



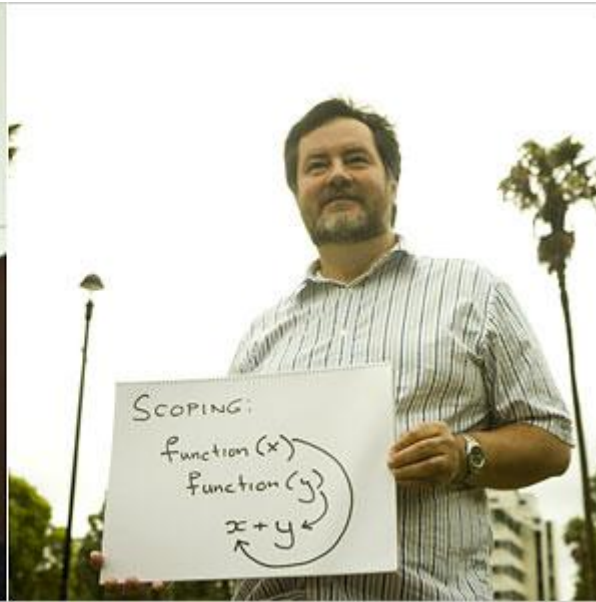
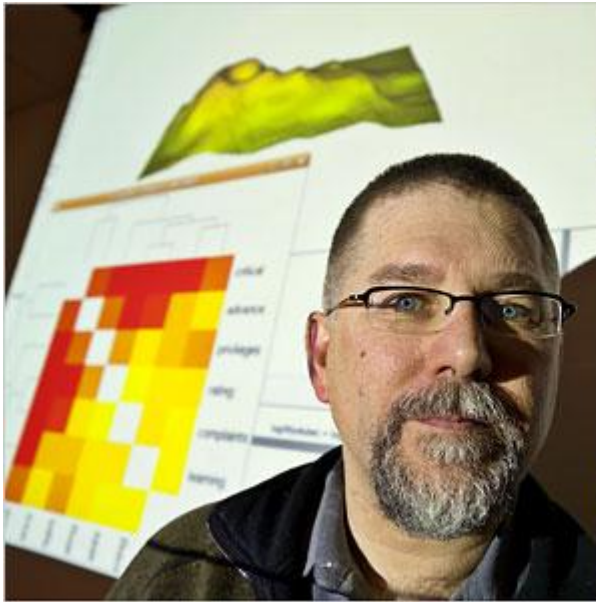
# Introducción al lenguaje R

José Enrique Martín García

Universidad Politécnica de Gimialcón

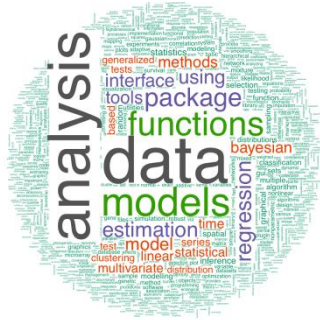
(Copyright © 2014)





R Inicialmente fue escrito por Robert Gentleman and Ross Ihaka tambien conocidos como los "R & R" del Departamento de Estadística de la Universidad de Auckland





# ¿Qué es R?



R es un lenguaje de programación y un entorno para análisis estadístico y representación gráfica .

R es un proyecto GNU similar a S. Las diferencias entre R y S son importantes, pero la mayoría del código escrito para S corre bajo R sin modificaciones.

R actualmente es el resultado de un esfuerzo de colaboración de personas del todo el mundo.



R File Edit Format Workspace Packages & Data Misc Window Help 100% (Charged) Tue 2:14 PM stefano iacus

R Console

```

rgl.sr> ylen <- ylim[2] - ylim[1] + 1
rgl.sr> colorlut <- terrain.colors(ylen)
rgl.sr> col <- colorlut[y - ylim[1] + 1]
rgl.sr> rgl.clear()
rgl.sr> rgl.surface(x, z, y, color = col)

```

R Data Editor

| height | weight |
|--------|--------|
| 58     | 115    |
| 59     | 117    |
| 60     | 120    |
| 61     | 123    |
| 62     | 126    |
| 63     | 129    |
| 64     | 132    |
| 65     | 135    |
| 66     | 139    |
| 67     | 142    |
| 68     | 146    |
| 69     | 150    |
| 70     | 154    |
| 71     | 159    |
| 72     | 164    |

Quartz (2) - Active

Given : depth

R Workspace Browser

| Object    | Type       | Structure  |
|-----------|------------|------------|
| dati      | data.frame | dim: 20 4  |
| g         | factor     | levels: 10 |
| l         | numeric    | length: 12 |
| n         | numeric    | length: 1  |
| opar      | list       | length: 2  |
| pie.sales | numeric    | length: 6  |
| pin       | numeric    | length: 2  |
| scale     | numeric    | length: 1  |
| usr       | numeric    | length: 4  |
| women     | data.frame | dim: 15 2  |
| height    | numeric    | length: 15 |
| weight    | numeric    | length: 15 |
| x         | numeric    | length: 87 |

R Package Manager

| status                                     | Package  | Description                          |
|--|----------|--------------------------------------|
| <input checked="" type="checkbox"/> loaded | graphics | The R Graphics Package               |
| <input type="checkbox"/> not loaded        | grid     | The Grid Graphics Package            |
| <input type="checkbox"/> not loaded        | lattice  | Lattice Graphics                     |
| <input checked="" type="checkbox"/> loaded | methods  | Formal Methods and Classes           |
| <input type="checkbox"/> not loaded        | mvn      | CAMs with CCV, smoothness estimation |

RGL device 1 (active)

BoxDens=function(data, npts = 200., x = c(0., add = TRUE, col = 11., border=FALSE, collin

```

{
  dens <- density(data, n = npts)
  dx <- dens$x
  dy <- dens$y
  if(add == FALSE)
    plot(0., 0., axes = F, main = "", xlim = x, ylim = y,
         ylab = "")
  if(orientation == "paysage") {
    dx2 <- (dx - min(dx))/(max(dx) - min(dx)) * (x[2.] - x[1.])
    dy2 <- (dy - min(dy))/(max(dy) - min(dy)) * (y[2.] - y[1.])
    seqbelow <- rep(y[1.], length(dx))
    if(Fill = T)
      confshade(dx2, seqbelow, dy2, col = col)
    if (border==TRUE) points(dx2, dy2, type = "l", col = c
  }
  else {
    dy2 <- (dx - min(dx))/(max(dx) - min(dx)) * (y[2.] - y[1.])

```

The R Graphics Package

Documentation for package 'graphics' version 2.0.0

Help Pages

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [L](#) [M](#) [N](#) [P](#) [R](#) [S](#) [T](#) [X](#)



# Historia de R



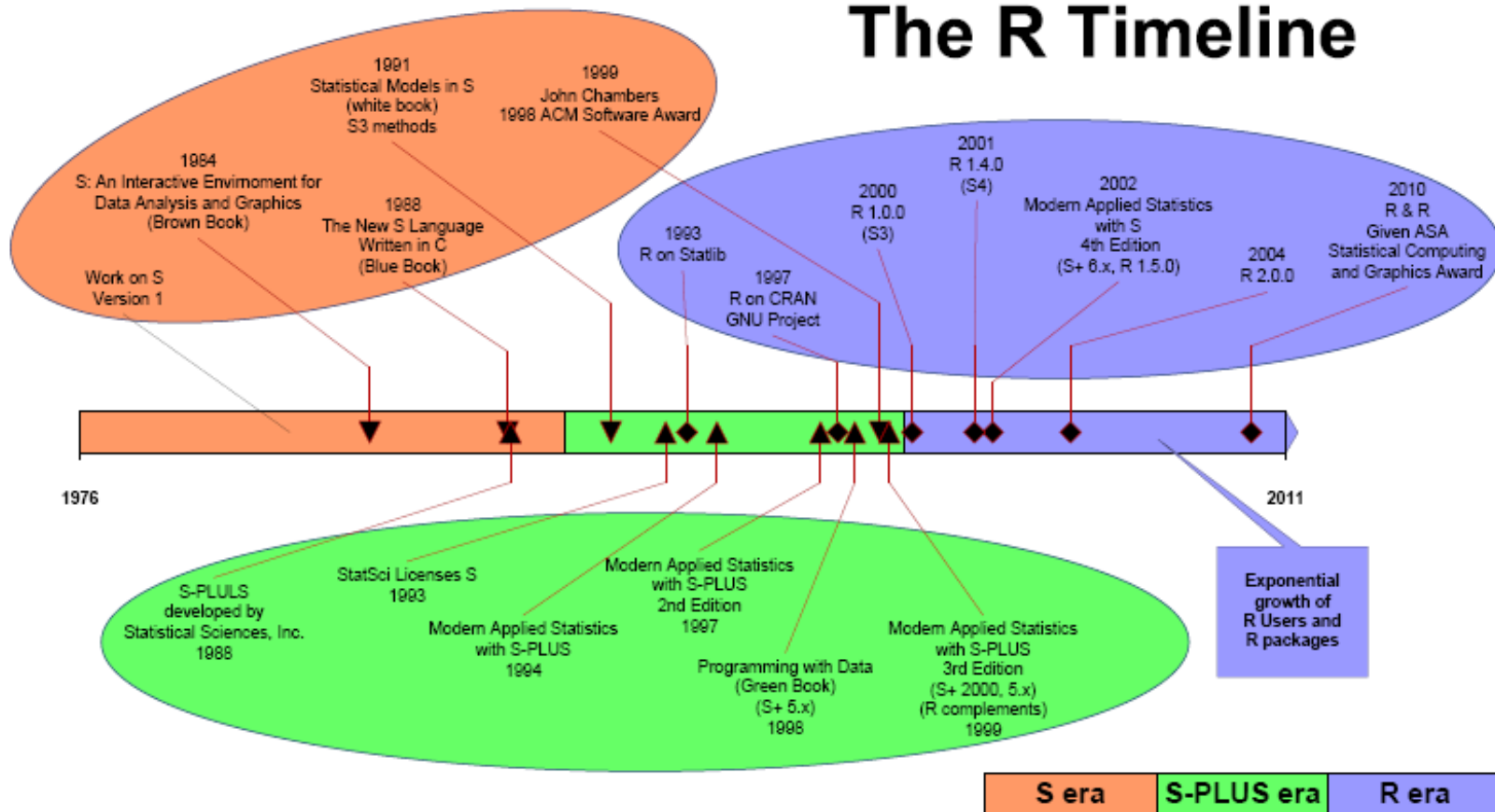
Fue inicialmente escrito por Robert Gentleman y Ross Ihaka del *Departamento de Estadística* de la *Universidad de Auckland* en Nueva Zelanda.

R actualmente es el resultado de un esfuerzo de colaboración de personas de todo el mundo.

Desde mediados de 1997 se formó lo que se conoce como núcleo de desarrollo de R, que actualmente es el que tiene la posibilidad de modificación directa del código fuente.

R es un proyecto GNU similar a S, desarrollado éste por los *Laboratorios Bell*.

# The R Timeline







R es un entorno informático para análisis estadístico, distribuido bajo la licencia GPL de GNU (<http://gnu.org/copyleft/gpl.html>).

Funciona en los sistemas operativos más populares (Microsoft Windows, Linux Ubuntu. IOs ). Incluye:

- Un intérprete del lenguaje R, que a su vez es un dialecto del lenguaje S (otro dialecto de S famoso es Splus). El nombre S viene de Statistics (Estadística); R se pronuncia como our (“nuestro” en inglés), para destacar su carácter público.
- Rutinas en C y Fortran optimizadas para cálculo numérico.
- Numerosos complementos (paquetes) para aplicaciones estadísticas concretas.

La página oficial del proyecto R es  
<http://www.r-project.org>.



Al igual que S, se trata de un lenguaje de programación, lo que permite que los usuarios lo extiendan definiendo sus propias funciones. De hecho, gran parte de las funciones de R están escritas en el mismo R, aunque para algoritmos computacionalmente exigentes es posible desarrollar bibliotecas en C, C++ o Fortran que se cargan dinámicamente. Los usuarios más avanzados pueden también manipular los objetos de R directamente desde código desarrollado en C. R también puede extenderse a través de paquetes desarrollados por su comunidad de usuarios

R forma parte de un proyecto colaborativo y abierto. Sus usuarios pueden publicar paquetes que extienden su configuración básica. Existe un repositorio oficial de paquetes cuyo número superó en otoño de 2009 la cifra de los 2000.





# Página web de inicio de R

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

- Listado de repositorios CRAN
- Manuales
- Preguntas frecuentes
- Búsquedas
- Listado de emails
- Enlaces

The R Project for Statistical Computing

PCA 5 vars  
 (p1=pc1, p2=pc2, p3=pc3, p4=pc4, p5=pc5)

Clustering 4 groups

Factor 1 [41%]      Factor 3 [19%]

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 2.15.1 (Roasted Marshmallows) has been released on 2012-06-22.
- R version 2.14.2 (Gift-Getting Season) has been released on 2012-02-29.
- [The R Journal Vol.3/2](#) is available.
- [useR! 2012](#), will take place at Vanderbilt University, Nashville Tennessee, USA, June 12-15, 2012.

This server is hosted by the [Institute for Statistics and Mathematics](#) of the [WU Wien](#).

<http://cran.r-project.org/mirrors.html>



# Página CRAN Comprehensive R Archive Network

http://cran.r-project.org

## Repositorios CRAN

- 90 páginas web en el mundo
- 20 Páginas web en USA

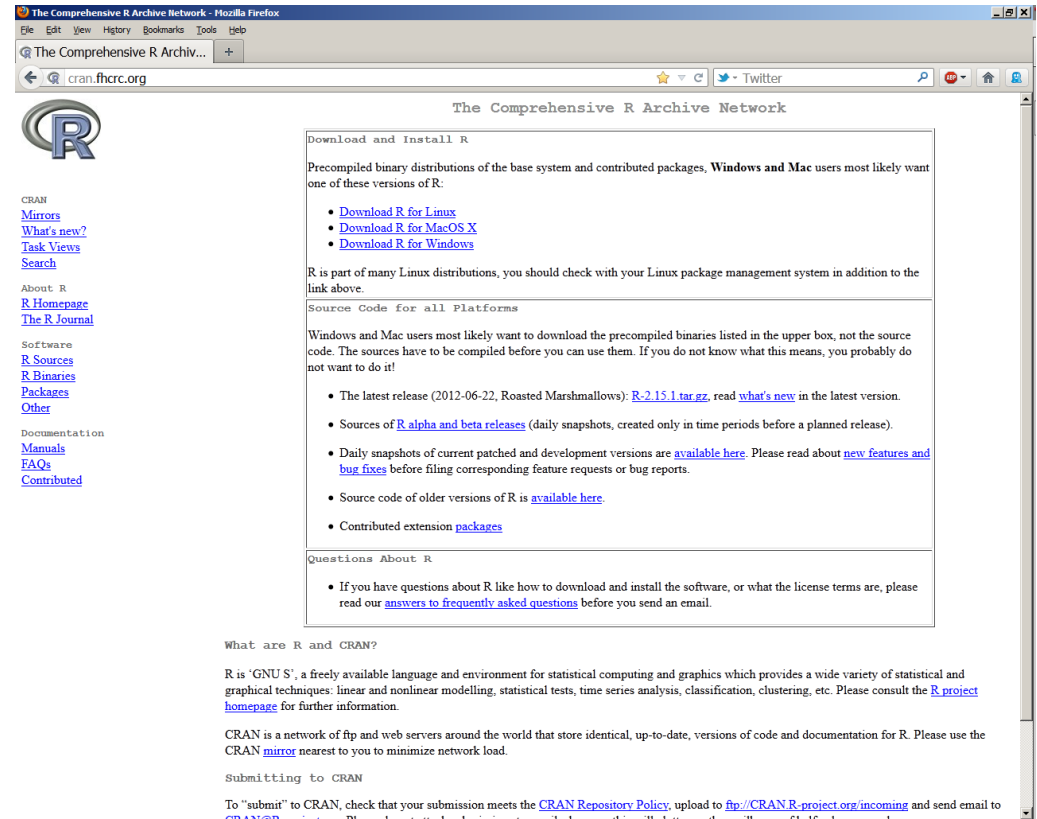
## R Binaries

## Paquetes R

- mas de 4800 paquetes

## Fuentes de R

## Vista de Tareas





# Paquetes de R

Mas de 6000+ paquetes de R organizados por tipo de Aplicación

- Finanzas
- Series Temporales
- Econometría
- Optimización
- Geoestadística
- Análisis de Riesgos
- Aprendizaje de Máquina
- Etc.





# Características de R

A la hora de describir el entorno R, suelen destacarse las siguientes características:

- El lenguaje R es interpretado, a alto nivel; similar a Octave/Matlab, pero con la sintaxis orientada al manejo de datos estadísticos (factores, fórmulas de modelos...).
- Una comunidad de programadores muy dinámica (multitud de paquetes adicionales).
- Bien documentado y con numerosos foros de ayuda.
- Lenguaje de programación orientado a objetos bien desarrollado, simple y efectivo
- Lenguaje interpretado, no compilado. Posibilidad de usar scripts
- Interfaz gráfica limitada (aunque se dispone de varios GUI que suplen esta deficiencia)
- No tiene soporte comercial

# R es una herramienta para.....

## Manipulación de datos:

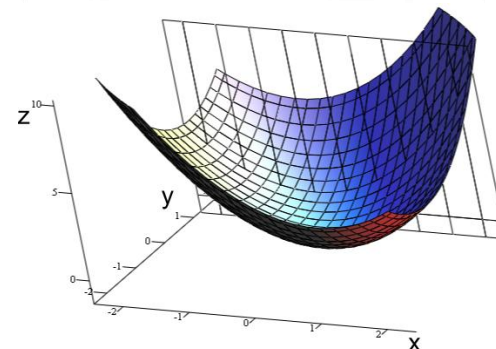
- Conexión con Bases de Datos
- Cocinado de datos

## Modelado y Cálculo:

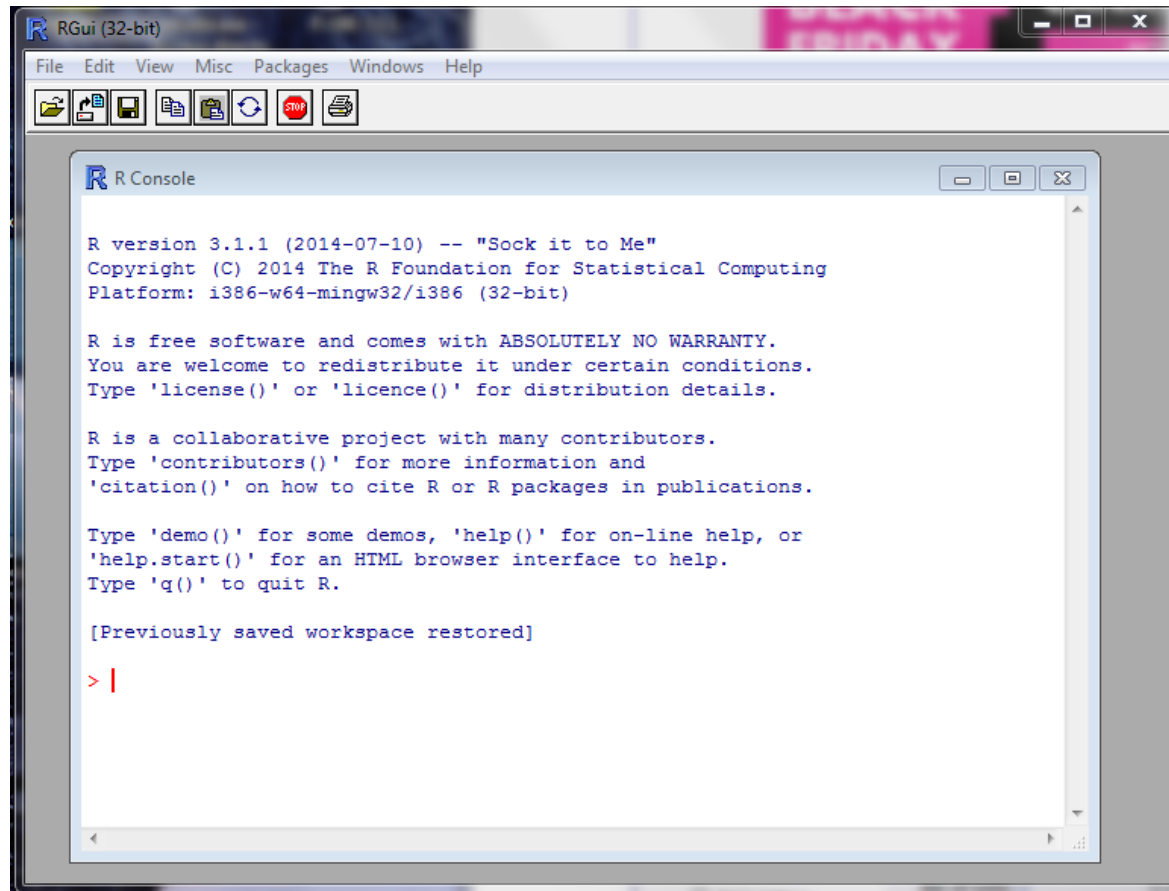
- Modelos Estadísticos
- Simulación Numérica

## Visualización de datos:

- Visualización y ajuste de modelos
- Composición de datos estadísticos



# La Interface con el usuario puede ser simple:



```
RGui (32-bit)
File Edit View Misc Packages Windows Help

R Console

R version 3.1.1 (2014-07-10) -- "Sock it to Me"
Copyright (C) 2014 The R Foundation for Statistical Computing
Platform: i386-w64-mingw32/i386 (32-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

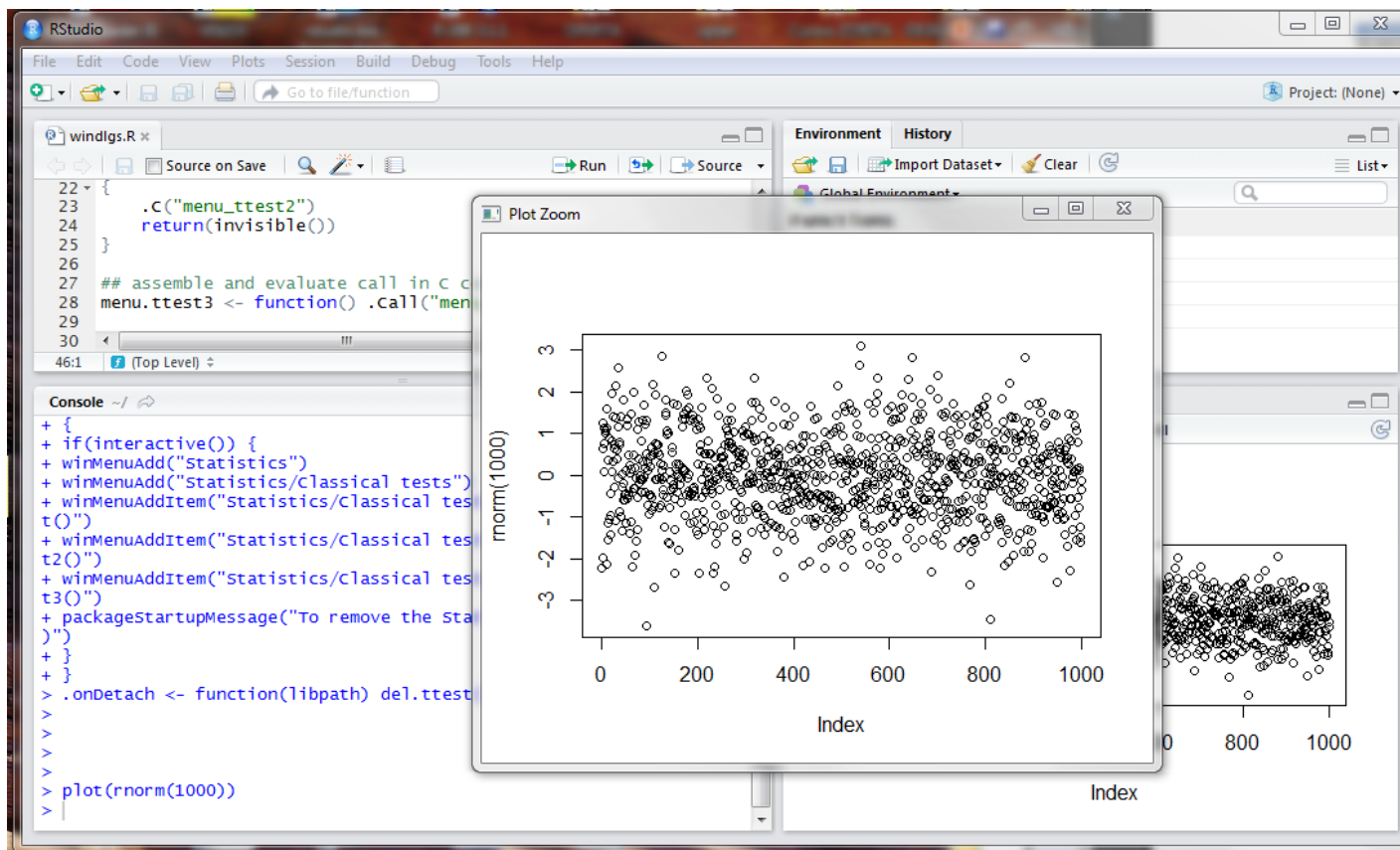
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Previously saved workspace restored]

> |
```

# O como un entorno de trabajo:





# R puede funcionar como una calculadora:

## Matemáticas Sencillas

```
> 3 + 2
5
```

## Almacenamiento de resultados en variables

```
> x <- 3 + 2
> x^2
25
```



## Matemáticas vectoriales

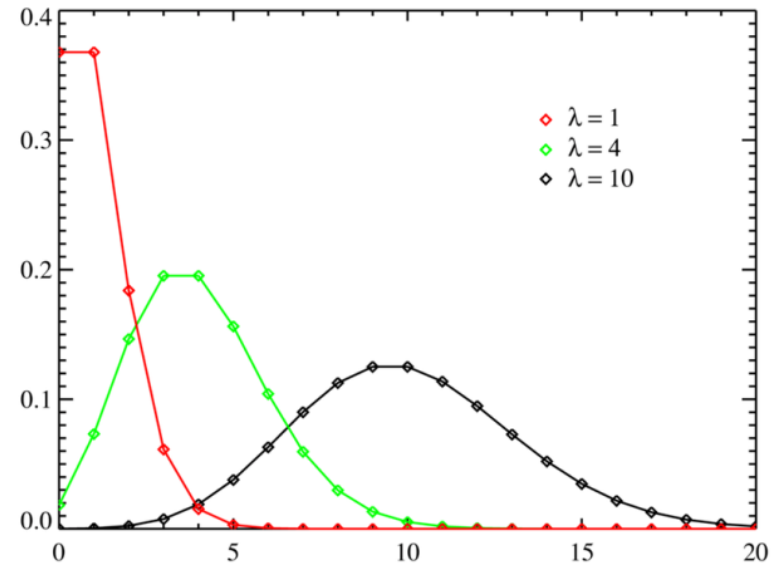
```
> weigh <- c(110, 180, 240)
> heigh <- c(5.5, 6.1, 6.2)
> Bmi <- (weigh*4.88/heigh^2)
17.7 23.6 30.4
```

# Funciones de Distribución de Probabilidad

## Matemáticas Sencillas

**d***dist*() density function (pdf)  
**p***dist*() cumulative density function  
**q***dist*() quantile function  
**r***dist*() random deviates

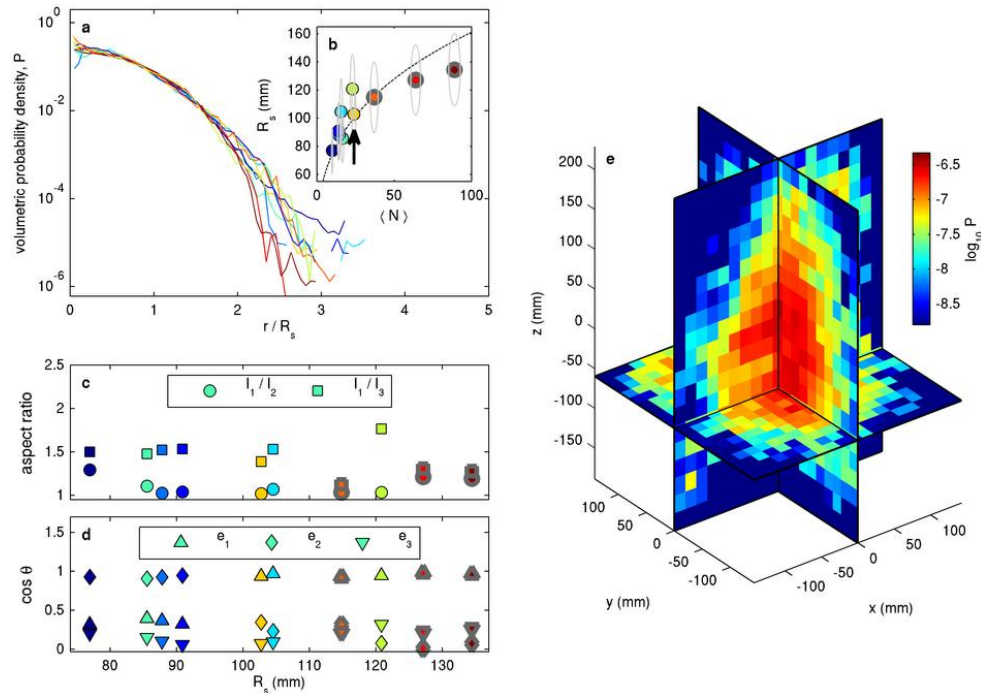
> **pnorm(0)** 0.05  
 > **qnorm(0.9)** 1.28  
 > **rnorm(100)** vector of length 100



## Ejemplos

Normal **d**norm, **p**norm, **q**norm, **r**norm  
 Binomial **d**binom, **p**binom, ...  
 Poisson **d**pois, ...

# Representaciones gráficas complejas





# Importación de datos:



De objetos de R  
> load(„Insurance.RData“)



De ficheros Excel  
> Insurance <- read.csv(“Insurance.csv”,header=TRUE)

|    | A        | B             | C      | D    |
|----|----------|---------------|--------|------|
| 1  | Delgado  | Pedro         | 500.00 | 4.00 |
| 2  | Caño     | Juan Lopez    | 350.00 | 4.00 |
| 3  | Barahona | Juan Lopez    | 200.00 | 3.00 |
| 4  | Barahona | Osma Garcia   | 350.00 | 3.00 |
| 5  | Alcorno  | Juan Lopez    | 350.00 | 3.00 |
| 6  | Vazquez  | Marta Summers | 350.00 | 3.00 |
| 7  | Caño     | Marta Summers | 400.00 | 4.00 |
| 8  | Alcorno  | Osma Garcia   | 350.00 | 3.00 |
| 9  | Alcorno  | Nidia Vidar   | 340.00 | 3.00 |
| 10 | Isaías   | Nidia Vidar   | 350.00 | 3.00 |
| 11 | Isaías   | Osma Garcia   | 400.00 | 4.00 |
| 12 | Isaías   | Juan Lopez    | 340.00 | 3.00 |
| 13 | Isaías   | Nidia Vidar   | 200.00 | 3.00 |
| 14 | Barahona | Nidia Vidar   | 350.00 | 4.00 |

De ficheros de datos  
> Insurance <- read(“data.txt”)



De bases de datos  
> con <-dbConnect(driver,user,password,host,dbname)  
>Insurance <-dbSendQuery(con, “SELECT \* FROM claims”)



De páginas Web  
> con <-url('http://labs.dataspora.com/test.txt')  
> Insurance <-read.csv(con, header=TRUE)



# Editores de Código para R

Basic code editors provided by [Rguis](#)

[RStudio](#): GUI-based IDE for R

[Vim-R-Tmux](#): R working environment based on vim and tmux

[Emacs](#) ([ESS add-on package](#))

[gedit](#) and [Rgedit](#)

[RKWard](#)

[Eclipse](#)

[Tinn-R](#)

[Notepad++](#) ([NppToR](#))



# Editores de Código para R

RStudio: <http://www.rstudio.org/>

Tinn-R: <http://www.sciviews.org/Tinn-R/>

StatET: <http://www.walware.de/goto/statet>

Eclipse: <http://www.eclipse.org/>

R Commander: <http://socserv.mcmaster.ca/jfox/Misc/Rcmdr/>

JGR: <http://cran.r-project.org/web/packages/JGR/index.html>

Deducer: <http://www.deducer.org/pmwiki/pmwiki.php?n=Main.DeducerManual>

Rattle: <http://rattle.togaware.com/>

RedR: <http://www.red-r.org/>

TextWrangler: <http://www.barebones.com/products/textwrangler/>

Notepad++: <http://notepad-plus-plus.org/>, with Npp2r

plugin: <http://sourceforge.net/projects/npptor/>



# Selección de Referencias de Programación en R

- [Programming with Data](#), by John M. Chambers
- [R for Programmers](#), Norm Matloff, UC Davis
- [S Programming](#), by W. N. Venables and B. D. Ripley
- [R Help & R Coding Conventions](#), Henrik Bengtsson, Lund University
- [Programming in R \(Vincent Zoonekynd\)](#)
- [Peter's R Programming Pages](#), University of Warwick
- [Rtips](#), Paul Johnsson, University of Kansas
- [High-Performance R](#), Dirk Eddelbuettel tutorial presented at [useR-2008](#)
- [C/C++ level programming for R](#), Gopi Goswami
- [R Programming for Bioinformatics](#), by Robert Gentleman





# Selección de Referencias en R

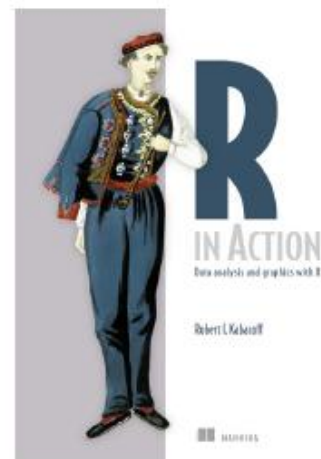
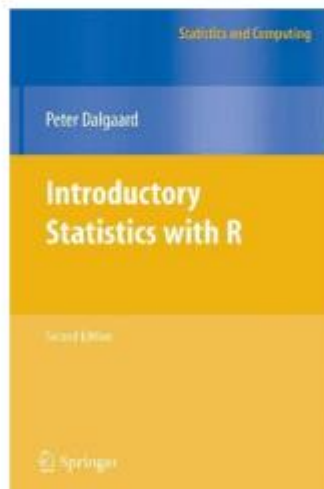
- Chambers (2008). *Software for Data Analysis*, Springer.
- Chambers (1998). *Programming with Data*, Springer.
- Venables & Ripley (2002). *Modern Applied Statistics with S*, Springer.
- Venables & Ripley (2000). *S Programming*, Springer.
- Pinheiro & Bates (2000). *Mixed-Effects Models in S and S-PLUS*, Springer.
- Murrell (2005). *R Graphics*, Chapman & Hall/CRC Press.
- Springer has a series of books called *Use R!*.

Un listado más extenso de libros lo podemos encontrar en

<http://www.r-project.org/doc/bib/R-books.html>

# Selección de Referencias en R

- Introductory Statistics with R  
2nd Edition
  - P. Dalgaard
  - Springer, 2008
- R in Action
  - Robert Kabacoff
  - Manning Publications, 2011



# Selección de Referencias en R

- An Introduction to R
  - W.N. Venables, D.M. Smith
  - R Development Core Team
- A Beginner's Guide to R
  - Zuur, Ieno, Meesters
  - Springer, 2009





# Selección de Referencias en R

See here for R-help *phylogenetics*: <https://stat.ethz.ch/mailman/listinfo/r-sig-phylo>

See here for R-help *ecology*: <https://stat.ethz.ch/mailman/listinfo/r-sig-ecology>

See here for R-help on *mixed effects models*: <https://stat.ethz.ch/mailman/listinfo/r-sig-mixed-models>

See here for R-help on *networks/graphs*: <https://stat.ethz.ch/mailman/listinfo/r-sig-networks>

all R-help listserves: <https://stat.ethz.ch/mailman/listinfo/>

Stackoverflow: <http://stackoverflow.com/>

The R Journal: <http://journal.r-project.org/>

Google groups, ggplot2: <http://groups.google.com/group/ggplot2?pli=1>



# Selección de Referencias en R

R Graphical Manual: <http://rgm2.lab.nig.ac.jp/RGM2/images.php?show=all&pageID=935>

R Bloggers: <http://www.r-bloggers.com/>

R Graph Gallery: <http://addictedtor.free.fr/graphiques/>

Examples of figures in both Lattice and ggplot2: [http://learnr.files.wordpress.com/2009/08/latbook\\_time1.pdf](http://learnr.files.wordpress.com/2009/08/latbook_time1.pdf)

Quick R: <http://www.statmethods.net/index.html>

CrossValidated: <http://stats.stackexchange.com/>

R Inferno (pdf document): [http://www.burns-stat.com/pages/Tutor/R\\_inferno.pdf](http://www.burns-stat.com/pages/Tutor/R_inferno.pdf)

Hadley Wickham's short courses: <http://courses.had.co.nz/>

# Selección de Referencias de R en Español

- “R para Principiantes”, Jorge A. Ahumada
- “Introducción a R” Andrés González and Silvia González
- “Gráficos Estadísticos con R” J. C. Correa, Nelfi González
- “Cartas sobre Estadística de la Revista Argentina de Bioingeniería” Marcelo R. Risk.
- “Introducción al uso y programación del sistema estadístico R” Ramón Díaz-Uriarte
- “Generación automática de reportes con R y LaTeX” Mario Alfonso Morales Rivera.
- “Metodos Estadísticos con R y R Commander” Antonio Jose Saez Castillo.
- “Optimización Matemática con R: Volumen I” E. G. Baquela A. Redchuk
- “Introducción al uso de R y R Commander para el análisis estadístico de datos en ciencias sociales” by Rosario Collatón Chicana.

## Bases de Datos

- <http://www.modelizandosistemas.com.ar/p/optimizacion-con-r.html>.



# Selección de páginas web

## www.r-bloggers.com

### R-bloggers

R news and tutorials contributed by (393) R bloggers

- Home
- About
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- Contact us
- RSS

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Like

R bloggers

Beautiful

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)

**TOPICS OF INTEREST**

ggplot2 r-project graphics

programming rstats

R Language Books

visualization Data R-english tutorial events

LaTeX finance Big Data packages sweave applications

## Walmart Invasion

August 26, 2012  
By Corey Chivers



As an invasion biologist, the process of spatial spread is at the heart of what I do. When I came across this dataset of Walmart store openings since 1962 I couldn't help but see it as an invasion front which looks a lot like a biological invasion or (albeit slow) epidemic. The video shows monthly

Read more »

## Kaggle Prospect – Harvard Business Review

August 25, 2012  
By MK

## Economic geography of the eastern USA circa 1999, median incomes...

August 25, 2012  
By Isomorphimes



(This article was first published on We think therefore we R, and kindly contributed to R-bloggers) This post is meant for submitting visual

Economic geography of the eastern USA circa 1999, median incomes by zip code Code and data source to

- TOP 7 ARTICLES OF THE WEEK**
1. Creating beautiful reports from R with knitr
  2. How robust is logistic regression?
  3. Welcome Hadley, Winston, and Garrett!
  4. London 2012 Olympics — Medals per hundred players
  5. Getting Started with R and Hadoop
  6. Select operations on R data frames
  7. R and the web (for beginners), Part III: Scraping MPs' expenses in detail from the web

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<http://www.r-bloggers.com/>

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14783 readers BY FEEDBURNER

On Twitter:

Follow @rbloggers 13K fo

On Facebook:

R bloggers Me gusta

## Archetypal Analysis: Similarity Defined by Distances from Contrasting Ideals

December 5, 2014  
By Joel Cadwell

Carl Jung was at least partially correct. We do tend to think in terms of the extremes as shown in this archetypal wheel with rulers versus outlaws and heroes versus caregivers at different ends of bipolar dimensions. Happily, we are not required to ac...

**TOP 3 POSTS FROM THE PAST 2 DAYS**

- ggvis tutorial: become a data visualization expert with RStudio
- A comment on preparing data for classifiers
- Installing R packages

Search & Hit Enter

**TOP 9 ARTICLES OF THE WEEK**

- Installing R packages
- In-depth introduction to machine learning in 15 hours of expert videos
- Using apply, sapply, lapply in R
- Eight Christmas Gift Ideas for the Statistically Interested
- Basics of Histograms

# Selección de páginas web

<http://www.inside-r.org/packages>

The screenshot shows a web browser window displaying the 'inside-r.org' website. The page title is 'Package reference: A'. The main content area features a table of R packages starting with 'A'. The table has two columns: 'Package' and 'Description'. The packages listed are A3, aaMI, abc, and abcdeFBA. To the right of the table, there is a 'Search Packages' section with an input field and a 'GO' button, and an 'About Package Reference' section with explanatory text.

| Package                  | Description   |
|--------------------------|---|
| <a href="#">A3</a>       | A3: Accurate, Adaptable, and Accessible Error Metrics for Predictive Models         |
| <a href="#">aaMI</a>     | Mutual information for protein sequence alignments                                  |
| <a href="#">abc</a>      | Tools for Approximate Bayesian Computation (ABC)                                    |
| <a href="#">abcdeFBA</a> | ABCDE_FBA: A-Biologist-Can-Do-Everything of Flux Balance Analysis with this package |



# Selección de páginas web

<http://r-es.org/Comunidad>

The screenshot shows the website 'Comunidad R-Hispano' in a browser window. The browser's address bar shows 'r-es.org/Comunidad'. The website has a dark header with the logo and navigation links: '¿Quiénes somos?', '¿Qué hacemos?', '¡Asóciate!', 'Recursos', 'Noticias', and 'Jornadas'. Below the header is a login section with fields for 'Usuario:' and 'Clave:', and buttons for 'Conéctate', 'Olvidé mi contraseña', and 'Registrarse'. The main content area features a search bar, a 'Mapa del Sitio' (Site Map) with links to 'Sobre la Comunidad R Hispano', 'Nuestras actividades', and 'Documentación', and an 'Archivo' (Archive) section with 'Ofertas de Trabajo' (Job Offers) for various months from 2011 to 2014. The main text area is titled '(Cacheado)' and contains the text: 'Esta es la página de la Comunidad R Hispano, la asociación de los usuarios de R (¿qué es R?), que tiene como objetivo fundamental **fomentar su uso y conocimiento.**' Below this is a 'DESTACAMOS...' (We highlight...) section with the title 'Última asamblea anual de socios' (Last annual meeting of members) dated 'Jueves 23 Octubre, 19h: Asamblea'. The R logo is displayed below the text. At the bottom, it says 'Últimas Jornadas de Usuarios de R' (Last R Users Workshops) on '23 y 24 de octubre de 2014, en Santiago de Compostela', with the logo of 'CNUT CENTRO DE NOVAS TECNOLOXÍAS DE GALICIA'. On the right side, there is a 'Mapa del sitio:' (Site Map) with a list of links: 'Sobre la Comunidad R Hispano', 'Estatutos', 'Hazte Socio', 'Junta', 'Votación', 'Socios', 'Economía', 'Patrocinadores', 'Nuestras actividades', and 'Grupos de Interés Local - G.I.L.' with sub-links for Barcelona, Galicia, Lisboa, and Madrid.



# Selección de páginas web

<http://www.rdocumentation.org/>

The screenshot shows the R Documentation website interface. On the left is a navigation menu with categories like Bayesian, ChemPhys, ClinicalTrials, etc. The main content area features logos for CRAN, Bioconductor, and GitHub, along with a search bar and a 'Start search' button. On the right, there are two tables: 'Top Ranked CRAN Packages' and 'New Packages'.

| Week | Package      | All time |
|------|--------------|----------|
| 1    | Rcpp         | 66169    |
| 2    | ramps        | 79610    |
| 3    | ggplot2      | 60661    |
| 4    | plyr         | 59134    |
| 5    | stringr      | 55115    |
| 6    | digest       | 52307    |
| 7    | RColorBrewer | 50112    |
| 8    | reshape2     | 49812    |
| 9    | colorspace   | 45414    |
| 10   | car          | 42718    |

| #  | Package           |
|----|-------------------|
| 1  | panelaggregation  |
| 2  | retistruct        |
| 3  | RPANDA            |
| 4  | ClimClass         |
| 5  | choroplethrAdmin1 |
| 6  | rDEA              |
| 7  | radar             |
| 8  | netgsa            |
| 9  | ASPBay            |
| 10 | hnp               |

# Selección de páginas web

<http://www.statmethods.net/interface/index.html/>

Home | Interface | Input | Manage | Stats | Adv Stats | Graphs | Adv Graphs | Blog

## Quick-R

accessing the power of R

Search

### R Interface

- [Getting Help](#)
- [The Workspace](#)
- [Input/Output](#)
- [Packages](#)
- [Graphic User Interfaces](#)
- [Customizing Startup](#)
- [Publication Quality Output](#)
- [Batch Processing](#)
- [Reusing Results](#)

### R in Action

[R in Action \(2nd ed\)](#) significantly expands upon this material. Use promo code `ria38` for a 38% discount.

## Overview

```
R Console
File Edit Misc Packages Windows Help
> par(bg="white")
> n <- 100
> x <- c(0, cumsum(r
> y <- c(0, cumsum(r
> xx <- c(0:n, n:0)
> yy <- c(x, rev(y)
> plot(xx, yy, type=
Waiting to confirm
```

R is a dialect of the [S language](#). It is a case-sensitive, interpreted language. You can enter commands one at a time at the command prompt (`>`) or run a set of commands from a source file. There is a wide variety of [data types](#), including vectors (numerical, character, logical), matrices, data frames, and lists. Most functionality is provided through built-in and user-created functions and all data objects are kept in memory during an interactive session. Basic functions are available by default. Other functions are contained in [packages](#) that can be attached to a current session as needed.

“ R is a case sensitive language. FOO, Foo, and foo are three different objects!

This section describes working with the R interface. A key skill to using R effectively is learning how to use the built-in [help system](#). Other sections describe the [working environment](#), [inputting programs](#) and

# Selección de páginas web

<http://www.rdatamining.com/resources/onlinedocs>

**RDM** RDataMining.com: R and Data Mining

Search this site

Home  
News  
Course News  
Job News  
Resource News  
Documents

Examples

- Data Exploration
- Decision Trees
- Random Forest
- k-means Clustering
- Hierarchical Clustering
- Outlier Detection
- Time Series
- Forecasting
- Time Series Analysis
- Time Series Clustering and Classification
- Association Rules
- Text Mining
- Twitter Follower Map
- Social Network Analysis
- Multidimensional Scaling (MDS)
- Principal Component Analysis (PCA)
- Parallel Computing
- Other Examples

Big Data

- Big Data Platforms
- Step-by-Step Guide to Setting Up an R-Hadoop System
- Building an R Hadoop System
- Hadoop: from Single-Node Mode to Cluster Mode

Resources

- Online Documents, Books and Tutorials

Resources >

## Online Documents, Books and Tutorials

Some free online documents on R and data mining are listed below.

### R

- [Quick-R](#)
- [Computing for Data Analysis \(with R\)](#): a free online course
- YouTube playlists for the videos of the course: [week 1](#), [week 2](#), [week 3](#) and [week 4](#).
- [Data Analysis \(with R\)](#): a free online course
- [Advanced R](#): a book for R users who want to improve their programming skills and understanding of the language
- [R Reference Card](#)
- [Google's R Style Guide](#)
- [R Tips](#): lots of tips for R programming
- [R Tutorial](#)
- [The R Manuals](#), including an *Introduction to R*, *R Language Definition*, *R Data Import/Export*, and other R manuals
- [R You Ready?](#)
- [R for Beginners](#)
- [Econometrics in R](#)
- [Using R for Data Analysis and Graphics - Introduction, Examples and Commentary](#)
- Lots of [R Contributed Documents](#), including non-English documents
- [The R Journal](#)
- [Learn R Toolkit](#)
- [Resources to help you learn and use R](#) at UCLA
- [R Tutorial - An R Introduction to Statistics](#)
- [Cookbook for R](#)
- [Slides for a couple of R short courses](#)
- [Tips on memory in R](#)
- [Slides on building R packages](#):  
[http://sites.stat.psu.edu/~dsy109/SOS\\_Talk.pdf](http://sites.stat.psu.edu/~dsy109/SOS_Talk.pdf)  
<http://www.hsph.harvard.edu/statinformatics/soft/files/buildingrpackages.pdf>
- [Creating R Packages: A Tutorial](#)
- [60+ R resources to improve your data skills](#)

### Data Mining

- [Introduction to Data Mining](#) by Pang-Ning Tan, Michael Steinbach and Vipin Kumar  
Lecture slides (in both PPT and PDF formats) and three sample Chapters on classification, association and clustering available at the above link

Data Mining for Databases

Analyze relational DBs without SQL

Free/commercial versions available





# R Studio



Home Screenshots Download Docs Support Development Blog

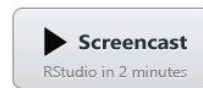
## Welcome to RStudio

RStudio™ is a free and open source integrated development environment (IDE) for R. You can run it on your desktop (Windows, Mac, or Linux) or even over the web using RStudio Server.



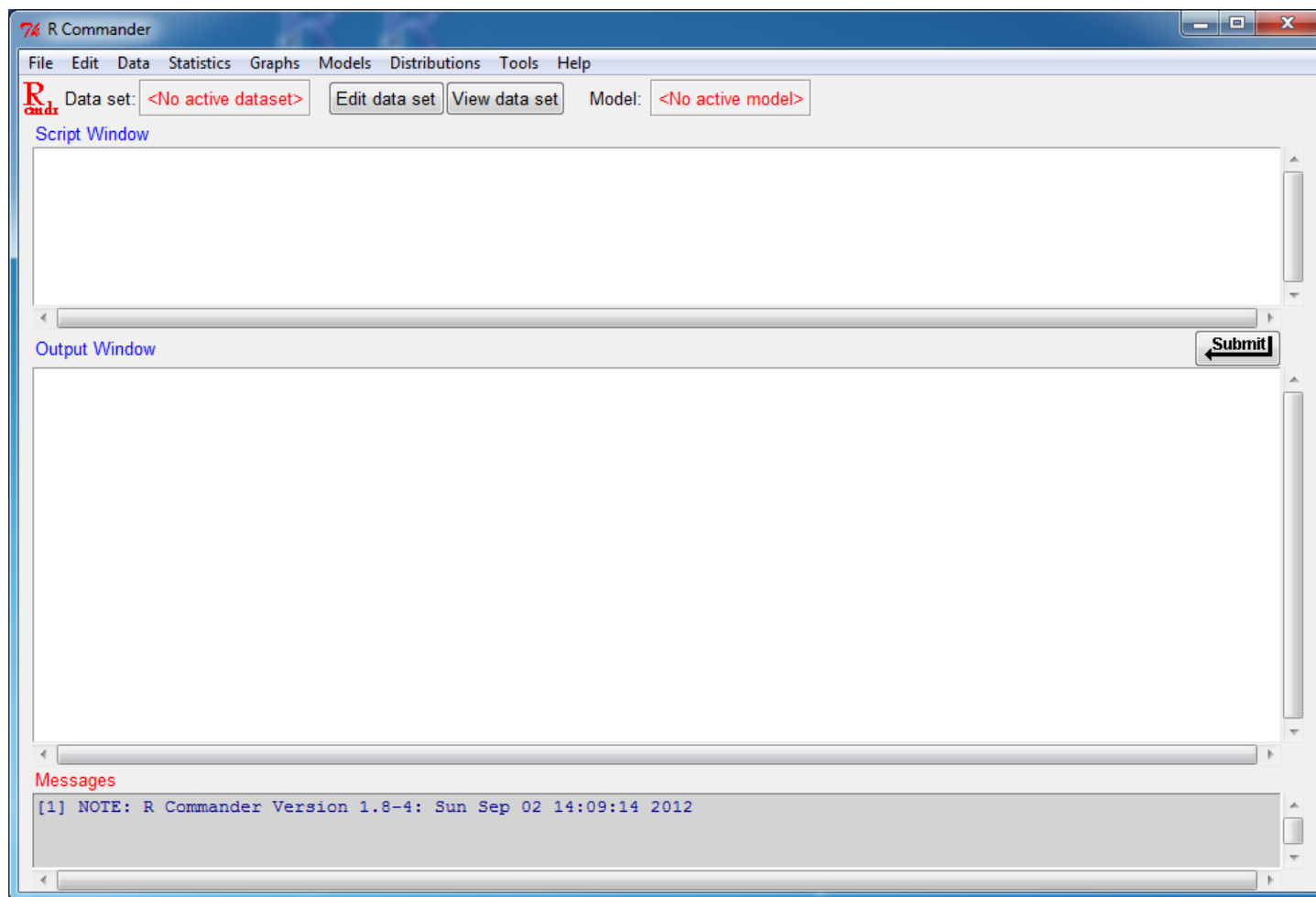
The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code for loading the 'diamonds' dataset, summarizing it, and creating a scatter plot 'p' of Price vs. Carat, colored by Clarity.
- Console:** Shows the execution output, including summary statistics for 'diamonds' and 'diamonds\$price', and the execution of the plot command.
- Workspace:** Lists the loaded data object 'diamonds' (53940 obs. of 10 variables) and the function 'format.plot'.
- Plots:** Displays a scatter plot titled 'Diamond Pricing' with 'Price' on the y-axis and 'Carat' on the x-axis. Points are colored by 'Clarity' (I1, SI2, SI1, VS2, VS1, VVS2, VVS1, IF).





# R Commander





# R\_EXCEL

**Powerful data analysis from inside your favorite application**

Statconn projects and programs provide the software infrastructure for application integration and have enabled powerful data analysis and visualization functionality in many rather diverse applications.

Our components and applications for seamless integration allow to embed statistics software from the [R project](#) and data analysis and computation services from [Scilab](#) into applications on Microsoft Windows, MacOS X and Linux.

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All these products are available free of charge for single user non-commercial use for download (from our site only).

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# Emacs

