Introduction to Statistical Analysis Using IBM SPSS Statistics (v24)

Course Outline

1. Introduction to statistical analysis
• Explain the difference between a sample and a population
• Explain the difference between an experimental research design and a non-experimental research design
• Explain the difference between independent and dependent variables

2. Examine individual variables
• Describe the levels of measurement used in IBM SPSS Statistics
• Use graphs to examine variables
• Use summary measures to examine variables
• Explain normal distributions
• Explain standardized scores and their use

3. Test hypotheses-theory
• Explain the difference between a sample and a population
• Design a test of a hypothesis
• Explain the alpha level
• Explain the difference between statistical and practical significance
• Describe the two types of errors in testing a hypothesis

4. Test hypotheses about individual variables
• Explain the sampling distribution of a statistic
• Explain the difference between the standard deviation and the standard error
• Use the One-Sample T Test to test a hypothesis about a population mean
• Use the Paired-Samples T Test to test on a "before-after treatment" effect
• Use the Binomial Test to test a hypothesis about a population proportion

5. Test the relationship between categorical variables
• Use the Chart Builder to graphically illustrate the relationship between two categorical variables
• Use percentages in Crosstabs to describe the relationship between two categorical variables
• Use the Chi-Square test in Crosstabs to test the relationship between two categorical variables

6. Test the difference between two group means
• Use the Chart Builder to graphically illustrate the difference between two group means
• Use Explore and Means to describe the differences between groups
• Use the Independent-Samples T Test to test whether the difference between two group means is statistically significant

7. Test the differences between more than two group means
• Use One-Way ANOVA to determine whether there are statistically significant differences between means of three or more groups
• Use post hoc tests to detect differences between group means

8. Test the relationship between scale variables
• Chart the relationship between two scale variables
• Use Pearson's correlation coefficient to examine the relationship between two scale variables
• Test hypotheses on Pearson's correlation coefficient
• Assumptions for using Pearson's correlation coefficient

9. Predict a scale variable
• Use Linear Regression to predict a scale variable with one or more scale variables
• Use Automatic Linear Modeling to predict a scale variable with categorical and scale variables

10. Explore nonparametric tests
• Describe when Nonparametric Tests should and can be used
• Use Nonparametric Tests for two or more independent samples
• Use Nonparametric Tests for two dependent samples