

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 R startup message, which includes the version number (3.0.0), copyright information, and instructions on how to use R. A large black oval is drawn around the console text. To the right of the console, the 'Packages' pane is visible, showing a list of installed R packages with their names, descriptions, and versions.

```
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.

>
```

Package Name	Description	Version
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 shows the RStudio interface with the following components:

- Script Editor:** A large empty text area for writing R code, circled in black.
- Console:** Displays the R version and license information:

```
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)  
  
R is free software and comes with ABSOLUTELY NO WARRANTY.  
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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 List:** A list of installed and available packages:

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

- 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:** Shows the environment with a variable `p` of type `gg[9]`. This pane is circled in red.
- Plots:** Displays a scatter plot of `mpg` vs `wt` from the `mtcars` dataset.

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/)