General Overview:

R Workshop 1 hour, 30 minutes each, with 30 minutes for questions

Planning on having a “live coding” demo each day, R Markdown scripts created beforehand and then adding onto them as I go, then pushing to GitHub at the end of the day so everyone can see it.

Sessions and Things to Go Over:

Session I:

* What is R and what do we use it for? (with other people who use R; Filip, Sydney)
* How to install R and RStudio?
* Read in a file and set a working directory
* R Script vs. R Markdown vs. console vs. R Project (where to code in, and how to organize it)?
* Basics:
  + Commonly-used operators: assignment operator (<-), selecting columns ($), concatenate (c())
  + Data structures and types: Integers, characters, factors, doubles
  + Tibbles/data frames
* Math with R
  + Calculations (mean, sd, etc.)
  + Stats package

Session II: (THIS MAY BE TOO CHUNKY TO DO BY ITSELF IN ONE DAY. I MAY DO THIS IN BASE R. THOUGHTS/COMFORT LEVEL WITH NON-TIDY PLOTTING?)

* Tidyverse: readr 🡪 dplyr 🡪 ggplot2 pipeline for data cleaning (and how to install packages)
  + Readr: read\_csv()
  + Dplyr: pipe (%>%), mutate, joining datasets, filtering/subsetting with computer logic (&&, ||)
  + Ggplot2: Mapping and how you call ggplot2 to customize what you want your data to look like
* Types of data: categorical, continuous, and how to visualize them
  + And how to change between types as needed using *as.numeric()*, *as.factor*(), *as.integer*(), *as.Date(*)
* Exercises with built-in data (*mtcars, diamonds*)
  + Histogram, bar plot, displaying data and modifying the plots

Session III:

* Synthesis: Make your own chart! (Provide sample data?)
* GitHub and version control (briefly, because this is boring)

Subsection of Section II: Resources and where else to go to learn more (I’LL MAKE THIS INTO A RESOURCES SHEET BUT I’D LIKE TO GO OVER THIS TOO)

* Fun packages and add-ons
  + tidytext for text analysis/token-based
  + lubridate/chron for time series
* Resources
  + DataCarpentry, online courses/videos
  + Hadley Wichkam’s books online (they are free!)
  + RStudio cheat sheets online
  + Teacups, giraffes, and statistics: <https://tinystats.github.io/teacups-giraffes-and-statistics/01_introToR.html>
  + GitHub (TidyTuesdays)

Resources to Make / Create / Find

* Several R Markdown files for each day, with datasets
* GitHub repository
* Resources sheet