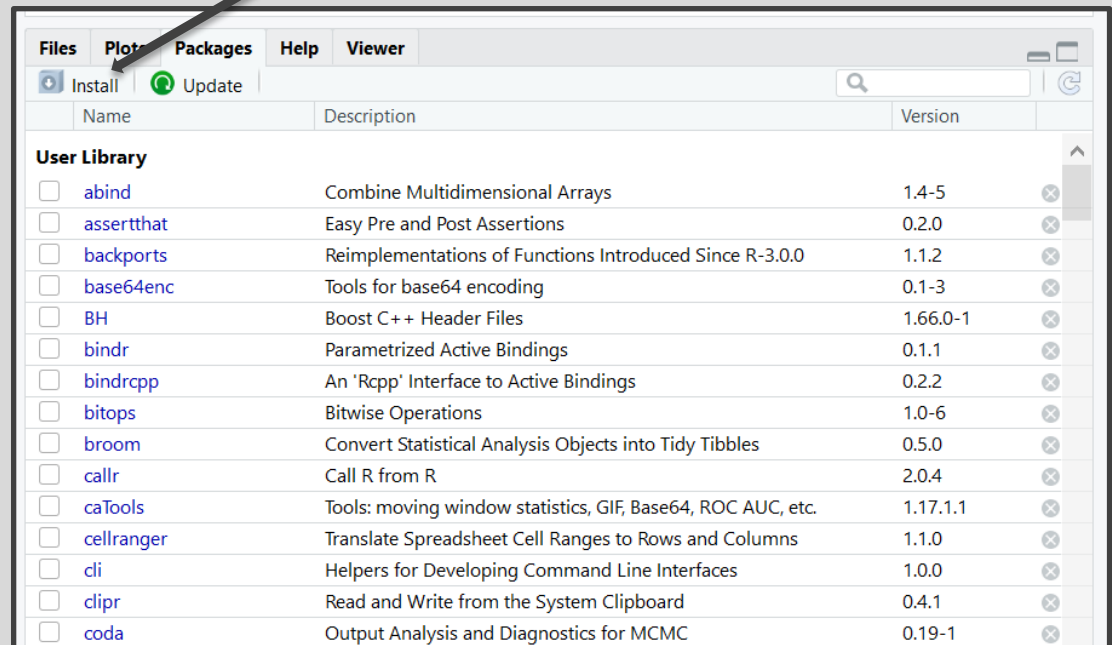Data Visualization

Why are We Here?

- To Develop a Personal and Intimate Relationship With R

- To Install Some Key R Packages
  - Tidyverse
  - Rmarkdown

- To Practice Coding via R Scripts

- To Learn Elements of ggplot2

- Practice Making Visually Stunning Pictures that Change Lives

Initial Steps in RStudio

- Install Tidyverse Package

  `> install.packages("tidyverse")`

- Other Packages To Be Installed
  - RColorBrewer
  - Rmarkdown

Select Install and Search on CRAN
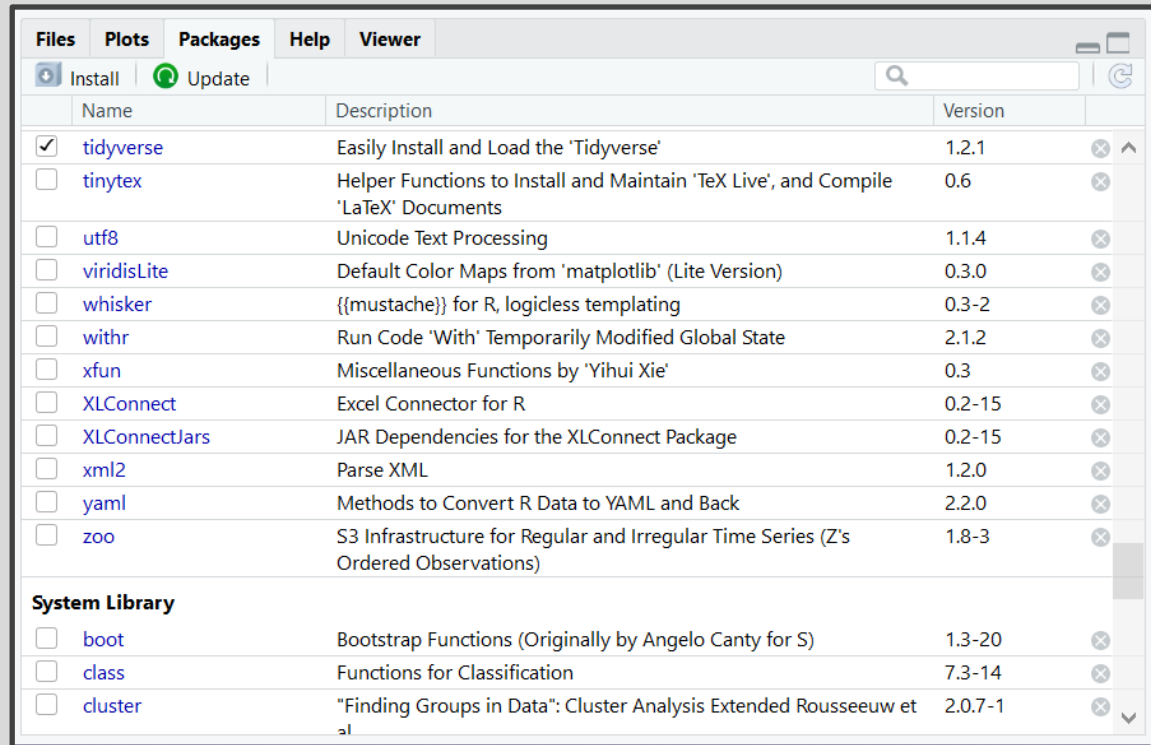

	Name	Description	Version	
	Files **Plots** **Packages** **Help** **Viewer**			
	⊕ Install 🔄 Update			
	Name	Description	Version	
	User Library			
☐	abind	Combine Multidimensional Arrays	1.4-5	⊗
☐	assertthat	Easy Pre and Post Assertions	0.2.0	⊗
☐	backports	Reimplementations of Functions Introduced Since R-3.0.0	1.1.2	⊗
☐	base64enc	Tools for base64 encoding	0.1-3	⊗
☐	BH	Boost C++ Header Files	1.66.0-1	⊗
☐	bindr	Parametrized Active Bindings	0.1.1	⊗
☐	bindrcpp	An 'Rcpp' Interface to Active Bindings	0.2.2	⊗
☐	bitops	Bitwise Operations	1.0-6	⊗
☐	broom	Convert Statistical Analysis Objects into Tidy Tibbles	0.5.0	⊗
☐	callr	Call R from R	2.0.4	⊗
☐	caTools	Tools: moving window statistics, GIF, Base64, ROC AUC, etc.	1.17.1.1	⊗
☐	cellranger	Translate Spreadsheet Cell Ranges to Rows and Columns	1.1.0	⊗
☐	cli	Helpers for Developing Command Line Interfaces	1.0.0	⊗
☐	clipr	Read and Write from the System Clipboard	0.4.1	⊗
☐	coda	Output Analysis and Diagnostics for MCMC	0.19-1	⊗

Initial Steps in RStudio

- To Use the Package
  - Code

  > library("tidyverse")

  - Check Box for Tidyverse

ggplot2

- Help Page: [Link](#)

- Comes with Preloaded Datasets

ggplot2 *part of the tidyverse*   Reference

Data

ggplot2 comes with a selection of built-in datasets that are used in examples to illustrate various visualisation challenges.

`diamonds`	Prices of 50,000 round cut diamonds
`economics`	US economic time series
`faithfuld`	2d density estimate of Old Faithful data
`midwest`	Midwest demographics
`mpg`	Fuel economy data from 1999 and 2008 for 38 popular models of car
`msleep`	An updated and expanded version of the mammals sleep dataset
`presidential`	Terms of 11 presidents from Eisenhower to Obama
`seals`	Vector field of seal movements
`txhousing`	Housing sales in TX
`luv_colours`	`colors()` in Luv space

ggplot2

- Many Useful Plots and Charts Provided
  - See Cheat Sheet: [Link](#)
    (Also on Course Website)
  - Called Geoms (Geometric Objects)
  - The Geom you choose Must Comply with the Type of Variables You are Analyzing

- Organized by Type of Data
  - Univariate
  - Bivariate
  - Mixtures of Categorical and Numeric

ggplot2

- ggplot2 General Form

Fill in Blank With Name of Data in R

```
> ggplot(data=_____) +
    geom_TYPE(mapping=aes(x=____,y=_____, etc.))
```

Fill in Blanks from Variables in Data

Many Examples

- Locate Supplement on Website

- Download Rmd File

- Open Rmd File on Computer

- Knit the Rmd File to HTML format

- View Graphs with Me

Closing

Disperse and Make Reasonable Decisions