

Table of Contents

Chapter 1: Quantitative Research	1
1.1: Foundational Concepts	1
Introduction	1
Constructs	2
Sampling.....	3
Measurement.....	7
1.2: Data Ethics	18
Principles	18
Statistical Reporting.....	20
1.3: Microsoft Excel Fundamentals	23
Cell Formatting	26
Cell Addressing.....	30
Entering Data.....	30
Entering Independent and Dependent Data.....	31
Entering Formulas	33
Tables	36
Pivot Tables	38
Generating Random Numbers.....	50
1.4: Summary of Key Concepts.....	51
1.5: Chapter 1 Review	52
Chapter 2: Descriptive Statistics.....	57
2.1: Introduction to Descriptive Statistics.....	57
Sample Size	60
2.2: Measures of Central Tendency	61
Mean.....	63
Standard Error of the Mean	64
Median.....	65
Mode.....	66
2.3: Measures of Dispersion.....	70
Variance.....	72
Standard Deviation	73
Maximum & Minimum	75
Range	76
Interquartile Range	77
Percent Distribution	78
2.4: Measures of Shape.....	80
Coefficient of Skewness	80
Standard Error of Skewness.....	82
Standard Coefficient of Skewness	83
Coefficient of Kurtosis.....	83
Standard Error of Kurtosis	85

Standard Coefficient of Kurtosis	85
2.5: Measures of Relative Position	87
Percentile.....	88
Quartile	90
2.6: Normal Curve.....	92
The Normal Distribution	92
Transforming Raw Scores Into Standard Scores	97
Z-Score, $N(0,1)$	97
T-Score, $N(50,10)$	100
Normal Curve Equivalent (NCE) Score, $N(50, 21.06)$	101
Stanine Scores	103
Standardized Norm-Referenced Testing.....	105
2.7: Charts.....	106
Creating Charts	106
Line Chart.....	109
Area Chart.....	117
Column Chart	121
Bar Chart	125
Scatterplot	129
Histogram	134
Pie Chart.....	148
2.8: Analysis ToolPak and StatPlus Procedures	152
2.9: Summary of Key Concepts.....	156
2.10: Chapter 2 Review	159
Chapter 3: Inferential Statistics	163
3.1: Basic Concepts	163
Introduction	163
Probability.....	167
Parameter Estimation	169
Hypothesis Testing.....	181
Controlling Type I Error	196
3.2: Evaluating Test Assumptions	198
Introduction	198
Independence of Observations.....	198
Measurement Without Error	199
Normality	199
Absence of Extreme Outliers.....	203
Linearity	204
Homogeneity of Variance.....	206
Homoscedasticity	207
Sphericity.....	207
Absence of Restricted Range	208
Dealing with Deviations	208

3.3: Summary of Key Concepts.....	210
3.4: Chapter 3 Review.....	211
Chapter 4: Hypothesis Tests	217
4.1: Hypothesis Test Overview.....	217
4.2: Goodness-of-Fit Tests	222
One-Sample t-Test.....	223
Chi-Square Goodness-of-Fit Test.....	230
Kolmogorov-Smirnov Test.....	236
4.3: Comparing Two Independent Samples	245
F-Test of Equality of Variance	246
Levene's Test.....	253
Independent t-Test.....	259
Mann-Whitney U Test	272
4.4: Comparing Multiple Independent Samples.....	279
One-Way Between Subjects ANOVA.....	280
Kruskal-Wallis H Test.....	293
Post Hoc Multiple Comparison Tests	299
4.5: Comparing Two Dependent Samples	301
Dependent t-Test	302
Wilcoxon Matched-Pair Signed Ranks Test.....	312
Related Samples Sign Test.....	319
McNemar Test.....	324
4.6: Comparing Multiple Dependent Samples	331
One-Way Within Subjects ANOVA.....	332
Post Hoc Trend Analysis.....	345
Friedman Test.....	347
4.7: Association	356
Introduction	357
Pearson Product-Moment Correlation Test.....	364
Partial and Semipartial Correlation	372
Spearman Rank Order Correlation Test	377
Chi-Square Contingency Table Analysis.....	384
Phi (Φ), Cramér's V , and Contingency Coefficient (CC).....	394
Reliability Analysis	402
4.8: Linear Regression.....	413
Bivariate Linear Regression	414
4.9: Chapter 4 Review	432
Chapter 5: Research Reports	437
5.1: The Research Manuscript.....	437
5.2: Research Report Organization.....	438
Front Matter	438
Introduction	439

Literature Review.....	442
Methodology	443
Results.....	444
Discussion	447
End Matter	448
5.3: Chapter 5 Review	449
Appendix A: Statistical Abbreviations and Symbols	453
Appendix B: Glossary	459
Appendix C: About the Author	487
Appendix D: References	489
Index	493