

Computational Statistics: An Introduction to R

Gunther SAWITZKI. Boca Raton, FL: Chapman & Hall/CRC, 2009.
ISBN 978-1-4200-8678-2. xiv+251 pp. with 8-page color insert, \$89.95.

A compact and efficient introduction to R, *Computational Statistics: An Introduction to R* is a well-written and nicely organized book suitable for quantitatively and computationally sophisticated readers. As the author writes, “This introduction to R is intended as course material to be used in a concise course or for self-instruction. The course is for students with basic knowledge in stochastics.” (p. v)

The book is divided into four main chapters: “Basic Data Analysis,” “Regression,” “Comparisons,” and “Dimensions $1, 2, 3, \dots, \infty$.” In order, they introduce the application of R for one-sample analysis and distributions, regression models, two-sample problems and comparing distributions, and multivariate analysis. Each chapter nicely integrates stochastic processes and statistical theory with examples and associated R code and output. The chapters conclude with references to the literature, so that readers interested in delving further into a particular topic can do so, and the references are aggregated into a complete list at the end of the book.

In my opinion, it is the integration of interesting examples and associated R code that make the text a pleasure to read and work through. The examples are neither overly trivial (though some are familiar, such as the ubiquitous iris data) nor excessively complicated, and the R code is similarly accessible without being either too simple or complex. Throughout, each of the main points and examples are followed by exercises so that readers can practice and test comprehension.

The book concludes with an appendix summarizing the R programming language and environment with well-organized lists containing function descriptions and other useful information. A rudimentary companion site at <http://sintro.r-forge.r-project.org/> provides some additional materials for those that might use the book for a short course.

In addition, the text contains three separate indices. The first, Functions and Variables by Topic, nicely organizes R functions by topics such as “High-Level Plots,” “Data Manipulation,” etc. I particularly like this index since one of the main learning impediments for new R users is the catch-22 of needing to know the name of a function to look up its associated help file. The second, Function and Variable Index, provides an alphabetical index of R functions and variables. And, the third, Subject Index, is just what the title implies.

In total, the three indices provide readers with a nice set of resources to locate information within the text.

Now, in addition to assuming a relatively advanced level of quantitative sophistication, the text presumes a working knowledge of computing and of basic computer concepts such as variables, loops, and functions. As such, *Computational Statistics: An Introduction to R* will be most useful to computer savvy readers with at least some skill in statistical programming who would like a succinct introduction to R. It could also be useful as a supplementary text for upper-level undergraduate or graduate courses with labs that use R. It will be least useful to those interested in learning just the rudimentary skills necessary for some basic statistical analysis – but those individuals are unlikely to use R anyway.

Ronald D. Fricker, JR.
Naval Postgraduate School