Environmental Economics and Policy 145 Syllabus
Health and Environmental Economic Policy

Department of Agricultural and Resource Economics
University of California, Berkeley
Fall 2019

Lectures: MWF 11:00 am–12:00 pm, 2040 VLSB
Sections: Multiple

Course Website: https://bcourses.berkeley.edu/

Instructor: Michael Anderson
Contact: mlanderson@berkeley.edu, https://are.berkeley.edu/~mlanderson
Office Hours: TBD, 291 University Hall
Sign up online at http://bit.ly/1TBpLzf

GSI(s): Kate Pennington, Matthew Suandi
Contact: kate.pennington@berkeley.edu, suandima@berkeley.edu
Office Hours: Contact Kate and Matthew

Course Description

This course introduces students to key issues and findings in the valuation and production of health. It combines theoretical and empirical techniques from health economics and environmental economics. At their cores, both disciplines deal with market failures – in particular, public goods, externalities, and moral hazard. The first part of the course provides an introduction to the theoretical framework used to analyze and value the provision of health and environmental goods. The second part focuses on policy-relevant empirical measurements of the valuation of health and safety – how much is society willing to pay for improvements in health and safety? The remaining two parts of the course explore the different ways in which we can produce health and safety. What types of investments work and what types do not? Which investments are cost effective? In these latter two parts, we first explore what we know about the environmental and social production of health, and then examine whether medical care is a cost effective means of producing health.

The first goal of the course is to encourage students to consider the tradeoffs made when investing in the provision of health and environmental goods and to understand how economics can provide a framework to compare these choices and guide policy. The second goal is to familiarize students with the empirical methods that researchers use to estimate the effects of health and environmental policies. The third goal is to introduce students to basic statistical programming skills. Most students will not go on to do graduate work in this field, but upon completion of the course they should, for example, be able to analyze a study described on a news site and ascertain its credibility.

Prerequisites

Students should be familiar with intermediate micro economic theory and basic probability and statistics. The former can be satisfied with EEP 100 or 101 or ECON 100A or 101A (or equivalent). The latter can be satisfied with STAT 20, 21, 25, or 131A or EEP 118.

Assignments and Grading

We will assign a series of problem sets during the course of the semester. On each problem set, a random sample of the questions will be graded. The problem set on which you score lowest will be **dropped** when computing your course grade, but as a consequence **late problem sets will not be accepted for any reason**. Completing the problem sets will be very helpful for the midterm and the final examination. Overall grades will be based on performance on problem sets (36%), participation (4%), the midterm grade (20%), and the final exam grade (40%).

The tentative date for the 2019 final is Monday, October 21.

Information regarding the schedule and location of the final exam will be available at https://registrar.berkeley.edu/scheduling/academic-scheduling/final-exam-guide-schedules. **Please do not ask me or the GSIs when or where the final is.** We assume no responsibility for erroneous information if you ask us when/where the final is, as any information we give you on this matter can only be *less* accurate than what is on the Registrar website.

Textbooks and Readings

There is no single text for the course, but there are readings that pertain to each section of the course. Links to these articles are included below; the articles should be accessible to anyone on the UC Berkeley network. If you are off campus, you can access the articles by configuring your browser proxy settings using the instructions at http://www.lib.berkeley.edu/Help/proxy.html. If you do not understand how to follow the instructions listed there, please ask a classmate for assistance.

Software/IT

Some problem sets require access to a statistical software package. You have two choices: Stata, which is freely available via the campus Citrix server at https://citrix.berkeley.edu (you will first need to install Citrix Receiver), or R, which is available for free download at https://www.r-project.org (you may also want to install the GUI editor from https://www.rstudio.com). The GSIs will work in Stata, so this is probably the better choice unless you have much more expertise in R.

Lectures will utilize i>clickers for polls, so you should make sure that you have purchased one and set it up on bCourses. Do not register your clicker on iclicker.com: if you do, I will not be able to match your responses with your name and you will not receive credit. Please see instructions for setting up your clicker at https://dls.berkeley.edu/services/clickers/students-getting-started-clickers.

Accommodations

Students with DSP accommodations should have the DSP office inform the instructor within the first three weeks of classes. In general it is logistically infeasible to grant last-minute requests for accommodations just prior to exams or assignment due dates.

Course Outline

SECTION 1 – THEORETICAL TOOLS

Review of Market Failures

Efficient Allocation and Externalities (Instructor Slides and Berck Chapters 3 and 12)

Public Goods (Instructor Slides)

Revealed vs. Stated Preferences and Benefit-Cost Analysis (Instructor Slides and Berck Chapter 6)

SECTION 2 – THE VALUATION OF HEALTH

Statistical Value of Life and Health

Basic empirical tools.

Randomized trials versus observational data: the role of omitted variables bias (Instructor Notes)

Simple linear regression (Instructor Notes)

Simple differences-in-differences (Instructor Notes)

How do we value improvements in safety or health?

Brannon, Ike. "What is a Life Worth?" *Regulation*, 2007, 27, 60-63.

"How to Value Life? EPA Devalues Its Estimate." *Associated Press*, 10 July 2008.

Empirical estimates of the statistical value of life.

Viscusi, Kip, and Joseph Aldy. "The Value of a Statistical Life: A Critical Review of Market Estimates Throughout the World." *The Journal of Risk and Uncertainty*, 2003, 27, 5-76.

Ashenfelter, Orley, and Michael Greenstone. "Using Mandated Speed Limits to Measure the Value of a Statistical Life." *Journal of Political Economy*, 2004, 112(1), S226-67.

Davis, Lucas. "The Effect of Health Risk on Housing Values: Evidence From a Cancer Cluster." *American Economic Review*, 2004, 94, 1693-1704.

Rohlfs, Chris, Ryan Sullivan, and Thomas Kniesner. "New Estimates of the Value of a Statistical Life Using Air Bag Regulations as a Quasi-experiment." *American Economic Journal: Economic Policy*, 2015, 7, 331-59.

SECTION 3 – ENVIRONMENTAL AND SOCIAL PRODUCTION OF HEALTH

The Health Production Function

Why should we care about costs?

Tengs, Tammy, Miriam Adams, Joseph Pliskin, Dana Gelb Safran, Joanna Siegel, Milton Weinstein, and John Graham. "Five-Hundred Life-Saving Interventions and Their Cost-Effectiveness." *Risk Analysis*, 1995, 15, 369-390.

Air Pollution

The effects of air pollution on infants.

Chay, Kenneth, and Michael Greenstone. "The Impact of Air Pollution on Infant Mortality: Evidence from Geographic Variation in Pollution Shocks Induced by a Recession." *The Quarterly Journal of Economics*, 2003, 118, 1121-1167.

Currie, Janet, and Reed Walker. "Traffic Congestion and Infant Health: Evidence from E-ZPass." *American Economic Journal: Applied Economics*, 2011, 3, 65-90.

The effects of air pollution on adults.

Ransom, Michael, and C. Arden Pope. "External Health Costs of a Steel Mill." *Contemporary Economic Policy*, 1995, 13, 86-97.

Moretti, Enrico and Matthew Neidell. "Pollution, Health, and Avoidance Behavior: Evidence from the Ports of Los Angeles." *Journal of Human Resources*, 2011, 46, 154–75.

Dockery, Douglas, C. Arden Pope, Xiping Xu, John Spengler, James Ware, Martha Fay, Benjamin Ferris, and Frank Speizer. "An Association between Air Pollution and Mortality in Six U.S. Cities." *New England Journal of Medicine*, 1993, 329, 1753-1759.

Anderson, Michael. "As the Wind Blows: The Effects of Long-term Exposure to Air Pollution on Mortality." Forthcoming, *Journal of the European Economic Association*.

Water Pollution

The effects of fracking on human health.

"Comment: Should fracking stop?" Point and Counterpoint in *Nature*, 15 September 2011, 477, p. 271.

Hill, Elaine. "Shale Gas Development and Infant Health: Evidence from Pennsylvania." *Journal of Health Economics*, 2018, 61, 134-150.

The effects of water pollution on human health.

Galiani, Sebastian, Paul Gertler, and Ernesto Schargrodsky. "Water for Life: The Impact of the Privatization of Water Services on Child Mortality." *Journal of Political Economy*, 2005, 113, 83-120.

Climate Change

The effects of short-term climate fluctuations on mortality.

Deschenes, Olivier, and Enrico Moretti. "Extreme Weather Events, Mortality and Migration." *Review of Economics and Statistics*, 2009, 91, 659-681.

Death on the Roads

The vehicle "arms race"

Anderson, Michael, and Max Auffhammer. "Pounds That Kill: The External Costs of Vehicle Weight." *Review of Economics Studies*, 2014, 81, 535-571.

Texting and driving

Abouk, Rahi, and Scott Adams. "Texting Bans and Fatal Accidents on Roadways: Do They Work? Or Do Drivers Just React to Announcements of Bans?" *American Economic Journal: Applied Economics*, 2013, 5, 179-99.

The Built Environment

The effects of fast-food on obesity.

Anderson, Michael and David Matsa. "Restaurants, Regulation, and the Supersizing of America." *Regulation*, 2010, 33(3), 40–47. (Based on the full length article: "Are Restaurants Really Supersizing America?" *American Economic Journal: Applied Economics*, 2011, 3, 152–88.)

Bollinger, Bryan, Phillip Leslie, and Alan Sorensen. "Calorie Posting in Chain Restaurants." *American Economic Journal: Economic Policy*, 2011, 3, 91–128.

SECTION 4 – MEDICAL PRODUCTION OF HEALTH

Does Medical Spending Produce Health?

The effects of health care expenditures on health.

Cutler, David and Dan Ly. "The (Paper)Work of Medicine: Understanding International Medical Costs." *Journal of Economic Perspectives*, 2011, 25, 3–25.

Harris, Gardiner. "Wearing Off: Schering-Plough Faces A Future With Coffers Unfortified by Claritin – As Pill Goes Over-the-Counter And Generic, Firm Woos Users to Successor Drug." *The Wall Street Journal*, 22 March 2002.

Carroll, Aaron. "Health care from the heart – my response." 26 January 2011.

Perlroth, D., D. Goldman, and A. Garber. "The Potential Impact of Comparative Effectiveness Research on U.S. Health Care Expenditures." *Demography*, 2010, 47, S173–S190.

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

Daysal, N. Meltem, Mircea Trandafir, and Reyn van Ewijk. "Saving Lives at Birth: The Impact of Home Births on Infant Outcomes." *American Economic Journal: Applied Economics*, 2015, 7, 28-50.

Wennberg, John, Elliot Fisher, and Jonathan Skinner. "Geography and the Debate over Medicare Reform." *Health Affairs*, 2002, web exclusive.

Cutler, David and Elizabeth Richardson. "The Value of Health: 1970–1990" *The American Economic Review*, 1998, 88, 97-100.

Optional Readings:

Hanratty, M. "Canadian National Health Insurance and Infant Health." *The American Economic Review*, 1996, 86, 276-84.

Lurie, N., N. Ward, M. Shapiro, and Brook R. "Termination From Medi-Cal: Does It Affect Health?" *New England Journal of Medicine*, 1984, 311, 480-4.

Baicker, Katherine, Sarah L. Taubman, Heidi L. Allen, Mira Bernstein, Jonathan H. Gruber, Joseph P. Newhouse, Eric C. Schneider, Bill J. Wright, Alan M. Zaslavsky, and Amy N. Finkelstein. "The Oregon experiment—effects of Medicaid on clinical outcomes." *New England Journal of Medicine*, 2013, 368, 1713-1722.

Market Failure in the Provision of Healthcare

Adverse selection in insurance markets.

Akerlof, George. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *The Quarterly Journal of Economics,* 1970, 84, 488-500.

Dubinsky, Donna. "Money Won't Buy You Health Insurance." *The New York Times*, 19 February 2011.

Moral hazard, externalities, and other market failures in healthcare. (Instructor Slides)