

**Advanced Statistical Analysis using SPSS**

**Course Number:** SPSS-106  
**Duration:** 2 days

**Overview**

This Advanced Statistical Analysis using SPSS training course teaches attendees more advanced SPSS® regression and analysis techniques. Students learn when and how to use each approach and how to interpret the results.

**Prerequisites**

All students should have taken [Introduction to SPSS](file:////training/spss-introduction) or have equivalent experience.

**Materials**

All SSPS training attendees receive an extensive library of SPSS examples to take with them following the training.

**Software Needed on Each Student PC**

This class uses SPSS Statistics 25 or newer but is appropriate to SPSS Statistics 19 and newer. Attendees are assumed to have their own copy of the software.

**Objectives**

* Master various analytic techniques in SPSS, including Discriminant, Survival, Cluster, Factor, Loglinear, Multivariate, and more
* Perform Binary and Multinomial logistic regression
* Understand when to apply each approach based on the characteristics of your data and the analytic outcomes you are seeking

**Outline**

* Introduction and Overview
  + Goals of the Course
  + Taxonomy of Methods
  + General Approach
* Discriminant Analysis
  + How Does Discriminant Analysis Work?
  + The Elements of Discriminant Analysis
  + The Discriminant Model
  + How Cases are Classified
  + Assumptions of Discriminant Analysis
  + A Two-Group Discriminant Example
  + Checking Variance Assumptions
  + How Does Discriminant Analysis Work?
  + The Elements of Discriminant Analysis
  + The Discriminant Model
  + How Cases are Classified
  + Assumptions of Discriminant Analysis
  + A Two-Group Discriminant Example
  + Checking Variance Assumptions
  + Running a Discriminant Analysis
  + The Discriminant Coefficients
  + Classification Statistics 2- 18 Prediction
  + The Assumption of Equal Covariance
  + Modifying the List of Predictors
  + Casewise Statistics and Outliers
  + Adjusting Prior Probabilities
  + Validating the Discriminant Model
  + Stepwise Model Selection
  + Three-Group Discriminant Analysis
* Binary Logistic Regression
  + How Does Logistic Regression Work?
  + The Logistic Equation
  + The Elements of Logistic Regression
  + Assumptions of Logistic Regression
  + A First Example of Logistic Regression
  + Interpreting Logistic Regression Coefficients
  + Making Predictions
  + The Accuracy of Prediction
  + Estimated Probabilities
  + Checking Classifications
  + Residual Analysis
  + Stepwise Logistic Regression
  + Summary
  + Comparison to Discriminant Analysis
* Multinomial Logistic Regression
  + Multinomial Logistic Model
  + Assumptions of Multinomial Logistic Regression
  + A Multinomial Logistic Analysis: Predicting Credit Risk
  + Interpreting Coefficients
  + Classification Table
  + Making Predictions
  + Appendix: Multinomial Logistic with a Two-Category Outcome
* Survival Analysis (Kaplan-Meier)
  + What is Survival Analysis
  + Concepts
  + Censoring
  + What to Look for in Survival Analysis
  + Survival Procedures in SPSS
  + An Example: Kaplan-Meier
  + Results
  + Extensions
* Cluster Analysis
  + How Does Cluster Analysis Work?
  + Types of Data Used for Clustering
  + What to Look at When Clustering
  + Methods
  + Distance and Standardization
  + Overall Recommendations
  + Hierarchical Cluster Analysis
  + Cluster Results
  + Obtaining Mean Profiles of Clusters
  + Relating Clusters to Other Variables
  + Summary of First Cluster Example
  + Example II: K-Means Clustering
  + Running K-Means Clustering
* Factor Analysis
  + Uses of Factor Analysis
  + What to Look for When Running Factor Analysis
  + Principles
  + The Idea of a Principal Component
  + Factor Analysis Versus Principal Components
  + Number of Factors
  + Rotation
  + Factor Scores & Sample Size
  + Methods
  + An Example: 1988 Olympic Decathlon Scores
  + Looking at Correlations
  + Principal Components Analysis with an Orthogonal Rotation
  + Principal Axis Factoring with an Oblique Rotation
* Loglinear Analysis
  + What are Loglinear Models
  + Relations Among Loglinear, Logit Models and Logistic Regression
  + What to Look for in Loglinear and Logit Analysis
  + Assumptions
  + Procedures in SPSS that Run Loglinear or Logit Analysis
  + Example: Analysis of Location Preference (Model Selection)
  + Running the Analysis
  + Significance Tests
  + Coefficient Interpretation
  + Summary
  + Logit Analysis with Specific Model (Genlog)
  + Results
* Multivariate Analysis of Variance
  + Why Perform MANOVA
  + Assumptions of MANOVA
  + What to Look for in MANOVA
  + SPSS Version 7 Differences
  + An Example: Memory Influences
  + Examining the Output
  + Post Hoc Tests
  + Post Hoc Testing of Means
* Repeated measures Analysis of Variance
  + Why do a Repeated Measures Study
  + The Logic of Repeated Measures
  + Assumptions
  + Example: One Factor Drug Study
  + Examining Results
  + Further Analysis
  + Planned Comparisons
  + Ad Viewing with Pre-Post Brand Ratings
  + Examining Results
  + Tests of Assumptions
  + Profile Plots
  + Extensions
* Conclusion