**Department of Sociology**

**Dartmouth College**

**Fall 2022**

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

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**Course Description:**

While statistics and quantitative data are increasingly becoming important components 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 than 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. Some books may be physically available in the course reserve at the Baker-Barry Library.

**Course Requirements:**

**Participation and Attendance (20%)**

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 (25%) “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.

**Assignment 2 (25%) “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. Groups will be organized in the second 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.

**Grading Scale:**

A 94-100

A- 90-93.99

B+ 87-89.99

B 83-86.99

B- 80-82.99

C+ 77-79.99

C 73-76.99

C- 70-72.99

D 60-69.99

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*

**Office Hour Meeting**

I will hold Zoom office hour sessions every Monday from 2:30PM to 4:00PM by appointment. You should sign up at: <https://www.wejoinin.com/sheets/rwoyg>. 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](https://students.dartmouth.edu/student-accessibility/students/working-sas/getting-started); [student.accessibility.services@dartmouth.edu](mailto: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](https://students.dartmouth.edu/student-accessibility/services/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*](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*](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*](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.

**Course Schedule and Assigned Readings:**

**Part I. NUMBERS IN MODERN WORLD**

**Week 1. Why study numbers?**

Introduction

O’Neal, Cathy. 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown: 1-31; 50-67; 84-122; 141-160.

**Week 2. 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: 50-84.

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 (https://www.nytimes.com/2007/08/12/weekinreview/12kolata.html)

Best, Joel. 2001. *Damned Lies and Statistics*. University of California Press: 1-29; 96-127.

**Week 3. Trust in numbers**

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

Hacking, Ian. 1990. *The Taming of Chance*. Cambridge University Press: 1-10; 47-104; 160-188.

Desrosières, Alain. 1998. *The Politics of Large Numbers: A History of Statistical Reasoning*. Harvard University Press: 1-15; 147-209.

\*\*\* Assignment 1 due at the end of week 3 \*\*\*

**Part II. GOVERNANCE THROUGH DATA**

**Week 4. Public opinion**

Lee, Taeku. 2002. *Mobilizing Public Opinion: Black Insurgency and Racial Attitudes in the Civil Rights Era*. The University of Chicago Press: 17-42.

Blumer, Herbert. 1948. “Public Opinion and Public Opinion Polling” *American Sociological Review* 13(5): 542-549.

Bourdieu, Pierre. 1979. "Public Opinion Does Not Exist." In *Communication and Class Struggle, Volume 1*. Mattelart and Siegelaub, Editors. International General. 124-130.

**Week 5. Hierarchy by numbers**

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 Chines Nation-State, 1900-1949*. University of California Press: 1-49.

Espeland, Wendy, and Michael Sauder. 2016. *Engines of Anxiety: Academic Rankings, Reputation, and Accountability*. Russell Sage Foundation: 1-132.

**Week 6. Market by numbers**

Fourcade, Marion and Kieran Healy. 2017. “Seeing Like a Market” Socio-economic Review 15(1): 9-29

Fourcade, Marion. 2016. “Ordinalization” *Sociological Theory* 34(3): 175-195

\*\*\* Assignment 2 due at the end of week 6 \*\*\*

**Week 7. Race and gender by numbers**

Kevles, Daniel J. 1985. *In the Name of Eugenics: Genetics and the Uses of Human Heredity*. Cambridge: Harvard University Press: 3-69.

Xie, Yu. 1988. “Franz Boas and Statistics.” *Annals of Scholarship* 5: 269-296

Pierpont, Claudia. 2004. “The Measure of America: How a Rebel Anthropologist Waged War on Racism.” *The New Yorker*, Mar. 8: 48-6

Stapleford, Thomas. 2004. “’Housewife vs. Economist’: Gender, Class, and Domestic Economic Knowledge in Twentieth- Century America.” *Labor: Studies in Working Class History in the Americas* 1(2): 89-112.

Anderson, Margo. 1992. “The History of Women and History of Statistics.” *Journal of Women's History*. 4(1): 14-36.

**Part III. ALGORITHMIC SOCIETY**

**Week 8. The black box**

Pasquale, Frank. 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Harvard University Press: 1-139.

Harcourt, Bernard. 2006. *Against Prediction: Profiling, Policing, and Punishing in an Actuarial Age.* The University of Chicago Press: 109-172.

**Week 9. The social life of algorithms**

Finn, Ed. 2017. *What Algorithms Want: Imagination in the Age of Computing*. MIT Press: 15-56.

Cheney-Lippold, John. 2017. *We Are Data: Algorithms and The Making of Our Digital Selves*. NYU Press: 94-200.

Scheiber, Noam. 2017. “How Uber Uses Psychological Trick to Push It's Driver’s Buttons” *New York Times*, April 2 (https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html).

**Week 10. Student Presentations**