

**Department of Sociology
Dartmouth College
Winter 2025**

**The Power of Numbers:
How Data and Algorithms Shape the World (Sociology 77)**

MWF 2
205 Blunt

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Course Description:

While statistics and quantitative data are increasingly becoming important parts of our lives, the specific social processes through which they are engineered remain elusive to many of us. We learn math, statistics, and quantitative methods in classes, but most often those courses glance over the social contexts in which the technology of numbers was developed. In this course, we trace the development of statistics and quantitative analysis through modern times in an attempt to understand how they have been used and perceived in society. We also address recent controversies surrounding their implementation in businesses and government institutions, especially in relation to algorithmic decision making. In the process, we will establish that statistics and quantitative data are not just abstract, formal tools whose meanings are absolute and obvious, but that they are social constructs embedded in particular institutions, such as the state and market.

The first part of the course establishes the necessity of studying the social history of numbers. In Part II, we observe how statistics and quantitative data provide the foundation for social order and trace the connection between numbers and social categories, such as race and gender. Part III highlights the most recent trends in the use of statistics and quantitative data, such as automation and algorithmic decision making.

After taking this course, students should be able to understand how statistics and quantitative data came to hold sway in modern world and understand the specific manner in which they govern our everyday lives. Taking up an impartial view, students should be able to explain the harms as well as benefits associated with the uses and misuses of statistics and quantitative data.

Research Intensive Course:

There is no midterm or final exam for this course. Instead, students will be graded on a series of assignments and a group research project, the result of which will be presented to the entire class

at the end of the semester. This does not mean that students have less work to do—more likely the opposite. Students will be expected to come up with research ideas, review the relevant sources, and write papers. Students are also expected to present your findings in an accessible manner to classmates. The goal of the assignments in this course is to give you a chance to engage in independent research projects, in which you choose a topic and design the method of inquiry. The professor will be available to provide consultation on this process throughout the semester.

All assigned readings will be provided as pdf files via Canvas.

Course Requirements:

Participation and Attendance (25%)

This course relies much on active participation from students. Students will be granted one unexcused absence before attendance affects your final grade. Each additional absence will deduct 1% from your final grade.

Assignment 1 (15%) “Making Facts from Numbers”

For this assignment, students are expected to write a 2-page (single-spaced, no more than 1,400 words) report on how social facts emerge out of a particular set of numbers. Choose a particular data set, or even a single number, such as unemployment rate. While paying attention to the concept of social fact, as presented by Durkheim, answer the following questions: 1) What does the number represent? 2) How was the number produced—based on what kind of information? Who did the production? 3) Once the data is produced, how do institutions and individuals perceive it? What is the most common context in which you find the number coming up? The professor will review a couple of examples in class while using these questions as guidelines.

Reading (15%): As you may infer from the reading list below, this course relies much on assigned books and articles. I have, in most cases, kept the amount of reading required to lower than 200 pages per week. **YOU MUST READ ALL OF THE ASSIGNED READINGS BEFORE EACH CLASS SESSION.** My lecture, as well as class discussion, will assume that you have read all the readings beforehand.

A note on cold calling: I will call upon students without warning any time during class to answer questions about the assigned reading. Failing to answer will not result in point deduction, but you should be always prepared to answer questions about the readings.

If I feel that students as a whole are keeping up with the assigned readings, everyone will receive 15% percent of grade without further verification procedure. If not, I will implement measures such as random quizzes for assessment.

Assignment 2 (15%) “Lies, Damned Lies, and Statistics”

American writer Mark Twain is rumored to have had a very skeptical attitude toward statistical data. He believed that whenever someone cites statistics, it was an attempt to obscure truth and deceive his or her audience by conveying a false sense of credibility. For this assignment, students are invited to locate and analyze such attempts. Write no more than 2 single-spaced

pages (approximately 1,400 words). Students should discuss 1) the case and context; 2) how the statistics are used, and for whose advantage and 3) why it is misleading.

Student Presentations (30%)

Through consultations with the professor, each student group will choose a topic from the course content, and conduct a research project related to the topic. For instance, based on “rankings” (week 5), a group can analyze how rankings and metrics are used in business sector to impose regulations on employee behaviors. Drawing on the literature on algorithms (week 8 and 9), a group can study how our favorite services, such as ride sharing apps and social media platforms, operate on hidden and not-so-hidden assumptions. In research projects, students are encouraged to organize their inquiry around the following questions: a) what functions do numbers and/or algorithms perform (and do not perform) in the case? b) what is the problem? And c) how can we intervene to make the situation better?

Groups will be organized in the first week of the term; each group will have at least one meeting with the instructor before week 4 and start working on their research project no later than week 6. Each group will give 10-minute presentation and will submit the presentation slides at the end of the term.

Grading Scale:

A 94-100
A- 90-94
B+ 87-90
B 83-7
B- 80-83
C+ 77-80
C 73-77
C- 70-73
D 60-70
F <60

I follow Dartmouth’s Scholarship Ratings:

http://www.dartmouth.edu/~reg/transcript/grade_descriptions.html

Earning an “A” entails the following:

Excellent mastery of course material

Student performance indicates a very high degree of originality, creativity, or both Excellent performance in analysis, synthesis, and critical expression, oral or written Student works independently with unusual effectiveness

In case of a borderline score (i.e., 94), I will conduct a comprehensive assessment of the student’s participation during the term to decide on a grade (either A or A-). The main criteria will be attendance, teamwork, and in-class participation. For instance, a 94 who turned in

excellent assignments and missed a couple of classes will most likely receive A-. If they actively participated in class discussions, however, they may receive an A.

Office Hour Meeting

I will hold Zoom office hour sessions every Tuesday from 3 to 4 by appointment. You should sign up at: <https://www.wejoinin.com/sunmin.kim@dartmouth.edu>. You should sign up for at least one session throughout the term, and I encourage you to meet with me early on in the term so we can get to know each other. If you are unable to meet during this time, please get in touch.

Student Accessibility and Accommodations:

Students requesting disability-related accommodations and services for this course are required to register with Student Accessibility Services (SAS; [Getting Started with SAS webpage](#); student.accessibility.services@dartmouth.edu; 1-603-646-9900) and to request that an accommodation email be sent to me in advance of the need for an accommodation. Then, students should schedule a follow-up meeting with me to determine relevant details such as what role SAS or its [Testing Center](#) may play in accommodation implementation. This process works best for everyone when completed as early in the quarter as possible. If students have questions about whether they are eligible for accommodations or have concerns about the implementation of their accommodations, they should contact the SAS office. All inquiries and discussions will remain confidential.

Title IX Reporting Requirement:

At Dartmouth, we value integrity, responsibility, and respect for the rights and interests of others, all central to our Principles of Community. We are dedicated to establishing and maintaining a safe and inclusive campus where all have equal access to the educational and employment opportunities Dartmouth offers. We strive to promote an environment of sexual respect, safety, and well-being. In its policies and standards, Dartmouth demonstrates unequivocally that sexual assault, gender-based harassment, domestic violence, dating violence, and stalking are not tolerated in our community.

The Sexual Respect Website (<https://sexual-respect.dartmouth.edu>) at Dartmouth provides a wealth of information on your rights with regard to sexual respect and resources that are available to all in our community.

Please note that, as a faculty member, I am obligated to share disclosures regarding conduct under Title IX with Dartmouth's Title IX Coordinator. Confidential resources are also available, and include licensed medical or counseling professionals (e.g., a licensed psychologist), staff members of organizations recognized as rape crisis centers under state law (such as WISE), and ordained clergy (see https://dartgo.org/titleix_resources).

Should you have any questions, please feel free to contact Dartmouth's Title IX Coordinator or the Deputy Title IX Coordinator for the Guarini School. Their contact information can be found on the sexual respect website at: <https://sexual-respect.dartmouth.edu>.

Religious Observances:

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.

Honor Principle:

Assignments will be conducted in accord with the principles of academic honor detailed in the Dartmouth Organization, Regulations and Courses. I encourage you to discuss ideas from class with your classmates. However, unless otherwise noted, assignments should be completed independently and all work turned in should be your own. You may study with classmates, but (as noted above) you should not discuss the exam or your answers with classmates or anyone else while completing it. If your paper topic for a project is one that you're exploring in another class, independent study, or other academic work, you must let me and the other professor(s) know. If you have questions about what is permissible, I urge you to consult the academic honor principle (<https://students.dartmouth.edu/judicial-affairs/policy/academic-honor-principle>), the statement on sources and citations (<http://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth>), and talk with me.

Note on the Use of Generative AI (i.e., CHAT GPT and such)

This course takes algorithms and their social impact as one of its objects of inquiry, and as such, I encourage use of AI for learning purposes. With one caveat, however: in any assignment submitted, you should specify the role of AI and mark distinctively the parts generated by AI. Also, the AI-generated part should be accompanied by your own writing, which, obviously, should be different from the AI's work. The purpose of exercise is to clearly understand the impact of AI in our education.

Do not use AI to generate summaries of assigned readings. DO YOUR OWN READING.

Course Schedule and Assigned Readings:

Part I. NUMBERS IN MODERN WORLD

1/6 Introduction

1/8 Trouble with Numbers

O'Neal, Cathy. 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown: 1-67; 84-104.

1/10 The Numbers as Social Fact

- Durkheim, Emile. 1982[1895]. “What is a Social Fact?” and “Rules for the Observation of Social Fact” in *Rules of Sociological Method and Selected Texts on Sociology and Its Method*. Free Press: 50-59.
- Schuman, Howard. 2002. “Sense and Nonsense about Surveys.” *Contexts* (Summer): 40-47.
- Kolata, Gina. 2007. [“The Myth, the Math, the Sex.”](#) *New York Times*, August 12.
- Azeen, Ghorayshi. 2024. [“3% of American Highschoolers Identify as Transgender, First National Survey Finds.”](#) *New York Times*, October 8.

Team building exercise

1/13 The Ordinal Society

- Healy, Kieran, and Marion Fourcade. 2024. *The Ordinal Society*. Harvard University Press: 1-32; 67-99; 132-161; 187-227.

1/15 Stat Wars

- Best, Joel. 2001. *Damned Lies and Statistics*. University of California Press: 9-29; 128-159.

1/17 Trust in Numbers

- Porter, Theodore. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton University Press: 3-86.

1/20 MLK Day; no class

1/22 The Politics of Numbers

- Hacking, Ian. 1990. *The Taming of Chance*. Cambridge University Press: 1-10; 47-72; 160-188.

Part II. GOVERNANCE THROUGH DATA

1/23 Class meets at 2X; Assignment 1: “Making Facts through Numbers” Presentation

1/24 “Merit”

- Carson, John. 2007. *The Measure of Merit: Talents, Intelligence, and Inequality in the French and American Republics, 1750-1940*. Princeton University Press: 159-228.

*** Assignment 1: “Making Facts from Numbers” due by 6PM on January 26th ***

1/27 “Race”

Kevles, Daniel J. 1985. *In the Name of Eugenics: Genetics and the Uses of Human Heredity*. Harvard University Press: 3-69.
Yglesias, Matthew. 2018. [“The Belle Curve is about Policy. And It's Wrong.”](#) Vox, April 10.

1/29 “Gender”

Schaffer, Amanda. 2008. [“The Ghost of Larry Summers.”](#) *Slate*, July 4.
Anderson, Margo. 1992. “The History of Women and History of Statistics.” *Journal of Women's History*. 4(1): 14-36.

1/31 “Nation”

Igo, Sarah. 2007. *The Averaged American: Surveys, Citizens, and the Making of a Mass Public*. Harvard University Press: 1-102.
Lam, Tong. 2011. *A Passion for Facts: Social Surveys and the Construction of the Chinese Nation-State, 1900-1949*. University of California Press: 1-49.

2/3 “Elite University”

Espeland, Wendy, and Michael Sauder. 2016. *Engines of Anxiety: Academic Rankings, Reputation, and Accountability*. Russell Sage Foundation: 1-18; 40-98.
Chu, James. 2021. “Cameras of Merit or Engines of Inequality? College Ranking Systems and Enrollment of Disadvantaged Students.” *American Journal of Sociology* 126(6): 1307-1346.

2/5 “Diversity”

Hirschman, Daniel, Ellen Berrey, and Fiona Rose-Greenland. 2016. “Dequantifying Diversity: Affirmative Action and Admissions at the University of Michigan.” *Theory and Society* 45: 265-361.
Bhatia, Aatish, and Emily Badger. 2024. [“Can You Create a Diverse College Class without Affirmative Action?”](#) New York Times, March 9.
Bhatia, Aatish. 2024. [“Colleges are Reporting Post-Affirmative Action Data. Be Careful Interpreting It.”](#) New York Times, September 27.

2/7 Assignment 2: “Lies, Damned Lies, and Statistics” Presentation

Part III. THE SOCIETY OF ALGORITHMS

2/10 Welfare

Eubanks, Virginia. 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. Picador: 39-83; 127-173.

2/12 Work

- Wei, Jiemin Tina. 2024. "Amazon Mechanical Turk: The Human Sciences' Labor Problem." *Labor: Studies in Working-Class History* 21(3).
- Levy, Karen. 2023. *Data-Driven: Truckers, Technology, and the New Workplace Surveillance*. Princeton University Press: 52-76; 92-118.
- Scheiber, Noam. 2017. "[How Uber Uses Psychological Trick to Push Its Driver's Buttons.](#)" *New York Times*, April 2.

2/14 Policing

- Lum, Kristian, and William Issac. 2016. "To Predict and Serve?" *Significance*, October 7.
- Brayne, Sarah. 2017. "Big Data Surveillance: The Case of Policing." *American Sociological Review* 82(5): 879-1110.
- Brayne, Sarah, and Angèle Christin. 2021. "Technologies of Crime Prediction: The Reception of Algorithms in Policing and Criminal Courts." *Social Problems* 68(3): 608-624.

2/17 President's Day: No class

*** Assignment 2 "Lies, Damned Lies, and Statistics" due by 6PM on February 17th ***

2/19 Special Guest Lecture: Benjamin Shestakofsky (University of Pennsylvania)

Behind the Startup: How Venture Capital Shapes Work, Innovation, and Inequality

Venture capital investors push startups to scale as quickly as possible to inflate the value of their asset. In *Behind the Startup*, I draw on nineteen months of participant-observation research inside a successful Silicon Valley startup to illuminate the relationship between financial systems and on-the-ground processes of technology development. I show how investors' demands created organizational problems that managers addressed by combining high-tech systems with a low-wage, globally distributed workforce. With its focus on the financialization of innovation, *Behind the Startup* explains how the gains generated by tech startups are funneled into the pockets of a small cadre of elite investors and entrepreneurs, leaving workers and users to bear many of the costs and risks associated with innovation. To promote innovation that benefits the many rather than the few, I argue that we must focus less on fixing the technology and more on changing the financial infrastructure that supports it.

Benjamin Shestakofsky is an assistant professor of sociology at the University of Pennsylvania, where he is a faculty affiliate of AI at Wharton and the Center on Digital Culture and Society. His research centers on the design, development, and use of AI, and its implications for work, organizations, and social inequalities. His book, *Behind the Startup: How Venture Capital Shapes Work, Innovation, and Inequality*, was published in 2024 by the University of California Press. His articles have appeared in journals including *Big Data & Society*, *Socio-Economic Review*, *Theory and Society*, and *Work and Occupations*. His research and commentary have appeared in media outlets including the *New York Times*, *National Public Radio*, *USA Today*, *San Francisco Chronicle*, *Financial Times*, and *Fast Company*.

2/21 No class (Professor out of town)

2/24 Media and Information

Christin, Angèle. 2020. *Metrics at Work: Journalism and the Contested Meaning of Algorithms*. Princeton University Press: 1-14; 75-124.

Noble, Sofiya Umoja. 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York University Press: 15-63.

2/26 Artificial Intelligence

Crawford, Kate. 2021. *Atlas of AI: Power, Politics, and Planetary Cost of Artificial Intelligence*. Yale University Press: 1-52; 181-228.

Sun, Yujie, Dongfang Sheng, Zihan Zhou, and Yifei Wu. 2024. "AI Hallucination: Towards a Comprehensive Classification of Distorted Information in Artificial Intelligence-Generated Content." *Nature: Humanities and Social Sciences Communications* 11.

2/28 Presentation Prep

3/3 Reclaiming Future

Benjamin, Ruha. 2019. *Race after Technology: Abolitionist Tool for the New Jim Code*. Polity: 1-48; 160-197.

D'Ignazio, Catherine, and Lauren Klein. 2020. *Data Feminism*. The MIT Press: 1-72.

3/5 Student Presentations

3/7 Student Presentations