**Models for Intensive Longitudinal Data**
Theodore A. Walls, Joseph L. Schafer (Editors)
Oxford University Press, 2006, xxii + 288 pages, £38.99, hardcover
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*Readership:* Applied statisticians, methodologists in social and behavior sciences, data analysts, graduate students in methodology and statistics courses.

This book is concerned with statistical methods for the analysis of "intensive longitudinal data". The editors use the term *intensive* to reflect problems in which a relatively large number of measurements of possibly several features are made over time. This is in contrast to the kind of longitudinal data arising from standard repeated measures studies where responses might be observed at a relatively few, often evenly spaced, time points. Examples in which intensive longitudinal data arise are given in the Introduction in which technological advances facilitate automatic collection of more extensive information over long periods of time (e.g. when data are collected via handheld devices), and further discussion is given in the final chapter. With a longer series of observations and extensive data collected at each assessment time, the authors argue that there are often compelling reasons to question the assumptions of traditional methods and consider more specialized, perhaps less studied models. There is certainly a wide range of topics covered in this book that are not traditionally dealt with in the more widely known literature on longitudinal data analysis, and it is gratifying to see the promotion of these alternative frameworks and methods.

The book surveys a variety of modeling approaches and discusses the rationale for model construction, and makes these discussions useful by giving good coverage to the associated methods of estimation (algorithms and software) and statistical inference. The book is geared towards statisticians, data analysts, and methodologically oriented researchers in the social sciences, health sciences, and engineering. Chapter 1 contains a series of definitions as well as useful discussion of the rationale for the terminology used in the text. The editors also state topics that are not covered in depth, which include multi-state event history models, dealing with time-varying confounders, variable reduction, and issues related to inferences from a single series arising from a single individual or unit. Additional topics that are omitted or discussed very briefly include issues related to observation schemes (dependent observations, interval censoring) or selection mechanisms (e.g., truncation, response-dependent observation), missing data and measurement error (both mentioned briefly in Chapter 11).

As can be seen from the Table of Contents, however, there are many important topics addressed, including hierarchical models, marginal (partially specified) models, functional data analysis with time-varying means and covariate effects, latent class and state-space models, and intensity-based methods. Most of the topics are discussed in the context of specific examples that are integrated into chapters to illustrate the application of the methodology. A variety of methods of estimation and inference are discussed in these various topics including restricted maximum likelihood estimation for hierarchical models, robust inference for marginal methods, and Kalman filter for autoregressive state-space models. The writing style and notation are reasonably consistent across chapters. There is a good subject index that helps to locate material across all chapters.

I think this is a useful book. It offers brief but well-written introductions to a diverse array of topics. Uninitiated data analysts would no doubt wish to delve further into the literature for topics new to them, and the references at the end of each chapter can help make this efficient.

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## The Statistics of Gene Mapping

David Siegmund, Benjamin Yakir
Springer, 2007, xix + 332 pages, US$ 79.95, hardcover
ISBN: 978-0-387-49684-9

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*Readership:* Those with some familiarity with probability, statistics and elementary genetics. It is ideally suited to a graduate student, trained in statistics, who requires an understanding of the nature of the inferential challenges of gene mapping.

This book presents an excellent introduction to the basic statistical principles used in gene mapping. The assumed basic knowledge of statistics and genetics is reviewed in the early chapters to familiarize readers with the basic concepts and vocabulary used later. The subsequent chapters set out the inferential problems associated with selected important forms of data and experimental design including sib pairs, pedigrees and association studies. The selection is appropriate.

The index is spare. (Readers, looking there for "founder effect" will find no entries beginning with f, or for that matter, entries beginning with d, e, j, k, u, w, x, y, or z. The careful reader, of course, will return to Chapter 10.)

The purpose of the book is to aid the understanding of current problems. The reader is spared an examination of much earlier methods. While the presentation is clear and precision is not sacrificed to simplicity, the mathematical details of particular methodologies do not interrupt the