

# OSU Text Workshop

## Introduction to R

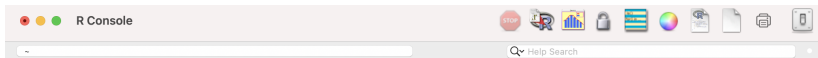
More Materials: <https://github.com/PrisonRodeo/OSU-Text>

January 7, 2023

- R
  - “R is a free software environment for statistical computing and graphics.”
  - The R Project: <https://www.r-project.org/>
  - Comprehensive R Archive Network (CRAN):  
<https://cran.r-project.org/>
- RStudio / “Posit”
  - A free, open-source GUI for R
  - Website: <https://posit.co/>
  - Also available in the Cloud (<https://posit.cloud/>)

## R:

- Is an **object-oriented** language
- Is made up of:
  - Objects
  - Functions
  - Classes (of objects and functions)
- Is **Turing complete**
- Is **modular**
  - User-created **packages**
  - Organized into **task views**  
(<https://cran.r-project.org/web/views/>)
- Runs on UNIX/Linux/OS-X/Windows



R version 4.2.2 (2022-10-31) -- "Innocent and Trusting"  
Copyright (C) 2022 The R Foundation for Statistical Computing  
Platform: aarch64-apple-darwin20 (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

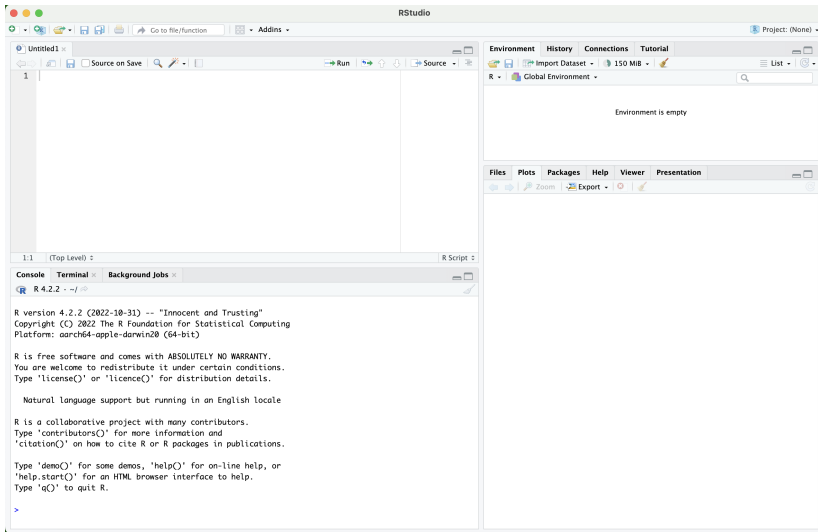
R is a collaborative project with many contributors.  
Type 'contributors()' for more information and  
'citation()' on how to cite R or R packages in publications.

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 1.79 (8160) aarch64-apple-darwin20]

[History restored from /Users/cuz10/.Rapp.history]

>



# RStudio (annotated)

The screenshot shows the RStudio interface with several annotations:

- Source window:** The top-left pane. Annotations include:
  - A red circle around the "Source on Save" button with the text: "Click here to save your source code. Save often!"
  - A red circle around the "Run" button with the text: "Highlight text in the Source window, then click this button to 'run' the code."
  - Text inside the 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").
  - Text below the window: "You'll spend most of your time working here."
- Environment window:** The top-right pane. Annotations include:
  - Text inside: "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"
  - Text below: "There's also a 'History' tab above; switching to that will show what has transpired in the Console window recently."
- Files window:** The bottom-left pane. Annotations include:
  - Text above: "This is the 'working directory.' Anything you save will be saved here, unless you tell the program to save it somewhere else."
  - Text inside: "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."
  - Text below: "This is the 'Console.' When you run the code in the Source window, the results that aren't graphics appear here."
- Plots, Packages, Help, and Viewer windows:** The bottom-right pane. Annotations include:
  - Text above: "This is a window that shows various other things. Those things are tabbed above ^ and include:"
  - List of items:
    - Plots (graphs) that you have created
    - Packages that are loaded
    - Help results (obtained by typing "?XXX" in the Console window, e.g. "?table").

# How Do I Get Started?

If you've never used R / RStudio, a good demo / tutorial is:

<https://learnr-examples.shinyapps.io/ex-setup-r/>

(Note that you should skip / ignore the advice about the “tidyverse.”)

Some other good tutorials are available at the [learnr site](#).

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.”



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

Very basic R examples...

(see the file named `OSU-2023-R-Intro.R` in the Code folder  
in the [workshop github repository](#))

# 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
- “Learn R” on W3Schools
- Also be sure to consult the “Useful R Resources” guide (available on the [workshop github repository](#))