

# Applied Econometrics and Data Analysis

ECON 121

# Some Stuff You Didn't Learn in 120A-C

---

- ▶ How to deal with observations that are not independent?
  - ▶ e.g., siblings, neighbors, coworkers.
- ▶ When to weight?
  - ▶ e.g., sampling weights, population weights.
- ▶ How to model non-linear relationships?
  - ▶ Polynomials are not the only answer.
- ▶ What to do with non-continuous dependent variables?
  - ▶ e.g., voting, product choice, unemployment duration, work hours.
- ▶ What is causality?
  - ▶ Hint: not a regression.
- ▶ How to implement a difference-in-differences design?
  - ▶ Hint: can be a regression.



# Roadmap for the Semester

---

- ▶ “Review” of basic statistics, linear regression
  - ▶ Ceci n’est pas une review.
  - ▶ On each topic, we will add nuance, expand our capacity to deal with complex data, build intuition for which tools to use when.
- ▶ Non-parametric regression
- ▶ Maximum likelihood and limited dependent variables
- ▶ Panel data
- ▶ Causality
  - ▶ Conceptualization: Rubin Causal Model.
  - ▶ Tools: randomized experiments, difference-in-difference methods, instrumental variables, regression discontinuity.



# Course Structure

---

## ▶ Text

- ▶ No textbook, will rely on course notes.

## ▶ Participation

- ▶ Participation matters for grade but can take on many forms.

## ▶ In-Quarter Assignments

- ▶ Problem sets (4): Stata/R-based, can work in groups (max 4 people) but must hand in own write-up. Lowest score dropped.
- ▶ Academic articles (4): group presentation for one, reading response for others. Lowest score dropped.

## ▶ End-of-Quarter Assignments

- ▶ Final reading response: you choose the article.
  - ▶ Final exam: open book, Stata-based. Basically a extra problem set.
- 



# Lectures and Assignments

---

## ▶ Lectures:

- ▶ Laptops to the back of the class.
- ▶ I will post written notes the night before each lecture at the latest. Print them or put them on your tablet for notetaking.
- ▶ I will post the whiteboard and lecture video afterward.

## ▶ Assignments:

- ▶ Work in groups on your problem sets. Talk to each other. If you need help finding problem set partners, let us know.
- ▶ Late assignments not accepted.
  - ▶ Lowest problem set and paper summary grades are dropped.
  - ▶ If you are late with an assignment, you should do it anyway.



# Statistical Computing

---

- ▶ **Course mostly uses Stata.**
  - ▶ Easier for basic implementation of methods we study.
  - ▶ Used in earlier econometrics courses.
  - ▶ Less common outside academia.
- ▶ **You may be interested in R.**
  - ▶ Some prefer it to Stata. Increasingly the standard in industry.
  - ▶ Will post R script for each Stata do file, but Stata in class.
  - ▶ You may use R on problem sets. Only recommended if you:
    - ▶ Feel very comfortable with R.
    - ▶ Feel very comfortable with Stata, want to challenge yourself.
- ▶ **Stuck on Stata?**
  - ▶ Refer to my examples from class (on GitHub).
  - ▶ Use Stata help / Stata manual / internet.



# Public Health Considerations

---

- ▶ Wear your mask. Need a break? Step outside.
- ▶ COVID symptoms? + test? Uncomfortable? Don't come!
  - ▶ Watch lecture online (but better in person, come if you can!)
  - ▶ A little more complicated on your group presentation day.
  - ▶ If you miss class a lot, you need to participate in other ways.
- ▶ Course modality depends on public health conditions.
  - ▶ Tuesday before Thanksgiving already on Zoom.
- ▶ My OH will be on Zoom. Connor's will be hybrid.
- ▶ Any concerns? E-mail me!



# Course Personnel

---

## ▶ Me: Tom Vogl

- ▶ I'm a user, not developer, of econometrics.
- ▶ I do research mostly on health and population issues, mostly in developing countries.
- ▶ Random fact: When I was 18, neuropsychologists told me I wasn't suited to study math or economics.

## ▶ TA: Connor Redpath

- ▶ 5<sup>th</sup>-year PhD student in the economics department.
  - ▶ Random fact: Once was paid \$50 + a plate of truffle risotto to wear a white wig and hold a lit candelabra for 2 hours at the Plaza Hotel.
- 





# ECONnected

***Informal conversations  
with Econ PhD students  
about grad school.***

What would inspire someone to pursue Economics Graduate School? What is PhD life like? Do your TAs/professors draw supply and demand curves, make mad money on the stock market, or re-hash the infamous Hayek/Keynes debates all day?

*ECONnected connects you with an Econ PhD student to discuss these questions!*

Whether you know graduate school is for you, and you want to talk about the best strategy for your application process, or you're only starting to consider graduate school and just want to learn more, we are here to get you the information you need.

If you are interested in speaking with a current economics PhD student, please fill out this google form: <https://forms.gle/KUDbuM2nFCAtpk6T9>.

Questions? Email us at [econnected-g@ucsd.edu](mailto:econnected-g@ucsd.edu).