Economics 104 Spring Quarter 2015

Instructor: Carlos Dobkin

Office Hours: Monday 2:00-3:00 (E2 Room 441)

E-mail: cdobkin@ucsc.edu

This class is focused on how to use regression to perform causal inference and to present and describe these results clearly. We will cover the analysis of Randomized Control Trial (RCT) which is the gold standard for causal inference. We will then examine four other approaches: regression, instrumental variables, regression discontinuity, and difference in differences. Class attendance is required. I will cold call people in class and have a short quiz at the end of most classes. The grade is based on in class quizzes (15 percent), write ups and homework (25 percent), and two papers (60 percent). You may use any statistical package you want to conduct the analysis for the homework and papers but only R and Stata will be supported by the teaching assistants. The sections will be focused on teaching you how use R.

We will use R to do the Statistical Analysis in the Homework. Please install it on your laptop before the first section. You can download R for free by going to the [this website](http://cran.cnr.berkeley.edu/) and clicking download R. Once it is installed you should install [RStudio](http://www.rstudio.com/products/rstudio/download/).

A useful text you can purchase on Amazon is ***"Mastering 'Metrics: The Path from Cause to Effect"***

**Frequently Asked Questions**

* + **What do you want for the write up of the journal articles?** I would like 2-3 paragraphs that convey the central message of the paper.
  + **Why can't I download the papers from the reading list below?** You need to be on a campus IP address to access the papers as they are from sites UCSC pays for.
  + **What is the face sheet I need to turn in with a revised paper?** It is one page of bullet points describing all the major and minor fixes you made to the paper in the revision. You should fix and note how you fixed both the issues flagged in the comments on your original paper and anything else that you noticed needed work such as narrative flow, grammar or details of your argument.

**Teaching Assistants Office Hours (All held in E2 403G)**

* + Kyle Neering (kneering@ucsc.edu) Tue 3-4pm & Wed 10-11am
  + Liam Rose (lrose1@ucsc.edu) Tue 12-1pm & Thurs 12-1
  + Brian Giera (bgiera@ucsc.edu) Thu 3:30-4:30pm & Fri 2-3pm

**Section Times (All held in Porter Academy 246)**

* + Mon 3:30-4:40pm - Kyle
  + Tue 6-7:10pm - Brian
  + Wed 12:30-1:40pm - Liam
  + Wed 2-3:10pm - Liam
  + Thur 4-5:10pm - Kyle
  + Fri 9:30-10:40am - Brian

**Homework**

* + Homework 1: Evaluating a Job Training Experiment [Homework 1](http://people.ucsc.edu/~cdobkin/HW%201.pdf)
  + Homework 2: Does Regression Get us the "Right" Answer? [Homework 2](http://people.ucsc.edu/~cdobkin/HW%202.pdf)
  + Homework 3: Does the Minimum Legal Drinking Age Reduce Alcohol Consumption[Homework 3](http://people.ucsc.edu/~cdobkin/HW%203.pdf)
  + Homework 4: Does the Minimum Legal Drinking Age Reduce Mortality[Homework 4](http://people.ucsc.edu/~cdobkin/HW%204.pdf)

**Paper**

* + First Paper [First Paper](http://people.ucsc.edu/~cdobkin/First%20Paper.pdf)
  + First Paper [Second Paper](http://people.ucsc.edu/~cdobkin/Second%20Paper.pdf)

**Data & Useful Links**

* + [Video of how to load data into R](http://www.youtube.com/watch?v=VLtazaiYo-c)
  + [Liam's web page](https://sites.google.com/a/ucsc.edu/liamrose/teaching/econ104spring15) (section code & videos on R)
  + Survey on Texting [csv](http://people.ucsc.edu/~cdobkin/texting_survey.csv) [code](http://people.ucsc.edu/~cdobkin/Code%20for%20Texting%20Example.r)
  + HW 1 Data: National Supported Work - Comparison Group from Experiment [CSV](http://people.ucsc.edu/~cdobkin/nsw.csv) or [Stata](http://people.ucsc.edu/~cdobkin/nsw.dta)
  + HW 2 Data: National Supported Work - Comparison Group from PSID [CSV](http://people.ucsc.edu/~cdobkin/NSW_PSID.csv) or [Stata](http://people.ucsc.edu/~cdobkin/NSW_PSID.dta)
  + [Age Profile of Mortality Rates](http://people.ucsc.edu/~cdobkin/mortality%20data.csv)
  + HW 3 Data: [Alcohol Consumption from the National Health Interview Survey](http://people.ucsc.edu/~cdobkin/NHIS%20Data.csv)
  + HW 4 Data: [Mortality Rates from Death Certificates](http://people.ucsc.edu/~cdobkin/mortality%20data.csv)
  + Age Profile of Crime Rates in California [CSV](http://people.ucsc.edu/~cdobkin/MLDA%20Crime%20CA.csv)

**Section Data and Code**

* + Section 1: Setting up R and basic R programming [Section Notes](http://people.ucsc.edu/~cdobkin/Section%201.pdf), [Voter turnout experiment data](http://people.ucsc.edu/~cdobkin/voting.csv) & [Some code from Liam](http://people.ucsc.edu/~cdobkin/Section%201%20-%20Code.R)

**Syllabus**

Schedule of Lectures, Readings and Assignments (This is subject to change depending on how rapidly we proceed)

Week 1

* + Lecture 1 (Tuesday, March 31): Review of Regression
  + Lecture 2 (Thursday, April 2): Inference: SE, p-values, significance tests and how to present regression results

Week 2

* + Lecture 3 (Tuesday, April 7): Introduction to Randomized Controlled Trials
    - **Write up of article due #1:** Holland, Paul ["Statistics and Causal Inference."](http://www.jstor.org/sici?sici=0162-1459%2528198612%252981%253A396%253C945%253ASACI%253E2.0.CO%253B2-7) Journal of the American Statistical Association, 1986, 81, 945-960.
  + Lecture 4 (Thursday, April 9): More on Randomized Controlled Trials
    - **Homework 1 Due:** Check for balance in National Supported Work Experiment and estimate treatment effect (Cleanly present results and include annotated code archive)

Week 3

* + Lecture 5 (Tuesday, April 14): Regression - Correction on Observables
    - **Write up of article due #2:** Lalonde, Robert. ["Evaluating Econometric Evaluations of Training Programs with Experimental Data."](http://www.jstor.org/sici?sici=0002-8282%2528198609%252976%253A4%253C604%253AETEEOT%253E2.0.CO%253B2-P) American Economic Review, 1986, 76, 604-620.
  + Lecture 6 (Thursday, April 16): Regression - Correction on Observables
    - **Homework 2 Due:** Evaluation of Non Experimental Control Arm vs Treatment Arm of Lalaonde Study

Week 4

* + Lecture 7 (Tuesday, April 21): Regression - Correction on Observables
  + Lecture 8 (Thursday, April 23): Instrumental Variables
    - **First draft of first paper due:** Evaluation of NSW and why regression fails in this context

Week 5

* Lecture 9 (Tuesday, April 28): Instrumental Variables
  + **Write up of article due #3:** Angrist, Joshua, Guido Imbens, and Donald Rubin. ["Identification of Causal Effects Using Instrumental Variables."](http://www.jstor.org/sici?sici=0162-1459%2528199606%252991%253A434%253C444%253AIOCEUI%253E2.0.CO%253B2-O) Journal of the American Statistical Association, 1996, 91, 444-455.
* Lecture 10 (Thursday, April 30): Regression Discontinuity: Overview and examples
  + **Second draft of first paper due:** Evaluation of NSW and why regression fails in this context

Week 6

* Lecture 11 (Tuesday, May 5): Regression Discontinuity: Making Figures
  + **Write up of article due #4:** Imbens, Guido and Thomas Lemieux. ["Regression Discontinuity Designs: A Guide to Practice."](http://www.sciencedirect.com/science/article/pii/S0304407607001091) Journal of Econometrics, 2008, 142, 615-635.
* Lecture 12 (Thursday, May 7): Regression Discontinuity: Choosing Regression Specification
  + **Final draft of first paper due:** Evaluation of NSW and why regression fails in this context

Week 7

* Lecture 13 (Tuesday, May 12): Regression Discontinuity
  + **Write up of article due #5:** ["The Minimum Legal Drinking Age and Public Health"](http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.25.2.133) Journal of Economic Perspectives, 2011, Vol 25 Number 2, 133-156.
* Lecture 14 (Thursday, May 14): Regression Discontinuity
  + **Homework 3 Due:** Effect of MLDA on Alcohol Consumption

Week 8

* Lecture 15 (Tuesday, May 19): Difference in Differences
* Lecture 16 (Thursday, May 20): Difference in Differences
  + **Homework 4 Due:** Effect of MLDA on Mortality

Week 9

* Lecture 17 (Tuesday, May 26): Difference in Differences: Panel models
* Lecture 18 (Thursday, May 28): More tools: Placebo tests, randomization inference, power analysis
  + **First draft of second paper due:** Evaluation of the Effectivness of the MLDA

Week 10

* Lecture 19 (Tuesday,June 2): Presenting Study Results to an Audience
* Lecture 20 (Thursday, June 4): Overview of Course
  + **Second draft of second paper due:** Evaluation of the Effectiveness of the MLDA

Exam Week

* **Final revision of second paper: Due by 5 PM Thursday June 11th**