Contents

Tables, Figures, and Boxes ix
Preface xiii
About the Author xvii

Introduction xviii
What This Book Is About xix
Facts and Values in Perspective xx
The Scientific Approach xxi
Conclusion xxii
Notes xxii

1. The Definition and Measurement of Concepts 1
Conceptual Definitions 3
Clarifying a Concept 3
A Template for Writing a Conceptual Definition 6
Operational Definitions 7
Measurement Error 9
Reliability and Validity 11
Evaluating Reliability 12
Evaluating Validity 14
Summary 17
Key Terms 18
Exercises 18
Notes 20

2. Measuring and Describing Variables 24
Measuring Variables 25
Levels of Measurement 25
Additive Indexes 27

Describing Variables 29
Nominal Variables 30
Ordinal Variables 32
Interval Variables 35
Summary 41
Key Terms 44
Exercises 44
Notes 46

3. Proposing Explanations, Framing Hypotheses, and Making Comparisons 48
Proposing Explanations 51
Framing Hypotheses 54
Common Mistakes in Hypothesis Writing 56
Intervening Variables 56
Making Comparisons 58
Cross-tabulations 59
Mean Comparisons 62
Graphing Relationships and Describing Patterns 63
Summary 69
Key Terms 70
Exercises 70
Notes 75

4. Research Design and the Logic of Control 78
Experimental Designs 80
Random Assignment 81
A Laboratory Experiment 82
A Field Experiment 83
Controlled Comparisons 84
Three Scenarios 86
Spurious Relationships 87
Additive Relationships 90
Interaction Relationships 92
The Many Faces of Interaction 94
Summary 96
Key Terms 97
Exercises 97
Notes 99

5. Making Controlled Comparisons 102
Cross-tabulation Analysis 103
Control Tables 103
Partial Effect 104
Identifying the Pattern 106
Graphing Controlled Comparisons 108

An Example of Interaction 109
Mean Comparison Analysis 112
An Example of Additive Relationships 113
Another Example of Interaction 115
Summary 118
Key Terms 118
Exercises 119
Notes 121

6. Foundations of Statistical Inference 123
Population Parameters and Sample Statistics 124
Random Sampling 125
Sample Size and Random Sampling Error 128
Variation Revisited: The Standard Deviation 130
n and σ 133
The Standard Error of a Sample Mean 136
The Central Limit Theorem and the Normal Distribution 137
Inference Using the Normal Distribution 141
Inference Using the Student's *t*-Distribution 145
What about Sample Proportions? 149
Summary 151
Key Terms 153
Exercises 153
Notes 155

7. Tests of Significance and Measures of Association 156
Statistical Significance 157
Comparing Two Sample Means 158
Comparing Two Sample Proportions 163
The Chi-square Test of Significance 165
Measures of Association 170
Lambda 171
Cramer's V 173
Somers's d_{yx} 174
Summary 177
Key Terms 178
Exercises 179
Notes 181

8. Correlation and Linear Regression 183
Correlation 184
Bivariate Regression 188
R-square 194
Adjusted R-square 197
Dummy Variable Regression 198
Multiple Regression 201

Interaction Effects in Multiple Regression 203
Multicollinearity 207
Summary 208
Key Terms 209
Exercises 209
Notes 213

9. Logistic Regression 215
The Logistic Regression Approach 217
Finding the Best Fit: Maximum Likelihood Estimation 226
Logistic Regression with Multiple Independent Variables 231
Working with Probabilities: MEMs and MERs 233
Summary 238
Key Terms 239
Exercises 239
Notes 241

10. Thinking Empirically, Thinking Probabilistically 244
Thinking Empirically 245
Thinking Probabilistically 246
Notes 247

Index 249