SOCY 598/721 – Data Visualization
Fall 2025 – Sloan 103   Class Time: Wed 16:40-19:25

Professor: jimi adams (jimi.adams@sc.edu)
Office: Sloan 216
Office Hours: Mon 13:00-14:00 (drop in, or by appointment –
                      https://calendly.com/jimiadams)
                      NOTE: Drop-in hours will be in person only. Appointments can be in person or
                      virtual (a link will be auto-generated).

Course Description

Our aim in this course is to enhance your reading and creating of data visualizations. To maximize their potential, researchers must strategically construct and present any data visualization in ways that clearly communicate with their intended audience(s). Often, this requires trade-offs between data-fidelity, theoretical simplification, and aesthetic appeal—all of which can be constrained by a variety of technical limitations. We will explore the theoretical and practical approaches to maximizing the value of visualizations while navigating these considerations. As such, our approach will be a combination of philosophy of science, data analysis, theoretical modeling, and scientific communication. That is, we will not simply focus on the "nuts and bolts" of how to generate various types of plots, but emphasize why we'd want to use them in the first place, and acknowledge the strengths and weaknesses of a variety of approaches we could take. Our applications will primarily take place in R, though other alternatives will be considered along the way.

Objectives

By the end of the semester, participants will:
- Be a more informed consumer of data visualizations.
- Be a more skilled producer of data visualizations.
- Have improved their coding skills in R.
- Gain additional appreciation for the importance of linking theory to data analysis & visualization strategies.
- Be a better writer than at the beginning of the course.

Assigned Readings

All required readings and supplemental materials will be readily findable online or provided on Blackboard. Two of the primary resources we will rely on are books that are each available freely online:
- Healy, Kieran. 2019. *Data Visualization: A Practical Introduction.* Princeton University Press. https://socviz.co/.
- Wickham, Hadley, Mine Çetinkaya-Rundel, & Garrett Grolemund. 2023. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*, 2nd Edition. O'Reilly. https://r4ds.hadley.nz/.

A note about reading: Occasionally in this class, the assigned readings will constitute more than you can reasonably complete in the time allotted. As you continue in your career, you will find that this is often the case. Again, this course is not meant to comprehensively cover any of the covered topics, but to be an introduction to each. As such, you should develop a strategy for extracting the key elements of each reading *as it pertains to the aims of this class*; if you have questions about how to do this; let's chat.

Course Structure & Requirements

This seminar will be approximately equal parts conceptual, empirical, mathematical and computational. As such, it will be a healthy mix of lecture, discussion and tutorial. To make the most of this structure, you need should show up to each class fully prepared to participate. Requirements include in-class participation, a series of homework assignments and a final paper.

Requirements

I – **In-class Participation**

The seminar structure of this course requires that you contribute to class meetings. Doing so will require keeping up with the assigned readings and homework assignments. As one element of this, each of you will be asked to present one self-selected data visualization to the class – sign-ups are available on Blackboard.

II – Homework/Lab Assignments

A handful of homework tasks will apply concepts developed and demonstrated in class. Problem sets will only be graded for completion, with solutions to be posted to Blackboard *after* they are due.

III – Common Theme Task, Group Visualization & Presentation Research

For one assignment, you will work with a partner (or in groups of 3 if necessary) to analyze a common question that I will pose. For this task, I will provide the dataset and question. Then each team will be responsible for importing, processing, transforming, describing, and analyzing the data to answer the question. You will be required to (1) document each of these steps, (2) produce a preliminary visualization that represents several of these stages, and (3) briefly present your process and results to the class.

IV – Final Visualization Project

The culminating assignment for this course will ask you to produce a "publication quality" visualization of a research finding of your choosing. At minimum, this will be associational (more complex is welcome). While these need not be "original" data analyses, you must have access to the **raw data** to successfully complete the assignment (e.g., you can convert your own or someone else's published table to a figure, but you must have the original data—not just the model results—to be able to accomplish this full assignment). More details will be forthcoming in a separate handout, describing the assignment's aims of (1) exploring the data, (2) formulating a conceptual map of the question, (3) conducting appropriate analysis, (4) converting analytic results to a figure, and (5) comparing among alternatives as several of those steps.

A note about writing: The majority of a practicing researcher's job is spent writing. One of your primary aims in graduate school should therefore be to develop your writing skills. As such, all written work should be edited and *carefully* proofread. If necessary, please make use of University writing services and/or writing style guides. Some examples worth having on your shelf are:
- Becker, Howard S. 1983. *Writing for Social Scientists: How to Start and Finish Your Thesis, Book or Articl*e. University of Chicago Press (multiple updated editions)
- Sword, Helen. 2012. *Stylish Academic Writing.* Harvard University Press.
- Thomas & Turner. 1994. Clear and Simple as the Truth: Writing Classic Prose. Princeton University Press

Grading

Grading Expectations:
Grades you earn will reflect how thoroughly your work demonstrates the particular assignment requirements *and* overall course aims, which will correspond to the following sets of expectations:

- A   Work that, **in addition to** meeting an assignment's **minimum requirements**, also *consistently* reflects **engagement** with other material from the course where appropriate & in ways that **exceed course objectives** will earn grades in the A range.
- B   Work that, **in addition to** meeting an assignment's **minimum requirements**, also *occasionally* reflects **engagement** with other material from the course where appropriate, in ways that **meet course objectives** will earn grades in the B range.
- C   Work that **addresses only** an assignment's **minimum requirements** will earn grades in the C range.
- D   Work that **incompletely addresses** an assignment's **minimum requirements** will earn grades in the D range.
- F   Work that **fails to address** an assignment's **minimum requirements** will earn grades in the F range.

As such, all grades will be recorded as letter grades or equivalents (i.e., A=4, A-=3.7, B+=3.3, etc.). Final grades will be computed as a weighted average over each of the required components:

I.   Participation (20%) – 5% of this will be from your presentation of a visualization.
II. Problem Sets (20%)
III. Group Common Theme Task (15%)
IV. Paper (55%) – 10% of this will be a preliminary presentation of your project to the class.

A note about grading: If you haven't figured it out by now – grades in grad school should not matter. If you do well on each of the components described above, you will earn an A in the course. If you do not contribute to in-class discussion, or write a poor proposal, you will not earn an A. I do NOT discuss individual student's grades in class or over email; that should be reserved for office hours.

Due Dates & Late Assignments:
- All assignments will be submitted via Blackboard.
- Any late assignments will be deducted 15% per day late, and not accepted after 3 days.

Course Expectations

What we all can expect from each other:
Behave in a manner reflecting common courtesies. Show up to office hours or other appointments as scheduled. Maintain professionalism in all electronic communication (e.g., email/Blackboard messages). Put forth our best efforts to maintain a productive and welcoming course.

What I expect from you:
1 – *Make a concerted effort to bring the best you can to the course.* This means doing readings each week, completing required assignments on time, putting forth effort into the evaluated elements of the course. It also means taking ownership over the grades you earn.
2 – *Treat others in the class with respect.* This includes simple norms of regular interaction in an online forum and thoughtfully considering the contributions of others. At times we'll potentially cover material of a sensitive nature; being able to respect other's expressed opinions makes critical discourse possible.

Personal Computers Use: Personal electronics may be used only for legitimate classroom purposes, such as taking notes, downloading class information, or working on an in-class exercise.

What you can expect from me:
1 – *Make a concerted effort to bring the best I can to the course.* This means leading a class appropriate to its level, selecting "up to date" material that helps illustrate the course's key aims (though I'll aim to keep covid from over-taking our course, even despite its direct relevance), regularly being available for interaction via Blackboard & office hours, and adapting as is appropriate for the needs of the class.
2 – *Treat others in the class with respect.* This includes being prepared for class, returning graded materials in a timely manner with useful feedback, seeking to be impartial in the assessment of student work, while holding it to the standards of the course and college. It also means fostering an environment where diverse perspectives can comfortably be shared in class.

Course Communication:
- *The Syllabus* has answers to the most common questions pertaining to the course. Be sure check the syllabus first, before asking me about due-dates, assignment requirements, etc.
- *Office Hours* are available to add to your experience in this course. **Please make use of them.** These are meant to supplement required course work and in-class elements. As such, while I am happy to discuss course materials or other aspects of sociology/academia in general with you during this time, they should not be viewed as an opportunity to ask, "What did I miss in class?" (You should find peers in the class with whom you can share notes for that purpose.)
- *Blackboard* will be used for the majority of communication in this course. You can find a copy of the syllabus, additional assigned readings, and all assignments there. I will also post any lecture notes after each class. To make your experience in this course successful, you should expect to make this resource a *regular* part of your preparation for this course.
- *E-mail* should be used for quick communications (things that can be responded to in no more than a few sentences); use office hours for anything requiring more depth. You should only use your USC email account for communication related to this course; I will not read/reply to emails from your personal accounts (e.g., Yahoo!, Hotmail, etc; honestly they very regularly get filtered from my inbox and I simply don't see them). Please consider e-mail as subject to the same standards of communication as you would all other forms written material in this course (i.e., you should use complete sentences, proper punctuation, etc.). I will typically respond to email within ***48 hours***.

University, CAS, and other Important Administrative Policies

Academic Integrity. You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in a minimum academic penalty of your failing the assignment (i.e., receiving a zero) and will result in additional disciplinary measures. This includes improper citation of sources, using another student's work and any other form of academic misrepresentation.

Plagiarism. Using the words or ideas of another as if they were one's own is a serious form of academic dishonesty. If another person's complete sentence, syntax, key words, or the specific or unique ideas and information are used, one must give that person credit through proper citation.
Please remember that avoiding plagiarism is only a minimal threshold for maintaining academic integrity. Additionally, the first tenet of the Carolinian Creed is, "I will practice personal and academic integrity." There are useful resources on what this entails available for you at:
- [Carolinian Creed](http://www.sa.sc.edu/creed) (http://www.sa.sc.edu/creed)
- [Academic Responsibility](http://www.sc.edu/policies/staf625.pdf) (http://www.sc.edu/policies/staf625.pdf)
- [Office of Student Conduct and Academic Integrity](https://www.sa.sc.edu/academicintegrity/) (https://www.sa.sc.edu/academicintegrity/)

If you remain unsure what this means for your successful participation in and completion of assignments in this course, ask, don't assume.

Accommodations for Disabilities and Other Personal Circumstances - Please notify me if you believe you will have trouble completing course assignments or meeting course requirements for any reason, including, but not limited to: disabilities; family circumstances; poor health; or economic hardship. All discussions will be confidential. I will make reasonable accommodations to ensure your inclusion and success in the course. Students with disabilities can contact the Student Disability Resource Center (SDRC: http://www.sa.sc.edu/sds/) at 803-777-6142, sadrc@mailbox.sc.edu, or at LeConte College, Room 112A for additional assistance.

Student Success Center – In partnership with USC faculty, the Student Success Center (SSC; www.sc.edu/success) offers a number of free programs to assist you in better understanding your course material and to aid you on your path to success. SSC programs are facilitated by professional staff, graduate students, and trained undergraduate peer leaders who have previously excelled in their courses. Resources available to you in this course include:
- Peer Tutoring: You can make a one-on-one appointment with a peer tutor. Drop-in Tutoring and Online Tutoring may also be available for this course. Visit their website for a full schedule of times, locations, and courses.
- Peer Writing: Improve your college-level writing skills by bringing writing assignments from any of your classes to a Peer Writing Tutor. Similar to Tutoring, you can visit the website to make an appointment, and to view the full schedule of available drop-in hours and locations.
- Success Consultations: In Success Consultations, SSC staff assist you in developing study skills, setting goals, and connecting to a variety of campus resources. Throughout the semester, I may communicate with the SSC via Success Connect, an online referral system, regarding your progress in the course. If contacted by the SSC, please schedule a Success Consultation. Success Connect referrals are not punitive and any information shared by me is confidential and subject to FERPA regulations.

Writing Center – This course has many of writing assignments. The University Writing Center (http://artsandsciences.sc.edu/write/university-writing-center) is open to help any USC student needing assistance with a writing project at any stage of development.

Counseling Services - The University offers counseling and crisis services as well as outreach services, self-help, and frequently asked questions: https://sc.edu/about/offices_and_divisions/student_health_services/medical-services/counseling-and-psychiatry/index.php

Grades of Incomplete: The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course. Students have up to one year (three semesters) to complete course requirements. Dr. adams is the final authority on whether you qualify for an incomplete. Incomplete work must be finished within the time allowed or the "I" will automatically be recorded as an "F" on your transcript.

Course Schedule Overview

<mark>NOTE: this schedule is subject to change. Changes will be announced in class and on Blackboard. Full reference information provided at the end of the syllabus.</mark>

Week 1   Aug 20   Introductions, Course Overview, Initialize R
Week 2   Aug 27   Data Wrangling
Week 3   Sep 3   A Grammar of Graphics
                        Assignment Due: Data Summary

Week 4   Sep 10   Exploratory Data Analysis
Week 5   Sep 17   Principles of *Reading* Visualizations
                        Assignment Due: A Comparison of First Passes

Week 6   Sep 24   Multiple Comparisons
Week 7   Oct 1   (Causal) Theoretical Diagrams
Week 8   Oct 8   What's in a Model?
Week 9   Oct 15   Explanatory Data Visualization
Week 10   Oct 22   Group Task Presentations & Discussion
                        Assignment Due: Group Single Theme Figure & Write-Up

Week 11   Oct 29   Is 1000 Words an Under-estimate? Focusing Readers' Attention on Key Result(s)
Week 12   Nov 5   "Special" Data Forms (Networks, Geography, et al.)
Week 13   Nov 12   Incorporating Uncertainty
Week 14   Nov 19   Show & Tell
                        Assignment Due: 2 Alternatives for Final Visualization

Week 15   Dec 3   Post Processing

<mark>Thursday Dec 12</mark>   <mark>Final Paper Due @1700 (to Blackboard)</mark>