PSYC359

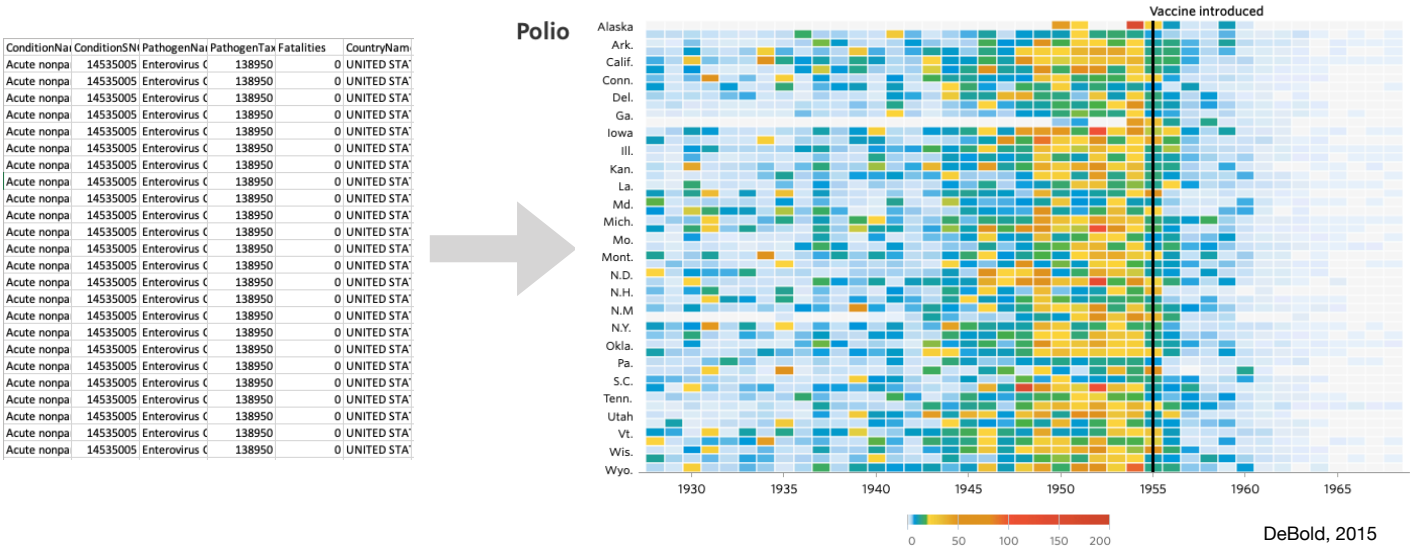
Fall 2022 | Andrew Bell, PhD

DATA VISUALIZATION AND ANALYSIS

Meets Wednesdays | 6:00-8:45 pm

Course Learning Objectives

Understand how to craft and communicate an effective argument with data visualizations

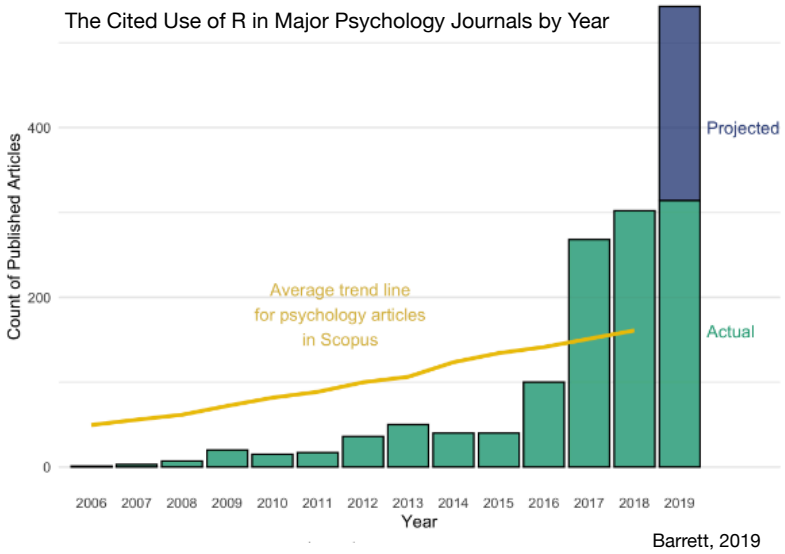


DeBold, 2015

Develop computational skills to conduct reproducible, ethical, and scriptable data analysis and visualization

The ability to develop data workflows that utilize R scripts is rapidly becoming a highly marketable skillset for both graduate school and the workforce (see figure on right)

No coding experience is required to enroll but after taking this course students will have the skills, knowledge and confidence to explore, analyze and/or visualize any dataset using R.



Barrett, 2019

Course Details

Opportunities to demonstrate how much you've learned

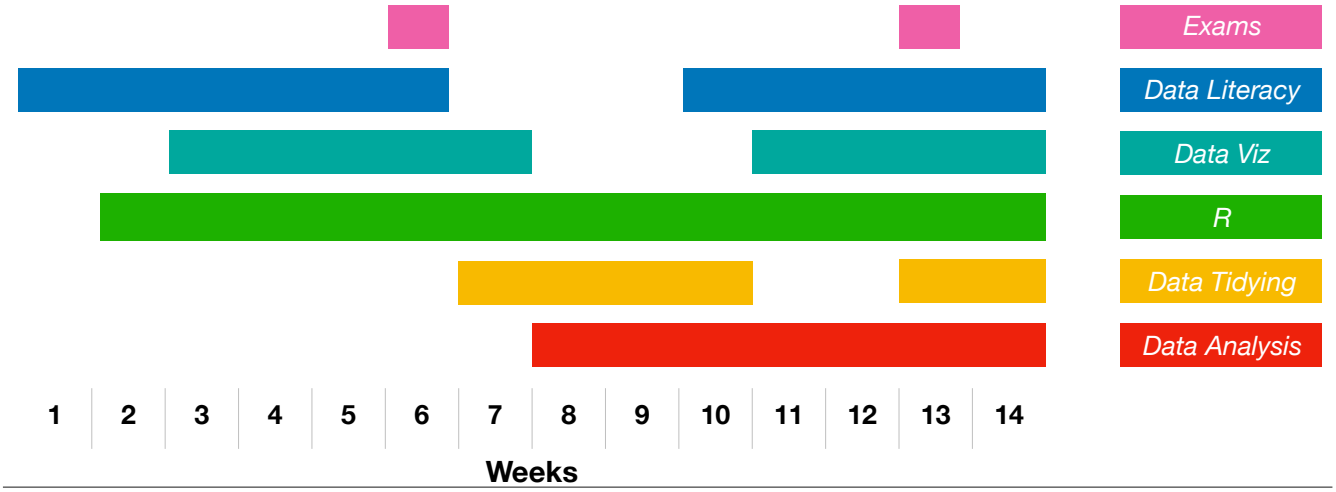
2 exams (20%) Designed to incentivize students to develop skills needed to succeed on final project

Assignments (35%) Assignments are designed to encourage students to practice their skills and iterate based on feedback from the class and professor. Coding assignments will be graded on a 10 point scale (rubric will be given in class).

1 final project (25%) A showcase of the student's knowledge and skill set gained throughout the course. A scaffolded project that is collaboratively developed over the second half of the semester. Students are given the freedom to choose their dataset and research topic.

Engagement (20%) This course requires intentional engagement with the reading material and classroom activities. You will be asked to create a course portfolio where you'll organize development as a data visualizer. This gives me an idea for how deeply you are engaging with the course content and also gives you the opportunity to see how you've progressed over the course of the semester. We'll meet individually at the mid semester point to discuss your engagement.

Tentative Schedule



Course Materials

Books

R for Data Science - Garrett Grolemund & Hadley Wickham

Data Visualization: A Practical Introduction - Kieran Healy

Course Sites

Blackboard

Technology Requirements

Laptop required - need one? contact me

Course Details

How the Course is Organized

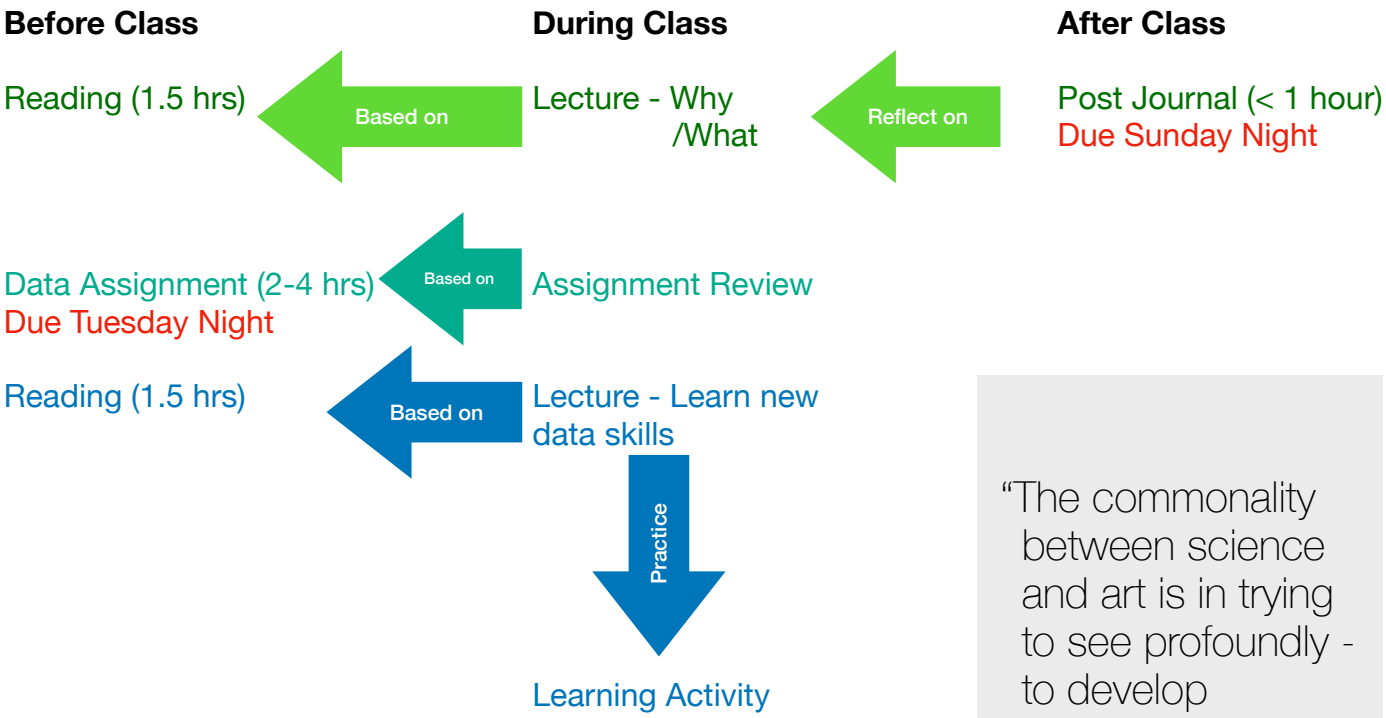
This course is organized into 10 modules that we will cover over the course of 14 weeks. Each module has two basic components:
1) Theory: where will talk about the theory behind data visualization and analysis
2) Practical: where you'll learn how to apply the theory using R

To reflect on the module's theoretical component, you'll have a discussion post.
To practice each module's R content and skill, you'll have a coding assignment.

The two exams and final project are your opportunity to demonstrate mastery over the course content and your R coding ability.

A TYPICAL MODULE

5.0-8.0 hrs of work outside class
2.5-3.0 hrs of work in class * 14 weeks = 105-154 hrs of work



"The commonality between science and art is in trying to see profoundly - to develop strategies of seeing and showing."

- EDWARD TUFTE

About Dr. Bell

I wear many hats at the University of Richmond. A common thread across all my responsibilities is the need to express myself with data. Here's some data about me:

- I have **3 kids**.
- I married a UR spider **13 years ago**.
- We live **0.9 miles** from Boatwright Library
- Last month I averaged **7 hours** and **35 minutes** of sleep a night and walked/ran an average of 4**.1 miles** a day.
- My resting heart rate in 2022 has averaged **59 bpm**
- My music library has **29,241 songs** in it (**3,661** of which are by Pearl Jam, my favorite band).

How to get in touch with me

Office Hours: By appointment Only (schedule appointment at abell.youcanbook.me)

Email: abell4@richmond.edu

Course Policies

Honor Code – The conduct of science requires absolute honesty and integrity. Each student will be responsible for his or her own work, excepting those cases where I have asked for collaboration. I want you to be critical and to think logically, and that can only come with a reliance on and confidence in your skills. Any violations of the University of Richmond Honor Code will be treated seriously and appropriate action will be taken.

Attendance – Attending class in-person is strongly encouraged but not required. If you are unable to attend class due to an illness, please let me know and I'll work with you to make up classroom assignments / workshops (see more in COVID-19 section).

Missed Due Dates – In the cases where a student knows he or she will be unable to turn in an assignment on time contact me as soon as possible. Late assignments will not be accepted unless you notify me before the due date.

Technology during class: Please use whatever technology **helps you learn** during our face-to-face meetings. The only restriction on such use is that you may not engage in behavior that distracts others from learning - messaging and social media use during class is considered a distraction.

COVID-19 Specific Policies: We are facing a challenging situation in which all of us are called on to make a good faith effort to be flexible and to make decisions in the best interest of the community. If you are too sick to attend our meeting, you will not be required to provide formal documentation from a health care provider, and you will not be penalized for absences. However, you must:

- Stay in close communication with me including notifying me in advance of your absence if at all possible.
- Contact the Student Health Center if you are sick.
- Keep up with classwork if you are able to do so.
- Submit assignments on time whenever possible.
- Work with me as soon as possible to try to reschedule any missed assignments.

This attendance policy puts everyone on their honor. It requires that faculty and instructors trust the word of their students when they say they are ill, and it requires that students report the reason for their absence truthfully.

Other Information

Academic Integrity: High standards of academic integrity are crucial for University of Richmond to fulfill its educational mission. Students are expected to abide by the honor code at all times. If I suspect students of cheating on exams or quizzes or otherwise violating the honor code, I will report this to the honor council. As a reminder, the first violation results in a letter in your university record which can be requested by potential employers, and the second violation typically results in expulsion from the university.

Disability Services: If you believe you have a disability requiring an accommodation, please follow the procedures listed on the University of Richmond Disability Services website https://disability.richmond.edu to begin the accommodations process as soon as possible. If you already have a University of Richmond Disability Accommodation Notice (DAN), please make an appointment with me as soon as possible, so that I am aware of your accommodations. No student will receive accommodations of any kind without a DAN. Note that extended time exams will be given in the Academic Testing Center. Paperwork for your entire semester of exams must be filed at least one week prior to your first exam.

Academic Skills Center (http://asc.richmond.edu, 804.289.8626 or 804.289.8956): Helps students assess their academic strengths and weaknesses; hone their academic skills through teaching effective test preparation, critical reading and think- ing, information processing, concentration, and related techniques; work on specific subject areas (e.g., calculus, chemistry, accounting, etc.); and encourage campus and community involvement.

Counseling and Psychological Services (http://caps.richmond.edu or 804.289.8119): Assists students in meeting academic, personal, or emotional challenges. Services include assessment, short-term counseling and psychotherapy, crisis intervention, psychiatric consultation, and related services.