Welcome to Spring 2021!

Data Science for Biologists

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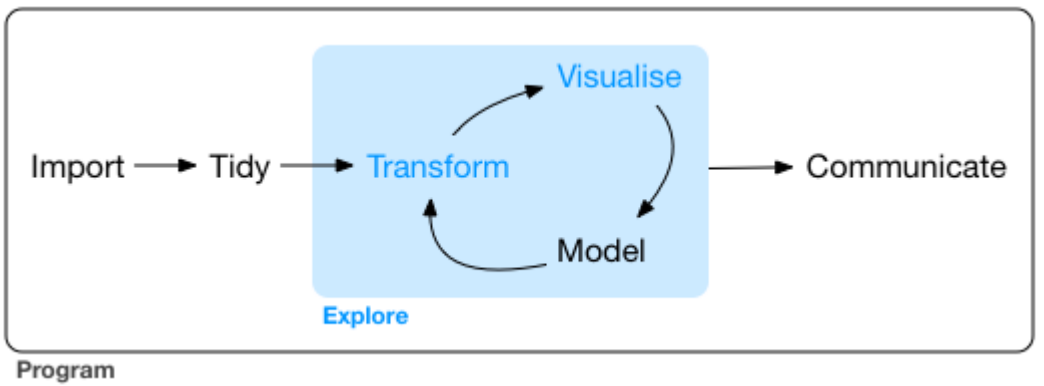
What are we doing here?



How will we do it?

- Learning the "tidyverse" framework in the R statistical computing language. *You will be coding!*

- We will use a website called **RStudio Cloud** to write code in the browser - no downloads!
  - **Make a FREE account** at https://rstudio.cloud. This is not affiliated with Rowan (can be any email).
  - Make sure your displayed name is *identifiable* with your (preferred) First and Last name
  - We will start using the website *next week*. Stay tuned!

- You will *need* a computer with an internet connection
- You will *want* a dual monitor setup

What can you expect?

- Weekly homeworks due **every Tuesday at 1 pm**. (70% of final grade, drop the lowest score)
  - Why Tuesday? Why 1 pm?
  - Submitted late on same day: -5%
  - Submitted late next day: -10%.
  - -10% for each additional day late.
  - *Communicate with me EARLY and I will work with you on extensions.*

- Final *independent* project (20% of final grade)
  - Exploratory analysis on a dataset of your choosing

- Attend class for the first *four weeks* (10% of final grade). Then, choose your own learning style.

- Lectures will always be recorded, but technical difficulties can happen leading to "lost" lecture records. This has happened before, and it might happen again.

- NO EXAMS OR QUIZZES.

What can you expect?

- Lecture/labs will be "indistinguishable" class time. We will naturally go back and forth among "traditional" lecture (slides), live coding demonstrations, and exercises

- Office hours will be on Zoom every **Monday and Friday 11:30-12:30**
  - One Zoom to rule them all
  - No appointment necessary

- All one-on-one appointments should be scheduled via email. *Email me a week in advance of when you want to meet. My time fills up extremely quickly - do not rely on getting last-minute help!*

What will you be able to do after this class?

- Make figures from data ("data visualization", or as the cool kids say, "dataviz") using computer code
- Manipulate and work with datasets using computer code
- Create professional reports with integrated figures, text, and code.
- Learn how to find trends in your data with *linear models* and *logistic regression*
- Learn how to use *version control* to never again have this:
  - `paper.docx`
  - `paper-final.docx`
  - `paper-final1.docx`
  - `paper-final2.docx`
  - `paper-final-final.docx`
  - `paper-final-final1.docx`
  - ...
- You will never *have* to use Excel again unless you want or need to

What will this class NOT teach you?

- The entire R language

- "Computer program" in the traditional sense of the term (if/else, for loops, writing functions, functional programming, object-oriented programming, etc.)
  - The skills you learn here will make it *much easier* to pursue "programming" going forward

- Web development

- Deep learning/artificial intelligence
  - We will discuss concepts in machine learning, but this is not an ML class
  - But let's be real: literally half the time someone says "AI", they mean "linear regression."

- Statistical tests that are taught in Biometry (*t*-tests, χ^2 tests, etc.)

How do set yourself up for success?

- Practice, practice, practice. Do the exercises over and over again, *until you are SO bored you can't take it.*
- Come to office hours (email me ASAP if you can't make either time)
- Make a working group to complete assignments
- Take advantage of the resources I provide
- Start assignments *early* to take advantage of Friday AND Monday office hours
- Communicate with me *in a timely fashion*

How do set yourself up for FAILURE?

- Start assignments within 48 hours of the deadline
- Skip the practice exercises, *or only do them once*
- Wait to email me until the day before the deadline - I will not have time to help you
- Randomly google *instead of* using the resources I provide
- Try to code out *without* looking at resources or documentation.
- Not reading instructions.
- **Submitting code that you did not write and/or sharing code with someone else who then submits your code.**

We are going to hit the ground running

- First HW is posted and due **next Tuesday at 1 pm**. We will begin coding next Tuesday
- *Add/drop ends on Monday February 8th*.