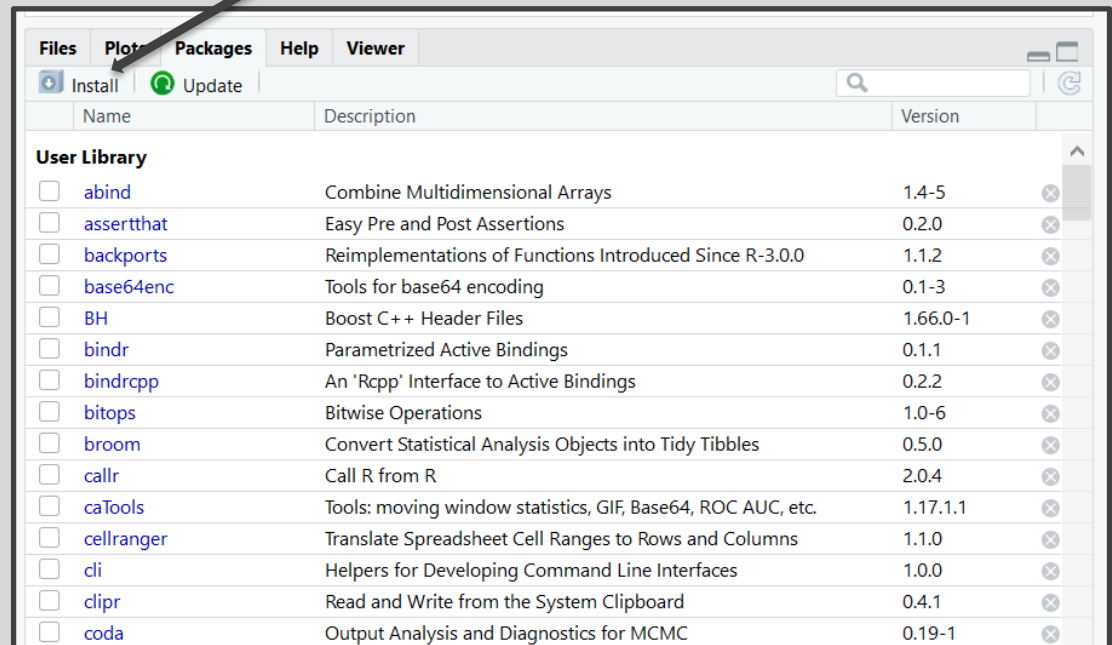Data Visualization

Why are We Here?

- To Install Some Key R Packages
  - tidyverse
  - Rmarkdown
  - knitr

- To Learn Elements of ggplot2

- Make Visually Stunning Pictures that Change Lives

Initial Steps in RStudio

- Install Tidyverse Package

> install.packages("tidyverse")

- Try Installing Other Packages Using Dropdown Menu

Select Install and Search on CRAN

	Name	Description	Version	
	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 Zipped Folder and Unzip

- Open Rmd File on Computer

- Knit the Rmd File to HTML format

- View Graphs with Me

Closing

Disperse and Make Reasonable Decisions