



BURKE INSTITUTE

# Practical Multivariate Analysis

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Seminar DA03

# Practical Multivariate Analysis

## SESSION 1: CLASSIC & CONTEMPORARY APPROACHES TO ANALYTICAL MODELING

- Univariate, bivariate, multivariate and unstructured data analytical techniques overview
- Comparing traditional and new ways of analyzing data
- Tools for helping to link and analyze multiple data sources together
- Review of fundamental principles for analyzing data

## SESSION 2: SELECTING THE MOST APPROPRIATE ANALYTICAL TECHNIQUES

- A structured framework of seven charts to help select the best analytical techniques for specific marketing research applications
- Exercise: Selecting the most appropriate analytical techniques for several applications
- A series of case examples applying a wide range of data analysis techniques.

## SESSION 3: MULTIPLE REGRESSION ANALYSIS

- Applications of regression
- Interpretation of computer regression output
- Understanding and dealing with multicollinearity
- Stepwise regression
- Data transformations, modeling interactions, and other improvements to the regression model

## SESSION 4: DISCRIMINANT, DISCRETE CHOICE, AND CONJOINT ANALYSIS

- Discriminant analysis description and applied examples
- What are conjoint and discrete choice analysis
- Case study illustrating the use of conjoint and discrete choice
- Analyzing conjoint and discrete choice results
- Simulation example

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## SESSION 5: FACTOR AND CLUSTER ANALYSIS

- Factor and cluster analysis: What are they, how they work and when they should be used
- Performing PCA/factor analysis: inputs and outputs
- How Principal Components Analysis differs from exploratory factor analysis
- Hierarchical cluster analysis and K-means cluster analysis
- Other forms of cluster analysis including LCA
- Exercise using factor and cluster analysis

## SESSION 6: MACHINE LEARNING / AI TECHNIQUES

- Overview of machine learning and AI
- Dynamic learning models vs static learning models
- Four main pillars of AI and ML
- The relationship between artificial intelligence, machine learning and deep learning
- Using machine learning and AI techniques for text analysis

## SESSION 7: BAYESIAN NETWORK ANALYSIS (BNA)

- Overview of Bayesian analysis
- Case studies using Bayesian analysis
- Instructor lead demonstration leveraging Bayesian analysis
- Practical applications of Bayesian analysis

## SESSION 8: CASE STUDY (GROUP WORKSHOP): ANALYSIS PLANS & OVERALL CUSTOMER LOYALTY MEASUREMENT

- Overview of case study exercise
- Review survey information and data table results
- Review supporting charts and graphs
- Determine what additional analysis techniques to apply to the data
- Provide recommendations to help inform business decisions