Statistical Reasoning

Sept. 13th

Introduction

- Use of statistics is **crucial to research**
- Allows researchers to **describe data** and **draw conclusions**

Descriptive Stats

→ **Purpose:** allows researchers to organize, summarize, and describe data in a concise way

→ **Examples:** correlation coefficient, percentages, histograms (bar graphs)

- **Central Tendency:** allows researchers to understand what's typical
  - **Median:** also called 50th percentile cuz it sits in the middle of the distribution of scores (DEAD CENTER)
    - We order the scores and take the middle number
    - If even, take two middle ones and divide the sum by 2
    - **Caution:** median relies on one single number - may not be representative of what's standard of the scores
  - **Mode:** most frequently occurring
    - **Caution:** just cuz a score repeats the most, dnt mean it represents the most typical score
  - **Mean:** mathematical average of the scores
    - Sum of all scores divided by total number of scores
    - **Advantage:** considers every single score
    - **Caution:** sensitive to extreme scores
      - Researchers reasonably remove outliers (and state if they do so)
- **Variability:** allow researchers to have an idea of the typical difference in their distribution of scores
  - **Range:** takes the highest and lowest score to find the difference
    - **Caution:** may not give a clear idea of typical diff. cuz only 2 scores considered
  - **Standard Deviation**
    - Much better measure of variability than range cuz it considers all scores

    - Looks at how individual scores differ from the mean (like report card)
    - Summarizes differences into a number representing typical diff.
- Much better measure of variability than range