

Economics 113

Agenda

- ① Course information
- ② Define Statistics/Econometrics.
- 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

Course information

Grades

- 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.

Computer Program Stata

- 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!*

Basics

- What is econometrics?

⇒ *The application of statistics to economic issues*

- What are economic issues?

⇒ *Anything dealing with the interactions of agents*

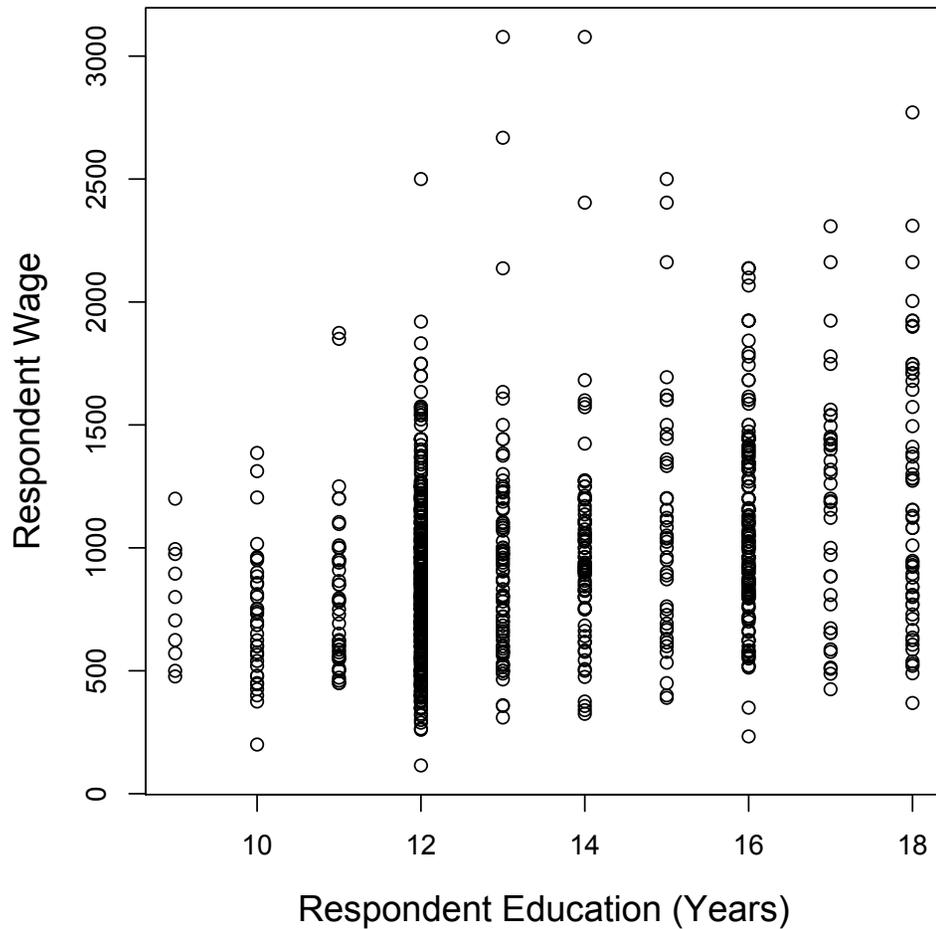
- What's the trick?

- ① Finding the right data.

- ② Settings are often *non-experimental*

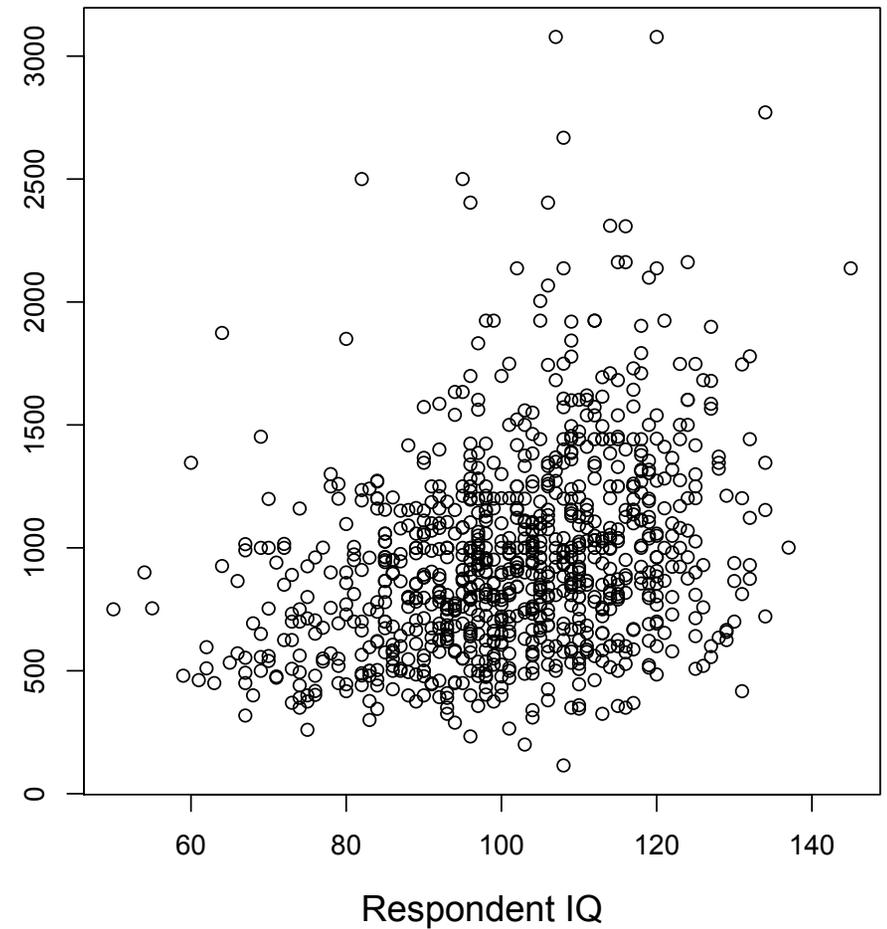
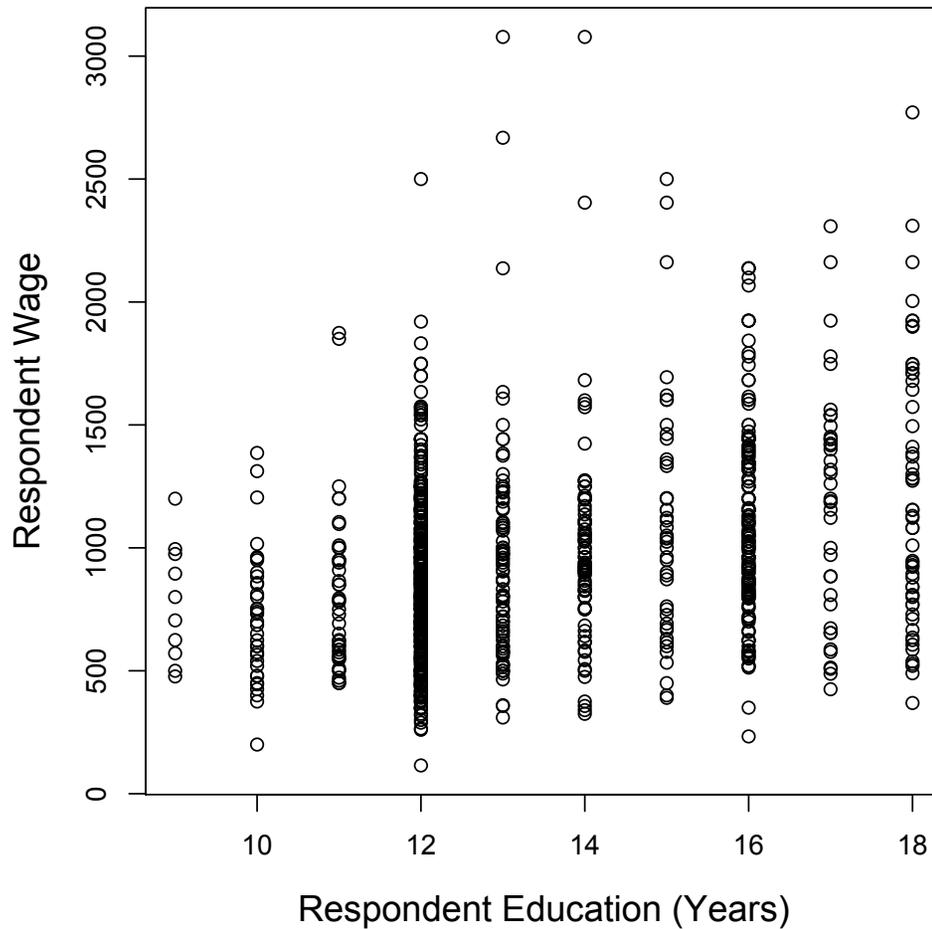
Wages Example

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



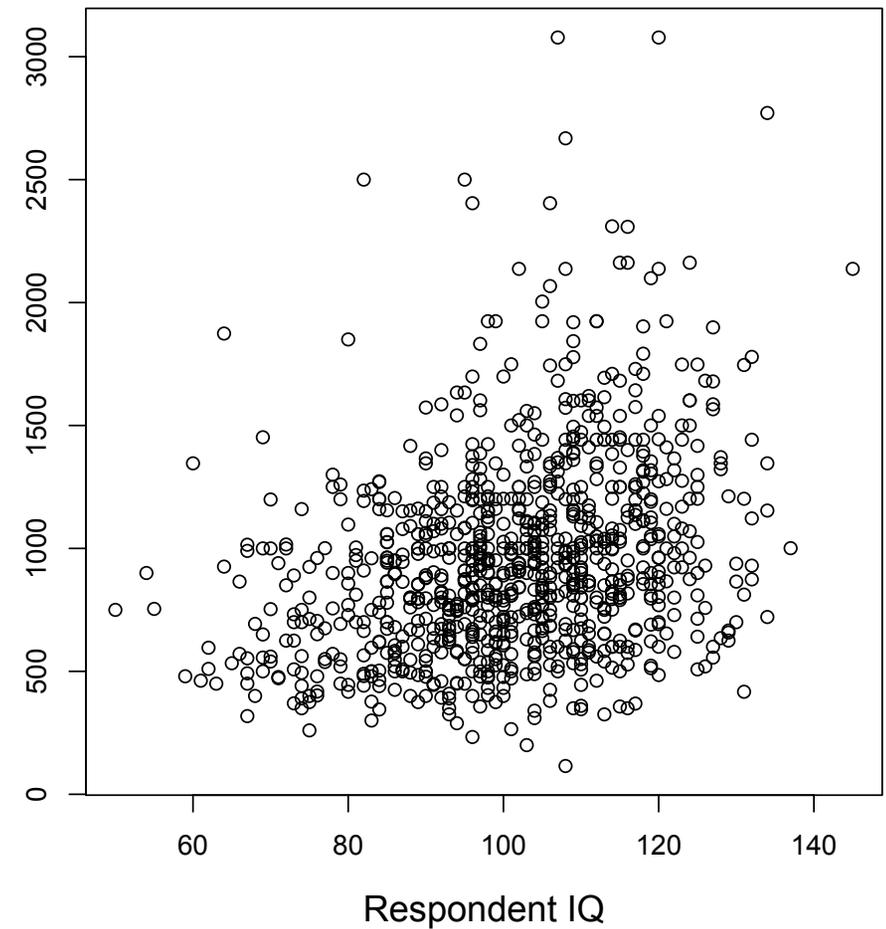
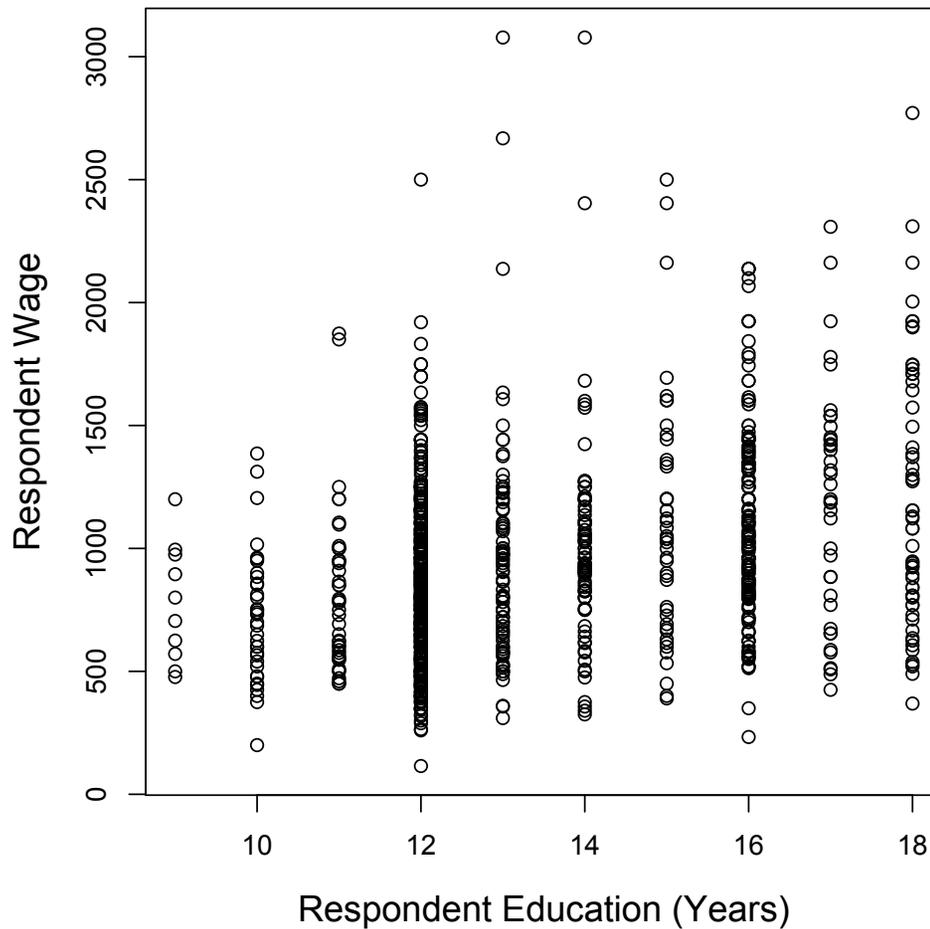
Wages Example

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



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

	Estimated from the sample	Parameter from the population
Mean	$\hat{\mu}_x$	μ_x
Variance	$\hat{\sigma}_x^2$	σ_x^2
Standard Deviation	$\hat{\sigma}_x$	σ_x
Size	n	N

- We estimate parameters to describe a population using the sample.
- The "hats" represent statistics estimated using the sample.
- What properties should these statistics have?

Summary measures

An example

- 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?