The book can be strongly recommended not only to institutional libraries but also to anybody who is working or interested in stochastic financial modelling.

References

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Linear Mixed Models: a Practical Guide using Statistical Software

B. T. West, K. B. Welsh and A. T. Gałecki, 2007
Boca Raton, Chapman and Hall–CRC
354 pp., £44.99
ISBN 1-584-88480-0

Software reviews usually focus on one product or compare feature by feature, concentrating on the user interface. This book is unusual in describing a modelling application in detail, giving a very even-handed treatment to five mainstream products: HLM, R, SAS, SPSS and Stata.

The treatment is thorough, to an extent that the audience will be restricted to serious professional data analysts and university libraries; there is too much detail to suggest it as an undergraduate or Masters course book. The central five chapters each feature a data set with a specific model, highlighting one package but fitting the equivalent model in all five and comparing the results. These chapters are prefaced by a general introduction to the linear mixed model but would have benefited from a final summary chapter to provide an authorial view. Although an immense effort has clearly gone into the material, the result for me was a detailed and worthy book that I admired rather than enjoyed.

What did I learn from all the detail? It was pleasing that all the packages could tackle all the problems, if not to exhaustion. This reads as a refreshing change from software reviews that are disguised advertising. Data analysis should not be limited or prescribed by software deficiencies. In practice, all the packages provide many other analyses. Numerical results across all were generally in close agreement. All the packages were robust against misuse and gave relevant warnings, though your first reaction to non-convergence with an arbitrary default number of iterations might be to increase iterations rather than to respecify a considered model. The examples work well as discussed problems, and yet. . ..

What I wanted after each description was the 'so what?'. Each chapter contains comments that this package can or cannot do this twist—so what? I reached page 111 before noticing a 'we recommend', and that was only between the options in SAS `Proc Mixed`. When statistics are *applied*, it should be impossible to avoid the meaning and interpretation, but these authors—like so many—are content to stop when the sums are done. This may be appropriate in the software manual, but it creates a contradiction when 'diagnostics for the final model' include a plot that

> 'suggests that the distribution of the conditional residuals deviates from a normal distribution. This further suggests that a transformation of the response variable may be warranted.'

So do it and revise the model. Show how statistical methods provide useful insight into data rather than models for their own sake.

I commend this book to anyone who is using software for statistical modelling, either for a detailed account of specific linear models or an exemplar of how to gather the information to compare software. But expect to draw your own conclusions.

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