Economics 113

Agenda

1. Course information


3. Key ideas we’ll use throughout the semester

4. Quote of the Day:

   *I’m a great believer in luck, and I find the harder I work, the more I have of it.*

   -Thomas Jefferson
Course information

- The syllabus is the main source of information for the course. Please check the syllabus before asking questions.

- Website: http://people.ucsc.edu/~aspearot

- Exams:
  - Exam 1: Wednesday, Oct. 22nd In-class
  - Exam 2: Friday, Nov. 7th In-class
  - Exam 3: Friday, Nov. 21st In-class
  - Exam 4: Tuesday, Dec. 16th 7:30-10:30PM
  - You have a week from now to let me know of any issues with any exam.

- Grades:
  - 20% Homework, 20% each exam.

- Book:
  - Introductory Econometrics by Jeffrey Wooldridge

- Office hours: 3:15-5:15PM Wednesdays, 459 Engineering 2

- Email: aspearot@ucsc.edu
Yes, I do curve.

No, it is not consistent from quarter to quarter.

The curve will be worse if you disrespect your classmates, TAs, or me.

Don’t cheat. It will not be tolerated. If you’re caught, you will receive a failing grade and be reported for academic misconduct.
We will eventually use the statistics program "Stata" to work on computer problems.

You are expected to either buy the program or use it at a lab.

- It is available in limited UCSC computer labs (Class Folders/Economics).

- There is a link on the course website to the Stata "Grad plan". The cheapest version is $35, which will be sufficient for the class.
On Soapbox...

- **Emails**
  - Do not send frivolous emails.
  - If you have something important to talk about, it’s always best to do it in person.
  - If your email can be answered by looking at the website or syllabus, it likely won’t be answered.

- **Other**
  - Exams won’t (and shouldn’t) be the homework with different numbers.
  - Now is the time to work hard.
  - You will solve problems in this course.
  - This course is useful. Believe it!!!
Basics

- What is statistics?
  1. Collecting raw data
  2. Manipulating raw data
  3. Summarizing data

- Types of statistics
  1. Descriptive statistics
  2. Inferential Statistics
Basics
Descriptive

- Descriptive statistics
  1. Numbers that summarize or describe
  2. Plots

- Descriptive Example:
  1. The Detroit foreclosure rate was 5% in 1997.
  2. Economics graduates 12 students per faculty member.
Basics
Inferential

- Inferential statistics
  1. Estimation
  2. Hypothesis testing
  3. Draw conclusions, given randomness

- Example
  1. Higher tariffs have a statistically significant effect on trade.
  2. At 99% confidence, living in an area with a significant cancer risk lowers housing prices between 11% and 20%.

- *Inferential statistics deal with hypotheses!*
What is econometrics?

⇒ The application of statistics to economic issues

What are economic issues?

⇒ Anything dealing with the interactions of agents

What’s the trick?

1. Finding the right data.

2. Settings are often non-experimental
A classic question in economics is the effect of education on wage outcomes.
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Wages Example

A classic question in economics is the effect of education on wage outcomes.

How can we claim a causal impact of education on wages when IQ also matters?
Textbooks and Educational Achievement

- A large policy literature advocates spending on textbooks and other educational inputs - sometimes over and above hiring more teachers
- Retrospective (non-experimental) evidence in Developing Countries
  - Textbooks lead to significant improvements in test scores in a majority of studies that evaluate textbook ownership.
- What else could lead to textbook ownership, and also correlate with educational outcomes?
- Glewwe, Kremer, and Moulin (2009)
  - Randomized provision of textbooks to schools in Kenya
  - Little to zero effect of textbooks on test scores
  - Did improve scores for the highest performing students prior to the intervention
- Bottom line - evaluating relationships in non-experimental settings is extremely difficult - but we will learn how to do it in this class.
Key Terms

- Population
  The "universe". All items of interest.
  Rarely view the entire population.

- Sample
  A random sample of the population

- Parameter
  Summary value of the population

- Statistic
  Summary measure of the sample
Summary measures
Preliminaries

- Standard notation

<table>
<thead>
<tr>
<th>Estimated from the sample</th>
<th>Parameter from the population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>$\hat{\mu}_x$</td>
</tr>
<tr>
<td>Variance</td>
<td>$\hat{\sigma}^2_x$</td>
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<tr>
<td>Standard Deviation</td>
<td>$\hat{\sigma}_x$</td>
</tr>
<tr>
<td>Size</td>
<td>$n$</td>
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- We estimate parameters to describe a population using the sample.

- The "hats" represent statistics estimated using the sample.

- What properties should these statistics have?
We want to estimate the height of all UCSC students.

Is this expensive?

Where should we go to sample?

1. Bus stop?
2. Bay tree?
3. Bar?
4. Office hours?

Are there problems with these sampling points?