



# Applied Spatial Statistics for Public Health Data

By Lance A. Waller, Carol A. Gotway

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**Applied Spatial Statistics for Public Health Data** By Lance A. Waller, Carol A. Gotway

**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 detailed treatment of some of the more recent methods in spatial statistics useful for public health studies that have not been previously covered elsewhere.

Assuming minimal knowledge of spatial statistics, the authors provide important statistical approaches for assessing such questions as:

- Are newly occurring cases of a disease "clustered" in space?
- Do the cases cluster around suspected sources of increased risk, such as toxic waste sites or other environmental hazards?
- How do we take monitored pollution concentrations measured at specific locations and interpolate them to locations where no measurements were taken?
- How do we quantify associations between local disease rates and local exposures?
- After reviewing traditional statistical methods used in public health research, the text provides an overview of the basic features of spatial data, illustrates various geographic mapping and visualization tools, and describes the sources of publicly available spatial data that might be useful in public health applications.

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**Applied Spatial Statistics for Public Health Data** By Lance A. Waller, Carol A. Gotway **Bibliography**

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### **Review**

"...a fine textbook for a course on spatial statistics...easy to follow and agreeable to read...an excellent introduction and overview..." (*Statistics in Medical Research*, August 2006)

"...will be a successful addition to existing literature and foster the application of spatial statistical methods to topics in epidemiology and public health." (*Biometrics*, December 2005)

"...an interesting and worthwhile read for all practitioners of spatial statistics." (*Computers & Geosciences*, July 2005)

"...I am pleased to add it to my collection and feel sure that it will be widely read and appreciated." (*Journal of the American Statistical Association*, June 2005)

### **From the Back Cover**

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### **About the Author**

**LANCE A. WALLER**, PhD, is an associate professor in the Department of Biostatistics at Emory University in Atlanta, Georgia. He received his PhD in Operations Research in 1992 from Cornell University. Dr. Waller was named Student Government Professor of the Year in 2003 by the Rollins School of Public Health, Emory University, and is a Fellow of the American Statistical Association.

**CAROL A. GOTWAY**, PhD, is a mathematical statistician for the National Center for Environmental

Health and an adjunct associate professor in the Department of Biostatistics at Emory University. She received her PhD in Statistics from Iowa State University in 1989. Dr. Gotway was awarded a Distinguished Achievement Medal by the American Statistical Association's Section on Statistics and the Environment for her contributions to environmental statistics and is also a Fellow of the American Statistical Association.

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