SPSS Statistical Analysis for Research: Hypothesis Testing, Regression and Reporting

19 – 23 April 2027
London - Central London four-star

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Introduction:

SPSS statistical analysis for research is where many studies lose credibility: hypotheses are tested with the wrong procedure, assumptions go unchecked, p-values are reported without effect sizes and output tables are pasted into reports unedited. This Core Concept course trains research staff to run a defensible inferential analysis in IBM SPSS Statistics, from coding a dataset through significance tests, regression, scale reliability and factor structure to written results. Working in the SPSS lab on health, education, social and public service datasets, participants build an SPSS Analysis Dossier with annotated syntax, APA-style tables and a draft results chapter.

Course Objectives:

- Convert research questions into testable hypotheses with defined variables, measurement levels and a matching statistical procedure
- Set up, code, recode and screen a research dataset in IBM SPSS Statistics using Variable View, value labels, missing value definitions and reproducible syntax
- Select and run the correct parametric or non-parametric test for group differences and associations after checking its assumptions
- Build and interpret multiple linear and binary logistic regression models, including coefficients, model fit and diagnostic checks
- Evaluate the reliability and dimensional structure of multi-item scales with Cronbach's alpha and exploratory factor analysis
- Report inferential results with confidence intervals and effect sizes in APA-style tables and a structured research results narrative

Target Audience:

- Researchers who design quantitative studies and must analyse and defend their own data
- Research and policy analysts who test hypotheses on survey, administrative or programme data
- Staff in public-sector research and statistics units who produce analytical reports for decision makers
- Postgraduate staff preparing theses, dissertations or journal manuscripts with quantitative results
- Monitoring and evaluation staff who compare outcomes between groups and over time

Course Outline:

Day 1: Research Questions, Variables and the SPSS Data File

- Research Question to Hypothesis Pair: Null and Alternative Statements
- Measurement Levels: Nominal, Ordinal and Scale Variables in Variable View
- Dependent, Independent, Control and Grouping Variable Map for a Study Design
- SPSS Data Entry, Value Labels and User-Missing Value Codes
- Command Syntax Editor: Pasting, Annotating and Rerunning Procedures

Day 2: Data Preparation, Descriptive Statistics and Estimation

- Recode Into Different Variables, Compute Variable and Reverse-Scored Items
- Data Screening with Explore: Outliers, Boxplots and Missing Data Patterns
- Frequencies, Descriptives and Crosstabs for a Sample Profile Table
- Normality Assessment: Histograms, Q-Q Plots, Skewness and Shapiro-Wilk Test
- Sampling Distribution, Standard Error and 95 Percent Confidence Intervals

Day 3: Hypothesis Testing for Group Differences and Associations

- Independent-Samples and Paired-Samples t-Tests with Levene's Test
- One-Way ANOVA with Tukey and Games-Howell Post Hoc Comparisons
- Pearson Chi-Square Test of Independence and Cramer's V
- Non-Parametric Alternatives: Mann-Whitney U, Wilcoxon and Kruskal-Wallis
- Pearson and Spearman Correlation Matrices with Significance Flags

Day 4: Regression Modelling, Scale Reliability and Factor Structure

- Multiple Linear Regression: Coefficients, Adjusted R-Squared and Residual Plots
- Multicollinearity and Influence Diagnostics: VIF, Tolerance and Cook's Distance
- Binary Logistic Regression: Odds Ratios, Classification Table and Model Fit
- Cronbach's Alpha, Item-Total Statistics and the Alpha-If-Item-Deleted Caveat
- Exploratory Factor Analysis: KMO, Bartlett's Test, Extraction and Rotation

Day 5: Analysis Lab: Results Tables and the Research Report

- Effect Size Calculation and Interpretation: Cohen's d, Partial Eta Squared and Odds Ratio
- Editing SPSS Viewer Pivot Tables into APA-Style Results Tables
- Education Study Dataset Lab: From Hypotheses to Tested Findings
- Public Service Evaluation Dataset Lab: Regression and Scale Checks
- SPSS Analysis Dossier Assembly and Results Chapter Peer Review

Skills You Will Gain:

- Hypothesis Formulation
- SPSS Data Preparation
- Statistical Test Selection
- Assumption Checking
- Regression Model Interpretation
- Scale Reliability Analysis
- Factor Analysis
- Statistical Results Reporting

Why Attend This Course:

- Return with an SPSS Analysis Dossier: an annotated syntax file, APA-style tables and a draft results chapter built in the lab
- Defend your choice of test to supervisors, reviewers and sponsors by showing that its assumptions were checked
- Save rework on future studies by rerunning saved, commented syntax instead of repeating menu clicks
- Compare analytical practice with researchers from health, education, social and public service settings

Conclusion:

Credible findings depend on matching each research question to the right statistical procedure and reporting what the numbers mean, not only whether they are significant. The five days move from hypotheses, variables and the SPSS data file, through data preparation, descriptive statistics and confidence intervals, to group-difference tests, correlation, regression, reliability and factor analysis. The final day is a hands-on lab on education and public service datasets that closes with an SPSS Analysis Dossier participants can reuse for their next thesis, evaluation or research report.