



Data Visualization

Why are We Here?



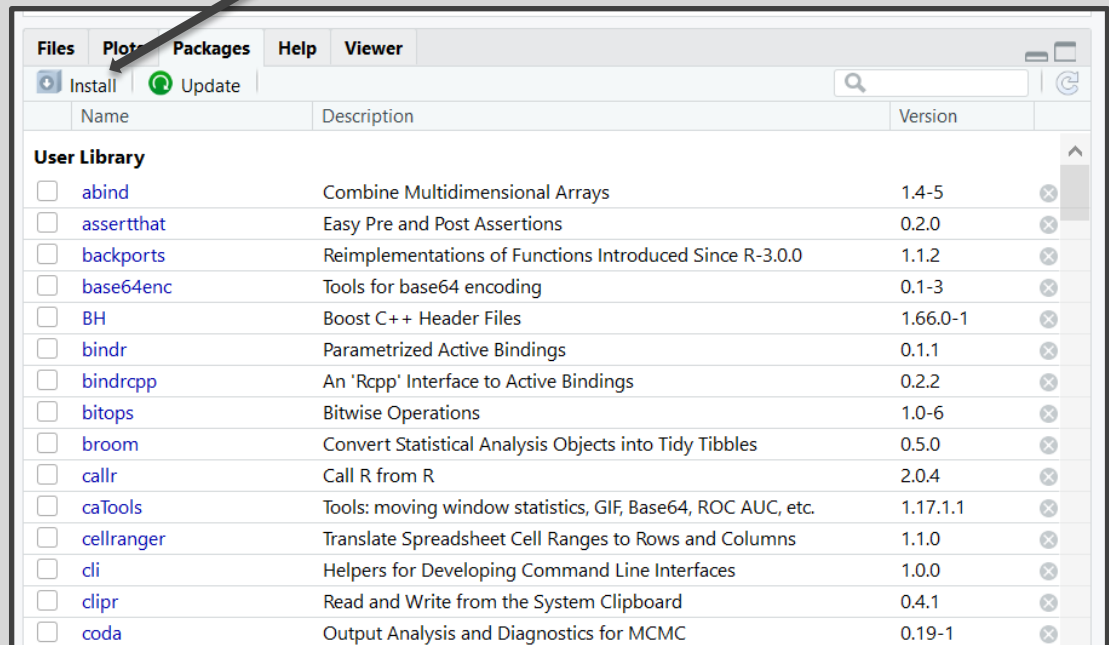
- To Install Some Key R Packages
 - tidyverse
 - Rmarkdown
 - knitr
- To Learn Elements of ggplot2
- Make Visually Stunning Pictures that Change Lives

Initial Steps in RStudio



- Install Tidyverse Package
> `install.packages("tidyverse")`
- Try Installing Other Packages Using Dropdown Menu

Select Install and Search on CRAN



Initial Steps in RStudio

- To Use the Package

- Code

```
> library("tidyverse")
```

- Check Box for Tidyverse




The screenshot shows the RStudio Packages window with the 'Install' tab selected. A search bar is visible at the top right. The table below lists various packages with their names, descriptions, and versions. The 'tidyverse' package is checked, while others are unchecked.

Name	Description	Version
<input checked="" type="checkbox"/> tidyverse	Easily Install and Load the 'Tidyverse'	1.2.1
<input type="checkbox"/> tinytex	Helper Functions to Install and Maintain 'TeX Live', and Compile 'LaTeX' Documents	0.6
<input type="checkbox"/> utf8	Unicode Text Processing	1.1.4
<input type="checkbox"/> viridisLite	Default Color Maps from 'matplotlib' (Lite Version)	0.3.0
<input type="checkbox"/> whisker	{{mustache}} for R, logicless templating	0.3-2
<input type="checkbox"/> withr	Run Code 'With' Temporarily Modified Global State	2.1.2
<input type="checkbox"/> xfun	Miscellaneous Functions by 'Yihui Xie'	0.3
<input type="checkbox"/> XLConnect	Excel Connector for R	0.2-15
<input type="checkbox"/> XLConnectJars	JAR Dependencies for the XLConnect Package	0.2-15
<input type="checkbox"/> xml2	Parse XML	1.2.0
<input type="checkbox"/> yaml	Methods to Convert R Data to YAML and Back	2.2.0
<input type="checkbox"/> zoo	S3 Infrastructure for Regular and Irregular Time Series (Z's Ordered Observations)	1.8-3
System Library		
<input type="checkbox"/> boot	Bootstrap Functions (Originally by Angelo Canty for S)	1.3-20
<input type="checkbox"/> class	Functions for Classification	7.3-14
<input type="checkbox"/> cluster	"Finding Groups in Data": Cluster Analysis Extended Rousseeuw et al	2.0.7-1

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	<code>colors()</code> 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