

Statistics Class Notes

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0.1 Definition of Statistics

“Statistics is the science of collecting, organizing, analyzing, and interpreting data in order to make decisions.”

1 Data

1.1 Data Sets

Population The collection of all outcomes, responses, measurements, or counts, that are of interest.

Sample A subset of the population.

Parameter A number that describes a population characteristic.

Statistic A number that describes a sample characteristic.

1.2 Types of Data

Qualitative Data Attributes, labels, or non-numerical entries.

Quantitative Data Numerical measurements or counts.

2 Sample Mean and Median

2.1 Definition

Sample Mean The average of the sample data points, however it may not be a data point.

$$\bar{x} = \sum_{i=1}^n \frac{x_i}{n} = \frac{x_1 + x_2 + x_3 \cdots x_n}{n}$$

Sample Median The middle value of the data.

$$\tilde{x} = \begin{cases} x + \frac{(x_{n+1})}{2} & \text{if } n \text{ is odd} \\ \frac{1}{2}(x_{n-2} + x_{\frac{n}{2}+1}) & \text{if } n \text{ is even} \end{cases}$$

Trimmed Mean A trimmed mean is computed by trimming off the largest and smallest set of values. For example a 10% trimmed mean is found by eliminating the largest 10% and smallest 10% and computing the mean of the remaining values. This may be useful for data that contains possible outliers. Denoted by $x_{tr(\text{percent})}$

3 Homework

p. 13 #'s 1.5, 1.6 p.17 #'s 1.11, 1.12