McCOMBS SCHOOL OF BUSINESS

Salem Center for Policy

PRL introduction

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Introductions

- what class year are you?
- major?
- what are you hoping to get out of this class?

Warm up: marijuana

Let's play a game...

- You will flip a coin...
- if heads, you will write down the number 1 if your social security number ends with an even digit, otherwise write down 0.
- if tails, you will write down the number 1 if you ever used marijuana (smoke, edible, ...), otherwise 0.

Question: What percentage of students have used marijuana?

Warm up: marijuana

Law of total probability

$$\begin{aligned} P(1) &= P(1, \text{heads}) + P(1, \text{tails}) \\ &= P(1 \mid \text{heads})P(\text{heads}) + P(1 \mid \text{tails})P(\text{tails}) \end{aligned}$$

The bar "|" means conditional probability – like fixing a known state of the world.

When you're done, tell me whether you wrote down a 1 or 0!

What is this class all about?

Evaluating policies (economic, governmental, otherwise) using the best available evidence + techniques.

How are we doing this?

The evidence is data.

- data cleaning and organization
- data summarization

The techniques are statistical learning and coding.

- coding
- statistical modeling
- causal inference
- unsupervised learning

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$$\underbrace{\text{evidence} + \text{techniques}}_{\text{thoughtful interpretation}} = \text{solid policy analysis!}$$

Class structure

Foundational topics (weeks 1 through ∼10)

(1) Causality
(2) Probability
(3) Prediction (regression)
(4) Unsupervised learning

How to do research (weeks 11 through 15)

(1) Reading academic papers
(2) Data visualization, avoiding pitfalls
(3) Resources at UT

Class structure

Before class

- readings and coding practice

During class

- lecture and discussion

After class

- homeworks (one per week)

Class structure

Evaluation

- homeworks (20%)
- in-class midterm (30%)
- research project (40%)
- engagement / participation (10%)

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Evaluation

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Research project

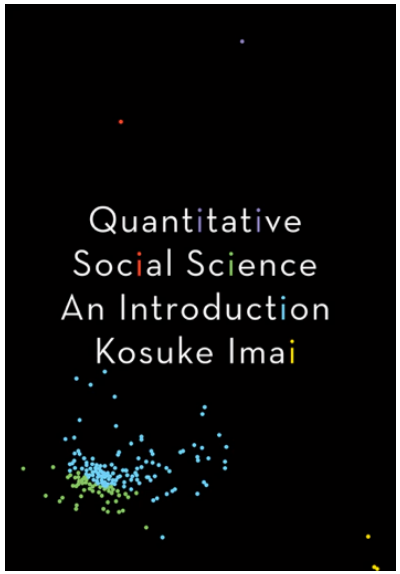
– in groups of up to 2
– you choose either
(i) replicate existing policy analysis from peer-reviewed research
(ii) conduct your own policy analysis, gather data and investigate

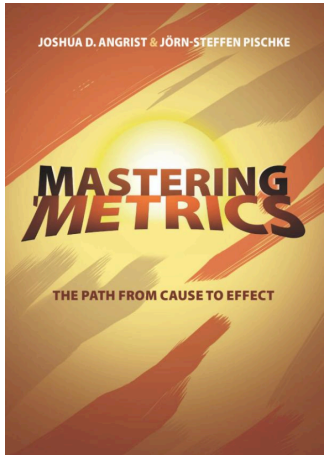
Research project

(i) replicate existing policy analysis from peer-reviewed research
(ii) conduct your own policy analysis, gather data and investigate

In either case, I expect a detailed and thorough analysis and report.
Let me know of your group, decision, and research question by March 25th.

Books





- we will use the left book (QSS) for readings and exercises
- we will use the right book (MM) for supplementary reading
- additional readings will be provided as we work our way through the semester

Expectations

- collaborate with your fellow students
- engage with the readings and in class discussions
- please make every effort to attend the coding / TA session on Wednesdays!
- I will be asking a lot of you because I know you're excellent students :)
- keep up with the fast pace and have fun!