



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
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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.
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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!
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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.
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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.


RStudio Desktop 1.2.5033 - [Release Notes](#)

1. Install R. RStudio requires [R 3.0.1+](#).
2. Download RStudio Desktop. Recommended for your system:



Requires macOS 10.12+ (64-bit)

5. Download and run the latest tar.gz file



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R Sources

Official releases

Official releases of R source code are most likely what you want if you are looking for the sources of R (both Unix and Windows).

- The latest release (2019-12-12, Dark and Stormy Night): [R-3.6.2.tar.gz](#)
- Changes to the previous version are documented in the file [NEWS](#) (also contained in the sources).
- Older releases are available [here](#).

Snapshots

Snapshots of R sources for development and patched release versions can be obtained as gzipped and bzippped tar files from <https://stat.ethz.ch/R/daily/>:

- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- The latest patched release: [R-patched.tar.gz](#), [R-patched.tar.bz2](#) (read [what's new](#) in the latest patched version).
- The latest development release: [R-devel.tar.gz](#), [R-devel.tar.bz2](#) (read [what's new](#) in the latest devel version).

After downloading the R sources you should also download the recommended packages by entering the R source tree and running

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.

RStudio Desktop 1.2.5033 - [Release Notes](#)

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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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