

Table of Contents

Preface	viii
Chapter 1: Quantitative Research	1
1.1: Foundational Concepts	1
Introduction.....	1
Constructs	2
Sampling.....	3
Measurement.....	7
1.2: Data Ethics	15
1.3: Microsoft Excel Fundamentals	18
Entering Data and Formulas.....	20
Formatting	26
Tables	28
Pivot Tables	30
Generating Random Numbers.....	38
1.4: Summary of Key Concepts	39
1.5: Chapter 1 Review	40
Chapter 2: Descriptive Statistics	45
2.1: Introduction to Descriptive Statistics	45
2.2: Measures of Central Tendency	47
Count	48
Mean.....	49
Median.....	50
Mode.....	51
2.3: Measures of Dispersion	53
Percent Distribution	54
Standard Deviation	54
Standard Error of the Mean	56
Variance.....	57
Skewness	57
Standard Error of Skewness.....	59
Standard Coefficient of Skewness.....	59
Kurtosis.....	60
Standard Error of Kurtosis	61
Standard Coefficient of Kurtosis	61
Range	62
Interquartile Range	62
2.4: Measures of Relative Position	64
Percentiles.....	65
Quartiles	65
2.5: Normal Curve	68
The Normal Distribution.....	68

Transforming Raw Scores Into Standardized Scores.....	69
Z-Score, $N(0,1)$	70
T-Score, $N(50,10)$	72
Normal Curve Equivalent (NCE) Score, $N(50, 21.06)$	74
Stanine Scores.....	74
Standardized Norm-Referenced Testing.....	75
2.6: Charts.....	76
Creating Charts.....	76
Line Chart.....	79
Area Chart.....	85
Column Chart.....	88
Bar Chart.....	91
Scatterplot.....	94
Histogram.....	99
Pie Chart.....	106
2.7: Automated Procedures.....	108
2.8: Summary of Key Concepts.....	114
2.9: Chapter 2 Review.....	115
Chapter 3: Inferential Statistics.....	119
3.1: Basic Concepts.....	119
Introduction.....	119
Probability.....	123
Parameter Estimation.....	127
Hypothesis Testing.....	133
Controlling Type I Error.....	147
3.2: Evaluating Test Assumptions.....	148
Introduction.....	148
Independence of Observations.....	148
Measurement Without Error.....	149
Normality.....	149
Absence of Extreme Outliers.....	152
Linearity.....	154
Homogeneity of Variance.....	155
Homoscedasticity.....	156
Sphericity.....	157
Absence of Restricted Range.....	157
Dealing with Deviations.....	157
3.3: Summary of Key Concepts.....	160
3.4: Chapter 3 Review.....	161
Chapter 4: Hypothesis Tests.....	167
4.1: Hypothesis Test Overview.....	167
4.2: Goodness-of-Fit Tests.....	172

One-Sample t-Test.....	173
Chi-Square Goodness-of-Fit Test.....	179
Kolmogorov-Smirnov Test.....	183
4.3: Comparing Two Independent Samples.....	191
F-Test of Equality of Variance.....	191
Independent t-Test.....	197
Mann-Whitney U Test.....	209
4.4: Comparing Multiple Independent Samples.....	215
One-Way Between Subjects ANOVA.....	217
Kruskal-Wallis H Test.....	230
Post Hoc Multiple Comparison Tests.....	237
4.5: Comparing Two Dependent Samples.....	239
Dependent t-Test.....	240
Wilcoxon Matched-Pair Signed Ranks Test.....	248
Related Samples Sign Test.....	255
McNemar Test.....	259
4.6: Comparing Multiple Dependent Samples.....	266
One-Way Within Subjects ANOVA.....	266
Friedman Test.....	281
Post Hoc Trend Analysis.....	289
4.7: Association.....	290
Introduction.....	292
Pearson Product-Moment Correlation Test.....	299
Partial and Semipartial Correlation.....	306
Reliability Analysis.....	313
Spearman Rank Order Correlation Test.....	325
Chi-Square Contingency Table Analysis.....	332
Phi (Φ), Cramér's V , and Contingency Coefficient (CC).....	340
4.8: Linear Regression.....	348
Bivariate Linear Regression.....	349
4.9: Chapter 4 Review.....	367
Chapter 5: Research Reports.....	371
5.1: The Research Report.....	371
5.2: Research Report Organization.....	372
Front Matter.....	372
Introduction.....	373
Literature Review.....	375
Methodology.....	376
Results.....	376
Discussion.....	379
End Matter.....	380
5.3: Chapter 5 Review.....	380

Appendix A: Statistical Abbreviations and Symbols	385
Appendix B: Glossary	391
Appendix C: About the Author	419
Appendix D: References	421
Index	425