

Dynamic Uments With R And Knitr

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Using R and RStudio for Data Management, Statistical Analysis, and Graphics - Nicholas J. Horton 2015-03-10

Improve Your Analytical Skills Incorporating the latest R packages as well as new case studies and applications, Using R and RStudio for Data Management, Statistical Analysis, and Graphics, Second Edition covers the aspects of R most often used by statistical analysts. New users of R will find the book's simple approach easy to understand while more

R in Action - Robert I. Kabacoff 2015-05-20

Summary R in Action, Second Edition presents both the R language and the examples that make it so useful for business developers. Focusing on practical solutions, the book offers a crash course in statistics and covers elegant methods for dealing with messy and incomplete data that are difficult to analyze using traditional methods. You'll also master R's extensive graphical capabilities for exploring and presenting data visually. And this expanded second edition includes new chapters on time series analysis, cluster analysis, and classification methodologies, including decision trees, random forests, and support vector machines. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the

Technology Business pros and researchers thrive on data, and R speaks the language of data analysis. R is a powerful programming language for statistical computing. Unlike general-purpose tools, R provides thousands of modules for solving just about any data-crunching or presentation challenge you're likely to face. R runs on all important platforms and is used by thousands of major corporations and institutions worldwide. About the Book R in Action, Second Edition teaches you how to use the R language by presenting examples relevant to scientific, technical, and business developers. Focusing on practical solutions, the book offers a crash course in statistics, including elegant methods for dealing with messy and incomplete data. You'll also master R's extensive graphical capabilities for exploring and presenting data visually. And this expanded second edition includes new chapters on forecasting, data mining, and dynamic report writing. What's Inside Complete R language tutorial Using R to manage, analyze, and visualize data Techniques for debugging programs and creating packages OOP in R Over 160 graphs About the Author Dr. Rob Kabacoff is a seasoned researcher and teacher who specializes in data analysis. He also maintains the popular Quick-R website at statmethods.net. Table of Contents PART 1 GETTING

STARTED Introduction to R Creating a dataset Getting started with graphs Basic data management Advanced data management PART 2 BASIC METHODS Basic graphs Basic statistics PART 3 INTERMEDIATE METHODS Regression Analysis of variance Power analysis Intermediate graphs Resampling statistics and bootstrapping PART 4 ADVANCED METHODS Generalized linear models Principal components and factor analysis Time series Cluster analysis Classification Advanced methods for missing data PART 5 EXPANDING YOUR SKILLS Advanced graphics with ggplot2 Advanced programming Creating a package Creating dynamic reports Advanced graphics with the lattice package available online only from manning.com/kabacoff2

Julia Quick Syntax Reference - Antonello Lobianco 2019-11-11
This quick Julia programming language guide is a condensed code and syntax reference to the Julia 1.x programming language, updated with the latest features of the Julia APIs, libraries, and packages. It presents the essential Julia syntax in a well-organized format that can be used as a handy reference. This book provides an introduction that reveals basic Julia structures and syntax; discusses data types, control flow, functions, input/output, exceptions, metaprogramming, performance, and more. Additionally, you'll learn to interface Julia with other programming languages such as R for statistics or Python. You will learn how to use Julia packages for data analysis, numerical optimization and symbolic computation, and how to disseminate your results in dynamic documents or interactive web pages. In this book, the focus is on providing important information as quickly as possible. It is packed with useful information and is a must-have for any Julia programmer. What You Will Learn Set up the software needed to run Julia and your first Hello World example Work with types and the different containers that Julia makes available for rapid application development Use vectorized, classical loop-based code, logical operators, and blocks Explore Julia functions by looking at arguments, return values, polymorphism, parameters, anonymous

functions, and broadcasts Build custom structures in Julia Interface Julia with other languages such as C/C++, Python, and R Program a richer API, modifying the code before it is executed using expressions, symbols, macros, quote blocks, and more Maximize your code's performance Who This Book Is For Experienced programmers new to Julia, as well as existing Julia coders new to the now stable Julia version 1.0 release.

Dynamic Documents with R and knitr - Yihui Xie 2017-07-12
Quickly and Easily Write Dynamic Documents Suitable for both beginners and advanced users, Dynamic Documents with R and knitr, Second Edition makes writing statistical reports easier by integrating computing directly with reporting. Reports range from homework, projects, exams, books, blogs, and web pages to virtually any documents related to statistical graphics, computing, and data analysis. The book covers basic applications for beginners while guiding power users in understanding the extensibility of the knitr package. New to the Second Edition A new chapter that introduces R Markdown v2 Changes that reflect improvements in the knitr package New sections on generating tables, defining custom printing methods for objects in code chunks, the C/Fortran engines, the Stan engine, running engines in a persistent session, and starting a local server to serve dynamic documents Boost Your Productivity in Statistical Report Writing and Make Your Scientific Computing with R Reproducible Like its highly praised predecessor, this edition shows you how to improve your efficiency in writing reports. The book takes you from program output to publication-quality reports, helping you fine-tune every aspect of your report.

Implementing Reproducible Research - Victoria Stodden 2018-12-14
In computational science, reproducibility requires that researchers make code and data available to others so that the data can be analyzed in a similar manner as in the original publication. Code must be available to be distributed, data must be accessible in a

readable format, and a platform must be available for widely distributing the data and code. In addition, both data and code need to be licensed permissively enough so that others can reproduce the work without a substantial legal burden.

Implementing Reproducible Research covers many of the elements necessary for conducting and distributing reproducible research. It explains how to accurately reproduce a scientific result. Divided into three parts, the book discusses the tools, practices, and dissemination platforms for ensuring reproducibility in computational science. It describes: Computational tools, such as Sweave, knitr, VisTrails, Sumatra, CDE, and the Declaratron system Open source practices, good programming practices, trends in open science, and the role of cloud computing in reproducible research Software and methodological platforms, including open source software packages, RunMyCode platform, and open access journals Each part presents contributions from leaders who have developed software and other products that have advanced the field. Supplementary material is available at www.ImplementingRR.org.

R Markdown Cookbook - Yihui Xie 2020-10-30

R Markdown is a powerful tool for combining analysis and reporting into the single document in the spirit of literate programming and reproducible research. Since the birth of the rmarkdown package in early 2014, R Markdown has grown substantially from a package that supports a few output formats (such as HTML, PDF, and Word) to an extensive and diverse ecosystem that enables the creation of books, blogs, scientific articles, websites, and more. Due to its rapid success, this ecosystem is hard to learn completely meaning that R Markdown users, from novices to advanced users, likely do not know all that these packages have to offer. The R Markdown Cookbook confronts this gap by showcasing short, practical examples of wide-ranging tips and tricks to get the most out of these tools. After reading this book, you will learn how to: Enhance your R

Markdown content with diagrams, citations, and dynamically generated text Streamline your workflow with child documents, code chunk references, and caching Control the formatting and layout with Pandoc markdown syntax or by writing custom HTML and LaTeX templates Utilize chunk options and hooks to fine-tune how your code is processed Switch between different language engines to seamlessly incorporate python, D3, and more into your analysis

R Companion for Sampling - Yan Lu 2021-11-25

The R Companion for Sampling: Design and Analysis, designed to be read alongside Sampling: Design and Analysis, Third Edition by Sharon L. Lohr (SDA; 2022, CRC Press), shows how to use functions in base R and contributed packages to perform calculations for the examples in SDA. No prior experience with R is needed. Chapter 1 tells you how to obtain R and RStudio, introduces basic features of the R statistical software environment, and helps you get started with analyzing data. Each subsequent chapter provides step-by-step guidance for working through the data examples in the corresponding chapter of SDA, with code, output, and interpretation. Tips and warnings help you develop good programming practices and avoid common survey data analysis errors. R features and functions are introduced as they are needed so you can see how each type of sample is selected and analyzed. Each chapter builds on the knowledge developed earlier for simpler designs; after finishing the book, you will know how to use R to select and analyze almost any type of probability sample. All R code and data sets used in this book are available online to help you develop your skills analyzing survey data from social and public opinion research, public health, crime, education, business, agriculture, and ecology.

Reproducible Research with R and R Studio - Christopher Gandrud 2018-09-03

All the Tools for Gathering and Analyzing Data and Presenting Results Reproducible Research with R and RStudio, Second Edition

brings 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. New to the Second Edition The rmarkdown package that allows you to create reproducible research documents in PDF, HTML, and Microsoft Word formats using the simple and intuitive Markdown syntax Improvements to RStudio's interface and capabilities, such as its new tools for handling R Markdown documents Expanded knitr R code chunk capabilities The kable function in the knitr package and the texreg package for dynamically creating tables to present your data and statistical results An improved discussion of file organization, enabling you to take full advantage of relative file paths so that your documents are more easily reproducible across computers and systems The dplyr, magrittr, and tidyr packages for fast data manipulation Numerous modifications to R syntax in user-created packages Changes to GitHub's and Dropbox's interfaces Create Dynamic and Highly Reproducible Research This updated book provides all the tools to combine your research with the presentation of your findings. It saves you time searching for information so that you can spend more time actually addressing your research questions. Supplementary files used for the examples and a reproducible research project are available on the author's website.

Testing R Code - Richard Cotton 2017-01-12

Learn how to write R code with fewer bugs. The problem with programming is that you are always one typo away from writing something silly. Likewise with data analysis, a small mistake in your model can lead to a big mistake in your results. Combining the two disciplines means that it is all too easy for a missed minus sign to generate a false prediction that you don't spot until it's too late. Testing is the only way to be sure that your code, and your results, are correct. Testing R Code teaches you how to perform

development-time testing using the testthat package, allowing you to ensure that your code works as intended. The book also teaches run-time testing using the assertive package; enabling your users to correctly run your code. After beginning with an introduction to testing in R, the book explores more advanced cases such as integrating tests into R packages; testing code that accesses databases; testing C++ code with Rcpp; and testing graphics. Each topic is explained with real-world examples, and has accompanying exercises for readers to practise their skills — only a small amount of experience with R is needed to get started!

Extending R - John M. Chambers 2017-12-19

Up-to-Date Guidance from One of the Foremost Members of the R Core Team Written by John M. Chambers, the leading developer of the original S software, Extending R covers key concepts and techniques in R to support analysis and research projects. It presents the core ideas of R, provides programming guidance for projects of all scales, and introduces new, valuable techniques that extend R. The book first describes the fundamental characteristics and background of R, giving readers a foundation for the remainder of the text. It next discusses topics relevant to programming with R, including the apparatus that supports extensions. The book then extends R's data structures through object-oriented programming, which is the key technique for coping with complexity. The book also incorporates a new structure for interfaces applicable to a variety of languages. A reflection of what R is today, this guide explains how to design and organize extensions to R by correctly using objects, functions, and interfaces. It enables current and future users to add their own contributions and packages to R. A 2017 Choice Outstanding Academic Title

R Markdown - Yihui Xie 2018-07-27

R Markdown: The Definitive Guide is the first official book authored by the core R Markdown developers that provides a comprehensive and accurate reference to the R Markdown

ecosystem. With R Markdown, you can easily create reproducible data analysis reports, presentations, dashboards, interactive applications, books, dissertations, websites, and journal articles, while enjoying the simplicity of Markdown and the great power of R and other languages. In this book, you will learn Basics: Syntax of Markdown and R code chunks, how to generate figures and tables, and how to use other computing languages Built-in output formats of R Markdown: PDF/HTML/Word/RTF/Markdown documents and ioslides/Slidy/Beamer/PowerPoint presentations Extensions and applications: Dashboards, Tufte handouts, xaringan/reveal.js presentations, websites, books, journal articles, and interactive tutorials Advanced topics: Parameterized reports, HTML widgets, document templates, custom output formats, and Shiny documents. Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published three other books, Dynamic Documents with R and knitr, bookdown: Authoring Books and Technical Documents with R Markdown, and blogdown: Creating Websites with R Markdown. J.J. Allaire is the founder of RStudio and the creator of the RStudio IDE. He is an author of several packages in the R Markdown ecosystem including rmarkdown, flexdashboard, learnr, and radix. Garrett Golemund is the co-author of R for Data Science and author of Hands-On Programming with R. He wrote the lubridate R package and works for RStudio as an advocate who trains engineers to do data science with R and the Tidyverse.

[bookdown](#) - Yihui Xie 2016-12-12

bookdown: Authoring Books and Technical Documents with R Markdown presents a much easier way to write books and technical publications than traditional tools such as LaTeX and Word. The bookdown package inherits the simplicity of syntax and flexibility for data analysis from R Markdown, and extends R Markdown for technical writing, so that you can make better use of document elements such as figures, tables, equations, theorems,

citations, and references. Similar to LaTeX, you can number and cross-reference these elements with bookdown. Your document can even include live examples so readers can interact with them while reading the book. The book can be rendered to multiple output formats, including LaTeX/PDF, HTML, EPUB, and Word, thus making it easy to put your documents online. The style and theme of these output formats can be customized. We used books and R primarily for examples in this book, but bookdown is not only for books or R. Most features introduced in this book also apply to other types of publications: journal papers, reports, dissertations, course handouts, study notes, and even novels. You do not have to use R, either. Other choices of computing languages include Python, C, C++, SQL, Bash, Stan, JavaScript, and so on, although R is best supported. You can also leave out computing, for example, to write a fiction. This book itself is an example of publishing with bookdown and R Markdown, and its source is fully available on GitHub.

blogdown - Yihui Xie 2017-12-01

blogdown: Creating Websites with R Markdown provides a practical guide for creating websites using the blogdown package in R. In this book, we show you how to use dynamic R Markdown documents to build static websites featuring R code (or other programming languages) with automatically rendered output such as graphics, tables, analysis results, and HTML widgets. The blogdown package is also suitable for technical writing with elements such as citations, footnotes, and LaTeX math. This makes blogdown an ideal platform for any website designed to communicate information about data science, data analysis, data visualization, or R programming. Note that blogdown is not just for blogging or sites about R; it can also be used to create general-purpose websites. By default, blogdown uses Hugo, a popular open-source static website generator, which provides a fast and flexible way to build your site content to be shared online. Other website generators like Jekyll and Hexo are also supported. In this

book, you will learn how to: Build a website using the blogdown package; Create blog posts and other website content as dynamic documents that can be easily edited and updated; Customize Hugo templates to suit your site's needs; Publish your website online; Migrate your existing websites to blogdown and Hugo. Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published two other books, Dynamic Documents with R and knitr and bookdown: Authoring Books and Technical Documents with R Markdown. Amber Thomas is a data journalist and "maker" at the online publication of visual essays: The Pudding (<https://pudding.cool>). Her educational background was marine biology, but she has a strong love of data analysis, visualization, and storytelling. Alison Presmanes Hill is an Associate Professor of Pediatrics at Oregon Health & Science University, where she teaches Computer Science courses on data analysis, data science, and visualization. Her research focuses on using computational methods to study the development of children with neurodevelopmental disorders, in particular Autism Spectrum Disorders.

Doing Data Science in R - Mark Andrews 2021-03-31

This approachable introduction to doing data science in R provides step-by-step advice on using the tools and statistical methods to carry out data analysis. Introducing the fundamentals of data science and R before moving into more advanced topics like Multilevel Models and Probabilistic Modelling with Stan, it builds knowledge and skills gradually. This book: Focuses on providing practical guidance for all aspects, helping readers get to grips with the tools, software, and statistical methods needed to provide the right type and level of analysis their data requires Explores the foundations of data science and breaks down the processes involved, focusing on the link between data science and practical social science skills Introduces R at the outset and includes

extensive worked examples and R code every step of the way, ensuring students see the value of R and its connection to methods while providing hands-on practice in the software Provides examples and datasets from different disciplines and locations demonstrate the widespread relevance, possible applications, and impact of data science across the social sciences.

Blogdown - Yihui Xie 2017-12-12

blogdown: Creating Websites with R Markdown provides a practical guide for creating websites using the blogdown package in R. In this book, we show you how to use dynamic R Markdown documents to build static websites featuring R code (or other programming languages) with automatically rendered output such as graphics, tables, analysis results, and HTML widgets. The blogdown package is also suitable for technical writing with elements such as citations, footnotes, and LaTeX math. This makes blogdown an ideal platform for any website designed to communicate information about data science, data analysis, data visualization, or R programming. Note that blogdown is not just for blogging or sites about R; it can also be used to create general-purpose websites. By default, blogdown uses Hugo, a popular open-source static website generator, which provides a fast and flexible way to build your site content to be shared online. Other website generators like Jekyll and Hexo are also supported. In this book, you will learn how to: Build a website using the blogdown package; Create blog posts and other website content as dynamic documents that can be easily edited and updated; Customize Hugo templates to suit your site's needs; Publish your website online; Migrate your existing websites to blogdown and Hugo. Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published two other books, Dynamic Documents with R and knitr and bookdown: Authoring Books and Technical Documents with R

Markdown. Amber Thomas is a data journalist and "maker" at the online publication of visual essays: The Pudding (<https://pudding.cool>). Her educational background was marine biology, but she has a strong love of data analysis, visualization, and storytelling. Alison Presmanes Hill is an Associate Professor of Pediatrics at Oregon Health & Science University, where she teaches Computer Science courses on data analysis, data science, and visualization. Her research focuses on using computational methods to study the development of children with neurodevelopmental disorders, in particular Autism Spectrum Disorders.

R for Everyone - Jared P. Lander 2017-06-13

Statistical Computation for Programmers, Scientists, Quants, Excel Users, and Other Professionals Using the open source R language, you can build powerful statistical models to answer many of your most challenging questions. R has traditionally been difficult for non-statisticians to learn, and most R books assume far too much knowledge to be of help. *R for Everyone, Second Edition*, is the solution. Drawing on his unsurpassed experience teaching new users, professional data scientist Jared P. Lander has written the perfect tutorial for anyone new to statistical programming and modeling. Organized to make learning easy and intuitive, this guide focuses on the 20 percent of R functionality you'll need to accomplish 80 percent of modern data tasks. Lander's self-contained chapters start with the absolute basics, offering extensive hands-on practice and sample code. You'll download and install R; navigate and use the R environment; master basic program control, data import, manipulation, and visualization; and walk through several essential tests. Then, building on this foundation, you'll construct several complete models, both linear and nonlinear, and use some data mining techniques. After all this you'll make your code reproducible with LaTeX, RMarkdown, and Shiny. By the time you're done, you won't just know how to write R programs, you'll be ready to tackle the statistical problems you

care about most. Coverage includes Explore R, RStudio, and R packages Use R for math: variable types, vectors, calling functions, and more Exploit data structures, including data.frames, matrices, and lists Read many different types of data Create attractive, intuitive statistical graphics Write user-defined functions Control program flow with if, ifelse, and complex checks Improve program efficiency with group manipulations Combine and reshape multiple datasets Manipulate strings using R's facilities and regular expressions Create normal, binomial, and Poisson probability distributions Build linear, generalized linear, and nonlinear models Program basic statistics: mean, standard deviation, and t-tests Train machine learning models Assess the quality of models and variable selection Prevent overfitting and perform variable selection, using the Elastic Net and Bayesian methods Analyze univariate and multivariate time series data Group data via K-means and hierarchical clustering Prepare reports, slideshows, and web pages with knitr Display interactive data with RMarkdown and htmlwidgets Implement dashboards with Shiny Build reusable R packages with devtools and Rcpp Register your product at informit.com/register for convenient access to downloads, updates, and corrections as they become available.

Data Mining with R - Luis Torgo 2016-11-30

Data Mining with R: Learning with Case Studies, Second Edition uses practical examples to illustrate the power of R and data mining. Providing an extensive update to the best-selling first edition, this new edition is divided into two parts. The first part will feature introductory material, including a new chapter that provides an introduction to data mining, to complement the already existing introduction to R. The second part includes case studies, and the new edition strongly revises the R code of the case studies making it more up-to-date with recent packages that have emerged in R. The book does not assume any prior knowledge about R. Readers who are new to R and data mining

should be able to follow the case studies, and they are designed to be self-contained so the reader can start anywhere in the document. The book is accompanied by a set of freely available R source files that can be obtained at the book's web site. These files include all the code used in the case studies, and they facilitate the "do-it-yourself" approach followed in the book. Designed for users of data analysis tools, as well as researchers and developers, the book should be useful for anyone interested in entering the "world" of R and data mining. About the Author Luís Torgo is an associate professor in the Department of Computer Science at the University of Porto in Portugal. He teaches Data Mining in R in the NYU Stern School of Business' MS in Business Analytics program. An active researcher in machine learning and data mining for more than 20 years, Dr. Torgo is also a researcher in the Laboratory of Artificial Intelligence and Data Analysis (LIAAD) of INESC Porto LA.

Dynamic Documents with R and knitr - Yihui Xie 2017-07-12
Quickly and Easily Write Dynamic Documents Suitable for both beginners and advanced users, *Dynamic Documents with R and knitr*, Second Edition makes writing statistical reports easier by integrating computing directly with reporting. Reports range from homework, projects, exams, books, blogs, and web pages to virtually any documents related to statistical graphics, computing, and data analysis. The book covers basic applications for beginners while guiding power users in understanding the extensibility of the knitr package. New to the Second Edition A new chapter that introduces R Markdown v2 Changes that reflect improvements in the knitr package New sections on generating tables, defining custom printing methods for objects in code chunks, the C/Fortran engines, the Stan engine, running engines in a persistent session, and starting a local server to serve dynamic documents Boost Your Productivity in Statistical Report Writing and Make Your Scientific Computing with R Reproducible Like its highly praised predecessor, this edition shows you how to improve

your efficiency in writing reports. The book takes you from program output to publication-quality reports, helping you fine-tune every aspect of your report.

Epigenomics in Health and Disease - Mario Fraga 2015-10-12
Epigenomics in Health and Disease discusses the next generation sequencing technologies shaping our current knowledge with regards to the role of epigenetics in normal development, aging, and disease. It includes the consequences for diagnostics, prognostics, and disease-based therapies made possible by the study of the complete set of epigenetic modifications to the genetic material of human cells. With coverage pertinent to both basic biology and translational research, the book will be of particular interest for medical and bioscience researchers and students seeking current translational knowledge in epigenesis and epigenomics. Coverage includes the latest findings on epigenome-wide research in disease-based profiling, epidemiological implications, epigenome-wide epigenetic studies, the cancer epigenome, and other pervasive disease categories. Presents critical reviews that provide the means for reviewing and analyzing the epigenome as a whole, also discussing its translational potential Combines basic epigenomic knowledge with methodological and biostatistical topics related to technology and data analysis Includes coverage of relatively new topics, including DNA methylation dynamics during development and differentiation, genome-wide histone post-translational modifications during development and differentiation, and genome-wide DNA methylation changes during aging
Surrogates - Robert B. Gramacy 2020-03-10

Computer simulation experiments are essential to modern scientific discovery, whether that be in physics, chemistry, biology, epidemiology, ecology, engineering, etc. *Surrogates* are meta-models of computer simulations, used to solve mathematical models that are too intricate to be worked by hand. Gaussian process (GP) regression is a supremely flexible tool for the analysis

of computer simulation experiments. This book presents an applied introduction to GP regression for modelling and optimization of computer simulation experiments. Features:

- Emphasis on methods, applications, and reproducibility.
- R code is integrated throughout for application of the methods.
- Includes more than 200 full colour figures.
- Includes many exercises to supplement understanding, with separate solutions available from the author.
- Supported by a website with full code available to reproduce all methods and examples.

The book is primarily designed as a textbook for postgraduate students studying GP regression from mathematics, statistics, computer science, and engineering. Given the breadth of examples, it could also be used by researchers from these fields, as well as from economics, life science, social science, etc.

Engineering Production-Grade Shiny Apps - Colin Fay
2021-09-27

From the Reviews "[This book] contains an excellent blend of both Shiny-specific topics ... and practical advice from software development that fits in nicely with Shiny apps. You will find many nuggets of wisdom sprinkled throughout these chapters...." Eric Nantz, Host of the R-Podcast and the Shiny Developer Series (from the Foreword) "[This] book is a gradual and pleasant invitation to the production-ready shiny apps world. It ...exposes a comprehensive and robust workflow powered by the {golem} package. [It] fills the not yet covered gap between shiny app development and deployment in such a thrilling way that it may be read in one sitting.... In the industry world, where processes robustness is a key toward productivity, this book will indubitably have a tremendous impact." David Granjon, Sr. Expert Data Science, Novartis Presented in full color, Engineering Production-Grade Shiny Apps helps people build production-grade shiny applications, by providing advice, tools, and a methodology to work on web applications with R. This book starts with an overview of the challenges which arise from any big web application project:

organizing work, thinking about the user interface, the challenges of teamwork and the production environment. Then, it moves to a step-by-step methodology that goes from the idea to the end application. Each part of this process will cover in detail a series of tools and methods to use while building production-ready shiny applications. Finally, the book will end with a series of approaches and advice about optimizations for production. Features Focused on practical matters: This book does not cover Shiny concepts, but practical tools and methodologies to use for production. Based on experience: This book is a formalization of several years of experience building Shiny applications. Original content: This book presents new methodologies and tooling, not just a review of what already exists. Engineering Production-Grade Shiny Apps covers medium to advanced content about Shiny, so it will help people that are already familiar with building apps with Shiny, and who want to go one step further.

bookdown - Yihui Xie 2016-12-12

bookdown: Authoring Books and Technical Documents with R Markdown presents a much easier way to write books and technical publications than traditional tools such as LaTeX and Word. The bookdown package inherits the simplicity of syntax and flexibility for data analysis from R Markdown, and extends R Markdown for technical writing, so that you can make better use of document elements such as figures, tables, equations, theorems, citations, and references. Similar to LaTeX, you can number and cross-reference these elements with bookdown. Your document can even include live examples so readers can interact with them while reading the book. The book can be rendered to multiple output formats, including LaTeX/PDF, HTML, EPUB, and Word, thus making it easy to put your documents online. The style and theme of these output formats can be customized. We used books and R primarily for examples in this book, but bookdown is not only for books or R. Most features introduced in this book also apply to other types of publications: journal papers, reports, dissertations,

course handouts, study notes, and even novels. You do not have to use R, either. Other choices of computing languages include Python, C, C++, SQL, Bash, Stan, JavaScript, and so on, although R is best supported. You can also leave out computing, for example, to write a fiction. This book itself is an example of publishing with bookdown and R Markdown, and its source is fully available on GitHub.

R for Stata Users - Robert A. Muenchen 2010-04-26

Stata is the most flexible and extensible data analysis package available from a commercial vendor. R is a similarly flexible free and open source package for data analysis, with over 3,000 add-on packages available. This book shows you how to extend the power of Stata through the use of R. It introduces R using Stata terminology with which you are already familiar. It steps through more than 30 programs written in both languages, comparing and contrasting the two packages' different approaches. When finished, you will be able to use R in conjunction with Stata, or separately, to import data, manage and transform it, create publication quality graphics, and perform basic statistical analyses. A glossary defines over 50 R terms using Stata jargon and again using more formal R terminology. The table of contents and index allow you to find equivalent R functions by looking up Stata commands and vice versa. The example programs and practice datasets for both R and Stata are available for download.

Mastering RStudio - Develop, Communicate, and Collaborate with R - Julian Hillebrand 2015-12-04

Harness the power of RStudio to create web applications, R packages, markdown reports and pretty data visualizations About This Book Discover the multi-functional use of RStudio to support your daily work with R code Learn to create stunning, meaningful, and interactive graphs and learn to embed them into easy communicable reports using multiple R packages Develop your own R packages and Shiny web apps to share your knowledge and collaborate with others. Who This Book Is For This book is aimed at

R developers and analysts who wish to do R statistical development while taking advantage of RStudio's functionality to ease their development efforts. R programming experience is assumed as well as being comfortable with R's basic structures and a number of functions. What You Will Learn Discover the RStudio IDE and details about the user interface Communicate your insights with R Markdown in static and interactive ways Learn how to use different graphic systems to visualize your data Build interactive web applications with the Shiny framework to present and share your results Understand the process of package development and assemble your own R packages Easily collaborate with other people on your projects by using Git and GitHub Manage the R environment for your organization with RStudio and Shiny server Apply your obtained knowledge about RStudio and R development to create a real-world dashboard solution In Detail RStudio helps you to manage small to large projects by giving you a multi-functional integrated development environment, combined with the power and flexibility of the R programming language, which is becoming the bridge language of data science for developers and analyst worldwide. Mastering the use of RStudio will help you to solve real-world data problems. This book begins by guiding you through the installation of RStudio and explaining the user interface step by step. From there, the next logical step is to use this knowledge to improve your data analysis workflow. We will do this by building up our toolbox to create interactive reports and graphs or even web applications with Shiny. To collaborate with others, we will explore how to use Git and GitHub with RStudio and how to build your own packages to ensure top quality results. Finally, we put it all together in an interactive dashboard written with R. Style and approach An easy-to-follow guide full of hands-on examples to master RStudio. Beginning from explaining the basics, each topic is explained with a lot of details for every feature.

R Markdown - Yihui Xie 2018-07-27

R Markdown: The Definitive Guide is the first official book authored by the core R Markdown developers that provides a comprehensive and accurate reference to the R Markdown ecosystem. With R Markdown, you can easily create reproducible data analysis reports, presentations, dashboards, interactive applications, books, dissertations, websites, and journal articles, while enjoying the simplicity of Markdown and the great power of R and other languages. In this book, you will learn Basics: Syntax of Markdown and R code chunks, how to generate figures and tables, and how to use other computing languages Built-in output formats of R Markdown: PDF/HTML/Word/RTF/Markdown documents and ioslides/Slidy/Beamer/PowerPoint presentations Extensions and applications: Dashboards, Tufte handouts, xaringan/reveal.js presentations, websites, books, journal articles, and interactive tutorials Advanced topics: Parameterized reports, HTML widgets, document templates, custom output formats, and Shiny documents. Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published three other books, Dynamic Documents with R and knitr, bookdown: Authoring Books and Technical Documents with R Markdown, and blogdown: Creating Websites with R Markdown. J.J. Allaire is the founder of RStudio and the creator of the RStudio IDE. He is an author of several packages in the R Markdown ecosystem including rmarkdown, flexdashboard, learnr, and radix. Garrett Golemund is the co-author of R for Data Science and author of Hands-On Programming with R. He wrote the lubridate R package and works for RStudio as an advocate who trains engineers to do data science with R and the Tidyverse.

Computational Intelligence Methods for Bioinformatics and Biostatistics - Claudia Angelini 2016-07-30

This book constitutes the thoroughly refereed post-conference proceedings of the 12th International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics, CIBB

2015, held in Naples, Italy, in September, 2015. The 21 revised full papers presented were carefully reviewed and selected from 24 submissions. They present problems concerning computational techniques in bioinformatics, systems biology and medical informatics discussing cutting edge methodologies and accelerate life science discoveries, as well as novel challenges with an high impact on molecular biology and translational medicine.

Event History Analysis with R - Göran Broström 2021-11-11

With an emphasis on social science applications, Event History Analysis with R, Second Edition, presents an introduction to survival and event history analysis using real-life examples. Since publication of the first edition, focus in the field has gradually shifted towards the analysis of large and complex datasets. This has led to new ways of tabulating and analysing tabulated data with the same precision and power as that of an analysis of the full data set. Tabulation also makes it possible to share sensitive data with others without violating integrity. The new edition extends on the content of the first by both improving on already given methods and introducing new methods. There are two new chapters, Explanatory Variables and Regression, and Register-Based Survival Data Models. The book has been restructured to improve the flow, and there are significant updates to the computing in the supporting R package. Features

- Introduction to survival and event history analysis and how to solve problems with incomplete data using Cox regression.
- Parametric proportional hazards models, including the Weibull, Exponential, Extreme Value, and Gompertz distributions.
- Parametric accelerated failure time models with the Lognormal, Loglogistic, Gompertz, Exponential, Extreme Value, and Weibull distributions.
- Proportional hazards models for occurrence/exposure data, useful with tabular and register based data, often with a huge amount of observed events.
- Special treatments of external communal covariates, selections from the Lexis diagram, and creating period as well as cohort statistics.
- “Weird bootstrap” sampling suitable

for Cox regression with small to medium-sized data sets. • Supported by an R package (<https://CRAN.R-project.org/package=eha>), including code and data for most examples in the book. • A dedicated home page for the book at <http://ehar.se/r/ehar2> This substantial update to this popular book remains an excellent resource for researchers and practitioners of applied event history analysis and survival analysis. It can be used as a text for a course for graduate students or for self-study.

R for Everyone - Jared P. Lander 2014

A guide to using and understanding the 'R' computer programming language.

Presenting Statistical Results Effectively - Robert Andersen
2021-12-15

Perfect for any statistics student or researcher, this book offers hands-on guidance on how to interpret and discuss your results in a way that not only gives them meaning, but also achieves maximum impact on your target audience. No matter what variables your data involves, it offers a roadmap for analysis and presentation that can be extended to other models and contexts. Focused on best practices for building statistical models and effectively communicating their results, this book helps you: - Find the right analytic and presentation techniques for your type of data - Understand the cognitive processes involved in decoding information - Assess distributions and relationships among variables - Know when and how to choose tables or graphs - Build, compare, and present results for linear and non-linear models - Work with univariate, bivariate, and multivariate distributions - Communicate the processes involved in and importance of your results.

Advances in Streamflow Forecasting - Priyanka Sharma
2021-06-20

Advances in Streamflow Forecasting: From Traditional to Modern Approaches covers the three major data-driven approaches of

streamflow forecasting including traditional approach of statistical and stochastic time-series modelling with their recent developments, stand-alone data-driven approach such as artificial intelligence techniques, and modern hybridized approach where data-driven models are combined with preprocessing methods to improve the forecast accuracy of streamflows and to reduce the forecast uncertainties. This book starts by providing the background information, overview, and advances made in streamflow forecasting. The overview portrays the progress made in the field of streamflow forecasting over the decades. Thereafter, chapters describe theoretical methodology of the different data-driven tools and techniques used for streamflow forecasting along with case studies from different parts of the world. Each chapter provides a flowchart explaining step-by-step methodology followed in applying the data-driven approach in streamflow forecasting. This book addresses challenges in forecasting streamflows by abridging the gaps between theory and practice through amalgamation of theoretical descriptions of the data-driven techniques and systematic demonstration of procedures used in applying the techniques. Language of this book is kept simple to make the readers understand easily about different techniques and make them capable enough to straightforward replicate the approach in other areas of their interest. This book will be vital for hydrologists when optimizing the water resources system, and to mitigate the impact of destructive natural disasters such as floods and droughts by implementing long-term planning (structural and nonstructural measures), and short-term emergency warning. Moreover, this book will guide the readers in choosing an appropriate technique for streamflow forecasting depending upon the given set of conditions. Contributions from renowned researchers/experts of the subject from all over the world to provide the most authoritative outlook on streamflow forecasting Provides an excellent overview and advances made in streamflow forecasting over the past more than five decades and covers both

traditional and modern data-driven approaches in streamflow forecasting Includes case studies along with detailed flowcharts demonstrating a systematic application of different data-driven models in streamflow forecasting, which helps understand the step-by-step procedures

Implementing Reproducible Research - Victoria Stodden
2014-04-14

In computational science, reproducibility requires that researchers make code and data available to others so that the data can be analyzed in a similar manner as in the original publication. Code must be available to be distributed, data must be accessible in a readable format, and a platform must be available for widely distributing the data and code. In addition, both data and code need to be licensed permissively enough so that others can reproduce the work without a substantial legal burden.

Implementing Reproducible Research covers many of the elements necessary for conducting and distributing reproducible research. It explains how to accurately reproduce a scientific result. Divided into three parts, the book discusses the tools, practices, and dissemination platforms for ensuring reproducibility in computational science. It describes: Computational tools, such as Sweave, knitr, VisTrails, Sumatra, CDE, and the Declaratron system Open source practices, good programming practices, trends in open science, and the role of cloud computing in reproducible research Software and methodological platforms, including open source software packages, RunMyCode platform, and open access journals Each part presents contributions from leaders who have developed software and other products that have advanced the field. Supplementary material is available at www.ImplementingRR.org.

Data Visualization - Lauren Magnuson 2016-09-15

Data Visualization: A Guide to Visual Storytelling for Libraries is a practical guide to the skills and tools needed to create beautiful and meaningful visual stories through data visualization. Learn

how to sift through complex datasets to better understand a variety of metrics, such as trends in user behavior and electronic resource usage, return on investment (ROI) and impact metrics, and data about library collections and repositories. Sections include:

- Identifying and interpreting datasets for visualization
- Tools and technologies for creating meaningful visualizations
- Case studies in data visualization and dashboards

Data Visualization also features a 20-page color insert showcasing a wide variety of visualizations generated using an array of data visualization technologies and programming languages that can serve as inspiration for creating your own visualizations.

Understanding and communicating trends from your organization's data is essential. Whether you are looking to make more informed decisions by visualizing organizational data, or to tell the story of your library's impact on your community, this book will give you the tools to make it happen.

Programming Skills for Data Science - Michael Freeman
2018-11-23

The Foundational Hands-On Skills You Need to Dive into Data Science "Freeman and Ross have created the definitive resource for new and aspiring data scientists to learn foundational programming skills." -From the foreword by Jared Lander, series editor Using data science techniques, you can transform raw data into actionable insights for domains ranging from urban planning to precision medicine. *Programming Skills for Data Science* brings together all the foundational skills you need to get started, even if you have no programming or data science experience. Leading instructors Michael Freeman and Joel Ross guide you through installing and configuring the tools you need to solve professional-level data science problems, including the widely used R language and Git version-control system. They explain how to wrangle your data into a form where it can be easily used, analyzed, and visualized so others can see the patterns you've uncovered. Step by step, you'll master powerful R programming techniques and

troubleshooting skills for probing data in new ways, and at larger scales. Freeman and Ross teach through practical examples and exercises that can be combined into complete data science projects. Everything's focused on real-world application, so you can quickly start analyzing your own data and getting answers you can act upon. Learn to Install your complete data science environment, including R and RStudio Manage projects efficiently, from version tracking to documentation Host, manage, and collaborate on data science projects with GitHub Master R language fundamentals: syntax, programming concepts, and data structures Load, format, explore, and restructure data for successful analysis Interact with databases and web APIs Master key principles for visualizing data accurately and intuitively Produce engaging, interactive visualizations with ggplot and other R packages Transform analyses into sharable documents and sites with R Markdown Create interactive web data science applications with Shiny Collaborate smoothly as part of a data science team Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details.

Advanced R - Matt Wiley 2016-11-17

Program for data analysis using R and learn practical skills to make your work more efficient. This book covers how to automate running code and the creation of reports to share your results, as well as writing functions and packages. Advanced R is not designed to teach advanced R programming nor to teach the theory behind statistical procedures. Rather, it is designed to be a practical guide moving beyond merely using R to programming in R to automate tasks. This book will show you how to manipulate data in modern R structures and includes connecting R to data bases such as SQLite, PostgreSQL, and MongoDB. The book closes with a hands-on section to get R running in the cloud. Each chapter also includes a detailed bibliography with references to research articles and other resources that cover relevant

conceptual and theoretical topics. What You Will Learn Write and document R functions Make an R package and share it via GitHub or privately Add tests to R code to insure it works as intended Build packages automatically with GitHub Use R to talk directly to databases and do complex data management Run R in the Amazon cloud Generate presentation-ready tables and reports using R Who This Book Is For Working professionals, researchers, or students who are familiar with R and basic statistical techniques such as linear regression and who want to learn how to take their R coding and programming to the next level.

Reproducible Research with R and RStudio - Christopher Gandrud 2020-02-21

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 brings 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

Statistical Techniques for Neuroscientists - Young K. Truong
2016-10-04

Statistical Techniques for Neuroscientists introduces new and useful methods for data analysis involving simultaneous recording of neuron or large cluster (brain region) neuron activity. The statistical estimation and tests of hypotheses are based on the likelihood principle derived from stationary point processes and time series. Algorithms and software development are given in each chapter to reproduce the computer simulated results described therein. The book examines current statistical methods for solving emerging problems in neuroscience. These methods have been applied to data involving multichannel neural spike train, spike sorting, blind source separation, functional and effective neural connectivity, spatiotemporal modeling, and multimodal neuroimaging techniques. The author provides an overview of various methods being applied to specific research areas of neuroscience, emphasizing statistical principles and their software. The book includes examples and experimental data so that readers can understand the principles and master the methods. The first part of the book deals with the traditional

multivariate time series analysis applied to the context of multichannel spike trains and fMRI using respectively the probability structures or likelihood associated with time-to-fire and discrete Fourier transforms (DFT) of point processes. The second part introduces a relatively new form of statistical spatiotemporal modeling for fMRI and EEG data analysis. In addition to neural scientists and statisticians, anyone wishing to employ intense computing methods to extract important features and information directly from data rather than relying heavily on models built on leading cases such as linear regression or Gaussian processes will find this book extremely helpful.

[Data Visualization](#) - Kieran Healy 2018-12-18

An accessible primer on how to create effective graphics from data This book provides students and researchers a hands-on introduction to the principles and practice of data visualization. It explains what makes some graphs succeed while others fail, how to make high-quality figures from data using powerful and reproducible methods, and how to think about data visualization in an honest and effective way. *Data Visualization* builds the reader's expertise in ggplot2, a versatile visualization library for the R programming language. Through a series of worked examples, this accessible primer then demonstrates how to create plots piece by piece, beginning with summaries of single variables and moving on to more complex graphics. Topics include plotting continuous and categorical variables; layering information on graphics; producing effective "small multiple" plots; grouping, summarizing, and transforming data for plotting; creating maps; working with the output of statistical models; and refining plots to make them more comprehensible. Effective graphics are essential to communicating ideas and a great way to better understand data. This book provides the practical skills students and practitioners need to visualize quantitative data and get the most out of their research findings. Provides hands-on instruction using R and ggplot2 Shows how the "tidyverse" of data analysis tools makes

working with R easier and more consistent Includes a library of data sets, code, and functions

Competitiveness and Economic Development in Europe - Sławomir I. Bukowski 2021-04-12

The success of an economy to adapt quickly, flexibly, and effectively to the demands of the changing international economic environment can only be investigated using the achievements of other national economies or regions as a benchmark. This book analyzes the fundamental factors of competitiveness, which will, in turn, facilitate economic development and growth, in the new post-crisis environment. In the economic, social, legal, and technological environment that has emerged in recent years, as well as in the period after the recent financial crisis, it is critical to define, assess, and implement new pathways to competitiveness and economic development. The book covers all aspects of competitiveness and economic growth, from financial intermediaries to tourism and the digital economy, and from regulation and corporate governance to exchange rate dynamics and monetary policy issues. It uses empirical findings from a variety of different countries with divergent economic structures and policies. It examines the new system of production, and the technological, commercial, financial and institutional environment, with the aim of recommending a proportional division of benefits and costs of economic growth. It offers a fresh, holistic, and flexible concept to underscore the new relationship between competitiveness and economic growth. Such an approach is needed, whereby competitiveness is no longer a zero-sum game between countries, but is achievable for all countries. The book recommends future directions and offers policy solutions, and as

such, will appeal to students, researchers, and policymakers, as well as those interested in the role of competitiveness in the operation of markets, productivity, and economic development, and how it might foster innovation and growth.

Efficient R Programming - Colin Gillespie 2016-12-08

There are many excellent R resources for visualization, data science, and package development. Hundreds of scattered vignettes, web pages, and forums explain how to use R in particular domains. But little has been written on how to simply make R work effectively—until now. This hands-on book teaches novices and experienced R users how to write efficient R code. Drawing on years of experience teaching R courses, authors Colin Gillespie and Robin Lovelace provide practical advice on a range of topics—from optimizing the set-up of RStudio to leveraging C++—that make this book a useful addition to any R user’s bookshelf. Academics, business users, and programmers from a wide range of backgrounds stand to benefit from the guidance in *Efficient R Programming*. Get advice for setting up an R programming environment Explore general programming concepts and R coding techniques Understand the ingredients of an efficient R workflow Learn how to efficiently read and write data in R Dive into data carpentry—the vital skill for cleaning raw data Optimize your code with profiling, standard tricks, and other methods Determine your hardware capabilities for handling R computation Maximize the benefits of collaborative R programming Accelerate your transition from R hacker to R programmer

Communicating with Data - Deborah Nolan 2021

Communicating with Data aims to help students and researchers write about their insights in a way that is both compelling and faithful to the data.