

STAT 231

Day 1

- An *empirical study* is one where knowledge is gained by observation or experiment
- Empirical studies deal with *populations* and *processes* which are groups of individual *units*
- A population is a collection of units
- A process is a system by which units are produced, typically over time
- *Variates* are characteristics of units which define what the measurement of the unit looks like
- Terms we use to describe variates:
 - Continuous, ex. reals
 - Discrete, ex. integers
 - Categorical, ex. circle, square, triangle
 - Ordinal, ex. small, medium, large
 - Complex, ex. unstructured text

Day 2

- A *sample survey* is where information is obtained about a finite population
- An *observational study* is where information about the population is conducted without interfering with the observed phenomena
- In contrast, an *experimental study* is where we change something with the phenomena
- A sample survey still "interferes" by directly querying data from the units of the population
- An observational study often involves the data being collected over time, whereas a sample survey often only has one point of contact
- Don't always jump to graphical summaries!

Types of numeric measures

Measures of location:

- Median
- Mean
- Mode

Measures of variability:

- Sample variance
- Sample standard deviation
- Quantiles

- Interquartile range (distance between 1st and 3rd quartile)