Analysis of Longitudinal Data

Peter Diggle, Patrick Heagerty, Kung-Yee Liang, Scott Zeger
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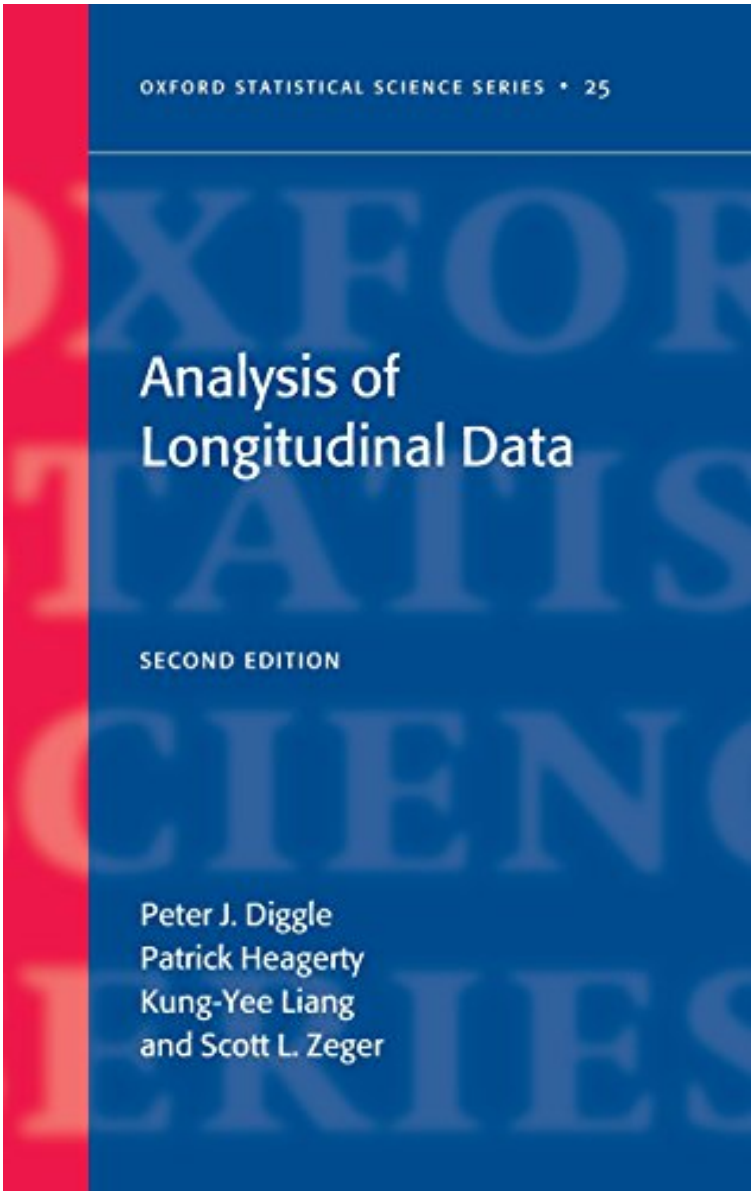

#1200158 in Books Peter Diggle 2002-08-15Ingredients: Example IngredientsOriginal language:EnglishPDF # 1 6.40 x 1.10 x 9.30l, 1.51 #File Name: 0198524846396 pagesAnalysis of Longitudinal Data | File size: 43.Mb

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of ...By EthanThis book is a good applied guide to analysis and the overall process of longitudinal modeling. A good supplement to more in depth texts like ALA by Fitzmaurice. Don't come here looking for code though.1 of 1 people found the following review helpful. I recommend readers looking for an applied analysis guide to look ...By Patrick NeyBook is more geared readers to theoretical approach. I recommend readers looking for an applied analysis guide to look elsewhere.55 of 56 people found the following review helpful. they were the first and they are still one of the bestBy Michael R. ChernickThe first edition of this book was a major success as for the first time advanced methods for the use of longitudinal data were introduced. Longitudinal data (sometimes also referred to as repeated measures data) is very important in the analysis of clinical trial data. This is because many important trial endpoints are collected for each patient at several visits over the course of the trial and the study sponsor (usually the manufacturer of a drug or a device)will want to see how the measures change over time with usually the baseline measurement and the last measurement being the most important. Often they want to see in a randomized trial whether the treatment over inerest tends to perform better for the subjects taking the test treatment versus those who take the active control and/or placebo. An issue is the presence of correlation between measurements from one time point to another.So this type of analysis is similar to time series analysis. The difference is that time series are usually studied in the situation where a single series is observed for a long time and the analyst wants to determine future behavior based on an model constructed to fit this one observed series very well. The model is intended in the time series setting to describe a stochastic process (usually a stationary process or one transformed to stationarity by removal of trends). On the other hand in longitudinal analysis each patients profile over time is usually a very short series and the collection of these series over several patients in a particular treatment group are view to come from the same stochastic process. So the data represent several short partial realizations of the stochastic process while a time series is a long, single partial realization.Since the data differ the methods of analyses differ also. For time seies analysis the autoregressive integrated moving average models of Box and Jenkins are often employed while for longitudinal data the mixed effect linear models are often the class of models chosen. The common theme is the structure of the covariance matrix for the observations in time series and the model noise terms in the case of the linear mixed models.Zeger and Liang were among the leaders in developing successful modelling for these data. In a series of articles they develop a restricted maximum likelihood approach to the problem of estimating the model parameters and introduce a method called GEE an acronym for generalized estimating equations. The first edition of this book was very popular in the statistical community, particularly for statisticians working in the pharmaceutical industry. Along with Peter Diggle these three authors presented in the first edition this research organized into a single book for the first time. Now there is a plethora of books some prinarily theoretical and others primarily applied. The issue of missing data is very common to this type of data particularly when the data come from a clinical trial. The research of Molenberghs and Verbeke, covered by them in some repeated measures books, has shown these models to be among the most useful for handling missing data in realistic ways.This second edition of this book has even greater coverage of topics and includes a fourth author Patrick Heagerty. Each of the four authors are skill research statisticians who specialize in biostatistics and particularly longitudinal data. While today there are many books to choose, this text continues ot be among the best.

The new edition of this important text has been completely revised and expanded to become the most up-to-date and thorough professional reference text in this fast-moving and important area of biostatistics. Two new chapters have been added on fully parametric models for discrete repeated measures data and on statistical models for time-dependent predictors where there may be feedback between the predictor and response variables. It also contains the many useful features of the previous edition such as, design issues, exploratory methods of analysis, linear models for continuous data, and models and methods for handling data and missing values.

"...it is well written, with wide coverage of biological and medical applications. It should continue to have a prominent place in libraries, and researchers who are interested in longitudinal data analysis will want a personal copy." --Journal of the American Statistical AssociationAbout the AuthorPeter Diggle is in the Department of Mathematics and Statistics, University of Lancaster. Patrick Heagerty is in the Biostatistics Department, University of Washington. Kung-Yee Liang and Scott Zeger are both in the Biostatistics Department, Johns Hopkins University.