

## Practice Exercise 1: Central Tendency and Variability

**Directions:** Use the Frequencies option in SPSS to answer the questions based on the following scenario.

### Scenario:

A teacher asked his students how much time they spent studying for their statistics exam. The results (in minutes) were:

222 161 239 135 209 179 222 201 228 222 235 228 179 47 238 150 99 201

### Questions:

1. What is the value of  $n$ ?
2. What is mean amount of time spent studying?
3. What is the median amount of time spent studying?
4. What is the value of the mode?
5. What is the maximum amount of time spent studying? 6.  
What is the minimum amount of time spent studying?
7. What is the range of times spent studying?
8. What is the value of the standard deviation for this set of study times?
9. What is the value of the variance for this set of study times?
10. Was the median equal to one of the study times that was included in the data?  
Why.
11. For this example, which measure of central tendency would be the most appropriate measure to report? Why.
12. What is the standard abbreviation for the mean when reporting the findings in an article?
13. What is a standard abbreviation for the median when reporting the findings in an article?
14. What is the relationship between the standard deviation and variance?
15. What is a standard abbreviation to the standard deviation?
16. Write a statement as it might appear in an article that reports the measures of central tendency and variability.

## **Practice Exercise 2: Central Tendency and Variability**

**Directions:** Use the Frequencies option in SPSS to answer the questions based on the following scenario.

### **Scenario:**

A market research team went from store to store in a local mall, checking prices of jeans.

The results were:

42 56 69 49 44 79 39 31 40 30 67 92 46 66 41 99 52 51 51 75 76 34 44

### **Questions:**

1. What letter is commonly used to represent the sample size or number of items included in the analysis?
2. What is the sample size for this analysis?
3. What is the mean price for a pair of jeans?
4. What is the median price for a pair of jeans?
5. What is the lowest price for a pair of jeans?
6. What is the highest price for a pair of jeans?
7. What is the value for the range?
8. What is the value for the standard deviation?
9. What is the value for the variance?
10. What abbreviation is commonly used in articles to denote the standard deviation?
11. Write a statement as it might appear in an article that reports the measures of central tendency and variability.

### Practice Exercise 3: Graphical Display of Data

**Directions:** Use the data from Practice Exercise 1 to complete the following.

1. Use the Frequencies function in SPSS to generate a frequency distribution.
  - A. What is the minimum amount of study time?
  - B. What is the maximum amount of study time?
  - C. What was the most frequently reported amount of study time?
  - D. Refer to the Cumulative Percent column of the frequency table. What percent of study times were equal to or less than 179?
  - E. What percent of study times were equal to or less than 235?
  - F. Based on the observed frequencies and the information in the Cumulative, what study time corresponds to the 50<sup>th</sup> percentile?
2. Use the Frequencies function in SPSS to generate another frequency distribution. In addition to the frequency distribution, specify the 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup> percentiles using the statistics submenu.
  - A. What is the value for the 25<sup>th</sup> percentile?
  - B. What is the value for the 50<sup>th</sup> percentile?
  - C. Is this the same value that was identified based on the cumulative percent information? If no, why do you think they are different?
  - D. How would you explain what the 75<sup>th</sup> percentile means?
  - E. Write a statement as it might appear in an article that reports the information derived from the frequency distribution and percentiles.

### **Practice Exercise 4: Graphical Display of Data**

**Directions:** Use the data from Practice Exercise 2 to complete the following.

Use the Frequencies function in SPSS to generate a frequency distribution. In addition to the frequency distribution, use the Statistics submenu to obtain measures of central tendency, variability, skewness, and percentiles.

1. What is the mean price for a pair of jeans?
2. What is the median price for a pair of jeans?
3. What is the minimum price for a pair of jeans?
4. What is the maximum price for a pair of jeans?
5. What is the range of jean prices?
6. What is the value for the standard deviation?
7. What are the values of the 25th, 50th, and 75th percentiles?
8. Are the mean and median the same value?
9. If the mean and median are not equal, what does this mean about the shape of the distribution?
10. Is the difference between the mean and median (mean - median) positive or negative?
11. Is this distribution positively or negatively skewed?
12. Does this correspond with the skewness value displayed in the output?
13. What is meant when a distribution is described as positively skewed?
14. Generate a Histogram using the price data from #1. Does the shape of the histogram support the conclusion that the distribution is positively skewed?
15. Write a statement as it might appear in an article that reports the information derived from the frequency distribution and statistics.