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Letters and Science 88-1: Health, Human Behavior, and Data Spring 2016

CCN	Meeting time	Location	Final exam
52055	Mondays 1pm–3pm	2232 Piedmont room 100	(take-home)

Sections below:

Course Overview | Learning Objectives | Prerequisites | Math | Academic Integrity
 Required Texts | Course Requirements | i>clickers | Class Participation | Term Projects
 Web Sites | Students with Disabilities | Student Accommodations

COURSE OVERVIEW. Humans, especially we older ones, are obsessed with good health and longevity, and we are willing to pay for it. As a nation, Americans spend 17% of their incomes on health care, and that share has generally been rising above and beyond what one would expect based on aging of the population alone. In an era when the longevity gap between rich and poor may be widening, we are keenly interested in understanding and preventing health inequalities by improving the health of the disadvantaged. But what external elements and human behaviors produce good health? What kinds of influences reduce health? Is there a difference between activities that we observe healthy people engaging in and activities that actually improve health? The gold standard for disentangling cause and effect in medicine is the randomized controlled trial. But we suspect that many social and behavioral phenomena are important for population health but are never administered in specific dosages to randomly selected treatment and control groups. In this first year connector course, we will examine and discuss measures of human health and longevity alongside arrays of measurable influences on health, identifying the key questions traditionally addressed in health sciences and exploring the current frontier. We will develop broad knowledge of the metrics, methods, and challenges, and we will apply them toward understanding of current issues in health policy.

LEARNING OBJECTIVES. In L&S 88, we will discuss measures and topics in health economics and policy, and we will develop some basic analytical techniques that are useful in understanding key questions. As part of Berkeley's Undergraduate Student Learning Initiative (USLI), the Economics Department has developed learning goals for the Economics major:

<https://www.econ.berkeley.edu/undergrad/home/learning-goals>

Although not an economics course, L&S 88 seeks to achieve the following learning goals:

- CT1. Apply economic analysis to evaluate everyday problems
- QT1. Understand how to use empirical evidence to evaluate an economic argument
- QT2. Interpret statistical results
- QT4. Obtain and/or collect relevant data using specific qualitative and/or quantitative research methods
- CS1. Communicate effectively in written, spoken, and graphical form about specific economic issues

CS2. Formulate a well-organized written argument supported by evidence
 LL2. Know how to locate and use primary data sources

PREREQUISITES. None. L&S 88, like its parent class Data Science (DS) 8, which is cross-listed as Computer Science / Statistics / Information c8. DS 8 is a first-year course and has no prerequisites other than being enrolled as a first-year student at UC Berkeley.

MATH. Students should have a basic knowledge of algebra for quantitative courses at UC Berkeley, and a background in calculus or statistics is helpful. We anticipate that DS 8 will prepare students sufficiently for the breadth of analytical and numerical work ultimately required for DS 8 and for L&S 88.

ACADEMIC INTEGRITY. The student community at UC Berkeley has adopted the following Honor Code: “As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.” The hope and expectation is that students will adhere to this code. Breaches of this code will lead to penalties up to and including an F in the class and a report to the Office of Student Conduct. Students are responsible for being up to date on the academic integrity policies outlined at <http://sa.berkeley.edu/conduct/integrity>

REQUIRED TEXTS. There is no textbook for the course. We will instead draw material from an assortment of readings, which are listed at the end of this syllabus, and from class notes provided via the class bCourses website (see below).

COURSE REQUIREMENTS. L&S 88 is a two-unit introductory course in data analysis with a focus on health economics and policy. Much of the grade derives from attendance and in-class participation via the i>clickers (see below), and the rest from a midterm draft of the term project (see below) and the final version of the project.

The overall course grade will be determined in the following way:

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|---|-----|
| 1. In-class participation : | 40% |
| 2. Empirical term paper project: | 60% |
| a. Topic statement with 3 sentences: question, data, answer | 10% |
| b. Produce a single table or figure with your data set | 10% |
| c. Rough draft at midterm: at least 1 table/figure <i>with descriptive text</i> | 10% |
| d. “Mostly done” draft | 10% |
| e. Final draft | 10% |
| f. Emailed response to final grade | 10% |

CLASS PARTICIPATION. To earn full participation credit, students are required to:

1. **Attend class.** You can miss one class when unexcused and still receive full credit
2. Discuss **assigned readings** and topics. Every student must complete the weekly readings and bring to class three provocative questions inspired either by the readings or their own research
3. **Complete in-class exercises.** During most classes, we will spend part of the time on small data analysis projects using Jupyter notebooks with pre-coded Python. Create a MS Word or other document each week to answer the supplied questions, using drag-and-drop if you like, and turn it in. *You may work in groups of 2 if you like.*

TERM PROJECTS. Students are required to complete an **empirical term paper** on a topic of their choosing. The goal of the class paper is for you to analyze primary data and shed light on a theoretical question. Data from a published source in which they have already been analyzed are off limits without special exemption granted from the instructor.

In their final versions, papers should be no more than five printed double-spaced pages of text, plus any references and any figures and tables you may want to add, up to a maximum of 7 figures and tables combined. A good paper includes:

- a. an introduction outlining the question you are trying to answer and why it is interesting
- b. an explanation of which data you are using and how you analyze the data
- c. a presentation of your findings
- d. a conclusion explaining what light your findings shed on your original question

The conclusion can also recommend a better way to answer the question. For example, you could discuss another real or hypothetical data source that you didn't analyze.

The goal of the paper is for you to confront theory with real data. You do not need to do extensive reading on your subject, nor do you need to use any fancy statistical techniques to do your analysis. Simple is fine. What is important is that your paper be clear, original, and that you explain how your analysis addresses the question you are interested in.

Deadlines. See the course calendar at the end of this syllabus for due dates. Deadlines are FRIDAYS by close-of-business, 5pm Pacific. Unexcused late submissions will be docked a third of a letter grade for each day they are late. Meet your deadlines. If you know you cannot, see me.

Data and Topics. Students may choose any data and topics that they wish provided that they obtain clearance from the instructor, which is built into the deadline schedule.

Collaboration. By default, students must devise and write up their own term projects. Students who desire to collaborate must make their cases to the instructor. Collaborative projects, if approved, will be held to a higher standard appropriate for joint work.

WEB SITES. We will be using bCourses to distribute course materials, submit assignments, and check grades:

<http://bCourses.berkeley.edu>

Many course materials will also be placed on a publicly viewable web page at

<http://demog.berkeley.edu/~redwards/ls88.html>

Optional Q&A Forum. Piazza is a free online forum for students in a class to interact with each other and with GSIs and professors outside of the classroom environment. Per its founder and CEO, Piazza was started so that every student can have the opportunity to learn from classmates outside of class. To access the class Piazza site, navigate to

<http://piazza.com>

and sign up to get started. You will need to have a berkeley.edu or ucb.edu email address.

STUDENTS WITH DISABILITIES and other special needs will be fully accommodated. UC Berkeley's Disabled Students Program (DSP) is the group to approach initially for such needs:

<http://www.dsp.berkeley.edu>

Please email me or see me before or after class to address these needs as they may regard in-class participation or related issues.

Accommodations. Please carefully read the class schedule. If you need to request an alternative time for an exam or other accommodations pertaining to your religious creed, your extracurricular schedule, illnesses, disabilities, pregnancy or parenting, please submit a request directly to Prof. Edwards by the end of the second week of the semester or when the condition develops. In general, please notify Prof. Edwards **in writing** (email is fine) about these issues and please recommend a solution.

Reading List

Week 1: January 18

No meeting, no readings

Week 2: January 25 Background and Motivation

First meeting, no readings

Week 3: February 1 Health metrics, social indicators, inequalities, and policy

Bhattacharya, Jay, Timothy Hyde, and Peter Tu (2013) *Health Economics*. New York: Palgrave. Chapters 1 and 2.

Cutler, David, Angus Deaton, and Adriana Lleras-Muney (2006) “The Determinants of Mortality,” *Journal of Economic Perspectives* 20(3): 97–120.

Week 4: February 8 REGULAR CLASS CANCELED **Schedule one-on-one office hours meetings to discuss term paper**

Week 5: February 15 PRESIDENT’S DAY, NO CLASS

Week 6: February 22 How to think like a health economist

Bhattacharya, Jay, Timothy Hyde, and Peter Tu (2013) *Health Economics*, Chapters 3 and 4.

Week 7: February 29 Randomized controlled trials – 1

Sutton, Graham (2003) “Putrid gums and ‘Dead Men’s Cloaths’: James Lind aboard the Salisbury,” *J R Soc Med* 96: 605–608.

Bartholomew, M. (2002) “James Lind's Treatise of the Scurvy,” *Postgraduate Medical Journal* 78: 695–696.

Week 8: March 7 Randomized controlled trials – 2

Aron-Dine, Aviva, Liran Einav, and Amy Finkelstein. 2013. “The RAND Health Insurance Experiment, Three Decades Later.” *Journal of Economic Perspectives*, 27(1): 197–222.

Week 9: March 14 **Observational studies**

Oster, Emily (2014) *Expecting Better: Why the Conventional Pregnancy Wisdom Is Wrong—and What You Really Need to Know*. New York: Penguin. Chapter 4, “The Vices: Caffeine, Alcohol, and Tobacco”

Week 10: March 21 **SPRING BREAK, NO CLASS****Week 11: March 28** **Weather and wine**

Ashenfelter, Orley, David Ashmore, and Robert Lalonde (1995) “Bordeaux Wine Vintage Quality and the Weather,” *Chance* 8(4): 7–14.

Ziliak, Stephen T. (2008) “Retrospectives: Guinnessometrics: The Economic Foundation of ‘Student’s’ t,” *Journal of Economic Perspectives* 22(4): 199–216.

Week 12: April 4 **More strong exogeneity**

Ruhm, Christopher J. 2000. “Are Recessions Good for Your Health?” *Quarterly Journal of Economics* 115(2): 617–50.

Week 13: April 11 **Natural experiments and instrumental variables**

Small, Dylan S. and Paul R. Rosenbaum (2008) “War and Wages: The Strength of Instrumental Variables and Their Sensitivity to Unobserved Biases,” *Journal of the American Statistical Association* 103(483): 924–933.

Week 14: April 18 **Case studies 1**

Buckles, Kasey S. and Daniel M. Hungerman (2013) “Season of Birth and Later Outcomes: Old Questions, New Answers,” *Review of Economics and Statistics* 95(3): 711-724.

Week 15: April 25 **Case studies 2**

Carpenter, Christopher, and Carlos Dobkin (2011) “The Minimum Legal Drinking Age and Public Health,” *Journal of Economic Perspectives*, 25(2): 133-56.

		Topics & events in L&S 88	Readings	Data exercises	Deadlines: FRIDAYS each week by 5pm
Week 1	18-Jan	NO MEETING			
Week 2	25-Jan	1 Background and motivation		c01. Introduction	
Week 3	1-Feb	2 Metrics, inequalities, and policy	Bhattacharya chaps. 1-2 Cutler et al. (2006)	c02. Tables	a. Topic statement with 3 sentences
Week 4	8-Feb	3 CLASS CANCELED, OFFICE HOURS WEEK Each student will find 30 minutes sometime this week to meet one-on-one with Prof. Edwards			
Week 5	15-Feb	PRESIDENT'S DAY, UC CLOSED			
Week 6	22-Feb	4 How to think like a health economist	Bhattacharya chaps. 3-4	c04. Subcharacteristics	b. Produce a single table or figure with your data
Week 7	29-Feb	5 Randomized controlled trials 1	Sutton (2003) Bartholomew (2002)	c05. Hodgkin's	
Week 8	7-Mar	6 Randomized controlled trials 2	Aron-Dine et al. (2013)	c06. Balance in the RAND HIE	
Week 9	14-Mar	7 Observational studies	Oster (2014)	c07. Smoking & weight in cross section & over time	c. Rough draft: One table/figure with written description
Week 10	21-Mar	SPRING BREAK, UC CLOSED			
Week 11	28-Mar	8 Strong exogeneity: Weather	Ashenfelter et al. (1995) Ziliak (2008)	c08. Wine scatter plots & regressions	
Week 12	4-Apr	9 More strong exogeneity	Ruhm (2000)	c09. Swedish historical mortality & GDP	
Week 13	11-Apr	10 Natural experiments and instrumental variables	Small and Rosenbaum (2008)	c10. WWII earnings and disability by birth year	d. "Mostly done" draft
Week 14	18-Apr	11 Case studies 1	Buckles and Hungerman (2013)	c11. Census data child characteristics by birth quarter	
Week 15	25-Apr	12 Case studies 2	Carpenter and Dobkin (2011)	c12. Regression discontinuity and the legal drinking age	
Week 16	2-May	<i>(no class)</i>			e. Final draft of term paper
Week 17	9-May	<i>(no class)</i>			f. Emailed response to final grade