

# Outils pour chercher de l'information sur R et se former

Nathalie Villa-Vialaneix, Christophe Bontemps & Sébastien Déjean

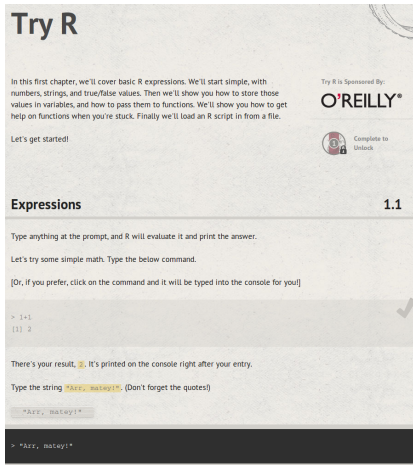
- 1 où commencer avec R ?
- 2 à ne pas manquer !
- 3 à l'aide... !!!





# Où commencer ? En interactif...

On line



**Try R**

In this first chapter, we'll cover basic R expressions. We'll start simple, with numbers, strings, and true/false values. Then we'll show you how to store those values in variables, and how to pass them to functions. We'll show you how to get help on functions when you're stuck. Finally we'll load an R script in from a file.

Let's get started!

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Complete to Unlock

## Expressions 1.1

Type anything at the prompt, and R will evaluate it and print the answer.

Let's try some simple math. Type the below command.

[Or, if you prefer, click on the command and it will be typed into the console for you!]

```
> 1+1  
[1] 2
```

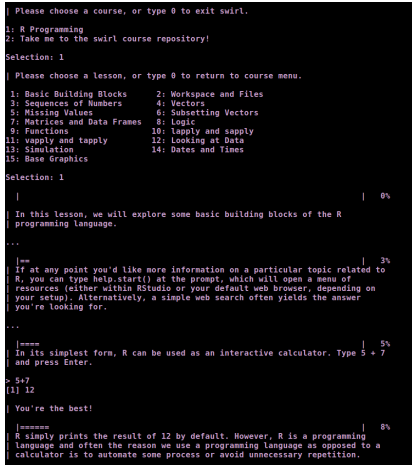
There's your result, 2. It's printed on the console right after your entry.

Type the string `"Arr, matwy!"`. (Don't forget the quotes!)

```
"Arr, matwy!"  
> "Arr, matwy!"
```

<http://tryr.codeschool.com>

Off line



```
| Please choose a course, or type 0 to exit swirl.  
1: R Programming  
2: Take me to the swirl course repository!  
Selection: 1  
  
| Please choose a lesson, or type 0 to return to course menu.  
1: Basic Building Blocks  
2: Workspace and Files  
3: Sequences of Numbers  
4: Vectors  
5: Missing Values  
6: Subsetting Vectors  
7: Matrices and Data Frames  
8: Logic  
9: Functions  
10: lapply and sapply  
11: vapply and tapply  
12: Looking at Data  
13: Simulation  
14: Dates and Times  
15: Base Graphics  
Selection: 1  
  
| 0%  
  
| In this lesson, we will explore some basic building blocks of the R  
| programming language.  
...  
| == 3%  
| If at any point you'd like more information on a particular topic related to  
| R, you can type help.start() at the prompt, which will open a menu of  
| resources (either within RStudio or your default web browser, depending on  
| your setup). Alternatively, a simple web search often yields the answer  
| you're looking for.  
...  
| === 5%  
| In its simplest form, R can be used as an interactive calculator. Type 5 + 7  
| and press Enter.  
> 5+7  
[1] 12  
  
| You're the best!  
...  
| ===== 8%  
| R simply prints the result of 12 by default. However, R is a programming  
| language and often the reason we use a programming language as opposed to a  
| calculator is to automate some process or avoid unnecessary repetition.
```

`install.packages("swirl")`



# À ne pas manquer ! Les manuels du CRAN...

The R Manuals

*edited by the R Development Core Team.*

The following manuals for R were created on Debian Linux and may differ from the manuals for Mac or Windows on platform-specific pages, platform are part of the respective R installations. The manuals change with R, hence we provide versions for the most recent released R ver: a version for the forthcoming R version that is still in development (R-devel).

Here they can be downloaded as PDF files, EPUB files, or directly browsed as HTML:

Manual	R-release	R-patched	R-devel
<b>An Introduction to R</b> is based on the former "Notes on R", gives an introduction to the language and how to use R for doing statistical analysis and graphics.	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>
<b>R Data Import/Export</b> describes the import and export facilities available either in R itself or via packages which are available from CRAN.	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>
<b>R Installation and Administration</b>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>
<b>Writing R Extensions</b> covers how to create your own packages, write R help files, and the foreign language (C, C++, Fortran, ...) interfaces.	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>
A draft of <b>The R language definition</b> documents the language <i>per se</i> . That is, the objects that it works on, and the details of the expression evaluation process, which are useful to know when programming R functions.	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>
<b>R Internals</b> : a guide to the internal structures of R and coding standards for the core team working on R itself.	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>	<a href="#">HTML</a>   <a href="#">PDF</a>   <a href="#">EPUB</a>
<b>The R Reference Index</b> : contains all help files of the R standard and recommended packages in printable form. (9MB, approx. 3500 pages)	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>



# À ne pas manquer ! Les vues thématiques du CRAN...

<a href="#">Bayesian</a>	Bayesian Inference
<a href="#">ChemPhys</a>	Chemometrics and Computational Physics
<a href="#">ClinicalTrials</a>	Clinical Trial Design, Monitoring, and Analysis
<a href="#">Cluster</a>	Cluster Analysis & Finite Mixture Models
<a href="#">DifferentialEquations</a>	Differential Equations
<a href="#">Distributions</a>	Probability Distributions
<a href="#">Econometrics</a>	Econometrics
<a href="#">Environmetrics</a>	Analysis of Ecological and Environmental Data
<a href="#">ExperimentalDesign</a>	Design of Experiments (DoE) & Analysis of Experimental Data
<a href="#">Finance</a>	Empirical Finance
<a href="#">Genetics</a>	Statistical Genetics
<a href="#">Graphics</a>	Graphic Displays & Dynamic Graphics & Graphic Devices & Visualization
<a href="#">HighPerformanceComputing</a>	High-Performance and Parallel Computing with R
<a href="#">MachineLearning</a>	Machine Learning & Statistical Learning
<a href="#">MedicalImaging</a>	Medical Image Analysis
<a href="#">MetaAnalysis</a>	Meta-Analysis
<a href="#">Multivariate</a>	Multivariate Statistics
<a href="#">NaturalLanguageProcessing</a>	Natural Language Processing
<a href="#">NumericalMathematics</a>	Numerical Mathematics
<a href="#">OfficialStatistics</a>	Official Statistics & Survey Methodology
<a href="#">Optimization</a>	Optimization and Mathematical Programming
<a href="#">Pharmacokinetics</a>	Analysis of Pharmacokinetic Data
<a href="#">Phylogenetics</a>	Phylogenetics, Especially Comparative Methods
<a href="#">Psychometrics</a>	Psychometric Models and Methods
<a href="#">ReproducibleResearch</a>	Reproducible Research
<a href="#">Robust</a>	Robust Statistical Methods
<a href="#">SocialSciences</a>	Statistics for the Social Sciences
<a href="#">Spatial</a>	Analysis of Spatial Data
<a href="#">SpatioTemporal</a>	Handling and Analyzing Spatio-Temporal Data
<a href="#">Survival</a>	Survival Analysis
<a href="#">TimeSeries</a>	Time Series Analysis
<a href="#">WebTechnologies</a>	Web Technologies and Services
<a href="#">gR</a>	gRaphical Models in R

CRAN Task View: High-Performance and Parallel Computing with R

**Maintainer:** Dirk Eddelbuettel

**Contact:** Dirk.Eddelbuettel at R-project.org

**Version:** 2016-01-28

This CRAN task view contains a list of packages, grouped by topic, that are useful for high-per related to pushing R a little further: using compiled code, parallel computing (in both explicit a

Unless otherwise mentioned, all packages presented with hyperlinks are available from CRAN,

Several of the areas discussed in this Task View are undergoing rapid change. Please send sug

Suggestions and corrections by Achim Zeileis, Markus Schmidberger, Martin Morgan, Max Kuli Bill Cleveland, Ross Boylan, Ramon Diaz-Uriarte, and Mark Zeligman (as well as others I may i

Contributions are always welcome, and encouraged. Since the start of this CRAN task view in GitHub repository (see below) so that pull requests are also possible.

**Direct support in R started with release 2.14.0**, which includes a new package **parallel** in 'parallel'. However, and as explained in the package vignette, the parts of parallel which provic The **parallel** package also contains support for multiple RNG streams following L'Ecuyer et al The version released for R 2.14.0 contains base functionality: higher-level convenience functio

## Parallel computing: Explicit parallelism

- Several packages provide the communications layer required for parallel computing. The longer actively maintained, but available from its CRAN archive directory.
- In recent years, the alternative MPI (Message Passing Interface) standard has become the access to numerous functions from the MPI API, as well as a number of R-specific extensions is now in maintenance mode, and new development is focussed on Open MPI.
- The **pbdMPI** package provides 54 classes to directly interface MPI in order to support the builds on this and uses scalable linear algebra packages (namely BLACS, PBLAS, and Sca for distributed data types upon which the **pbddMAT** builds to provide distributed dense m synchronization) and supports terabyte-sized files. The **pbddEMG** package provides exam libraries, such as fpmpl, mpiP, or TAU.
- An alternative is provided by the **nws** (NetWorkSpaces) packages from REvolution Compute toolkit for Python.
- The **snow** (Simple Network of Workstations) package by Tierney et al. can use PVM, MPI, provides fault-tolerance extensions to **snow**.
- The **snowfall** package by Knaus provides a more recent alternative to **snow**. Functions car
- The **foreach** package allows general iteration over elements in a collection without the use (using parallel/multicore on single workstations), **doSNOW** (using **snow**, see above), **doMFP**
- The **future** package allows for synchronous (sequential) and asynchronous (parallel) eva. Iteration over elements in a collection is supported.
- The **Rborist** package employs OpenMP pragmas to exploit predictor-level parallelism in th of which are performance bottlenecks in the algorithm.
- The **h2o** package connects to the h2o open source machine learning environment which h
- The **randomForestSRC** package can use both OpenMP as well as MPI for random forest e

## Parallel computing: Implicit parallelism

- The **pnmath** package by Tierney ([link](#)) uses the Open MP parallel processing directives o make use of multiple cores -- without any explicit requests from the user. The alternate pr



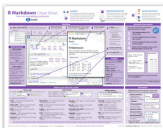
# À ne pas manquer ! Les feuilles de triche de RStudio

## 2 feuilles sur des généralités

### R Markdown Cheat Sheet

R Markdown is an authoring format that makes it easy to write reusable reports with R. You combine your R code with narration written in markdown (an easy-to-write plain text format) and then export the results as an HTML, PDF, or Word file. You can even use R Markdown to build interactive documents and slideshows. (D3J Weblog)

DOWNLOAD



### RStudio IDE Cheat Sheet

The RStudio IDE is the most popular integrated development environment for R. Do you want to write, run, and debug your own R code? Work collaboratively on R projects with version control? Build packages or create documents and apps? No matter what you do with R, the RStudio IDE can help you do it faster. This cheat sheet will guide you through the most useful features of the IDE, as well as the long list of keyboard shortcuts built into the RStudio IDE.

DOWNLOAD



### Shiny Cheat Sheet

If you're ready to build interactive web apps with R, say hello to Shiny. This cheat sheet provides a tour of the Shiny package and explains how to build and customize an interactive app. Be sure to follow the links on the sheet for [even more information](#).

DOWNLOAD



### Data Visualization Cheat Sheet

The ggplot2 package lets you make beautiful and customizable plots of your data. It implements the grammar of graphics, an easy-to-use system for building plots. See [docs.ggplot2.org](#) for detailed examples.

DOWNLOAD



### Advanced R Cheat Sheet

Created by Aronnie Carlson and Sean Chen

#### Environments (Scope)

Global environment: Data structure (list) containing global objects (global namespace)

Package environment: List of parent and child environments

Global environment: env\$() or env[[...]]

Named list (list of names): each name points to an object stored elsewhere in memory.

If an object has no names pointing to it, it gets automatically stored by the package author.

Access with \$() or [[...]]

Parent environment: used to implement lexical scoping. If a name is not found in an environment, then it'll look in its parent (and so on).

Access with parent.env() or \$()

Parent environment: env\$parent() or \$()

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#### Global Env

Search path: mechanism to look up objects (subsystem functions)

- Access with `search()` - lists all parents of the global environment
- Access any environment on the search path: `environment(package:base)`

**Figure 1 - The Search Path**

Method: `getOption("search.path")` - returns the global environment, then the listed attached (package) environment.

- New package loading with `library(package)` - new package is attached right after the global environment (See Figure 2)
- Name conflict in two different packages - functions with the same name, later package loading will get called.

`search()`

```
globalEnv()
"Autoload" ("package:base")
"base" ("package:base")
"Autoload" ("package:base")
"base" ("package:base")
NOTE: Autoload: special environment used for saving memory by only loading package objects (like the functions) when needed.
```

**Figure 2 - Package Attachment**

#### Binding Values to Values

**Assignment** - act of binding or re-binding a name to a value in an environment.

- `<-` (Regular assignment `env`) - always creates a variable in the current environment.
- `<->` (Co-assignment `env`) - modifies an existing variable found by walking up the parent environments.

**Warning:** If `<->` doesn't find an existing variable, it will create one in the global environment.

#### Active Environments

Existing environment - an environment where the function is created. It determines how function finds values.

- Existing environment never changes, even if the function is re-created (After-attached environment).
- Access with `environmentName()`

**Binding Environment** - all environments that the function has a binding to. It determines how we find the function.

- Access with `parent.frame()`

**Example:** (for enclosing and binding environment)

```

f = function() {
  x = 1
  g = function() {
    x = 2
  }
  g()
}
f()

```

**Execution Environment** - new created environments to host a function call execution.

- The parent
- Containing environment of the function
- Calling environment of the function
- Execution environment is broken away once the function has completed.

**Calling Environment** - environments where the function was called.

- Access with `parent.frame()`
- Dynamic scoping
  - About look-up variables in the calling environment rather than the enclosing environment.
  - Change - most useful for developing functions that add interactive data analysis

## 7 feuilles sur des outils de RStudio

### Data Wrangling with dplyr and tidyr

**Syntax: Hospital conversions for wrapping**

```

df %>% summarise(
  total = sum(x, y)
)

```

**df %>% summarise()**  
Information: Concise summary of tbl data.

**df %>% view()**  
View data (df) in spreadsheet-like display (look chapter 10)

### Tidy Data - A foundation for wrangling in R

In a tidy data set:

- Each variable starts with a consistent name
- Each observation is stored in its own row

This data complements the **vertical** operations with **horizontal** operations on your manipulable variables. No other format works as intuitively with it.

**Reshaping Data** - Change the layout of a data set

**df %>% gather()**  
Converts data to tall data. Both are easier to understand than data frames. It displays only the data that fits concerns.

**df %>% spread()**  
Converts data to wide data. It displays only the data that fits concerns.

**df %>% select()**  
Information: Select a subset of tbl data.

**df %>% filter()**  
Information: Filter rows based on logical or numeric conditions.

**df %>% arrange()**  
Information: Sort rows based on logical or numeric conditions.

**df %>% mutate()**  
Information: Create new variables based on existing variables.

**df %>% rename()**  
Information: Rename variables based on existing variables.

**df %>% distinct()**  
Information: Remove duplicate rows based on selected variables.



# À ne pas manquer ! Bioconductor et ses vignettes...

edgeR

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This is the **development** version of edgeR; for the stable release version, see [edgeR](#).

## Empirical Analysis of Digital Gene Expression Data in R

Bioconductor version: Development (3.4)

Differential expression analysis of RNA-seq expression profiles with biological replication. Implements a range of statistical methodology based on the negative binomial distributions, including empirical Bayes estimation, exact tests, generalized linear models and quasi-likelihood tests. As well as RNA-seq, it is applied to differential signal analysis of other types of genomic data that produce counts, including ChIP-seq, SAGE and CAGE.

Author: Yunshun Chen <yuchen at wehi.edu.au>, Aaron Lun <alun at wehi.edu.au>, Davis McCarthy <dmcCarthy at wehi.edu.au>, Xiaobei Zhou <xiaobei.zhou at uzh.ch>, Mark Robinson <mark.robinson at imls.uzh.ch>, Gordon Smyth <smlyth at wehi.edu.au>

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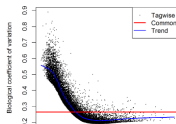
Citation (from within R, enter `citation("edgeR")`):

## Extrait de la vignette (104 pages)

### 4.2.7 Estimating the dispersion

Estimate the genewise dispersion estimates over all genes, allowing for a possible abundance trend. The estimation is also robustified against potential outlier genes.

```
> y <- estimateDisp(y, design, robust=TRUE)
> y$common.dispersion
[1] 0.0705
> plotBCV(y)
```



### BioC 2016

Join us for our annual conference **BioC 2016: Open Software and R/Bioconductor** this year at **Stanford University, June 24 (Developer Day), 25, and 26!**

### About Bioconductor

Bioconductor provides tools for the analysis and comprehension of high-throughput genomic data. Bioconductor uses the R statistical programming language, and is open source and open development. It has been released each year, [2011](#), [2012](#), [2013](#), [2014](#), and an other user community, Bioconductor is also available as an [OSG \(Open Source Machine Image\)](#) and a series of [Docker](#) images.

### News

- Bioconductor 3.2 is available.
- Bioconductor [2016 Research Channel](#) launched.
- Orchestrating high-throughput genomic analysis with Bioconductor [Linux](#) and other [Linux Binaries](#).
- Read our latest [newsletter](#) and [slide catalog](#).
- Use the [support site](#) to get help installing, learning and using Bioconductor.



# À ne pas manquer ! Bioconductor et ses outils...

## Explore workflows

### Basic Workflows

- Sequence Analysis** Import fastq, fastx, BAM, big bed, wig, and other sequence formats. Trim, transform, align, and resequence sequences. Perform quality assessment, CpG sites, differential expression, RNA-seq, and other workflows. Access the Sequence Read Archive.
- Single-cell Analysis** Import differential, Illumina, Nanopore, Agilent, and other platforms. Perform quality assessment, normalization, differential expression, clustering, classification, gene set enrichment, gene set analysis, and other workflows for expression, scRNA, copy number, DNA methylation and other assays. Access GEO, ArrayExpress, BioGRID, UCSC, and other publicly available resources.
- Genomic Coordinates** Interactions to using gene, pathway, gene ontology, ontology annotations and the AnnotationHub. Access GO, KEGG, NCBI, BioMart, UCSC, vendor, and other sources.
- Annotation Genomic Regions** Represent common sequence data types (e.g., from BAM, big bed, and wig files) as genomic regions for simple and advanced single-based queries.
- Annotation Genomic Regions** Read and write VCF files. Identify structural location of variants and compute amino acid coding changes for non-synonymous variants. Use SIFT and PolyPhen database packages to predict consequence of amino acid coding changes.
- Chromatin states, coordinate systems with trackViewer-IPDSeq** The IPDSeq facilities developed in conjunction with the UCSC Invertebrate track infrastructure are available for transferring data in GFF3 format. This is illustrated here with an image of the H3K9me3 DNaseI calling that is, as of Oct. 31, 2014, distributed with coordinates defined by NCBI build hg38.

### Advanced Workflows

- High Throughput Assays** Import, transform, edit, analyze and visualize flow cytometric, mass spec, HT-PCR, cell-based, and other assays.
- RNA-seq workflow: gene-level exploratory analysis and differential expression** This lab will walk you through an end-to-end RNA-seq differential expression workflow, using DESeq2 along with other Bioconductor packages. We will start from the FASTQ files, show how these files align to the reference genome, prepare gene expression values as a count matrix by counting the sequenced fragments, perform exploratory data analysis (EDA), perform differential gene expression analysis with DESeq2, and visually explore the results.
- RNA sequencing data analysis** This lab demonstrates how to access data from proteomics data repositories, how to parse various mass spectrometry data formats, how to identify MS2 spectra and

## Browse packages by topic

### All Packages

#### Bioconductor version 3.3 (Release)

#### Packages found under DNAMethylation:

Autocomplete bioviews search:

Package	Maintainer	Title
<b>ASBNormalisation</b>	Jean-Philippe Fortin	Adaptive Robust Regression Normalization for Illumina methylation data
<b>BEAT</b>	Kemal Akman	BEAT: BS-seq Estimation Analysis Toolkit
<b>Bisector</b>	Horvut Horvut	Correct for batch effects in DNA methylation data
<b>BisSeq</b>	Katja Hebestreit	Processing and analyzing bisulfite sequencing data
<b>Bisseq</b>	Kasper Daniel Hansen	Analyze, manage and store bisulfite sequencing data
<b>Bismark</b>	Rafael A. Irizarry	Bismark
<b>CLAMP</b>	Yuan Tian, Tiffany Horn	ChIP Analysis: Methylation Pipeline for Illumina HumanMethylation450 and EPIC
<b>DMRcate</b>	Peter Hunkari	Analysis of DNA methylation data from CHARM microarrays
<b>DMRcate</b>	Cheris Warren	CpG Island Analysis Pipeline for Illumina HumanMethylation450 and EPIC Data
<b>DMRcate</b>	Tiphaine Martin	dmr: visualization of regional epigenome-wide association scan (EWAS) results and DNA co-methylation patterns
<b>DMRcate</b>	Volker Hovestadt	Enhanced copy-number variation analysis using Illumina 450k methylation arrays
<b>DMRcate</b>	Simon Phipps-Cavanagh	R package for calling CNV from Illumina 450k methylation microarrays
<b>DMRcate</b>	Nicolae Radu Zabet	Differentially Methylated Regions caller
<b>DMRcate</b>	Tim Peters	Methylation array and sequencing spatial analysis methods
<b>DMRcate</b>	Hans Rijkersdam	DMRtools: Identifying Differentially Methylated Regions between unique samples using array based methylation profiles

## RNA-seq workflow: gene-level exploratory analysis and differential expression

Michael Love [1], Simon Anders [2,3], Vladislav Kim [3], Wolfgang Huber [3]

[1] Department of Biostatistics, Dana-Farber Cancer Institute and Harvard School of Public Health, Boston, US;

[2] Institute for Molecular Medicine Finland (FIMM), Helsinki, Finland;

[3] European Molecular Biology Laboratory (EMBL), Heidelberg, Germany.

## Short links

- [Counting reads](#)
- [Building a DESeqDataSet](#)
- [Exploratory analysis and visualization](#)
- [Differential expression](#)
- [Plotting results](#)
- [Annotating and exporting results](#)
- [Accounting for unknown batches](#)
- [Time course experiments](#)
- [Session information and references](#)

## Abstract





# À ne pas manquer ! Des blogs...

573 bloggers vous donnent les dernières news



R news and tutorials contributed by (573) R bloggers

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Here you will find daily news and tutorials about R, contributed by over 573 bloggers. There are many ways to follow us - By e-mail:

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R blog... 34K likes

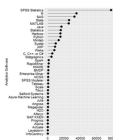
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If you are an R blogger yourself you are invited to add your own R content feed to this site (Non-English R bloggers should add themselves- here)

## R Passes SAS in Scholarly Use (finally)

June 7, 2016  
By muenchen.bob@gmail.com



Way back in 2012 I published a forecast that showed that the use of R for scholarly publications would likely pass the use of SAS in 2015. But I didn't believe the forecast since I expected the sharp decline in SAS ... Continue reading →

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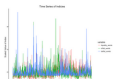
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## R code coverage support via docker

December 17, 2014

By R2D2

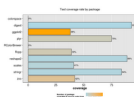
R code coverage support via docker 2014-12-17 Source In my previous post , I used a R with built-in code coverage to compute the code coverage of some packages. Today I will show you how to install and use such a R with code coverage support. I just created a public docker container that provides this patched R. If you do not...

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## Test coverage of the 10 most downloaded R packages

May 2, 2014

By R2D2



Test coverage of the 10 most downloaded R packages 2014-04-30 Source Introduction How do you know that your code is well tested ? The test coverage is the proportion of source code lines that are executed (covered) when running the tests. It is useful to find the parts of your

code that are not exercised no matter how...

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## An example of monkey patching a package

August 1, 2013

By R2D2



# À ne pas manquer ! Un grand Wiki...

## R Programming

The latest reviewed version was checked on 15 October 2023. There are template/file changes awaiting review.



### Editor's note

This book is still under development. Please help us

### Welcome to the *R programming* Wikibook

This book is designed to be a practical guide to the **R programming language**<sup>[1]</sup>.

**R** is free software designed for statistical computing. There is already great documentation for the standard R packages on the Comprehensive R Archive Network (CRAN)<sup>[2]</sup> and many resources in specialized books, forums such as Stackoverflow<sup>[3]</sup> and personal blogs<sup>[4]</sup>, but all of these resources are scattered and therefore difficult to find and to compare. The aim of this Wikibook is to be the place where anyone can share his or her knowledge and tricks on **R**. It is supposed to be organized by task but not by discipline<sup>[5]</sup>. We try to make a cross-disciplinary book, i.e. a book that can be used by all people applying statistics to some specific fields.

### How can you share your R experience ? [ edit ]

- Explain the syntax of a command
- Compare the different ways of performing each task using **R**.
- Try to make unique examples based on fake data (ie simulated data sets).
- As with any Wikibook please feel free to make corrections, expand explanations, and make additions where necessary.

### Some rules :

- Put the name of functions in the code environment : `<code>la()</code>`
- Put the name of packages in bold : `'stats'`
- Except for the default packages, put the name of the package in parentheses after each function : `<code>MCMCprobil()</code>` ("MCMCpack")
- Put examples in the source environment with argument `lang="r&plus="` : `<source lang="r&plus=">#</source>`
- Use references to package documentations, academic literature and wikipedia.
- Use the citations templates to make citations : `Template:Cite book`, `Template:Cite web`, `Template:Cite journal`
- If you want to add a graph, you should load it on **Commons** and add the tag `{{Created with R}}` and, if it is applicable, `[[Category:Images with R source code]]`.

### Prerequisites [ edit ]

We assume that readers have a background in statistics. This book is not a book about statistics but a book about how to implement statistical methods using **R**. We try to use terms which are already defined on Wikipedia such that people can refer to the corresponding wikipedia page each time they have some doubts on a notion.

We also assume that readers are familiar with computers and that they know how to use software with a **command-line interface**. There are some graphical user interfaces for **R** but we are not going to explain how to use them in this textbook. Beginners should have a look at the **Sample session** for a first session with **R**. They can also have a look at the **Statistical Analysis: an Introduction using R** book.

### See also [ edit ]

[https://en.wikibooks.org/wiki/R\\_Programming](https://en.wikibooks.org/wiki/R_Programming)

## R Programming



### • R Basics

- Introduction
- Sample Session
- Manage your workspace
- Settings
- Documentation
- Control Structures
- Working with functions
- Debugging
- Using C or Fortran
- Utilities
- Estimation utilities
- Packages

### • Data Management

- Data types
- Working with data frames
- Importing and exporting data
- Text Processing
- Times and Dates

### • Graphics

- Grammar of graphics
- Publication quality output
- Descriptive Statistics

### • Mathematics

- Optimization
- Probability Distributions
- Random Number Generation

### • Statistical Core Methods

- Maximum Likelihood
- Method of Moments
- Bayesian Methods
- Bootstrap
- Multiple Imputation
- Nonparametric Methods

### • Regression Models

- Linear Models
- Quantile Regression
- Binomial Models
- Multinomial Models
- Tobit And Selection Models
- Count Data Models





# À l'aide !!!! GI(not)YF

Une bête étude comparée...  
avec mon canard préféré

**Rstats**

Images Vidéos

Nous avons inclus **rstats**.  
Lancer les résultats à R stats ?

**turbofast® Official Site**  
30 Avenue St Michel 93150 Paris, Ne Apprenez Rien de Plus sur TurboFast®  
TurboFast.com - (Version: Select Download) - (Link & Social Info)

**R: The R Project for Statistical Computing**  
The R Project for Statistical Computing (R) is a free software environment for statistical computing and graphics.

**R (programming language) - Wikipedia, the free encyclopedia**  
R is a programming language and software environment for statistical computing and graphics supported by the Foundation for Statistical Computing. The R language...

**R-Stats - Home**  
Besoin de savoir comment faire ? Une page accréditée de la part d'informations précieuses attendent.  
rstats.com

**Statistics.com - R for Statistical Analysis**  
Online courses in using R for statistical analysis, students need not be online at any particular times during the weekly course sessions.  
rstats.com/R-for-statistical-analysis/

**R: The R Stats Package - ETH Zurich**  
C-Sets, Contrasts for the Factor, Linear, Generalized Coordinates, Generalized Coordinates, Generalized Coordinates of Mixed Models, Generalized Coordinates and Residuals, Generalized Coordinates of Mixed Models...

**Google R stats**

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Inventé il y a 200 000 résultats (2,48 secondes)

**R: The R Project for Statistical Computing**  
https://www.r-project.org/ - Tutorial web page  
R, also called GNU R, is a strongly functional programming and environment in statistical computing with a wide range of graphical displays of data from various sources.  
Website: FAQs Manuals Books

**CRAN Packages by Name**  
https://cran.r-project.org/web/packages/index.html\_packages\_20\_janvier.html  
R: A Computer Language for Statistical Data Analysis with R  
Regression Diagnostics: Residual Analysis of Anytime Data of the Same Sample for ...  
logit4r User Report Update

**R (programming language) - Wikipedia, the free encyclopedia**  
https://en.wikipedia.org/wiki/R\_(programming\_language) - "R is a free software language for statistical computing and graphics, including linear and nonlinear ..."

**Télécharger R - 01net.com - Télécharger.com**  
www.01net.com/.../4-vos/.../Development/Creation-de-logiciel/...  
R est un langage de programmation et un environnement logiciel open source pour les calculs statistiques et graphiques. R fournit une grande variété de...

**R-statistics Blog | Statistics With R, And Open Source Stuff ...**  
www.r-statistics.com/ - "R is a free software language for statistical computing and graphics. It has a large source code base, but the full..."

## contre leur concurrent spécialisé



**stats**

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**stats (acof4) | Inside-R | A Community Site for R**  
www.inside-r.org/projects/stats  
performs a **STATS** analysis of a kstat object. Usage: stats(X, scalar = TRUE, nt = 3, tol = 1e-07) #R S3 method for class  
stats: print(X, xax = 1, yax = 2, option ...)

**Package 'MExPosition'**  
https://cran.r-project.org/web/packages/.../MExPosition.pdf  
File Format: PDF Adobe Acrobat  
Jun 15, 2013 ... **STATS**, **CGSTATS**, **Dual STATS** and **ANISOSTATS**. The core of MExPosition is ExPosition and the env.  
Details: Package: MExPosition, Type: Labelled Packages

**meDOACT STATS core (MExPosition) | Inside-R | A Community Site ...**  
www.inside-r.org/packages/cran/...docs/meDOACT-STATS.com  
**STATS** core: Core Function for Dual **STATS** (DOACT) via MExPosition. Package: ... **STATS**. core@statset1, column design 1, **stats@2**, column design 2)  
Labelled Packages Support

**kstat.stats (acof4) | Inside-R | A Community Site for R**  
www.inside-r.org/packages/cran/...docs/kstat.stats  
Arguments: object: an object of class **kstats**; xax, yax: the numbers of the x-axis and the y-axis; mrow: parameter for the array of figures to be drawn; whichTab: # ...  
Labelled Packages Support

**print.KPlus1.stats overview (MExPosition) | Inside-R | A Community ...**  
www.inside-r.org/packages/cran/...print.KPlus1.stats/overview  
Arguments: x: an object of class **KPlus1.stats** ... inherited/passed arguments for S3 print methods). Author(s): Chetler R. Chin, Falt, chetler.chin@r@statsetas.edu.  
Labelled Packages Support

**R: Dual STATS**  
search.r-project.org/library/mey/meydoc/html/CGSTATS.html  
Dual STATS: Description, Dual STATS: Usage, DSTATS(Data, Group, ncomp = NULL, Scale = FALSE, graph = FALSE)  
Arguments: Data, a numeric matrix or ...

et son concurrent le plus célèbre

http://rseek.org



# Conclusion

