Contents

Preface vii
Acknowledgments ix

Chapter 1 Mapping where things are 1
Tutorial 1-1 Working with categories 2
Tutorial 1-2 Controlling which values are displayed 21
Tutorial 1-3 Limiting values to display 30

Chapter 2 Mapping the most and least 43
Tutorial 2-1 Mapping quantities 44
Tutorial 2-2 Choosing classes 62
Tutorial 2-3 Creating a map series 83
Tutorial 2-4 Working with charts 96

Chapter 3 Mapping density 105
Tutorial 3-1 Displaying density for analysis 106
Tutorial 3-2 Creating dot density maps 119
Tutorial 3-3 Creating a density surface 126

Chapter 4 Finding what's inside 135
Tutorial 4-1 Overlaying datasets for analysis 136
Tutorial 4-2 Finding features partially inside 149

Chapter 5 Finding what's nearby 163
Tutorial 5-1 Selecting features nearby 164
Tutorial 5-2 Creating buffer features 174
Tutorial 5-3 Clipping features 184
Tutorial 5-4 Buffering values 197
Tutorial 5-5 Using multiple buffer zones 202
Tutorial 5-6 Quantifying nearness 214
Tutorial 5-7 Creating distance surfaces 227
Tutorial 5-8 Calculating cost along a network 236
Tutorial 5-9 Calculating nearness along a network 254

Chapter 6 Mapping change 263
Tutorial 6-1 Mapping change in location 264
Tutorial 6-2 Mapping change in location and magnitude 275
Tutorial 6-3 Mapping percentage change in value 285

Chapter 7 Measuring geographic distribution 297
Tutorial 7-1 Calculating centers 298
Tutorial 7-2 Adding weights to centers 306
Tutorial 7-3 Calculating standard distance 313
Tutorial 7-4 Calculating a standard deviational ellipse 320
Tutorial 7-5 Calculating the linear directional mean 327

Chapter 8 Analyzing patterns 335
Tutorial 8-1 Using average nearest neighbor 336
Tutorial 8-2 Identifying the clustering of values 348
Tutorial 8-3 Checking for multidistance clustering 357
Tutorial 8-4 Measuring spatial autocorrelation 371

Chapter 9 Identifying clusters 381
Tutorial 9-1 Performing cluster and outlier analysis 382
Tutorial 9-2 Performing hot spot analysis 394

Independent projects 399

Appendix A Task index 401
Appendix B Data source credits 403