

PLSC 503: “Multivariate Analysis for Political Research”

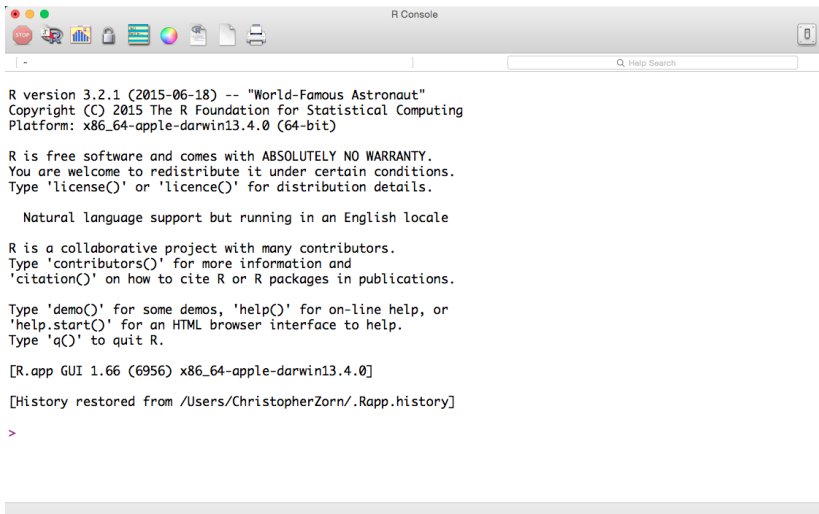
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An Introduction To R

- Preferred: R + RStudio
- Also viable: Stata
- Highly discouraged: SAS, SPSS/PSPP, etc.

Accessing RStudio

- Simplest: Install and run R + RStudio locally
- Also viable:
 1. Go read this:
<http://clc.its.psu.edu/RemoteAccess/LinuxCluster/access>
 2. Install software as needed ([X/cygwin](#) for Windows, [X11/XQuartz](#) for OS-X)
 3. Start up the X-window software, and open a session to `lxcluster.tlt.psu.edu`
 4. When logged in, type "rstudio" at the command prompt
- Harder:
 1. Secure an account on [Hammer](#)
 2. Install the [ExceedonDemand client](#)
 3. Run Rstudio in the EoD client window



```
R version 3.2.1 (2015-06-18) -- "World-Famous Astronaut"
Copyright (C) 2015 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin13.4.0 (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.

Natural language support but running in an English locale

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.

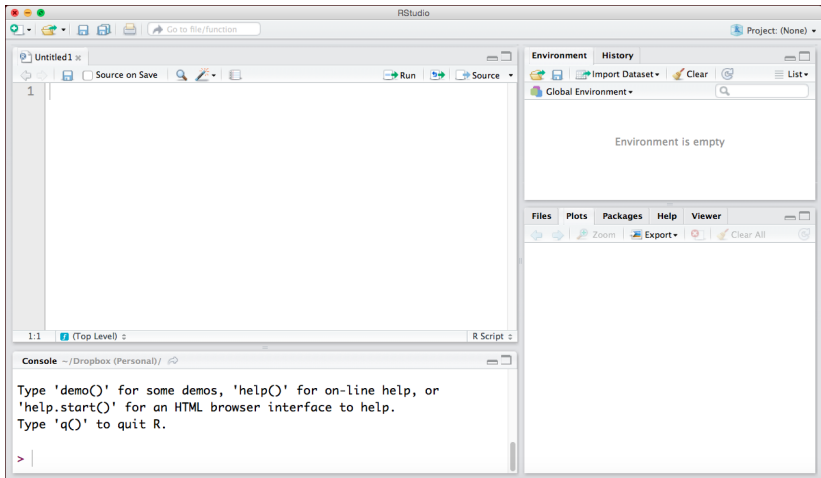
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[R.app GUI 1.66 (6956) x86_64-apple-darwin13.4.0]

[History restored from /Users/ChristopherZorn/.Rapp.history]

>
```

RStudio



RStudio (annotated)

Source window: This is the "Source" window.

- It's the place where you'll type the code that will then be sent to R.
- It's basically a text editor. You can open text files of any kind here if you want.
- Files that appear here end in (and should be saved with) the extension ".R" (as in "MyCode.R").

You'll spend most of your time working here.

Run button: Highlight text in the Source window, then click this button to "run" the code.

Environment window: This is the "Environment" window. It is where you can find all the various "objects" that you create, grouped by object type (data frames, lists, graphs, etc.). Environment is empty.

There's also a "History" tab above; switching to that will show what has transpired in the Console window recently.

Files, Plots, Packages, Help, Viewer: This is a window that shows various other things. Those things are tabbed above ^ and include:

- Plots (graphs) that you have created
- Packages that are loaded
- Help results (obtained by typing "?XXX" in the Console window, e.g. "?table").

Console window: This is the "working directory." Anything you save will be saved here, unless you tell the program to save it somewhere else.

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.

This is the "Console." When you run the code in the Source window, the results that aren't graphics appear here.

Inside the Source Window

This:

```
> table(df$X)
```

... means “Type the phrase ‘table(df\$X)’ on the command line,” or – equivalently – “Type the phrase ‘table(df\$X)’ into your Source code, and then run it.”

Inside the Source Window

More often, you'll see:

```
with(df, plot(Y~X,pch=19,col="red")) # draw a scatterplot  
abline(h=0,lty=2) # add a horizontal line at zero  
abline(v=0,lty=2) # add a vertical line at zero  
text(df$X,df$Y,labels=df$names,pos=1) # add labels
```

... which means “Put this block of text into your Source code, and then run it.”

Note:

- R / RStudio ignores line breaks
- Anything to the right of a “#” is a comment

Examples...

(see `PLSC503-2017-R-Intro.R`)

Help For Learning R(Studio)

In rough order of preference:

- Quick-R (<http://www.statmethods.net/>)
- The “[Level-Zero](#)” R Tutorial (doesn’t integrate RStudio, but is otherwise very good)
- [Statistics with R](#)
- The [Do It Yourself Introduction to R](#)
- Also be sure to consult the PLSC 503 “[Useful R Resources](#)” guide (under “Resources” on GitHub).