R1: Download + Intro to R & Rstudio

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Introduction to R

Artwork by @allison_horst

What is R?

- A programming language
- Focus on statistical modeling and data analysis
- Useful for epidemiology, biostatistics, and data science
- Great visualizations

What is RStudio?

R: Engine

RStudio: Dashboard

Modern Dive

- R is a programming language

- RStudio is an integrated development environment (IDE)
  - An interface to use R (with perks!)

We open RStudio on our computer (not R!)

1.1.2 Using R via RStudio

Recall our car analogy from earlier. Much as we don't drive a car by interacting directly with the engine but rather by interacting with elements on the car's dashboard, we won't be using R directly but rather we will use RStudio's interface. After you install R and RStudio on your computer, you'll have two new *programs* (also called *applications*) you can open. We'll always work in RStudio and not in the R application. Figure 1.2 shows what icon you should be clicking on your computer.

R: Do not open this	RStudio: Open this

FIGURE 1.2: Icons of R versus RStudio on your computer.

So let's take some time to download each!

- Use this link to start: https://posit.co/download/rstudio-desktop/
- I will click on this link!

- You must install R first
  - Even if you have R installed already, I highly recommend installing the latest version
  - In the future, you will periodically want to update this
- Install RStudio Desktop Open Source License (second)

- If you get them both installed, then you can open up RStudio and start checking it out

RStudio anatomy

BuzzR

RStudio anatomy

https://buzzrbeeline.blog/

Emma Rand

Script file

Write code here

To run code put your cursor on the line and click the run button

Edit to correct errors

⇒ record of commands that worked

Save scripts with the **.R** extension

⇒ syntax will be highlighted

⇒ good practice

`<-` is the assignment operator

⇒ puts what is on the right in to the object on the left

⇒ Assign results if you want to use them again

Console

When you click run, code is sent to the console and executed

`>` is the prompt

⇒ do not type it

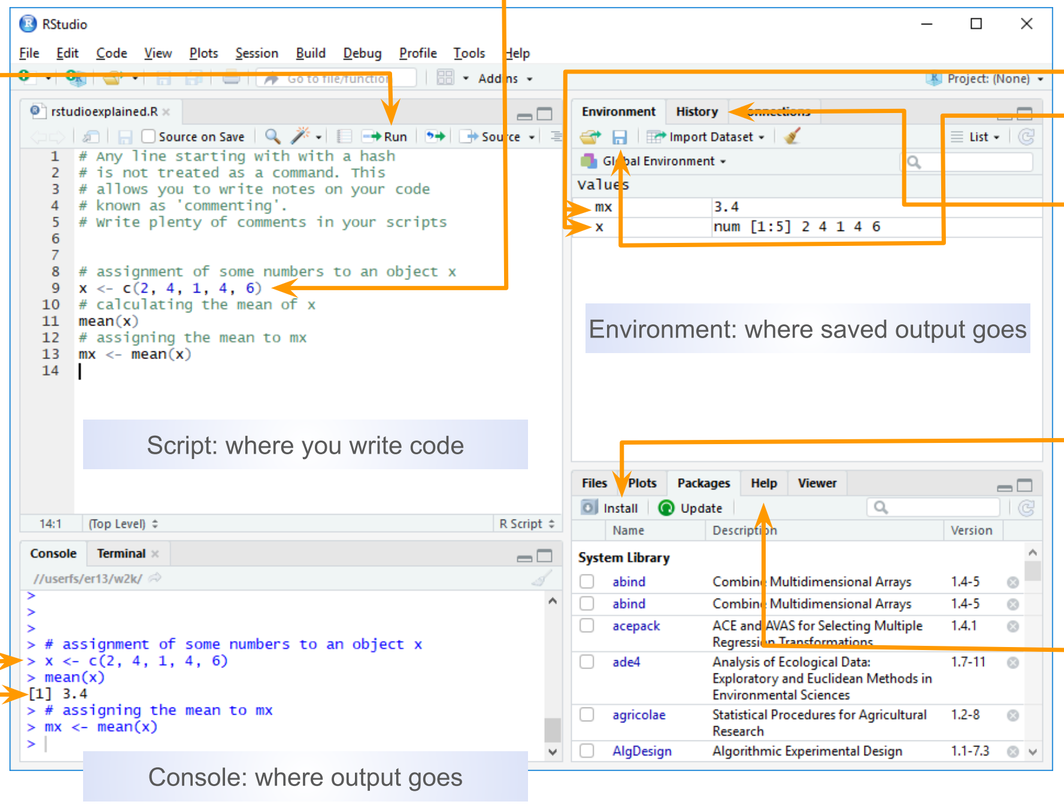
⇒ appears when R is ready for next command

Command output goes here by default

⇒ output is in a different colour

⇒ `[1]` indicates 3.4 is the first element of the output

⇒ many commands will not have output, the prompt just reappears



Environment

Name objects by assignment to use them again

All the objects you created in your session

Saving the environment saves all the objects, but not the code with a **.RData** extension

History

A history of every command you sent to the console, mistakes included.

File can be saved but usually you just need the script

Packages

Many functions come with R

A huge amount of extra functionality is available in packages

Packages can be installed by clicking the Install button

Help

Access to manual pages for all installed packages

Plots

Figure output appears here