

# RStudio

Introduction to R for Public Health Researchers

# Working with R

- ▶ The R Console “interprets” whatever you type
  - ▶ Calculator
  - ▶ Creating variables
  - ▶ Applying functions
- ▶ “Analysis” Script + Interactive Exploration
  - ▶ Static copy of what you did (reproducibility)
  - ▶ Try things out interactively, then add to your script

R essentially is a command line with a set of functions loaded

# R Uses Functions, in Packages

- ▶ R revolves around functions
  - ▶ Commands that take input, performs computations, and returns results
  - ▶ When you download R, it has a “base” set of functions/packages (**base R**)
- ▶ Functions are enclosed in packages
  - ▶ These written by R users/developers (like us) - **some are bad**
  - ▶ Think of them as “R Extensions”

# Using Packages

- ▶ You **need to know base R** - answers on Google commonly use it
- ▶ We will show you some newer and **more intuitive** ways to do things, not in base R
- ▶ RStudio (the company) makes a lot of great packages
- ▶ **Hadley Wickham** writes a lot of them (Employee and Developer at RStudio)
  - ▶ One authority on all things R
  - ▶ How to trust an R package: <http://simplystatistics.org/2015/11/06/how-i-decide-when-to-trust-an-r-package/>

# RStudio (the software)

RStudio is an Integrated Development Environment (IDE) for R

- ▶ It helps the user effectively use R.
- ▶ Makes things easier
- ▶ Is NOT dropdown statistical tools (such as Stata)
  - ▶ See Rcmdr or Radiant
- ▶ All snapshots in these slides are taken from <http://ayeimanol-r.net/2013/04/21/289/>

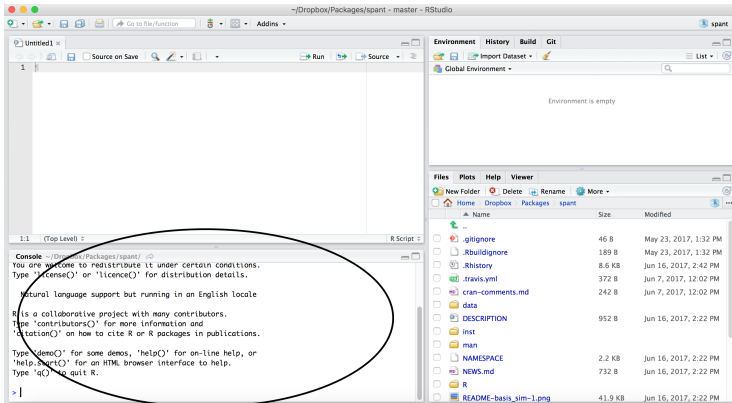
## Easier working with R

- ▶ Syntax highlighting, code completion, and smart indentation
- ▶ Easily manage multiple working directories and projects

## More information

- ▶ Workspace browser and data viewer
- ▶ Plot history, zooming, and flexible image and PDF export
- ▶ Integrated R help and documentation
- ▶ Searchable command history

# RStudio/R Console





# RStudio/R Console

- ▶ Where code is executed (where things happen)
- ▶ You can type here for things interactively
- ▶ Code is **not saved** on your disk

## RStudio Layout

If RStudio doesn't look like this (or our RStudio), then do:

RStudio → Preferences → Pane Layout



General



Code



Appearance



Pane Layout



Packages

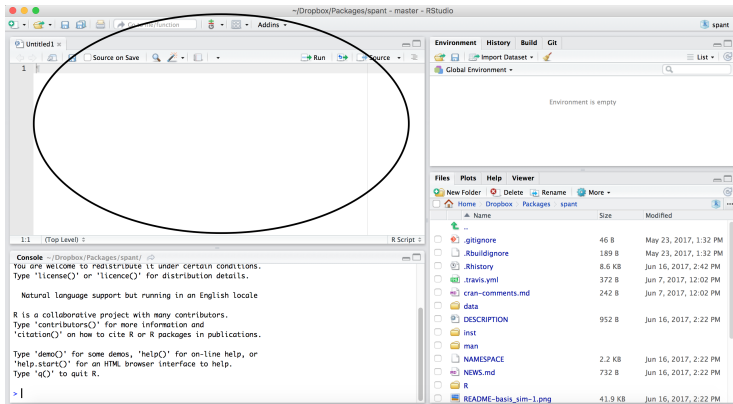
Choose the layout of the panes in RStudio by each quadrant.

Source



Cons

# Source/Editor

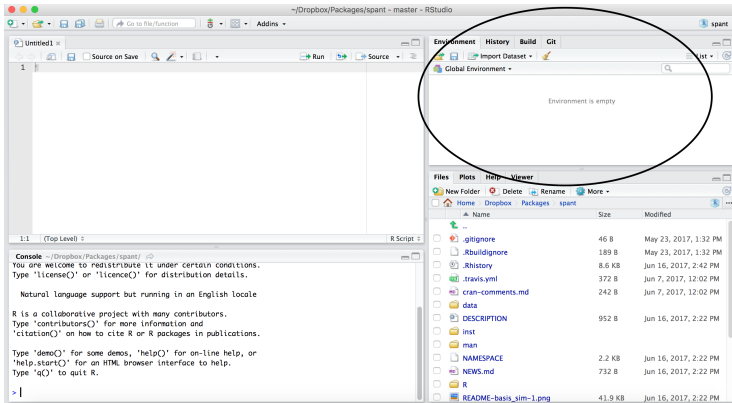


## Source

- ▶ Where files open to
- ▶ Have R code and comments in them
- ▶ Can highlight and press (CMD+Enter (Mac) or Ctrl+Enter (Windows)) to run the code

In a .R file (we call a script), code is saved on your disk

# Workspace/Environment



# Workspace/Environment

- ▶ Tells you what **objects** are in R
- ▶ What exists in memory/what is loaded?/what did I read in?

## History

- ▶ Shows previous commands. Good to look at for debugging, but **don't rely** on it as a script. Make a script!
- ▶ Also type the “up” key in the Console to scroll through previous commands

## Other Panes

- ▶ **Files** - shows the files on your computer of the directory you are working in
- ▶ **Viewer** - can view data or R objects
- ▶ **Help** - shows help of R commands
- ▶ **Plots** - pretty pictures
- ▶ **Packages** - list of R packages that are loaded in memory

# Useful R Studio Shortcuts

- ▶ `Ctrl + Enter` (`Cmd + Enter` on OS X) in your script evaluates that line of code
  - ▶ It's like copying and pasting the code into the console for it to run.
- ▶ `Ctrl+1` takes you to the script page
- ▶ `Ctrl+2` takes you to the console
- ▶ [http://www.rstudio.com/ide/docs/using/keyboard\\_shortcuts](http://www.rstudio.com/ide/docs/using/keyboard_shortcuts)



Website

Website