Main Ideas

- Classify data as discrete or continuous
- Determine if data is qualitative or quantitative
- Identify cross sectional and time-series data
SECTION 2.2
DATA CLASSIFICATION

- Classify data as discrete or continuous
- Determine if data are qualitative or quantitative
DATA CAN BE CATEGORIZED IN SEVERAL WAYS....

Quantitative or qualitative

Discrete or continuous

QUALITATIVE VS. QUANTITATIVE DATA

QUALITATIVE (CATEGORICAL)
Descriptive and conceptual, categorizes based on traits and characteristics

Examples
- Gender
- Ethnicity
- Educational Background
- Zip Code

QUANTITATIVE
Can be counted, measured, and expressed using numbers

Examples
- Height
- Weight
- Age
- Number of pizzas you eat in a week
DISCRETE AND CONTINUOUS DATA

**DISCRETE**
Data that can only take certain values

**Examples**
The number of students in this class
The number of slices of pizza you ate this week

**CONTINUOUS**
Data that can take any value

**Examples**
Height
The total weight of all the slices of pizza you ate this week

PUTTING IT ALL TOGETHER...

- Data
  - Qualitative
  - Quantitative
- Discrete
- Continuous
DISCRETE OR CONTINUOUS?

OPEN UP THE SURVEY RESULTS IN BB

- What are some qualitative variables?  
- Likert scales: Qualitative or Quantitative?
- What are some quantitative variables?
- Discrete or continuous?

NOT ALL DATA IS CREATED EQUAL...

THE SURVEY

- Were there any biased questions?
  - Leading questions
  - Assumptive questions
  - Double-barreled questions

CHECK OUT THE BAD SURVEY ON BB
Slide 7

What are some qualitative variables?
- Your current grade level
- Your major
- Where you live

All of these responses are clearly qualitative as the responses are words.

- How familiar are you with statistics on a scale from 1 to 5?
The responses here are qualitative as even though the response is numbers the numbers stand for categories of familiarity.

What are some quantitative variables?
- Your height - Continuous because you can measure partial inches.
- Your age - Discrete because we almost always count age by full years.
Bad Survey Questions

- Leading Question
  - Example: How awesome is Math?
    This question is inherently positive leading you to respond more positively. The same can be true for an inherently negative question.

- Assumptive Question
  - Example: How often do you study?
    A. A lot  
    B. Sometimes  
    C. Rarely

  The question is assuming that you study because it does not give you the option of never. Thus it's a bad question as possibly valid responses are not covered.
Slide 8

- Double-barreled questions

  - Example: You are taking Statistics because it's on your degree plan and your friend recommended it?  
    A. Yes  B. No

This question is putting two separate bits of info together you could be taking this class because of only one reason or the other but that response is not available.
SECTION 2.3
TIME SERIES VS. CROSS-SECTIONAL DATA

LEARNING OBJECTIVES

- Identify cross-sectional data
- Identify time series data
TIME SERIES DATA

Originate as measurements usually taken from some process over equally spaced intervals of time.

CROSS-SECTIONAL DATA

Measurements created at approximately the same period of time.
Slide 13 & 14

1: Cross-Sectional data because it's all data from January 2012. So it's mass data all taken at the same time.

2: Time Series because it's the same measurement taken at different points in time.

3: Cross-Sectional

4: Time Series for the same reason as 2.