# R Stats Bootcamp

R language

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# R stats bootcamp - Module 1

Schedule:

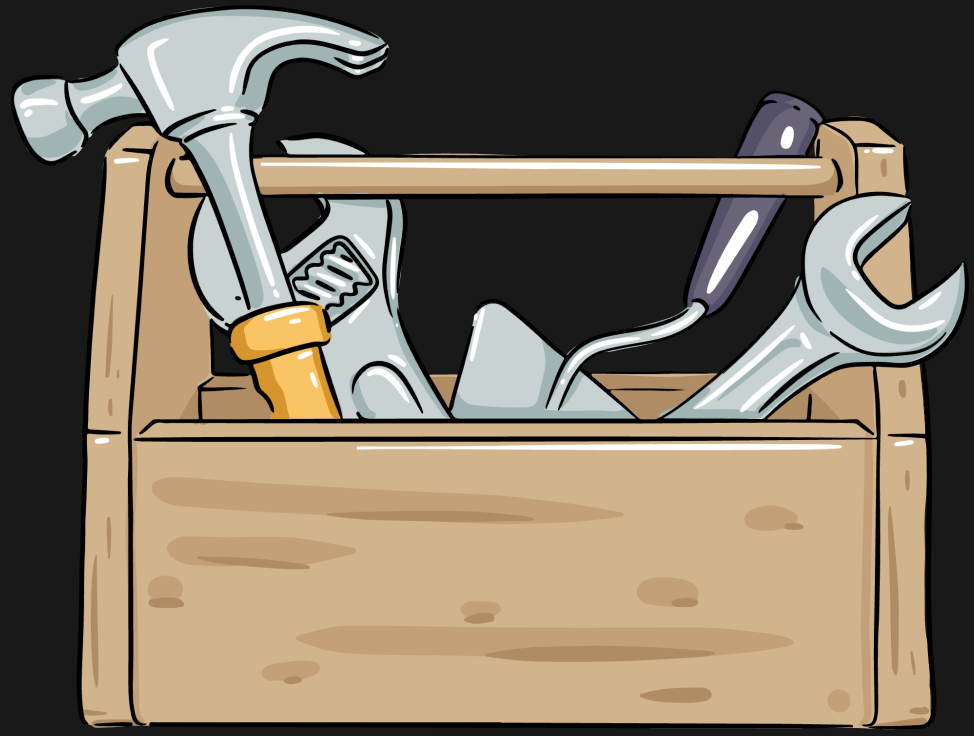
- ~~Session 1: An introduction and script workflow~~
- ~~Session 2: R language~~
- Session 3: R functions
- Session 4: Data objects
- Session 5: Data frames
- Session 6: Data subsetting

# Session 3 objectives:

- Function tour
- Using functions and getting help
- R Packages
- Finding, downloading and using packages
- Practice exercises

# R Functions

- Like tools in a tool box
- R packages are themselves a toolbox



# Function tour

## R Functions

Think of functions in R as tools that do work for you.

- Simple once you get the idea
- Need to consider the use of a function

# What does a function look like?

💡 Generic function

`function_name()`

- `function_name` = the name of the function
- All functions MUST have bracket notation `'()'`

Not the same as…

`Function_name()` or `function_Name()`

# Using R functions

- Need to provide information inside the brackets `'(...)'`
- Commonly referred to as arguments (or parameters)

```
function_name(argument_1 = value_1, argument_2
= value_2, ...)
```

# Using R functions

- You **input** info or data into brackets
- Function **output** is the work being done
- Key points:
  - Each argument has a unique name
  - Argument values assigned using the `'='`
  - Each argument separated by a comma `','`
  - `'...'` means that additional arguments can be used (*optional*)

# Function names

- Functions have names which differentiate functions from one another
  - E.g.,
  - `mean()` = calculates the arithmetic mean
  - `log()` = Calculates the log
  - `sd()` = Calculates standard deviation
  - `plot()` = Draws a plot
  - etc..

# Using functions and help

- So you know what tasks you want to do
- You know what functions can perform those tasks…

DEMO script

# R packages

- R's tool boxes
- Often built to help solve a problem
- All official packages are open source
- Typically only download a package if you need to use some of it's functions

# Finding packages

- Recommendations
- Discover on the web
- Supervisor etc…

# Installing packages

Step 1: install a package

```
help(install.packages) install.packages(pkgs = "package_name")
```

- The package is downloaded from a remote repository
- Often with additional packages that are required for us

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Step 2: load a package

```
library("package_name")
```

# Live challenge

- Write code to install and load “ggplot2” package
- Use `help()` to look at `ggplot()` help page
- What kind of object is required by the “data” argument?

# Using R studio interface

- Several ways of using R Studio interface to install packages
  - Code in script
  - Code in console
  - Tools menu > Install packages…
  - Packages tab in lower left pane

# Practice excerises

HARUG R Stats Bootcamp by Ed Harris