

# POLS 8500: CAUSAL INFERENCE

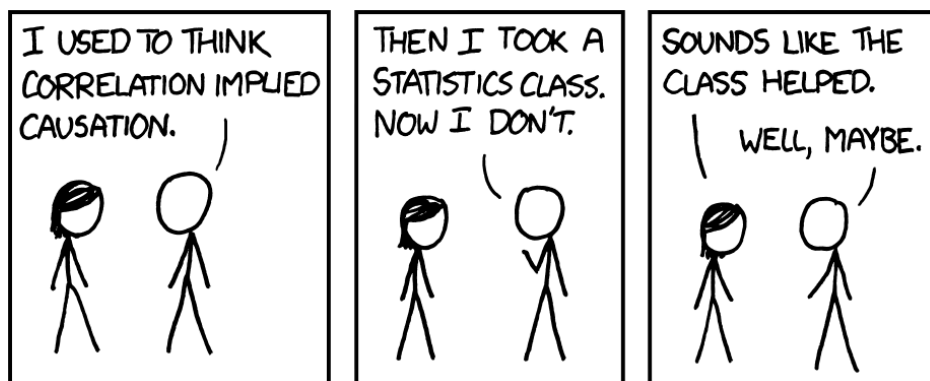
Spring 2023

---

<b>Professor:</b>	Joe Ornstein	<b>Time:</b>	Th 3:55pm – 6:40pm
<b>Email:</b>	<a href="mailto:jornstein@uga.edu">jornstein@uga.edu</a>	<b>Place:</b>	101B Baldwin Hall
<b>Website:</b>	<a href="https://github.com/joeornstein/causal-inference">github.com/joeornstein/causal-inference</a>		

---

Correlations alone are rarely satisfying. As social scientists, we don't just want to identify patterns in data – we want to convincingly explain *why* those patterns exist. In this class, we introduce the workhorse methods for inferring causal relationships from observational data, with a focus on building the skills you need to develop convincing research designs, identify useful variation in your data, and write error-free, reproducible code.



## Requirements

Your course grade will be based on three components.

- **Readings and Annotations (25%):** Each week, read the assigned chapters/articles and annotate using [Hypothesis](#).
- **Replications ( $2 \times 25\%$ ):** Choose two of *Optional Bonus Fun* papers on the syllabus below (each student must choose a different set of papers). Using their posted replication materials, recreate the paper's key results in a Quarto report. You will present your findings in a Mock Conference Presentation during class.
- **Final Paper (25%):** Write a final paper using one or more of the designs we introduced in class. This could be either an original research project or a re-analysis and extension of one of the papers you replicated.

## Course Outline

Here is the rough plan of action for our semester together. Readings abbreviated “NHK” denote our primary textbook, Nick Huntington-Klein’s *The Effect*, available in hard copy or [free online](#).

## Week 1: Garbage Cans, Causal Salads, and the Seven Deadly Sins

### Required Reading:

- Angrist, Joshua D, and Jörn-Steffen Pischke. 2010. “The Credibility Revolution in Empirical Economics: How Better Research Design Is Taking the Con out of Econometrics.” *Journal of Economic Perspectives* 24(2): 3–30.
- McElreath, Richard. 2021. *Regression, Fire, and Dangerous Things*.
- Schrodtt, Philip A. 2014. “Seven Deadly Sins of Contemporary Quantitative Political Analysis.” *Journal of Peace Research* 51(2): 287–300.

## Week 2: The Fundamental Problem

### Required Reading:

- NHK Chapters 1-4

## Weeks 3: D’ya Like DAGs?

### Required Reading:

- NHK Chapters 5-8

### Deeper Dives:

- Pearl, Judea, and Dana Mackenzie. *The Book of Why: The New Science of Cause and Effect*. Penguin Science. London: Penguin Books, 2019.

## Week 4: Experiments (Both Natural and Unnatural)

### Required Reading:

- NHK Chapters 9-11

### Optional Bonus Fun:

- Montgomery, Jacob M., Brendan Nyhan, and Michelle Torres. “How Conditioning on Posttreatment Variables Can Ruin Your Experiment and What to Do about It.” *American Journal of Political Science* 62, no. 3 (2018): 760–75. <https://doi.org/10.1111/ajps.12357>.

## Week 4: Regression (Omniscience + Linearity)

### Required Reading:

- NHK Chapter 13

### Optional Bonus Fun:

- Cinelli, Carlos, and Chad Hazlett. “Making Sense of Sensitivity: Extending Omitted Variable Bias.” *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 82, no. 1 (2020): 39–67. <https://doi.org/10.1111/rssb.12348>.

## Week 5: Matching (Omniscience without Linearity)

### *Required Reading:*

- NHK Chapter 14

### *Optional Bonus Fun:*

- Hainmueller, Jens. 2012. "Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies." *Political Analysis* 20(1): 25–46.

## Week 6-7: Fixed Effects

### *Required Readings:*

- NHK Chapter 16

### *Deeper Dives:*

- Hazlett, Chad, and Leonard Wainstein. "Understanding, Choosing, and Unifying Multilevel and Fixed Effect Approaches." *Political Analysis* 30, no. 1 (January 2022): 46–65.
- Imai, Kosuke, and In Song Kim. "On the Use of Two-Way Fixed Effects Regression Models for Causal Inference with Panel Data." *Political Analysis* 29, no. 3 (July 2021): 405–15.

## Week X-Y: Regression Discontinuity

### *Required Readings:*

- Cattaneo, Matias D, Nicolas Idrobo, and Rocío Titiunik. 2018. "A Practical Introduction to Regression Discontinuity Designs: Volume I."
- Marshall, John. 2022. "Can Close Election Regression Discontinuity Designs Identify Effects of Winning Politician Characteristics?" *American Journal of Political Science*.
- Ornstein, Joseph T. & Duck-Mayr, JBrandon. 2022. "Gaussian Process Regression Discontinuity". *Working Paper*.

### *Optional Bonus Fun:*

- Klačnja, Marko, and Rocío Titiunik. 2017. "The Incumbency Curse: Weak Parties, Term Limits, and Unfulfilled Accountability." *The American Political Science Review* 111(1): 129–48.
- Keele, Luke J., and Rocío Titiunik. 2015. "Geographic Boundaries as Regression Discontinuities." *Political Analysis* 23(1): 127–55.

## Academic Honesty

Remember that when you joined the University of Georgia community, you agreed to abide by a code of conduct outlined in the academic honesty policy called [A Culture of Honesty](#). It has some pretty specific things to say on the subject of cheating. Quite specific. I will report any and all dishonest conduct to the Office of the Vice President for Instruction.

## Mental Health and Wellness Resources

- If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
- UGA has several resources for a student seeking [mental health services](#) or [crisis support](#).
- If you need help managing stress anxiety, relationships, etc., please visit [BeWellUGA](#) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
- Additional resources can be accessed through the UGA App.