Introduction to R and RStudio
Lab Session 1

Dr.Priyanga Talagala

08/02/2026

Installing R and Rstudio

- **Step 1:** First download R freely from the Comprehensive R Archive Network (CRAN) https://cran.r-project.org/. (At the moment of writing, R 4.5.2 is the latest version. Choose the most recent one.)

- **Step 2:** Then install R Studio's IDE (stands for integrated development environment), a powerful user interface for R from

$$https://posit.co/download/rstudio - desktop/$$

(https://posit.co/download/rstudio-desktop/. Get the Open Source Edition of RStudio Desktop. RStudio allows you to run R in a more user-friendly environment.

  - You need to install **both** R and Rstudio to use RStudio.

  - If you have a pre-existing installation of R and/or RStudio, I highly recommend that you reinstall both and get as current as possible.

- **Step 3:** Then open **Rstudio**.

Posit Cloud

- In 2022, RStudio changed its corporate name to Posit with the aim of expanding its focus beyond R to include users of Python and Visual Studio Code.

- If you don't want to download or install R and R Studio, you can use RStudio on Posit Cloud for free.

RStudio layout

The RStudio interface consists of four panes: See Figure 1)

1. **Source pane**

2. **Console pane**

3. **Environment pane**, containing the Environment, History, Connections, Build, and Tutorial tabs

4. **Output pane**, containing the Files, Plots, Packages, Help, Viewer, and Presentation tabs

Console Pane

- This is where you type and execute all your R commands.

- You can enter R commands after the '>' prompt, and R will process and execute them.

- This is the most essential window, as it is where R performs computations and executes your instructions.
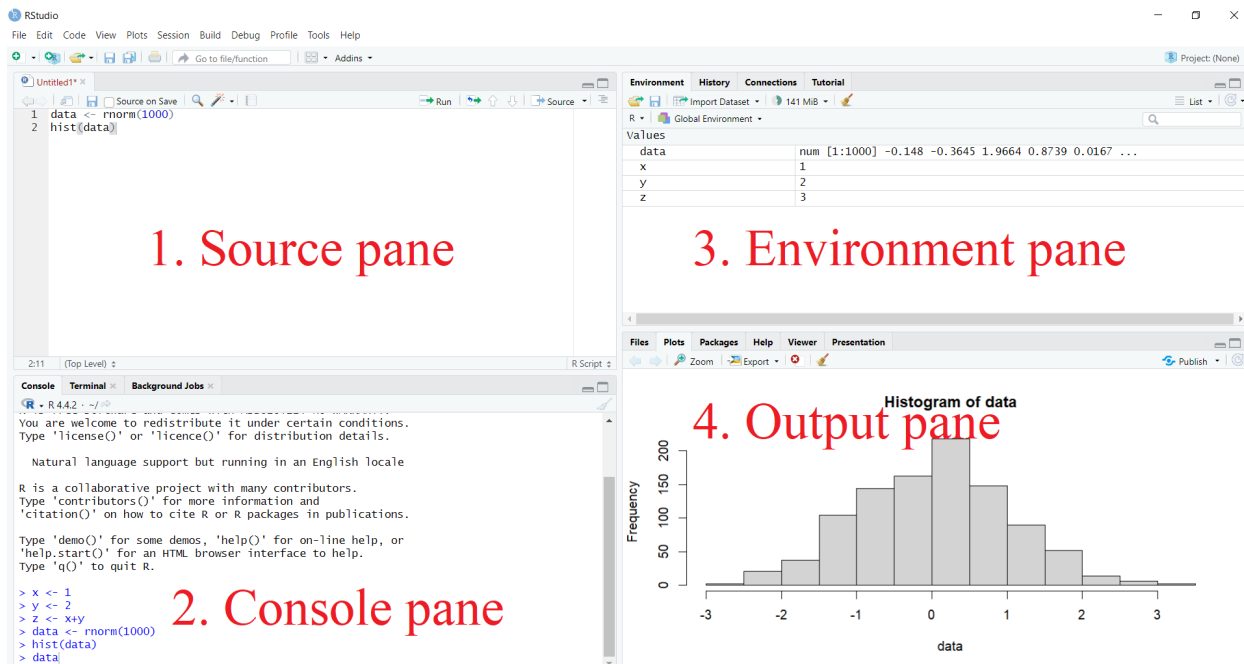
Figure 1: RStudio layout

Source pane

- In this window, a collection of commands (scripts) can be edited and saved.

- If this window is not visible, you can open it via File → New File → R Script.

- Simply typing a command in the Source pane is not enough; it must be sent to the Console before R executes it.

- To run a line from the Source pane, place your cursor on the desired line or select multiple lines to execute, then click Run or press CTRL + ENTER to send them to the Console pane.

- Make sure to save the 'Untitled1' file as a `*.R` script.

Environment pane

- This window contains multiple tabs: Environment, History, Connections, Build, and Tutorial.

The Environment tab displays all active objects.

- For data frames, clicking the grid symbol opens the full data frame in the Source pane.

- The History tab shows previously typed commands.

- To send a command in the history tab to the Source pane, select it and click the "To Source" icon, or click "To Console" to execute it in the Console.

Output Pane

- This window contains multiple tabs: Files, Plots, Packages, Help, Viewer, and Presentation.

- It allows you to open files, view plots (including previous ones), install and load packages, access help functions, and display web content such as Shiny apps and Quarto-generated web pages.

Now you are familiar with the layout. Let's begin with R basics.

Installing an R Package

- The primary source for R packages is CRAN (Comprehensive R Archive Network).
- Packages can be installed using the `install.packages()` function in R.
- To install a single package, pass its name as the first argument to `install.packages()`.
- The following code installs the tidyverse package from CRAN:

```r
install.packages("tidyverse")
```

- This command downloads and installs the `tidyverse` package from CRAN.
- Any dependencies required by the package will also be downloaded and installed.
- Installing the tidyverse package may take several minutes, but you only need to do this once. Think of it like installing a mobile app—you install it once on your smartphone and can use its features until a new version is released, at which point you may need to update it

Alternative way to install R packages in Rstudio

- An alternative way to install R packages is through the Packages tab in the Output Pane.
- Navigate to the Packages tab in the Output Pane and click Install.
- Under "Install from," select "Repository (CRAN)".
- In the Packages field, enter the name of the package you want to install.
- To install multiple packages at once, separate the package names with commas.
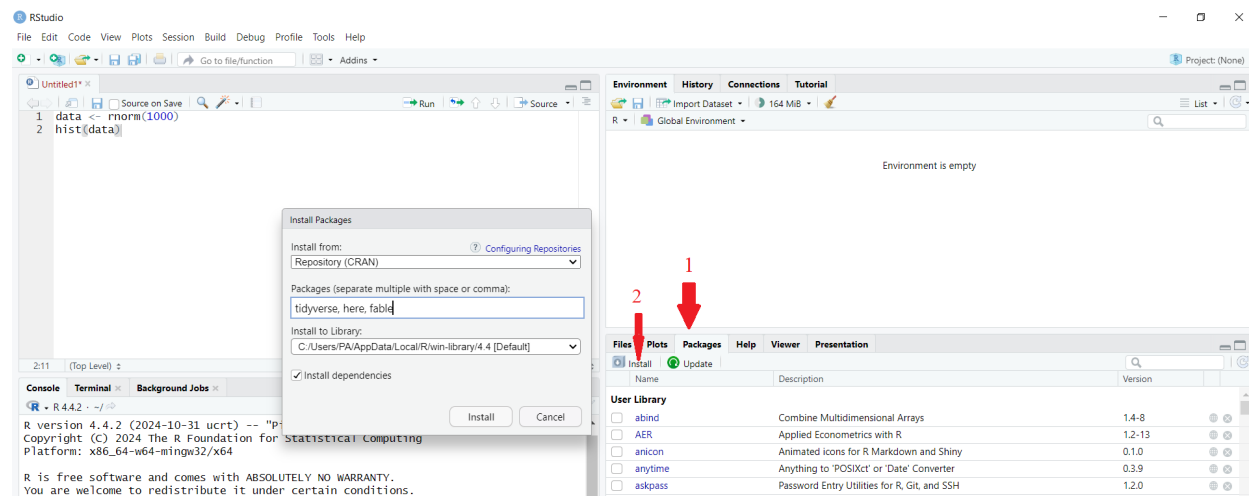- Finally, click Install.

Figure 2: Alternative way to install R packages in Rstudio

Loading an R Package

- Installing a package does not automatically make it available for use; you must load it. It's like a mobile app—you need to open it to access its functionalities.
- The `library()` function is used to load installed packages into R.
- To load the tidyverse package, use:

```r
library(tidyverse)
```

- **Note: Do not put the package name in quotes when using library().**
- Some packages display messages when loaded, while others do not.

Getting Started with R

For a detailed introduction to R, refer to:

An Introduction to R: https://cran.r-project.org/doc/manuals/R-intro.pdf