

ical applications and frequent reference to some macros that have been developed in SAS[®]. Software commands and basic explanations of its functionality are also given. SAS[®] is very widespread software for fitting mixed models, with a simple structure and a great capability of managing huge amounts of data.

The main change in this new edition is the use of version 9.1, instead of the old version 6.12 of SAS[®]. They differ in the procedures that are used for analysing mixed models and therefore the updating is greatly appreciated. The book contents are very similar to the previous edition, yet some improvements on repeated measures and missing data have been introduced. Key new references are also included.

A disadvantage in both editions is that models are explained only from a practical point of view, with no details about statistical models behind the scene. Although it is suitable for practitioners, I would not recommend it for theoretical statisticians. The procedures PROC MIXED, PROC GENMOD and PROC GLIMMIX are appropriate for fitting mixed models, but it is well known that PROC GLIMMIX uses a Laplace approximation that introduces bias in the estimation of the variance components (Lin and Breslow, 1996). The authors had recognized this limitation in the first edition and therefore a citation to PROC NLMIXED and its capabilities is missing in the second edition.

Reference

Lin, X. and Breslow, N. E. (1996) Bias correction in generalized linear mixed models with multiple components of dispersion. *J. Am. Statist. Ass.*, **91**, 1007–1016.

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Applied Longitudinal Analysis

G. M. FITZMAURICE, N. M. LAIRD AND J. H. WARE, 2004
New York, Wiley
xx + 506 pp., \$105.00
ISBN 0-471-21487-6

This book surgically explains applied longitudinal analysis in a way that is understandable even to the mathematically deficient. To accomplish this task, the authors discuss four scenarios in Chapter 1 and then provide just enough statistical theory to assist the reader in comprehending the possible data analysis routes. Readers will remain riveted to the elegant but simple explanations on the best choice of tests and modelling options currently available.

The material can be absorbed by anyone with a basic knowledge of linear algebra and mathematical statistics. The book is divided into four parts: 'Introduction to longitudinal and clustered data'; 'Linear models for longitudinal continuous data'; 'Generalized linear models for longitudinal data'; 'Advanced topics for longitudinal and clustered data'. It will be useful to anyone from graduate student to seasoned researcher. The SAS output and interpretation at the end of some chapters is an additional incentive for purchasing a copy. The authors walk the reader through some of the more important SAS procedures such as PROC MIXED and PROC GENMOD. In addition, at the end of each chapter, the authors examine applied problems. The main difference between this text and other texts in the market today is in the detailed explanations. Examples here not only use real data but also carry the reader through the entire statistical thinking process. Even if it is for this purpose only, statisticians should have access to a copy.

The book is unquestionably complete in its coverage of longitudinal data analysis. It goes a long way in bridging the gulf in understanding longitudinal data analysis. No longer will the researcher be restricted in terms of looking at differences between two points in time but will be able to access some more advanced modelling techniques such as generalized estimating equations.

Overall I found the book to be well written and good reading for anyone who is involved in longitudinal data analysis, from survey statisticians to clinicians. Libraries should purchase a copy of this book.

Selected Statistical Papers of Sir David Cox,

vols I and II
D. J. HAND AND A. M. HERZBERG (eds), 2005
Cambridge, Cambridge University Press
xii + 592 pp. (vol. I), xii + 590 pp. (vol. II), £180
ISBN 0-521-85816-X

It is not given to many statisticians to have a selection of their own works published in a collection like this. Ronald Fisher and John Tukey come to mind as illustrious predecessors and David Cox himself edited one of the eight volumes of Tukey's work. Compared with Tukey's voluminous output, the present collection is more modest in size; still, with a price of £180 for about 1200 pages, it may not find its way onto the shelves of many statisticians.