

# Using R for medical research

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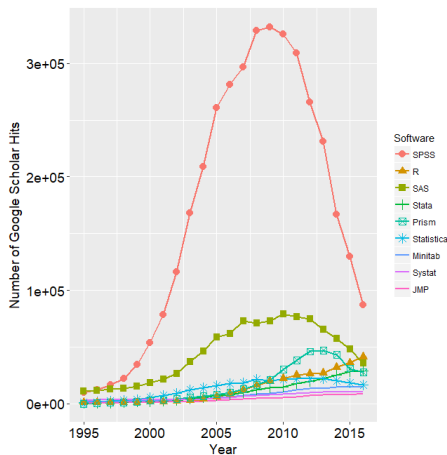
## Section 1

### Why use 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/>

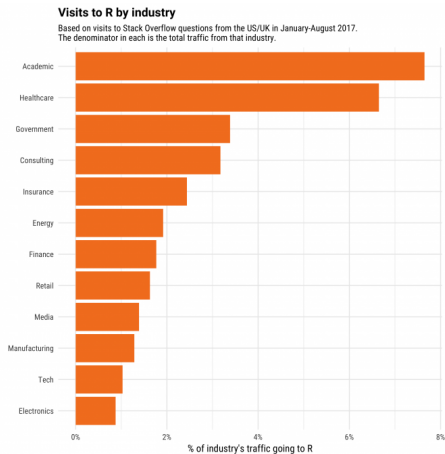
# R outpaces other statistics software



**Figure 1: R popularity**

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

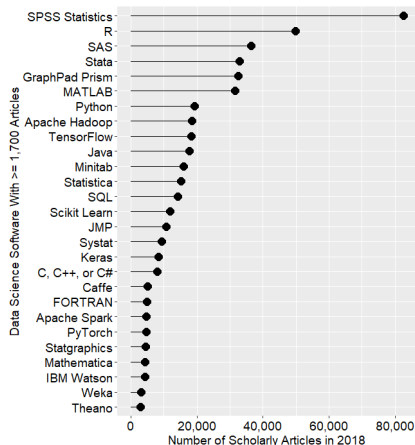
# R is getting more popular among academician



**Figure 2:** Impressive growth of R

Source: <https://stackoverflow.blog/2017/10/10/impressive-growth-r/>

# Scholarly impact



**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.



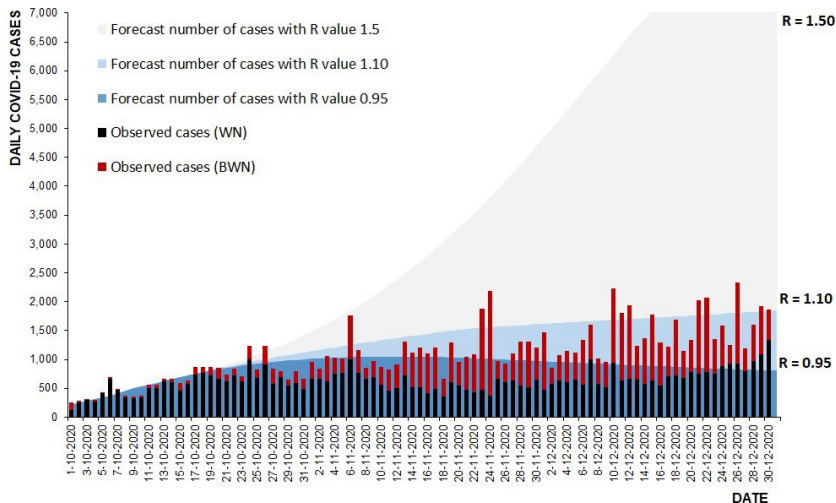
# Another reason to use R... 1



**Figure 5: ???**

Source: Thanks Dr. KIM ;- ) Modified comic from [duelinganalog.com](http://duelinganalog.com) on PC vs Mac vs Linux.

# Another reason to use R... 2



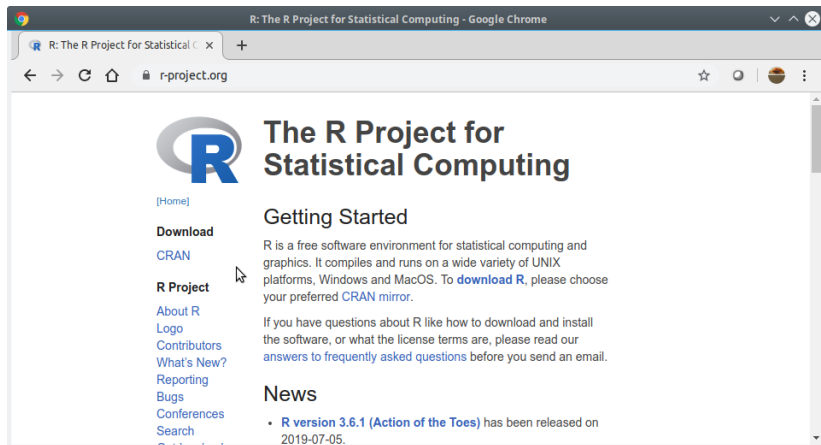
**Figure 6:** R invasion in infectious disease domain

## Section 2

# R and RStudio

# R Installation

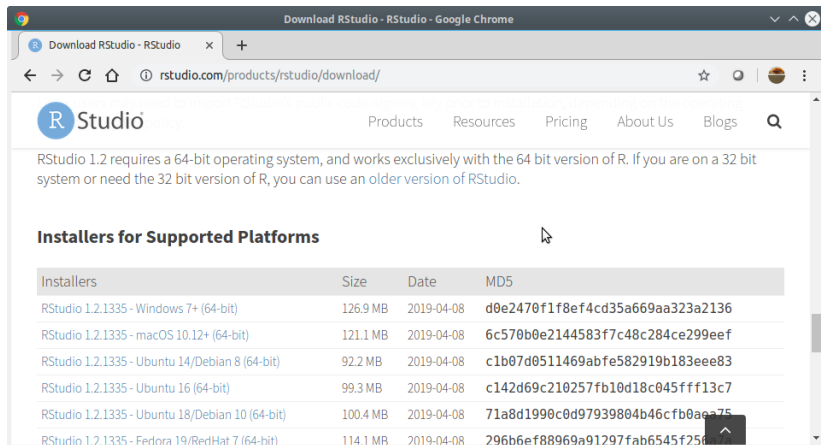
R @ <https://cran.r-project.org/>



**Figure 7:** R Project

# RStudio Installation

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



RStudio 1.2 requires a 64-bit operating system, and works exclusively with the 64 bit version of R. If you are on a 32 bit system or need the 32 bit version of R, you can use an [older version of RStudio](#).

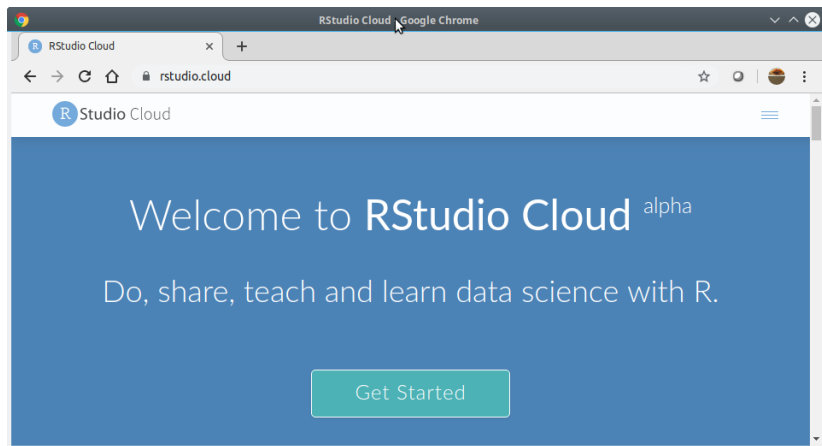
### Installers for Supported Platforms

Installers	Size	Date	MD5
RStudio 1.2.1335 - Windows 7+ (64-bit)	126.9 MB	2019-04-08	d0e2470f1f8ef4cd35a669aa323a2136
RStudio 1.2.1335 - macOS 10.12+ (64-bit)	121.1 MB	2019-04-08	6c570b0e2144583f7c48c284ce299eef
RStudio 1.2.1335 - Ubuntu 14/Debian 8 (64-bit)	92.2 MB	2019-04-08	c1b07d0511469abfe582919b183eee83
RStudio 1.2.1335 - Ubuntu 16 (64-bit)	99.3 MB	2019-04-08	c142d69c210257fb10d18c045fff13c7
RStudio 1.2.1335 - Ubuntu 18/Debian 10 (64-bit)	100.4 MB	2019-04-08	71a8d1990c0d97939804b46cfb0aea75
RStudio 1.2.1335 - Fedora 19/RedHat 7 (64-bit)	114.1 MB	2019-04-08	296b6ef88969a91297fab6545f250

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