How to install R and RStudio on your personal computer

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Introduction to R and RStudio

You may be wondering why we use R. Here are a few reasons :

- It's free!
- It's powerful! It's more flexible than Stata, more fun than Matlab.
- It's commonly used in the private sector, which makes it a valuable skill for getting a job.
- It has an active user community. (Stackoverflow.com)
- For more info, refer to: Advantages of R [by itself and vs. Matlab and Stata](http://tdmcarthur.github.io/slidify-presentations/r-intro/)

You will be learning R language, but working within RStudio. R is a free software environment for statistical computing and graphics. It comes with a small graphic user interface (GUI). RStudio is an integrated development environment (IDE) and is the most popular R code editor. It interfaces with R for Windows, MacOS, and Linux platforms. You need to download and install both R and RStudio (instructions below), but you only need to open RStudio to create and execute your code.

1 Step 1: Download & Install R (version 3.5.2)

- Select and download one of the CRAN Mirrors, available here.
  - Best practice is to download the mirror nearest you, but any will do.
  - Be sure to select the correct version for your operating system.
- Click on the executable file (ie: "R-3.5.2-win.exe" for Windows or "R-3.5.3.pk" for Mac) located in your Downloads folder to install the program.

2 Step 2: Download & Install RStudio Desktop

- Download RStudio Installer.
  - Be sure to select the correct version for your operating system.
- Click on the executable file (ie: "RStudio-1.1.463.exe" for Windows or"RStudio 1.1.463.dmg" for Mac) located in your Downloads folder to install the program.

3 Step 3: Open RStudio & Customize Appearance

- I find it helpful to change the font and background color for the console and code files.
  - For Windows: Tools → Global Options → Appearance → Editor Theme
  - For Mac: Preferences → Appearance → Editor Theme
- Rearrange your panes to create your desired layout
  - For Windows: Tools → Global Options → Pane Layout
  - For Mac: Preferences → Pane Layout
- Turn on line numbers
  - For Windows: Tools →Global Options → Code → Display →Show line numbers
  - For Mac: Preferences → Codey → Display → Show line numbers
- Consider adding a margin guide, which encourages you to write code in a format that is easily readable by others.
  - For Windows: Tools → Global Options → Code → Display →Show margin (Margin column = 80)
  - For Mac: Preferences → Code → Display → Show margin (Margin column = 80)

4 Step 4: Download & Install Packages

- Now that you've installed base R, you have access to a wide range of functions. However, you will also need to download specialized functions to complete your work. A bundle of functions is called a "package".

- The first time you want to use a package, you will need to download it. In your console, type:?install.packages("package.name"). This only needs to be done the first time you access a package.
- Once you've downloaded the package, type the following command into your console to load the package:?library("package.name").
- Commonly used packages include:
  - tidyverse → data manipulation
  - readxl → data importing
  - lmtest → statistical tests for linear regression models
  - lubridate → working with dates and times
  - magrittr → improving readability and maintainability of code
  - broom → tidying messy output
  - ggplot2 → data visualization
  - rmarkdown → integrated documentation
- The tidyverse is "an opinionated collection of R packages designed for data science. All packages share an underlying design philosophy, grammar, and data structures." Learn more about the tidyverse .
- R Markdown allows you to create an interactive document that can contain chunks of embedded code, outputs/results/graphs, and text/comments. You can convert the file to an HTML, PDF, or Microsoft Word file. We encourage you to use Markdown to submit homework assignments completed in R. Learn more about R Markdown.

5 Step 5: Happy Coding!

- Check out the next tutorial to learn how to execute commands and import data.
- For coding best practices, refer to R for Data Science, by Garrett Grolemund & Hadley Wickham.