# 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 (reproducability)
  - 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/`

# RStudio

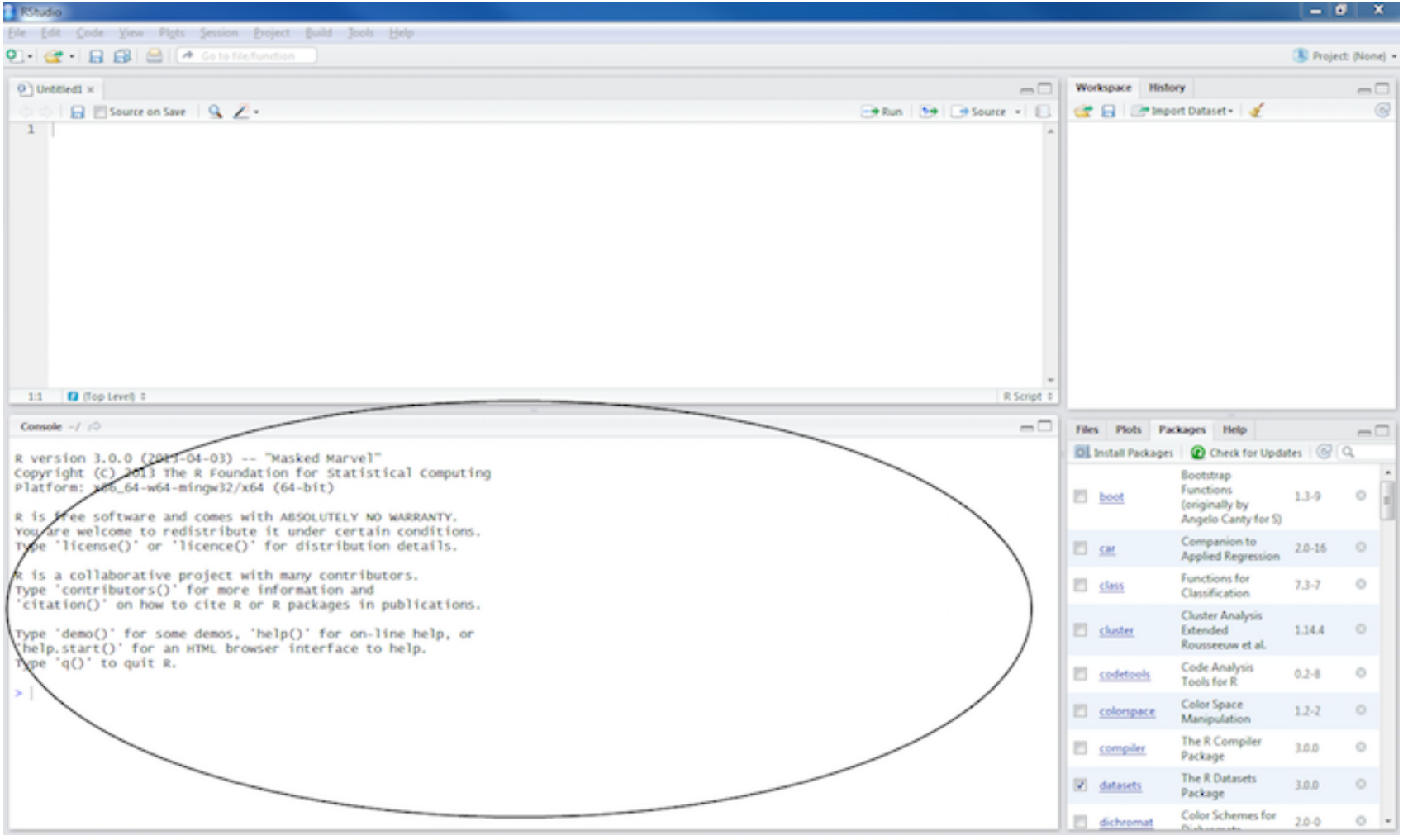
Easier working with R

- 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



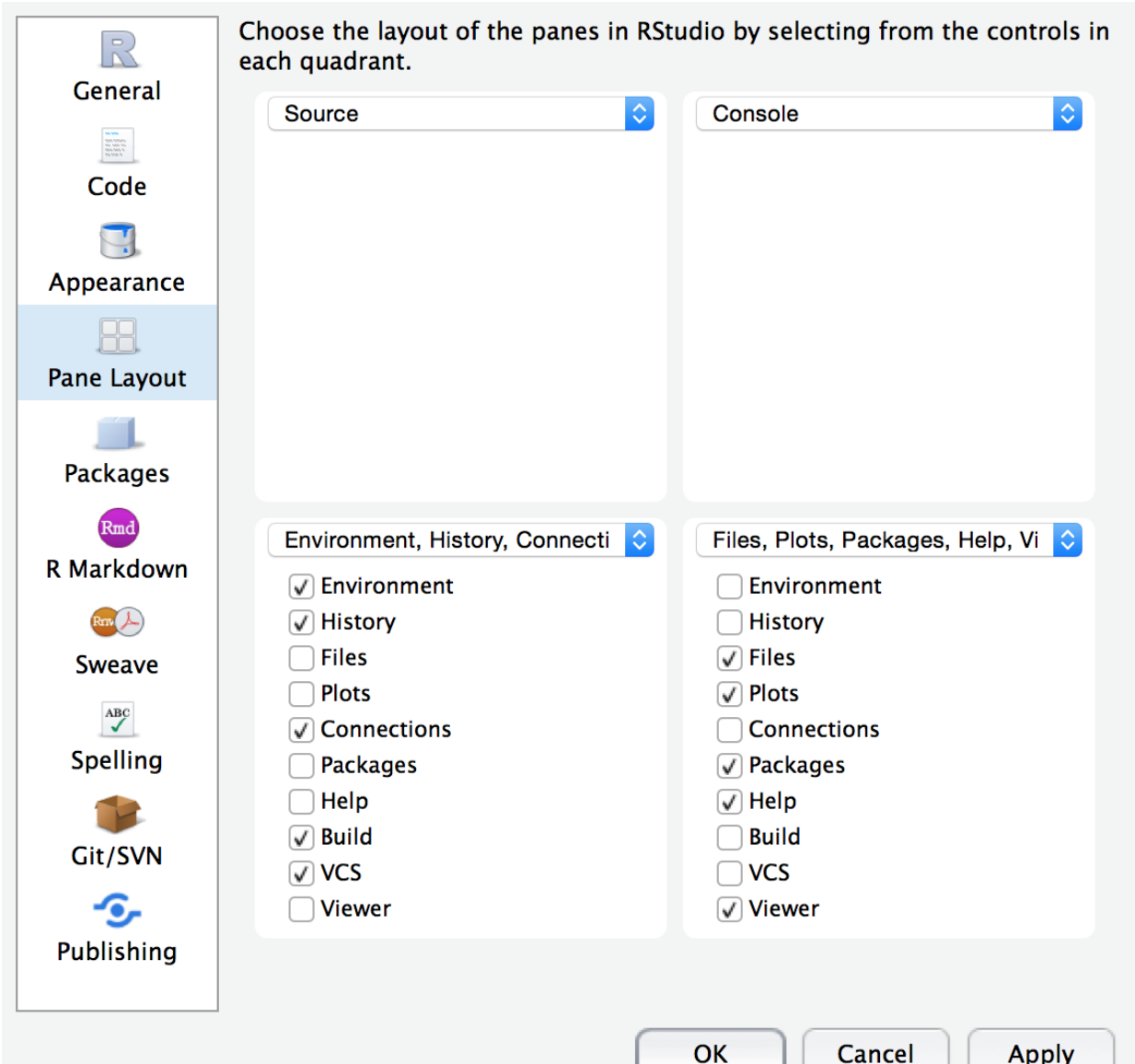
# RStudio/R Console

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

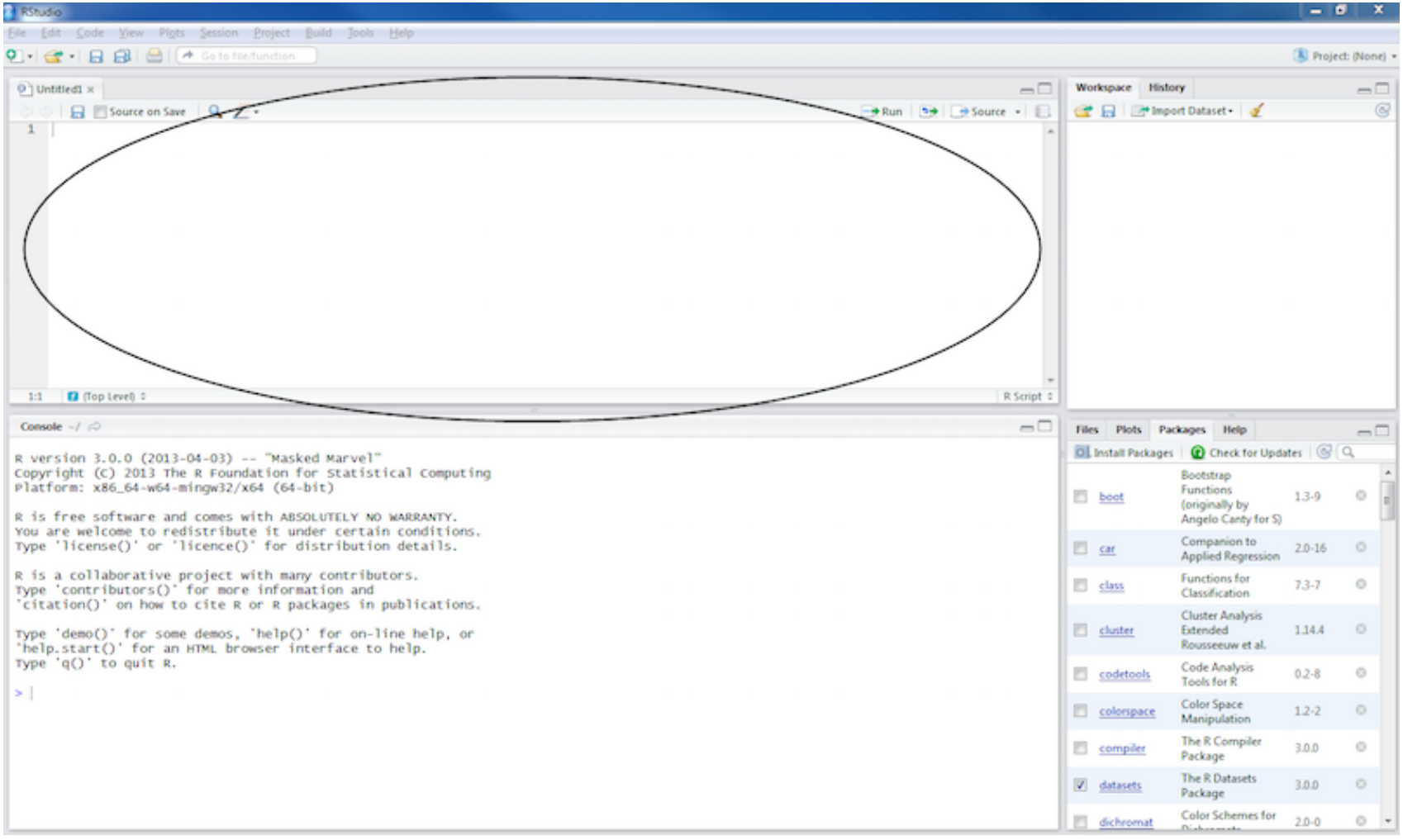
# RStudio Layout

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

RStudio → Preferences → Pane Layout



# Source/Editor

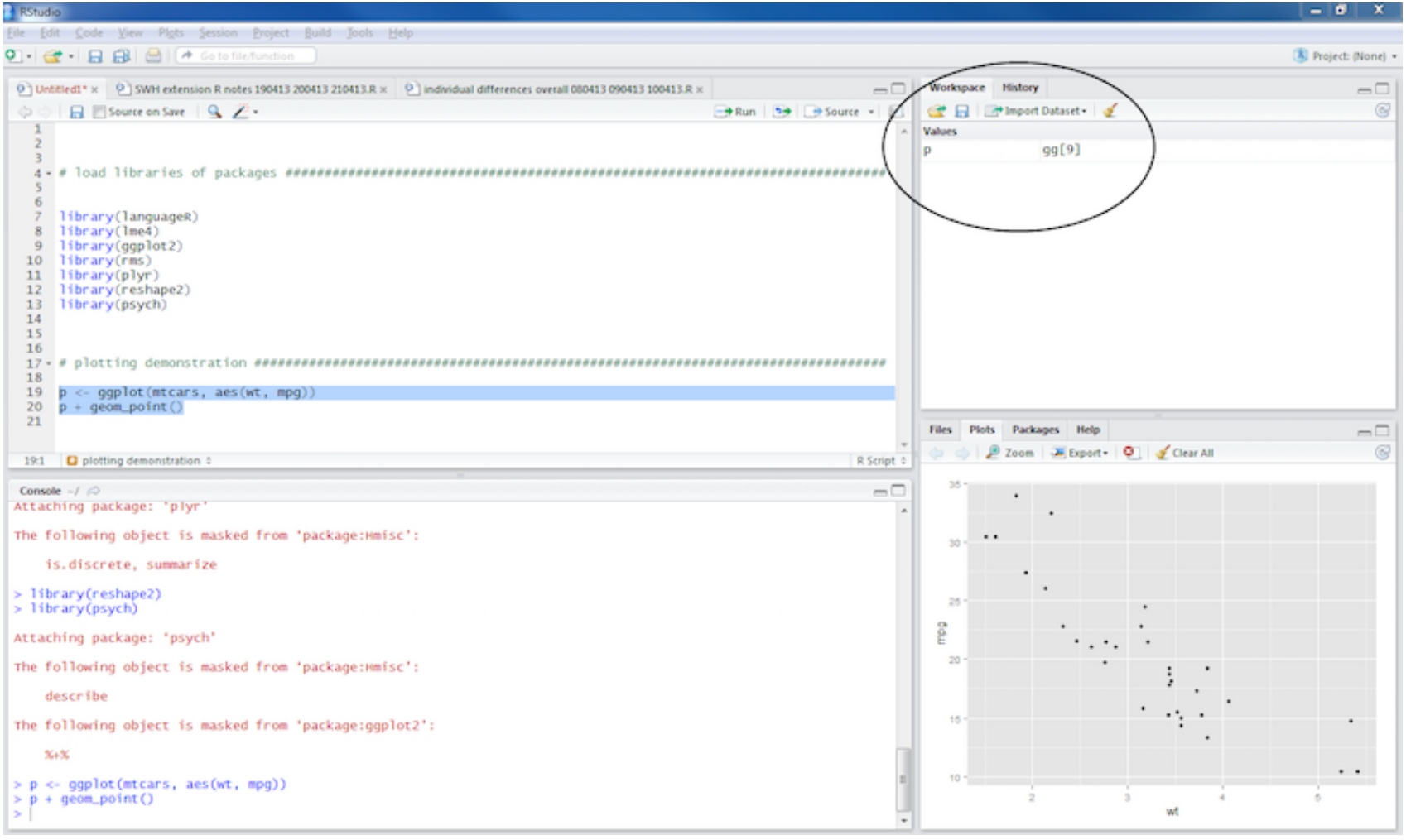


# Source

- 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`