

Introduction to R / RStudio

About R and R studio

- R is a free software environment for statistical computing and graphics
- It's open source and therefore available free of charge
- R studio is a powerful and productive user interface for *R*
- It's free and open source, and works great on Windows, Mac, and Linux.
- R is an object oriented programming language where we create objects and manipulate them as intended
- Objects can be Data frames, vectors, matrices, lists, raw data, spatial objects , maps etc



Why R Language

- ❑ R is not just a statistics package, it's a language(allows us to specify the performance of new tasks without any limitations)
- ❑ R is designed to operate the way that problems are thought about and has very simple syntax
- ❑ R is both flexible and powerful
- ❑ It is very interactive and thus suitable for data analysis
- ❑ R syntax is very simple and intuitive. *For instance,*

```
n <- 10 + 2
```

```
n
```

```
[1] 12
```

Install R for windows

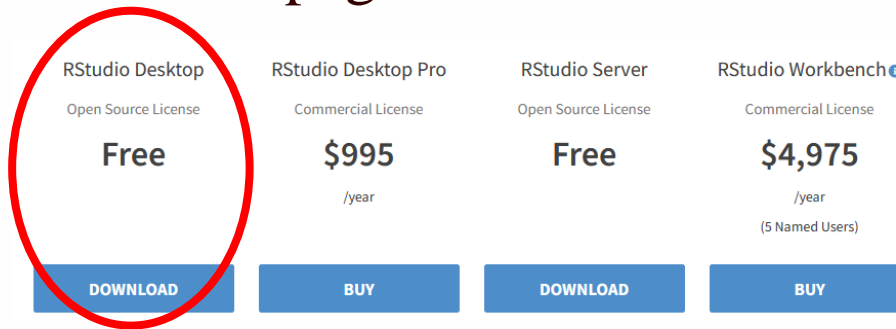
Go to your browser and search for **R 4.1.2 windows**

- Choose **Download R-4.1.2 for Windows**
- Click, **Download R 3.2.4 for windows** (86 megabytes, 32/64 bit)
- Then, **save** the file and **run** it after download is complete.
- **Click next** in all the popups that appear then **finish**.

Open the installed r

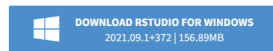
Install Rstudio

- Open browser and search for **rstudio download**
- Choose Download the RStudio IDE –**RStudio**
- Scroll down the page and click **Rstudio Destop Free**



- Choose the download file according to your **operating system**

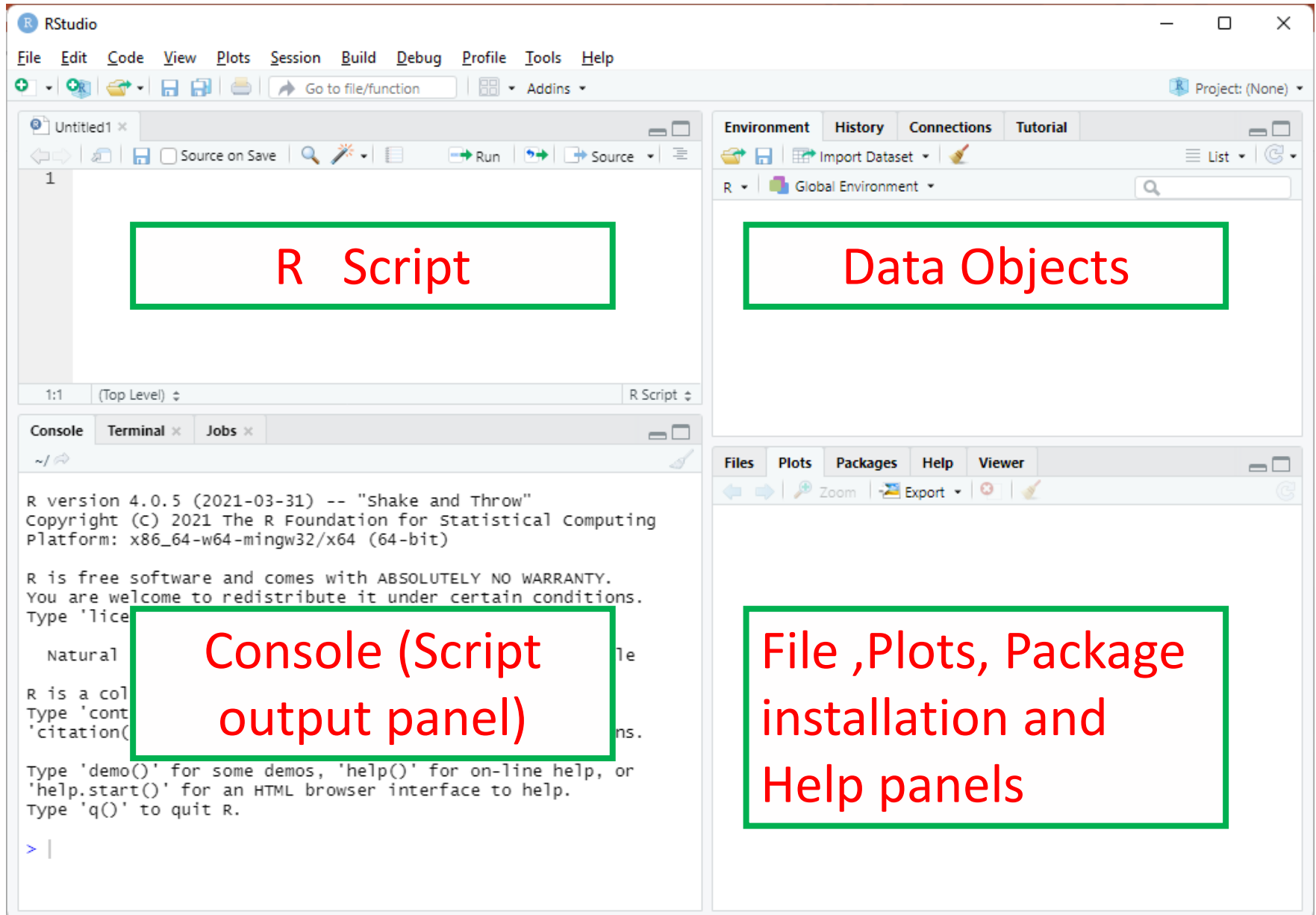
2. Download RStudio Desktop. Recommended for your system:



Requires Windows 10 (64-bit)

- Save the file and run it after download is complete.
- Click **Next** and then **Finish**

Rstudio



Read Data in RStudio

The screenshot displays the RStudio interface with the following components:

- Source Editor:** Contains R code for installing and loading packages, and reading four different datasets (CSV, Excel, Stata, and SPSS).
- Console:** Shows the output of the code execution, including the successful installation of 'ggplot2' and the loading of the datasets.
- Environment Pane:** Lists the datasets loaded in the global environment.
- Files Pane:** Shows the file explorer with the 'Install' and 'Update' buttons.
- Plots Pane:** Empty.
- Packages Pane:** Lists installed and available packages, with 'ggplot2' checked.
- Help Pane:** Provides documentation for the 'ggplot2' package.

```
# Install packages
install.packages("ggplot2")

# Load packages
library(ggplot2)

# Read csv datafile
dataset1 <- read.csv("E:/Dropbox (Personal)/MDCF Study/MDCF data/Final MDCF dataset.csv")

# Read Excel datafile
library(readxl)
dataset2 <- read_excel("E:/Dropbox (Personal)/MDCF Study/MDCF data/6 month follow-up anthro.xlsx")

# Read stata datafile
library(haven)
dataset3 <- read_dta("E:/Dropbox (Personal)/MDCF Study/MDCF data/Final anthro dataset.dta")

# Read SPSS datafile
library(haven)
dataset4 <- read_sav("C:/Users/icddrb/Desktop/DR SHARIKA/LSU +ICU pt list_V2.sav")
```

Console Output:

```
downloaded 3.9 MB
package 'ggplot2' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\icddrb\AppData\Local\Temp\Rtmpaqlsmy\downloaded_packages
> library(ggplot2)
> detach("package:ggplot2", unload = TRUE)
> library(ggplot2)
> library(haven)
> dataset3 <- read_dta("E:/Dropbox (Personal)/MDCF Study/MDCF data/Final anthro dataset.dta")
> view(dataset3)
> library(haven)
> LSU_ICU_pt_list_V2 <- read_sav("C:/Users/icddrb/Desktop/DR SHARIKA/LSU +ICU pt list_V2.sav")
> view(LSU_ICU_pt_list_V2)
> # Read csv datafile
> dataset1 <- read.csv("E:/Dropbox (Personal)/MDCF Study/MDCF data/Final MDCF dataset.csv")
> dataset2 <- read_excel("E:/Dropbox (Personal)/MDCF Study/MDCF data/6 month follow-up anthro.xlsx")
> dataset3 <- read_dta("E:/Dropbox (Personal)/MDCF Study/MDCF data/Final anthro dataset.dta")
> dataset4 <- read_sav("C:/Users/icddrb/Desktop/DR SHARIKA/LSU +ICU pt list_V2.sav")
```

Environment Pane Data:

Dataset	Observations	Variables
dataset1	124 obs.	165 variables
dataset2	114 obs.	8 variables
dataset3	124 obs.	94 variables
dataset4	9846 obs.	94 variables

Files Pane:

Name	Description
gert	Simple Git Client for R
GGally	Extension to 'ggplot2'
ggbeeswarm	Categorical Scatter (Violin Point) Plots
ggbiplot	A ggplot2 based biplot
ggeffects	Create Tidy Data Frames of Marginal Effects for Outputs
<input checked="" type="checkbox"/> ggplot2	Create Elegant Data Visualisations Using the Grammar of Graphics
ggpmisc	Miscellaneous Extensions to 'ggplot2'
ggpol	Visualizing Social Science Data with 'ggplot2'
ggpp	Grammar Extensions to 'ggplot2'
ggpubr	'ggplot2' Based Publication Ready Plots
ggquicked	Quickly Explore Your Data Using 'ggplot2' and Tables
ggrepel	Automatically Position Non-Overlapping Text Labels
ggridges	Ridgeline Plots in 'ggplot2'
ggsci	Scientific Journal and Sci-Fi Themed Color Palettes
ggsignif	Significance Brackets for 'ggplot2'
ggstance	Horizontal 'ggplot2' Components

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library(haven)
dataset3 <- read_dta("E:/Dropbox (Personal)/MDCF Study/MDCF data/Final anthro dataset.dta")
# Read SPSS datafile
library(haven)
dataset4 <- read_sav("C:/Users/icddrb/Desktop/DR SHARIKA/LSU +ICU pt list_V2.sav")
```


Thank you

icddr,b thanks its core donors for their on-going support



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