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Nota di contenuto	Spatial and Syndromic Surveillance for Public Health; Contents; Preface; List of Contributors; 1 Introduction: Spatial and syndromic surveillance for public health; 1.1 What is public health surveillance?; 1.1.1 Spatial surveillance; 1.1.2 Syndromic surveillance; 1.2 The increased importance of public health surveillance; 1.3 Geographic information, cluster detection and spatial surveillance; 1.4 Surveillance and screening; 1.5 Overview of process control and mapping; 1.5.1 Process control methodology; 1.5.2 The analysis of maps and surveillance; 1.6 The purpose of this book 1.6.1 Statistical surveillance and methodological development in a public health context1.6.2 The statistician's role in surveillance; 1.7 The contents of this book; Part I Introduction to Temporal Surveillance; 2 Overview of temporal surveillance; 2.1 Introduction; 2.1.1 Surveillance systems; 2.1.2 Surveillance attributes; 2.1.3 Early detection of unusual health events; 2.2 Statistical methods; 2.2.1 Historical limits method; 2.2.2 Process control charts; 2.2.3 Time-series analysis; 2.3

Conclusion; 3 Optimal surveillance; 3.1 Introduction
3.2 Optimality for a fixed sample and for on-line surveillance3.3 Specification of the statistical surveillance problem; 3.4 Evaluations of systems for surveillance; 3.4.1 Measures for a fixed sample situation adopted for surveillance; 3.4.2 False alarms; 3.4.3 Delay of the alarm; 3.4.4 Predictive value; 3.5 Optimality criteria; 3.5.1 Minimal expected delay; 3.5.2 Minimax optimality; 3.5.3 Average run length; 3.6 Optimality of some standard methods; 3.6.1 The likelihood ratio method; 3.6.2 The Shewhart method; 3.6.3 The CUSUM method; 3.6.4 Moving average and window-based methods
3.6.5 Exponentially weighted moving average methods3.7 Special aspects of optimality for surveillance of public health; 3.7.1 Gradual changes during outbreaks of diseases; 3.7.2 Change between unknown incidences; 3.7.3 Spatial and other multivariate surveillance; 3.8 Concluding remarks; Acknowledgment; Part II Basic Methods for Spatial and Syndromic Surveillance; 4 Spatial and spatio-temporal disease analysis; 4.1 Introduction; 4.2 Disease mapping and map reconstruction; 4.3 Disease map restoration; 4.3.1 Simple statistical representations; 4.3.2 Basic models
4.3.3 A simple overdispersion model4.3.4 Advanced Bayesian models; 4.4 Residuals and goodness of fit; 4.5 Spatio-temporal analysis; 4.6 Surveillance issues; 5 Generalized linear models and generalized linear mixed models for small-area surveillance; 5.1 Introduction; 5.2 Surveillance using small-area modeling; 5.2.1 Example; 5.2.2 Using the model results; 5.3 Alternate model formulations; 5.3.1 Fixed effects logistic regression; 5.3.2 Poisson regression models; 5.4 Practical variations; 5.5 Data; 5.5.1 Developing and defining syndromes; 5.6 Evaluation
5.6.1 Fixed and random effects monthly models

Sommario/riassunto

Following the events of 9/11 and in the current world climate, there is increasing concern of the impact of potential bioterrorism attacks. Spatial surveillance systems are used to detect changes in public health data, and alert us to possible outbreaks of disease, either from natural resources or from bioterrorism attacks. Statistical methods play a key role in spatial surveillance, as they are used to identify changes in data, and build models of that data in order to make predictions about future activity. This book is the first to provide an overview of all the current key methods in spa