1.1 Introduction to R

Welcome to introduction to R. This single-day course intends to provide you with a base of knowledge and a sense of excitement about the power of R. Throughout, we provide guided tutorials and exercises to be completed after the course.

Objectives:

- Provide an overview of R and RStudio.
- Demonstrate how to install both R and RStudio on Windows or Mac computers.

Contents:

- What is R?
- Evolution of R
- Why should you learn R?
- Why is R so powerful?
- Features of R
- Installing R and RStudio

What is R?

R is a widely used programming /statistical analysis language. It's primary use is in academia and industry as a software environment for statistical analysis, visualisation, automation and reporting.

Evolution of R

- R was created by researchers (Ross Ihaka and Robert Gentleman) at the University of Auckland, New Zealand in 1993.
- R language and source codes are currently developed and maintained by the R Development Core Team.
- R also evolves with the contributions of its users through bug reports, bug fixes and implementation of packages.

Why should you learn R?

- Learning R can help you understand your data better by exploratory data analysis and visualisation.
- Learning R can help you understand statistical methods better by writing the code.
- Learning R gives you access to a wide range of packages to perform almost any analytical method you can think of!

Why is R so powerful?

- R allows integration with the procedures written in the C, C++, .Net, Python or FORTRAN languages for maximal efficiency.
- R is freely available under the GNU (General Public License), and pre-compiled binary versions are provided for various operating systems like Linux, Windows and Mac. This guarantees that every user has the freedom to utilise R in its current and future formats.

Features of R

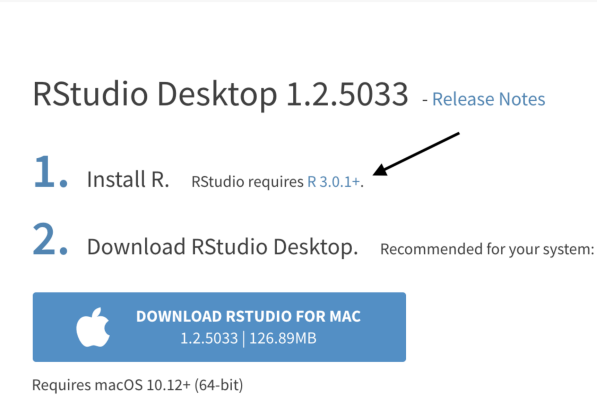
- R is a well-developed, simple and effective programming language that includes conditionals, loops, user-defined recursive functions and input and output facilities.
- R has an effective data handling and storage facility.
- R benefits from the Comprehensive R Archive Network (CRAN), a network of web worldwide servers that store identical, up-to-date versions of code and documentation for R, allowing the wide dissemination of the latest statistical tools.
- R provides a suite of operators for calculations on arrays, lists, vectors and matrices, facilitating analytical flexibility.
- R provides a large, coherent and integrated collection of tools for data analysis.
- R provides advanced graphical capabilities for data analysis and visualisation.

R is the world's most widely used statistical programming language. It's one of the most popular and diverse languages used by data scientists and supported by a vibrant and talented community of contributors. R is taught in universities and deployed in mission-critical business applications. The purpose of this course is to provide an introduction to the basics of this wonderful language!

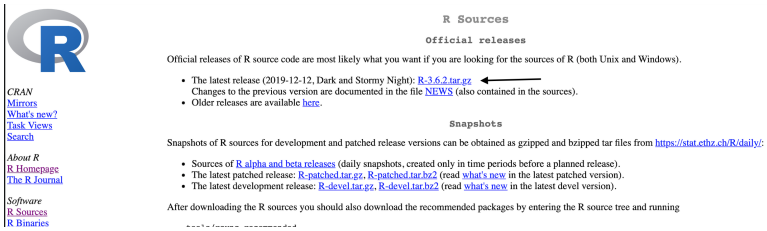
Installing R and RStudio

To install R and RStudio on Mac or Windows machines, follow the steps below:

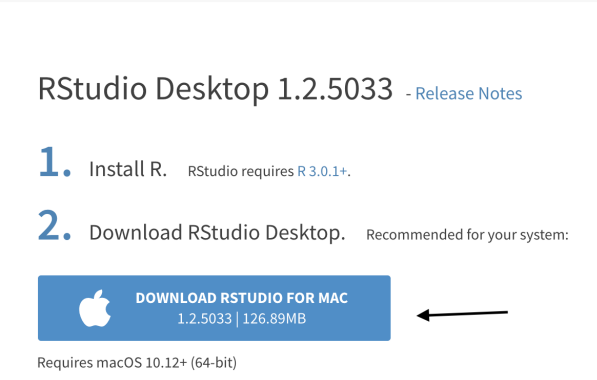
1. Navigate to the RStudio (https://rstudio.com/)
2. Navigate to *products* > *open sources* > *RStudio*
3. Select RStudio Desktop
4. First, you must install R, as RStudio is just a wrapper for R. At the time of writing, RStudio 1.2.5033 required R 3.0.1 or higher. Scroll down until you see the link for R.



5. Download and run the latest tar.gz file



6. After your download has finished, you can return to the page from step 4 and download RStudio to your machine.
   Note: The link below is for Mac computers. If you are running windows, you will see a windows option.



Materials used in this course can be cloned directly by clicking here. Alternatively, you can view the repository online:

> *https://github.com/RJODRISCOLL/Introduction-to-R*

For any help and advice, We can be contacted at:

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