

R Studio Overview

R Refresher

July 17, 2018

Matt Carson

Head, Digital Systems Department
Galter Health Sciences Library

Basic Questions

- What is R Studio?
 - An Integrated Development Environment (IDE) for the R programming language
- Why use it?
 - Full feature text editor
 - Easier to manage projects with many scripts
 - Easier access to files and directories on your computer
 - Easier to manage graphics
 - It's free and open-source

Main Components

- R Studio has four basic windows, or “panes”
 - Console
 - Source
 - Environment
 - Files
- Min/max with arrows or with the min/max buttons on the top right
- To change pane preferences...



Tools → Global Options → Pane Layout

Mac vs PC Keys in Shortcuts

Command Key (Mac) = Control Key (PC)

Option Key (Mac) = Alt Key (PC)

Console Pane

- Where you type code
- In the lower left corner by default
- Useful features
 -  scrolls through recent commands
 - Start typing a command, then...
 - Press **tab** for a list of available functions, variables, and data sets
 - To change behavior go to **tools** → **global options** → **code** → **completion**
 - **Command** +  to choose matching commands
 - Clear contents by typing **Control + L**

Source Pane

- Launched when you open file
 - New: **File → New File → R Script**
 - Existing: **File → Open File**
 - Recent: **File → Recent File**
- To save...
 - **File → Save**
 - **File → Save As**

Source Pane (cont.)

- **Tab completion** also works here
- R Studio applies **syntax highlighting** based on the file extension (.r, .py, .cpp, etc.)
- To modify font and font size: **Tools → Global Options → Appearance**

Running Code in the Source Pane

- Highlight code and...
 - **Command + Enter**
 - Click the **Run** button
- If you want to run the entire R script...
 - **Command + SHIFT + S**
 - Click the **Source** button
 - **Source with Echo** will print all output (versus only print statements)

Environment Pane

- A record of R session activity
- Two main tabs:
 - Environment (keeps track of all objects)
 - History (keeps track of all commands)
- All variables show up here
- There is a **global environment** as well as **package environments**

Environment Pane (cont.)

- You can save objects in an **.rdata file** by clicking the **Save** icon
- Load an **.rdata file** by clicking the **Folder** icon
- You can view as a **list** or **grid**
 - Use the grid view to delete individual objects
- **Import Dataset** will let you import through the R Studio GUI
- **Delete** all object with the **Broom** icon

The View() Funtion

- A data viewer for data frames, lists, and matrices
- Two ways to access:
 - `View(data_object)`
 - Click the name of the object in the **Environment** window
- Pop out using **Show in new window** button
- Lots of options for sorting and filtering within the view

Environment Pane (History Tab)

- Keeps track of all commands run in the session
- You can save your history in a **.rhistory file** by clicking the **Save** icon
- Load an **.rhistory file** by clicking the **Folder** icon
- **Delete** all history with the **Broom** icon
- **Highlight** a command and click the **X-file** icon to delete it

Environment Pane (History Tab)

- Run a command again by **highlighting** it and...
 - Pressing **Enter**
 - or
 - Clicking the **To Console** icon
- Copy a command to the source pane by **highlighting** it and...
 - Pressing **Shift + Enter**
 - or
 - Clicking the **To Source** icon

Files Pane

- Contains five tabs
 - Files
 - Plots
 - Packages
 - Help
 - Viewer

Files Tab

- Shows contents of your current working directory
- Open, create, rename and delete files
- Set a new working directory by clicking **More** and selecting **Set As Working Directory**
- Other ways to set the working directory:
 - `setwd (path)`
 - **Session → Set Working Directory (MAC)**
 - **Tools → Change Working Directory (PC)**

Plots Tab

- Displays results from R's plotting functions (**plot**, **hist**, **ggplot**, **xyplot**)
- Navigate using **Arrow** buttons
- Open in a new window with the **Zoom** button
- Use the **Broom** icon to delete all contents
- Use **Export** to save the plot in one of several formats (.png, .jpeg, .tiff, .bmp, .svg, .eps)

Packages Tab

- Shows all packages in both current session (checked) and in R generally
- To add a package to your session by...
 - Typing **library(library_name)** in the console
 - Checking the box (R will execute the library() function)
- To delete a package...
 - Uncheck the box and R will execute the 'detach' function
 - Uncheck the box next to the name

Help Tab

- Search for objects in the help tab search box
- Other ways to get help:
 - **help(function_name)**
 - **?function_name**
 - Highlight object in source or console pane and click F1.

NOTE: *the package containing the object must be loaded in your R session for R to know about it and find the help docs*

- The tool bar has several options, including a search box for searching within help docs

Viewer Tab

- Similar to the plots tab, but displays HTML content (RMarkdown, shiny, HTML widgets w/ JavaScript, etc.)
- Will not be covered in this session



Coding in the Source Pane

- As you write your code in the source pane, diagnostics will add warning (⚠️) and error (❌) symbols in the margin
- There are many keyboard shortcuts
 - To see a complete list: **Option + Shift + K**
 - Press **Esc** to close

Code Snippets

- R Studio has several code snippets that will save you time
 - Type **fun** to see the function template
 - Type **lib** to see the library call template
- To see all code snippets or add your own: **Tools → Global Options → Code → Edit Snippets**
- There are common snippets for several languages

Other Useful Features

- Multiple Cursors
 - **Control + Option** and either  or  (or click on the line you want the extra cursor(s))
 - After this, anything you type will appear on all cursor lines
- Navigating and searching code:
 - Go to line: **Command + Shift + Option + G**
 - Search with regex: **Command + f**

Other Useful Features (cont.)

- Code folding
 - Braces and paired symbols cause small arrows to show in the margin
 - You can click these to collapse or expand code blocks (e.g., functions)
 - Close all folds: **Command + Option + o**
 - Open all folds: **Command + Shift + Option + O**
- Jump to matching braces: **Control + p**
- Drag tabs to reorder files in the source pane

R Studio Projects

- Using R Studio Projects has several advantages
 - Easy to import files
 - Reproducibility
 - Easier to collaborate with colleagues
 - Environment and history are saved
 - Source pane remembers which files were open
- Working directory is automatically set when you create a new project
- **File → New Project** or click the **Project** icon