Instructor

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Course Overview

This seminar will explore different methods typically used across various social science disciplines for eliciting causal effects from observational data. The main objective of this course is to turn students into educated users and consumers of these different methods. Importantly, this often means understanding what the method cannot do, as much as what it can. Topics to be covered include identification, natural experiments, instrumental variables, propensity scores, matching estimators, regression discontinuity designs, quantile regression and panel models. Additionally, related topics including treatment effect heterogeneity and treatment compliance will be discussed. Though the theoretical treatment of all topics will be covered, empirical applications of all methods will be stressed, with an emphasis in criminological research.

The framework of the course is intended to be ½ econometrics/statistics/methods course and ½ critical review seminar focusing on dissection of relevant empirical applications (both good and bad) in criminological literature. The general format of each topic will be as follows: the first week of a topic will typically focus on learning the methodology, including using various statistical packages (mainly Stata) to implement, and interpretation. The second week (or weeks) will focus on critically reviewing the usage of the methodology in empirical crime applications.

Prerequisites

Proficiency in basic statistics and regression (e.g., the material that covered in CCJS 620 and 621, or something equivalent to a first-year MA sequence) is essential to go forward in this course. If you are not current or proficient, I strongly suggest that you review that material and/or revisit this course at a later point in your doctoral studies. Given the advanced nature of this course, a strong willingness to put in appropriate time and effort to do quality, quantitative empirical research in criminology/criminal justice is also a necessity. This means spending time outside of the lectures and assignments to learn and master the material. If you have questions about this, be sure to speak to me as soon as possible. I will treat this course as a responsibility and opportunity to train future colleagues; thus, I expect you to reciprocate and take this responsibility and opportunity seriously.
#1 Prerequisite

The most important thing needed to do well in this course is a healthy level of skepticism. This will often involve you coming to different conclusion than I do about the validity of some empirical approaches and results we discuss. If you take all the findings as being perfectly valid or agree with me all of the time, chances are you are not thinking through these issues in enough depth!!

Software

I will demonstrate in class and provide examples and support for most applications using Stata. Time permitting we may use R for some applications, too. However, you are welcome to use any statistical software you wish to complete the assignments, although I cannot guarantee I will be able to help you with all other packages.

Required Textbook


Additional (Not Required) Textbooks Which You May or May Not Find Useful


Additionally, Wooldridge’s homepage has a link dedicated to these texts where you can download the datasets used in his examples, as well as the solutions to some of the exercises: https://www.msu.edu/~ec/faculty/wooldridge/books.htm. I tend to find this extremely helpful in learning the material.

Course Policies

Class Attendance

All students are expected to attend class regularly and **come prepared to participate.** While you will not directly lose points for missing class, note that too many absences will affect your participation, and hence, your final grade.

Disability Accommodations

Persons with a documented disability requesting reasonable accommodations should contact me **by the second class meeting.** We will then work with Disability Support Services (DSS) to make arrangements with you to determine and implement appropriate academic accommodations.

Religious Observances

Any student who anticipates the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) to me, in writing, **by the second class meeting.** The request should not include travel time.

Late Work and Incomplete Grades

Extensions for assignments of exams will not be given except in cases of a medical or family emergency. Proper accompanying written documentation is required. Any problems that a student encounters must be brought to my attention as soon as possible. Incomplete grades are strongly discouraged and will be given only in situations where (a) a student has completed a majority of the course requirements and (b) shows substantial proof of hardship that necessitates more time to meet those requirements. As noted elsewhere, no late homework will be accepted. In the event of either of the above circumstances, a make-up assignment will be given. **To be clear, I have a strong prejudice against the use of “incompletes” to allow for more time to complete the requirements of graduate courses, and I reserve the right to decide on the appropriate extension case-by-case.**

Academic Dishonesty

Plagiarism will not be tolerated in this course under any circumstances. All instances of academic dishonesty will be reported directly to the Honor Council. If you engage in it, I will take the proper actions to ensure that you receive a failing grade in the course and are disciplined by the University to the fullest extent possible.
Grading Criteria

Your final grade for the course will be determined using the following formula:

Homework/Presentation 25%
Midterm Exam 25%
Term Paper Concept 25%
Participation 25%

100%

Notice that equal weight is given to your class participation as is everything else. This should stress to you that you will be expected to be prepared and participate in each class. Given the advanced nature of the course, this is essential for learning the material. Your final grade will be derived from this percentage (90-100%, A; 80-89.9%, B; 70-79.9%, C; < 70%, F).

Empirical Projects

There will be 3-4 homework assignments throughout the semester which are designed to give you practice applying some of the methods. Because half of the class is designed to stress discussing literature, we won’t be able to have an assignment for each topic or else the work load would be too great. Each project will count equally as far as the final grade. The project will be due at the beginning of class on the due date. Late homework will not be accepted and will count as a zero for that assignment. You may, and in fact are encouraged, to discuss solution strategies in groups. However, each student must turn in individually written answers to the homework assignments (this includes your own set of interpretations of any joint results). Solution sets will be made available when the assignments are returned. Additionally, on at least one assignment you will be asked to read an empirical paper and provide reviewer’s comments.

Midterm Exam

I will make more information, including the format, available to you as the date nears.

Presentation of an Empirical Paper

Each student will be required to present an (already published) empirical paper from the syllabus at the beginning of class, which will count equally as a homework assignment. The method used in each paper will be one which we have discussed in a previous lecture. I will do the first one in the third week to give you a roadmap. Your presentation should be no longer than 10-15 minutes, along with 3-4 discussion questions which we will open to the class. The presentation need not be formal.

The rest of the class is expected to actively participate in the ensuing discussion. I will provide the assigned reading for discussion; however, if there is another appropriate paper which you would like to discuss, feel free to contact me in advance to determine the feasibility. We will sign up for dates the second week.
Term Project

In lieu of a final exam, you will be required to submit a proposal for your own research paper. You are encouraged to choose an empirical strategy that we cover in class. As an independent researcher, it will be incumbent upon you to work in highly unstructured settings, and develop your own coherent, structured research paper. Therefore, this assignment is left intentionally ambiguous in order to give you practice at this very thing. You are welcome (and in fact encouraged) to use this assignment as an opportunity to craft a project which is ultimately publishable. Therefore, the extent to which you develop your proposal (including, e.g., literature review, research question, method and potential data; policy relevance) is up to you, but ones more thoughtfully constructed and developed will be graded higher, regardless of extent of completion. Your guidelines for this proposal should be to try answer (or craft a potential plan to answer) the following 4 questions:

1) What is the problem?
2) Why is it important?
3) How do you solve it?
4) What do you find?

Specifically, I want you to focus on a possible identification strategy which stands up to rigor (as opposed to definitively answering question #4), and for this the four additional questions Angrist and Pischke pose in Chapter 1 will be quite helpful. As compared to your 710 project, I am less interested in data and results than I am a thoughtful plan for identification.

You should begin thinking about your research questions immediately, and at some point mid semester, will be required to hand in a brief abstract to demonstrate sufficient progress. I will provide more detail on this nearer to the due date, although I can tell you that I will provide feedback and this will be ungraded.

Participation

Participation is the key element of this course. Though by nature of the material, some of the meetings will involve a lot of lecturing, questions and discussion are highly encouraged. In weeks where we shift to more of a seminar environment, excessive participation is vital. I want you to be obsessive about the readings, and do all readings prior to coming to class. Not all of the material you will find to be straightforward, so you are encouraged to discuss them with one another if you are having difficulty understanding them. My door is always open, so you are welcome to discuss things with me, too (whenever I am in the office with my door opened, you are free to stop in and talk, “office hours” or not.)

Also, a good reason not to talk is NOT because you think you’ll say something stupid and embarrass yourself. Believe me—I have been put in my place many times for making incorrect assertions!! We’ll try to keep the environment respectful and light so you feel comfortable speaking up.
Tentative Schedule and Readings

This is an extremely aggressive list of topics which may need to be modified. Thus, I reserve the right to adjust the schedule of topics. Also, time permitting, we may add additional topics, in which instance, I will make sure all assigned reading in done at least two weeks in advance. (Readings denoted as MHH refer to Angrist and Pischke book.)

Also, notice while the empirical articles deal with crime as much as possible, there are some readings which do not deal explicitly with crime. Trust me: if you read these, nothing bad is going to happen to you… in fact, you may realize just how underutilized some of these methods actually are in our field!

Readings marked with a “*” mean that you should at least be familiar with them, although they will likely be less important in the context of the week’s discussion.

January 27 – Introduction; Review of Regression and Introduction to Potential Outcomes Framework

MHH Chs. 1-3 (you can skip over pp. 69-91 for now)

(Note that much of this should be a review if you are familiar at all with regression; however, even so some of the notation may look a bit intimidating, but we will cover this in class.)


February 3 – Social Experiments


**February 10 – Identification of Treatment Effects and Bounds**


If you are brave, try to make it through (at least the first 11 pages) of this article:


**February 17 – Instrumental Variables and 2SLS, Part 1**

MHH Ch. 4


**February 24 – More IV and Applications**


**March 3 – Catch-up and Quantile Effects**

MHH Ch. 7

More TDB, depending on time

**March 10 – Midterm Exam**

**March 17 – No Class; Spring Break**

**March 24 – Propensity Scores; Matching, Stratification and Weighting**


**March 31 – Propensity Scores Applications and Extensions; Hidden Biases and Dosages**


April 7 – Regression Discontinuity, Part I

MHH Ch. 6


April 14 – More Regression Discontinuity and Crime Applications


April 21 – Panel Data and Fixed Effects

MHE Ch. 5


**April 28 – Difference in Difference Estimators**


**May 5 – Catch-Up**

**May 12 – Wrap-Up; Comparing Nonexperimental Estimators and other Hodgepodge**


