Using R for medical research

Wan Nor Arifin

Biostatistics and Research Methodology Unit, Universiti Sains Malaysia.
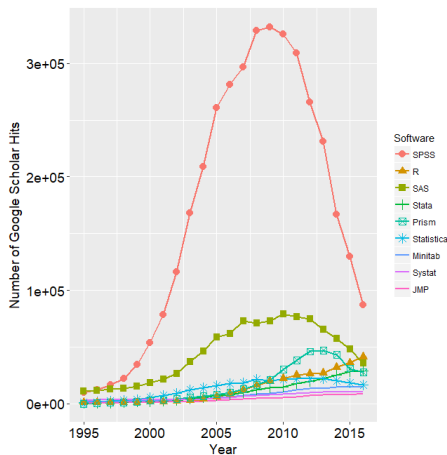
Email: wnarifin@usm.my

Section 1

Why use R?

R

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS.
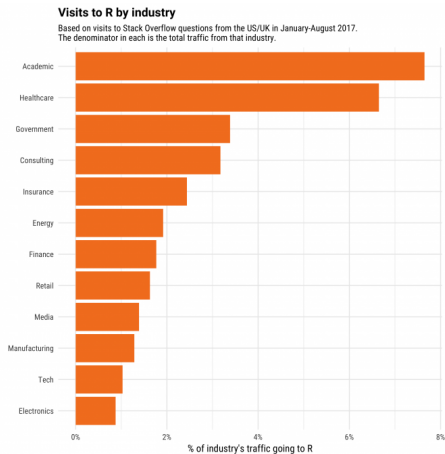
Source: https://www.r-project.org/

R outpaces other statistics software

Figure 1: R popularity

Source: http://r4stats.com/articles/popularity/

R is getting more popular among academician

Figure 2: Impressive growth of R

Source: https://stackoverflow.blog/2017/10/10/impressive-growth-r/
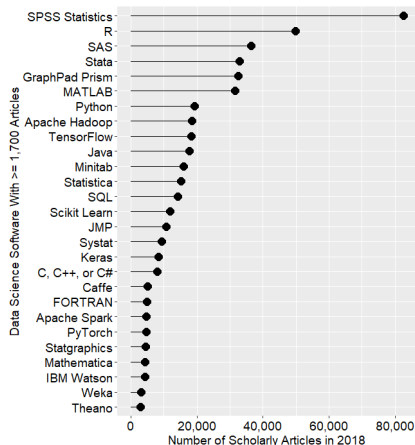
Figure 3: Scholarly impact

Source: http://r4stats.com/articles/popularity/

Availability of R packages

Contributed Packages

Available Packages

Currently, the CRAN package repository features 18568 available packages.

Table of available packages, sorted by date of publication

Table of available packages, sorted by name

Installation of Packages

Please type `help("INSTALL")` or `help("install.packages")` in R for information on how to install packages from this repository. The manual R Installation and Administration (also contained in the R base sources) explains the process in detail.

CRAN Task Views allow you to browse packages by topic and provide tools to automatically install all packages for special areas of interest. Currently, 41 views are available.

Package Check Results

All packages are tested regularly on machines running Debian GNU/Linux, Fedora, macOS (formerly OS X) and Windows.

The results are summarized in the check summary (some timings are also available). Additional details for Windows checking and building can be found in the Windows check summary.

Figure 4: CRAN

Source: https://cloud.r-project.org/web/packages/index.html, as of 7/12/2021.

It's difficult to learn!!!

R software: unfriendly but probably the best

Hackenberger, B. K. (2020). R software: unfriendly but probably the best. Croatian medical journal, 61(1), 66-68.
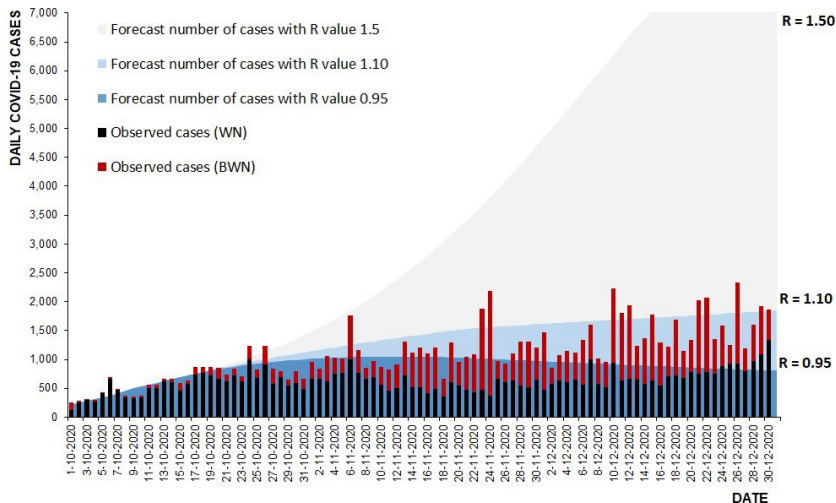
Another reason to use R... 1

Figure 5: ???

Source: Thanks Dr. KIM ;-) Modified comic from duelinganalogs.com on PC vs Mac vs Linux.

Figure 6: R invasion in infectious disease domain
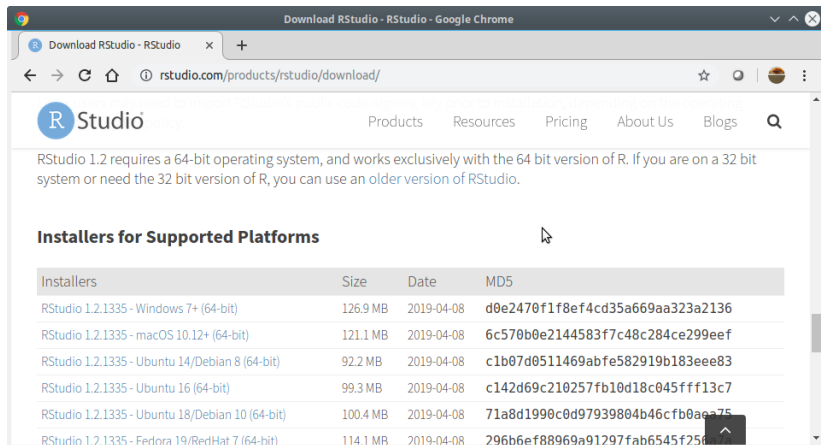
Section 2

R and RStudio

R Installation

R @ https://cran.r-project.org/
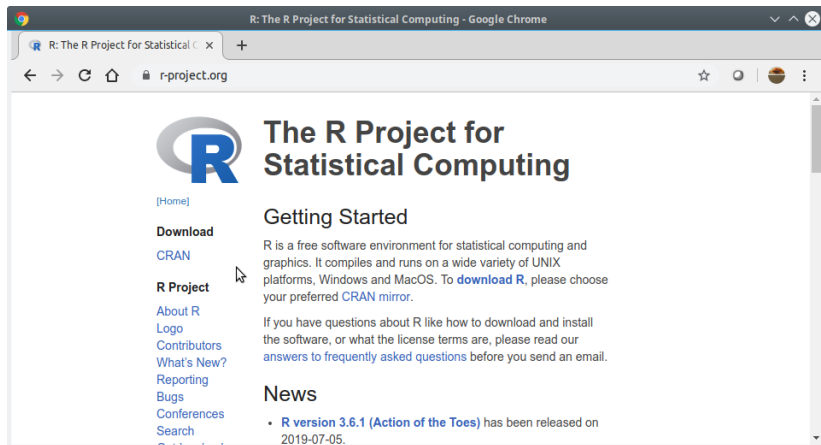
Figure 7: R Project

RStudio Installation

RStudio @ https://www.rstudio.com/products/rstudio/download/

Figure 8: RStudio

Alternative: RStudio Cloud

RStudio Cloud @ https://rstudio.cloud/ (no need to install R)
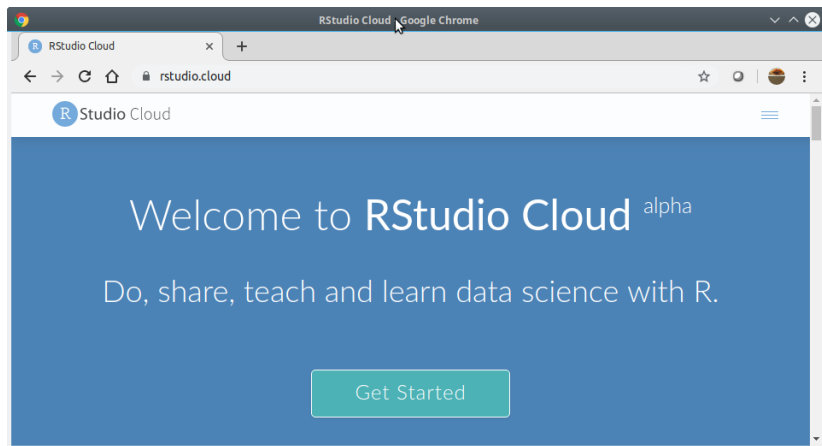
Figure 9: RStudio Cloud

Section 3

Let's start!!!

Notes and Resources

Web-based note

Github for workshop files