Advanced Statistical Analysis Using IBM SPSS Statistics

Course Outline

Factor Analysis

- Explain the basic theory of factor analysis and the steps in factor analysis
- Explain the assumptions and requirements of factor analysis
- Specify a factor analysis and interpret the output

K-Means Cluster Analysis

- Explain the basic theory of cluster analysis and the steps in doing a cluster analysis
- Explain the approach of K-Means cluster analysis
- Specify a K-Means cluster analysis and interpret the output

TwoStep Cluster Analysis

- Explain the basic approach of TwoStep cluster analysis
- Specify a TwoStep cluster analysis
- Use the Model Viewer to study and interpret the output

Binary Logistic Regression

- Explain the basic theory and assumptions of logistic regression
- Specify a logistic regression analysis
- Interpret model fit, logistic regression coefficients and model accuracy

Multinomial Logistic Regression

- Explain the basic theory of multinomial logistic regression
- Specify a multinomial logistic regression analysis
- Interpret model fit, logistic regression coefficients and model accuracy

Discriminant Analysis

- Explain the basic theory of discriminant analysis and how cases are classified
- Specify a two-group discriminant analysis and interpret the resulting output
- Complete additional analysis and validation of the discriminant model

Nearest Neighbor Analysis

- Explain the basic approach of nearest neighbor analysis
- Explain the meaning of k in the analysis and how cases are classified
- Specify a nearest neighbor analysis and interpret the resulting output in the Model Viewer

Kaplan-Meier Analysis

- Explain the general principles of survival analysis
- Specify a Kaplan-Meier analysis and interpret the resulting tabular and graphical output

- Specify a Kaplan-Meier analysis with a strata variable, and with pairwise comparisons

Cox Regression

- Explain the general principles of Cox regression
- Specify a Cox regression analysis and interpret the resulting tabular and graphical output
- Test the assumption of proportional hazards
- Specify a Cox regression with time-varying covariate for variables that don't meet the assumption of proportionality

Generalized Linear Models

- Explain the use of the exponential family of distributions and a link function and how these differential a generalized linear model from a general linear model
- Specify a Generalized Linear Model analysis and interpret the resulting output
- Check model assumptions and predictions

Linear Mixed Models

- Explain the general principles of a linear mixed model approach to data analysis
- Specify a Linear Mixed Model analysis and interpret the resulting output, building successive models of greater complexity