

QUANTITATIVE ANALYSIS OF SOCIAL DATA
SOCY 10
Fall Quarter 2019
(MWF, 8:50-9:55am; x-period, Th 9:05-9:55am)
Location: 061 Carson

Professor: Jason Houle

Email: Jason.Houle@Dartmouth.edu

Office Hours: Monday and Wednesday, 3:30pm-5:15pm, or by appointment

STATA Programming Assistance: Jianjun Hua Jianjun.Hua@Dartmouth.edu (Office Hours: Mondays 2pm-4pm, 010 Silsby; email Jianjun to schedule an appointment before stopping by)

*Office:*301F Blunt Hall

Phone: 646-3524

Course Description:

This course is intended to provide an introduction to basic statistical techniques used by researchers to investigate social, economic, and political phenomena. The statistical techniques you will learn are really just tools to effectively organize data and present information about the world. For example, researchers have recently employed these statistical techniques to answer the following kinds of questions:

“How have societal opinions about same-sex marriage changed over time?”

“Do people who grow up in impoverished communities have better or worse health than those who did not?”

“Are birth defects related to local levels of water pollution?”

“Is a history of depression associated with premature death?”

“Does getting a college degree have the same labor market benefits for blacks and whites?”

“Is student loan debt leading the current generation of young adults to forgo home-buying?”

By the end of this quarter, you too will be skilled enough in the art of statistics to address these types of questions. Just as important, however, this course is designed to help you become informed consumers of social statistics. This will involve attaining an awareness of the many uses of statistics in everyday life, gaining the ability to think critically about the use of statistics, and developing the skills necessary to interpret and critique social scientific research employing these techniques.

This course is designed to introduce you to the logic of statistical analysis, not to test your mathematical abilities. A rudimentary familiarity with basic arithmetic and a few algebraic functions will suffice for material presented in the course. This means that, even if you are insecure about your math prowess, this class should not intimidate you. More than anything, success in this course requires diligence. The material covered in the course is very incremental, with the presentation of new material building on what you learn in earlier segments of the course. You will have the greatest chance of success if you attend class regularly, take meticulous notes, keep up on your reading, and make sure to visit office hours to get clarification on issues about which you are unsure. In the past, students who have not taken these steps to be proactive in this course have not done well. I reserve the right to use X hours as an impromptu review session if we feel that some issues need further clarification. In addition, please do not hesitate to ask for x-hour review sessions!

Course Readings

Required Texts

Healey, Joseph. 2014. *Statistics: A Tool for Social Research, 10th edition*. Stamford, CT: Cengage.

*I recognize that the latest edition of this book is relatively expensive. Thus, you are welcome to purchase a previous edition of the book at a reduced cost. That said, you are responsible for the material covered in Healey 2014. If you cannot afford the book, please see me as soon as possible. A copy will also be available on reserve at Baker-Berry. If you ever encounter financial challenges related to this class or purchasing the book, please let me know.

Below is a list of optional texts that you may find useful to have on your bookshelf. I will be drawing from these readings (and will occasionally assign chapters on Canvas) throughout the course.

Optional Texts:

- Acock, Alan. 2012. *A Gentle Introduction to Stata* (Revised Third Edition). College Station, TX: Stata Press. ****If you are having trouble with STATA, this is an excellent resource.**
- Best, Joel. 2001. *Damned Lies and Statistics: Untangling Numbers from the Media, Politicians, and Activists*. Berkeley: University of California Press.
- Firebaugh, Glenn. 2008. *Seven Rules for Social Research*. Princeton: Princeton University Press
- Silver, Nathan. 2012. *The Signal and the Noise: Why So Many Predictions Fail—But Some Don't*. New York: Penguin.
- Wheelan, Charles (Dartmouth '88). 2013. *Naked Statistics: Stripping the Dread from the Data*. New York: WW Norton.
- Ziliak, Stephen T. and Deirdre N. McCloskey. 2008. *The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives*. Ann Arbor: University of Michigan Press

For a good application of statistics to everyday life, I highly recommend that you add these blogs to your daily reading:

- Family Inequality (Phil Cohen): <http://familyinequality.wordpress.com/>
- Five Thirty Eight (Nate Silver et al.): <http://www.fivethirtyeight.com/>
- Vox (Ezra Klein et al.) www.vox.com
- The Upshot (NYTimes) <http://www.nytimes.com/upshot/>
- Wonkblog (WaPo): <http://www.washingtonpost.com/blogs/wonkblog/>
- Statistical Modeling, Causal Inference, Social Science (Andy Gelman) <http://andrewgelman.com/>

Statistical Software and Electronics

We will be using STATA 15 for in-class demonstrations, problem sets, and the final project. STATA is available for free on the Dartmouth Network (Mac/PC) and is also available on most public computers on campus. If you are off campus, you can use Dartmouth's VPN to access the keyserve. For more information on STATA resources and installing STATA on your computer, see the following websites:

<http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/software>

MAC: <http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/stata-macintosh-os-x>
PC: <http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/stata-windows>

Please use these resources and the helpdesk for any installation questions.

In some classes, we will be using STATA in order to demonstrate statistical techniques. This will generally occur every Friday. For this reason, you are encouraged to bring your laptop to class so that you may follow along on Fridays.

A brief note on STATA: Learning a new statistical analysis program and programming language is **hard**. I highly recommend that you practice outside of class to hone your skills. I recommend you come see me during office hours with all STATA related questions. In addition, here are some resources that will help you as you learn to code in STATA:

Jianjun Hua's research guides <http://researchguides.dartmouth.edu/content.php?pid=316205&sid=2587562>

UCLA Stata Resources

<https://stats.idre.ucla.edu/stata/modules/>

Princeton Stata Resources:

<http://data.princeton.edu/stata/>

<http://dss.princeton.edu/training/StataTutorial.pdf>

http://dss.princeton.edu/online_help/stats_packages/stata/

Stata Online Course and Cheat Sheets:

<http://geocenter.github.io/StataTraining/>

You will also need to have a calculator to complete your assignments and exams, and to participate in in-class exercises. A basic and inexpensive calculator that has square-root and squaring functions is best for use in this class. *Make sure to bring your calculator to class every day and to all exams.* You are not permitted to use cell phone calculators for exams, but you are welcome to use them during regular class periods. If you do have a graphing calculator with advanced functions (such as automatic calculations for standard deviations, t-tests, ANOVA, etc), I ask that you not use these advanced functions on exams.

Evaluation and Grading

Exam 1,2,3 (20% each) There will be three exams during the course of the term. The exams are not open book. For exams, students are permitted to bring in one *hand-written* 8.5x11 sheet of paper (front and back) with notes and equations. Other materials that will be needed during the exams (such as a copy of the standard normal table) will be provided by the instructor when applicable. For Exams 1 and 2, you will be allotted 65 minutes to complete the exam. For Exam 3 you will be allotted 120 minutes to complete the exam.

Group Project (Assignments, Presentation, and Report) (40%) The group project is one of the most important, and perhaps the most rigorous aspect of this course. Some (or all) of you will be partnering with a local organization and the *Dartmouth Center for Social Impact* to design your study and answer research questions to help the organization better serve the community. See the description in Canvas. These projects will require a significant time commitment, so it's important to choose a topic that you're excited about and get started early! At the end of the term, you will be asked to evaluate the contribution of your fellow group members to the project. These evaluations will be factored into your project grade. In addition, the group project has several components, with the final report worth the lion's share of the points. **-all final papers and accompanying files must be submitted to me electronically (to jason.houle@dartmouth.edu) by the deadline.**

The breakdown for the group project grade is as follows:

Group Project Assignment 1:	5%
Group Project Assignment 2:	5%
Group Project Assignment 3:	5%
Final Presentation*:	15%
Final Report:	70%

**attendance is required for all final presentation dates. Note: if you are not present for your group's presentation day, your final presentation grade will be reduced by 35 percentage points.*

Homework/Problem Sets (0%) There will be 8 ungraded homework assignments this term. For most of these assignments you will use STATA. While I will not be grading homework assignments, you are required to hand in completed assignments. You will lose points for incomplete assignments. With few exceptions homework will be due at the beginning of the class on Monday of each week. **You will be deducted 3 points from your most recent exam score for each homework assignment that you do not hand in, and the late penalty (see below) will be enforced.** You should be completing the homework assignments (and checking your answers) to ensure that you keep up to speed with the course material. I am happy to meet with students during office hours to discuss any questions regarding the homework. Assignments, required questions, and answer keys will be posted on Canvas by Monday of the week before they are due. Please post any questions about the assignments to the *Homework Discussions* forum on Canvas. I will be checking this forum occasionally, but its primary purpose is to provide you a place to help one another understand the material. If you would like to meet with me to discuss the homework assignments, please feel free to drop by during office hours. **Please do not email me with questions about the individual assignments.**

One final note: To receive full credit on exams, you **must** show your work. If you write down the answer without showing how you got to that answer, even if that answer is correct, you will not receive full credit. I will use the following scale in assigning grades:

95%-100%: A	83%-88.9%: B	73%-76.9%: C	Below 60%: F
92%-94.9% A-	80%-82.9% B-	70%-72.9% C-	
89%-91.9%: B+	77%-79.9%: C+	60%-69.9%: D	

Please note the following about grades: 1) I do not round grades; 2) I **do not negotiate final grades** unless an error was made.

Attendance Policy

As a general rule, I do not believe in attendance policies for college-aged students. If you must miss class, you do not need to provide me with an explanation. More importantly, do not ask whether you missed anything important (if the material you missed wasn't important, it wouldn't have been covered in class). Do not ask me for lecture notes—ask your classmates. I will assume that you are serious about your commitment to this class. As such, I presume that if you miss class you have a good reason (e.g., you are very sick, you are caring for someone who is very sick, or you are trapped under something very heavy). Two exceptions: 1) If your absences become chronic, or if you anticipate chronic absences, then it's time to consult with me; 2) your attendance is required for group presentation days

All that said, if you blow off class and do so on a regular basis, you will likely fall behind and find it very difficult to catch up. Fair warning: if this happens, I am unlikely to sympathize with your plight.

Religious Observance Policy: 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 (such as an exam day), please meet with me before the end of the second week of the term to discuss appropriate accommodations.

Late Policy

On any assignment, your grade will be reduced by 8 percentage points for each day late (e.g., 1 day late a grade of 100 would be reduced to a 92; 2 days, 84; and so on). Assignments that are more than 5 days late will not be graded and will receive a 0. **For the ungraded homework assignments, you will be deducted one point from your most recent exam score for each day that the assignment is late (e.g., 1 day late = 1 exam point deducted; 2 days late = 2 exam points deducted; 3+ days late = 3 exam points deducted).** Given that assignments are posted far in advance, no exceptions to the late policy will be made, including for planned and unplanned absences.

Make-up exams: There will be no make-up examinations except in extremely rare cases in which some unforeseen crisis/emergency arises. If you know ahead of time that you have a conflict with the exam schedule, discuss this with me as soon as possible to make arrangements for the exam. Do not expect to arrange different exam schedules simply because it is more convenient.

Academic Integrity

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner and all members of the Dartmouth community are expected to act in accordance with this principle. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the Dartmouth community and compromise the worth of work completed by others. As such, dishonesty of any kind will not be tolerated and students found in violation of the Dartmouth Academic Honor Principle will be notified and reported to the appropriate authorities (<http://student-affairs.dartmouth.edu/policy/academic-honor-principle>). Cheating and other forms of dishonesty

(such as plagiarizing) often result when students feel too much pressure to perform and that they do not have the tools to achieve their goals. If you are falling behind or feeling overwhelmed, please come sit down and chat with me BEFORE you decide to cheat. For additional resources on the Academic Honor Code, plagiarizing, and proper citation of sources, please see the following link: <http://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth>

Disability Needs

Students with disabilities who may need disability-related academic adjustments and services for this course are encouraged to see me privately as early in the term as possible. Students requiring disability-related academic adjustments and services must consult the Student Accessibility Services office (Carson Hall, Suite 125, 646-9900). Once SAS has authorized services, students must show the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to me. As a first step, if students have questions about whether they qualify to receive academic adjustments and services, they should contact the SAS office. All inquiries and discussions will remain confidential, but please note that the Student Disabilities Coordinator may be consulted to verify the disability. See <http://www.dartmouth.edu/~accessibility/> for more information.

Statement of Mental Health

The academic environment at Dartmouth is challenging, our terms are intensive, and classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including your undergraduate dean (<http://www.dartmouth.edu/~upperde/>), Counseling and Human Development (<http://www.dartmouth.edu/~chd/>), and the Student Wellness Center (<http://www.dartmouth.edu/~healthed/>).

TENTATIVE COURSE SCHEDULE

Class	Topic	Readings	Assignment Due Dates
M 9/16	Course Introduction		
W 9/18	X hour: The Research Process	Healey Ch 1; Wheelan Ch. 1 (CV)	
F 9/20	Working with and displaying data; Intro to STATA	Healey Ch 2	
M 9/23	Measures of Central Tendency	Healey Ch 3; Wheelan Ch. 2 (CV) Gould (CV)	HW #1 Due
W 9/25	Measures of Dispersion	Healey Ch 4	
Th 9/26	X hour: STATA Basics		
F 9/27	STATA Lab		
M 9/30	Normal Curve and Z scores	Healey Ch 5	HW #2 Due
W 10/2	STATA Lab and Catch-up		Group Project Assignment 1 Due
Th 10/3	X hour: Optional exam review		
Fri 10/4	EXAM I		
M 10/7	Intro to Sampling	Healey Ch 6	HW #3 Due; Group Project Assignment 2: Select Data, Schedule Meeting (via email) by 10/16

W 10/9	Confidence Intervals	Healey Ch 7	
F 10/11	STATA LAB		
M 10/14	Intro to Hypothesis Testing	Healey Ch 8	HW #4 Due
W 10/16	Two Sample Hypothesis Testing	Healey Ch 9	
Th 10/17	STATA Lab: Regular Class Session		
F 10/18	***NO CLASS***		
M 10/21	Analysis of Variance	Healey Ch 10	HW #5 Due
W 10/23	Chi-Square	Healey Ch 11	
Th 10/24	Optional Exam Review Session		
F 10/25	STATA Lab		
M 10/28	EXAM 2		HW #6 Due
W 10/30	Correlation	Healey Ch 13	
F 11/1	STATA Lab	Wheelan Ch 11(CV)	
M 11/4	Bivariate Regression	Healey Ch. 13 (continued)	HW #7 Due; Group Project Assignment 3 due
W 11/6	Multivariate Analysis	Healey Ch 15 Wheelan Ch 12 (CV)	
Th 11/7	X Hour: Group Project Workshop / Review		
F 11/8	STATA Lab	Barkan (CV)	
M 11/11	Wrap up/Advanced Topics		HW # 8 Due
W 11/13	Promises and Perils of Inferential Statistics	Ziliak & McCloskey; Smith & Pell <u>Optional/Skim:</u> <u>Bernardi et al. 2017;</u> <u>Siegfried & Membrillas; Silver; Flam (CV)</u>	
Th 11/14	X Hour: Group Project Workshop / Review		
F 11/15	Group Presentations		
M 11/18	Group Presentations		
Exam #3 During Final Exam Week: Sun 11/24, 8am (Room TBA; this exam will be proctored) Final Group Report Due (electronically) Mon 11/25 by 10am			

**NOTE: We do not have the time to cover Healey Ch 12 or 14, though I recommend you read these chapters on your own.

CV=Reading on Canvas