TOPIC 5: POPULATIONS

Important Ideas:

- Samples and populations
  - A sample is accessible and tangible, but in some senses, we are not interested in the sample
  - A sample is important for what it tells us about a population
- Distribution of two types
  - A description of the way observations is distributed across a measurement scale in a sample
  - A function representing a theory we have about the population from which the sample is drawn.
- Population distributions come in a variety of shapes and two main types that reflect the type of data
  - Continuous
  - Discrete

Distributions as models for data:

- We can imagine a hypothetical population from which our random sample came
- We observe the distribution of the sample
- Imagine what the distribution of a much larger sample would look like
- What would an infinite sample look like?

Continuous Distributions:

- Used for continuous random variable
- Reflects the corresponding distinction between types of data
- Quantitative measurements measure amounts
- Smooth curve

Discrete Distributions:

- Used for discrete random variables
- Reflects the corresponding distinction between types of data
- Quantitative measurements count the number of things
- Separate properties, shown as spikes

Theoretical Distributions:

- Used for interpreting data:
  - Understanding variation in data
  - Making inferences, assessing uncertainty in a quantitative way
  - Components of models that have variation as an inherent feature
  - Evaluating extreme observations
- Can be used in any context and discipline
- Powerful mental framework