

# R Workshop Module 1: Introduction to R and RStudio

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## Introduction to R

- *Getting Started:* R is a free software environment for statistical computing and graphics and can be downloaded from <http://www.r-project.org/>.
- According to wikipedia.com: “The R language is widely used among statisticians and data miners for developing statistical software and data analysis. Polls and surveys of data miners are showing R’s popularity has increased substantially in recent years.”
- *Advantages of R:* The R language is part of the GNU project which means that
  - the program is freely distributed,
  - the source code is available, and
  - any users can submit code/libraries so that other users can use the methods they have developed
- There are two (related) ways you can use R:
  1. you can simply write commands and use the preloaded functions already included, or
  2. you can write your own functions.
- In either case, it is generally a bad idea to type commands directly into R, since these commands are often hard to track. Also, if a mistake is made in a command, it is hard to find and fix.
- *Instead,* use a text editor to write a script (e.g. filename.R) and either copy and paste the commands into R or use the `source()` function to run the script in R. If you use Windows, editors such as RStudio, tinn-R, Winedt, notepad++ and others exist.

## Introduction to RStudio

- *Getting Started:* RStudio is a free R-editor that can be used along with R. It can be downloaded from <http://www.rstudio.com/>. RStudio can be found under the start menu and the programs tab.
- There are four panels in the main RStudio window.
  1. *Console:* This is the place you can type R commands line-by-line.
  2. *Script Window:* This is where you can type R commands and save them so that you can reproduce or reanalyze your results.
    - To run commands, highlight the code you want to run and press **Ctrl + R** or click “Run” in the upper right hand corner of the panel.
  3. *Workspace/History:* Workspace shows all of the variables currently loaded in RStudio. History gives a list of all of the commands you have typed in this R Session.
  4. *Various Extra Features:* The two tabs I use most often are “Plots,” which shows the current plot from R, and “Help,” which displays the help for a function already built-in to R.

## Help within R

The help files (as well as google) are very useful when learning about functions.

- If you know a function name (for instance, `mean()`) you can use either `help(mean)` or `?mean`.
- If you do not know a function name, search for applicable functions for what you want to do using either `help.search("mean")` or `??mean`.

There are *many* other resources for general help with R.