntro Statistics*, 2nd Edition, CreateSpace Independent Publishing Platform, 2013. <http://www.openintro.org/stat/textbook.php>

Homework assignments/Midterm/Final

I will not accept late homework assignments.

Lecture notes, data sets, and problem sets are available on courses.gmu.edu. Correct answers to problem sets and reading assignments will be posted on this site.

The midterm exam will be held on June 4. This exam is a closed book exam. There will be no makeup midterm. If you miss the midterm with a valid excuse, its weight will be shifted to the final.

The final will be cumulative. Please refer to <http://registrar.gmu.edu/calendars/summer-2017/final-exams/> regarding the date for the final exam.

Be sure to check courses.gmu.edu frequently. I will announce updates regarding materials that will be covered through courses.gmu.edu.

Please familiarize yourself with the Honor Code, <http://www.gmu.edu/catalog/apolicies/>.

Suspected cases of academic dishonesty including plagiarism will be sent immediately to the Honor Committee.

Applied Computing

This course will include applied computing, using MS Excel, DataSplash, and Stata. You will learn how to use these programs and solve statistical problems through learning-by-doing. In either case, your work must be your own. Thus, please don't hand in someone else's work product.

Excel and Stata are available on in some computer labs around campus. DataSplash is an online tool accessible with an internet connection through most web browsers at <http://www.datasplash.com>.

DataSplash is an intuitive data analysis tool available online. Data can be entered manually or uploaded from a csv (comma separated value) file, or via Google Sheets

I recommend that you purchase Stata. This software is probably the most favored statistical package used by applied economists. You will get information about the software and reduced prices for students (the so-called grad-plan) at:

<http://www.stata.com/order/new/edu/gradplan.html>

The license for Stata (small Stata) starts at \$35. If you think you have use for it, purchase the perpetual license of Stata/IC for about \$200. Also, you can use Stata on GMU computer labs.

I have no financial interest in what type of Stata option you chose and whether you chose to purchase Stata.

Not on the "required list" but very useful is Statistics with Stata by Lawrence C. Hamilton. If you have this book, it will make your life easier, but you can do OK in the class without purchasing this book. Especially, given that there are tons of online sources as to how to learn Stata, as for example on youtube and the the UCLA web site,

Grades

Problem Sets: 50%

Midterm Exam: 20%

Final Exam: 30%

Course Outline

Section 1: Why Econometrics, Moving from Correlation to Causation, Inference, and Data Mgmt

Reading: *OpenIntro Statistics* Chapter 7 and Woolridge Chapter 1

Section 2: The Bivariate Regression Model and Residuals

Reading: Woolridge Chapter 2

Section 3: The Multivariate Regression Model and Interpreting Results

Reading: *OpenIntro Statistics* Chapter 8 and Woolridge Chapter 3

Section 4: Hypothesis Tests

Reading: Woolridge Chapter 4

Section 5: Heteroskedasticity and Dummy Variables

Reading: Woolridge Chapters 7 & 8

Section 6: Case Studies

Reading: Woolridge Ch 19; Bertrand & Mullainathan; Katz, Kling, & Liebman; and Sacerdote

Midterm Exam

Section 7: Case Studies

Reading: Woolridge Ch. 19; Dale & Krueger; Duggan & Levitt; and Fisman & Miguel

Section 8: Large Sample Properties of OLS

Reading: Woolridge Chapter 5

Section 9: Time Series (Part 1) and Wilcox

Reading: Woolridge Chapter 10, and Wilcox

Section 10: The Efficient Markets Hypothesis

Reading: Woolridge Chapter 11; Thaler; and Malkiel

Section 11: Time Series (Part 2), Difference-in-Differences (Part 1)

Reading: Woolridge Chapter 12

Section 12: Difference-in-Differences (Part 2), Panel Data Methods

Reading: Woolridge Chapters 13 & 14; Meyer et al; Card & Krueger; Linden & Rockoff; and Ayers & Levitt

Section 13: Two-Stage Least Squares

Reading: Woolridge Chapter 15; Angrist; Hotz et al; and Angrist & Evans

Review

Final Exam June 20, 2015

Reading List

We will discuss some of these papers in class.

Angrist, J.D., "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records," *American Economic Review*, 80, 1990, 313-336.

Angrist, J.D., and W.N. Evans, "Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size," *American Economic Review*, 88(3), 1998, 450-477.

Ayres, Ian and Steven Levitt, "Measuring Positive Externalities from Unobserved Victim Precaution: An Empirical Analysis of Lojak," *Quarterly Journal of Economics*, 115(3), 2000, 755-789.

Bertrand, Marianne and Sendhil Mullainathan, "Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination," *American Economic Review*, 94(4), 2004, 991-1013.

Card, D., and A.B. Krueger, "Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania," *American Economic Review*, September 1994, 722-794.

Duggan, M., and Steven Levitt, "Winning Isn't Everything: Corruption in Sumo Wrestling," *American Economic Review*, 92(5), 2002, 1594-1605.

Fisman, Raymond and Edward Miguel, "Corruption, Norms, and Legal Enforcement: Evidence from Diplomatic Parking Tickets," *Journal of Political Economy*, 2007, 115(6): 1020-1048

Hotz, Joseph, Susan Williams McElroy and Seth Sanders, "Teenage Childbearing and Its Lifecycle Consequences: Exploiting a Natural Experiment," *Journal of Human Resources*, 2005, 40(3): 683-715.

Katz, Lawrence, Jeffrey Kling, and Jeffrey Liebman, "Moving to Opportunity in Boston: Early Results of a Randomized Mobility Experiment," *Quarterly Journal of Economics*, 2001, 116(2), 607-654.

Linden, Leigh L. and Jonah Rockoff. "Estimates of the Impact of Crime Risk on Property Values from Megan's Laws." *American Economic Review*, 2008, 98(3): 1103-27.

Malkiel, Burton G. "The Efficient Market Hypothesis and Its Critics," *Journal of Economic Perspectives*, 2003, 17(1), 59-82.

Meyer, Bruce D., W. Kip Viscusi and David L. Durbin (1995), "Worker's Compensation and Injury

Duration: Evidence from a Natural Experiment," *American Economic Review*, 85(3): 322-340.

Sacerdote, Bruce, "How Large Are the Effects from Changes in Family Environment? A Study of Korean American Adoptees," *Quarterly Journal of Economics*, 121(1), 2007, 119-157

Richard Thaler, "Anomalies: Weekend, Holiday, Turn of the Month, and Intraday Effects," *Journal of Economic Perspectives*, 1, Fall 1987, 169-78.

Wilcox, David, "Social Security Benefits, Consumption Expenditures, and the Life Cycle Hypothesis," *Journal of Political Economy*, 97, April 1989, 288-304