STOR 320 Data Visualization

Lecture 1
Yao Li

Department of Statistics and Operations Research
UNC Chapel Hill

Why are We Here?

- To Install Some Key R Packages
 - Tidyverse
- To Practice Coding via R Scripts
- To Learn Elements of ggplot2
- Practice Making Visually Stunning Pictures

Initial Steps in RStudios

Install Tidyverse Package

> install.packages("tidyverse")

Other Packages To Be Installed

RColorBrewer

Rmarkdown

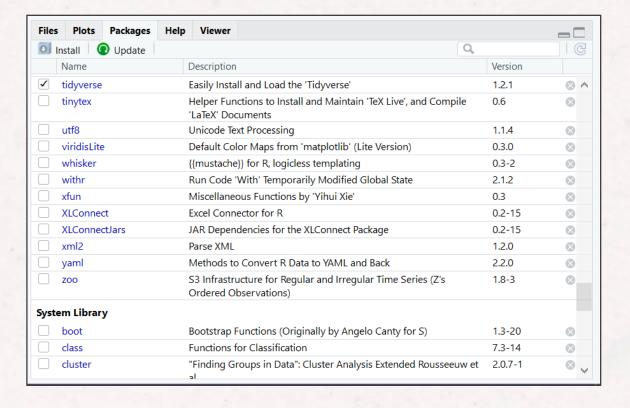
Select Install and Search on CRAN

Files	Plots Packages	Help	Viewer			
Install ① Update					Q	
	Name	D	Description		Version	
User	Library					^
	abind	C	Combine Multidimensional Arrays		1.4-5	8
	assertthat	E	Easy Pre and Post Assertions		0.2.0	8
	backports	R	Reimplementations of Functions Introduced Since R-3.0.0		1.1.2	8
	base64enc	Te	Tools for base64 encoding		0.1-3	8
	ВН	В	Boost C++ Header Files		1.66.0-1	8
	bindr	Р	Parametrized Active Bindings		0.1.1	8
	bindrcpp	A	An 'Rcpp' Interface to Active Bindings		0.2.2	8
	bitops	В	Bitwise Operations		1.0-6	8
	broom	C	Convert Statistical Analysis Objects into Tidy Tibbles		0.5.0	8
	callr	C	Call R from R		2.0.4	8
	caTools	T	Tools: moving window statistics, GIF, Base64, ROC AUC, etc.		1.17.1.1	8
	cellranger	Т	Franslate Spreadsheet Cell Ranges to Rows and Columns		1.1.0	8
	cli	H	Helpers for Developing Command Line Interfaces		1.0.0	8
	clipr	R	Read and Write from the System Clipboard		0.4.1	8
	coda	C	Output Analysis and Diagnostics for MCMC		0.19-1	8

Initial Steps in RStudios

- To Use the Package
 - Code
 - > library("tidyverse")

Check Box for Tidyverse



ggplot2

- Help Page: Link
- Comes with Preloaded Datasets

ggplot2 part of the tidyverse Referen						
Data						
gplot2 comes with a selection of built-in datasets that are used in examples to illustrate various visualisation hallenges.						
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 Cheat Sheet

- 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 General Form

ggplot2 General Form

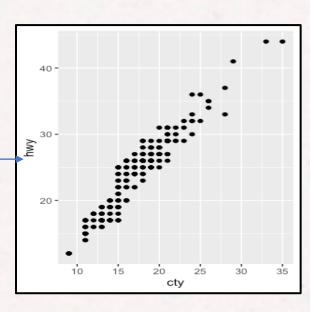
Fill in Blank With Name of Data in R

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

• Example:

Fill in Blanks from Variables in Data

```
> ggplot(data=mpg) +
    geom_point(mapping=aes(x=cty,y=hwy))
```



Tutorial

- Locate Tutorial 1 on Course Website
- Download Rmd File
- Open Rmd File on Computer
- Knit the Rmd File to HTML format
- View Graphs with Me