

# Data Visualization

## Why are We Here?



- To Install Some Key R Packages
  - Tidyverse
  - Rmarkdown
- To Learn Elements of ggplot2
- Make 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

Files Plots Packages He	elp Viewer		
Install ① Update		Q,	
Name	Description	Version	
User Library			
abind	Combine Multidimensional Arrays	1.4-5	⊗
assertthat	Easy Pre and Post Assertions	0.2.0	8
backports	Reimplementations of Functions Introduced Since R-3.0.0	1.1.2	8
base64enc	Tools for base64 encoding	0.1-3	8
□ ВН	Boost C++ Header Files	1.66.0-1	8
bindr	Parametrized Active Bindings	0.1.1	8
bindrcpp	An 'Rcpp' Interface to Active Bindings	0.2.2	8
bitops	Bitwise Operations	1.0-6	8
broom	Convert Statistical Analysis Objects into Tidy Tibbles	0.5.0	8
callr	Call R from R	2.0.4	8
☐ caTools	Tools: moving window statistics, GIF, Base64, ROC AUC, etc.	1.17.1.1	8
cellranger	Translate Spreadsheet Cell Ranges to Rows and Columns	1.1.0	8
di	Helpers for Developing Command Line Interfaces	1.0.0	8
clipr	Read and Write from the System Clipboard	0.4.1	8
coda	Output Analysis and Diagnostics for MCMC	0.19-1	(3)

# Initial Steps in RStudio



- To Use the Package
  - Code
    - > library("tidyverse")
  - Check Box for Tidyverse

Files	Plots	Packages	Help	Viewer				
0	nstall (	Update				Q,		l C
	Name			Description			Version	
<b>✓</b>	tidyverse			Easily Instal	ll and Load the 'Tidyverse'		1.2.1	⊗ ^
	tinytex			Helper Fund 'LaTeX' Doc	ctions to Install and Maintain 'TeX Live', and Compi uments	le	0.6	8
	utf8			Unicode Tex	xt Processing		1.1.4	8
	viridisLite	9		Default Col	or Maps from 'matplotlib' (Lite Version)		0.3.0	8
	whisker			{{mustache	}} for R, logicless templating		0.3-2	⊗
	withr			Run Code "	With' Temporarily Modified Global State		2.1.2	8
	xfun			Miscellaneo	ous Functions by 'Yihui Xie'		0.3	⊗
	XLConne	ct		Excel Conne	ector for R		0.2-15	⊗
	XLConne	ctJars		JAR Depend	dencies for the XLConnect Package		0.2-15	8
	xml2			Parse XML			1.2.0	8
	yaml			Methods to	Convert R Data to YAML and Back		2.2.0	8
	Z00				octure for Regular and Irregular Time Series (Z's oservations)		1.8-3	8
System Library								
	boot			Bootstrap F	unctions (Originally by Angelo Canty for S)		1.3-20	8
	class			Functions for	or Classification		7.3-14	8
	cluster			Finding Gr عا	oups in Data": Cluster Analysis Extended Rousseeu	w et	2.0.7-1	⊗ 🗸

## ggplot2



## • Help Page: Link

#### Comes with Preloaded Datasets

ggplot2 ggplot2	rerse Refer	ene
Data		
ggplot2 comes with a selection of built-in challenges.	datasets that are used in examples to illustrate various visualisation	
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: <u>Link</u>
    (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

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