## Contents

	Preface Acknowledgments	viii X
1	Basic Descriptions of the Data: Measurement and Frequency Introduction 1 1.1 Percentage I 3 1.2 Percentage II 6 1.3 Frequency Distribution with Percentages 8 1.4 Cumulative Percentage and Percentile Rank 11 1.5 Rate per 100,000: Alternatives to Percentage 14 1.6 Nominal and Rank Order Data: Scale of Measurement I 17 1.7 Interval and Ratio Data: Scale of Measurement II 20	1
2	Describing the Data Introduction 23 2.1 Mean, Median, Mode, and Cumulative Percentage 25 2.2 Mean and Range 28 2.3 Median and Interquartile Range 31 2.4 Mean, Standard Deviation, and 68% Rule 34 2.5 Mean, Standard Deviation, and 95% and 99% Rules 37 2.6 Z-Scores I 40 2.7 Z-Scores II 44 2.8 T Scores 47	23
3	Displaying Data: Visualizing What Is There Introduction 51 3.1 Histogram 53 3.2 Mean, Median, and Histogram 56 3.3 Stem and Leaf Plot 59 3.4 Box and Whisker Plot 62 3.5 Line Graph with Rate per 100,000 65 3.6 Scatterplot 67 3.7 Scatterplot and Regression Line 70 3.8 The Normal Distribution 73 3.9 Excerpts on Sampling 77	51

4	Finding Relationships: Association and Prediction	81
	Introduction 81	
	4.1 Correlation ! 83	
	4.2 Correlation   86	
	4.3 Significance of a Correlation + 89 4.4 Significance of a Correlation + 93	
	4.5 Meta-Analysis with Correlation Coefficients 96	
	4.6 Correlation and R <sup>2</sup>   100	
	4.7 Correlation and R <sup>2</sup> II 103	
	4.8 Multiple Correlation 106	
	4.9 Linear Regression 109	
	4.10 Multiple Linear Regression 112	
5	Group Differences with Normal Distributions	117
	Introduction 117	
	5.1 t-Test for Independent Groups I 119	
	5.2 t-Test for Independent Groups II 123	
	5.3 t-Test for Dependent Groups   126	
	5.4 t-Test for Dependent Groups II 129 5.5 Effect Size (d-Type) I 132	
	5.6 Effect Size ( <i>d</i> -Type) II 137	
	5.7 <i>t</i> -Test for Dependent Groups with Effect Size I 140	
	5.8 t-Test for Dependent Groups with Effect Size II 143	
	5.9 Meta-Analysis with <i>d</i> -Type Effect Size 146	
	5.10 Statistical Power 150	
	5.11 One-Way ANOVA 154	
	5.12 One-Way ANOVA L 163	
	5.13 Two-Way ANOVA   162 5.14 Two-Way ANOVA    165	
	5.15 Percentages and 95% Confidence Interval 168	
	5.16 Standard Error of a Percentage and Confidence	
	Interval 173	
	5.17 Standard Error of the Mean and 95% Confidence	
	Interval 177 5.18 Standard Error of the Mean and 68%, 95%, and 99%	
	Confidence Intervals 181	
6	Nonparametric Tests for Group Differences	185
	Introduction 185	
	6.1 Chi-Square I 187	
	6.2 Chi-Square II 190	
	6.3 Chi-Square and Crosstabs 193	
	6.4 Chi-Square and Cramer's V 197	
	6.5 Chi-Square and Odds Ratios 200	

	<ul><li>6.6 Chi-Square with Post Hoc Tests 204</li><li>6.7 Wilcoxon-Mann-Whitney Test 207</li><li>6.8 Wilcoxon Matched-Pairs Test 210</li></ul>	
7	Test Construction Introduction 213 7.1 Item-Total Correlations 215 7.2 Test-Retest Reliability and R <sup>2</sup> 219 7.3 Internal Consistency and Cronbach's Alpha 223 7.4 Test-Retest Reliability and Validity Coefficients 226	213

Index

CONTENTS

229