

[github.com/MarketBridge/  
tidyverse-training](https://github.com/MarketBridge/tidyverse-training)

# Preparing for success

- Please exit Outlook
- Please exit Teams

# Introduction to the Tidyverse

Ari Lamstein

# Exercise: What do you already know?

- Split into groups of 2.
- Ask your partner: *What do you already know about the Tidyverse?*
- 5 minutes



**Introduction**

Main ideas	Notes _____ _____ _____ _____ _____ _____
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Summary

How I can apply this to my work

# Notes form - please take out

# About Me

- Ari Lamstein
- Studied Math and CS
- Former "tech worker"
- Author of the *choroplethr* package
- Certified Tidyverse Instructor
- Now do R stuff at MB



# Day 1

Introduction and  
Visualize Data

9:00 - 10:30

Morning Break

10:30 - 11:00

Transform Data

11:00 - 12:00

Lunch

12:00 - 1:00

Transform Data

1:00 - 2:30

Afternoon Break

2:30 - 3:00

Transform Data,  
Import Data, Q&A

3:00 - 5:00

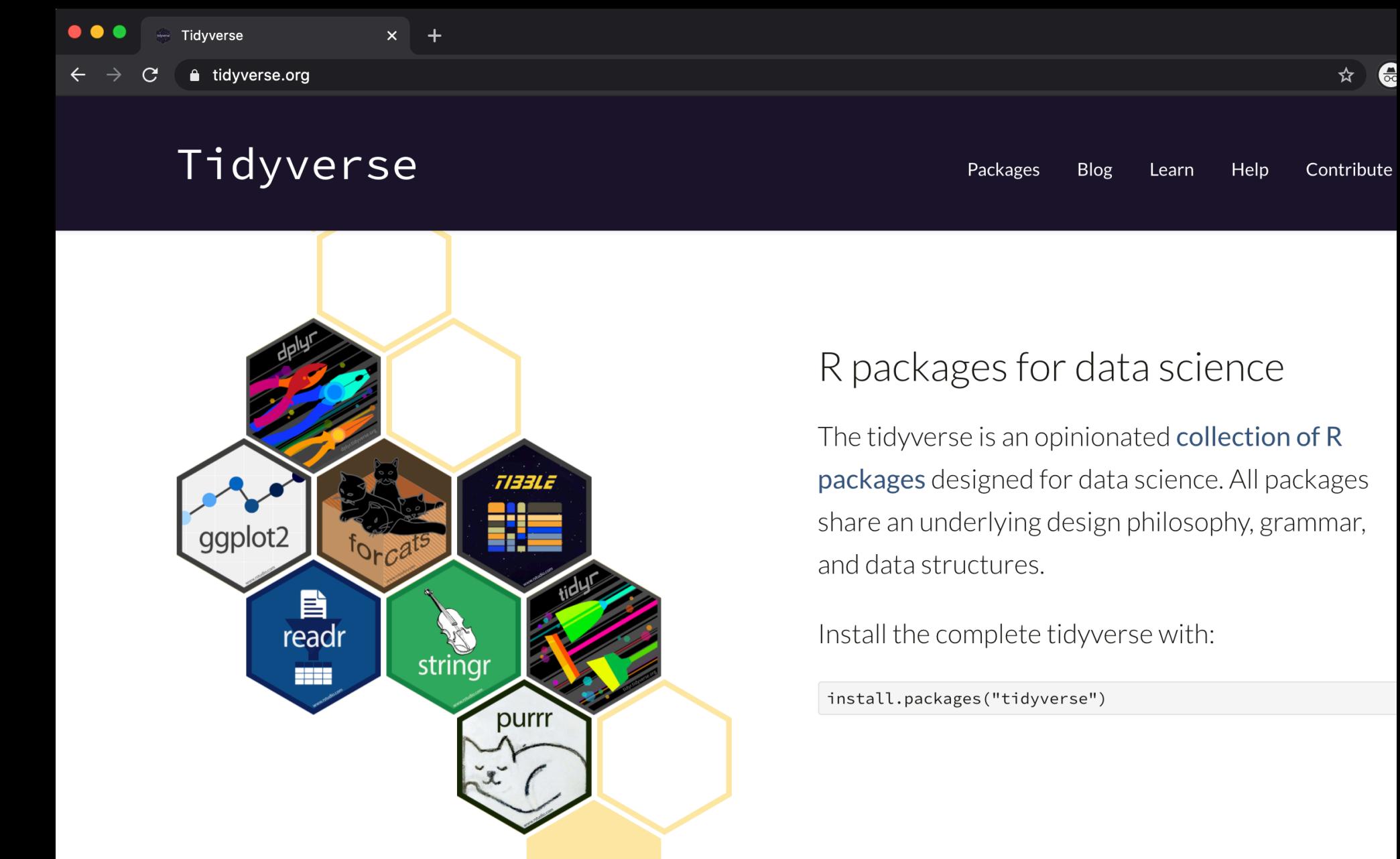
# Learning Goals

- What is the Tidyverse (and why learn it?)
- Complete a project with R Notebooks

# What is the Tidyverse?

## Answer 1: A Marketing Term

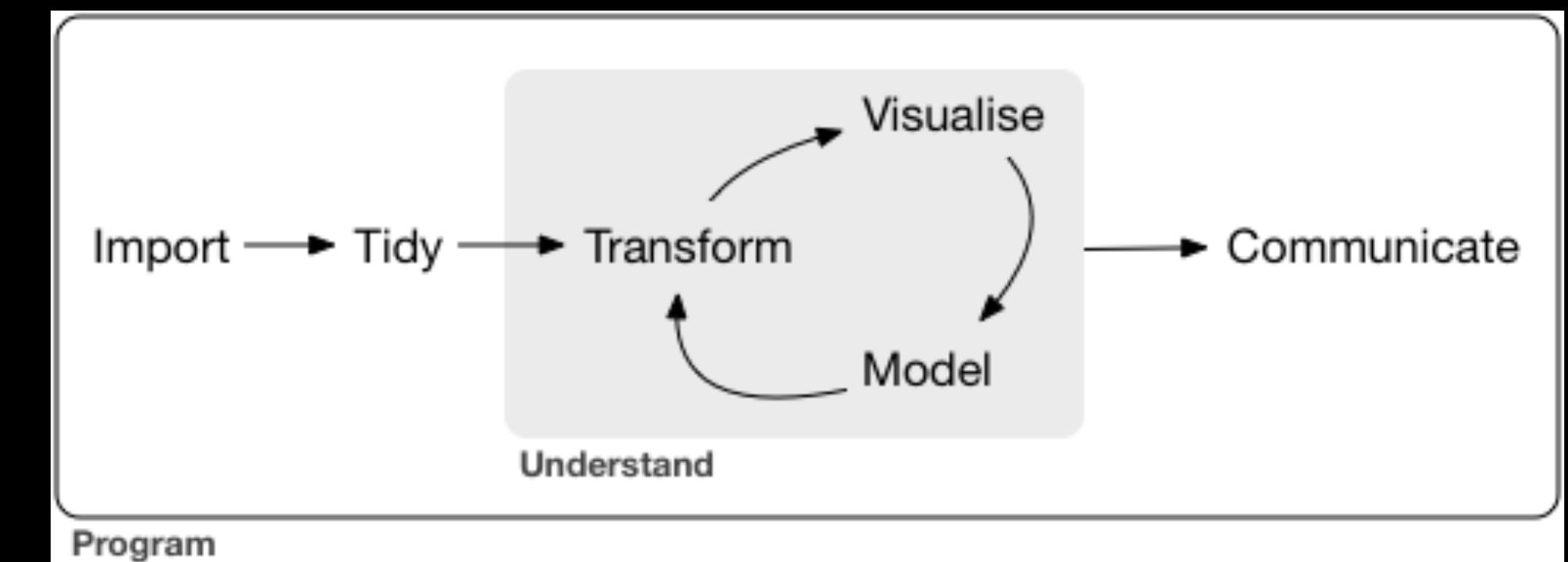
- Refers to dozens of packages created by Hadley Wickham (Chief Data Scientist at RStudio)
  - Replaces the "Hadley-verse"
- 2 main packages
  - **ggplot2** (data visualization)
  - **dplyr** (data manipulation)



# What is the Tidyverse?

## Answer 2: A "Dialect of R"

- Most R packages don't "agree" with each other
  - ?View vs. ?summary
- All Tidyverse packages are consistent
- Tidyverse packages cover all aspects of the "Data Science Workflow"



# What is the Tidyverse?

## Answer 3: A Package that Contains Packages

- "tidyverse" is a name of an actual R package
- The package itself does not do much
- Installing the package makes R install the most useful packages in the Tidyverse (such as ggplot2 and dplyr)

**tidyverse: Easily Install and Load the 'Tidyverse'**

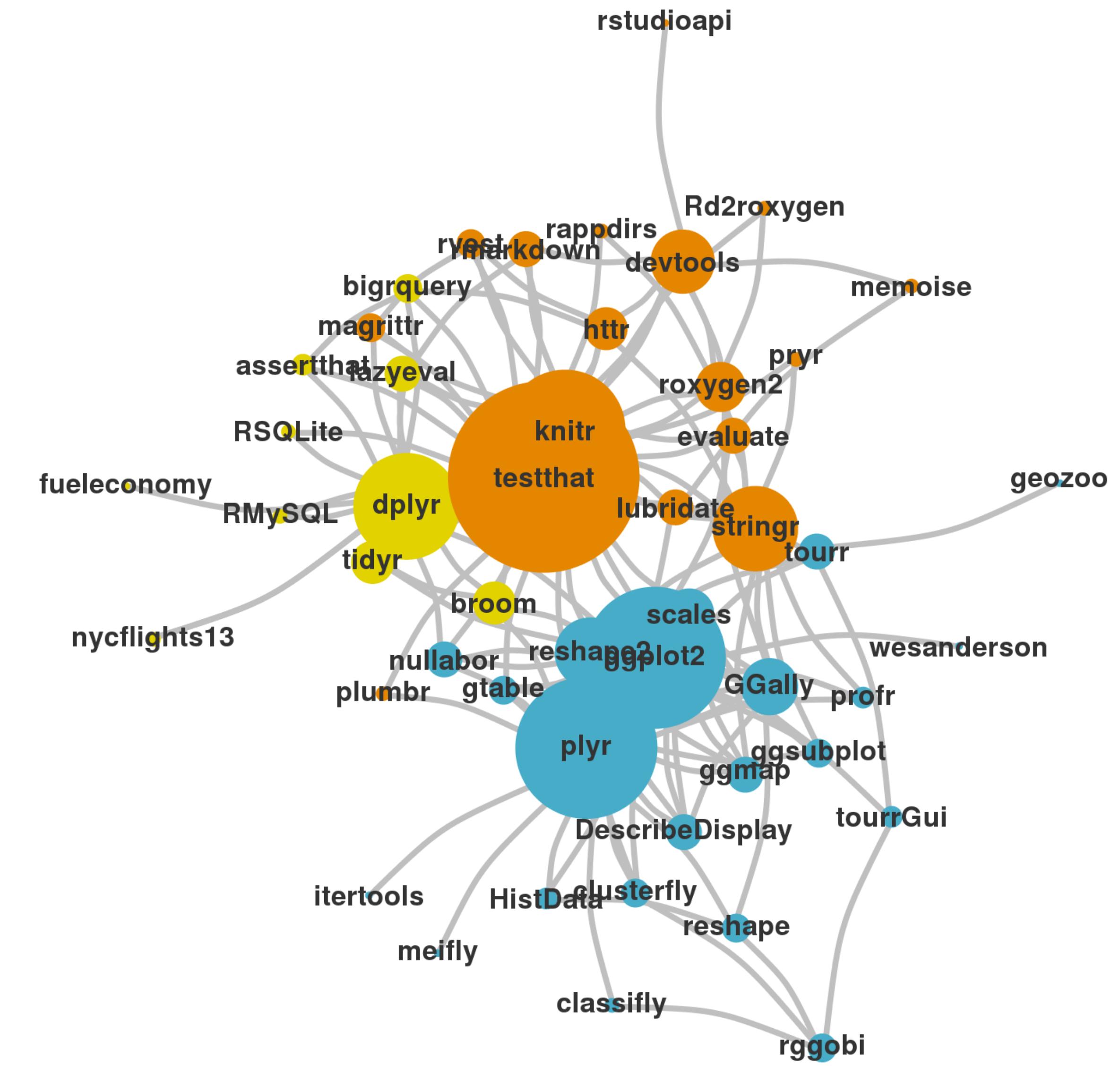
The 'tidyverse' is a set of packages that work in harmony because they share 'tidyverse' packages in a single step. Learn more about the 'tidyverse' at [https://tidyverse.org](#).

Version: 1.3.0  
Depends: R (>= 3.2)  
Imports: [broom](#) (>= 0.5.2), [cli](#) (>= 1.1.0), [crayon](#) (>= 1.3.4), [dbplyr](#) (>= 1.3.0), [gridExtra](#) (>= 2.3.0), [lubridate](#) (>= 1.7.4), [magrittr](#) (>= 1.5), [modelr](#) (>= 0.1.0), [rvest](#) (>= 0.3.5), [stringr](#) (>= 1.4.0), [tibble](#) (>= 2.1.3), [covr](#), [feather](#), [glue](#), [knitr](#), [rmarkdown](#), [testthat](#)  
Suggests:  
Published: 2019-11-21  
Author: Hadley Wickham [aut, cre], RStudio [cph, fnd]  
Maintainer: Hadley Wickham <hadley at rstudio.com>

```
install.packages("tidyverse")
```

does the equivalent of

```
install.packages("ggplot2")
install.packages("dplyr")
install.packages("tidyr")
install.packages("readr")
install.packages("purrr")
install.packages("tibble")
install.packages("hms")
install.packages("stringr")
install.packages("lubridate")
install.packages("forcats")
install.packages("DBI")
install.packages("haven")
install.packages("httr")
install.packages("jsonlite")
install.packages("readxl")
install.packages("rvest")
install.packages("xml2")
install.packages("modelr")
install.packages("broom")
```



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install.packages("tidyverse")
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install.packages("ggplot2")
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install.packages("jsonlite")
install.packages("readxl")
install.packages("rvest")
install.packages("xml2")
install.packages("modelr")
install.packages("broom")
```

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

does the equivalent of

```
library("ggplot2")
library("dplyr")
library("tidyr")
library("readr")
library("purrr")
library("tibble")
```

# What is the Tidyverse?

## Answer 4: Packages that work with "Tidy Data"

- ggplot2 and dplyr only work with "tidy data"
- Tidy data = a data frame where:
  - Each **variable** is in its own **column**
  - Each **case** is in its own **row**
  - Each **value** is in its own **cell**

Subject (car)	Speed (mph)	Distance (ft)
1	25	85
2	24	120
3	24	93
4	24	92

# Learning Goals

- What is the Tidyverse (and why learn it?)
- Complete a project with R Notebooks

# R Notebooks

An authoring format for Data Science.

The screenshot shows the RStudio interface with an R Notebook file open. The notebook contains the following content:

```
1 ---  
2 title: "R Notebook"  
3 output: html_notebook  
4 ---  
5  
6 Text written in **markdown**  
7  
8 ```{r}  
9 # code written in R  
10 (x <- rnorm(7))  
11 ````  
12  
13 Text written in _markdown_  
14  
15 ```{r}  
16 # code written in R  
17 hist(x)  
18 ````  
19  
20 [1] -1.2 1.0 -0.5 0.9 -0.6 -1.1 -1.5  
21  
22  
23 Text written in _markdown_  
24  
25 ```{r}  
26 # code written in R  
27  
28:4 (Top Level) ⇤  
Console  
16:20 C Chunk 2 ⇤ R Markdown ⇤
```

Annotations with arrows point to specific elements:

- A grey callout points to the green play button icon in the toolbar above the code editor, labeled "Click to run all code chunks above".
- A grey callout points to the green play button icon in the toolbar of the first code chunk, labeled "Click to run code in chunk".
- A dark grey callout points to the output console area below the code editor, labeled "Code result".

# Exercise: Your First R Notebook

- Open up **00-Introduction.Rmd**
- Read through the notebook and follow all the instructions.
- Ask your partner (or me) if you have any questions.
- Share your result with your partner.
- 5 minutes

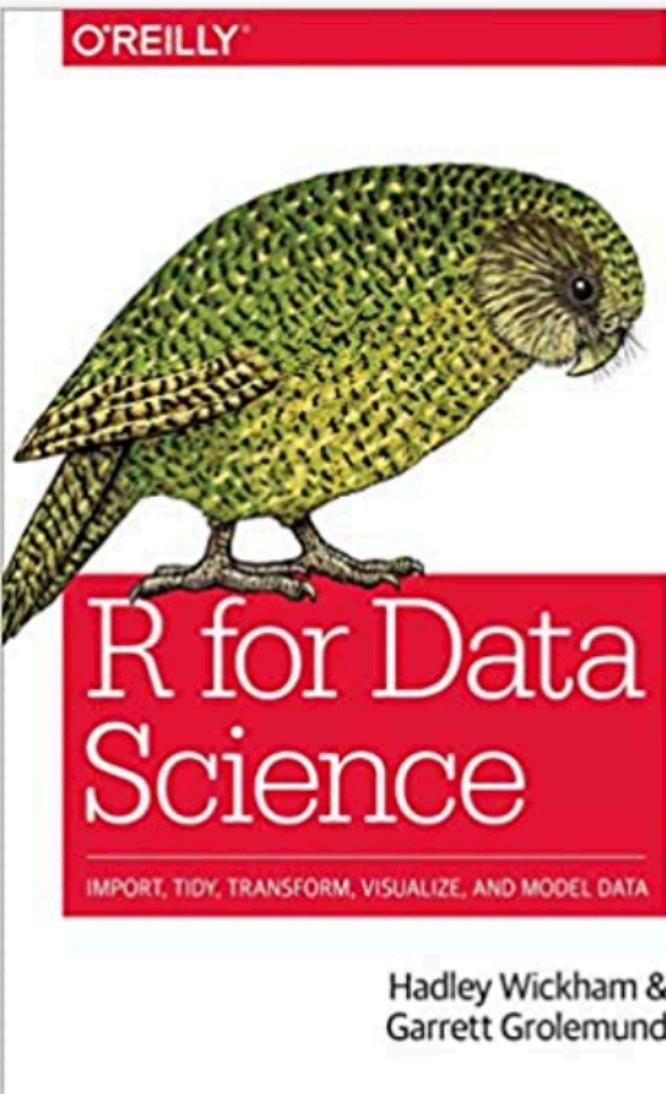


# What next?

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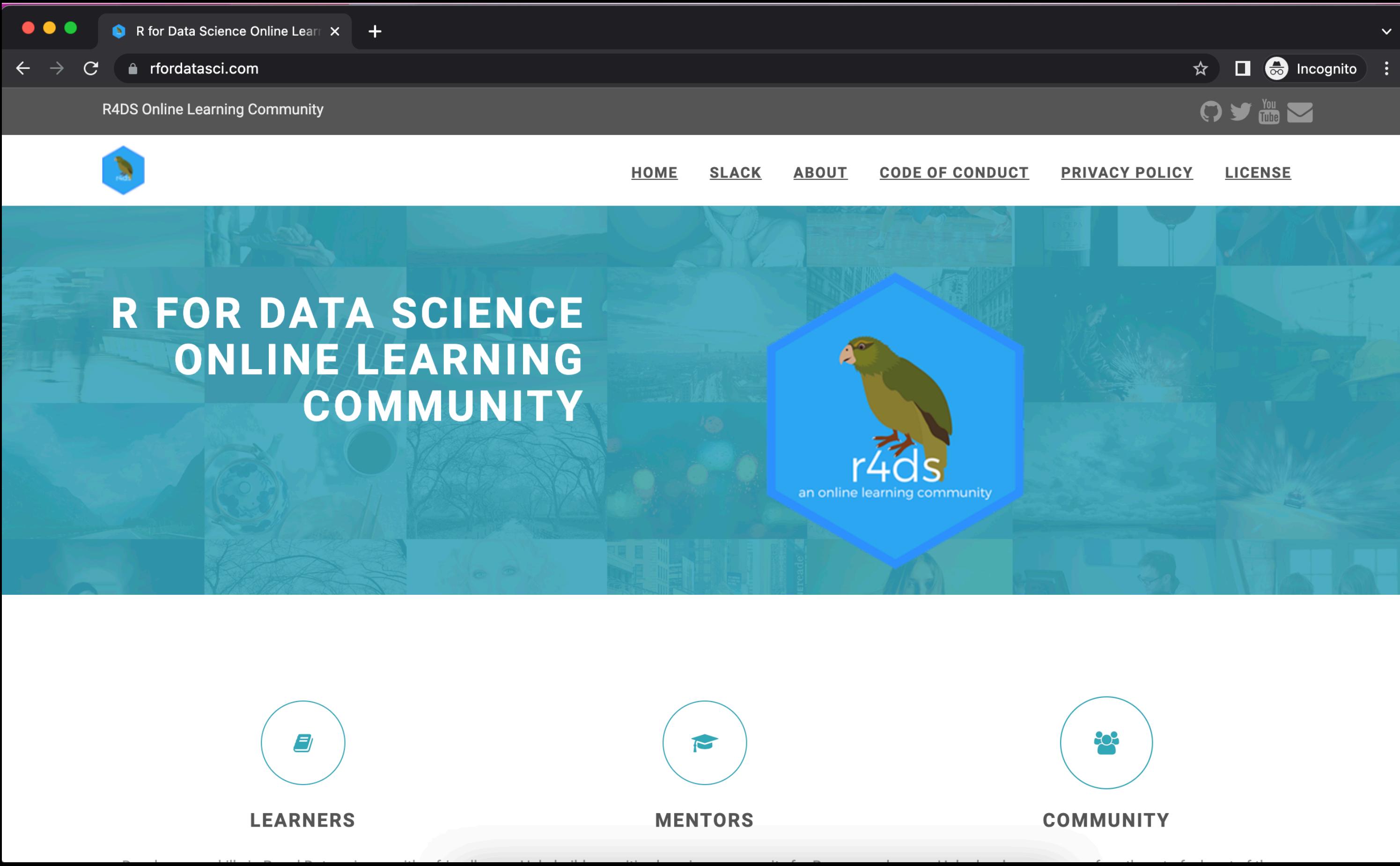
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# R for Data Science

<https://r4ds.had.co.nz/>



# R for Data Science Online Learning Community

<https://www.rfordatasci.com/>

# Closing Exercise

- Fill out the "Summary" section
- Fill out the "How I can apply to my work"
- Share with your neighbor!

02 : 00

Introduction	
Main Ideas	Notes
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	
Summary	
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	
How I can apply this to my work	
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	

# Any Questions?