

Conhecendo a Linguagem R

Prof. Dr. Walmes Zeviani

JUSTIÇA 4.0: INOVAÇÃO E EFETIVIDADE NA REALIZAÇÃO DA JUSTIÇA PARA TODOS
PROJETO DE EXECUÇÃO NACIONAL BRA/20/015



O que é o R?

Conhecendo a linguagem





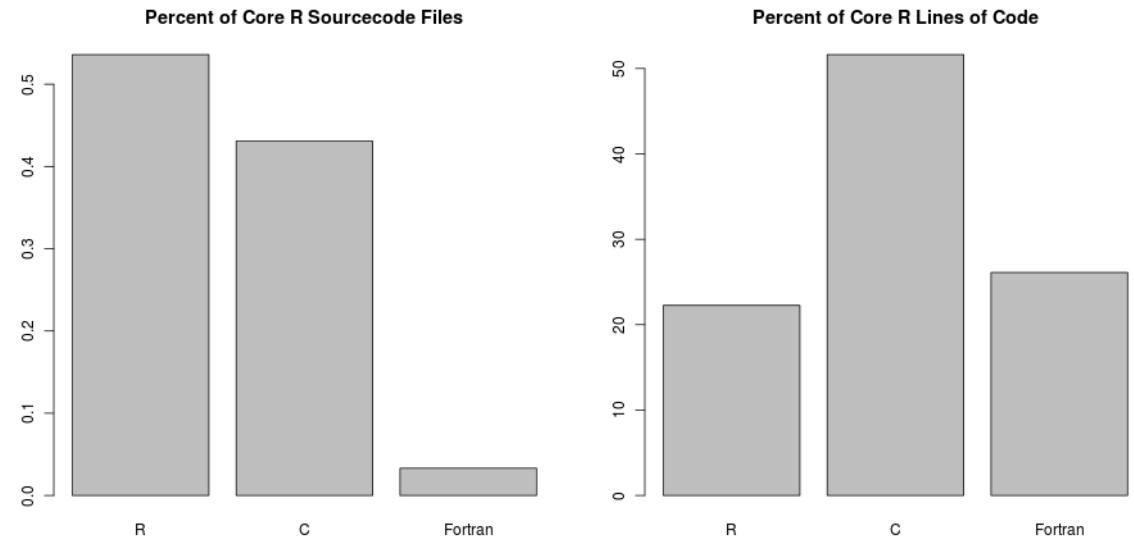
Logo do R.

- ▶ É uma linguagem de programação **livre** e de código **aberto** (um projeto GNU).
- ▶ É um ambiente de software para **computação estatística e gráficos**.
- ▶ Linguagem de **propósito específico**.
- ▶ <https://www.r-project.org/about.html>.

Características

O R fornece amplo ferramental de estatística além de:

- ▶ Inúmeros recursos gráficos.
- ▶ Extensível: coleção de mais de 18 mil **pacotes** oficiais no [CRAN](#).
- ▶ Interoperabilidade & Interconectividade: **APIs/drivers** para outros softwares/linguagens.
- ▶ Multiplataforma: Linux, Mac OS, Windows, Android.
- ▶ Escalabilidade e código compilado: C e Fortran.
- ▶ Boa parte do código fonte do *R base* está em C e Fortran.



<https://librestats.wordpress.com/2011/08/27/how-much-of-r-is-written-in-r/>

Breve história do R

De onde viemos?

Os criadores



- ▶ Desenvolvido por **Ross Ihaka** e **Robert Gentleman**.
- ▶ Implementação da Linguagem S de John Chambers.
- ▶ É uma implementação da linguagem S.
- ▶ University of Auckland, New Zealand.
- ▶ Surgiu em 1993.
- ▶ Hoje desenvolvido pelo **the R Development Core Team**.



R Day
Encontro nacional
de usuários do R

22 de Maio de 2018
UFPR · Curitiba · PR
rday.leg.ufpr.br

Promover atividades formativas e informativas

Congregar usuários e desenvolvedores R

Realização

Apresentações orais

Tutoriais

Conferências

Evento satélite da 63º RBras

Inscrições online

rday.leg.ufpr.br

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coletum

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Setor de Ciências da Saúde

Curso-R

R'eflexões: um pouco de história e experiências com o R

Paulo Justiniano Ribeiro Jr
LEG/DEST/UFPR

<https://www.youtube.com/watch?v=fnGvDEkjZy0>

O Projeto R



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Developer Pages

R Blog

The R Project for Statistical Computing

Getting Started

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To [download R](#), please choose your preferred CRAN mirror.

If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

News

- [R version 4.1.0 \(Camp Pontanezen\) prerelease versions](#) will appear starting Saturday 2021-04-17. Final release is scheduled for Tuesday 2021-05-18.
- [R version 4.0.5 \(Shake and Throw\)](#) has been released on 2021-03-31.
- Thanks to the organisers of useR! 2020 for a successful online conference. Recorded tutorials and talks from the conference are available on the [R Consortium YouTube channel](#).
- [R version 3.6.3 \(Holding the Windsock\)](#) was released on 2020-02-29.
- You can support the R Foundation with a renewable subscription as a [supporting member](#)

<https://www.r-project.org/>

Como obter o R?



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The Comprehensive R Archive Network

Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux](#)
- [Download R for \(Mac\) OS X](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- The latest release (2021-03-31, Shake and Throw) [R-4.0.5.tar.gz](#), read [what's new](#) in the latest version.
- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are [available here](#). Please read about [new features and bug fixes](#) before filing corresponding feature requests or bug reports.
- Source code of older versions of R is [available here](#).
- Contributed extension [packages](#)

<https://cran.r-project.org/>

Pacotes agrupados por tarefas/áreas

Topics	
Bayesian	Bayesian Inference
ChemPhys	Chemometrics and Computational Physics
ClinicalTrials	Clinical Trials
Cluster	Clustering
Databases	Databases
DifferentialEquations	Differential Equations
Distributions	Distributions
Econometrics	Econometrics
Environmetrics	Environmental Statistics
ExperimentalDesign	Experimental Design
ExtremeValue	Extreme Value Theory
Finance	Financial Mathematics
FunctionalData	Functional Data Analysis
Genetics	Genetics
Graphics	Graphics
HighPerformanceComputing	High Performance Computing
Hydrology	Hydrology
MachineLearning	Machine Learning
MedicalImaging	Medical Imaging
MetaAnalysis	Meta-Analysis
MissingData	Missing Data
ModelDeployment	Model Deployment with R
Multivariate	Multivariate Statistics
NaturalLanguageProcessing	Natural Language Processing
NumericalMathematics	Numerical Mathematics
OfficialStatistics	Official Statistics & Survey Methodology
Optimization	Optimization and Mathematical Programming
Pharmacokinetics	Pharmacokinetics
Phylogenetics	Phylogenetics, Especially Comparative Methods
Psychometrics	Psychometric Models and Methods
ReproducibleResearch	Reproducible Research
Robust	Robust Statistical Methods
SocialSciences	Statistics for the Social Sciences
Spatial	Spatial Data Analysis
SpatioTemporal	Handling and Analyzing Spatio-Temporal Data
Survival	Survival Analysis
TeachingStatistics	Teaching Statistics
TimeSeries	Time Series Analysis
WebTechnologies	Web Technologies and Services
gR	Graphical Models in R

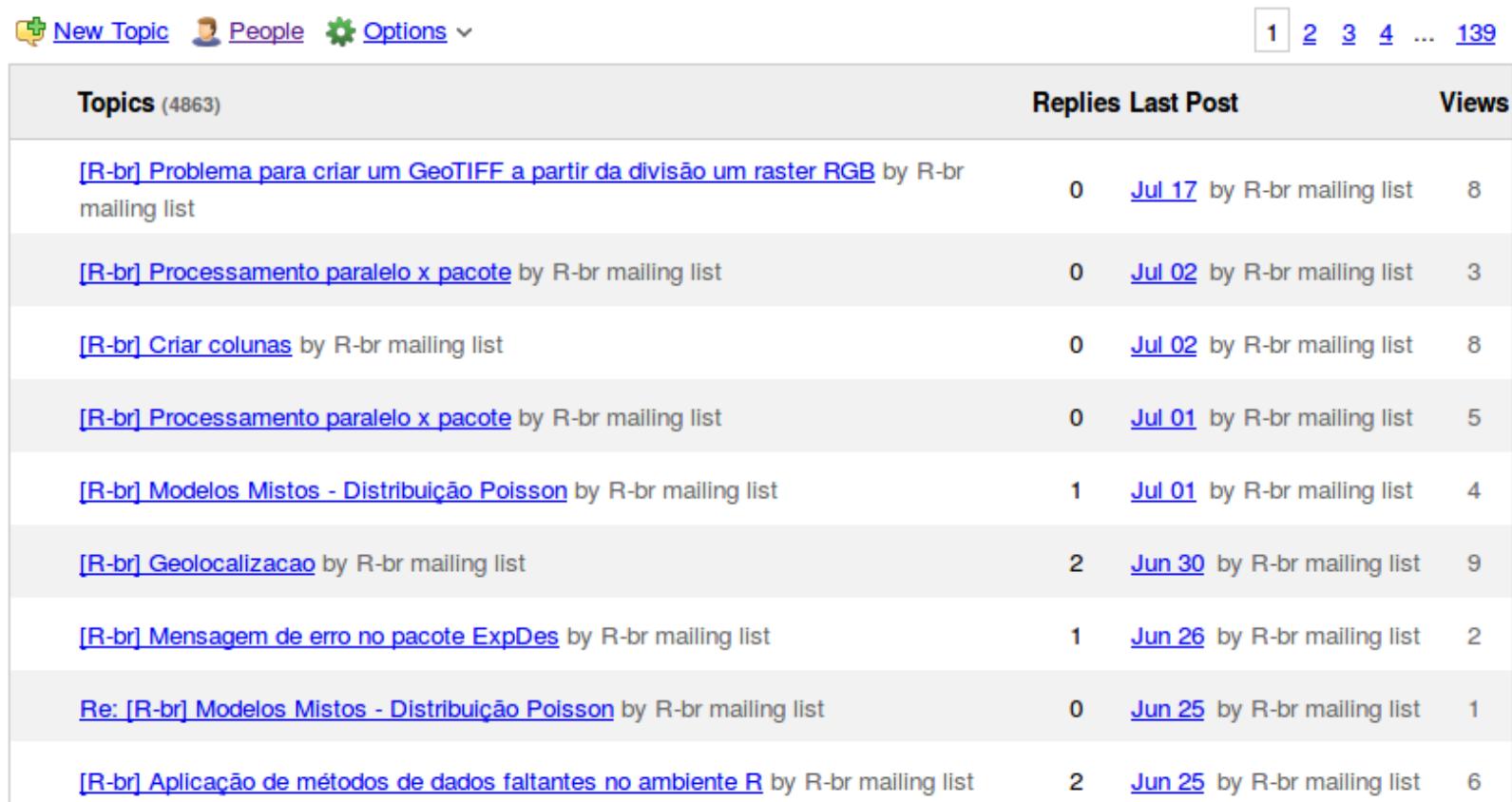
<https://cran.r-project.org/web/views/>

As listas de discussão oficiais

What List?			
1) org.r-project.r-help	374,710	13) org.r-project.r-packages	721
2) org.r-project.r-devel	56,322	14) org.r-project.r-sig-fedora	568
3) org.r-project.r-sig-geo	26,599	15) org.r-project.r-sig-wiki	398
4) org.r-project.r-sig-mixed-models	17,199	16) org.r-project.r-sig-jobs	381
5) org.r-project.r-sig-finance	14,504	17) org.r-project.r-sig-epi	348
6) org.r-project.r-sig-mac	12,497	18) org.r-project.r-sig-robust	248
7) org.r-project.r-sig-ecology	5,810	19) org.r-project.r-sig-gr	170
8) org.r-project.r-sig-phylo	5,359	20) org.r-project.r-announce	161
9) org.r-project.r-sig-debian	3,066	21) org.r-project.r-sig-s	32
10) org.r-project.r-sig-db	1,506	22) org.r-project.r-sig-networks	27
11) org.r-project.r-sig-gui	1,230	23) org.r-project.r-sig-mediawiki	25
12) org.r-project.r-sig-teaching	820	24) org.r-project.r-sig-qa	25

<https://r-project.markmail.org/>

R-BR · A lista nacional oficial de R



The screenshot shows a mailing list interface with the following header elements:

- New Topic
- People
- Options

Page navigation:

- 1
- 2
- 3
- 4
- ...
- 139

Topics (4863)	Replies	Last Post	Views
[R-br] Problema para criar um GeoTIFF a partir da divisão um raster RGB by R-br mailing list	0	Jul 17 by R-br mailing list	8
[R-br] Processamento paralelo x pacote by R-br mailing list	0	Jul 02 by R-br mailing list	3
[R-br] Criar colunas by R-br mailing list	0	Jul 02 by R-br mailing list	8
[R-br] Processamento paralelo x pacote by R-br mailing list	0	Jul 01 by R-br mailing list	5
[R-br] Modelos Mistos - Distribuição Poisson by R-br mailing list	1	Jul 01 by R-br mailing list	4
[R-br] Geolocalizacao by R-br mailing list	2	Jun 30 by R-br mailing list	9
[R-br] Mensagem de erro no pacote ExpDes by R-br mailing list	1	Jun 26 by R-br mailing list	2
Re: [R-br] Modelos Mistos - Distribuição Poisson by R-br mailing list	0	Jun 25 by R-br mailing list	1
[R-br] Aplicação de métodos de dados faltantes no ambiente R by R-br mailing list	2	Jun 25 by R-br mailing list	6

<http://www.leg.ufpr.br/doku.php/software:rbr>

A R-BR é mantida por nós do LEG com C3SL.

Considerações Finais

- ▶ R é uma linguagem e ambiente para **computação estatística e gráficos**, livre e de código aberto.
- ▶ É extensível, escalável, interopera com várias outras linguagens/softwares.
- ▶ É cada vez mais popular na comunidade acadêmica.
- ▶ Tem sido adotado exponencialmente na comunidade profissional para atividades de análise de dados.
- ▶ O R pode ser empregado em várias etapas do processo de análise de dados:
 - ▶ Aquisição, importação e tratamentos dos dados.
 - ▶ Confecção de visualizações estáticas e dinâmicas (gráficos, mapas, etc).
 - ▶ Elaboração de relatórios dinâmicos/reproduzível.
 - ▶ Disponibilização de conteúdo via APIs e dashboards.
 - ▶ Desenvolvimento e aplicação de modelos estatísticos.
 - ▶ Uso de métodos de aprendizado de máquinas.



*"This is R.
There is no if. Only how."*

-- Simon 'Yoda' Blomberg ·
R-help (April 2005)

Materiais didáticos

Principais indicações para aprender R

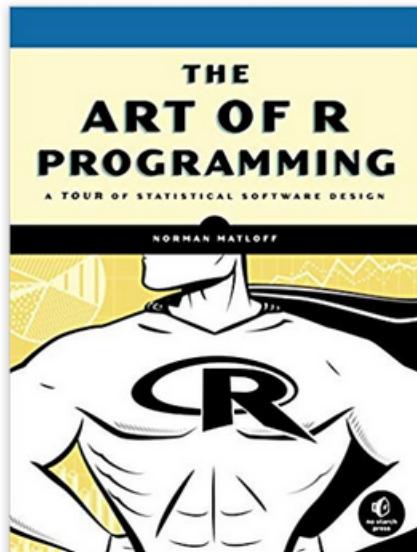
The Art of R Programming: A Tour of Statistical Software Design 1st Edition

by Norman Matloff (Author)



135 customer reviews

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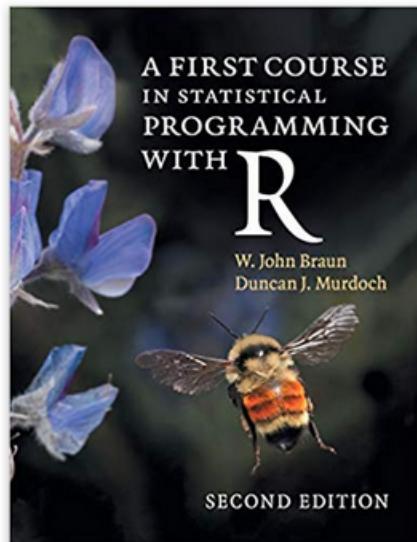
<https://www.amazon.com/Art-Programming-Statistical-Software-Design/dp/1593273843>

A First Course in Statistical Programming with R 2nd Edition

by W Braun (Author)

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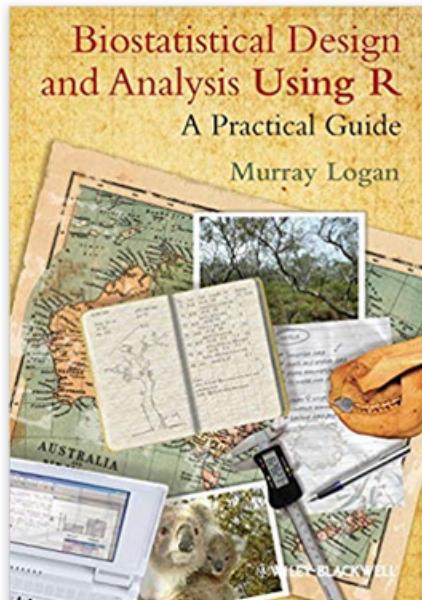
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Biostatistical Design and Analysis Using R: A Practical Guide 1st Edition

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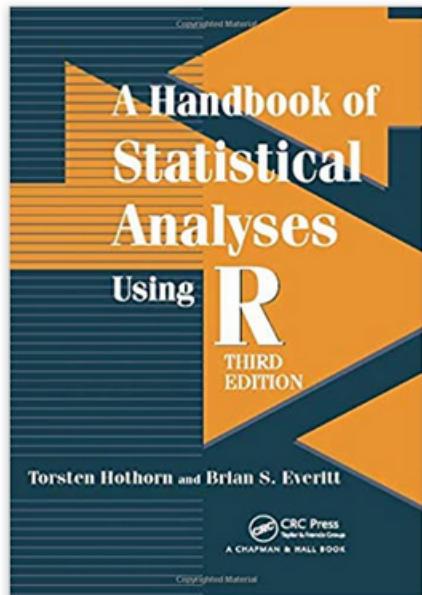
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A Handbook of Statistical Analyses using R, Third Edition 3rd Edition

by Torsten Hothorn (Author), Brian S. Everitt (Contributor)

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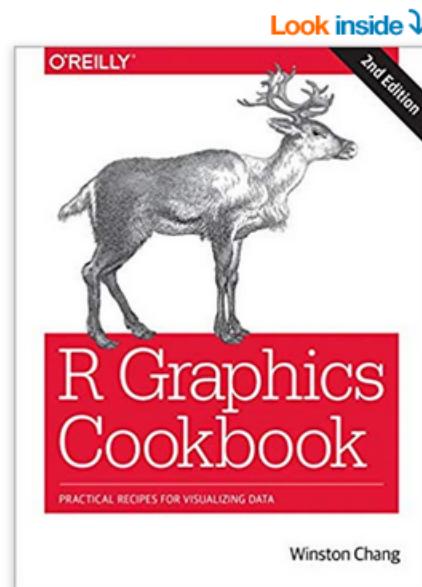
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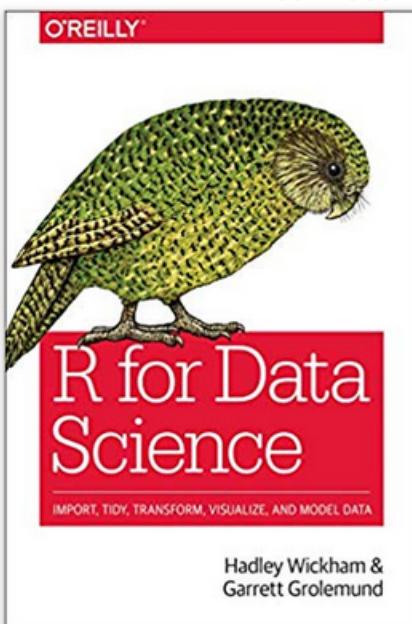
R for Data Science: Import, Tidy, Transform, Visualize, and Model Data 1st Edition

by Hadley Wickham ▾ (Author), Garrett Grolemund ▾ (Author)

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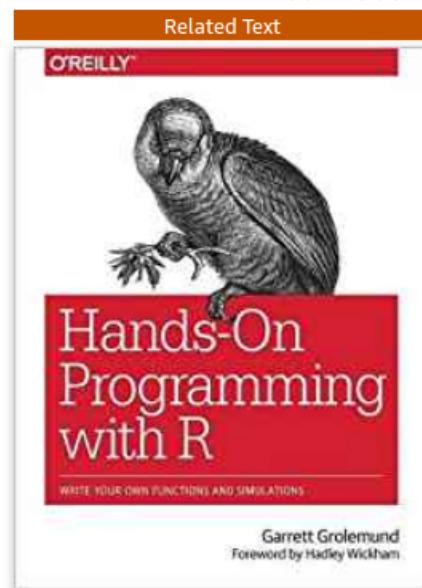
<https://www.amazon.com/Data-Science-Transform-Visualize-Model/dp/1491910399>

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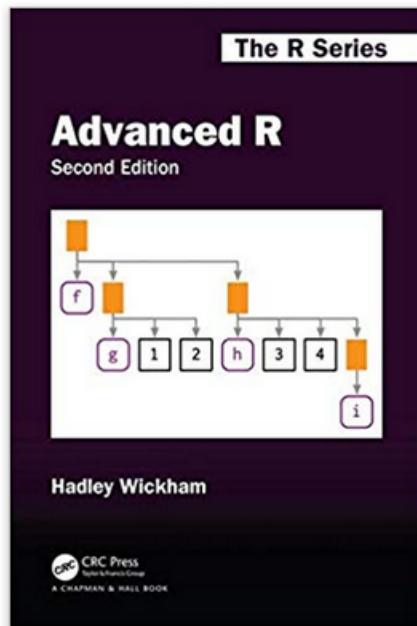
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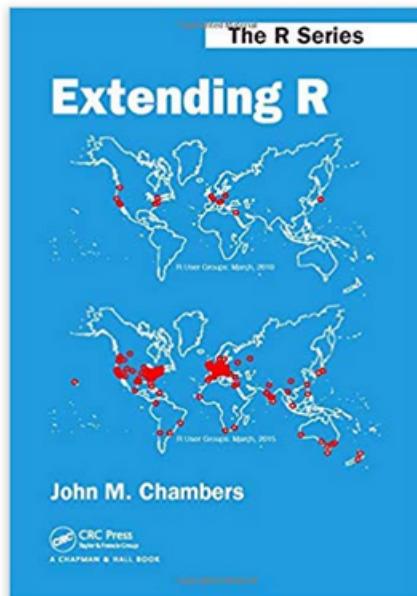
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