

Modelos Mixtos

“R: Introducción”

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Facultad de Ciencia e Ingeniería



@Hen1985

Qué es R?

- Leguaje para la computación estadística
- Variedad de técnicas estadísticas
- Similar al entorno de lenguaje S
- R fue escrito inicialmente por Robert Gentleman y Ross Ihaka, también conocido como " R & R " del Departamento de Estadísticas de la Universidad de Auckland. Desde mediados de 1997.
- Capacidad de visualización
- Altamente extensible

Ventajas?

- Código abierto! ¡Gratis!
- Master en gráficos
- Interfaz de línea de comando
- Reproducibilidad a través de scripts R
- Extensivo
- Comunidad (contribuciones de todo el mundo)

Desventajas?

- Fácil de aprender, difícil de dominar
- Interfaz de línea de comandos desalentadora al principio
- Código mal escrito difícil de leer / mantener

Descarga

R

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

RStudio

- <https://rstudio.com/>

Descarga “R”



r project



Todo

Imágenes

Vídeos

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Preferencias

Herramientas

Cerca de 5,750,000,000 resultados (1.02 segundos)

www.r-project.org Traducir esta página

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.

Visitaste esta página varias veces. Última visita: 05-13-20.

Resultados de r-project.org



Windows

R-4.0.0 for Windows (32/64 bit).

Download R 4.0.0 for Windows ...

R-3.5.3 for Windows (32/64 bit)

R-3.5.3 for Windows (32/64 bit).

Download R 3.5.3 for Windows ...

CRAN

Download and Install R.

Precompiled binary ...

R-3.5.2 for Windows (32/64 bit)

R-3.5.2 for Windows (32/64 bit).

Download R 3.5.2 for Windows ...

R-3.4.2 for Windows (32/64 bit)

R-3.4.2 for Windows (32/64 bit).

Download R 3.4.2 for Windows ...

R-3.6.0 for Windows (32/64 bit)

R-3.6.0 for Windows (32/64 bit).

Download R 3.6.0 for Windows ...



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R Project

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The R Project for Statistical Computing

Getting Started

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

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

News

- [R version 4.0.0 \(Arbor Day\)](#) has been released on 2020-04-24.
- [useR! 2020 in Saint Louis has been cancelled](#). The European hub planned in Munich will not be an in-person conference. Both organizing committees are working on the best course of action.
- [R version 3.6.3 \(Holding the Windsock\)](#) has been released on 2020-02-29.
- You can support the R Foundation with a renewable subscription as a [supporting member](#)

News via Twitter

[News from the R Foundation](#)

CRAN Mirrors

The Comprehensive R Archive Network is available at the following URLs, please choose a location close to you. Some statistics on the status of the mirrors can be found here: [main page](#), [windows release](#), [windows old release](#).

If you want to host a new mirror at your institution, please have a look at the [CRAN Mirror HOWTO](#).

0-Cloud

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

Automatic redirection to servers worldwide, currently sponsored by Rstudio

Algeria

<https://cran.usthb.dz/>

University of Science and Technology Houari Boumediene

Argentina

<http://mirror.fcaglp.unlp.edu.ar/CRAN/>

Universidad Nacional de La Plata

Australia

<https://cran.csiro.au/>

CSIRO

<https://mirror.aarnet.edu.au/pub/CRAN/>

AARNET

<https://cran.ms.unimelb.edu.au/>

School of Mathematics and Statistics, University of Melbourne

<https://cran.curtin.edu.au/>

Curtin University

Austria

<https://cran.wu.ac.at/>



Wirtschaftsuniversität Wien

Belgium

<https://www.freeststatistics.org/cran/>

Patrick Wessa

<https://lib.ugent.be/CRAN/>

Ghent University Library

Brazil

<https://nbcgib.uesc.br/mirrors/cran/>

Computational Biology Center at Universidade Estadual de Santa Cruz

<https://cran-r.c3sl.ufpr.br/>

Universidade Federal do Parana



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[Contributed](#)

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

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 (2020-04-24, Arbor Day) [R-4.0.0.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](#).



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R for Windows

Subdirectories:

[base](#) 

Binaries for base distribution. This is what you want to [install R for the first time](#).

[contrib](#)

Binaries of contributed CRAN packages (for R \geq 2.13.x; managed by Uwe Ligges). There is also information on [third party software](#) available for CRAN Windows services and corresponding environment and make variables.

[old contrib](#)

Binaries of contributed CRAN packages for outdated versions of R (for R $<$ 2.13.x; managed by Uwe Ligges).

[Rtools](#)

Tools to build R and R packages. This is what you want to build your own packages on Windows, or to build R itself.

Please do not submit binaries to CRAN. Package developers might want to contact Uwe Ligges directly in case of questions / suggestions related to Windows binaries.

You may also want to read the [R FAQ](#) and [R for Windows FAQ](#).

Note: CRAN does some checks on these binaries for viruses, but cannot give guarantees. Use the normal precautions with downloaded executables.



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R-4.0.0 for Windows (32/64 bit)

[Download R 4.0.0 for Windows](#) (84 megabytes, 32/64 bit)



[Installation and other instructions](#)
[New features in this version](#)

If you want to double-check that the package you have downloaded matches the package distributed by CRAN, you can compare the [md5sum](#) of the .exe to the [fingerprint](#) on the master server. You will need a version of md5sum for windows: both [graphical](#) and [command line versions](#) are available.

Frequently asked questions

- [Does R run under my version of Windows?](#)
- [How do I update packages in my previous version of R?](#)
- [Should I run 32-bit or 64-bit R?](#)

Please see the [R FAQ](#) for general information about R and the [R Windows FAQ](#) for Windows-specific information.

Other builds

- Patches to this release are incorporated in the [r-patched snapshot build](#).
- A build of the development version (which will eventually become the next major release of R) is available in the [devel snapshot build](#).
- [Previous releases](#)

Note to webmasters: A stable link which will redirect to the current Windows binary release is [<CRAN MIRROR>/bin/windows/base/release.htm](#).

<https://cran.r-project.org/bin/windows/base/R-4.0.0-win.exe>







R-4.0.0-win.exe

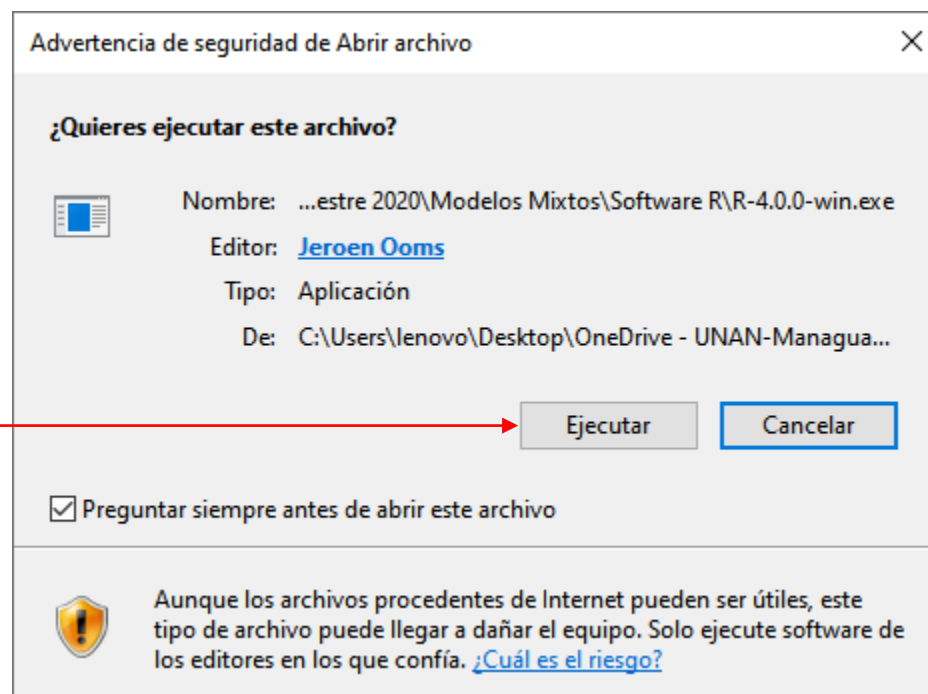
34,3/83,5 MB, Queda 1 min



Instalar “R”

Nombre	Estado	Fecha de modificación	Tipo	Tamaño
 R-4.0.0-win		18/5/2020 11:44	Aplicación	85,512 KB
 RStudio-1.2.5042		18/5/2020 12:40	Aplicación	146,327 KB

Pinchar dos veces,
luego pinchar en ejecutar.



Seleccione el Idioma de la Instalación



Seleccione el idioma a utilizar durante la instalación.

Español



Aceptar

Cancelar



Instalar - R for Windows 4.0.0



Información

Es importante que lea la siguiente información antes de continuar.



Cuando esté listo para continuar con la instalación, haga clic en Siguiente.

GNU GENERAL PUBLIC LICENSE
Version 2, June 1991

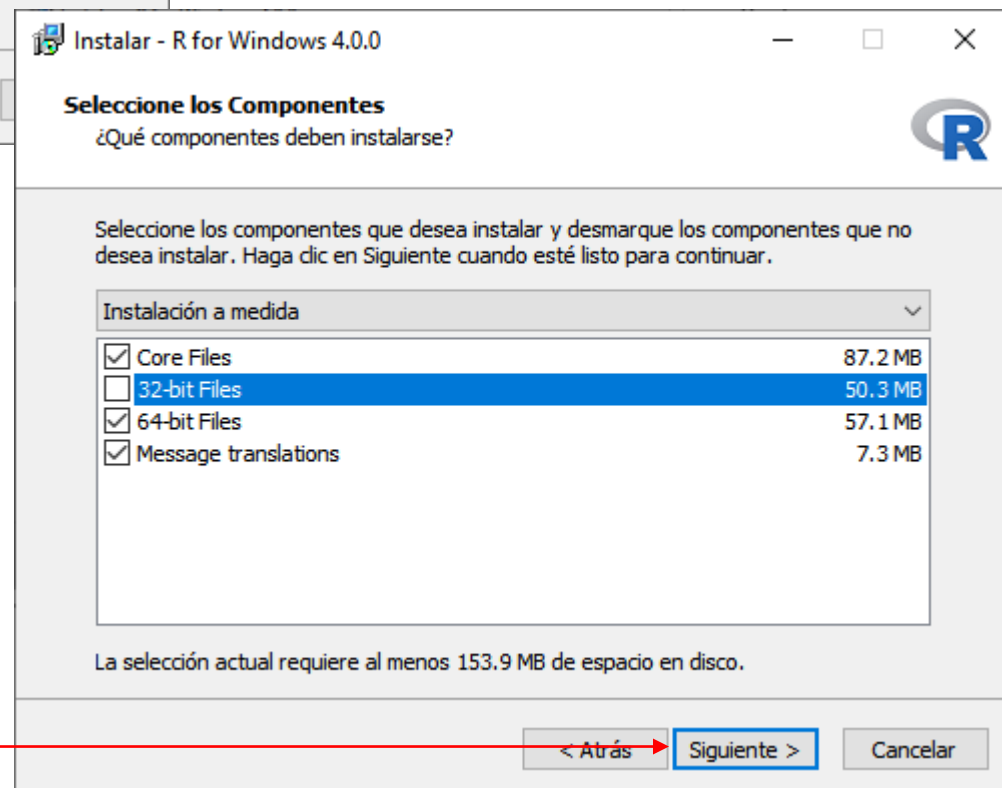
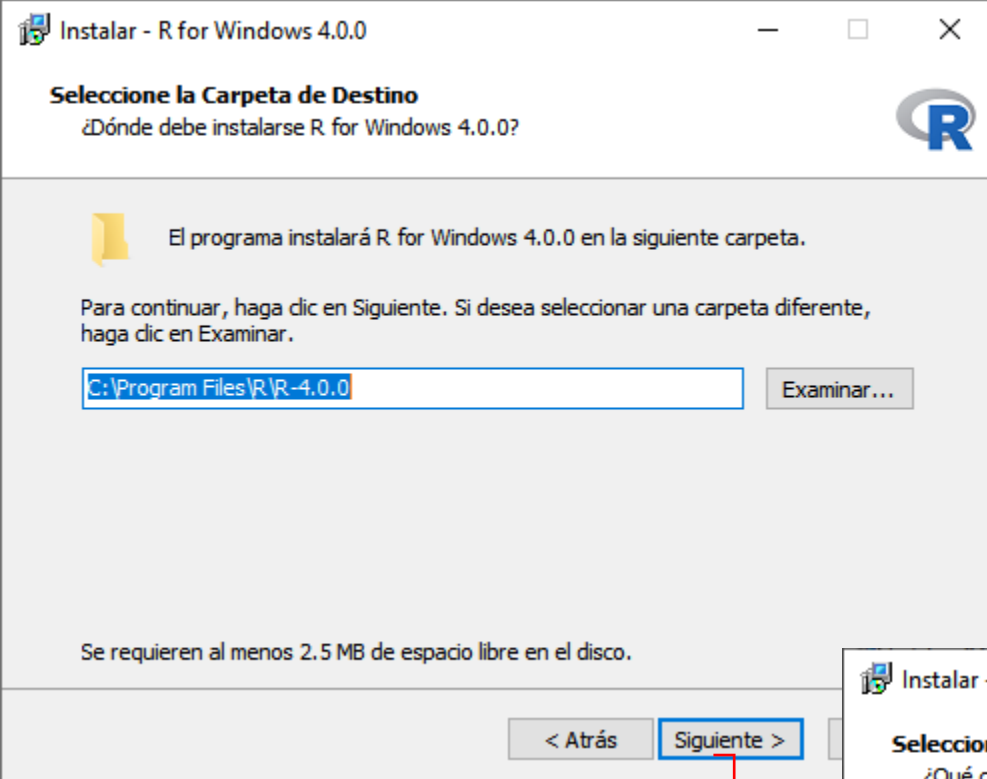
Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

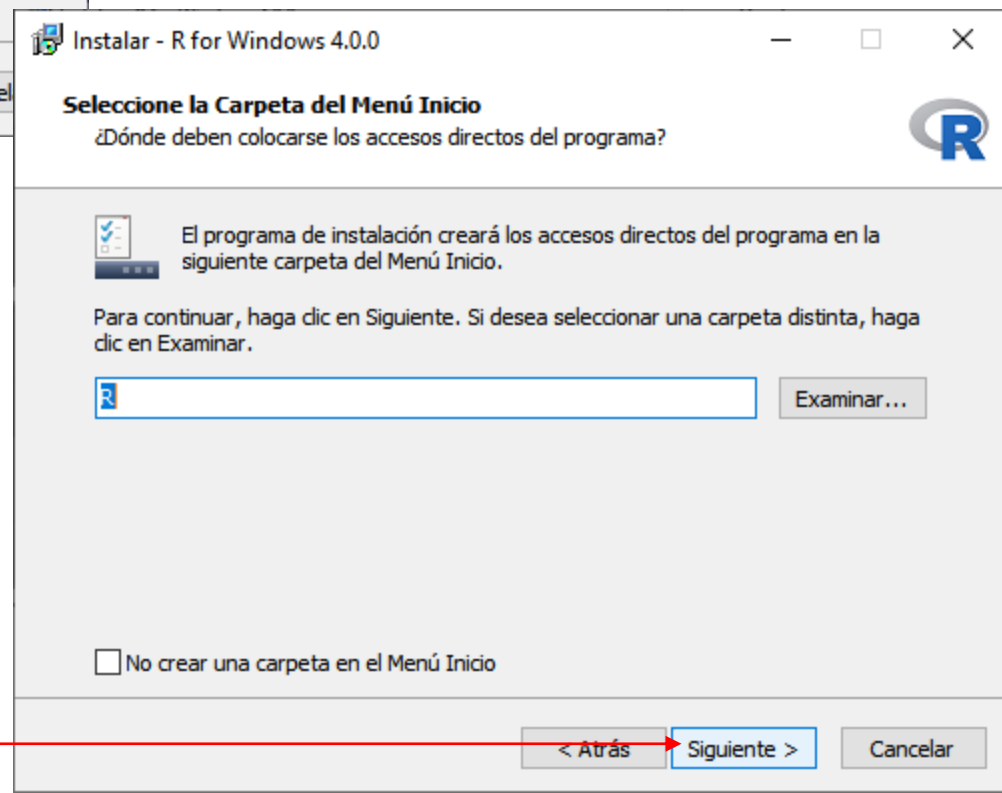
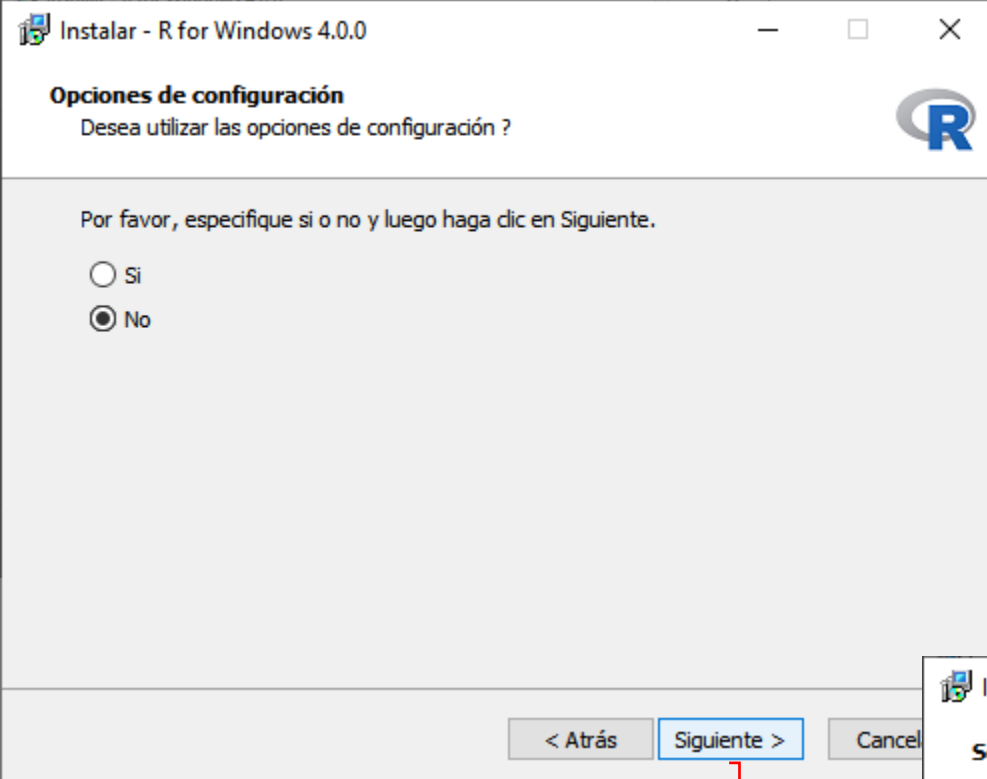
Preamble

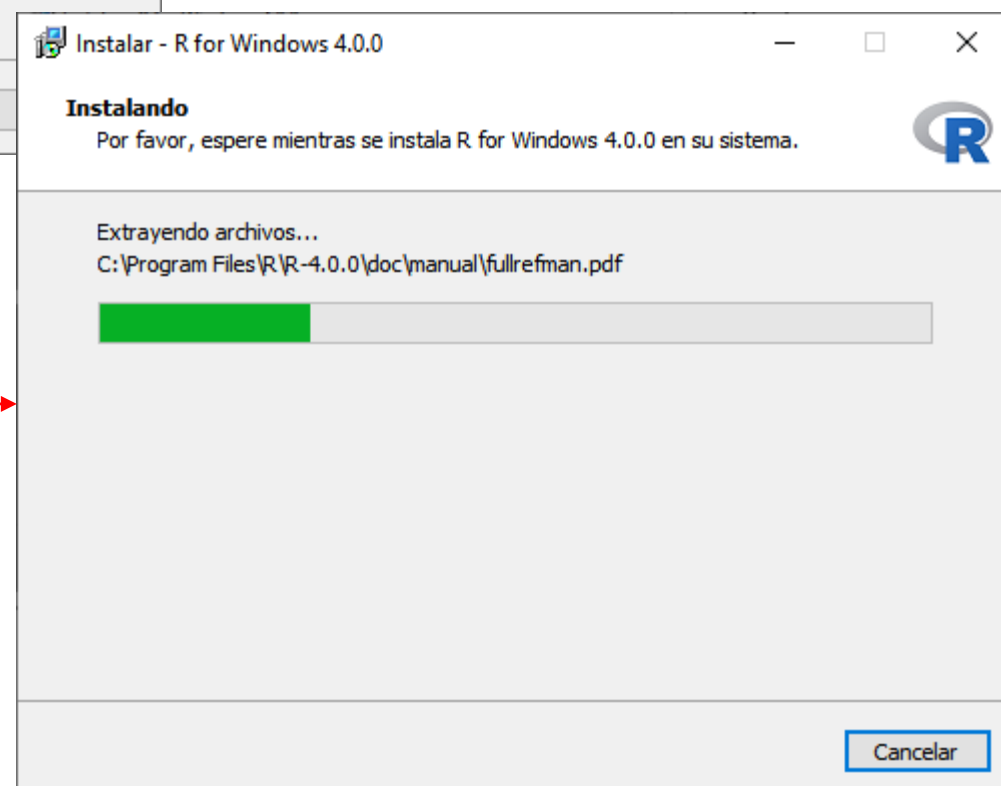
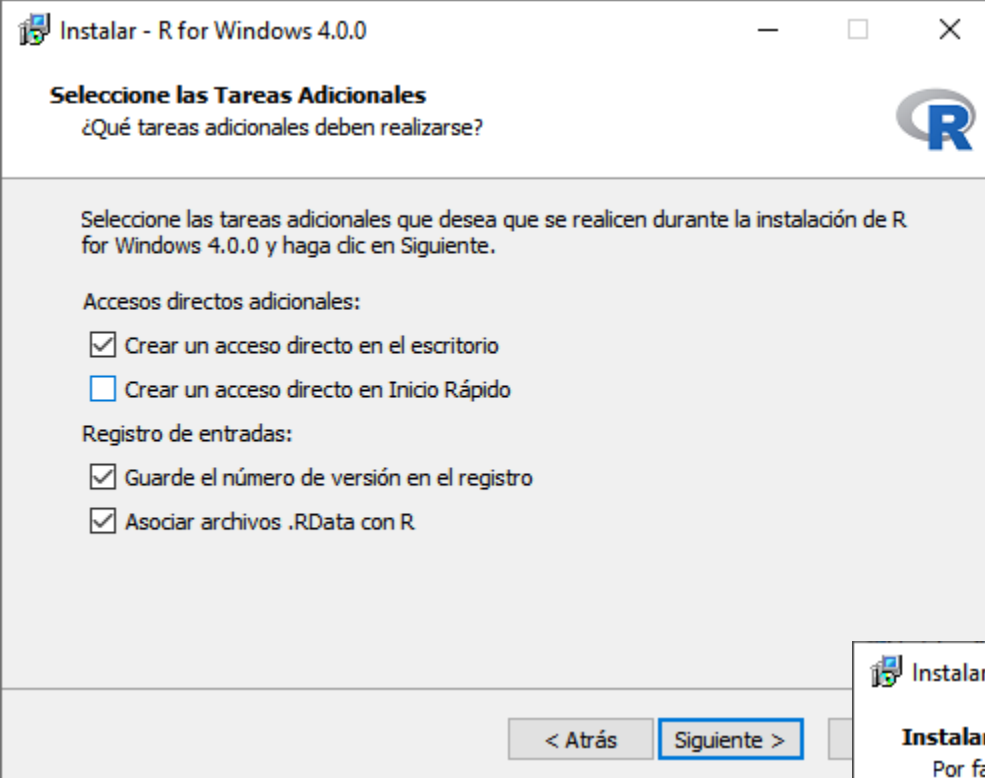
The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to

Siguiente >

Cancelar









Instalar - R for Windows 4.0.0



Completando la instalación de R for Windows 4.0.0

El programa completó la instalación de R for Windows 4.0.0 en su sistema. Puede ejecutar la aplicación utilizando los accesos directos creados.

Haga clic en Finalizar para salir del programa de instalación.

Finalizar

Descarga “RStudio”



r studio



Todo

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Cerca de 3,630,000,000 resultados (0.66 segundos)

[rstudio.com](#) ▾ [Traducir esta página](#)

[RStudio | Open source & professional software for data ...](#)

RStudio provides free and open source tools for R and enterprise-ready professional software for data science teams to develop and share their work at scale.

Visitaste esta página varias veces. Última visita: 05-13-20.

Resultados de rstudio.com



[Download RStudio](#)

Choose Your Version. RStudio is a set of integrated tools designed ...

[RStudio Server](#)

RStudio Server Pro Comparison to RStudio Server Open Source ...

[es.wikipedia.org](#) > [wiki](#) > [RStudio](#) ▾

[RStudio - Wikipedia, la enciclopedia libre](#)

RStudio es un entorno de desarrollo integrado (IDE) para el lenguaje de programación R, dedicado a la computación estadística y gráficos. Incluye una consola ...

Plataforma: [IA-32](#), [x86-64](#); [Qt](#) Última versión en pruebas: [r243](#) (info); 22 de n...

Autor: [Joseph J. Allaire](#)

Última versión estable: [1.1.383](#) (info); 9 de oct...

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OPEN SOURCE

Get started with R



RStudio

The premier IDE for R



RStudio Server

RStudio anywhere using a web browser



Shiny Server

Put Shiny applications online



R Packages

Shiny, R Markdown, Tidyverse and more

HOSTED SERVICES

Be our guest, be our guest



RStudio Cloud

Do, share, teach and learn data science



shinyapps.io

Let us host your Shiny applications

PROFESSIONAL

Enterprise-ready



RStudio Team

The premier software bundle for data science teams



RStudio Server Pro

RStudio for the Enterprise



RStudio Connect

Connect data scientists with decision makers



RStudio Package Manager

Control and distribute packages



RStudio Desktop

Run RStudio on



Studio Desktop

Open Source Edition

Overview

- Access RStudio locally
- Syntax highlighting, code completion, and smart indentation
- Execute R code directly from the source editor
- Quickly jump to function definitions
- Easily manage multiple working directories using projects
- Integrated R help and documentation
- Interactive debugger to diagnose and fix errors quickly
- Extensive package development tools

Support

Community forums only

License

AGPL v3

Pricing

Free

RStudio Desktop Pro

All of the features of open source; plus:

- A commercial license for organizations not able to use AGPL software
- Access to priority support
- [RStudio Professional Drivers](#)

- Priority Email Support
- 8 hour response during business hours (ET)

[RStudio License Agreement](#)

\$995/year

DOWNLOAD RSTUDIO DESKTOP

DOWNLOAD FREE RSTUDIO DESKTOP PRO TRIAL

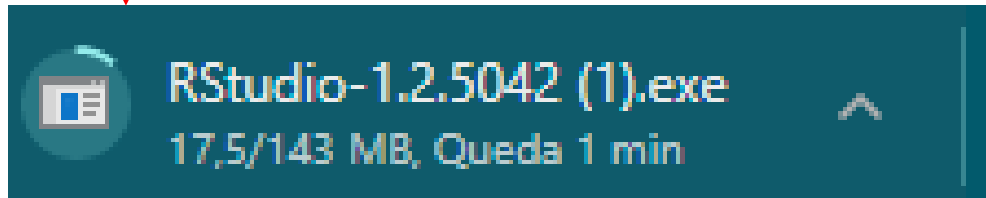
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RStudio Desktop 1.2.5042 - [Release Notes](#)

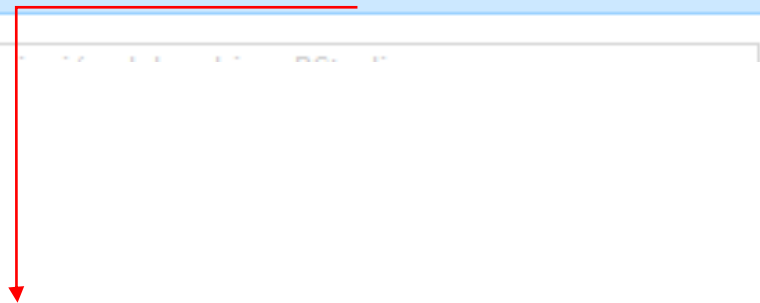
1. Install R. RStudio requires [R 3.0.1+](#).
2. Download RStudio Desktop. Recommended for your system:



Requires Windows 10/8/7 (64-bit)



Nombre	Estado	Fecha de modificación	Tipo	Tamaño
 R-4.0.0-win	✓	18/5/2020 11:44	Aplicación	85,512 KB
 RStudio-1.2.5042	✓	18/5/2020 12:40	Aplicación	146,327 KB



Pinchar dos veces,
luego pinchar en ejecutar.



Bienvenido al Asistente de Instalación de RStudio

Este programa instalará RStudio en su ordenador.

Se recomienda que cierre todas las demás aplicaciones antes de iniciar la instalación. Esto hará posible actualizar archivos relacionados con el sistema sin tener que reiniciar su ordenador.

Presione Siguiente para continuar.

Siguiente >

Cancelar

Instalación de RStudio



Elegir lugar de instalación

Elija el directorio para instalar RStudio.

El programa de instalación instalará RStudio en el siguiente directorio. Para instalar en un directorio diferente, presione Examinar y seleccione otro directorio. Presione Siguiente para continuar.

Directorio de Destino

C:\Program Files\RStudio

Examinar...

Espacio requerido: 777.5 MB

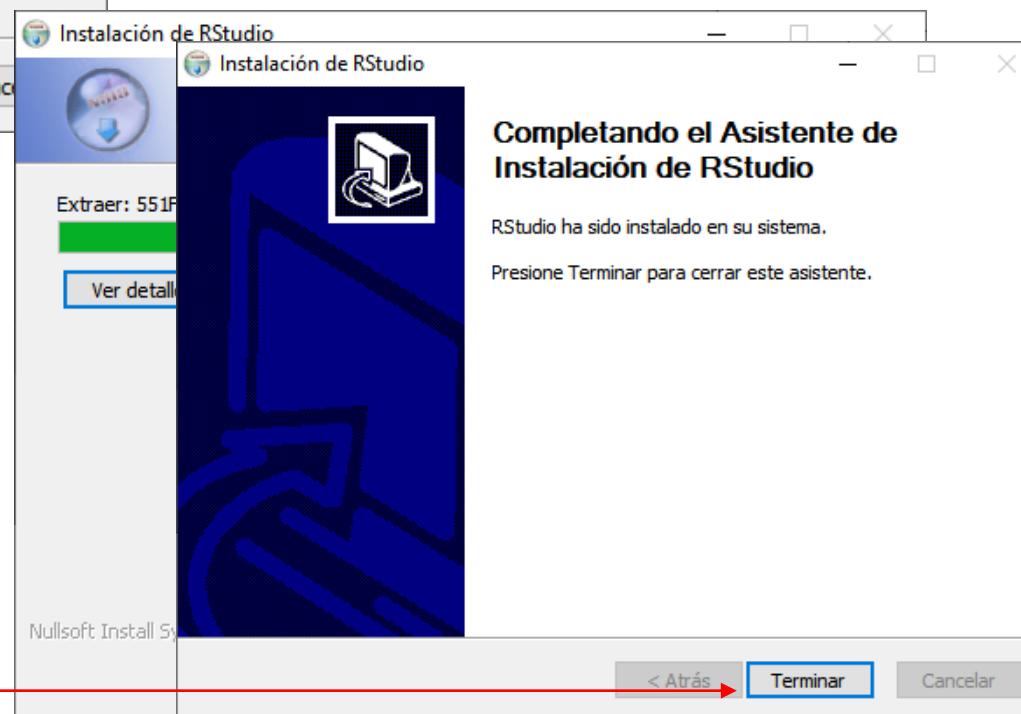
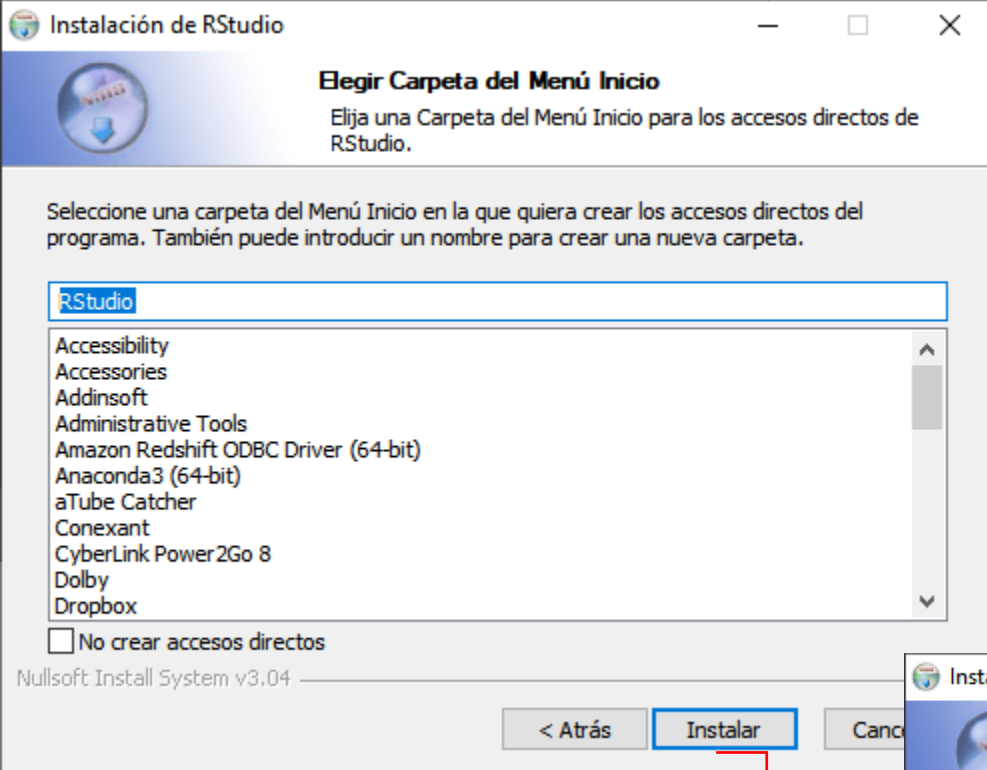
Espacio disponible: 750.5 GB

Nullsoft Install System v3.04

< Atrás

Siguiente >

Cancelar



Console ~/

```
R version 4.0.0 (2020-04-24) -- "Arbor Day"
Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R es un software libre y viene sin GARANTIA ALGUNA.
Usted puede redistribuirlo bajo ciertas circunstancias.
Escriba 'license()' o 'licence()' para detalles de distribucio
n.

R es un proyecto colaborativo con muchos contribuyentes.
Escriba 'contributors()' para obtener más información y
'citation()' para saber cómo citar R o paquetes de R en publica
ciones.

Escriba 'demo()' para demostraciones, 'help()' para el sistema
on-line de ayuda,
o 'help.start()' para abrir el sistema de ayuda HTML con su nav
egador.
Escriba 'q()' para salir de R.

Warning: namespace 'ggplot2' is not available and has been repl
aced
by .GlobalEnv when processing object 'c2'
[Workspace loaded from ~/.RData]

> |
```

Environment History Connections



Import Dataset



List



Global Environment



Environment is empty

Files Plots Packages Help Viewer

New Folder



Delete



Rename



More



Home

	Name	Size	Modified
	.RData	1 MB	Jul 23, 2020
	.Rhistory	0 B	May 18, 2020
	Camtasia Studio		
	CyberLink		
	Fax		
	GIS DataBase		
	IBM		
	Mobizon		

Consola

```
> 1+ 2
```

```
[1] 3
```

```
> "Hola, está es la consola"
```

```
> 2
```

```
[1] 2
```

```
> 8/4
```

```
[1] 2
```

Variables

- Almacene una variable para utilizarla más tarde
- <-

```
> Estatura <- 12.5
```

```
> # imprimir peso
```

```
> Peso
```

```
[1] 2
```

```
> Estatura <- 1.50
```

```
> # imprima estatura
```

Otros elementos

- vector
- Data frame
- Matriz
- graphics

```
> #Crear un vector c()
```

```
> #Crear una matriz matrix()
```

```
> #crear un marco de dato data.frame()
```

```
> #crear un gráfico plot(), hist () y boxplot ()
```

Modelos Mixtos

“lm”

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Facultad de Ciencia e Ingeniería



@Hen1985

Llamar el data frame formato xlsx

- `install.packages("readxl")`
- Cargar paquete `library(readxl)`

```
1
2 library(readxl)
3
4
5 lm <- read_excel("C:/Users/lenovo/Desktop/OneDrive - UNAN-Managua
6                  /Clases de Estadísticas/Semestre 2020/I Semestre 2020/
7                  Modelos Mixtos/lm.xlsx")
8
9 View(lm)
10 |
11
12
```

Construir gráfica de dispersión

- Función “plot”

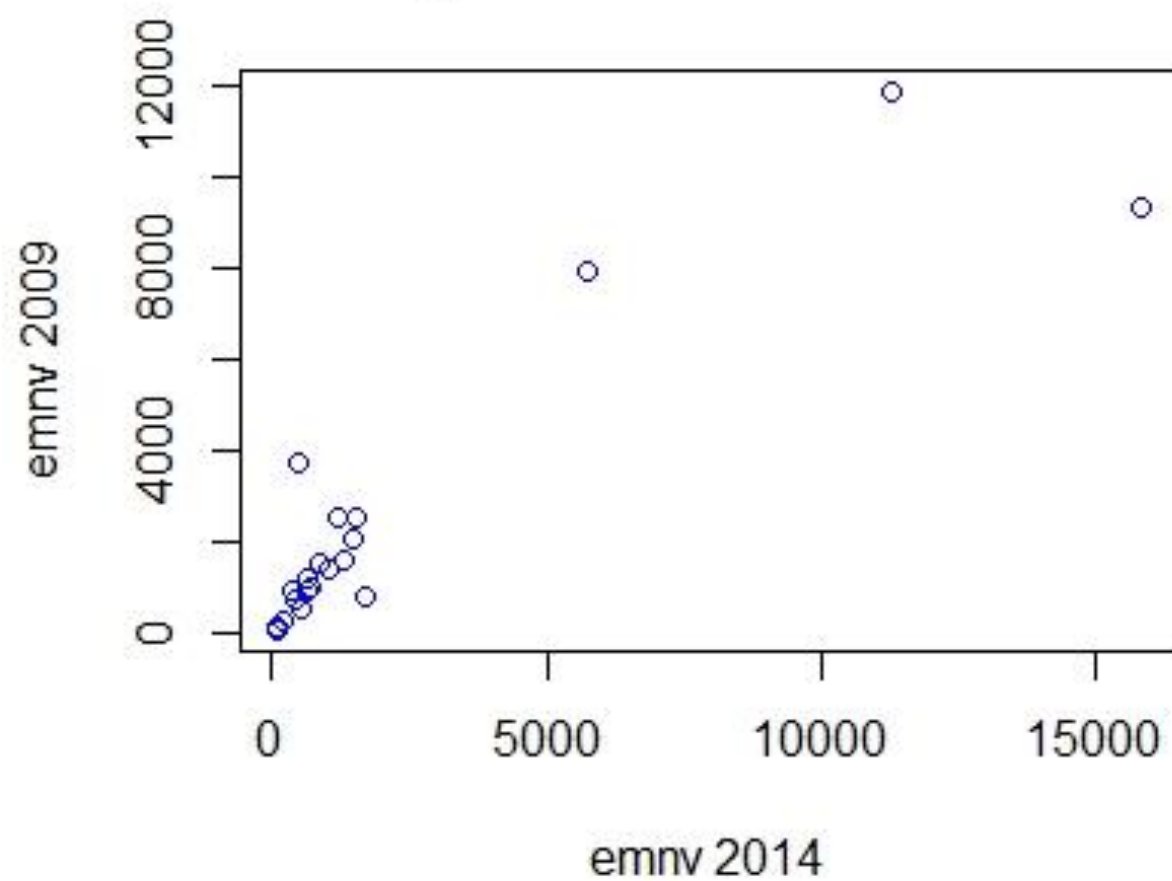
```
12 plot(lm$emnv_2009, lm$emnv_2014)
13 |
14
15 plot(lm$emnv_2009, lm$emnv_2014, col="blue",
16       ylab = "emnv 2009", xlab = "emnv 2014",
17       main = "gastos en alimentos")
18
19
20
```

Construir gráfica de dispersión

- Función “plot”

```
12 plot(lm$emnv_2009, lm$emnv_2014)
13 |
14
15 plot(lm$emnv_2009, lm$emnv_2014, col="blue",
16       ylab = "emnv 2009", xlab = "emnv 2014",
17       main = "gastos en alimentos")
18
19
20
```


gastos en alimentos



Construir modelo de regresión lineal

- modelo "lm"
- Tecla alt + 126 "~"

```
21  
22 lm1 <- lm(lm$emnv_2014 ~ lm$emnv_2009)  
23 lm  
24  
25 summary(lm1)  
26  
27
```

Construir modelo de regresión lineal

- Función “summary”

```
> summary(lm1)
```

Call:

```
lm(formula = lm$emnv_2014 ~ lm$emnv_2009)
```

Residuals:

Min	1Q	Median	3Q	Max
-3007.2	-714.8	-222.3	166.8	2915.0

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	863.82897	354.27199	2.438	0.0247	*
lm\$emnv_2009	0.72914	0.07881	9.251	1.82e-08	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1413 on 19 degrees of freedom

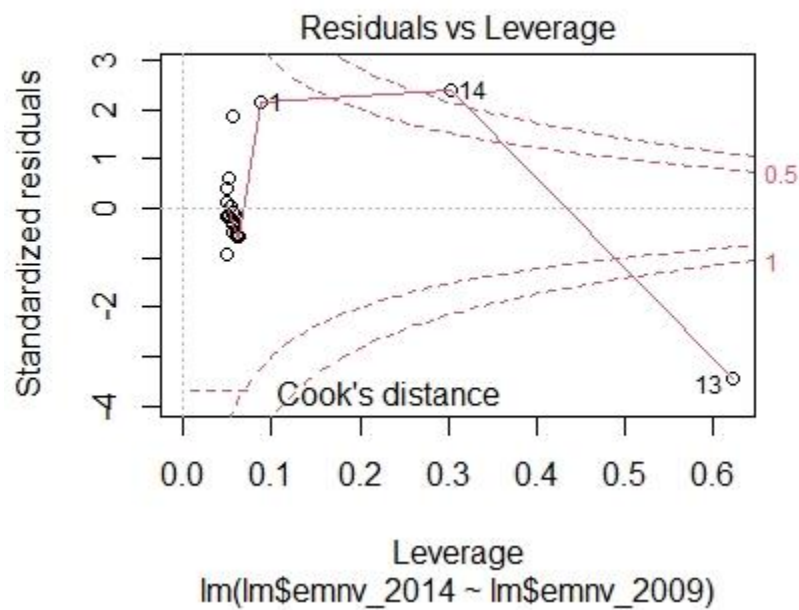
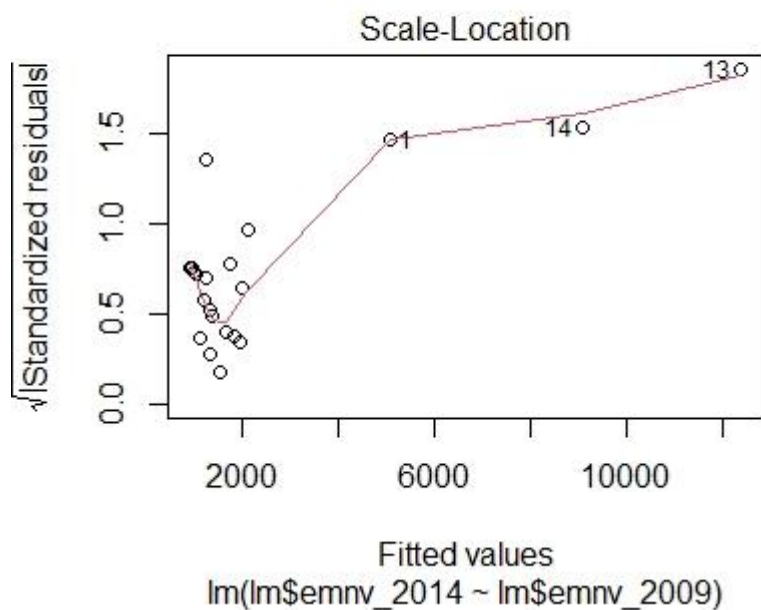
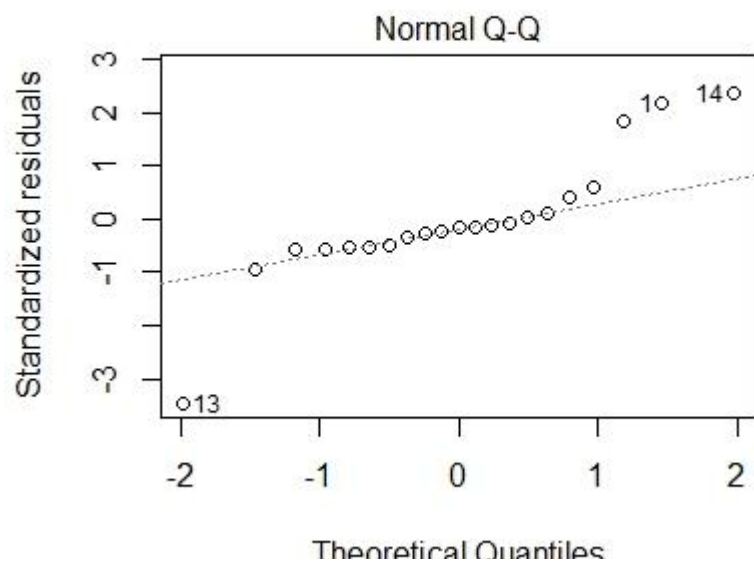
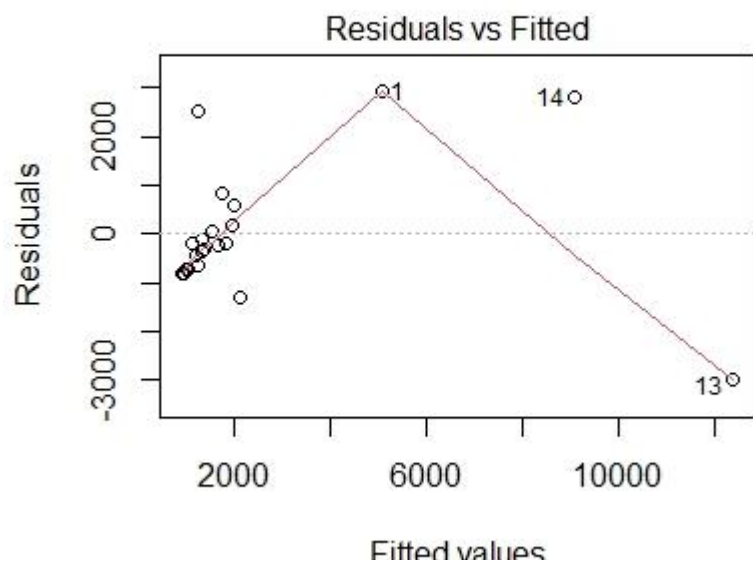
Multiple R-squared: 0.8183, Adjusted R-squared: 0.8088

F-statistic: 85.59 on 1 and 19 DF, p-value: 1.815e-08

Diagnostico de los residuos

- plot (lm1)

```
> plot(lm1)
<Enter> para ver el próximo gráfico:
<Enter> para ver el próximo gráfico:
<Enter> para ver el próximo gráfico:
<Enter> para ver el próximo gráfico:
> |
```



Modelos Mixtos

“Análisis de regresión lineal”

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Universidad Nacional Autónoma de Nicaragua, Managua
Facultad de Ciencia e Ingeniería



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