

# RStudio

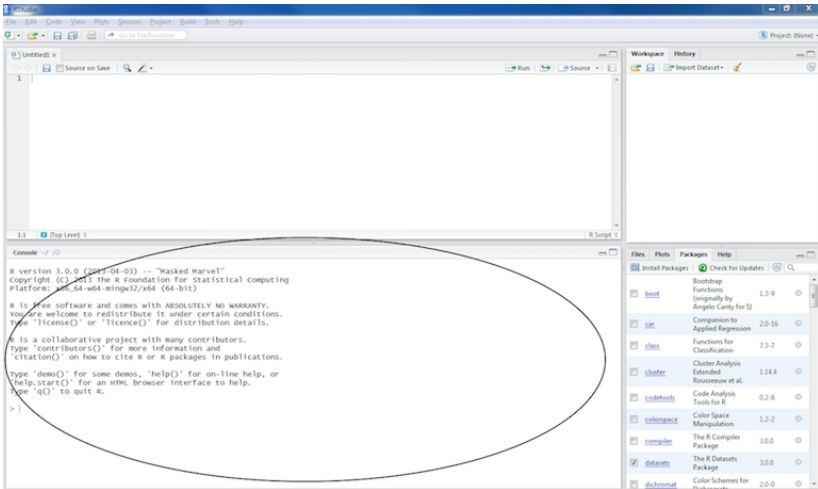
John Muschelli

June 13, 2016

# RStudio

- ▶ “RStudio is an integrated development environment (IDE) for R.”
- ▶ It helps the user use R.
- ▶ R, in essence is just the a console that takes commands from you typing into it
- ▶ Is NOT dropdown statistical tools (such as Stata)
- ▶ Snapshots taken from <http://ayeimanol-r.net/2013/04/21/289/>

# RStudio/R Console



R version 3.0.0 (2017-04-03) -- "Masked Marvel"  
Copyright (C) 2017 The R Foundation for Statistical Computing  
Platform: x86\_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.  
You are welcome to redistribute it under certain conditions.  
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.  
Type 'contributors()' for more information and  
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or  
'help.start()' for an HTML browser interface to help.  
Type 'q()' to quit R.

```
>
```

The screenshot shows the RStudio interface with the R Console window at the bottom. The console displays the standard R startup message. A large black oval is drawn around the text in the console. The top of the window shows the menu bar (File, Edit, Code, View, Plots, Session, Project, Build, Tools, Help) and the toolbar. The right side of the window shows the Workspace and History panes, and the bottom right shows the Files, Plots, Packages, and Help panes. The Packages pane lists several installed packages with their versions and update status.

Package Name	Description	Version	Update Status
boot	Bootstrap Functions (originally by Angelo Canty for S)	1.3-9	○
car	Companion to Applied Regression	2.0-16	○
class	Functions for Classification	7.3-7	○
cluster	Cluster Analysis Extended	1.14.4	○
codetools	Code Analysis Tools for R	0.2-8	○
colorspace	Color Space Manipulation	1.2-2	○
compiler	The R Compiler Package	3.0.0	○
datasets	The R Datasets Package	3.0.0	○
dichromat	Color Schemes for Plots	2.0-0	○

# RStudio/R Console

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

# Script/Editor

The screenshot displays the RStudio interface. The main editor window, titled 'Untitled1', is empty and circled in black. The console window at the bottom shows the R version and license information. The package list on the right includes bootstrap, car, class, cluster, codetools, colspace, compiler, datasets, and dichromat.

```
R version 3.0.0 (2013-04-03) -- "Masked Marvel"  
Copyright (c) 2013 The R Foundation for Statistical Computing  
Platform: x86_64-w64-mingw32/x64 (64-bit)  
  
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R is a collaborative project with many contributors.  
Type 'contributors()' for more information and  
'citation()' on how to cite R or R packages in publications.  
  
Type 'demo()' for some demos, 'help()' for on-line help, or  
'help.start()' for an HTML browser interface to help.  
Type 'q()' to quit R.  
  
> |
```

Package	Description	Version	Update
<a href="#">bootstrap</a>	Bootstrap Functions (originally by Angelo Canty for S)	1.3-9	○
<a href="#">car</a>	Companion to Applied Regression	2.0-16	○
<a href="#">class</a>	Functions for Classification	7.3-7	○
<a href="#">cluster</a>	Cluster Analysis Extended Rousseeuw et al.	1.14.4	○
<a href="#">codetools</a>	Code Analysis Tools for R	0.2-8	○
<a href="#">colspace</a>	Color Space Manipulation	1.2-2	○
<a href="#">compiler</a>	The R Compiler Package	3.0.0	○
<input checked="" type="checkbox"/> <a href="#">datasets</a>	The R Datasets Package	3.0.0	○
<a href="#">dichromat</a>	Color Schemes for Dichromats	2.0-0	○

# RStudio/R Script/Rmarkdown files

- ▶ 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
- ▶ Code is saved on your disk

# Workspace/Environment

The screenshot displays the RStudio interface with the following components:

- Source Editor:** Contains R code for loading packages and plotting. Lines 19 and 20 are highlighted: `p <- ggplot(mtcars, aes(wt, mpg))` and `p + geom_point()`.
- Console:** Shows the execution of the code, including package attachment messages and the final plot command: 

```
Attaching package: 'plyr'
The following object is masked from 'package:hmisc':
  is.discrete, summarize
> library(reshape2)
> library(psych)
Attaching package: 'psych'
The following object is masked from 'package:hmisc':
  describe
The following object is masked from 'package:ggplot2':
  %>%
> p <- ggplot(mtcars, aes(wt, mpg))
> p + geom_point()
>
```
- Workspace/History:** A circled area showing the variable `p` with the value `gg[9]`.
- Plots:** A scatter plot of `mpg` vs `wt` from the `mtcars` dataset, showing a negative correlation.

# Workspace/Environment

## Workspace/Environment

- ▶ Tells you what **objects** are in R
- ▶ What exists in memory

## History

- ▶ Shows previous commands. Good to look at for debugging, but **don't rely** on it as a script. Make a script!



# 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

## Other Panes - packages

- ▶ **Packages** - list of R packages that are loaded in memory
  - ▶ Packages are a set of functions written by R users
  - ▶ We write packages - some are good, some are not so good
- ▶ Think of them as “R Extensions”
- ▶ If they extend R, when you download R from CRAN, we (and others) refer to things as “base R”
  - ▶ We will show you how to do some things in base R, but also show you some newer (and more intuitive) ways to do things
  - ▶ You need base R, however, because when you Google for answers, they are commonly answered without any additional packages.

# Hadey Wickham

- ▶ Previous Assistant Professor of Statistics at Rice University
- ▶ Writes many R packages
- ▶ One authority on all things R
- ▶ Employee and Developer at RStudio
- ▶ I (John) trust almost all his packages
  - ▶ How to trust an R package:  
<http://simplystatistics.org/2015/11/06/how-i-decide-when-to-trust-an-r-package/>