

# Practical Multivariate Analysis, Fifth Edition (Chapman & Hall/CRC Texts in Statistical Science)

By Abdelmonem Afifi, Susanne May, Robin Donatello, Virginia A. Clark



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This new version of the bestselling *Computer-Aided Multivariate Analysis* has been appropriately renamed to better characterize the nature of the book. Taking into account novel multivariate analyses as well as new options for many standard methods, **Practical Multivariate Analysis**, **Fifth Edition** shows readers how to perform multivariate statistical analyses and understand the results. For each of the techniques presented in this edition, the authors use the most recent software versions available and discuss the most modern ways of performing the analysis.

# New to the Fifth Edition

- Chapter on regression of correlated outcomes resulting from clustered or longitudinal samples
- Reorganization of the chapter on data analysis preparation to reflect current software packages
- Use of R statistical software
- Updated and reorganized references and summary tables
- Additional end-of-chapter problems and data sets

The first part of the book provides examples of studies requiring multivariate analysis techniques; discusses characterizing data for analysis, computer programs, data entry, data management, data clean-up, missing values, and transformations; and presents a rough guide to assist in choosing the appropriate multivariate analysis. The second part examines outliers and diagnostics in simple linear regression and looks at how multiple linear regression is employed in practice and as a foundation for understanding a variety of concepts. The final part deals with the core of multivariate analysis, covering canonical correlation, discriminant, logistic regression, survival, principal components, factor, cluster, and log-linear analyses.

While the text focuses on the use of R, S-PLUS, SAS, SPSS, Stata, and

STATISTICA, other software packages can also be used since the output of most standard statistical programs is explained. Data sets and code are available for download from the book's web page and CRC Press Online.

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### **Editorial Review**

### Review

"I have come to know this book, and its several precursors, very well indeed. I have used it – in its various editions – for almost thirty years, as the principal text in my doctoral-level statistics course, S-052: Applied Data Analysis, at the Harvard University Graduate School of Education. My course served around 65-75 doctoral students annually, drawn from the social-science disciplines around Harvard and MIT. Over those years, students told me repeatedly what an excellent book they found it to be, as a resource both during and after their successful completion of the course. In my view, the book's main strength is embodied in its title – "*Practical Multivariate Analysis*" – with a strong emphasis on the "practical."

In the book, a thoughtful set of powerful multivariate methods are presented and described. Explanations in the text are built upon real-world data-examples and their accompanying research questions. There is strong emphasis on perceptive data-display and good data-analysis, on the testing of assumptions and on the credible interpretation of results. These very things are modelled deeply and repeatedly in the book itself, so that it is an exemplar for the rigorous conduct and clear reporting of sophisticated quantitative analyses. The writing is clear and understandable, while remaining technically stringent. It is in these important roles – as informant, explainer and model – that the book has always shone, in my view. Consequently, it has been a critical companion to many cohorts of new scholars and been instrumental in insuring the quality and rigor of the work that they then went on to do. Who knows how far its influence stretches? Overall, I do not think that there many other books at this level – maybe none – that have these same qualities. I recommend it very highly indeed."

?John B. Willett, Charles William Eliot Research Professor, Harvard University Graduate School of Education

"First of all, it is very easy to read. ... The authors manage to introduce and (at least partially) explain even quite complex concepts, e.g. eigenvalues, in an easy and pedagogical way that I suppose is attractive to readers without deeper statistical knowledge. The text is also sprinkled with references for those who want to probe deeper into a certain topic. Secondly, I personally find the book's emphasis on practical data handling very appealing. ... Thirdly, the book gives very nice coverage of regression analysis. ... this is a nicely written book that gives a good overview of a large number of multivariate techniques and also tries to give the reader practical advice on how to perform statistical analyses."

?Australian & New Zealand Journal of Statistics, 56(4), 2014

"I found the text enjoyable and easy to read. The authors provide a sufficient description of all the methodology for practical use. Each chapter includes at least one real world dataset analysis and the software commands summary tables included at the end of every chapter should be particularly helpful to a practitioner of statistics. ... I would recommend the text for practitioners of statistics looking for a handy reference, particularly those performing basic analysis in the health sciences."

?Thomas J. Fisher, Journal of Biopharmaceutical Statistics, Issue 6, 2012

### **Praise for Previous Editions:**

For the past 20 years, whenever I had an occasion to review a multivariate method...this was the book that I grabbed first. These books kept the mathematical content to the minimally necessary material and used a wealth of nice examples. One of its attractions is that it is a practical text that works well with

nonstatisticians who have had a decent statistics course. It also continues to be an excellent book for the statistician's bookshelf.

?Technometrics, November 2004

This book is an excellent presentation of computer-aided multivariate analysis. I believe that it will be a very useful addition to any scholarly library ... it provides a comprehensive introduction to available techniques for analyzing data of this form, written in a style that should appeal to non-specialists as well as to statisticians.

?Zentralblatt MATH 105

This is a text for a broad spectrum of researchers ... who may find it very useful as it stresses the importance of understanding the concepts and methods through useful real life illustrations.

?Journal of the RSS, Vol. 168, 2005

A key feature of this book is that it can be used in conjunction with any or all of the following very well-known software tools: S-Plus, SAS, SPSS, STATA, and STATISTICA.

?Pat Altham, University of Cambridge, UK, Statistics in Medicine, 2005

### **Users Review**

### From reader reviews:

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### **Marc Starr:**

The actual book Practical Multivariate Analysis, Fifth Edition (Chapman & Hall/CRC Texts in Statistical Science) has a lot info on it. So when you make sure to read this book you can get a lot of advantage. The book was authored by the very famous author. Mcdougal makes some research prior to write this book. This book very easy to read you may get the point easily after reading this book.

## Hoa Gilkey:

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