Discrete Data Analysis With R Visualization And Modeling Techniques For Categorical And Count Data Chapman Hallcrc Texts In Statistical Science

Structural Analysis of Discrete Data with Econometric Applications
R Data Analysis Cookbook
Ecological Models and Data in R
Event History Analysis with R
Analysis of Categorical Data with RR for Data Science
Discrete Event Systems
Statistical Analysis of Financial Data Using R
R for Introductory Statistics
Discrete Choice Analysis
R
Applied Categorical and Count Data Analysis
Reproducible Research with R and R
Studio
Exact Analysis of Discrete Data
An Introduction to Discrete-Valued Time Series
Discrete Data Analysis with R
An Introduction to Categorical Data Analysis
Graphical Data Analysis with R
Structural Equation Modeling
Statistical Data Analysis Explained
The Book of R
Applied Spatial Data Analysis with R
Applied Statistics for Environmental Science
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Introduction to Data Science
Practical Statistics for Data Scientists
Geophysical Data Analysis: Discrete Inverse Theory
ggplot2
Handbook of Statistics
The Statistical Analysis of Discrete Data

Structural Analysis of Discrete Data with Econometric Applications

Applied Statistics for Environmental Science with R presents the theory and application of statistical techniques in environmental science and aids researchers in choosing the appropriate statistical technique for analyzing their data. Focusing on the use of univariate and multivariate statistical methods, this book acts as a step-by-step resource to facilitate understanding in the use of R statistical software for interpreting data in the field of environmental science. Researchers utilizing statistical analysis in environmental science and engineering will find this book to be essential in solving their day-to-day research problems. Includes step-by-step tutorials to aid in understanding the process and implementation of unique data. Presents statistical theory in a simple way without complex mathematical proofs. Shows how to analyze data using R software and provides R scripts for all examples and figures.
R Data Analysis Cookbook

A clear and concise introduction and reference for anyone new to the subject of statistics.

Ecological Models and Data in R

Provides both rich theory and powerful applications. Figures are accompanied by code required to produce them. Full color figures.

Event History Analysis with R

R is open source statistical computing software. Since the R core group was formed in 1997, R has been extended by a very large number of packages with extensive documentation along with examples freely available on the internet. It offers a large number of statistical and numerical methods and graphical tools and visualization of extraordinarily high quality. R was recently ranked in 14th place by the Transparent Language Popularity Index and 6th as a scripting language, after PHP, Python, and Perl. The book is designed so that it can be used right away by novices while appealing to experienced users as well. Each article begins with a data example that can be downloaded directly from the R website. Data analysis questions are articulated following the presentation of the data. The necessary R commands are spelled out and executed and the output is presented and discussed. Other examples of data sets with a different flavor and different set of commands but following the theme of the article are presented as well. Each chapter presents a hands-on-experience. R has superb graphical outlays and the book brings out the essentials in this arena. The end user can benefit immensely by applying the graphics to enhance research findings. The core statistical methodologies such as regression, survival analysis, and discrete data are all covered. Addresses data examples that can be downloaded directly from the R website. No other source is needed to gain practical experience. Focus on the essentials in graphical outlays.

Analysis of Categorical Data with R

R for Data Science

Introduction to Data Science: Data Analysis and Prediction Algorithms with R introduces concepts and skills that can help you tackle real-world data analysis challenges. It covers concepts from probability, statistical inference, linear regression, and machine learning. It also helps you develop skills such as R programming, data wrangling, data visualization, predictive algorithm building, file organization with UNIX/Linux shell, version control with Git and GitHub, and reproducible document preparation. This book is a textbook for a first course in data
Discrete Event Systems

A far-reaching course in practical advanced statistics for biologists using R/Bioconductor, data exploration, and simulation.

Statistical Analysis of Financial Data

Discrete Choice Analysis presents these results in such a way that they are fully accessible to the range of students and professionals who are involved in modelling demand and consumer behavior in general or specifically in transportation - whether from the point of view of the design of transit systems, urban and transport economics, public policy, operations research, or systems management and planning. The methods of discrete choice analysis and their applications in the modelling of transportation systems constitute a comparatively new field that has largely evolved over the past 15 years. Since its inception, however, the field has developed rapidly, and this is the first text and reference work to cover the material systematically, bringing together the scattered and often inaccessible results for graduate students and professionals. Discrete Choice Analysis presents these results in such a way that they are fully accessible to the range of students and professionals who are involved in modelling demand and consumer behavior in general or specifically in transportation - whether from the point of view of the design of transit systems, urban and transport economics, public policy, operations research, or systems management and planning. The introductory chapter presents the background of discrete choice analysis and context of transportation demand forecasting. Subsequent chapters cover, among other topics, the theories of individual choice behavior, binary and multinominal choice models, aggregate forecasting techniques, estimation methods,
tests used in the process of model development, sampling theory, the
nested-logit model, and systems of models. Discrete Choice Analysis is
ninth in the MIT Press Series in Transportation Studies, edited by
Marvin Manheim.

**Using R for Introductory Statistics**

This book focuses on statistical methods for the analysis of discrete
failure times. Failure time analysis is one of the most important fields in
statistical research, with applications affecting a wide range of
disciplines, in particular, demography, econometrics, epidemiology and
clinical research. Although there are a large variety of statistical
methods for failure time analysis, many techniques are designed for
failure times that are measured on a continuous scale. In empirical
studies, however, failure times are often discrete, either because they
have been measured in intervals (e.g., quarterly or yearly) or because
they have been rounded or grouped. The book covers well-established
methods like life-table analysis and discrete hazard regression models,
but also introduces state-of-the-art techniques for model evaluation,
nonparametric estimation and variable selection. Throughout, the
methods are illustrated by real life applications, and relationships to
survival analysis in continuous time are explained. Each section
includes a set of exercises on the respective topics. Various functions
and tools for the analysis of discrete survival data are collected in the R
package discSurv that accompanies the book.

**Discrete Choice Analysis**

The high-level language of R is recognized as one of the most powerful
and flexible statistical software environments, and is rapidly becoming
the standard setting for quantitative analysis, statistics and graphics. R
provides free access to unrivalled coverage and cutting-edge
applications, enabling the user to apply numerous statistical methods
ranging from simple regression to time series or multivariate analysis.
Building on the success of the author’s bestselling Statistics: An
Introduction using R, The R Book is packed with worked examples,
providing an all inclusive guide to R, ideal for novice and more
accomplished users alike. The book assumes no background in statistics
or computing and introduces the advantages of the R environment,
detailing its applications in a wide range of disciplines. Provides the
first comprehensive reference manual for the R language, including
practical guidance and full coverage of the graphics facilities.
Introduces all the statistical models covered by R, beginning with
simple classical tests such as chi-square and t-test. Proceeds to
examine more advance methods, from regression and analysis of
variance, through to generalized linear models, generalized mixed
models, time series, spatial statistics, multivariate statistics and much
more. The R Book is aimed at undergraduates, postgraduates and
professionals in science, engineering and medicine. It is also ideal for
students and professionals in statistics, economics, geography and the
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Applied Categorical and Count Data Analysis

Join the revolution ignited by the ground-breaking R system! Starting with an introduction to R, covering standard regression methods, then presenting more advanced topics, this book guides users through the practical and powerful tools that the R system provides. The emphasis is on hands-on analysis, graphical display and interpretation of data. The many worked examples, taken from real-world research, are accompanied by commentary on what is done and why. A website provides computer code and data sets, allowing readers to reproduce all analyses. Updates and solutions to selected exercises are also available. Assuming only basic statistical knowledge, the book is ideal for research scientists, final-year undergraduate or graduate level students of applied statistics, and practising statisticians. It is both for learning and for reference. This revised edition reflects changes in R since 2003 and has new material on survival analysis, random coefficient models, and the handling of high-dimensional data.

Reproducible Research with R and RStudio

This book is ideal for those who are already exposed to R, but have not yet used it extensively for data analytics and are seeking to get up and running quickly for analytics tasks. This book will help people who aspire to enhance their skills in any of the following ways: • perform advanced analyses and create informative and professional charts • become proficient in acquiring data from many sources • apply supervised and unsupervised data mining techniques • use R’s features to present analyses professionally

Exact Analysis of Discrete Data

"This book introduces you to R, RStudio, and the tidyverse, a collection of R packages designed to work together to make data science fast, fluent, and fun. Suitable for readers with no previous programming experience"--

Discrete Data Analysis with R

With an emphasis on social science applications, Event History Analysis with R presents an introduction to survival and event history analysis using real-life examples. Keeping mathematical details to a minimum, the book covers key topics, including both discrete and continuous time data, parametric proportional hazards, and accelerated failure times. Features Introduces parametric proportional hazards models with baseline distributions like the Weibull, Gompertz, Lognormal, and Piecewise constant hazard distributions, in addition to traditional Cox regression Presents mathematical details as well as technical material in an appendix Includes real examples with applications in demography,
econometrics, and epidemiology Provides a dedicated R package, eha, containing special treatments, including making cuts in the Lexis diagram, creating communal covariates, and creating period statistics A much-needed primer, Event History Analysis with R is a didactically excellent resource for students and practitioners of applied event history and survival analysis.

**Visualizing Categorical Data**

The richly illustrated Interactive Web-Based Data Visualization with R, plotly, and shiny focuses on the process of programming interactive web graphics for multidimensional data analysis. It is written for the data analyst who wants to leverage the capabilities of interactive web graphics without having to learn web programming. Through many R code examples, you will learn how to tap the extensive functionality of these tools to enhance the presentation and exploration of data. By mastering these concepts and tools, you will impress your colleagues with your ability to quickly generate more informative, engaging, and reproducible interactive graphics using free and open source software that you can share over email, export to pdf, and more. Key Features: Convert static ggplot2 graphics to an interactive web-based form Link, animate, and arrange multiple plots in standalone HTML from R Embed, modify, and respond to plotly graphics in a shiny app Learn best practices for visualizing continuous, discrete, and multivariate data Learn numerous ways to visualize geo-spatial data This book makes heavy use of plotly for graphical rendering, but you will also learn about other R packages that support different phases of a data science workflow, such as tidyr, dplyr, and tidyverse. Along the way, you will gain insight into best practices for visualization of high-dimensional data, statistical graphics, and graphical perception. The printed book is complemented by an interactive website where readers can view movies demonstrating the examples and interact with graphics.

**An Introduction to Discrete-Valued Time Series**

Discrete Event Systems: Analysis and Control is the proceedings of WODES2000 (the 5th Workshop on Discrete Event Systems, held in Ghent, Belgium, on August 21-23, 2000). This book provides a survey of the current state of the art in the field of modeling, analysis and control synthesis of discrete event systems, lecture notes for a mini course on sensitivity analysis for performance evaluation of timed discrete event systems, and 48 carefully selected papers covering all areas of discrete event theory and the most important applications domains. Topics include automata theory and supervisory control (12); Petri net based models for discrete event systems, and their control synthesis (11); (max,+ ) and timed automata models (9); applications papers related to scheduling, failure detection, and implementation of supervisory controllers (7); formal description of PLCs (6); and finally, stochastic models of discrete event systems (3).
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**Discrete Data Analysis with R**
An Applied Treatment of Modern Graphical Methods for Analyzing Categorical Data

Discrete Data Analysis with R: Visualization and Modeling Techniques for Categorical and Count Data presents an applied treatment of modern methods for the analysis of categorical data, both discrete response data and frequency data. It explains how to use graphical meth

**An Introduction to Categorical Data Analysis**
Learn How to Properly Analyze Categorical Data

Analysis of Categorical Data with R presents a modern account of categorical data analysis using the popular R software. It covers recent techniques of model building and assessment for binary, multicategory, and count response variables and discusses fundamentals, such as odds ratio and probability estimation. The authors give detailed advice and guidelines on which procedures to use and why to use them. The Use of R as Both a Data Analysis Method and a Learning Tool Requiring no prior experience with R, the text offers an introduction to the essential features and functions of R. It incorporates numerous examples from medicine, psychology, sports, ecology, and other areas, along with extensive R code and output. The authors use data simulation in R to help readers understand the underlying assumptions of a procedure and then to evaluate the procedure’s performance. They also present many graphical demonstrations of the features and properties of various analysis methods. Web Resource The data sets and R programs from each example are available at www.chrisbilder.com/categorical. The programs include code used to create every plot and piece of output. Many of these programs contain code to demonstrate additional features or to perform more detailed analyses than what is in the text. Designed to be used in tandem with the book, the website also uniquely provides videos of the authors teaching a course on the subject. These videos include live, in-class recordings, which instructors may find useful in a blended or flipped classroom setting. The videos are also suitable as a substitute for a short course.

**Graphical Data Analysis with R**
Praise for previous editions: “Gandrud has written a great outline of how a fully reproducible research project should look from start to finish, with brief explanations of each tool that he uses along the way Advanced undergraduate students in mathematics, statistics, and similar fields as well as students just beginning their graduate studies would benefit the most from reading this book. Many more experienced R users or second-year graduate students might find themselves thinking, ‘I wish I’d read this book at the start of my studies, when I was first learning R!’This book could be used as the main text for a class on reproducible research " (The American Statistician) Reproducible Research with R and R Studio, Third Edition bringsroat
together the skills and tools needed for doing and presenting computational research. Using straightforward examples, the book takes you through an entire reproducible research workflow. This practical workflow enables you to gather and analyze data as well as dynamically present results in print and on the web. Supplementary materials and example are available on the author’s website. New to the Third Edition Updated package recommendations, examples, URLs, and removed technologies no longer in regular use. More advanced R Markdown (and less LaTeX) in discussions of markup languages and examples. Stronger focus on reproducible working directory tools. Updated discussion of cloud storage services and persistent reproducible material citation. Added discussion of Jupyter notebooks and reproducible practices in industry. Examples of data manipulation with Tidyverse tibbles (in addition to standard data frames) and pivot_longer() and pivot_wider() functions for pivoting data. Features Incorporates the most important advances that have been developed since the editions were published Describes a complete reproducible research workflow, from data gathering to the presentation of results Shows how to automatically generate tables and figures using R Includes instructions on formatting a presentation document via markup languages Discusses cloud storage and versioning services, particularly Github Explains how to use Unix-like shell programs for working with large research projects

**Structural Equation Modeling**

Introduction and background; Exploratory data analysis and graphics; Deterministic functions for ecological modeling; Probability and stochastic distributions for ecological modeling; Stochastic simulation and power analysis; Likelihood and all that; Optimization and all that; Likelihood examples; Standard statistics revisited; Modeling variance; Dynamic models.

**Statistical Data Analysis Explained**

**The Book of R**

Geophysical Data Analysis: Discrete Inverse Theory is an introductory text focusing on discrete inverse theory that is concerned with parameters that either are truly discrete or can be adequately approximated as discrete. Organized into 12 chapters, the book’s opening chapters provide a general background of inverse problems and their corresponding solution, as well as some of the basic concepts from probability theory that are applied throughout the text. Chapters 3-7 discuss the solution of the canonical inverse problem, that is, the linear problem with Gaussian statistics, and discussions on problems that are non-Gaussian and nonlinear are covered in Chapters 8 and 9. Chapters 10-12 present examples of the use of inverse theory and a discussion on the numerical algorithms that must be employed to solve
inverse problems on a computer. This book is of value to graduate students and many college seniors in the applied sciences.

**Applied Spatial Data Analysis with R**

An Applied Treatment of Modern Graphical Methods for Analyzing Categorical Data

Discrete Data Analysis with R: Visualization and Modeling Techniques for Categorical and Count Data presents an applied treatment of modern methods for the analysis of categorical data, both discrete response data and frequency data. It explains how to use graphical meth

**Applied Statistics for Environmental Science with R**

See How Graphics Reveal Information

Graphical Data Analysis with R shows you what information you can gain from graphical displays. The book focuses on why you draw graphics to display data and which graphics to draw (and uses R to do so). All the datasets are available in R or one of its packages and the R code is available at rosuda.org/GDA. Graphical data analysis is useful for data cleaning, exploring data structure, detecting outliers and unusual groups, identifying trends and clusters, spotting local patterns, evaluating modelling output, and presenting results. This book guides you in choosing graphics and understanding what information you can glean from them. It can be used as a primary text in a graphical data analysis course or as a supplement in a statistics course. Colour graphics are used throughout.

**Learning Statistics with R**

Few books on statistical data analysis in the natural sciences are written at a level that a non-statistician will easily understand. This is a book written in colloquial language, avoiding mathematical formulae as much as possible, trying to explain statistical methods using examples and graphics instead. To use the book efficiently, readers should have some computer experience. The book starts with the simplest of statistical concepts and carries readers forward to a deeper and more extensive understanding of the use of statistics in environmental sciences. The book concerns the application of statistical and other computer methods to the management, analysis and display of spatial data. These data are characterised by including locations (geographic coordinates), which leads to the necessity of using maps to display the data and the results of the statistical methods. Although the book uses examples from applied geochemistry, and a large geochemical survey in particular, the principles and ideas equally well apply to other natural sciences, e.g., environmental sciences, pedology, hydrology, geography, forestry, ecology, and health sciences/epidemiology. The book is unique because it supplies direct access to software solutions (based on R, the Open Source version of the S-language for statistics) for applied environmental statistics. For all graphics and tables presented in the book, the R-scripts are provided in the form of
executable R-scripts. In addition, a graphical user interface for R, called DAS+R, was developed for convenient, fast and interactive data analysis. Statistical Data Analysis Explained: Applied Environmental Statistics with R provides, on an accompanying website, the software to undertake all the procedures discussed, and the data employed for their description in the book.

Statistics in a Nutshell

***Winner of the 2008 Ziegel Prize for outstanding new book of the year*** Structural equation modeling (SEM) is a powerful multivariate method allowing the evaluation of a series of simultaneous hypotheses about the impacts of latent and manifest variables on other variables, taking measurement errors into account. As SEMs have grown in popularity in recent years, new models and statistical methods have been developed for more accurate analysis of more complex data. A Bayesian approach to SEMs allows the use of prior information resulting in improved parameter estimates, latent variable estimates, and statistics for model comparison, as well as offering more reliable results for smaller samples. Structural Equation Modeling introduces the Bayesian approach to SEMs, including the selection of prior distributions and data augmentation, and offers an overview of the subject’s recent advances. Demonstrates how to utilize powerful statistical computing tools, including the Gibbs sampler, the Metropolis-Hasting algorithm, bridge sampling and path sampling to obtain the Bayesian results. Discusses the Bayes factor and Deviance Information Criterion (DIC) for model comparison. Includes coverage of complex models, including SEMs with ordered categorical variables, and dichotomous variables, nonlinear SEMs, two-level SEMs, multisample SEMs, mixtures of SEMs, SEMs with missing data, SEMs with variables from an exponential family of distributions, and some of their combinations. Illustrates the methodology through simulation studies and examples with real data from business management, education, psychology, public health and sociology. Demonstrates the application of the freely available software WinBUGS via a supplementary website featuring computer code and data sets. Structural Equation Modeling: A Bayesian Approach is a multi-disciplinary text ideal for researchers and students in many areas, including: statistics, biostatistics, business, education, medicine, psychology, public health and social science.

Discrete Data Analysis with R

Statistical methods are a key part of data science, yet very few data scientists have any formal statistics training. Courses and books on basic statistics rarely cover the topic from a data science perspective. This practical guide explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data science resources incorporate statistical methods but lack a deeper statistical perspective. If you're familiar with the R programming language, and
have some exposure to statistics, this quick reference bridges the gap in an accessible, readable format. With this book, you'll learn: Why exploratory data analysis is a key preliminary step in data science How random sampling can reduce bias and yield a higher quality dataset, even with big data How the principles of experimental design yield definitive answers to questions How to use regression to estimate outcomes and detect anomalies Key classification techniques for predicting which categories a record belongs to Statistical machine learning methods that “learn” from data Unsupervised learning methods for extracting meaning from unlabeled data

**Introduction to Probability and Statistics Using R**

Applied Spatial Data Analysis with R, second edition, is divided into two basic parts, the first presenting R packages, functions, classes and methods for handling spatial data. This part is of interest to users who need to access and visualise spatial data. Data import and export for many file formats for spatial data are covered in detail, as is the interface between R and the open source GRASS GIS and the handling of spatio-temporal data. The second part showcases more specialised kinds of spatial data analysis, including spatial point pattern analysis, interpolation and geostatistics, areal data analysis and disease mapping. The coverage of methods of spatial data analysis ranges from standard techniques to new developments, and the examples used are largely taken from the spatial statistics literature. All the examples can be run using R contributed packages available from the CRAN website, with code and additional data sets from the book's own website. Compared to the first edition, the second edition covers the more systematic approach towards handling spatial data in R, as well as a number of important and widely used CRAN packages that have appeared since the first edition. This book will be of interest to researchers who intend to use R to handle, visualise, and analyse spatial data. It will also be of interest to spatial data analysts who do not use R, but who are interested in practical aspects of implementing software for spatial data analysis. It is a suitable companion book for introductory spatial statistics courses and for applied methods courses in a wide range of subjects using spatial data, including human and physical geography, geographical information science and geoinformatics, the environmental sciences, ecology, public health and disease control, economics, public administration and political science. The book has a website where complete code examples, data sets, and other support material may be found: http://www.asdar-book.org. The authors have taken part in writing and maintaining software for spatial data handling and analysis with R in concert since 2003.

**The R Book**

Graphical methods for quantitative data are well developed and widely used. However, until now with this comprehensive treatment, few graphical methods existed for categorical data. In this innovative book,
the author presents many aspects of the relationships among variables, the adequacy of a fitted model, and possibly unusual features of the data that can best be seen and appreciated in an informative graphical display.

**Modern Statistics for Modern Biology**

Developed from the authors’ graduate-level biostatistics course, *Applied Categorical and Count Data Analysis* explains how to perform the statistical analysis of discrete data, including categorical and count outcomes. The authors describe the basic ideas underlying each concept, model, and approach to give readers a good grasp of the fundamentals of the methodology without using rigorous mathematical arguments. The text covers classic concepts and popular topics, such as contingency tables, logistic models, and Poisson regression models, along with modern areas that include models for zero-modified count outcomes, parametric and semiparametric longitudinal data analysis, reliability analysis, and methods for dealing with missing values. R, SAS, SPSS, and Stata programming codes are provided for all the examples, enabling readers to immediately experiment with the data in the examples and even adapt or extend the codes to fit data from their own studies. Designed for a one-semester course for graduate and senior undergraduate students in biostatistics, this self-contained text is also suitable as a self-learning guide for biomedical and psychosocial researchers. It will help readers analyze data with discrete variables in a wide range of biomedical and psychosocial research fields.

**Applied Longitudinal Data Analysis**

The thirteen papers in "Structural Analysis of Discrete Data" are previously unpublished major research contributions solicited by the editors. They have been specifically prepared to fulfill the two-fold purpose of the volume, first to provide the econometrics student with an overview of the present extent of the subject and to delineate the boundaries of current research, both in terms of methodology and applications. "Coordinated publication of important findings" should, as the editors state, "lower the cost of entry into the field and speed dissemination of recent research into the graduate econometrics classroom."A second purpose of the volume is to communicate results largely reported in the econometrics literature to a wider community of researchers to whom they are directly relevant, including applied econometricians, statisticians in the area of discrete multivariate analysis, specialists in biometrics, psychometrics, and sociometrics, and analysts in various applied fields such as finance, marketing, and transportation. The papers are grouped into four sections: "Statistical Analysis of Discrete Probability Models," with papers by the editors and by Steven Cosselett; "Dynamic Discrete Probability Models," consisting of two contributions by James Heckman; "Structural Discrete Probability Models Derived from Theories of Choice," with papers by Daniel McFadden, Gregory Fischer and Daniel Nagin, Steven Lerman and
Charles Manski, and Moshe Ben-Akiva and Thawat Watanatada; and "Simultaneous Systems Models with Discrete Endogenous Variables, " with contributions by Lung-Fei Lee, Jerry Hausman and David Wise, Dale Poirier, Peter Schmidt, and Robert Avery. Among the applications treated are income maintenance experiments, physician behavior, consumer credit, and intra-urban location and transportation.

**Data Analysis and Graphics Using R**

Statistical Analysis of Financial Data covers the use of statistical analysis and the methods of data science to model and analyze financial data. The first chapter is an overview of financial markets, describing the market operations and using exploratory data analysis to illustrate the nature of financial data. The software used to obtain the data for the examples in the first chapter and for all computations and to produce the graphs is R. However discussion of R is deferred to an appendix to the first chapter, where the basics of R, especially those most relevant in financial applications, are presented and illustrated. The appendix also describes how to use R to obtain current financial data from the internet. Chapter 2 describes the methods of exploratory data analysis, especially graphical methods, and illustrates them on real financial data. Chapter 3 covers probability distributions useful in financial analysis, especially heavy-tailed distributions, and describes methods of computer simulation of financial data. Chapter 4 covers basic methods of statistical inference, especially the use of linear models in analysis, and Chapter 5 describes methods of time series with special emphasis on models and methods applicable to analysis of financial data. Features * Covers statistical methods for analyzing models appropriate for financial data, especially models with outliers or heavy-tailed distributions. * Describes both the basics of R and advanced techniques useful in financial data analysis. * Driven by real, current financial data, not just stale data deposited on some static website. * Includes a large number of exercises, many requiring the use of open-source software to acquire real financial data from the internet and to analyze it.

**Modeling Discrete Time-to-Event Data**

By charting changes over time and investigating whether and when events occur, researchers reveal the temporal rhythms of our lives.

**Interactive Web-Based Data Visualization with R, plotly, and shiny**

A first approach for modeling time series of counts: the thinning-based INAR (1) model -- Further thinning-based models for count time series -- INGARCH models for count time series -- Further models for count time series -- Analyzing categorical time series -- Models for categorical time series -- Control charts for count processes -- Control charts for categorical processes
**Introduction to Data Science**

The Book of R is a comprehensive, beginner-friendly guide to R, the world’s most popular programming language for statistical analysis. Even if you have no programming experience and little more than a grounding in the basics of mathematics, you’ll find everything you need to begin using R effectively for statistical analysis. You’ll start with the basics, like how to handle data and write simple programs, before moving on to more advanced topics, like producing statistical summaries of your data and performing statistical tests and modeling. You’ll even learn how to create impressive data visualizations with R’s basic graphics tools and contributed packages, like ggplot2 and ggvis, as well as interactive 3D visualizations using the rgl package. Dozens of hands-on exercises (with downloadable solutions) take you from theory to practice, as you learn: -The fundamentals of programming in R, including how to write data frames, create functions, and use variables, statements, and loops -Statistical concepts like exploratory data analysis, probabilities, hypothesis tests, and regression modeling, and how to execute them in R -How to access R’s thousands of functions, libraries, and data sets -How to draw valid and useful conclusions from your data -How to create publication-quality graphics of your results Combining detailed explanations with real-world examples and exercises, this book will provide you with a solid understanding of both statistics and the depth of R’s functionality. Make The Book of R your doorway into the growing world of data analysis.

**Practical Statistics for Data Scientists**

**Geophysical Data Analysis: Discrete Inverse Theory**

A valuable new edition of a standard reference The use of statistical methods for categorical data has increased dramatically, particularly for applications in the biomedical and social sciences. An Introduction to Categorical Data Analysis, Third Edition summarizes these methods and shows readers how to use them using software. Readers will find a unified generalized linear models approach that connects logistic regression and loglinear models for discrete data with normal regression for continuous data. Adding to the value in the new edition is: • Illustrations of the use of R software to perform all the analyses in the book • A new chapter on alternative methods for categorical data, including smoothing and regularization methods (such as the lasso), classification methods such as linear discriminant analysis and classification trees, and cluster analysis • New sections in many chapters introducing the Bayesian approach for the methods of that chapter • More than 70 analyses of data sets to illustrate application of the methods, and about 200 exercises, many containing other data sets • An appendix showing how to use SAS, Stata, and SPSS, and an appendix with short solutions to most odd-numbered exercises Written in an applied, nontechnical style, this book illustrates the methods
using a wide variety of real data, including medical clinical trials, environmental questions, drug use by teenagers, horseshoe crab mating, basketball shooting, correlates of happiness, and much more. An Introduction to Categorical Data Analysis, Third Edition is an invaluable tool for statisticians and biostatisticians as well as methodologists in the social and behavioral sciences, medicine and public health, marketing, education, and the biological and agricultural sciences.

ggplot2

The second edition of a bestselling textbook, Using R for Introductory Statistics guides students through the basics of R, helping them overcome the sometimes steep learning curve. The author does this by breaking the material down into small, task-oriented steps. The second edition maintains the features that made the first edition so popular, while updating data, examples, and changes to R in line with the current version. See What’s New in the Second Edition: Increased emphasis on more idiomatic R provides a grounding in the functionality of base R. Discussions of the use of RStudio helps new R users avoid as many pitfalls as possible. Use of knitr package makes code easier to read and therefore easier to reason about. Additional information on computer-intensive approaches motivates the traditional approach. Updated examples and data make the information current and topical. The book has an accompanying package, UsingR, available from CRAN, R’s repository of user-contributed packages. The package contains the data sets mentioned in the text (data(package="UsingR")), answers to selected problems (answers()), a few demonstrations (demo()), the errata (errata()), and sample code from the text. The topics of this text line up closely with traditional teaching progression; however, the book also highlights computer-intensive approaches to motivate the more traditional approach. The authors emphasize realistic data and examples and rely on visualization techniques to gather insight. They introduce statistics and R seamlessly, giving students the tools they need to use R and the information they need to navigate the sometimes complex world of statistical computing.

Handbook of Statistics

The Statistical Analysis of Discrete Data provides an introduction to current statistical methods for analyzing discrete response data. The book can be used as a course text for graduate students and as a reference for researchers who analyze discrete data. The book's mathematical prerequisites are linear algebra and elementary advanced calculus. It assumes a basic statistics course which includes some decision theory, and knowledge of classical linear model theory for continuous response data. Problems are provided at the end of each chapter to give the reader an opportunity to apply the methods in the text, to explore extensions of the material covered, and to analyze data with discrete responses. In the text examples, and in the problems, we have sought
to include interesting data sets from a wide variety of fields including political science, medicine, nuclear engineering, sociology, ecology, cancer research, library science, and biology. Although there are several texts available on discrete data analysis, we felt there was a need for a book which incorporated some of the myriad recent research advances. Our motivation was to introduce the subject by emphasizing its ties to the well-known theories of linear models, experimental design, and regression diagnostics, as well as to describe alternative methodologies (Bayesian, smoothing, etc.); the latter are based on the premise that external information is available. These overriding goals, togethertogether with our own experiences and biases, have governed our choice of topics.

**The Statistical Analysis of Discrete Data**

Researchers in fields ranging from biology and medicine to the social sciences, law, and economics regularly encounter variables that are discrete or categorical in nature. While there is no dearth of books on the analysis and interpretation of such data, these generally focus on large sample methods. When sample sizes are not large or the data are

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