R. Carmona, Princeton University, Princeton, NJ, USA

Statistical Analysis of Financial Data in R

Although there are many books on mathematical finance, few deal with the statistical aspects of modern data analysis as applied to financial problems. This textbook fills this gap by addressing some of the most challenging issues facing financial engineers. It shows how sophisticated mathematics and modern statistical techniques can be used in the solutions of concrete financial problems. Concerns of risk management are addressed by the use of extreme values, the fitting of distributions with heavy tails, the computation of values at risk (VaR), and other measures of risk. Principal component analysis (PCA), smoothing, and regression techniques are applied to the construction of yield and forward curves. Time series analysis is applied to the study of temperature options and nonparametric estimation. Nonlinear filtering is applied to Monte Carlo simulations, option pricing and earnings prediction.

Contents

Fields of interest
Statistics for Business/Economics/Mathematical Finance/Insurance; Statistical Theory and Methods; Quantitative Finance

Target groups
Upper undergraduate

Product category
Graduate/Advanced undergraduate textbook

Collectcd Works II

This is a collection of Harald Cramér's extensive works on number theory, probability, mathematical statistics and insurance mathematics. Many of these are not easily found nowadays in their original sources, for instance his pioneering works on risk theory published in jubilee volumes of the Skandia Insurance Company in 1930 and 1955. Despite their age, these eminent examples of Cramér's expository style remain highly readable.

Contents
Statistical Modeling and Computation

This textbook on statistical modeling and statistical inference will assist advanced undergraduate and graduate students. Statistical Modeling and Computation provides a unique introduction to modern Statistics from both classical and Bayesian perspectives. It also offers an integrated treatment of Mathematical Statistics and modern statistical computation, emphasizing statistical modeling, computational techniques, and applications. Each of the three parts will cover topics essential to university courses. Part I covers the fundamentals of probability theory.

Features

▸ An integrated treatment of statistical inference and computation helps the reader gain a firm understanding of both theory and practice. ▸ Discusses modern computation techniques including Markov chain Monte Carlo methods and the Expectation Maximization algorithm. ▸ Includes numerous solved examples and exercises. ▸ Includes computer codes and a brief programming primer in MATLAB for students.

Contents


Fields of Interest

Statistics and Computing/Statistics Programs; Statistics for Life Sciences, Medicine, Health Sciences; Statistical Theory and Methods

Target groups

Upper undergraduate

Product category

Graduate/Advanced undergraduate textbook

Nonparametric Statistics for Applied Research

Non-parametric methods are widely used for studying populations that take on a ranked order (such as movie reviews receiving one to four stars). The use of non-parametric methods may be necessary when data have a ranking but no clear numerical interpretation, such as when assessing preferences. In terms of levels of measurement, non-parametric methods result in “ordinal” data. As non-parametric methods make fewer assumptions, their applicability is much wider than the corresponding parametric methods. In particular, they may be applied in situations where less is known about the application in question.

Features

▸ Showcases “real-life scenarios” from psychology and medicine. ▸ Readers learn to analyze data and explain often opaque statistical concepts. ▸ Each scenario contains real data sets, questions, and self-learning exercises.

Contents


Fields of Interest

Statistical Theory and Methods; Statistics for Social Science, Behavioral Science, Education, Public Policy, and Law; Statistics for Life Sciences, Medicine, Health Sciences

Target groups

Upper undergraduate

Product category

Graduate/Advanced undergraduate textbook
Statistics

Bayesian Essentials with R

This Bayesian modeling book provides a self-contained entry to computational Bayesian statistics. Focusing on the most standard statistical models and backed up by real datasets and an all-inclusive R (CRAN) package called bayess, the book provides an operational methodology for conducting Bayesian inference, rather than focusing on its theoretical and philosophical justifications. Readers are empowered to participate in the real-life data analysis situations depicted here from the beginning. The stakes are high and the reader determines the outcome. Special attention is paid to the derivation of prior distributions in each case and specific reference solutions are given for each of the models. Similarly, computational details are worked out to lead the reader towards an effective programming of the methods given in the book. In particular, all R codes are discussed with enough detail to make them readily understandable and expandable. This works in conjunction with the bayess package.

Features

- A radical rethinking of how elementary inferences should be made in statistics
- Exercises and suggestions for further reading are provided
- Suitable as textbook for graduate courses in Statistics

Contents


Field of interest

Statistics, general

Target groups

Graduate

Product category

Brief

Bayesian Decision Theory

This monograph presents a radical rethinking of how elementary inferences should be made in statistics, implementing a comprehensive alternative to hypothesis testing in which the control of the probabilities of the errors is replaced by selecting the course of action (one of the available options) associated with the smallest expected loss. Its strength is that the inferences are responsive to the elicited or declared consequences of the erroneous decisions, and so they can be closely tailored to the client’s perspective, priorities, value judgments and other prior information, together with the uncertainty about them.

Features

- A radical rethinking of how elementary inferences should be made in statistics
- Exercises and suggestions for further reading are provided
- Suitable as textbook for graduate courses in Statistics

Contents


Field of interest

Statistics, general

Target groups

Graduate

Product category

Brief

Due October 2013

- $54.99

ISBN 978-3-642-40432-0

Due November 2013

2nd ed. 2014. CCCXXIV, 12 p. 67 illus., 30 in color. (Springer Texts in Statistics, Volume) Hardcover
- $69.99


Due October 2013

2013. VIII, 226 p. 50 illus., 30 in color. Hardcover
- $69.99

ISBN 978-1-4614-8707-4

Statistical Research Methods

A Guide for Non-Statisticians

This textbook will help graduate students in non-statistics disciplines, advanced undergraduate researchers, and research faculty in the health sciences to learn, use and communicate results from many commonly used statistical methods. The material covered, and the manner in which it is presented, describe the entire data analysis process from hypothesis generation to writing the results in a manuscript. Chapters cover, among other topics: one and two-sample proportions, multi-category data, one and two-sample means, analysis of variance, and regression. Throughout the text, the authors explain statistical procedures and concepts using a non-statistical language. This accessible approach is complete with real-world examples and sample write-ups for the Methods and Results sections of scholarly papers.

Features

- Geared to describe the entire data analysis process, from hypothesis generation to writing the results in a manuscript
- Designed to communicate with non-statisticians in a non-statistical language
- Complete with real-world examples and sample write-ups for Methods and Results sections of manuscripts

Contents

Introduction.- One-Sample Proportions.- Two-Sample Proportions.- Multi-Category Data.- Summarizing Continuous Data.- One-Sample Means.- Two-Sample Means.- Analysis of Variance.- Power and Sample-Size.- Association and Regression.

Fields of interest

Statistics for Life Sciences, Medicine, Health Sciences; Statistical Theory and Methods; Statistics, general

Target groups

Upper undergraduate

Product category

Graduate/Advanced undergraduate textbook
J. Sun, University of Missouri, Columbia, MO, USA; X. Zhao, Hong Kong Polytechnic Univ., Hong Kong, Hong Kong SAR

**Statistical Analysis of Panel Count Data**

Panel count data occur in studies that concern recurrent events, or event history studies, when study subjects are observed only at discrete time points. By recurrent events, we mean the event that can occur or happen multiple times or repeatedly. Examples of recurrent events include disease infections, hospitalizations in medical studies, warranty claims of automobiles or system break-downs in reliability studies. In fact, many other fields yield event history data too such as demographic studies, economic studies and social sciences. For the cases where the study subjects are observed continuously, the resulting data are usually referred to as recurrent event data. This book collects and unifies statistical models and methods that have been developed for analyzing panel count data. It provides the first comprehensive coverage of the topic.

**Features**
- First comprehensive book on Panel Count Data
- Complements existing resources on recurrent event data
- Techniques on regression and parametric and non-parametric methods covered in detail along with gamut of mathematical calculations

**Contents**

**Fields of interest**
Statistics for Life Sciences, Medicine, Health Sciences; Statistical Theory and Methods

**Target groups**
Research

**Product category**
Monograph

Due October 2013

2013. X, 265 p. 18 illus., 11 in color. (Statistics for Biology and Health, Volume 80) Hardcover
- $109.00