



COMP4030

DATA MODELLING AND ANALYSIS

Lecture 1: Intro to R

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LECTURE OUTLINE

1. Basics of R
2. How do you R?
 1. Resources:
 2. Editors
 3. RStudio: Scripts
 4. Rstudio: R Notebooks
3. What to do next?

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WHAT IS R?

- R is a high-level programming language and software environment designed for:
 - data manipulation
 - statistical computing
 - graphics

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WHAT IS R?

- Some characteristics:
 - Loosely (dynamically) typed, interpreted language
 - Data manipulation and full programming capabilities
 - Easy data import / export capabilities
 - Huge range of built-in and contributed functions - CRAN
 - Professional, reliable, open source, **FREE!**



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HOW DO YOU R? RESOURCES

- For more information, see

<http://cran.r-project.org/doc/manuals/R-intro.html>

- Using R:

<http://www.sr.bham.ac.uk/~ajrs/R>

- [\[Using R\]/r-getting_started.html](#)
- [\[Using R\]/r-access_data.html](#)
- <http://data.princeton.edu/R>

HOW DO YOU R? EDITORS

- Basic editor available from:

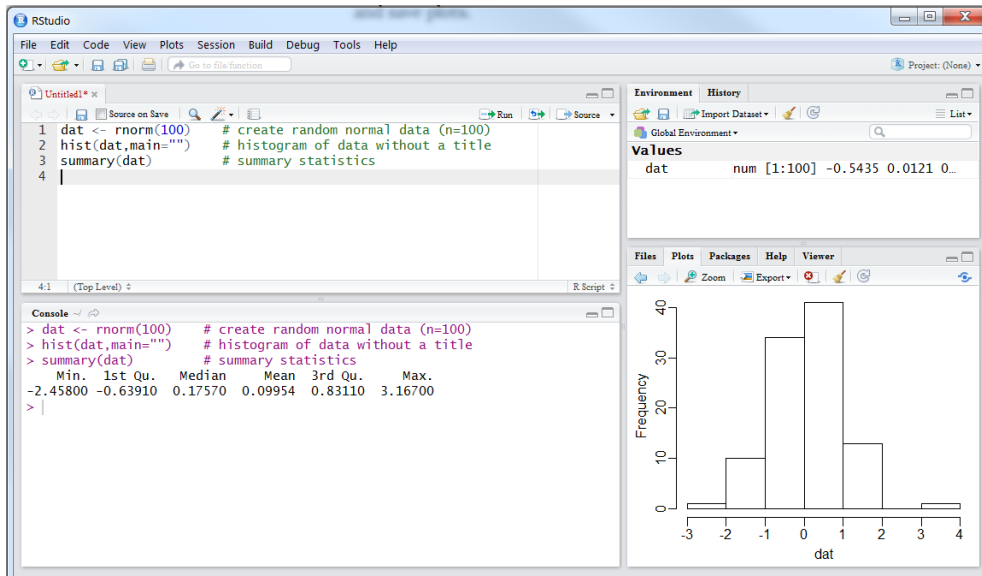
<http://www.r-project.org>

- On LHS, under 'Download, Packages'
 - select a CRAN mirror, e.g. University of Bristol
- Download a binary package for your platform
 - Windows, MacOS X, Linux

- The editor we will use:

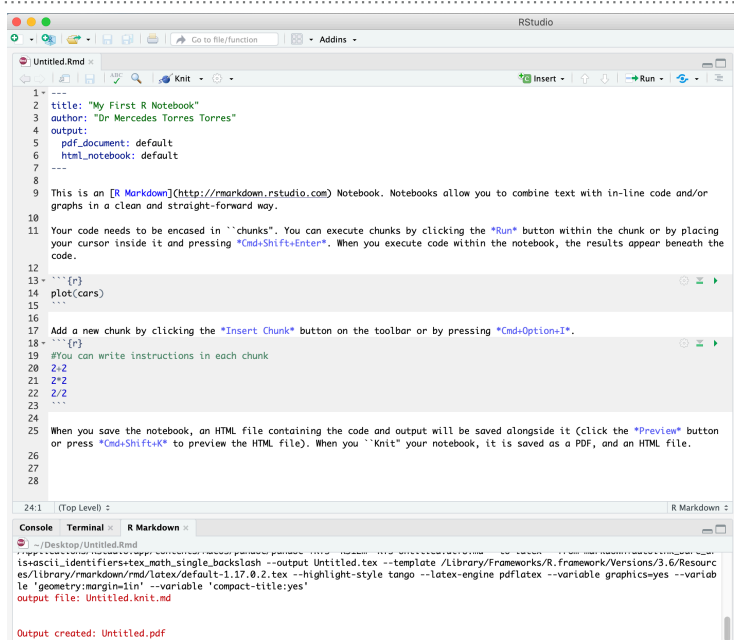
<https://www.rstudio.com>

HOW TO USE R STUDIO? SCRIPTS



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HOW TO USE R STUDIO? NOTEBOOKS

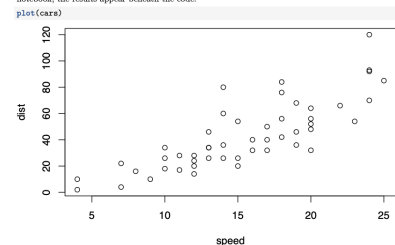


My First R Notebook

Dr Mercedes Torres Torres

This is an R Markdown Notebook. Notebooks allow you to combine text with in-line code and/or graphs in a clean and straight-forward way.

Your code needs to be enclosed in "chunks". You can execute chunks by clicking the Run button within the chunk or by placing your cursor inside it and pressing Cmd+Shift+Enter. When you execute code within the notebook, the results appear beneath the code.



Add a new chunk by clicking the Insert Chunk button on the toolbar or by pressing Cmd+Option+I.

#You can write instructions in each chunk

```
2+2
```

```
## [1] 4
```

```
2+2
```

```
## [1] 4
```

```
2/2
```

```
## [1] 1
```

When you save the notebook, an HTML file containing the code and output will be saved alongside it (click the Preview button or press Cmd+Shift+K to preview the HTML file). When you Knit your notebook, it is saved as a PDF, and an HTML file.

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EXERCISE

- Background reading
 - <http://www.stats.bris.ac.uk/R/>
 - FAQs and manuals
 - <http://cran.r-project.org/doc/manuals/R-intro.html>
 - <http://www.sr.bham.ac.uk/~ajrs/R>
 - <http://manuals.bioinformatics.ucr.edu/home>
 - Programming in R
 - http://zoonek2.free.fr/UNIX/48_R/all.html

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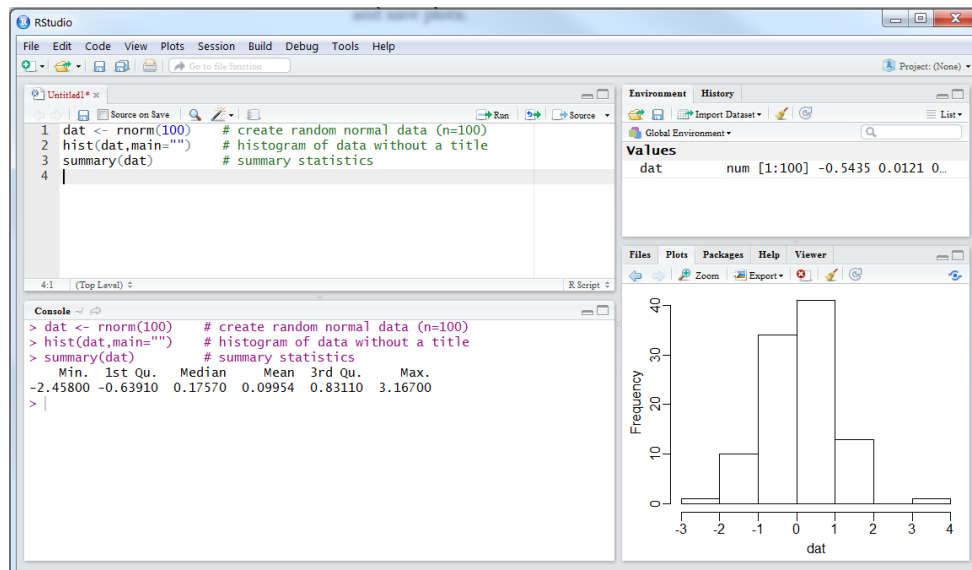
EXERCISE

- To do ahead of the first lab session:
 1. If you are using your own computer: download and install R and RStudio in your computer.
 2. If you are using remote computers: check that RStudio has been installed correctly and that you can execute simple operations.
 1. A32 computers' should have RStudio.
 3. Read brief R guide that has been uploaded to Moodle.
 4. Read Chapter 1 and 2 of: [An Introduction to R](#)
 5. Knit .Rmd: Questions form Lab 1.

This guide is extremely useful. You may want to print/save it, and refer back to it as you work through the lab exercises.

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LET'S SEE A SIMPLE EXAMPLE!



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THE END

Questions 

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