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Autore	Waller Lance A. <1965->
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Nota di contenuto	Applied Spatial Statistics for Public Health Data; Contents; Preface; Acknowledgments; 1 Introduction; 1.1 Why Spatial Data in Public Health?; 1.2 Why Statistical Methods for Spatial Data?; 1.3 Intersection of Three Fields of Study; 1.4 Organization of the Book; 2 Analyzing Public Health Data; 2.1 Observational vs. Experimental Data; 2.2 Risk and Rates; 2.2.1 Incidence and Prevalence; 2.2.2 Risk; 2.2.3 Estimating Risk: Rates and Proportions; 2.2.4 Relative and Attributable Risks; 2.3 Making Rates Comparable: Standardized Rates; 2.3.1 Direct Standardization; 2.3.2 Indirect Standardization 2.3.3 Direct or Indirect?2.3.4 Standardizing to What Standard?; 2.3.5 Cautions with Standardized Rates; 2.4 Basic Epidemiological Study Designs; 2.4.1 Prospective Cohort Studies; 2.4.2 Retrospective Case-Control Studies; 2.4.3 Other Types of Epidemiological Studies; 2.5 Basic Analytic Tool: The Odds Ratio; 2.6 Modeling Counts and Rates; 2.6.1 Generalized Linear Models; 2.6.2 Logistic Regression; 2.6.3 Poisson Regression; 2.7 Challenges in the Analysis of Observational Data; 2.7.1 Bias; 2.7.2 Confounding; 2.7.3 Effect Modification; 2.7.4 Ecological Inference and the Ecological Fallacy 2.8 Additional Topics and Further Reading2.9 Exercises; 3 Spatial Data;

3.1 Components of Spatial Data; 3.2 An Odyssey into Geodesy; 3.2.1 Measuring Location: Geographical Coordinates; 3.2.2 Flattening the Globe: Map Projections and Coordinate Systems; 3.2.3 Mathematics of Location: Vector and Polygon Geometry; 3.3 Sources of Spatial Data; 3.3.1 Health Data; 3.3.2 Census-Related Data; 3.3.3 Geocoding; 3.3.4 Digital Cartographic Data; 3.3.5 Environmental and Natural Resource Data; 3.3.6 Remotely Sensed Data; 3.3.7 Digitizing; 3.3.8 Collect Your Own!; 3.4 Geographic Information Systems
3.4.1 Vector and Raster GISs3.4.2 Basic GIS Operations; 3.4.3 Spatial Analysis within GIS; 3.5 Problems with Spatial Data and GIS; 3.5.1 Inaccurate and Incomplete Databases; 3.5.2 Confidentiality; 3.5.3 Use of ZIP Codes; 3.5.4 Geocoding Issues; 3.5.5 Location Uncertainty; 4 Visualizing Spatial Data; 4.1 Cartography: The Art and Science of Mapmaking; 4.2 Types of Statistical Maps; MAP STUDY: Very Low Birth Weights in Georgia Health Care District 9; 4.2.1 Maps for Point Features; 4.2.2 Maps for Areal Features; 4.3 Symbolization; 4.3.1 Map Generalization; 4.3.2 Visual Variables; 4.3.3 Color
4.4 Mapping Smoothed Rates and Probabilities4.4.1 Locally Weighted Averages; 4.4.2 Nonparametric Regression; 4.4.3 Empirical Bayes Smoothing; 4.4.4 Probability Mapping; 4.4.5 Practical Notes and Recommendations; CASE STUDY: Smoothing New York Leukemia Data; 4.5 Modifiable Areal Unit Problem; 4.6 Additional Topics and Further Reading; 4.6.1 Visualization; 4.6.2 Additional Types of Maps; 4.6.3 Exploratory Spatial Data Analysis; 4.6.4 Other Smoothing Approaches; 4.6.5 Edge Effects; 4.7 Exercises; 5 Analysis of Spatial Point Patterns; 5.1 Types of Patterns; 5.2 Spatial Point Processes
5.2.1 Stationarity and Isotropy

Sommario/riassunto

An application-based introduction to the statistical analysis of spatially referenced health data Sparked by the growing interest in statistical methods for the analysis of spatially referenced data in the field of public health, Applied Spatial Statistics for Public Health Data fills the need for an introductory, application-oriented text on this timely subject. Written for practicing public health researchers as well as graduate students in related fields, the text provides a thorough introduction to basic concepts and methods in applied spatial statistics as well as a detail