Meeting Time: Wednesdays 5:45pm-9:00pm  
Room: 14 E. Jackson, Room 602  
Instructor: Professor Anthony T. Lo Sasso  
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Overview 
Some of the most interesting and controversial research in the social and health sciences involves causal relationships. Here are a few recent examples:

- Neonatal intensive care units reduce mortality rates among very low birth weight babies by about 1 percentage point, and the cost per life saved in the NICU is about $550,000 (Almond et al, 2010).
- Recent increases in disability rates among Vietnam veterans are caused by features of the VA disability system and are not evidence of a delayed causal effect of military service (Angrist et al 2010).

The authors of these studies do not want us to think of their findings as mere correlations. They are making causal claims. What assumptions are the authors making? And what do they even mean by causality? What about those warnings that correlation does not imply causation? Should we believe their results?

This course is about the research designs and methods that researchers use to support causal inferences in the social sciences. Some specific topics include randomized experiments, instrumental variables, regression discontinuity designs, difference-in-differences models, regression analysis, and propensity score matching.

There are four broad goals of the course. The first is to learn some of the notation and language that social scientists use to describe causal effects. The second is to understand the logic and assumptions that support a set of research designs that are commonly used in quantitative social science research. The third is to gain some experience in implementing the methods using a statistical software package such as Stata. The fourth objective is to develop skill at reading, understanding, and critiquing “technical” scientific articles that make casual claims.

Learning Objectives 
By the end of the course, you will be able to:

- Express causal research questions using the formal notation and vocabulary used by economists, statisticians, and other researchers to describe causal relationships.
- Identify and judge the plausibility of various threats to the validity of causal inferences in applied settings.
- Identify and explain the structure, logic, and assumptions associated with several quasi-experimental research designs.
• Analyze data from various quasi-experimental research designs using statistical software and methods that are currently considered the best practice.
• Read and critique quasi-experimental research studies in writing and in conversations.

**Prerequisites**

Econ 508: Data Analysis II

**Required Textbook**


**Supplementary (Optional) Textbook**

- *Mostly Harmless Econometrics: An Empiricist’s Companion, Joshua Angrist and Jorn-Steffen Pischke, Princeton 2009*

**Software**

- Stata/Python/R (please note that I “speak” Stata, but you can use whatever language you in which you are comfortable—the important thing is that you understand the concepts)

**Grading**

- Assignments, generally weekly, some pretty quick, some more involved (50%)
- Term Paper (50%)

  $A = 93-100, A- = 90-92, B+ = 87-89, B = 83-86, B- = 80-82, C+ = 77-79, C = 73-76,$
  $C- = 70-72, D+ = 67-69, D = 60-66, F = <60$

**Term Paper: Replication of a Published Study**

Do a replication of a published paper highlighting one (or more) of the approaches we discuss in this course! Many journals require authors to add data and code to an online repository. Replication is (supposed to be) an integral part of science, but there is a very poor tradition of it in economics. Please see the detailed expectations and grading rubric for this project on D2L. **This is absolutely not something you can put off until the last week of class.**

**Course Modality**

This is an IN PERSON COURSE (yay!). You will need to attend in your flesh and blood human form, the old-fashioned way, if you want to learn. Of course, life (as they say) still happens and there may be occasions when you can’t attend. I will do my best to accommodate you in these situations. And of course I could get sick too. We’ll deal with these challenges as they arise.

**Super-awesome-definitely-NOT-boring-office-hours time:** 4:30-5:30pm Wednesday: I’ll be in my office in the Economics Department (room 6208) before class. Come visit me! Alternatively, you should feel free to contact me to schedule a time to chat whenever it’s convenient for you.
Other Course Information

The Discussion board on D2L will be where we “converse” offline about the material and you can ask questions. If you send me email questions about course material, I will respond by telling you post it. You may of course email me regarding any personal matters as they relate to the course.

Academic Dishonesty

You should certainly not cheat. It would be very bad if you do.
Schedule of Topics (Refer to D2L for papers)

1. **Introduction and Background Issues: Workflow, Analysis Plans, Identification**


   **Further Reading:**


2. **Randomized Experiments**

   MM, Chapter 1


   **Further Reading:**


3. **Controlling For Observable Confounders: Regression and Matching**

   MM, Chapter 2

   **Further Reading**


4. **Instrumental Variables**

MM, Chapter 3


**Further Reading**


5. **Regression Discontinuity Design**

MM, Chapter 4


**Further Reading**


6. **Panel Data and Difference in Differences**

MM, Chapter 5


**Further Reading**
