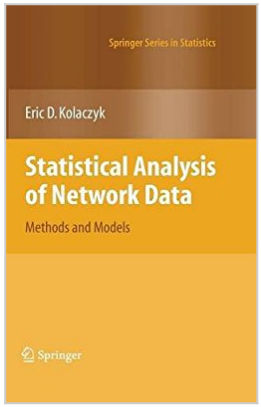

Statistical Analysis of Network Data: Methods and Models (Springer Series in Statistics)

By Eric D. Kolaczyk

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In recent years there has been an explosion of network data – that is, measu- ments that are either of or from a system conceptualized as a network – from se- ingly all corners of science. The combination of an increasingly pervasive interest in scienti c analysis at a systems level and the ever-growing capabilities for hi- throughput data collection in various elds has fueled this trend. Researchers from biology and bioinformatics to physics, from computer science to the information sciences, and from economics to sociology are more and more engaged in the c- lection and statistical analysis of data from a network-centric perspective. Accordingly, the contributions to statistical methods and modeling in this area have come from a similarly broad spectrum of areas, often independently of each other. Many books already have been written addressing network data and network problems in speci c individual disciplines. However, there is at present no single book that provides a modern treatment of a core body of knowledge for statistical analysis of network data that cuts across the various disciplines and is organized rather according to a statistical taxonomy of tasks and techniques. This book seeks to ll that gap and, as such, it aims to contribute to a growing trend in recent years to facilitate the exchange of knowledge across the pre-existing boundaries between those disciplines that play a role in what is coming to be called ‘network science.

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Editorial Review

Review

From the reviews:

"…Accessible and easy to read…strikes a balance between concepts and mathematical detail. …This book is a superb introduction to a fascinating area." (International Statistical Review, 2010, 78, 1, 134-159) "Many disciplines are nowadays involved in network modeling, but it appears as if a common methodological foundation is lacking. The objective of this book is to provide a first attempt at defining such a common methodological foundation from a statistical point of view. … The style of the writing is excellent. … ample references allow quick access to further literature. I can recommend this book to anyone with a serious statistical interest in networks." (Fred van Eeuwijk, VOC Nieuwsbrief, Issue 44, May, 2010)

"Any reader interested in networks and wanting a perspective beyond that of any single discipline should acquire this book. … Researchers will also appreciate the many points in the book where important open problems are identified. The book can also serve readily and flexibly as the main textbook for either a graduate-level seminar course or for an informally organized reading group. … This book sets itself the challenge of addressing statistics for network science broadly, and in the many ways already noted, it is successful." (Michael Frey, Technometrics, Vol. 54 (1), February, 2012)

From the Back Cover

In the past decade, the study of networks has increased dramatically. Researchers from across the sciences?including biology and bioinformatics, computer science, economics, engineering, mathematics, physics, sociology, and statistics?are more and more involved with the collection and statistical analysis of network-indexed data. As a result, statistical methods and models are being developed in this area at a furious pace, with contributions coming from a wide spectrum of disciplines.

This book provides an up-to-date treatment of the foundations common to the statistical analysis of network data across the disciplines. The material is organized according to a statistical taxonomy, although the presentation entails a conscious balance of concepts versus mathematics. In addition, the examples?including extended cases studies?are drawn widely from the literature. This book should be of substantial interest both to statisticians and to anyone else working in the area of 'network science.'

The coverage of topics in this book is broad, but unfolds in a systematic manner, moving from descriptive (or exploratory) methods, to sampling, to modeling and inference. Specific topics include network mapping, characterization of network structure, network sampling, and the modeling, inference, and prediction of networks, network processes, and network flows. This book is the first such resource to present material on all of these core topics in one place.

Eric Kolaczyk is a professor of statistics, and Director of the Program in Statistics, in the Department of Mathematics and Statistics at Boston University, where he also is an affiliated faculty member in the Center for Biodynamics, the Program in Bioinformatics, and the Division of Systems Engineering. His publications on network-based topics include work ranging from the detection of anomalous traffic patterns in computer networks to the prediction of biological function in networks of interacting proteins to the characterization of

influence of groups of actors in social networks.

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The knowledge that you get from Statistical Analysis of Network Data: Methods and Models (Springer Series in Statistics) could be the more deep you rooting the information that hide inside words the more you get considering reading it. It does not mean that this book is hard to comprehend but Statistical Analysis of Network Data: Methods and Models (Springer Series in Statistics) giving you thrill feeling of reading. The article author conveys their point in certain way that can be understood simply by anyone who read the item because the author of this reserve is well-known enough. This book also makes your vocabulary increase well. That makes it easy to understand then can go together with you, both in printed or e-book style are available. We highly recommend you for having this kind of Statistical Analysis of Network Data: Methods and Models (Springer Series in Statistics) instantly.

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