careful consideration of statistical aspects of these procedures. For a discussion of ethical and logistical issues surrounding response-adaptive designs, the authors refer the readers to Chapter 12 in [1]. Furthermore, the authors recommend Chapters 10–12 of the same book as pre-reading material to novices of the area of response-adaptive randomization.

The book provides a comprehensive overview of the theory of response-adaptive randomization and is recommended to readers with an interest in this specialist area.

REFERENCE

1. Rosenberger WF, Lachin JM. *Randomization in Clinical Trials*: *Theory and Practice*. Wiley: New York, 2002.

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2. MULTILEVEL AND LONGITUDINAL MODELING USING STATA. Sophia Rabe-Hesketh and Anders Skrondal, Stata Press, College Station, 2005. No. of pages: xxiii +317. Price: $54.00. ISBN10: 1-59718-008-4, ISBN13: 978-1-59718-008-5

This is a useful reference source for researchers involved with multilevel modeling. It gives a fairly comprehensive treatment of methods for analysis of multilevel data, with a particular focus on random effects models. Rabe-Hesketh and Skrondal's work would also be quite helpful as an adjunct text for courses on multilevel modeling. It could serve as a stand-alone text for courses that focus on applications and implementation of the methods but would need to be supplemented with background material for use with other types of courses.

One of the appealing features of the book is the use of interesting data sets throughout to illustrate the application of the methods. In addition to the data sets used in the text, many more data sets form the bases of interesting exercises provided after each chapter. All of the data sets can be freely downloaded from a Web site provided by the authors. Another useful feature is the detailed Stata commands for all the results presented, which will allow the reader to easily conduct the analyses on their own data sets. A strength of the book is the clear and detailed explanations of how to interpret all the models presented; the graphical depictions of the models are particularly helpful in this regard. The presentation is generally at an elementary level appropriate for a general audience, and most advanced material has been reserved for special sections labeled as being more advanced. However, references to likelihoods and prior distributions may be difficult for the reader not already familiar with these topics. The addition of background material on the basics of maximum likelihood and Bayesian inference would have been very helpful for many of the potential readers of this book and would make it more suitable as a stand-alone text. The main deficiencies of the book are the spotty attention paid to the assumptions of random effects models and the insufficient attention paid to generalized estimating equations (GEE) and sandwich variance estimates, which are very useful ways of accommodating departures from model assumptions. The book could be greatly improved by additional material on methods based on estimating equations and the related marginal models. Issues in the analysis of incomplete data also deserve more attention than provided here.

Chapter 1 serves as a nice introduction to the more advanced material of later chapters by presenting the basic concepts of clustered data, including variance components, intraclass correlation, maximum likelihood, and empirical Bayes prediction of random effects. As noted above, the maximum-likelihood method is not clearly presented; for example, no explicit presentation of a likelihood function is given.

In Chapter 2, methods for fitting regression models with clustered data are presented, with a focus on the random-intercept model. Interpretation of models is quite good and covers the important topic of between-cluster *versus* within-cluster effects. The presentation is at an elementary level appropriate for a general audience except for one use of matrix algebra. Residual diagnostics are presented but the focus is on checking distributional assumptions, whereas the more critical assumptions on the covariance structure are mostly ignored. In particular, many readers will be led astray by the application of a random intercepts model to longitudinal data, which is generally inappropriate due to incorrect modeling of the covariance structure.

GEE is not mentioned at all in this chapter, which is a serious omission because it leaves the impression that GEE is not useful for linear models; the sandwich variance estimate is only briefly mentioned.

Chapter 3 introduces linear random coefficient models in which coefficients for explanatory variables are allowed to vary randomly across clusters. The interpretation of models is again done with great care. However, assumptions about variances and covariances are again underemphasized although there is an interesting advanced section on modeling heteroskedasticity.

Models for binary responses are covered in Chapter 4. The discussions of the interpretation of latent response models and comparisons of marginal ('population averaged') with conditional ('subject-specific') models are excellent. Material on adaptive quadrature and empirical Bayes prediction is good, although it might be difficult to follow for many readers who do not already have a basic understanding of these subjects. GEE is introduced here for the first time in the book but is not given sufficient attention.

The final four chapters of the book cover special models, including ordinal responses (Chapter 5), counts (Chapter 6), nested models with three or more levels (Chapter 7), and crossed random effects (Chapter 8). These chapters, like the earlier ones, focus on random effects models. The authors continue to do a very nice job of discussing the interpretation of the models and illustrating methods for model fitting using Stata.

In summary, this is a useful text for researchers who need to learn how to model multilevel data, especially for those interested in applying random effects models. It is hoped that the authors will produce an improved future edition that can better serve as a stand-alone text. To achieve this goal, what is needed is additional background material, more complete coverage of modeling assumptions, and a more balanced presentation of marginal and conditional models.

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3. MARKOV CHAIN MONTE CARLO: STOCHASTIC SIMULATION FOR BAYESIAN INFERENCE (2nd edn). Dani Gamerman and Hedibert F. Lopes, Chapman & Hall/CRC, Boca Raton, FL, 2006. No. of pages: xvii +323. Price: $69.95. ISBN10: 1-58488-587-4, ISBN13: 978-1-58488-587-0

The second edition of this book by Gamerman and Lopes is well written and builds on the first edition, published almost a decade ago. The intention of the second edition is to update the previous edition with the developments in the field of Monte Carlo Markov chain (MCMC) research that have occurred during this period. The authors note that these advances have largely been in the space of methodological and application settings. As such the second edition is aimed at focusing on assessing and presenting pros and cons of the different options available when simulation is performed with an MCMC algorithm.

The addition of an associated Web site www.ufrj.br/MCMC is a valuable resource that contains many R scripts, allowing the readers to quickly and easily test different approaches on their desired models with minimal effort. Coupling this with the depth of examples and references provided, this text provides an excellent first graduate text on MCMC methods.

New topics covered include spatial statistical models, valuable in many areas of modern statistics from weather modeling, computer vision modeling to epidemiological model analysis. Additionally, model assessment and selection, noteably missing from the first text, is now covered. This includes relevant criteria developed for model selection approaches such as AIC, BIC and DIC. In addition to these topics, many sections have been updated to reflect new literature in the field and substantial increases in practical examples are provided.

A consequence of the broad target audience intended for this text is that several theoretical and more advanced recent methodological insights have not been included in detail. These include alternatives such as adaptive MCMC, slice sampling and auxiliary approaches. Additionally, approaches

