

Presentación de R - rstudio.

Mariela Sued

Instituto de Cálculo - marielasued@gmail.com

Que es R?

- R es un lenguaje de programación para análisis de datos y elaboración de gráficos
- Software libre, corre en diferentes sistemas operativos.
- Interacción por línea de comandos (reglas de sintaxis).
- *<https://www.r-project.org/>*

R: The R Project for Statistical Computing - Mozilla Firefox

R: The R Project for ... x

https://www.r-project.org

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

- Beta test period for version 3.3.0 has been extended to accommodate new Windows toolchain for CRAN. Final release rescheduled for Tuesday 2016-05-03.
- **Notice XQuartz users (Mac OS X)** A security issue has been detected with the Sparkle update mechanism used by XQuartz. Avoid updating over insecure channels.
- **R version 3.2.4 (Very Secure Dishes)** has been released on Thursday 2016-03-10.
- **R version 3.3.0 (Supposedly Educational) prerelease versions** will appear starting Monday 2016-03-14. Final release is scheduled for Thursday 2016-04-14.
- The **R Logo** is available for download in high-resolution PNG or SVG formats.
- **useR! 2016**, will take place at Stanford University, CA, USA, June 27 - June 30, 2016.
- **The R Journal Volume 7/2** is available.
- **R version 3.2.3 (Wooden Christmas-Tree)** has been released on 2015-12-10.
- **R version 3.1.3 (Smooth Sidewalk)** has been released on 2015-03-09.

[Home]

Download
[CRAN](#)

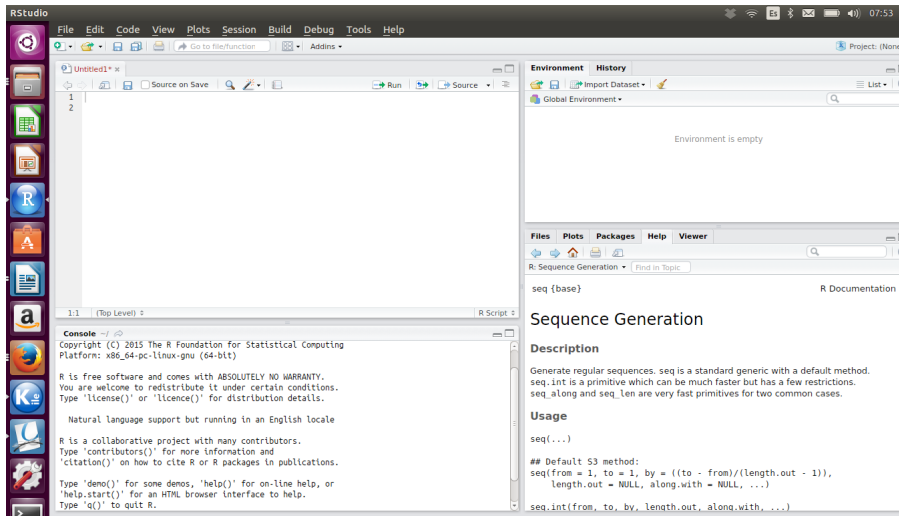
R Project
[About R](#)
[Logo](#)
[Contributors](#)
[What's New?](#)
[Mailing Lists](#)
[Bug Tracking](#)
[Development Site](#)
[Conferences](#)
[Search](#)

R Foundation
[Foundation](#)
[Board](#)
[Members](#)
[Donors](#)
[Donate](#)

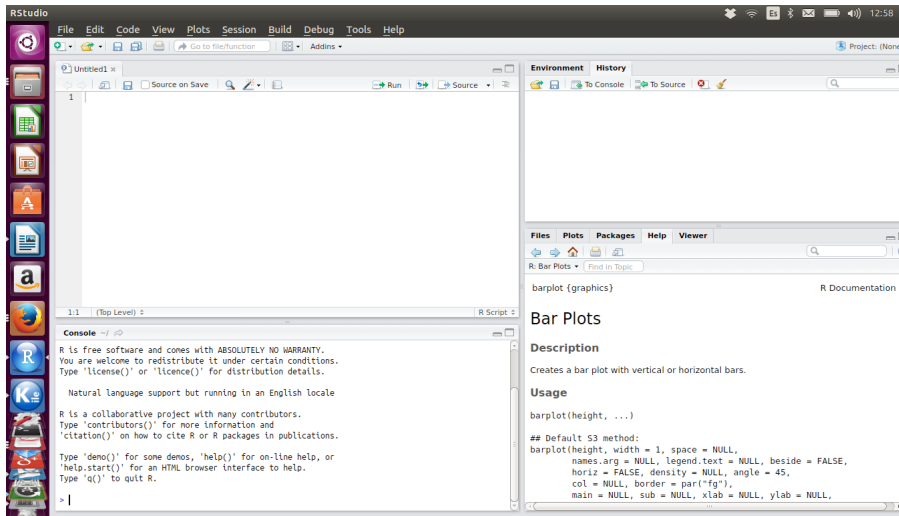
Documentation
[Manuals](#)
[FAQs](#)

Que es Rstudio?

- Es un entorno *amigable* donde ejecutar R.
- <https://www.rstudio.com/>



Rstudio: Pantalla



The screenshot displays the RStudio application window. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Tools, and Help. The main editor area shows a file named 'Untitled1' with a single line of code: '1'. The console panel at the bottom left contains the following text:

```
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.  
  
Natural language support but running in an English locale  
  
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.  
  
> |
```

The right-hand side of the interface shows the 'Environment' and 'History' tabs at the top. Below them is the 'Files', 'Plots', 'Packages', 'Help', and 'Viewer' tabs. The 'Help' tab is active, displaying the documentation for the `barplot` function. The documentation includes the following sections:

- Files**: R: Bar Plots
- Plots**: Find in Topic
- Packages**: barplot {graphics}
- Help**: R Documentation
- Viewer**: R Documentation

The main content of the documentation is:

Bar Plots

Description

Creates a bar plot with vertical or horizontal bars.

Usage

```
barplot(height, ...)  
  
## Default S3 method:  
barplot(height, width = 1, space = NULL,  
         names.arg = NULL, legend.text = NULL, beside = FALSE,  
         horiz = FALSE, density = NULL, angle = 45,  
         col = NULL, border = par("fg"),  
         main = NULL, sub = NULL, xlab = NULL, ylab = NULL,
```

Pantalla de Rstudio

- Console: Ejecuta comandos y muestra los resultados.
- Editor: Aca se escribe lo que se quiere ejecutar (script)
- History - Environment
- Files - Plots - Packages - Help - Viewer

Operadores

Aritméticos		Comparativos		Lógicos	
+	Adición	==	Igual a	&	Y lógico
-	Substracción	!=	Diferente de	!	NO lógico
*/	Multiplicación División	<, >	Menor que, Mayor que		O lógico

Asignación

< -

- < -: se consigue con el menor, seguido del guión.
- pepe< - B: crea el objeto pepe y le asigna B.

Vectores

<code>c(a,b,c)</code>	crea vector concatenando a, b, c
<code>rep(a,n)</code>	repite a n -veces
<code>seq(1:n)</code>	$(1, 2, 3, \dots, n)$
<code>seq(a,b,by=c)</code>	$(a, a + c, a + 2c, \dots)$ hasta b
<code>x[4]</code>	selecciona la cuarta coordenada del vector x
<code>x[c(2,5)]</code>	selecciona la segunda y quinta coordenada del vector x
<code>sample(x,size=k,replace=TRUE)</code>	saca muestra de x , tamaño k , CON rep
<code>sample(x,size=k,replace=FALSE)</code>	saca muestra de x , tamaño k , SIN rep
<code>length(x)</code>	calcula la longitud del vector x

Funciones

Funciones matemáticas		Funciones estadísticas	
<code>sqrt(x)</code>	Raíz de x	<code>mean(x)</code>	Media
<code>exp(x)</code>	Exponencial de x	<code>sd(x)</code>	Desvio
<code>log(x)</code>	Logaritmo natural de x	<code>var(x)</code>	Varianza
<code>log10(x)</code>	Logaritmo base 10	<code>median(x)</code>	Mediana
<code>length(x)</code>	Número de elementos	<code>quantile(x,p)</code>	Quantiles
<code>sum(x)</code>	Suma los elementos de x	<code>max(x)</code>	El máximo
<code>prod(x)</code>	Producto de los elementos	<code>min(x)</code>	El mínimo
<code>sin(x)</code>	Seno	<code>summary(x)</code>	Resumen
<code>cos(x)</code>	Coseno	<code>sort(x)</code>	Ordena (creciente)
<code>tan(x)</code>	Tangente		
<code>round(x,n)</code>	redondea a n dígitos		
<code>cumsum(x)</code>	calcula las sumas acumuladas		
<code>choose(n, k)</code>	calcula en combinatorio		

Gráficos

<code>plot(x,y)</code>	grafica los pares x vs. y - <code>help(plot)</code>
<code>hist(x)</code>	realiza un histograma con los valores del vector x - <code>help(hist)</code>
<code>boxplot(x)</code>	realiza un boxplot con los valores del vector x - <code>help(boxplot)</code>
<code>barplot(x)</code>	realiza gráfico de barras de x - <code>help(barplot)</code>
<code>pie(table(x))</code>	realiza gráfico de torta de la tabla de x - <code>help(pie)</code>
<code>par(mfrow = c(1,2))</code>	particiona el entorno gráfico

Dos referencias

- http://cms.dm.uba.ar/academico/materias/1ercuat2016/probabilidades_y_estadistica_C/
- <http://cms.dm.uba.ar/academico/materias/1ercuat2016/estadisticaQ/practicas>