

MAKING A CASE WITH NUMBERS GATHERING, STRUCTURING, AND VISUALIZING POLITICAL DATA

University of Michigan
Department of Political Science
Spring 2018

Instructor:	Jesse M. Crosson	Class Time:	T-W-TH
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Course Description:

Data and data science have become an integral part of most economic industries and many academic disciplines in the U.S. and abroad. With the push for “evidence-based” and “data-driven” analyses ever growing, employers—including those in politics and government—have become more interested than ever before in hiring job candidates with statistical and programming skills. In this course, we will learn some of these skills most relevant to political analysis. More specifically, students who successfully complete this course will learn:

1. How to program and work with data, using **R**.
2. Where to find and how to approach existing datasets, including data from government and academic sources.
3. Where to find and how collect original data from social media and other online sources.
4. How to intelligently consume and scrutinize data and data-driven claims
5. How to attractively visualize and present data to an audience

These skills will be useful to students planning on working in a wide variety of contexts, including government agencies, legislative offices, lobbying firms, non-profits, and other places. In order to meet these learning objectives, each week will follow a similar pattern. On Tuesday, class will follow a traditional lecture format, where I will teach a new skill (typically demonstrating with a political dataset) covered in the class readings. On Wednesday, class will proceed similarly, only students will follow along with an in-class application of the weekly topic. Finally, on Thursday, I transition from instructor to “client,” giving the class a challenge/task to complete, as if you were a political professional in the field. The task will focus specifically on the weekly topic, but it will also build on lessons learned in previous weeks.

Course Pages:

All course materials, except for textbook chapters, can be found at this courses Canvas site. Please check the site regularly, as I will be provided announcements and updates via that channel.

Required Texts: Please pick up a copy of

- Paul Teetor. 2011. *R Cookbook: Proven Recipes for Data Analysis, Statistics, and Graphics*. O’Reilly Media. ISBN: 9780596809157.
- Yau, Nathan. 2011. *Visualize this: the FlowingData guide to design, visualization, and statistics*. John Wiley & Sons.

- Imai, K., 2017. *Quantitative social science: an introduction*. Princeton University Press.

Prerequisites: No prerequisites are required!

Grading Policy and Relevant Dates:

Laboratory and Homeworks	40%
Class Participation and Attendance	20%
Midterm Exam	15%
Final Project	25%
Midterm Exam Sent	M, 5/28
Midterm Exam Due	W, 5/30
Student Presentations	W/Th, 6/21-22

Laboratory and Homeworks

As noted above, each week will feature a hands-on class period that applies the lessons learned in class that week. Most of the class period on Thursday will be dedicated to work on this mini project, and the work will be done in a collaborative setting (i.e., groups of 3 or 4). While the work is done in a group setting, each student will receive her own grade for the assignment. Therefore, students should write up in assignment in their own words—no copying! If you have not completed the assignment by the end of class, you must complete it over the weekend, as *all laboratory assignments are due by the beginning of class on the following Tuesday!*

Attendance and Participation

You are expected to come to class every day. However, I understand that life happens, so I give my students one no-questions-asked absence each semester. After that, students lose .5% from their participation/attendance grade for each additional absence. If you have a legitimate reason to miss more than one class (such as a sickness), you will need written documentation. Please feel free to send any questions you may have about this policy. Beyond attendance, your attendance/participation grade is governed by how active and involved you are in class. In order to receive full participation credit, a student must make *an average of one well-formulated, considerate contribution (answer to a question, posing a good question, etc.) per class.*

Midterm Examination (Take Home)

For the midterm exam, students will be given a dataset on Monday morning of May 28. With the dataset, students will be asked to perform a variety tasks and functions. Students will be required to send their completed exams to me via Canvas by *Wednesday, May 30*. Additional details about the exam and its contents will be available as we approach the exam date.

Student Presentations

Each student will use the skills she learned in the class to make a presentation at the end of the class. For the presentation, students will select a political topic of interest and articulate an argument or observation they desire to make with data. Relying primarily upon quantitative data, each student will attempt to persuade the class toward her cause via the final presentation.

In order to fairly measure where the class stands on each student's chosen issue, I will administer a pre-presentation survey early in the semester. This means that students will need to *select a topic by Tuesday*,

May 22. Following the presentations, another survey will be administered to assess the effectiveness of the data presentation. A portion of each student's final grade will be tied to these peer assessments. The rest of the final project grade will be assessed using a detailed rubric to be provided following the pre-survey.

Schedule and weekly learning goals

The schedule is tentative and subject to change. The learning goals below should be viewed as the key concepts you should grasp after each week. Please note that **all readings listed with each date should be completed by the data under which they are listed!**

Part 1: Data Structure, Sources, and Presentation

Week 1, 05/01 - 05/05: The Basics of Data: Why It's Useful, What Kinds Are Available

- *Tuesday.* Course Introduction: Why Data?, Introduction to Data Structures and Sources
 - Readings: Chapters 1, Teetor.
- *Wednesday.* Introduction to R: Language Basics and Capabilities
 - Readings: Chapter 1, Imai. Chapter 2, Teetor.
- *Thursday.* Laboratory – Fulfilling Campaign Finance Information Requests

Week 2, 05/08 - 05/12: Data Structure and Transformation

- *Tuesday.* Understanding data structures in R; Calling individual values
 - Reading: Chapter 2.2, Imai. Chapter 5 (first half), Teetor.
- *Wednesday.* Manipulating entire portions of a dataset
 - Reading: Chapter 6, Teetor.
- *Thursday.* Laboratory – Connecting Members of Congress to Their Districts

Week 3, 05/15 - 05/19: Where to Find Data?

- *Tuesday.* How to use existing data sources, and where to find them
 - Readings: Chapter 4, Chapter 5 (second half), Teetor.
- *Wednesday.* Rudimentary scraping and basic visualization
 - Reading: Imai, Chapter 3.3, 3.6. Tutorial on basic scraping @ <https://rpubs.com/Radcliffe/superbowl>
- *Thursday.* Laboratory – Assessing economic diversity using BLS data
 - Optional: Chapter 10, Teetor.

Week 4, 05/22 - 05/26: Presentation and Scraping Continued

- *Tuesday.* Intro to APIs, with an application to Twitter Scraping
 - Readings: <https://www.r-bloggers.com/how-to-use-r-to-scrape-tweets-super-tuesday-2016/> and <http://utstat.toronto.edu/~nathan/teaching/sta4002/Class1/scrapingtwitterinR-NT.html>
- *Wednesday.* Visualizing Proportional and Time-Variant Data
 - Readings: Chapters 4 and 5, Yau.
- *Thursday.* Laboratory – Tracking changes overtime time and groups, using the Cooperative Congressional Election Study
 - Readings: Chapters 7, Yau.

Part 2: Intelligent Consumption, Truthful Report, and Common Pitfalls of Data**Week 5, 05/29 - 06/02:** Introduction to Quantitative Data Analysis

- *Tuesday.* Goals of quantitative data analysis: inference and challenges to it
 - Rest of Chapter 2, Imai.
- *Wednesday.* Construct Validity and Measurement Error.
 - Reading – Peter, J.P., 1981. Construct validity: A review of basic issues and marketing practices. *Journal of marketing research*, pp.133-145.
- *Thursday.* Laboratory – Conservative or Not? Evaluating Measurements of Political Ideology in the American National Election Study

Week 6, 06/05 - 06/09: External Validity

- *Tuesday.* Sampling and Populations
 - Reading – Chapter 8, Teetor.
- *Wednesday.* Common methods for addressing challenges to external validity
 - Chapter 3.3-3.4, Imai.
- *Thursday.* Laboratory – Why were so many 2016 election polls incorrect?

Week 7, 06/12 - 06/16: Confounding and Alternative Explanations

- *Tuesday.* Confounding, Regression, and Randomization Inference
 - Chapter 2.3-2.5, 7.3, Imai.
- *Wednesday.* Reverse causality, Experiments, and Research Design
 - Chapter 4.2-4.3, Imai.
- *Thursday.* Laboratory – Picking winners or hedging bets? Studying interest group support in elections.

Week 8, 06/19 - 06/23: Summary and Student Presentations

- *Tuesday.* Survey of additional, advanced methods for identifying relationships in data
 - Chapter 5.1-5.3, Imai.
- *Wednesday.* Student presentations
- *Thursday.* Student presentations

Late Policy

Late papers will be penalized one letter grade every day they are late.

Classroom Environment

Please note that the classroom is a space where participation of all students is welcome, protected, and expected, regardless of differences in race, sex, gender, nationality, disability, religion, ideology, or otherwise. Students will be respectful of each other both during section and while completing any assignment outside of class that requires group interaction. As noted above, I recognize that political science is a discipline in which we discuss ideologies, viewpoints, and situations about which reasonable people may passionately disagree. Being the case, I ask that you display the utmost respect for fellow peers and their ideas during class. Please let me know if you feel the classroom lose such a level of respect at any time, so that we can address your concerns. Additionally, if you feel that your views are being disrespected in outside-the-classroom interactions related to this course, please do not hesitate to speak with me.

Cell Phones and Laptops

To limit disruptions, please turn off your cell phone when you come to class. If your cell phone does ring, I will ask you to turn it off and put it away. Repeated issues with cell phones will result in decreases in your participation grade. In fairness, if my cellphone goes off during class, I will bring doughnuts from Dom's Bakery in Ypsilanti to the following session. If you are expecting an important phone call during section, please get in touch with me before class and we can arrange something. Text messaging is not permitted.

I have no problem with you using your laptop to take notes. However, if you do choose to use your computer, I ask that you please sit towards the front of the classroom and refrain from browsing Facebook / other social media, or otherwise distracting yourself with your computer. Doing so may affect your participation grade.

Academic Misconduct and Grade Appeals

While the vast majority will not engage in academic misconduct, it must be reiterated that academic misconduct will not be tolerated. Please see the LSA website (<http://www.lsa.umich.edu/academicintegrity/>) regarding this topic for more thorough explanation of the plagiarism, cheating, and general academic misconduct policies.

Grade appeals must be submitted in writing to me at least 24 hours after the grade is returned. I will review your appeal and choose to either keep the same grade or change it.

Accommodations for Students with Disabilities

If you think you need an accommodation for a disability, please let me know at least two weeks prior to the time when the accommodation will be needed. Some aspects of this course, the assignments, the in-class activities, and the way the course is usually taught may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Office of Services for Students

with Disabilities (SSD) to help us determine appropriate academic accommodations. SSD (734-763-3000; <http://www.umich.edu/sswd>) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. Any information you provide is private and confidential and will be treated as such.

Contacting Me

My office, office hours, and e-mail can be located at the top of the syllabus. The best way to contact me is to come to office hours (or by scheduling an appointment if necessary). Office hours are intended as a resource for you; they are a time where we can discuss questions about the material, assignments, or your experience in class. You can also contact me through e-mail. I will respond to e-mails within 24 hours on a weekday and within 48 hours on the weekend and holidays. As you might expect, an e-mail sent during school hours will have a faster turnaround than an e-mail sent at 2 a.m. the night before an exam. If you wish to contact me this way, please include PS389 in the subject line of the e-mail.