

**LABOR ECONOMICS 250A**  
**Empirical Methods in Labor Economics**  
**Fall 2016**

**Professors Kate Antonovics, Eli Berman, Julian Betts, and Gordon Dahl**

**Location:** Econ 300

**Time:** Thursday, 1–3:50 pm

**Overview:** This first of three graduate labor courses focuses on the empirical methods used in labor (and other applied microeconomics fields). The course is designed to prepare you to read and evaluate empirical work in the other two graduate labor courses, 250B and 250C. However, the toolkit presented in this course will be useful for research in all areas of applied microeconomics and empirical Social Science.

This course is intended to be both more and less than a course in applied econometrics. It is “less” in that we will not concentrate heavily on deriving properties of estimators. Instead, we will focus on presenting a practical guide to the key advantages and disadvantages of each technique in estimation. It is “more” than a course in applied econometrics in that, for each technique, we will study empirical examples in considerable detail. In this way, the course also will provide an introduction to many different areas of research in labor economics, which has historically been a font of innovation in applied econometrics.

9/22

After Antonovics introduces the basic course requirements, Dahl will discuss how different economists define causality and identification. Betts will then summarize some of the main problems affecting empirical work, such as omitted variable bias, selectivity bias, endogeneity bias and measurement error, and present an overview of the standard techniques used to deal with these problems. Betts will then begin discussing selectivity bias.

9/29, 10/6

Betts will cover **selectivity bias** and **clustering**.

10/13, 10/20

Antonovics will cover **social experiments** and **difference-in-differences methods**.

10/27, 11/03

Dahl will cover **control functions**, **matching methods**, and **regression discontinuity**.

11/10, 11/17

Eli will cover **instrumental variable** methods.

12/01

Students will present their Very Short Papers. It’s possible that we will need to schedule an additional meeting for presentations depending on the class size.

### Evaluation and Course Requirements:

1. Very Short Paper. A five page paper (double-spaced, 11 point font) in which you will be required to engage a data set of your choosing. It will be marked on the econometric method alone, with no marks deducted for even the most ludicrous economic analysis; so feel free to have fun. On the other hand, you will spend many intimate hours with this project, so you may as well construct it in a way that will be interesting for you and your team.

This assignment must be completed in groups of **three** students.

VSP due dates:

**\*\*All assignments are to be turned in to the TA.**

Due date	Description	Points
Thurs, Oct. 6, in class	Each group must submit the question they will study, the dataset they will use, and the names of the group's members	5 points
Thurs, Oct. 13, in class	Each group must submit its table of means (see VSP handout for details)	5 points
Thurs, Oct. 27, in class	Each group must turn in a <i>hard copy</i> rough draft of its VSP (see VSP handout for details)	5 points
Thurs, Dec. 1, in class	Each group will present its VSP	5 points
Mon, Dec. 5 at 5 pm	Each group must turn in a <i>hard copy</i> final draft of its VSP (see VSP handout for details)	20 points

**TOTAL POINTS FOR VSP 40 POINTS**

2. Comprehensive final exam, Saturday 12/10, 11:30 am - 2:30 pm **50 POINTS**

3. Class participation **10 POINTS**

**TOTAL POINTS IN COURSE 100 POINTS**

### Office Hours

Each professor will hold office hours during the weeks he or she is teaching and will be available for meetings outside those weeks.

Students can make appointments with an individual professor outside professors' "teaching weeks" by sending an email to the relevant professor:

Julian Betts [jbetts@ucsd.edu](mailto:jbetts@ucsd.edu)  
Kate Antonovics [kantonov@ucsd.edu](mailto:kantonov@ucsd.edu)  
Eli Berman [elib@ucsd.edu](mailto:elib@ucsd.edu)  
Gordon Dahl [gdahl@ucsd.edu](mailto:gdahl@ucsd.edu)

**Teaching Assistant**

The Teaching Assistant is Pablo Ruiz Junco: [pruizjun@ucsd.edu](mailto:pruizjun@ucsd.edu)

He will be giving weekly office hours and leading a bi-weekly section.

He will be present in class, and in particular on the first day to schedule the day and time for section and OH.

# Reading List

## BERMAN SECTION

### Introduction to the Central Problems of Omitted Variable Bias, Self-Selection, Endogeneity and Measurement Error

Angrist, Joshua and Alan Krueger (1999), "Empirical Strategies in Labor Economics," in the *Handbook of Labor Economics*, Vol. 3A, O. Ashenfelter and D. Card, eds. Amsterdam: Elsevier Science.

### Causal Inference and Experiments

*Just master the notation and concept*

Angrist, Joshua D., Guido W. Imbens and Donald B. Rubin, "Identification of Causal Effects Using Instrumental Variables" *Journal of the American Statistical Association*, June 1996 Vol 91(434)

LaLonde, Robert J. (1986) "Evaluating the Econometric Evaluations of Training Programs with Experimental Data," *American Economic Review*, 76(4).

*Examples of Experiments (skim these):*

Esther Duflo, Glennerster, Rachel, and Michael Kremer (2007) "Using Randomization in Development Economics: A Toolkit" Centre for Economic Policy Research, Discussion Paper No. 6059.

Callen, Michael, and James D. Long. 2015. "Institutional Corruption and Election Fraud: Evidence from a Field Experiment in Afghanistan." *American Economic Review*, 105(1): 354-81.

### Instrumental Variable (IV) Method

Angrist, Joshua (1990), "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Records," *American Economic Review*, 80:3 (June).

Angrist, Joshua and Alan B. Krueger (1991), "Does Compulsory School Attendance Affect Schooling?" *Quarterly Journal of Economics*, 106, 979-1014.

Bound, John, David Jaeger and Regina Baker, (1995) "Problems with Instrumental Variables Estimation when the Correlation Between the Instruments and the Endogenous Explanatory Variables is Weak," *Journal of the American Statistical Association*, 90 (June): 443-450.

Imbens, Guido, and Jeffrey Wooldridge "Weak Instruments and Many Instruments" Lecture 13 *What's New in Econometrics? NBER, Summer 2007.*  
[http://www.nber.org/~confer/2007/si2007/WNE/lect\\_13\\_weakmany\\_iv.pdf](http://www.nber.org/~confer/2007/si2007/WNE/lect_13_weakmany_iv.pdf)

### Measurement Error and other Data Issues

Griliches, Z. (1986) "Economic Data Issues," in *Handbook of Econometrics*, Volume III, (Z. Griliches and M.D. Intriligator eds.) Elsevier Science.

## BETTS SECTION

**Note: This list is short but REQUIRED – unless noted otherwise you will be expected to read these papers.**

### Selectivity Correction

Heckman, James (1976), “The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models”, *Annals of Economic and Social Measurement* 5:475-492.

Lee, David. S. (2009), Training, Wages, and Sample Selection: Estimating Sharp Bounds on Treatment Effects. *Review of Economic Studies*, 76: 1071–1102.

Willis, R.J. and S. Rosen (1979), "Education and Self-Selection", *Journal of Political Economy*, 87, (Supplement, October), pp. S7-S36.

### Clustered Standard Errors and Wild Bootstrap

My notes on this section will be quite self contained. You should read Bertrand et al., while Donald and Lang is worth skimming. Cameron and Miller provide for more detailed and advanced information, special cases, and examples of estimation. Camerosn, Gelbach and Miller (2008) introduce the wild bootstrap. For this paper you should know how to implement the method, but you are not responsible for derivations!

Bertrand, M. E. Duflo, and S. Mullainathan, (2004), “How much Should We Trust Differences in-Differences Estimates?” *Quarterly Journal of Economics*, 119:1, 249-275.

Donald, S. and K. Lang, “Inference with Difference in Differences and Other Panel Data,”2004, Working Paper, Boston University.

Cameron, A. Colin and Douglas L. Miller, "A Practitioner's Guide to Cluster-Robust Inference", *Journal of Human Resources*, Spring (2015), 50:2, pp.317-373. See <http://cameron.econ.ucdavis.edu/research/papers.html> for the paper, data and sample programs.

Cameron, A. Coin, Jonah B. Gelbach and Douglas L. Miller, “Bootstrap-Based Improvements for Inference with Clustered Errors”, *Review of Economics and Statistics*, August 2008, Vol. 90, 414-427.

## ANTONOVICS SECTION

This list is subject to change . . .

### Social Experiments

- Burtless, Gary, "The Case for Randomized Field Trials in Economic and Policy Research," *Journal of Economic Perspectives*, Spring 1995, 9(2), pp. 63-84.
- Cullen, Julie, Brian Jacob and Steven Levitt. "The Effect of School Choice on Participants: Evidence from Randomized Lotteries," *Econometrica*, September 2006, 74(5), pp. 1191-1230.
- Heckman, James, Robert LaLonde, and Jeff Smith, "The Economics and Econometrics of Active Labor Market Programs," *Handbook of Labor Economics*, Vol. 3A, O. Ashenfelter and D. Card, eds. Amsterdam: North Holland, 1999, pp. 1865-2097.

### Difference-in-Difference Models

- Abadie, Alberto; Diamond, Alexis; Hainmueller, Jens, "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program," *Journal of the American Statistical Association*, vol. 105, no. 490, June 2010, pp. 493-505.
- Abadie, Alberto and Javier Gardeazabal, "The Economic Costs of Conflict: A Case Study of the Basque Country", *American Economic Review*, March 2003, pp. 113-132.
- Ashenfelter, O. (1978): "Estimating The Effect of Training Programs on Earnings," *Review of Economics and Statistics*, 60(1), 47-57.
- Athey, Susan and Guido Imbens, "Identification and Inference in Non-Linear Difference-in-Difference Models," *Econometrica*, 74(2), pp. 431-497.
- Bertrand, M., E. Duflo, and S. Mullainathan (2004), "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics*, February, 119(1): 249-275.
- Betts, Julian, Jesse Levin, Ana Paula Miranda, Bruce Christenson, Marian Eaton and Hans Bos (2010), "An Evaluation of Alternative Matching Techniques for Use in Comparative Interrupted Time Series Analyses: An Application to Elementary Education," manuscript, Department of Economics UCSD and American Institutes for Research.
- Bharadwaj, Prashant (2012), "The Impact of Changes in Marriage Law – Implications for Fertility and School," working paper.
- Black, Sandra E. and Philip E. Strahan, "The Division of Spoils: Rent-Sharing and Discrimination in a Regulated Industry." *American Economic Review*, September 2001, 814-831.
- Blundell, Richard & MaCurdy, Thomas, 1999. "Labor supply: A review of alternative approaches," *Handbook of Labor Economics*, in: O. Ashenfelter & D. Card (ed.), *Handbook of Labor Economics*, edition 1, volume 3, chapter 27, pages 1559-1695 Elsevier.
- Buchmueller, DiNardo and Valetta (2011) "The Effect of an Employer Health Insurance Mandate on Health Insurance Coverage and the Demand for Labor: Evidence from Hawaii", *American Economic Journal: Economic Policy*, 3(4), 25-51.
- Card, David (1990), "The Impact of the Mariel Boatlift on the Miami Labor Market", *Industrial and Labor Relations Review*, 43:245-257.
- Card, David and Alan B. Krueger (1994), "Minimum Wages and Employment - A Case Study of the Fast Food Industry in New Jersey and Pennsylvania," *American Economic Review*, (84:4), September.

- Conley and Taber (2011) "Inference with Difference in Differences with a Small Number of Policy Changes," *Review of Economics and Statistics*, Feb. 2011.
- Eissa, Nada (1995), "Taxation and Labor Supply of Married Women: The Tax Reform Act of 1986 As a Natural Experiment," NBER Working Paper #5023.
- Imbens, Guido, and Jeffrey Wooldridge, "Difference in Difference Estimation", Lecture 10 What's New in Econometrics? NBER, Summer 2007. Available at [http://www.nber.org/~confer/2007/si2007/WNE/lect\\_10\\_diffindiffs.pdf](http://www.nber.org/~confer/2007/si2007/WNE/lect_10_diffindiffs.pdf)
- Watson, Nadine (1996), Ph.D. Thesis, University of California, San Diego.

### **Fixed Effects**

See Angrist and Krueger (1999) above.

- Altonji, Joseph (1986), "Intertemporal Substitution in Labor Supply: Evidence from Micro Data," *Journal of Political Economy*, 94(3) Part 2, pp S176-S215.
- Altonji, Joseph and Thomas Dunn, (1996), "The Effects of Family Characteristics on the Return to Education", *Review of Economics and Statistics*, (November).
- Anderson, T. W. & Hsiao, Cheng, 1982. "Formulation and estimation of dynamic models using panel data," *Journal of Econometrics*, 18(1), pp. 47-82.
- Angrist, Joshua and Whitney Newey (1991), "Over-identification Tests in Earnings Functions with Fixed Effects", *Journal of Business and Economic Statistics* (July).
- Arellano, Manuel and Stephen Bond (1991), "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *The Review of Economic Studies*, 58(2), pp. 277-297.
- Ashenfelter, Orley and David Zimmerman (1997), "Estimates of the Returns to Schooling from Sibling Data: Fathers, Sons and Brothers", *Review of Economics & Statistics* v79, n1 (Feb.).
- Ashenfelter, Orley and Alan Krueger (1994), "Estimates of the Economic Return to Schooling from a New Sample of Twins", *American Economic Review* (December). (Note: This paper uses both instrumental variables and fixed effects. IV methods will be covered in greater detail in section 9 of the course.)
- Bifulco and Ladd (2006) "The Impacts of Charter Schools on Student Achievement: Evidence from North Carolina," *Education Finance and Policy*, 1(1), pp. 50-90.
- Light, Audrey (1995), "The Effects of Interrupted Schooling on Wages", *Journal of Human Resources* (Summer)

## DAHL SECTION

**Note: This list is preliminary and subject to change.**

### **Propensity Score Matching**

- Rosenbaum, Paul and Donald Rubin (1983), "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrika* 70:1, 41-55.
- Rosenbaum, Paul and Donald Rubin ((1985), "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score," *Journal of the American Statistical Association*, 79, 516-524.
- Deheji, Rajeev H. and Sadek Wahba, 1999. "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs," *Journal of the American Statistical Association*, December, 94:448, 1053-1062.
- Smith, Jeffrey and Petra Todd (2001), "Reconciling Conflicting Evidence on the Performance of Propensity Score Matching Methods," *American Economic Review*, May, 91:2, 112-118.
- Imbens, Guido. 2015. "Matching Methods in Practice: Three Examples." *Journal of Human Resources*, 50:373-419.

### **Control Function**

- Imbens, Guido and Jeffrey Wooldridge, "Recent Developments in the Econometrics of Program Evaluation," *Journal of Economic Literature*, 2009, 47:1, 5-86.
- Heckman, James and Salvador Navarro-Lozano, "Using Matching, Instrumental Variables, and Control Functions to Estimate Economic Choice Models," *The Review of Economics and Statistics*, February 2004, 86:1, 30-57.

### **Regression Discontinuity**

- Angrist, Joshua and Victor Lavy, "Using Maimonides Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Econometrics*, 1998, 114, 533-575.
- DiNardo, John and David Lee, "Economic Impacts of Unionization on Private Sector Employers: 1984-2001," *Quarterly Journal of Economics*, 2004, 119, pp. 1383-1441.
- Dahl, Gordon, Katrine Løken and Magne Mogstad (2014), "Peer Effects in Program Participation," *American Economic Review*, Vol. 104, No. 7, pp. 2049-2074.
- Hahn, Jinyong, P. Todd and W. Van Der Klaauw, "Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design," *Econometrica*, January 2001, 69(1), pp. 201-209.
- Imbens, Guido and Thomas Lemieux, "Regression Discontinuity Designs: A Guide to Practice," *NBER Technical Working Paper 337*, April 2007.
- Lee, David, "Randomized Experiments from Non-random Selection in U.S. House Elections," *Journal of Econometrics*, 2008, 142:2, 675-697.
- Lee, David and David Card, "Regression Discontinuity Inference with Specification Error," *Journal of Econometrics*, 2008, 142:2, 655-674.