

Math 4720: Statistical Methods

1st Week Summary (01/18/25)

- What is statistics?
- Population vs Sample.
- Observational studies vs Experiments
- Individuals and variables
- Confounding variable
- Two types of data: categorical [Nominal and Ordinal] and quantitative [Continuous and Discrete]
- Ways to chart categorical data: frequency table, bar graphs and pie charts
- Ways to chart quantitative data: histograms, box-plots

- Measure of the center

$$\text{Mean : } \bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

Median :

- Five number summary : Min, Q1, Median, Q3, Max

- Measure of Spread

$$\text{Variance : } s^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2, \text{ Standard deviation : } s = \sqrt{s^2}$$

$$\text{IQR : } IQR = Q3 - Q1$$

- What is outlier?
- Explanatory and response variables
- Relationship between two variables :
Comparing data using box-plot

