Lab Crossover Event

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R: The Swiss Army Knife of Science

▶ The R project for statistical computing is a free open source statistical programming language and project. Follow these steps to get started.

▶ The main advantages of R are the fact that R is freeware and that there is a lot of help available online.

Why use R?

- Strengths
  - free and open source, supported by a strong user community
  - highly extensible and flexible
  - implementation of modern statistical methods
  - assists with replication and extension of your work
- Weaknesses
  - slow with very large data sets ($>$1GB)
  - non-standard programming paradigms

Why use R?

- ▶ RStudio is the primary Integrated Develop Environment (IDE) for R
- ▶ We will be using RStudio for the tutorial

RStudio IDE

Packages/Libraries

- ▶ Packages are the main R tools
- ▶ There are 15388 packages. It's probable that if you have thought about the analysis, there is a package that is able to do it already. There are two basic steps to using a package:

Installing the package `install.packages("tidyverse")`

Loading the package `library(tidyverse)`

Packages/Libraries

- ► Packages include functions that do things.

data <- `read_csv`("/The/Path/To/Your/File.csv")

- ► `data` = where you want to save the data
- ► `<-` = tell the function where to put the output
- ► `read_csv` = the name of the function
- ► `()` = what you input into the function

Doing simple things in R

```
## [1] 4
## [1] 8
```

Reading in some data

The great R wars

Two similar but different methods for many common tasks

- ▶ Tidyverse
- ▶ Base R

Where to find packages

- CRAN Task View
- META Cran
- Follow prominent voices
  - JennyBryan
  - Hadley Wickham
  - Amelia MN

Ocean Plastic Sciences

- `marelac`
  https://cran.r-project.org/web/packages/marelac/index.html
- `oce` https://cran.r-project.org/web/packages/oce/

Political Sciences

- http://m-clark.github.io/docs/RSocialScience.pdf
- Twitter Sentiment Analysis
  - https://dataaspirant.com/2018/03/22/twitter-sentiment-analysis-using-r/

Workflow Revolution

- RStudio + Github
- https://github.com/TeamINTERACT/onboarding