

Chapter 4 – Numerical Methods for Describing Data

Section 4.1 – Describing the Center of a Data Set

- **The Mean**

What is the symbol used to represent the sample mean?

How is the sample mean calculated?

What is the symbol used to represent the population mean?

How is the population mean calculated?

- **The Median**

How is the sample median calculated?

- **Comparing the Mean and the Median**

When is it preferable to use the median rather than the mean to estimate the center or typical value of a population distribution?

- **Trimmed Means**

What is the reason for using a trimmed mean?

What is the trimming percentage and how is it determined?

- **Categorical Data**

Why aren't the sample mean and median applicable to categorical data?

What is the symbol used to represent the sample proportion?

How is the sample proportion calculated?

What is the symbol used to represent the population proportion?

How is the population proportion determined?

Homework: #1, 6, 10, 12, 14, 15, 16

Section 4.2 – Describing Variability in a Data Set

- **Deviations from the Mean**

What is meant by the deviation from the mean and how is it calculated?

- **The Variance and Standard Deviation**

How are the variance and the standard deviation related?

How is the standard deviation related to deviations from the mean?

What symbols are used to represent the sample variance and standard deviation?

What symbols are used to represent the population variance and standard deviation?

How is the standard deviation used in describing a data set and what is its interpretation?

- **The Interquartile Range**

What is a quartile?

What percentiles correspond to the lower quartile, median, upper quartile, respectively?

What is the iqr and how is it calculated?

Why would the iqr be the preferred measure of variability for describing a data set?

Homework: # 22, 24, 27, 28, 29, 30, 31

Section 4.3 – Summarizing a Data Set: Boxplots

What advantage would a modified boxplot provide over a skeletal boxplot?

How is the iqr used in determining outliers for a data set?

Homework: # 32, 33, 36, 37

Section 4.4 – Interpreting Center and Variability: Chebyshev’s Rule, the Empirical Rule, and z Scores

- **Empirical Rule**

What is the Empirical Rule?

Compare and contrast Chebyshev’s Rule to the Empirical Rule:

- **Measures of Relative Standing**

What is the purpose of a z score and how is it calculated?

- **Percentiles**

How should a percentile be interpreted?

How is a percentile different than a z score?

Homework: # 39, 41, 43, 48, 51

Section 4 .5 – Interpreting and Communicating the Results of Statistical Analyses

- **Communicating the Results of Statistical Analyses**

What characteristic(s) of the data set determine whether the mean and standard deviation versus the median and iqr are used to summarize center and spread when describing the distribution of the variable?

- **Interpreting the Results of Statistical Analyses**

What is meant by the term *summary statistics*? Give some examples.

- **What to Look for in Published Data**

Write a paragraph summarizing the interpretation of numerical summaries.

- **A Word to the Wise: Cautions and Limitations**

Briefly summarize the common mistakes when computing or interpreting numerical measures:

Homework: # 53, 54, 58, 60, 61, 66, 70, 73