

Numbers and Social Justice (CMMU 30) ~ Summer Session 2, 2020

Professor: Andrea Steiner, PhD (policy analysis), MSG (G for gerontology)
Department: Community Studies
Class offered: As a hybrid. Synchronous sessions M, Th 1-2 pm
NOTE: Attendance is required. Please do all you can to be able to turn ON your video throughout the sessions.

Section: Yes, on Tuesdays 1-2 pm, as pre-assigned via email to Section 1 or 2.

My office: In Zoom-land
My contact info: steiner@ucsc.edu
Office hours: By appointment Thursdays before class.

TAs: Julianne Foxworthy, jfoxwort@ucsc.edu
Vaibhav Sutrave, vsutrave@ucsc.edu

Teaching intern: Cal Larisch, clarisch@ucsc.edu
TA/intern office hours: To be arranged
NOTE: Instead of a final, you'll have a group project called Numbers in the News. **Each group must schedule at least one meeting** (preferably 2 or 3) with Cal or your TA to discuss its development.

Syllabus

Welcome to *Numbers & Social Justice*, a lower-division elective offered by Community Studies. This course is designed expressly for students who have found the language of math and statistics a problem; the goal this summer is to de-mystify quantitative thinking and develop appreciation for what it can – and cannot – accomplish. **If the language of math has not been a mystery for you, then you're in the wrong classroom.** You're likely to be bored... and possibly uncomfortable too because we break some of the most basic rules of how to do arithmetic.

The following syllabus will guide our work during the quarter and give you a clear picture of my expectations.

Aims:

- To support social science and humanities students in developing a firm foundation in basic statistical reasoning -- i.e., the logics of numeracy -- and a clear appreciation of the power of sensible thinking about probability and uncertainty, as well as its limitations.
- To relate simple lessons of quantitative analysis to topical materials immediately relevant to social justice, social change, civic engagement, and social action.
- To encourage willingness to sort fact from fiction in a critical and quantitatively informed manner. After all, statistics has been referred to as "political arithmetic." Let's get our arms around that too.

Objectives:

By the end of this course, you will know how to:

- Do “rough (back of the envelope) math” – quick calculations that give you a *clear sense* of the realities you’re confronting in the world, whether examining income inequality, voters’ polls and survey results, the rate at which a virus is spreading (and where), or potential discrimination whether in housing, policing and incarceration, or access to health care;
- Roughly calculate (orders of magnitude [powers of 10], rounded estimates) quantities such as proportions, rates of change, means, standard deviations, and standard errors, and understand *when* and *why* these calculations will serve you;
- Accurately extract useful information from graphs and tables; and
- Pose appropriate questions in response to quantitatively framed claims, whether to debunk naïve assumptions or expose the flaws behind impressive-looking but bogus arguments.

You will also be able to:

- Relate theory to practice, and personal experience to both;
- Develop your listening and participation skills; and
- Think critically and creatively about how quantitative information is deployed in relation to social justice debates.

Expectations (including assignments and due dates):

In order to get the most out of this course, I ask you to:

1. **Attend classes – i.e. Zoom sessions -- regularly, and arrive on time.** If this is a problem for you, come see me right away. Your attendance is crucial because (1) we meet only 10 times, (2) my teaching method is often interactive, so you can’t do the learning without the dialogue, and (3) we practice in class for the weekly take-home assignments (homework, test, quiz, call it what you want but there’s a grade). Attendance is required. We’re handling section attendance a little differently; see Grading & Evaluation (below) for an explanation.
2. **Keep up with all “asynchronous” materials** -- lectures, lessons, video clips, podcasts, and reading -- **and come to class prepared**. That’s important. Come with your questions and I’ll do my best to ensure that everyone understands the material. The reading is fairly light but it’s essential. You can’t just pull things at the moment you’re answering some homework question; it won’t work. Your graded assignments ask you to think, not just regurgitate.
3. **Ask questions *whenever you are unclear***. For all of us, the beginning of learning is to acknowledge ignorance. It can be an uncomfortable feeling but it’s crucial to become good at embracing the steeper parts of life’s learning curves. I encourage you to frame your uncertainties or anxiety as “excitement,” because it is also that. In this class, we’re aiming for an atmosphere where learning can happen, and that means all questions are welcome. I promise, if you have a question then somebody else in the class is wondering the same thing. And, if you prefer one-on-one tutorial-style learning, you can also talk with me, your TA, or our Community Studies undergrad teaching intern. We are all here to support you.
4. **In weeks 1-4, complete a weekly assignment.** You can think of these as homework or quizzes or tests; the point is to give you a somewhat extended space for hands-on engagement with course concepts, and to give us a way to assess what you’re learning. Your assignments will

be posted on Canvas each Monday after lecture. They will emphasize the current week’s work and also may cover previous lessons. As the course progresses, I expect your demonstrated knowledge to be cumulative. This is not what Paulo Freire called the banking method of education. Each assignment will, I hope, be a learning experience of its own. Do the work on your own and then you’ll go over it either during section, in section-targeted videos, or in one-on-one office hours. **Weekly assignments are due** no later than the following Sunday at 10 pm. Note that you’ll have to complete the week 4 assignment in parallel with your work on the final team project (see below) which you’ll present on Monday, Tuesday, or Thursday of week 5. Make sure to manage your time on that carefully. Remember: The assignments are open-book, but no collaborating & no Internet unless specifically instructed to do that. (Each homework is worth 15% of your grade, for a total of 60%.)

Due dates as follows:

HW #	Posted on Canvas (M)	DUE on Canvas -- Gradescope (SU)
1	7.27	8.2
2	8.3	8.9
3	8.10	8.16
4*	8.27	8.23
5	Groups present on M, Tu, or Th as assigned (Final Project). Individual summary analyses due no later than FRIDAY, 8.28.	

*: That last week will be chock-full because you’ll also be presenting your final project. Make sure you clear your calendar so that you can fully prepare for success!

- In place of a final exam, complete a team project on Number in the News, to be presented during the last week of class. Link it to your own (individual) 3-page summary/analysis.** The last months have been like a crash course in statistics for the whole population; we have been exposed to so many graphs and counts, rates and trends, surveys, equity analyses and more. Let’s take advantage of that. In week 2 you’ll identify a topic—we will suggest some to get you started, and I may give you a firm steer on where to focus your efforts once you’ve settled on the general topic—and you’ll join with 4 or 5 other people in the class to identify a set of sources in the news and critically analyze them from a numeracy perspective. A full prompt will be posted on Canvas. The practical details are: (1) each group will have a total of 15-20 minutes (tbc) to present your findings during week 5. In that week, the two sections will come together so that we’ll have a total of 3 hours on Monday, Tuesday and Thursday for, in effect, your elevator speeches summarizing and analyzing the news coverage of a key contemporary issue. (2) At the end of the week, each individual will turn in a 3-page paper –prompt for that will also be posted on Canvas—in which you describe your contributions to the group project and identify your top take-away messages, at least one of which must be “meta,” i.e. about the numeracy-related insights, and not simply informative about the subject (e.g., “I learned the population of Iceland compared to the population of Madagascar.” That’s nice, but not what we’re going for.) Presentations worth 15% of the final grade, papers worth 10% (final project total = 25% of final grade).
- Conduct yourself with academic integrity and honesty.** The university has strong policies about academic misconduct, and so do I. Much of our work is collaborative; some is not. If I catch you cheating, you will fail the relevant assignment, very possibly fail the course, and

equally possibly I will start the formal procedures that the university stipulates. If you have any questions at all about what constitutes cheating or plagiarism, there is no shame in that; for clarification, see http://www.ucsc.edu/academics/academic_integrity/index.html, where the 18th century thinker Samuel Johnson is quoted as saying: “Knowledge without integrity is dangerous and dreadful.” The UC statement goes on to read, “Academic misconduct includes but is not limited to cheating, fabrication, plagiarism, or facilitating academic dishonesty or as further specified in campus regulations.” You can also come and check with me.

Bottom line: it is your responsibility —and, I hope, your joy-- to learn for yourself by doing your own work. The assignments are designed to engage your mind, not just your feedback loop. If you’re concerned about your performance, come see me and we’ll create a plan to help you earn your best possible grade. Don’t get yourself into a desperate situation; communicate, please!

- 7. Equity, disability and universal design.** As you know, we’re still finding our way in the brave new world of teaching and learning in the time of pandemic. One thing’s that emerged is that folks aren’t equally distributed when it comes to stable wifi access. I want everyone on video because it truly affects our sense of connectedness; at the same time, I realize some people won’t be able to manage that. It’s also the case that some of you will require access to recordings of the synchronous sessions; that’s a setting I can arrange for you and I’ll look into making them universally available for the duration of the course. We can’t record break-out sessions, I don’t think. Anyway, the recordings may help with your studying or if you have to miss a class at some point (one class). I hope it will support folks with hearing or attention deficit challenges too. More generally, **please let me know right away if you are registered with the Disability Resource Center**, so we can ensure that your need for accommodations will be satisfied. I would like to meet with you in person as soon as possible. And everyone: **communicate!** It will make all the difference. Thanks.

Grading and evaluation

Please, don’t get hung up on them. Steady A’s don’t mean you couldn’t improve, and an early C or D doesn’t mean you won’t end up doing fine. I look at progress and growth as well as basic performance. I’ll give you a lot of feedback along the way, because I want you to take that feedback into account and use it to improve your critical thinking and writing. I’m happy to work closely with you, so please don’t be shy about asking for support. Here is the breakdown of how I’ll grade your work:

- **Weekly assignments – 15% each x 4 = 60%.** I’ll grade these according to the accuracy of responses, clarity of expression, and understanding of key concepts and why they matter.
- **Final project: Numbers in the News – 25% (15% presentation, 10% companion materials).** I’ll evaluate your presentations for their clarity, even-handedness, perceptiveness, accuracy, and —as appropriate—creativity. I’ll also look at your team-working skills, i.e. the quality of the collaboration as demonstrated by the overall functioning of the group *as a* group. I’ll assess the written essays for these strengths too, including appropriateness of sources you include and the insightfulness of how you point out their relevance; in the essay, your grammar, spelling, and writing style will also be assessed. Cite your sources using APA format.

- **Attendance and participation – 15% and risk of failing the course.** As you can see, your engaged presence in class is an important element of the course. Attendance is **required**. Lecture: Anyone who misses more than one class may not pass. “I’m busy with other courses” is not a legitimate excuse. Re participation I’ll consider (1) evidence that you’re coming to class prepared, (2) how perceptive your questions and comments are, and (3) how respectfully you listen to and engage with your classmates. Interaction and building a learning community will be challenging, especially over just a 5-week period! Your active, mindful, good-natured participation will make all the difference. Section: Section attendance is required at least until the first two assignments have been graded. After that, we’ll continue to take attendance and the final number of absences will be one factor in how your TA will arrive at a section grade; another is how much you need to be there! Students earning A’s on all the assignments may miss a section or two without penalty; students who need additional support are expected to show up and take advantage of the help that’s here for you. Everyone is required to attend the week 5 section so that you can participate in the final presentations, both as presenter and audience.

Please know that we’ll work hard to support your learning and expect you to work hard for it too. Passing is by no means automatic; best to know that going in. Also, Canvas’s Gradebook will show you your scores on each assignment, but that is not the same as your grade. If you want to know more, check in with me or your TA as the course progresses.

Required Reading and Viewing

Everything will be available for you on the Canvas site. I figure it’s hard enough right now without your having to source books, get them delivered, etc. If you want less screen time, though, consider creating a notebook or folder and – if you have access to the technology – printing them out for studying, mark-up, etc.

The primary text (we’ll read about a third of it, possibly less) is the user-friendly statistics book, Moore & Notz’s *Statistics: Concepts and Controversies*. They’re up to their 9th edition, so you can see it’s a keeper. We’ll be working with a slightly earlier version because it was the best our library could do. Trust me, though: the math doesn’t change.

Course Outline, by week

(How to read this: I have to say, the value of a course outline, syllabus-style, is growing more obscure as I work with the Modules framework on Canvas. That's really where you should go to understand each week's expectations. It would be great if you could complete some of the week's reading & viewing before we meet on Monday, but I know you'll be focused first on getting in your assignments by Sunday night. Definitely watch the lecture videos by Tuesday and have all the rest completed by the time we meet again on Thursday. Reading and other materials are listed under the week that it's due.)

Here's how most of the weeks will be structured:

- Mondays:** Lecture/lessons associated with (but not exclusively about) assigned reading, viewing, and key points from asynchronous lectures.
- Tuesdays:** Discussion section. The focus will be on understanding the questions and concepts in the take-home. Think of sections in this course as math labs, and take advantage of the great resource that Julianne and Vaibhav are. Remember, if you're not following the material or not doing well on your assignments, any absences will affect your participation grade. But, if you do well on the first two assignments and you're feeling confident about the material, you may post your work to Canvas and treat section as optional. Everyone has to attend week 5.
- Thursdays:** Lecture/practicing/continuing from Monday.

AND

Independently scheduled by project groups: Starting at the end of week 2 or beginning of week 3, groups should schedule zoom consults with your TA or tutor. Figure 30-60 minutes 2 or 3 times during the course.

ASSIGNMENTS DUE: Through Gradescope, every Sunday by 10 pm. They take time! Please work on them throughout the week, and definitely don't leave it to do in one short blast.

What follows is a re-cap of the reading, but may not include all the sources and resources you'll review. Assignment questions may come from anywhere in anything assigned on-line. Work through the "overview" and activities list in each week's module on Canvas. Do open each item separately because I give you a quick orientation to why it's there!

Again:

Find your weekly plan under Modules on Canvas.

Week One (July 27, 30)

Introductions / Numeracy as a social justice issue, statistics as a social justice tool /
Qualitative vs. quantitative frameworks/ Critical epistemology /
Reading and translating tourist math /
The key concept of scope (Is 100 a lot? Is 1000?) – Orders of magnitude / The questions to ask /
The best tool in the quantitative world: Rough math

Reading:

- Moore, D.S. and Notz, W.I. (2009) Prelude: Making sense of statistics. In *Statistics: Concepts and Controversies (7th edition)*. New York: Freeman & Co.
- Farmer, P. (1996) Perspectives: Social inequalities and emerging infectious diseases. *Emerging Infectious Diseases*, vol. 2, no. 4, pp. 259-269. ← Read this to understand the concept of 'critical epistemology.'
- Hacker, A. (2016) The wrong way to teach math. *The New York Times*, February 28, 2016.

Viewing & listening:

- International Labour Organization (2011). What does social justice mean to YOU? <https://youtube.com/watch?v=z754lhcx6qw> 1 min. 54 sec.
- Al Jazeera (2020) The Listening Post: Do Numbers Lie? Data & statistics in the age of coronavirus, 4.11.20. First 11 min., 45 sec. <https://www.aljazeera.com/programmes/listeningpost/2020/04/numbers-lie-data-statistics-age-coronavirus-200411095112009.html>
- Mr. Scaminaci's Statistics Song. 3 min., 25 sec. <https://www.youtube.com/watch?v=LkAjhKH7ovk>

Mini-lectures:

- See week 1 module on Canvas

Optional:

- Martin, D.B. (2013) Race, racial projects, and mathematics education. *Journal for Research in Mathematics Education*, vol. 44, no. 1, pp.316-333. ← A deep dive into the interconnectedness of white supremacy, power politics, and math education. Historical analysis, critical analysis, with implications for understanding intrinsic alienation even in the absence of such explicit insight.

For this and all optional materials, if you read it & write a 1-page response –including brief summary and concise discussion of how it relates to our overall subject, and... well... what did you think? I will give you **EXTRA CREDIT**. (Timing: Email it to me any time by the end of week 4, i.e. August 21st.)

DUE by 10 pm SUNDAY (8.2):

- Homework #1

Week Two (August 3, 6)

Conceptualizing measurement, rates & counts, calculating rates of change / The key role of context (specifying the right denominator) / The Logics of Probability: We are hard-wired for bias but can learn to do better / Using critical epistemology to create clarity / Numbers in the News (groups) /

Key activity this week:

- On Thursday **form groups** for the final Numbers in the News project. Come with your top two choices.

Reading:

- Moore & Notz, Chapters 8: Measuring, and 9: Do the Numbers Make Sense?
- Shaw, Randy. (2015) How statistics on crime, housing can mislead. Beyondchron.com, posted March 17, 2015.
- Van Dam, A. (2020) The awful reason wages appeared to soar in the middle of a pandemic. *The Washington Post*, May 8, 2020.
<https://www.washingtonpost.com/business/2020/05/08/awful-reason-wages-appeared-soar-middle-pandemic/>
- Pager, D. & Shepherd, H. (2008) The sociology of discrimination: Racial discrimination in employment, housing, credit, and consumer markets. *Annual Review of Sociology*, vol. 34, pp. 181-209.
- McIntosh K. et al. (2020) Examining the Black-white wealth gap. Brookings Institution, Up Front blog, February 27, 2020. <https://www.brookings.edu/blog/up-front/2020/02/27/examining-the-black-white-wealth-gap/>
- Bruenig, M. (2020) The racial wealth gap is about the upper classes. *Jacobin Magazine*, 7.6.20.

Viewing & Listening:

- onlin3kyne. TikTok, 6.6.20
<https://twitter.com/onlinekyne/status/1269323114971889670?lang=en>

Mini-lectures:

- See week 2 module on Canvas

Optional (Extra Credit):

- Tversky, A. & Kahneman, D. (1974) Judgment under uncertainty: heuristics and biases. *Science*, Vol. 185, Issue 4157, pp. 1124-1131.

DUE by 10 pm SUNDAY (8.9):

- Homework #2

Week Three (August 10, 13)

Data!

Counting: Surveys, censuses, polls / Samples and populations / Survey design

Reading (Monday: on Census 2020; Thursday: on surveys and polls)

- Moore & Notz, Chapter 1: Where do data come from?
- Baumgaertner, Emily. (2018) Despite concerns, Census will ask respondents if they are U.S. citizens. *New York Times*, March 26, 2018.
- Tankersley, J. and Baumgaertner, E. (2018) Here's why an accurate Census count is so important. *New York Times*, March 27, 2018.
- Williams, T. (2019) What you need to know about the Census citizenship question. *New York Times*, June 27, 2019.
- Percival, K. and Cea, B. (2019) Four takeaways from the Supreme Court's Census Ruling. Brennan Center for Justice, July 1, 2019.
- Franz, D. (2020) 2020 Census Underway. City on a Hill Press (UCSC), 1.30.20
<https://www.cityonahillpress.com/2020/01/10/2020-census-underway/>
- Moore & Notz, Chapter 2: Samples, good and bad (excerpt), Chapter 3: What do samples tell us? and Chapter 4: Sample surveys in the real world.

Viewing & listening:

- Clips from The West Wing. Watch Season 1, Episode 6; access this wherever you can (e.g. youtube) and watch this plot line: 6.47-8.16, 15.30-17.00, and 20.48-21.30.
- Franz, Daniel (2.5.20) 2020 Census Underway (city on a hill press) – video
<https://www.cityonahillpress.com/2020/02/05/2020-census-underway-2/>
- Chakrabarti, Meghna et al. (2020) How the pandemic and Trump's efforts to exclude undocumented immigrants could complicate the 2020 Census. NPR On Point, 7.23.20. Podcast link, 47min., 36sec.
<https://dcs.megaphone.fm/BUR7204354677.mp3?key=a79434cf97d31bbb095ca0b0d92584b3>

Optional (Extra Credit):

- Meerwijk, E.L. and Sevelius, J.M. (2017) Transgender population size in the United States: a meta-regression of population-based probability samples. *American Journal of Public Health*, Vol. 107, No. 2, February 2017.

Mini-lectures:

- See week 3 module on Canvas

DUE by 10 pm SUNDAY (8.16):

- Homework #3

Week Four (August 17, 20)

Tables & Figures: The good, the bad, and the flat-out misleading //
Q & A before your presentations

Reading:

- Moore & Notz. Chapter 10: Graphs, good and bad.
- Glen, Stephanie. Misleading graphs: Real life examples. From *StatisticsHowTo.com*, <https://www.statisticshowto.com/misleading-graphs/>
- Gargani, John. (2012) <https://evalblog.com/2012/01/06/tragic-graphic-the-new-york-times-checks-facts-not-math/> → In addition to reading this post, also read two noted as “Related” at the bottom of the blogpost: Should the Pie Chart Be Retired? And Tragic Graphic: The Wall Street Journal Lies with Statistics?

Viewing & listening:

- onlinekyne. (5.12.20). Here’s one way graphs can lie to you. TikTok, https://www.tiktok.com/@onlinekyne/video/6826124045075926277?u_code=dbi4gibl50fhm2&preview_pb=0&language=en&d=dbi4gm6hl43ka6×tamp=1590099585&utm_campaign=client_share&app=musically&utm_medium=ios&user_id=6810880124248130565&tt_from=sms&utm_source=sms&source=h5_m
- onlinekyne. (5.21.20). I’ve avoided making vids about covid-19 but this blunder was too big to ignore. TikTok. <https://twitter.com/onlinekyne/status/1268621286886039554?lang=en>
- onlinekyne. (6.7.20) Thanks to whoever sent me this graph from @cnbc.com. Let’s talk about why it’s misleading. TikTok. <https://twitter.com/onlinekyne/status/1269738962014404613>

Mini-lectures:

- See week 4 module on Canvas

DUE by 10 pm SUNDAY (8.23):

- Homework #4

DUE during class (8.24, 25, 27):

- Presentations as pre-assigned

DUE by midnight FRIDAY (8.28):

- Individual essays summarizing your role & insights from the final project

Week Five (August 24, 25, and 27)
Reading, Translating, Measuring, Showing, and Interpreting:
It's Your Turn!
// And, Wrapping Up

No new reading.

DUE THIS WEEK:

- On Monday, Tuesday and Thursday –as scheduled—**Student Presentations.**
- Also, some wrapping up activities on Thursday.
- **AND by Friday at midnight**, upload your final essay.

SORRY, NO EXTENSIONS

That's the course!
~ THANKS ~