Course Overview

This course explores the use of experiments and quasi-experiments in education research. We will examine papers that use advanced research methods such as instrumental variables, regression discontinuity, propensity score matching, natural experiments, differences-in-differences, and randomized trials.\(^1\)

Other than the readings, the major work of the class is a paper in which you replicate and extend an existing piece of education research. This class is ideal for PhD students early in their dissertation phase, as well as for advanced master's students who plan to work with empirical research in a professional setting.

Prerequisites

An introductory course in multiple regression analysis (e.g., EDUC 795, EDUC 794 or PUBPOL 639). The course assumes mastery of regression analysis and exposure to fixed effects, instrumental variables, and limited dependent variables. For those whose previous exposure to experimental and quasi-experimental methods is limited, we provide a section to deepen understanding of the methods. The time and location of this lab is to be determined.

Readings

You are expected to complete the assigned reading before class. These papers must be read closely in order to really understand what is going on. Read actively: circle what is unclear, highlight what you find most interesting, peruse the bibliography for useful sources, read the footnotes and tables especially closely. It is very useful to write a summary of the paper for your own files.

To guide this process of active and thoughtful reading, I will post questions about the articles. You can prepare your answers to these questions with a study group (I encourage this). You will not submit these answers. Rather, I will ask you these questions in class.

There is no course packet. Readings consist of:

1) Articles and working papers (all available online and I provide links, but if a link is broken please go hunting yourself)

2) *Mostly Harmless Econometrics* by Joshua Angrist and Jorn-Steffen Pischke (available online for $22)


\(^1\) Richard Murnane and John Willett teach a wonderful course on causal inference at the Harvard Graduate School of Education. They have generously shared their course materials, which I have drawn on in designing this course.
Course Requirements and Grading

1) Class Participation  
I will randomly choose students to answer the reading questions I distribute before class. The quality of your answers to these questions will determine your participation grade, along with the quality and quantity of your voluntary contributions to the class discussion.

2) Class Presentation (20 minutes, with slides)  
In November or December, you will present your research-in-progress to the class. Your slides should be posted to the course website by the day before your scheduled presentation. Co-authors should split the presentation so each gets a chance to speak.

3) Final Paper (20-25 pp)  
The major work of the class will be a paper in which you replicate and extend an existing article. I will provide a list of articles for which the underlying data is readily available. You can replicate an article that is not on this list, but it is up to you to obtain the necessary data. I encourage you to co-author with another student in the class; groups of up to three students are allowed to write a paper together. You will be graded on the components of writing the paper: progress reports, first draft and second draft.

   a) Three Progress Reports and Meetings to Discuss Them  25%
   b) First Draft  10%
   c) Second Draft  15%
   d) Final Draft  15%

Due Dates

Wed, Sept 28  Progress report (memo on proposed replication project)
Wed, Oct 26  Progress report
Wed, Nov 9  Progress report
Mon, Nov 21  First draft (comments back by Weds Nov 30)
Wed, Dec 7  Second Draft (comments back by Weds Dec 14)
Mon, Dec 19  Final Draft
Topic 1: Introduction to Causal Inference

Monday, Sept 12


Wednesday, Sept 14


Topic 2: Randomized Trials on Class Size

Monday, Sept 19


Topic 3: Experiments in Developing Countries: Tutors and Teachers

Wednesday, Sept 21


Abdul Latif Jameel Poverty Action Lab, "Making Schools Work for Marginalized Children: Evidence from an Inexpensive and Effective Program in India." (very short and accessible, written for practitioners)


Monday, Sept 26


Topic 4: Experiments in Postsecondary and Secondary Education

Wednesday, Sept 28


Monday, Oct 3


Topic 5: Instrumental Variables

Wednesday, Oct 5


Monday, Oct 10


Topic 6: Lotteries as Instruments

Wednesday, Oct 12


Monday, Oct 17 – No class, October break

Wednesday, Oct 19

**Topic 7: Regression Discontinuity**

*Monday, Oct 24*


*Wednesday, Oct 26*


**Topic 8: Differences-in-Differences**

*Monday, Oct 31*


*Wednesday, Nov 2*

Topic 9: Fixed Effects as an Identification Strategy

Monday, Nov 7

Angrist & Pischke (2009). *Mostly Harmless Econometrics* Ch 5 through 5.3


Wednesday, Nov 9


Topic 10: Propensity Scores and Matching [under construction]

Monday, Nov 14


Wednesday, Nov 16: David Figlio


Topic 11: Additional Topics (November 21): Brian Jacob

Topic 12: Practice Presentations (November 28 & 30)

This week you will do the first run of your 20-min presentation. Each team will be assigned a slot for their presentation. Emily House and other alumni of EDUC 820 will be your audience. They will provide coaching and feedback.

Topics 13/14: Presentations and Additional Topics (December 5, 7, and 12)

This week you will do the final run of your 20-min presentation. Each team will be assigned a slot for their presentation. The class and Dynarski will be your audience.