

Advanced Data Journalism

J7432/4432

Instructor: Elizabeth Lucas

I'm a long-time data journalist and trainer for Investigative Reporters and Editors (IRE). I was once a graduate student at Mizzou. Feel free to call me Liz.

At any time, you can email me at **LucasEK@missouri.edu**. I will try to respond within 24 hours.

If you need extra help or have questions about the material, I am more than happy to meet one-on-one. I will (almost) always be available for the two hours after class to meet with you in person or on zoom. You can sign up for a 30-minute meeting using [Calendly](#). We can also schedule a meeting for a different time, just send me an email.

My office is 107 Lee Hills Hall, in the basement, nearest the door to 7th St.

Course Overview

What is this course about?

My goal for this class is to help you develop *advanced* skills for acquiring, cleaning, analyzing and representing data. Advanced quantitative analysis requires 1) special tools and technical skill, and 2) robust critical thinking and decision making. You will never be done developing your skills or your capacity for critical thinking, so think of this class as one early section of a career-long journey. Each of you will come to this class with different interests and aptitudes; what you leave with depends largely on where you start, where you want to go, and how much effort you're willing to invest along the way.

While we will discuss many different techniques and strategies for doing advanced data journalism, our primary tool for exploring these concepts will be R, which is quickly becoming a favorite language of data teams, along with many individual reporters. Using R, you will have the opportunity to engage various datasets and analytical problems and learn to use data with accuracy, efficiency, and clarity. We will touch on these areas:

- Acquiring data from the web via APIs and scraping;
- Parsing, formatting, and otherwise preparing data for analysis;

- Conducting complex analyses with accuracy and integrity;
- Creating reproducible analyses;
- Using automation where applicable;
- Presenting data findings and visualizations with clarity.

At the end of the semester I expect you to have proficiency in these areas:

- Parsing, formatting and otherwise preparing data for analysis
- Developing sound methodologies for data analysis
- Conducting analysis with accuracy and integrity
- Presenting data findings and visualizations with clarity

You will be asked to demonstrate your level of competency in these skills with weekly practice assignments, and in two bigger projects due throughout the semester. There are no quizzes or tests.

What are your responsibilities?

1. Attendance

We will meet in person from 8:30 to 9:45 a.m. each Monday and Wednesday in RJI 200B (Spencer Room).

You'll need your laptop for every class. I will help you download and install the appropriate software, which shouldn't require anything more than a computer that is reasonably up-to-date. We'll discuss computers and specs in the first week.

The class will be built around a series of sequential modules that relate to and build off each other. Because this learning relies on step-by-step progression, and because of the technical challenges posed by the nature of the material, it's very important that you attend class and keep up with the material from week to week.

2. Assignments

Most weeks I will assign practice work on Wednesdays that will be due on Mondays. Generally these assignments will be coding exercises that will help you practice what we've learned in class.

Practicing writing code is incredibly important in developing proficiency. It can be frustrating, right up until the moment when it starts to make sense and your code does what you want it to do. I strongly encourage you to work through that frustration.

Keep these things in mind:

Failure is necessary. I can almost guarantee that your first attempts will not work, which is how it is for most of us. Failure is an important step in learning.

There is no such thing as perfect code, or *one way* to write code. Code can be written more efficiently and elegantly (what we call "refactoring" code), but if your code is doing what you want it to do, then you have succeeded. So I encourage you to persevere, and not to be concerned with perfection.

Answer the question. Since we're utilizing code for journalistic purposes, most of the time we'll be trying to answer a question. You can write beautiful code that doesn't answer the question, but that doesn't fulfill the assignment.

If you hand in an exercise with code that does not work, or does not make sense to you, or that has wrong answers, I will provide feedback and you can (and should) try again. I ask that you hand in your practice work each Monday, but I will always provide feedback and you will always have a chance to fix it.

The Graduate Assignment

Graduate students must complete an additional assignment to earn graduate credit for this course. We will discuss this in class.

3. Personal projects

Over the course of the semester you will turn in two larger projects that demonstrate your proficiency in coding and your ability to use data for journalistic purposes. I expect your work to be newsroom worthy, something you wouldn't mind handing in to your editor at your first job. Both projects should demonstrate a solid understanding of the fundamentals: know your data, document your work, check your work.

What are my responsibilities?

As someone who has spent 10 years in newsrooms working with data, it is my goal to prepare you for working in a professional setting. I will try to make this material accessible to you; to provide helpful feedback on your work; to respond to your requests for help in a timely manner; to take into account your various aptitudes and interests; and to submit a final grade for each of you at the end of the semester that reflects your work and proficiency.

Grading

Your final grade for this class will reflect your effort and progress toward becoming proficient in evaluating and analyzing data in a journalism setting. The level of technical skill you acquire is up to you. At a minimum you should be comfortable executing primary data analysis functions in R.

Your grade will be based on your attendance, the work you put into weekly assignments, the proficiency you demonstrate in the personal projects, and the grade you think you deserve.

Semester Schedule

This schedule will be a guide; it may change depending on our collective pace and circumstances.

Module 1: Introduction to the class and the basics of programming

Weeks 1 - 3

- Discussion: what is data, what is data journalism, where do we see it, how do we evaluate it
- Learning R: computer setup, working in RStudio, basic R syntax
- Reproducible analyses: from the start we'll work in R Notebooks which help foster cleaner, reproducible analyses
- Introduction to Tidyverse: basic analysis concepts and functions

Module 2: Analysis, methodologies, problem solving and critical thinking

Weeks 4 - 8

- Developing sound methodologies
- Acquiring data through APIs
- Preparing data for analysis
- Joining tables
- Web scraping

PROJECT 1 IS DUE

Mid semester check-ins (one on one)

Module 3: Best practices

Weeks 9 - 10

- Ethics and bias in data
- Reproducibility
- Conducting best practices at every step

SPRING BREAK

Module 4: Presenting Data

Weeks 12 - 14

- Presenting data in writing, audio and graphics

GRADUATE PROJECT group work

Module 5: Where to go from here

Week 15 - 16

- Advice, resources, final questions
- Final project presentations

PROJECT 2 IS DUE

MU Policies & Expectations

Academic Integrity

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor or the Office of Academic Integrity.

Students are expected to adhere to this honor pledge on all graded work whether or not they are explicitly asked in advance to do so: "I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work."

Academic Inquiry, Course Discussion and Privacy

When students record something that happens in a course (a lecture, class discussions, meetings, etc.) it has an impact on the rights of the people captured in that recording. For example, the instructor and the University may have rights to the intellectual property contained in that recording. At the same time, another student who may have been recorded has the right to privacy. In order to protect these rights, MU employs a policy (called "Executive Order No. 38") to govern both situations you may encounter while taking a course – when an instructor allows recordings and when they do not.

Instructors should inform students which applies to their course:

- In this class, students may not make audio or video recordings of course activity, except students permitted to record as an accommodation under section 240.040 of the Collected Rules.
- In this class, students may make audio or video recordings of course activity unless specifically prohibited by the faculty member. However, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded.

If the instructor doesn't specifically prohibit recording course activity, then the students are allowed to record and the same prohibitions regarding distribution apply.

Students who violate this policy are subject to discipline in accordance with provisions of section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters.

FERPA

The Family Educational Rights and Privacy Act (FERPA) of 1974 is a federal law designed to protect the privacy of educational records; to establish the rights of students to inspect and review their education records; and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. The law applies to any individual who is or has been in attendance at an institution *and* regarding whom the institution maintains educational records. Once students have matriculated to the University of Missouri, i.e. enrolled in course work, FERPA rights transfer to the student, regardless of the student's age.

Students can enable certain individuals to have access to their education records by signing a FERPA waiver. The consent must specify records to be disclosed, state the purpose of the disclosure and identify the party or class of parties to whom the disclosure must be made.

Intellectual Pluralism

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the departmental chair or divisional director, the Office of Academic Integrity, or the MU Equity Office.

Mental Health

The University of Missouri is committed to supporting student well-being through an integrated network of care, with a wide range of services to help students succeed. The MU Counseling Center offers professional mental health care, and can help you find the best approach to treatment based on your needs. Call to make an appointment at 573-882-6601. Any student in crisis may call or go to the MU Counseling Center between 8:00-5:00 M-F. After hours phone support is available at 573-882-6601.

Visit our website at <https://wellbeing.missouri.edu/> to take an online mental health screening, find out about workshops and resources that can help you thrive, or learn how to support a friend.

Netiquette

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's nondiscrimination statement, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance.

Religious Holidays & Accommodations

Many religious faiths are represented in the student body. The University of Missouri does not restrict student free exercise of religion, unless 1) the restriction is in the form of a rule of general applicability, and does not discriminate against religion or among religions; and 2) it can be demonstrated that the application of the restriction is essential to furthering a compelling university interest, and is not unduly restrictive considering the relevant circumstance. The policy of the University attempts to strike a reasonable balance between accommodating the religious practice of students and meeting academic needs and standards.

Consult IDE's [Guide to Religions](#) for the form that can be used to notify an instructor of an absence associated with religious practice. Students are expected to notify their instructor(s) by completing and submitting this form in a manner that is consistent with the procedure outlined in the university's policy on student religious accommodation. Providing false information regarding sincerely held religious practice is a violation of the university's Standard of Conduct and will not be tolerated.

Nondiscrimination Policy (Prohibited Discrimination)

The University of Missouri does not discriminate on the basis of race, color, national origin, ancestry, religion, sex* (including gender), pregnancy, sexual orientation, gender identity, gender expression, age, disability, protected veteran status, and any other status protected by applicable state or federal law. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and violence. *Sex discrimination includes rape, sexual assault, sexual harassment, unwanted touching, stalking, dating/domestic violence, stalking, and sexual exploitation. Retaliation for making or supporting a report of discrimination or harassment is also prohibited.

If you experience discrimination or sexual violence, you are encouraged (but not required) to report the incident to the MU Office for Civil Rights & Title IX. Learn more about your rights and options at civilrights.missouri.edu or call 573-882-3880. You also may make an anonymous report online.

If you are a survivor, or someone concerned about a survivor, and need immediate information on what to do, see [RSVP Resources page](#). Both the [Office for Civil Rights & Title IX](#) and the [RSVP Center](#) can provide assistance to students who need help with academics, housing, or other issues.

In the event that you choose to write or speak about having experienced any of these forms of prohibited discrimination or harassment, Mizzou policies require that, as your instructor, I share this information with the MU Office for Civil Rights & Title IX. They will contact you to offer information about resources, as well as your rights and options as a member of our campus community.

Students with Disabilities

The goal of the University of Missouri is to ensure an inclusive learning environment for all students. [The University of Missouri Disability Center](#) provides services and accommodations for students to participate fully in the learning experience and to experience equitable evaluation of their performance. Students (including online students) with a documented disability can contact the Disability Center to establish an [Accommodation Plan](#). Documented disabilities include *hearing, vision, mobility, learning and attention, psychological health, and physical health*. Students' accommodations are implemented with the input of students to maximize the learning experiences. The MU Disability Center keeps information about a student's disability confidential.

Please notify me of your eligibility for accommodations as soon as possible. Additionally, if there are aspects of the course that present as barriers, such as inaccessible course content (e.g., learning assessments, PowerPoints, non-captioned videos, images, tables, PDFs) or if you need an immediate accommodation due to an injury, please contact me or the Disability Center as soon as possible.