R-Courses Training: Day 01
Introduction to R & RStudio
Presented by Ezgi Karaesmen

Hello!

I am Ezgi!

I am a recent PhD graduate from The Ohio State University
I am currently a summer intern at RStudio
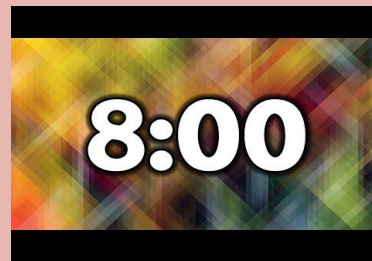I also co-organize R-Ladies Columbus

@e_Karaesmen
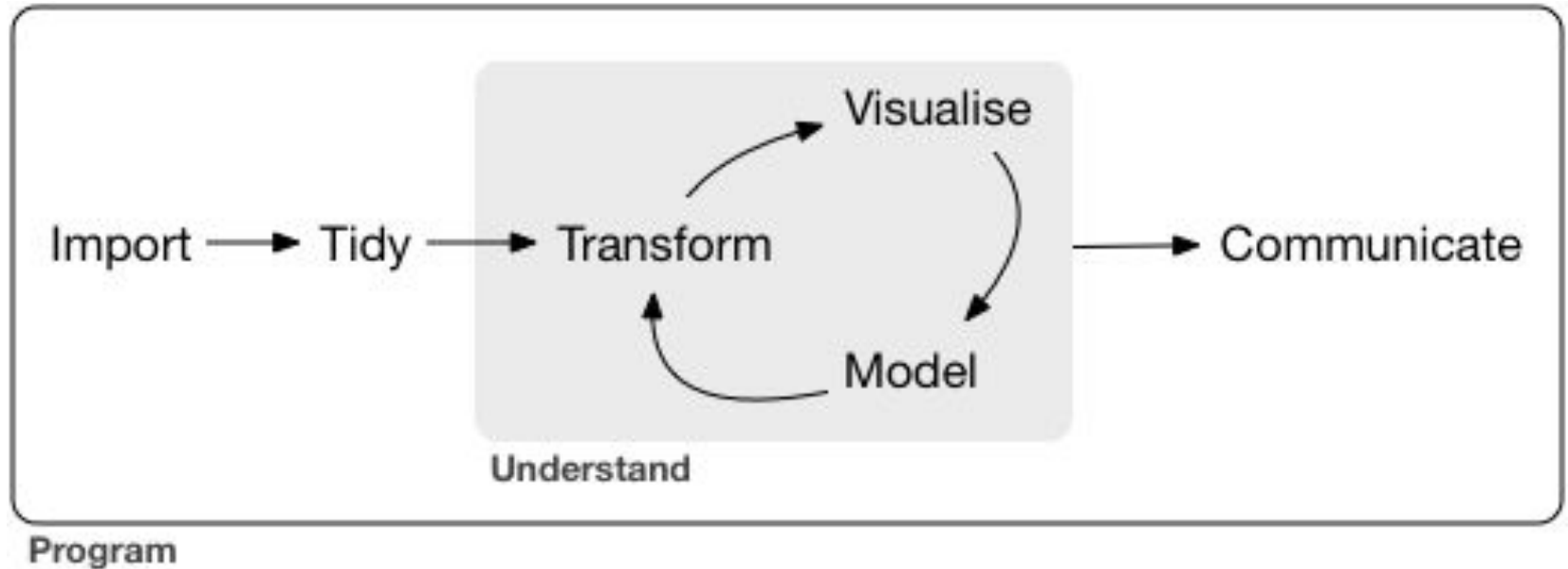info@r-courses.com

Your Turn

Break into groups of 4-5 people. Introduce yourself to your group members. Tell them:

1. Who you are
2. What you do with data
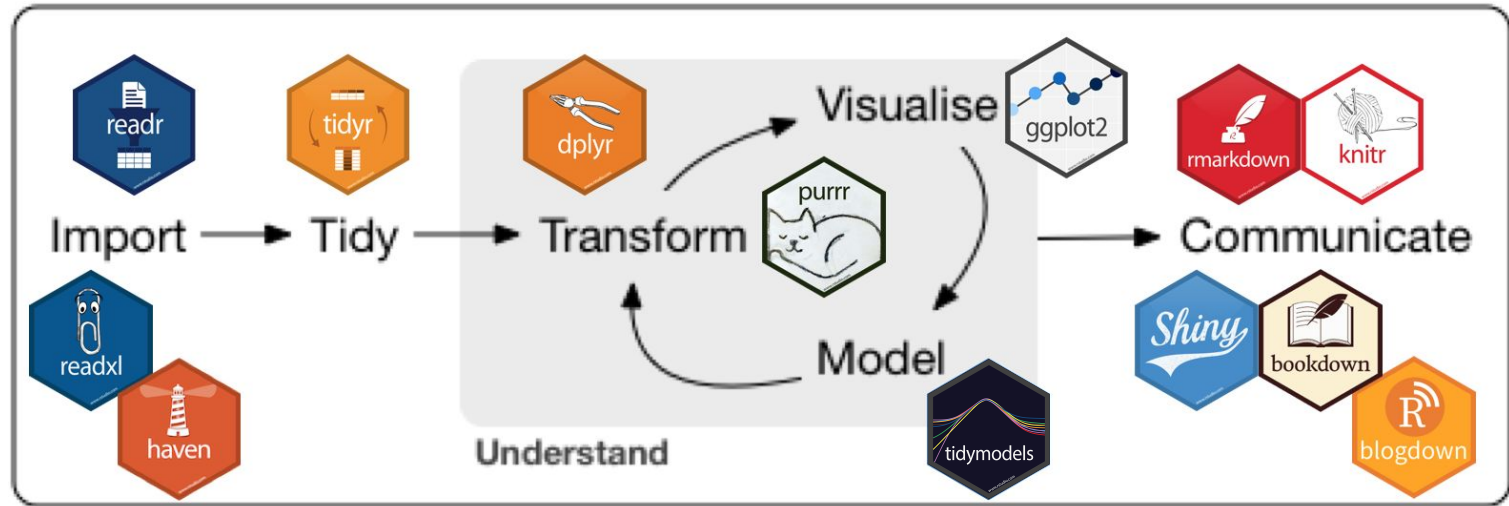3. Why you want to learn R

Then, **as a group**, pick a volunteer that will summarize what you talked about to the rest of the class.

Data Science Workflow

Data Science with R

R and RStudio

Bonnie and Clyde of the Statistical Programming

R: A programming language

- Free and open source programming
- Does not need RStudio
- Descends from S programming language
- Created by **R**oss Ihaka and **R**obert Gentleman

RStudio: A software application
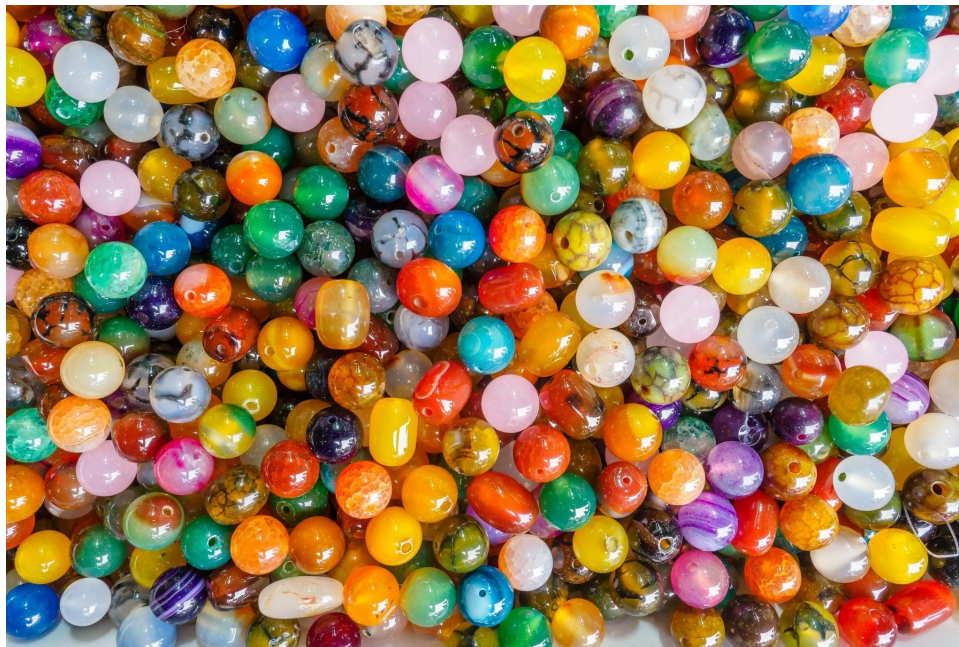

Photo by Alina Grubnyak on Unsplash

- If R is a pretty painting, Rstudio is the frame that enhances R's beauty.
- RStudio is a free and open-source integrated development environment (IDE) for R
- Built to help you write, run code, and analyze data with R, and also Python
- Text editor, version control, keyboard shortcuts, debugging tools, and much more

Why learn R?

- Very welcoming and supporting online community
- Programming is a superpower 💪
- Clean, plot, analyze and communicate your data all in one place
- Reproducible
- Automation
- IT'S FREE!

So many things one can do with R and RStudio

Data Visualiztion   Interactive Apps with Shiny   Reports and Books
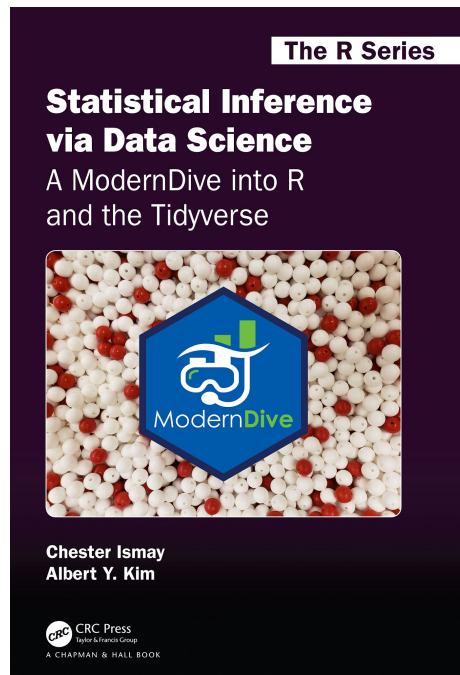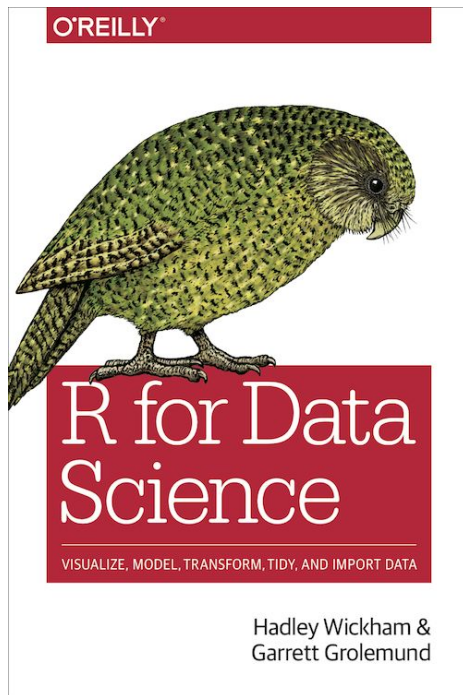
Your Turn

- Open **00-intro-rmarkdown.Rmd**
- Read through and do everything it tells you to do.

5:00

Resources

What I would say to my younger self

1. It's a bit like learning new language...
   It requires some patience but is also fun.

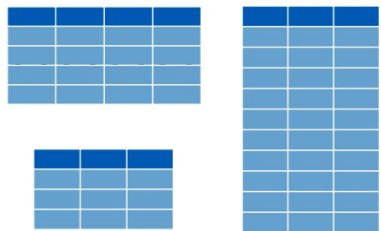2. R communicates with you via errors and warnings.💙
   Trying to understand what R is telling you is the only way to establish a healthy and happy relationship.
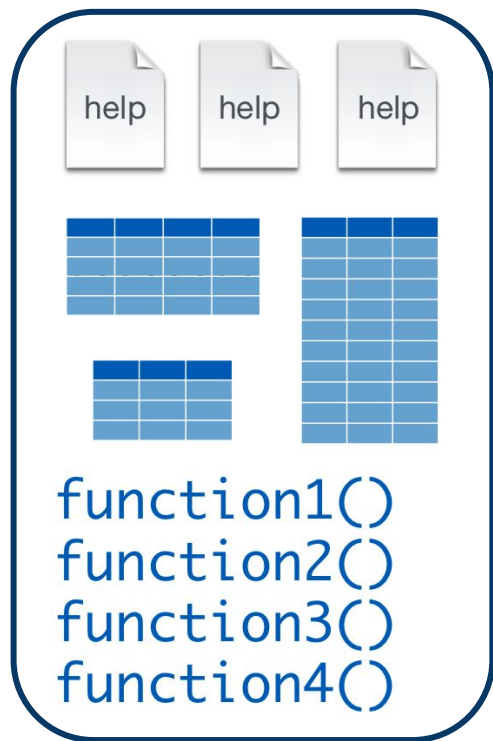
3. Never underestimate the power of Google 💪
   Google is the therapist that helps your relationship problems with R or RStudio
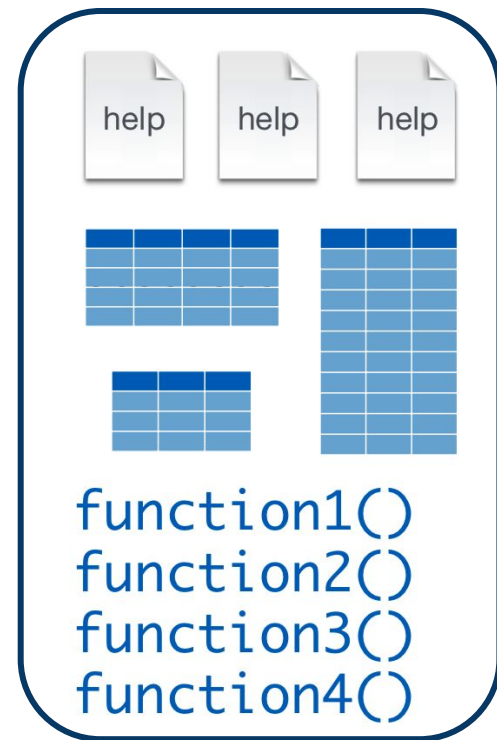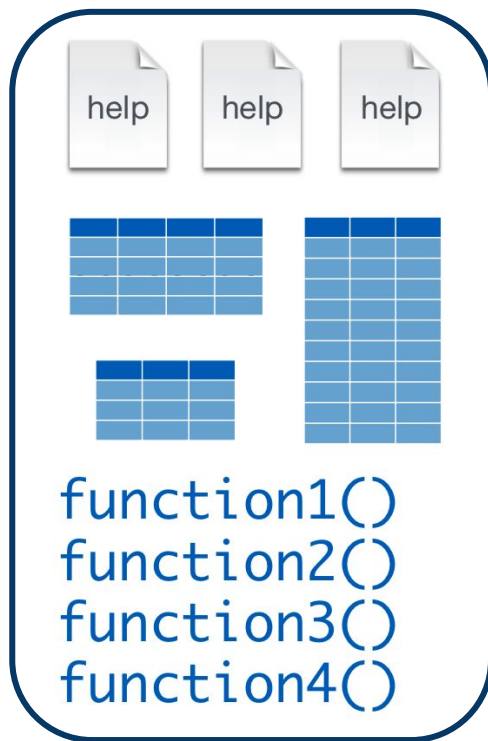
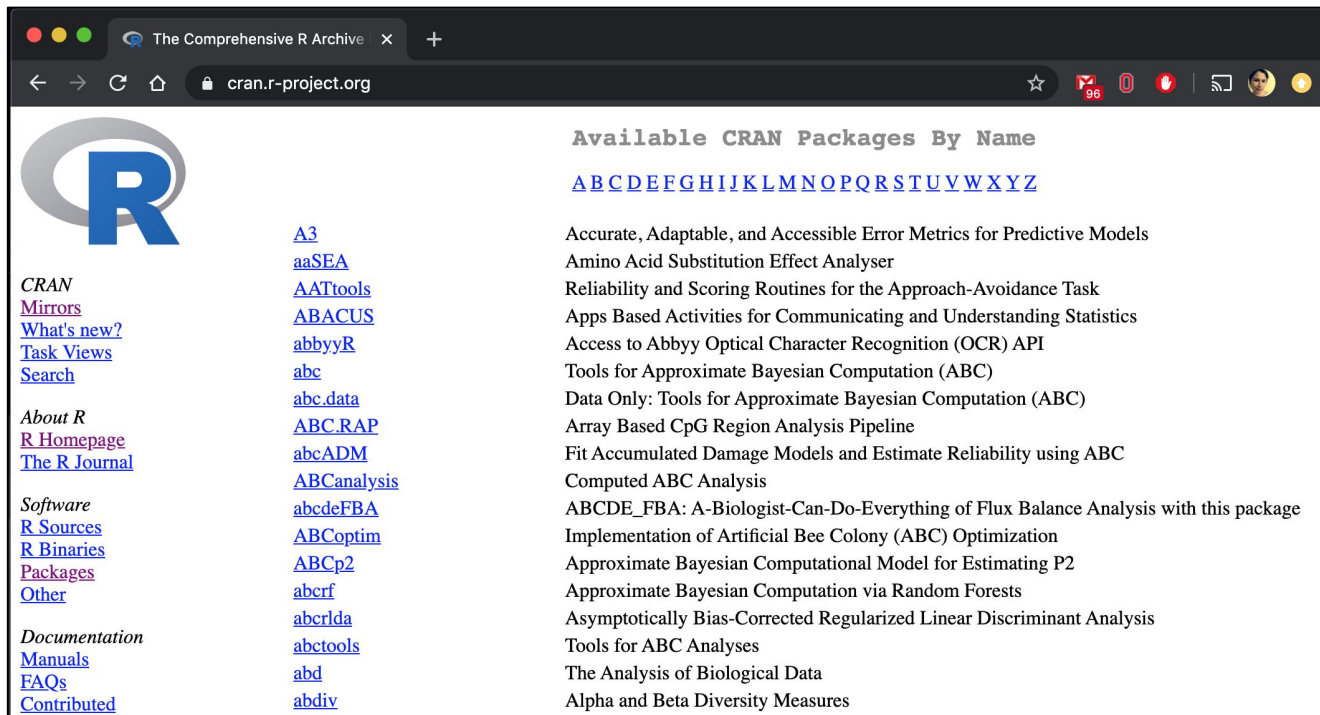# R Packages

function1()
function2()
function3()
function4()

Base R

function1()
function2()
function3()
function4()

The Comprehensive R Archive Network (CRAN)

Using Packages

1

```
install.packages("apackage")
```

Downloads package content to computer

1 × per computer

2

```
library(apackage)
```

Loads package

1 × per R Session

R Functions

Calling functions in R

R has many built-in functions which are structured like this:

```
function_name(arg1 = val1, arg2 = val2, …)
```

- For example `seq()` function generates sequences of numbers.
- To see the details for this function type `?seq` on your console.
- Generally this `seq()` function is structured like this:

```
seq(from, to, by)
```

Calling functions in R

Generally `seq()` function is structured like this:

```
seq(from, to, by)
```

So to generate a sequence of numbers from 1 to 10 increasing by 0.5, we would type

```
seq(from=1, to=10, by=0.5)
```

You can also have functions within functions

For example I can generate a sequence of numbers from 1 to 10, increasing by 1, compute the mean for this sequence and take its square root.

```
sqrt(mean(seq(from=1, to=10, by=1)))
```

Your Turn

Open **01-intro-r.Rmd**