Section 3: Design and Statistics

Descriptive Statistics: Learning Outcomes

1. Frequency Distributions
   1. Describe and construct a frequency distribution table and identify when it is used.
   2. Identify N and calculate sigma from a frequency distribution.
   3. Identity when a grouped frequency distribution is used and the rules for grouping data.
   4. Construct and interpret scores on graphs (e.g., bar graph, histogram, polygon). Identify when it is appropriate to use each.
   5. Identify characteristics of various shapes of distributions (i.e., leptokurtic, mesokurtic, and platykurtic, symmetrical, positively skewed, negatively skewed, bimodal, etc.).
2. Central Tendency
   1. Describe the purpose of measuring central tendency.
   2. Define and compute the three measures of central tendency.
   3. Describe how the mean is affected when a set of scores is modified.
   4. Describe the circumstances in which each of the three measures of central tendency is appropriate to use.
   5. Explain how the three measures of central tendency are related to each other in symmetrical and skewed distributions.
3. Variability
   1. Describe the purpose of measuring variability
   2. Define and compute range.
   3. Describe these terms, the calculation of these terms, logic behind them, and notation: deviation score, sum of deviations around the mean, sum of squared deviations, variance (sample & population), standard deviation (sample & population), degrees of freedom.
   4. Describe the differences in calculations and conceptions of population and sample calculations of variability.
   5. Describe how the standard deviation is affected when a set of scores is modified.
4. Z-scores
   1. Calculate, interpret, and explain the use of z-scores.
   2. Transform z-scores into X values.
   3. Describe the effects of standardizing a distribution
   4. Transform scores to standardized distribution. Explain why researchers would want to transform z-scores into a distribution with a predetermined population mean and standard deviation.