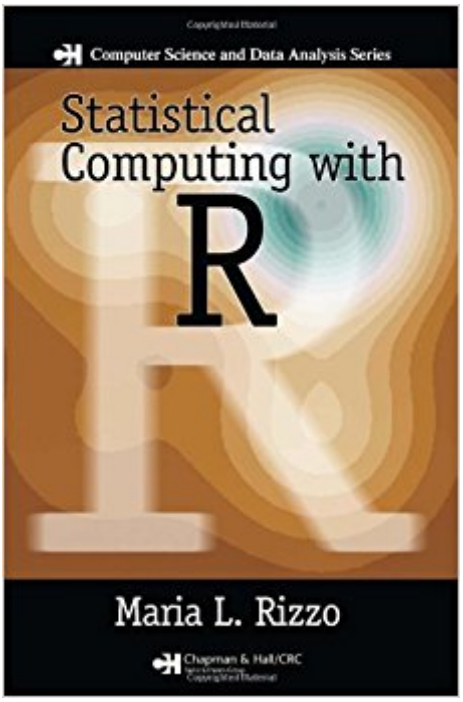
Statistical Computing With R (Chapman & Hall/CRC The R Series)



Synopsis

Computational statistics and statistical computing are two areas that employ computational, graphical, and numerical approaches to solve statistical problems, making the versatile R language an ideal computing environment for these fields. One of the first books on these topics to feature R, Statistical Computing with R covers the traditional core material of computational statistics, with an emphasis on using the R language via an examples-based approach. Suitable for an introductory course in computational statistics or for self-study, it includes R code for all examples and R notes to help explain the R programming concepts. After an overview of computational statistics and an introduction to the R computing environment, the book reviews some basic concepts in probability and classical statistical inference. Each subsequent chapter explores a specific topic in computational statistics. These chapters cover the simulation of random variables from probability distributions, the visualization of multivariate data, Monte Carlo integration and variance reduction methods, Monte Carlo methods in inference, bootstrap and jackknife, permutation tests, Markov chain Monte Carlo (MCMC) methods, and density estimation. The final chapter presents a selection of examples that illustrate the application of numerical methods using R functions. Focusing on implementation rather than theory, this text serves as a balanced, accessible introduction to computational statistics and statistical computing.

Book Information

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Customer Reviews

Bowling Green State Univ. , OHIO USA

It’s a great introduction to statistical topics and computing. If you’re interested in Monte Carlo Methods, this may be a good starting point. I wish I had found this book before my experience with Monte Carlo Methods.

Practitioners in statistics need two things: Understanding of the subject and a tool to help them explore data. R is clearly the tool of choice, providing a range of capabilities. There are several introductory books on R, but none also provide the grounding in statistics that Rizzo’s does.To a new student of the subject, I’d recommend this, and Gelman and Hill’s DATA ANALYSIS USING REGRESSION AND MULTILEVEL/HIERARCHICAL MODELS.

This book is clear and in depth. It takes one from the core of the subject to enabling its use at the frontiers of my research.

No complaints

I just stared to reading this book and I found out that there are missing pages and repeated pages. I am out of time to returned so my money was just stolen.

Good overall, would like more ecological examples provided. Solid introduction, good algebraic knowledge required. Six more words required, six more words required.

This book is another text that covers statistical methods using R. Many of the others are specialized as for example Mark Chang’s which covers adaptive designs only and Jim Albert’s deals only with Bayesian methods. This is the best that I have seen to cover advanced statistical topics and teach the essentials of R for statistical analysis. So someone like me, who is not very familiar with R, can learn quickly how to apply it. The basics are covered in Chapter 1 and the author explains where to find the good R libraries and how to download the software which is free.Chapter 2 is a short review of probability and statistics. This is provided to help the reader understand the material on generating Monte Carlo data for univariate and multivariate probability distributions that comes in Chapter 3.The other chapters cover visualization of multivariate data, Monte Carlo methods, integration and variance reduction techniques and advanced topics including the bootstrap and the

jackknife, permutation test, MCMC methods and working with data arrays and frames. All these methods are illustrated with R code.For the most part the author provides excellent references to the literature and texts. The coverage of bootstrap is exceptional. My book, Efron and Tibshirani, Davison and Hinkley and Shao and Tu are all referenced. There is a thorough treatment of bootstrap confidence intervals covering all the high order methods and their properties. There is even a discussion about the jackknife estimate of the acceleration constant (illustrated with R code) and mention of an alternative method available in the book by Shao and Tu. The text includes 299 references.The only glaring omission I found was in the discussion of permutation tests. There have been major books written by Good, Edgington. Manly and Pesarin that were overlooked.

Coming from the perspective of a stat grad student, I typically find most math/stat books to be quite lacking or altogether poorly written. Most are not worth the paper they are printed on, let alone the ridiculous prices set by textbook publishers. This book is the exception. With a solid knowledge of math stat at the Casella and Berger level, you will get a lot out of this textbook. What I like most about the book is that each section gives a summary of the underlying theory, and then provides the code to implement. This means less time searching another textbook to review the theory.My only criticism is the section on simulating a stochastic process, which I found too brief to fully understand. However, the author provides an extensive set of references for further reading. For simulating stochastic processes the author suggested An Introduction to Probability Models by Ross, which did clear up many of my questions. So overall, even where the book may be lacking, the author provides external references at roughly the same theoretical level as the book itself.

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