

**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