Beginning R

NC State University Libraries

Workspace: https://go.ncsu.edu/beginr

Slides: https://go.ncsu.edu/beginr-slides

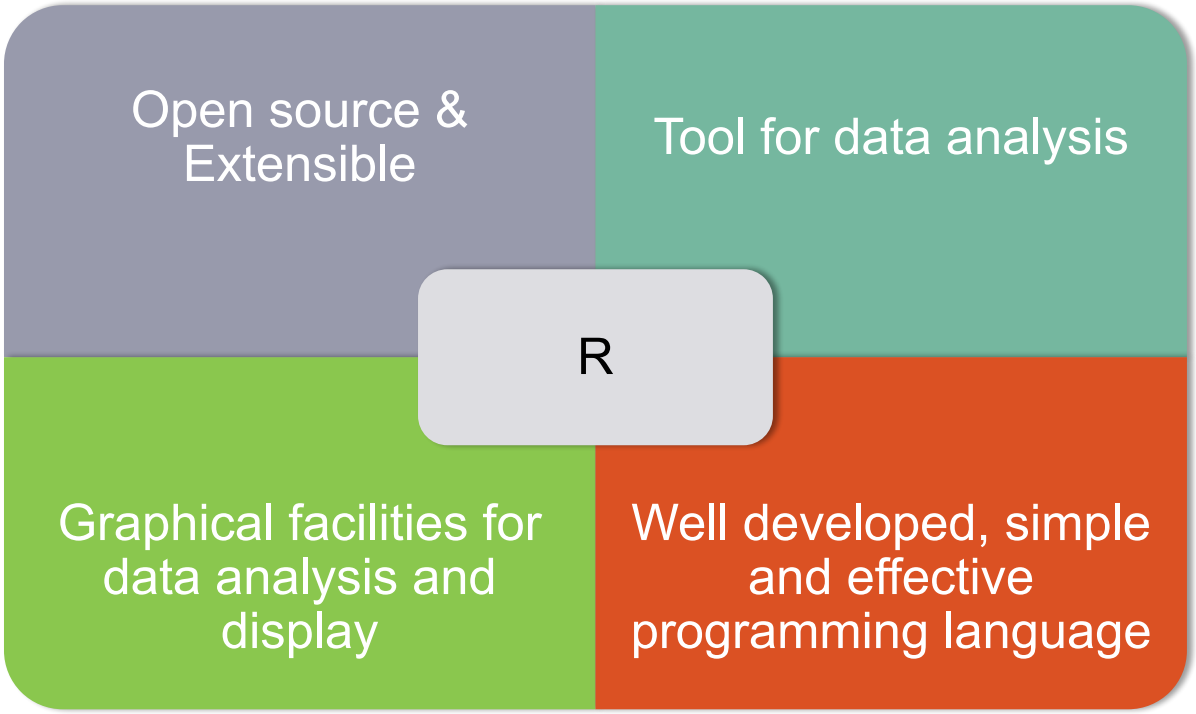
https://www.lib.ncsu.edu/workshops

You will learn the following today:

- use the RStudio interface
- explore & manipulate data
- create basic graphs
- load in an R package
- load in a data file
- do a correlation
- build a linear model
- find additional resources

What is R?

“Free software environment for statistical computing and graphics.” – R-Project [1]



1. **The R Project for Statistical Computing. (n. d.). Retrived from https://www.r-project.org/**

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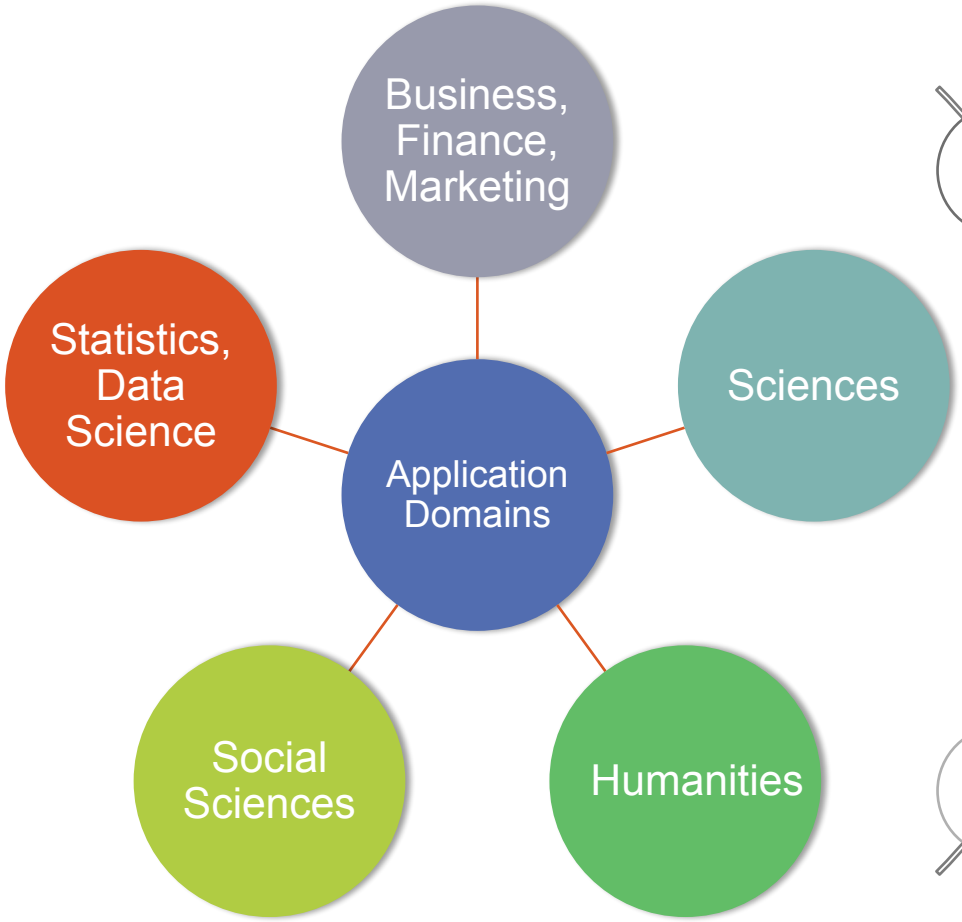
Applications of R



Application Methods

- Data Import
- Data Cleaning
- Investigation
- Data Analysis
- Visualization

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Why Use R?

- Free
- Get data, analyze, visualize and create publication-quality reports all in one tool.
- Over 17,000 packages for a variety of data analysis needs.
- Can write your own packages if necessary and make it available for others to use

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Comparable Software

- **MATLAB** – Programming language with statistical features
- **Mathematica** – A software package with statistical capabilities
- **SAS** – Comprehensive statistical package
- **SPSS (Statistical Package for Social Sciences)** – Comprehensive statistical software
- **Python** - general purpose programming language

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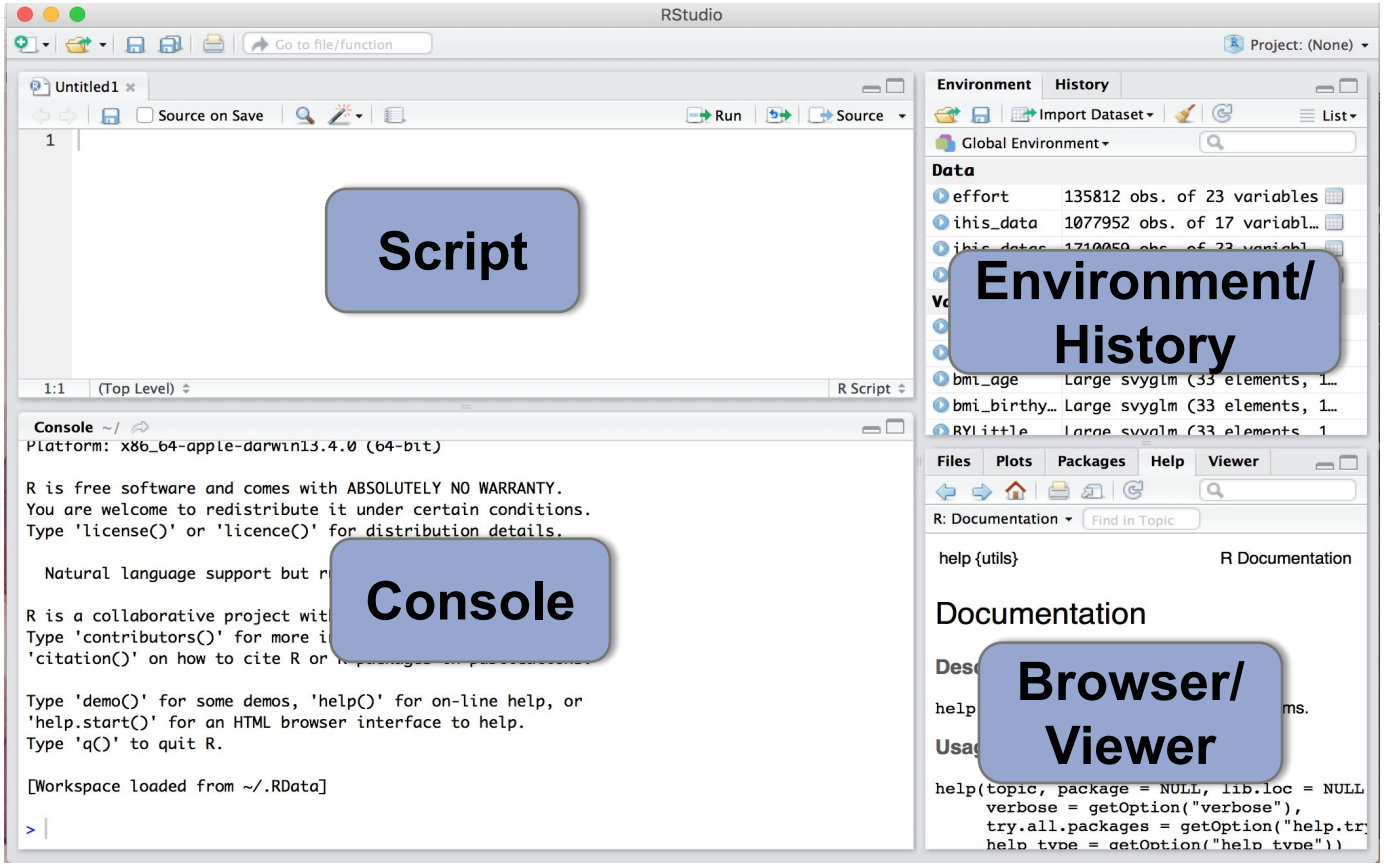
About the software

version 3.6+

Most popular Graphical interface for writing R code

RStudio

A powerful user interface for R that is free, open source and works in all platforms.



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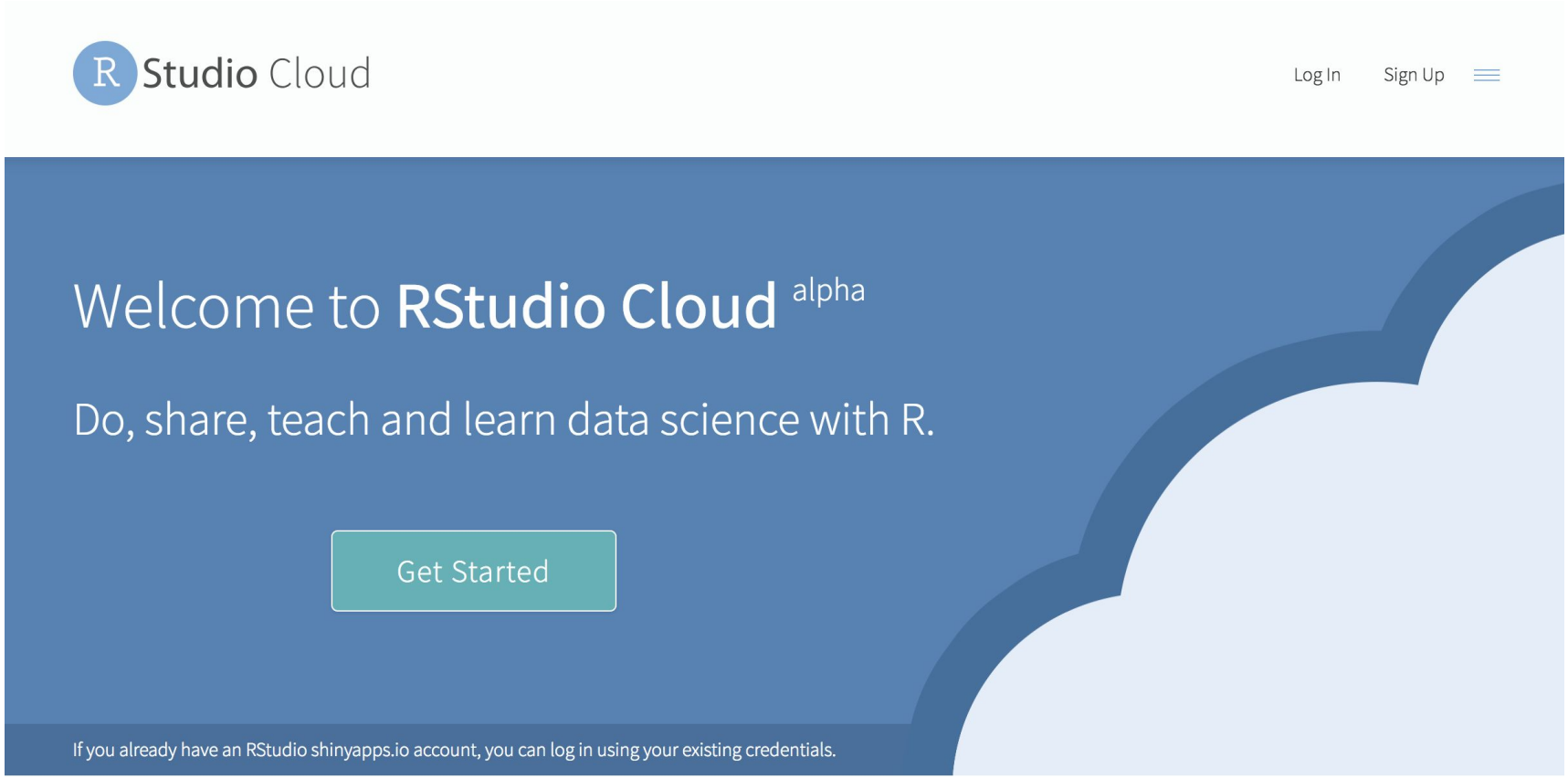
RStudio Cloud: RStudio in the browser



RStudio Cloud: R and RStudio in the Browser, shareable workspaces

You can also download R and RStudio to your computer

1) Download R

- R can be downloaded from http://archive.linux.duke.edu/cran/. It is available for Windows, Linux and Mac.
- After downloading R, open the package and install it.

2) Download R Studio Desktop (Free Version)

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

- Install R Studio following download.

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Packages in R

Packages are libraries of functions that are built to perform some specific tasks, i.e. create plots.

Packages are first installed, then loaded into your current working session.

Find out more about packages at

Rdocumentation.org

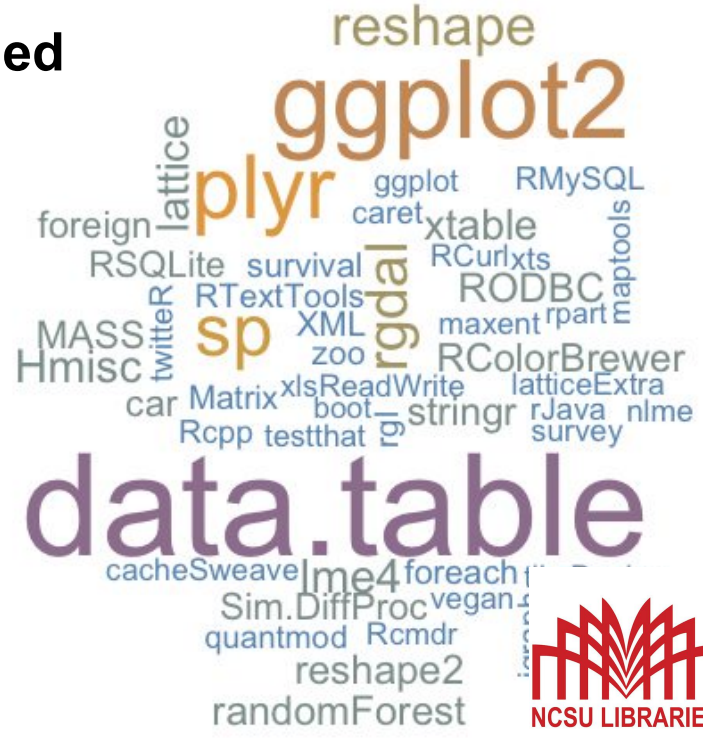

Image from http://bxhorn.com/category/r-packages/

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R Packages we will use

R core packages: base, stats, utils
external R package: readxl

Package info

base: core R functions

https://www.rdocumentation.org/packages/base

stats: statistics functions

https://www.rdocumentation.org/packages/stats

utils: utility functions

https://www.rdocumentation.org/packages/utils

readxl: functions for reading excel files

https://www.rdocumentation.org/packages/readxl

Learning Resources

- A short list of the most useful R commands - http://www.personality-project.org/r/r.commands.html
- R for Data Science (free book) - Wickham and Grolemund (2014). CRC Press.
- Impatient R – Quick tutorial of R basics for the beginners. Link: http://www.burns-stat.com/documents/tutorials/impatient-r/
- R – bloggers – A compiled resource useful articles on R from about 580 blogs. Link: https://www.r-bloggers.com/

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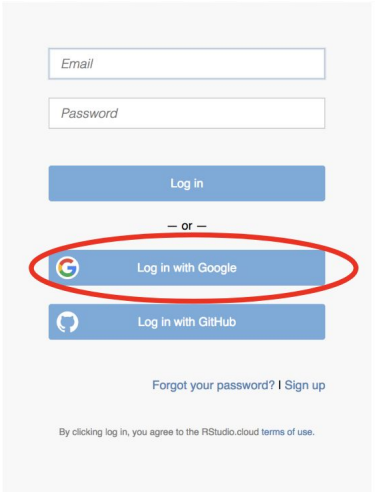
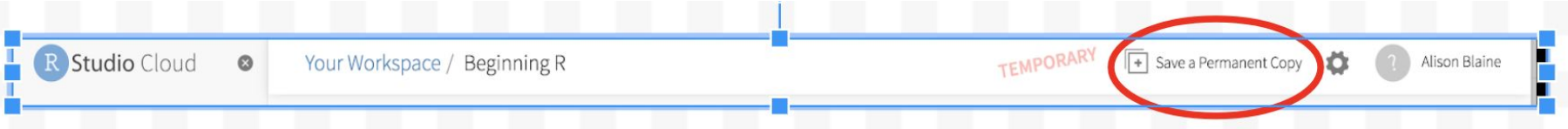
Access the workspace

https://go.ncsu.edu/beginr



Log in with Google



Evaluation

https://go.ncsu.edu/libeval