



Introducción a R Studio[®]

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<https://cran.itam.mx>



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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 (2020-10-10, Bunny-Wunnies Freak Out) [R-4.0.3.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](#)

Questions About R

- 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.

What are R and CRAN?

R is ‘GNU S’, a freely available language and environment for statistical computing and graphics which provides a wide variety of statistical and graphical techniques: linear and nonlinear modelling, statistical tests, time series analysis, classification, clustering, etc. Please consult the [R project homepage](#) for further information.

Según sea el sistema operativo, será distinta la instalación de R.
Afortunadamente existen multiples blogs y páginas con instrucciones paso a paso para la instalación.





<https://rstudio.com/products/rstudio/download/>

All Installers

Linux users may need to [import RStudio's public code-signing key](#) prior to installation, depending on the operating system's security policy.

RStudio requires a 64-bit operating system. If you are on a 32 bit system, you can use an [older version of RStudio](#).

OS	Download	Size	SHA-256
Windows 10/8/7	 RStudio-1.3.1093.exe	171.62 MB	62b9e60a
macOS 10.13+	 RStudio-1.3.1093.dmg	148.66 MB	bdc4d3a4
Ubuntu 16	 rstudio-1.3.1093-amd64.deb	124.33 MB	72f05048
Ubuntu 18/Debian 10	 rstudio-1.3.1093-amd64.deb	126.80 MB	ff222177
Fedora 19/Red Hat 7	 rstudio-1.3.1093-x86_64.rpm	146.96 MB	ed1f6ef8
Fedora 28/Red Hat 8	 rstudio-1.3.1093-x86_64.rpm	151.05 MB	01a978f3
Debian 9	 rstudio-1.3.1093-amd64.deb	127.00 MB	a747f9f9
SLES/OpenSUSE 12	 rstudio-1.3.1093-x86_64.rpm	119.43 MB	5016cbcfc
OpenSUSE 15	 rstudio-1.3.1093-x86_64.rpm	128.40 MB	cf47e32d

Descargar el paquete que corresponda a nuestro sistema operativo





<https://rstudio.com/products/rstudio/download/preview/>

Desktop Version

Installers	Size	Date	SHA-256
RStudio 1.4.1081 - Ubuntu 18/Debian 10 (64-bit)	120.61 MB	2020-12-05	edb4cef2
RStudio 1.4.1081 - Fedora 28/Red Hat 8 (64-bit)	137.99 MB	2020-12-05	a6b7340e
RStudio 1.4.1081 - Debian 9 (64-bit)	120.88 MB	2020-12-05	930b1962
RStudio 1.4.1081 - macOS 10.13+ (64-bit)	152.78 MB	2020-12-05	b85d0b08
RStudio 1.4.1081 - OpenSUSE 15 (64-bit)	122.00 MB	2020-12-05	05da2c25
RStudio 1.4.1081 - Fedora 19/Red Hat 7 (64-bit)	138.01 MB	2020-12-05	22fdfcb4
RStudio 1.4.1081 - Windows 10/8/7 (64-bit)	156.95 MB	2020-12-05	0e660740
RStudio 1.4.1081 - Ubuntu 16 (64-bit)	119.96 MB	2020-12-05	1f0484bf



También podemos descargar la versión 1.4 en desarrollo



1 • **Consola de R**

R version 4.0.3 (2020-10-10) -- "Bunny-Wunnies Freak Out"
 Copyright (C) 2020 The R Foundation for Statistical Computing
 Platform: x86_64-apple-darwin17.0 (64-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.

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.

2

- Datos en el ambiente
- Historial
- Git

3

- Plots
- Archivos
- Ayuda
- Paqueterías

Una vez instalado RStudio podemos tener acceso a la versión R instalada en nuestro sistema operativo. Esto es lo que se observa al abrir RStudio. El Yoda y la “frase” se configuran de una manera muy particular, puedes aprender de ello en el curso **“Best practices for bioinformatics workflows using R, RStudio, Git, and GitHub”**, pregunta a los organizadores por él.





The screenshot shows the RStudio interface. The top menu bar includes 'File', 'Edit', 'Code', 'View', 'Plots', 'Session', 'Build', 'Debug', 'Profile', 'Tools' (which is currently selected), 'Window', and 'Help'. The 'Tools' menu is open, displaying options like 'Install Packages...', 'Check for Package Updates...', 'Version Control', 'Shell...', 'Terminal', 'Jobs', 'Addins', 'Keyboard Shortcuts Help', 'Modify Keyboard Shortcuts...', 'Show Command Palette', 'Project Options...', and 'Global Options...'. The 'Global Options...' option is highlighted with a blue selection bar. The main workspace shows R version 4.0.3 starting up, followed by a message about natural language support. Below this, there's a decorative ASCII art of a rabbit made of symbols. A status bar at the bottom indicates 'Environment is empty'.



Las opciones globales nos permitirán cambiar aspectos visuales de la organización de la interfaz gráfica. Para fines prácticos por tiempo, solo nos enfocaremos en estas opciones.



The screenshot shows the RStudio interface with the 'Options' dialog box open. The 'Basic' tab is selected in the 'R Sessions' section. The 'Restore most recently opened project at startup' checkbox is checked and highlighted with a blue border. The 'Restore previously open source documents at startup' checkbox is unchecked. In the 'Workspace' section, the 'Restore .RData into workspace at startup' checkbox is unchecked and highlighted with a blue border. A dropdown menu 'Save workspace to .RData on exit:' is set to 'Ask'. The 'History' section contains two checked checkboxes: 'Always save history (even when not saving .RData)' and 'Automatically notify me of updates to RStudio'. The 'Other' section contains three checked checkboxes: 'Wrap around when navigating to previous/next tab', 'Automatically notify me of updates to RStudio', and 'Send automated crash reports to RStudio'. The 'Console' tab is selected in the left sidebar. The top status bar shows 'RStudio' and the bottom status bar shows 'Environment is empty'.

Al quitar las “palomitas” de los pequeños cuadros de las opciones generales señaladas en los recuadros azules, nos aseguramos que no se gaste memoria temporal al guardar datos o código de sesiones anteriores.





RStudio interface showing the R console output and the Options dialog box.

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 'help.start()' for an HTML browser inter
 Type 'q()' to quit R.

 ¿Quieres saber la diferencia entre un m
 el principiante lo ha intentado.

```
green text output
```

Options Dialog Box (Editing Tab):

- General:**
 - Highlight selected word
 - Highlight selected line
 - Show line numbers
 - Show margin
Margin column: 80
 - Show whitespace characters
 - Show indent guides
 - Blinking cursor
 - Allow scroll past end of document
 - Allow drag and drop of text
 - Highlight R function calls
 - Rainbow parentheses
- Fold Style: Start and End

OK Cancel Apply

v1.4 ← ----- →

En la versión en desarrollo 1.4, se pueden activar los paréntesis con colores de arcoíris.
 Esto es muy útil a la hora de generar funciones o hacer subsetting.





The screenshot shows the RStudio interface with the Global Options dialog box open. The dialog box is titled "Options" and has "Appearance" selected in the left sidebar. The "RStudio theme:" dropdown is set to "Modern". The "Editor font:" dropdown is set to "Monaco". The "Editor font size:" dropdown is set to "11". The "Editor theme:" dropdown is currently set to "Vibrant Ink", which is highlighted with a blue selection bar. Other themes listed include Merbivore Soft, Mono Industrial, Monokai, Pastel On Dark, Solarized Dark, Solarized Light, SQL Server, Textmate (default), Tomorrow, Tomorrow Night, Tomorrow Night 80s, Tomorrow Night Blue, Tomorrow Night Bright, Twilight, and Xcode.

```

# plotting of R objects
plot <- function (x, y, ...)
{
  if (is.function(x) &&
      is.null(attr(x, "class")))
  {
    if (missing(y))
      y <- NULL

    # check for ylab argument
    hasylab <- function(...)
      !all(is.na(
        pmatch(names(list(...)),
              "ylab")))

    if (hasylab(...))
      plot.function(x, y, ...)

    else
      plot.function(
        x, y,
        ylab = paste(
          deparse(substitute(x)),
          "(x)"),
        ...)

  } else
    UseMethod("plot")
}
  
```

At the bottom of the dialog box are three buttons: "OK", "Cancel", and "Apply".

Global Options → Appearance

En esta opción podemos definir el color, letra y tamaño de nuestro editor de código. De esta manera personalizarlo a nuestras necesidades o gustos.

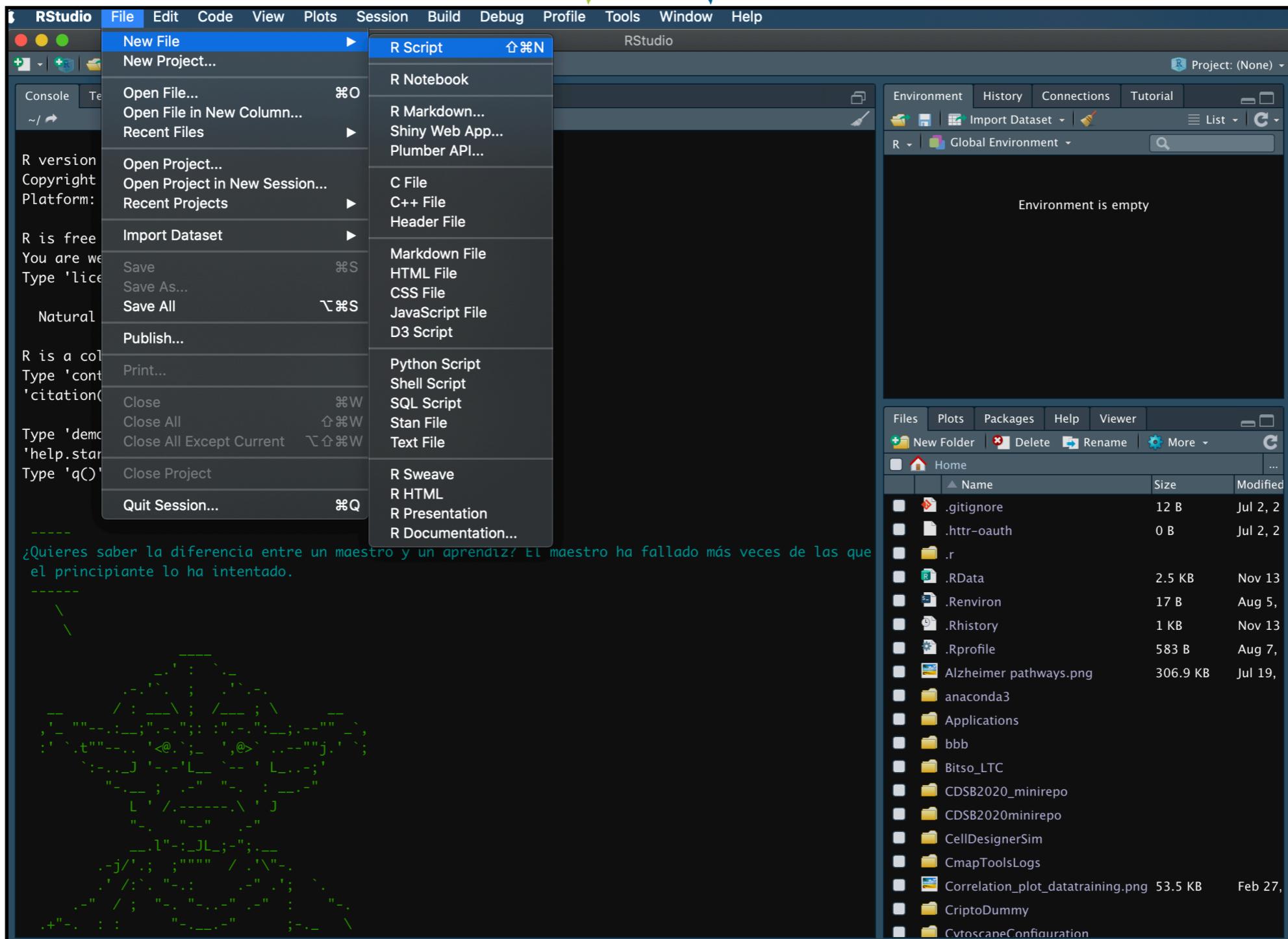




The screenshot shows the RStudio interface with the 'Console' tab selected in the top-left panel. The main area displays the R startup message and some introductory text. A modal dialog box titled 'Options' is open, specifically the 'Pane Layout' section. This dialog allows users to choose the layout of panels in RStudio by selecting controls in each panel. It includes three columns: 'Source' (with 'Add Column' and 'Remove Column' buttons), 'Environment, History, Connections' (with checked boxes for 'Connections', 'Build', 'VCS', and 'Tutorial'), and 'Console' (with 'Files, Plots, Packages, Help, Viewer' dropdown). The 'Source' column is highlighted with a blue border. In the bottom right corner of the dialog, there are 'OK', 'Cancel', and 'Apply' buttons. The background of the RStudio interface shows the 'Global Environment' panel with the message 'Environment is empty'.

Podemos cambiar la distribución de los paneles. En la v1.4 podemos añadir una columna de editor de código, muy útil para el desarrollo de paqueterías y la comparación de código.





En RStudio podemos generar todos los archivos enlístados en “New File”. El archivo más usado para desarrollar código en R es “R Script”. Aún así RStudio nos permite hacer reportes de nuestros código con “R Notebook y R Markdown”, aplicaciones web con “Shiny Web App”, generar APIs con “Plumber API”, editar código en HTML, C, C++, Python, CSS, JavaScript, Shell, entre otros. Pregunta a los organizadores cómo optimizar tu trabajo trabajando con RProject en RStudio.





RStudio File Edit Code View Plots Session Build Debug Profile Tools Window Help RStudio Project: (None)

Untitled1 x Addins Go to file/function Run Source Source Environment History Connections Tutorial Import Dataset List Global Environment

1 4 • Editor de código

Files Plots Packages Help Viewer New Folder Delete Rename More Home Name Size Modified .gitignore 12 B Jul 2, 2 .httr-oauth 0 B Jul 2, 2 .r 2.5 KB Nov 13 .RData .Reviron 17 B Aug 5, .Rhistory 1 KB Nov 13 .Rprofile 583 B Aug 7, Alzheimer natural way.R 306.9 KB Jul 19, anaconda3 Applications bbh Bits_o_LTC CDSB2020_minirepo CDSB2020minirepo CellDesignerSim CmapToolsLogs Correlation_plot_datatraining.png 53.5 KB Feb 27, CriptoDummy CytoscapeConfiguration 3 2 • Datos en el ambiente • Historial • Git Plots Archivos Ayuda Paqueterías 3 1 • Consola de R

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Al abrir un nuevo “R Script”, así se distribuye por default RStudio



RStudio File Edit Code View Plots Session Build Debug Profile Tools Window Help RStudio Addins Project: (None)

Untitled2 x Untitled1* x Environment History Connections Tutorial Global Environment

Import Dataset List C

Environment is empty

File Plots Packages Help Viewer

New Folder Delete Rename More

Home

Name	Size	Modified
.gitignore	12 B	Jul 2, 2018,
.httr-oauth	0 B	Jul 2, 2018,
.r		
.RData	2.5 KB	Nov 13, 201
.Renviron	17 B	Aug 5, 2020
.Rhistory	1 KB	Nov 13, 202
.Rprofile	583 B	Aug 7, 2020
Alzheimer pathways.png	306.9 KB	Jul 19, 2018
anaconda3		
Applications		
bbb		
Bitso_LTC		
CDSB2020_minirepo		
CDSB2020minirepo		
CellDesignerSim		
CmapToolsLogs		
Correlation_plot_datatraining.png	53.5 KB	Feb 27, 201
CriptoDummy		
CytoscapeConfiguration		

1 | 1 |

Options

v1.4

Choose the layout of the panels in RStudio by selecting from the controls in each panel. Add up to three additional Source Columns to the left side of the layout.

Add Column Remove Column

Source Add column Environment, History, Conn

Environment
 History
 Files
 Plots
 Connections
 Packages
 Help
 Build
 VCS

Console Files, Plots, Packages, Help, Conn

Environment
 History
 Files
 Plots
 Connections
 Packages
 Help
 Build
 VCS

OK Cancel Apply

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1:1 (Top Level) R Script

Y de esta manera en la v1.4 se puede añadir una nueva columna para editar código





The screenshot shows the RStudio interface with a dark theme. A large blue 'v1.4' watermark is overlaid on the left side of the main workspace. The RStudio window has a top menu bar with options like RStudio, File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Window, and Help. Below the menu is a toolbar with various icons. The main workspace contains two code editors (Untitled1 and Untitled2), a console, and a file browser. The file browser shows a directory structure under 'Home' with files like '.gitignore', '.RData', and 'Alzheimer pathways.png'. The bottom status bar indicates '1:1 (Top Level)' and 'R Script'.

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Name	Size	Modified
.gitignore	12 B	Jul 2, 2018,
.httr-oauth	0 B	Jul 2, 2018,
.r		
.RData	2.5 KB	Nov 13, 2018
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.Rhistory	1 KB	Nov 13, 2018
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CellDesignerSim		
CmapToolsLogs		
Correlation_plot_datatraining.png	53.5 KB	Feb 27, 2018
CriptoDummy		
CytoscapeConfiguration		

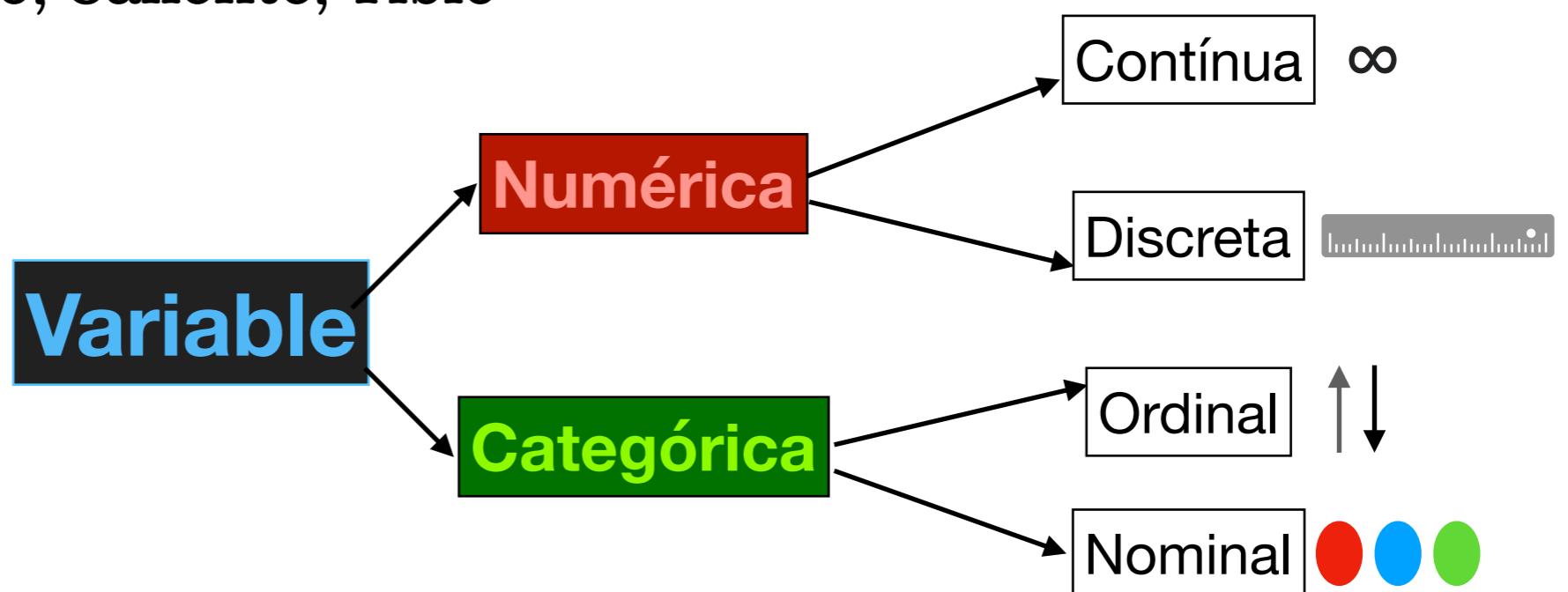


Y ahora así se distribuyen los paneles al agregar una columna.



Tipos de variables

- **Lógicos** : TRUE FALSE
- **Numéricos** : Enteros (25L, -5L) y dobles (3.1416, 25.0)
- **Carácter** o cadena : “a”, “abcd”
- **Factor** : Frío, Caliente, Tibio





Manos a la obra

- Cambia el tema del editor de código a “Pastel On Dark”
- Genera un archivo R script nuevo, y guárdalo como “tipos de variables”.
- ¿Qué sucede al usar **Shift** + **ctrl/command** + **P** ?
- ¿Qué sucede al sumar `FALSE + 4`? ¿y `TRUE + 4`?





Algunos atajos útiles

ctrl/command + Shift + C = Comentar líneas de código

Alt + Click = Índice de mouse en múltiples líneas

Alt + - = <->

ctrl/command + ENTER = Ejecutar línea de código

ctrl/command + Shift + M = %>%

Shift + ctrl/command + K = Compilar en reporte





abs	Valor absoluto
ceiling	Entero mayor o igual
cos	Coseno
dim	Dimensión de una Matriz
exp	Exponencial
floor	Entero menor o igual
log10	Logaritmo decimal
log	Logaritmo Neperiano
max	Máximo
mean	Media
median	Mediana
min	Mínimo
order	Vector entero en orden creciente
prod	Producto
range	Rango
rev	Elementos ordenados inversamente
sample	Generar muestras aleatorias
sin	Seno
sort	Elementos ordenados ascendentemente
sqrt	Raíz cuadrada
summary	Resumen estadístico de un objeto
sum	Suma
tan	Tangente
trunc	Entero más próximo a cero
var	Varianza de un vector o matrices





Material Extra

[**R for Beginners - Emmanuel Paradis**](#)

[**R tutorial beginners**](#)

[**R para Ciencia de Datos - Garret Grolemund & Hadley Wickham**](#)

!No te pierdas los mini cursos de cada mes!

