

# RStudio

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# 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

The screenshot shows the RStudio interface with the R Console window active. The console displays the following text:

```
R version 3.0.0 (2015-04-03) -- "Masked Marvel"  
Copyright (C) 2015 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.  
  
> |
```

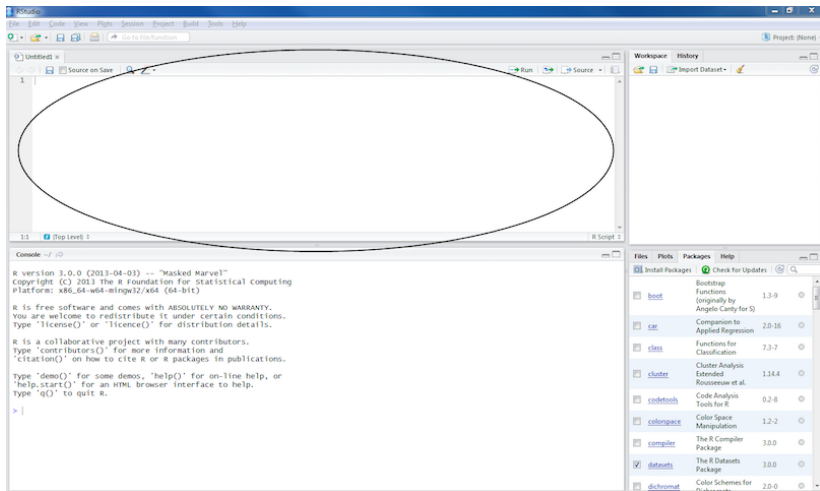
A large black oval is drawn around the console text. The right sidebar shows the 'Workspace' and 'History' tabs, and the 'Files', 'Plots', 'Packages', and 'Help' tabs. The 'Packages' tab is selected, showing a list of installed and available packages.

Package	Version	Update
boot	1.3-9	○
car	2.0-16	○
class	7.3-7	○
cluster	1.14.4	○
codetools	0.2-8	○
colorspace	1.2-2	○
compiler	3.0.0	○
datasets	3.0.0	○
dichromat	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



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> |

Workspace History

Files Plots Packages Help

Install Packages Check for Updates

Package	Description	Version	Update
<a href="#">boot</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	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 three main panels:

- Source Editor:** Contains R code for loading packages and creating a scatter plot. Lines 19 and 20 are highlighted in blue.
- Console:** Shows the execution of the code, including package attachment messages and the final plot command.
- Plots Panel:** Displays a scatter plot of mpg vs wt.

**Source Editor Code:**

```
1  
2  
3  
4 # load libraries of packages #####  
5  
6  
7 library(languageR)  
8 library(lme4)  
9 library(ggplot2)  
10 library(rms)  
11 library(plyr)  
12 library(reshape2)  
13 library(psych)  
14  
15  
16  
17 # plotting demonstration #####  
18  
19 p <- ggplot(mtcars, aes(wt, mpg))  
20 p + geom_point()  
21
```

**Console Output:**

```
Console ~/  
Attaching package: 'plyr'  
The following object is masked from 'package:rmisc':  
  is.discrete, summarize  
> library(reshape2)  
> library(psych)  
Attaching package: 'psych'  
The following object is masked from 'package:rmisc':  
  describe  
The following object is masked from 'package:ggplot2':  
  %>%  
> p <- ggplot(mtcars, aes(wt, mpg))  
> p + geom_point()  
>
```

**Workspace/History Panel:** A circle highlights the 'Values' section, showing the variable 'p' with the value 'gg[9]'.

**Plots Panel:** A scatter plot showing the relationship between weight (wt) on the x-axis and miles per gallon (mpg) on the y-axis. The plot shows a negative correlation, with mpg values ranging from approximately 10 to 35 and wt values ranging from 2 to 5.5.

# 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/](http://simplystatistics.org/2015/11/06/how-i-decide-when-to-trust-an-r-package/)