

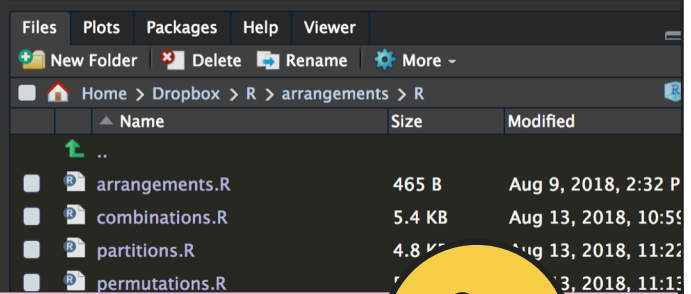
Presented by the SAM Lab,
Jake Plantz, and Brittany Wheeler

```
12     state = NULL
13   ),
14   public = list(
15     ◦ nextElem = function() {
16         out <- self$getNext()
17         is.null(out) && stop("StopIteration", call. = FALSE)
18         out
19     }

```

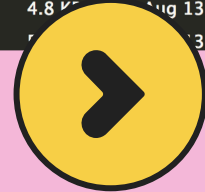
16:26 nextElem() R Script

Console Terminal Jobs
~/Dropbox/R/arrangements/
Type 'license()' or 'licence()' for distribution details.
Natural language support but running in an English locale



Files Plots Packages Help Viewer
+ New Folder - Delete Rename More -
Home > Dropbox > R > arrangements > R

Name	Size	Modified
..		
arrangements.R	465 B	Aug 9, 2018, 2:32 P
combinations.R	5.4 KB	Aug 13, 2018, 10:59
partitions.R	4.8 KB	Aug 13, 2018, 11:22
permutations.R		Aug 13, 2018, 11:13



Introduction to R



**Why do you
want to
learn R?**





Overview

About R

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What is R?

Originally developed in 1993, R is an open-source data-analysis program that has the capability to model, transform, and visualize data.



(Rungta, 2019; The R Foundation, 2021)



Companies that use R for Analytics



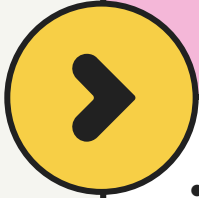


*“R is really important to the point that it’s hard to overvalue it...
It allows statisticians to do very intricate and complicated
analyses without knowing the blood and guts of computing
systems.”*

- Daryl Pregibon, Google Researcher



Benefits of Using R



R is free!

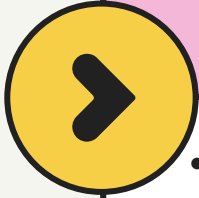
- R currently has over 10,000 packages for performing analysis.
- The program has the ability to handle large and very complex datasets.
- The graphing capabilities are more appealing compared to SPSS or Excel.
- There is a large community of users that can provide troubleshooting advice.

(DataFlair, 2021; Priyadarshini, 2021)



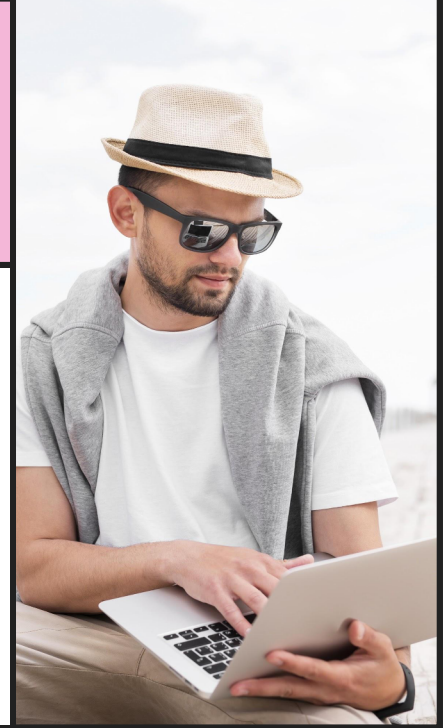


Drawbacks of Using R



- It requires the data to be stored in the memory all in one place.
- Learning R often has a steep learning curve.
 - R is flexible so there are many ways to solve a problem.
- No dedicated programming support.

(DataFlair, 2021; Techvidvan, 2021)





Panes in RStudio

The screenshot shows the RStudio interface with four main panes highlighted by yellow callouts:

- Code Editor:** The top-left pane containing R Markdown code for an R Markdown document.
- Workspace and History:** The top-right pane showing the current environment and history.
- Files, Packages, and Plots:** The bottom-right pane showing a file explorer view of the current project directory.
- R Console:** The bottom-left pane showing the R command prompt output.

```
1 ---
2 title: "Untitled"
3 output: html_document
4 ---
5
6 This is an R Markdown document. Markdown is a simple formatting syntax for
7 authoring HTML, PDF, and MS Word documents. For more details on using R Markdown
8 see <http://rmarkdown.rstudio.com>.
9
10 when you click the knit button a document will be generated that includes both
11 content as well as the output of any embedded R code chunks within the document.
12 You can embed an R code chunk like this:
13
14 ```{r}
15 summary(cars)
16 ```
17
18 You can also embed plots, for example:
19
20 ```{r, echo=FALSE}
21 > |
```

Console C:/Users/john-home/repos/r-intermediate-altmetrics/

```
Copyright (C) 2015 THE R FOUNDATION FOR STATISTICAL COMPUTING
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> |
```

Files	Plots	Packages	Help	Viewer
New Folder	Delete	Rename	More	
C:\Users\john-home\repos\r-intermediate-altmetrics				
01-project-setup.Rmd				7.2 KB Sep 7, 2015, 5:23 PM
01-project-setup.html				3.7 KB Sep 7, 2015, 5:25 PM
02-inspect-file.html				5, 5:25 PM
02-inspect-file.Rmd				5, 5:25 PM
03-rstudio.html				5, 5:25 PM
03-rstudio.Rmd				248 B Sep 7, 2015, 5:25 PM
04-import-data.html				24.2 KB Sep 10, 2015, 11:16 PM
04-import-data.Rmd				17.5 KB Sep 10, 2015, 11:16 PM
05-conditionals.html				12.3 KB Sep 10, 2015, 11:16 PM
05-conditionals.Rmd				6.4 KB Sep 10, 2015, 11:16 PM
06-loops.html				11.8 KB Sep 10, 2015, 11:16 PM
06-loops.Rmd				6.7 KB Sep 10, 2015, 11:16 PM



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psych

Designed for basic descriptive and multivariate analyses.

- T-Tests, Correlation, ANOVA



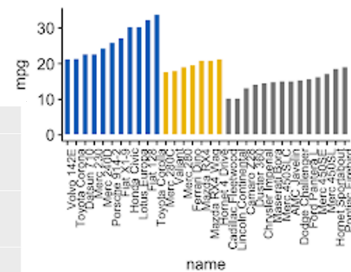
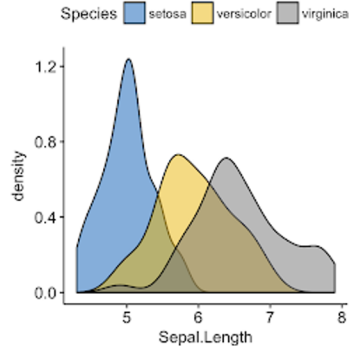
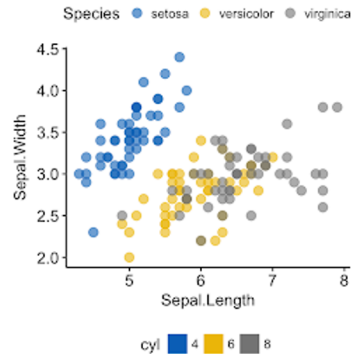
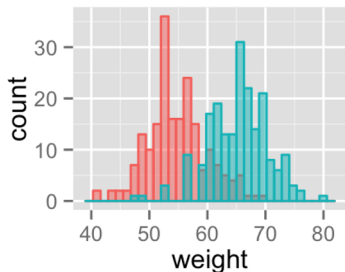
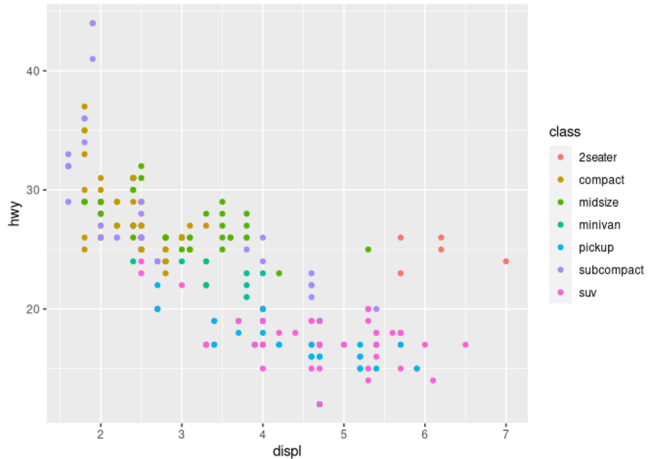
ggplot2

The most popular graphing package in R.

R Packages

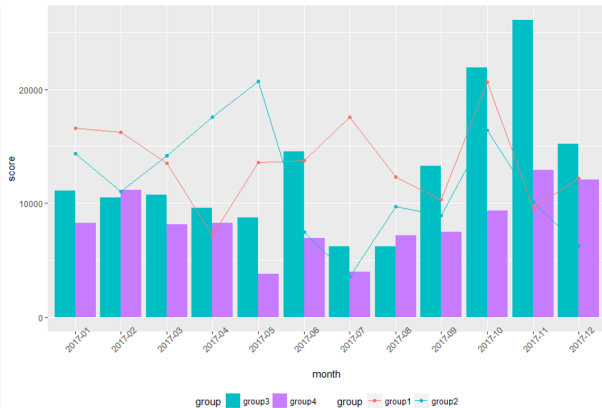
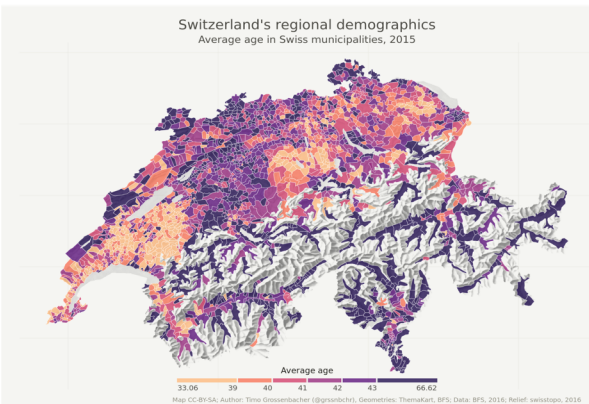


Packages are collections of functions that can be installed in the R program to perform analyses.



Species	length	mean	sd
setosa	50	5.01	0.352
versicolor	50	5.94	0.516
virginica	50	6.59	0.636

iris data set gives the measurements in cm of the variables sepal length and width and petal length and width, respectively, for 50 flowers from each of 3 species of iris. The species are *Iris setosa*, *versicolor*, and *virginica*.



Types of Plots



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Let's Practice

Open RStudio and we will walk through some basic analyses.





Websites

- stackoverflow.com/
- rstudio.cloud/learn/primers
- statmethods.net/stats/index.html
- paulvanderlaken.com/2017/08/10/r-resources-cheatsheets-tutorials-books/



Cheat Sheets

- rstudio.com/resources/cheatsheets/



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Thank You

Do you have any questions?

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samlabasu.com



STATISTICS AND METHODS

SAM LAB

ARIZONA STATE UNIVERSITY