

Topics in Health Economics

Course syllabus

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1 Overview and objectives

This course will cover frontier research on the evaluation of public programs with focus on issues related to determinants of health on one hand and health care delivery on the other. The recent Health literature applies the empirical tools pioneered in labor economics and capitalizes on the availability of high quality microdata on health outcomes for practically the entire population in many cases. The number of empirical papers on Health in the top-5 journals in Economics has increased manifold during the last ten years.

The course's focus will be on empirical applications but will briefly discuss two theoretical models of health, i.e., the human capital model by Grossman (1972) and the developmental model by Cunha and Heckman (2007). More importantly, the bulk of the empirical literature covered relies on the theoretical model of potential outcomes by Rubin (1974) which is key to thinking about identification and causal inference. We will deal with this model and include methodological topics, such as difference-in-difference, regression dis-

continuity designs, social experiments, and instrumental variables. Knowledge at the level of Wooldridge (2002) is required and some prior knowledge of program evaluation is useful but not imperative. The textbook in applied econometrics by Angrist and Pischke (2009) will prove to be handy throughout the course.

Angrist JD, Pischke J-S. *Mostly Harmless Econometrics: An Empiricist's Companion*. 2009. Princeton, New Jersey: Princeton University Press.

Cunha F, Heckman JJ. The technology of skill formation. *American Economic Review* 2007; 97(2):31–47.

Grossman M. On the concept of health capital and the demand for health. *Journal of Political Economy* 1972;80(2):223–255.

Rubin, DB. Estimating the causal effects of treatments in randomized and non-randomized studies. *Journal of Educational Psychology* 1974;66:688–701.

Wooldridge J. *Econometric Analysis of Cross Section and Panel Data*. 2002. MIT Press Books, The MIT Press.

2 Course outline

1. Human capital model - Health and education: Part 1
 - (a) Grossman (1972)
 - (b) Twin studies
2. Human capital model - Health and education: Part 2
3. Human capacity formation: Part 1
 - (a) Theoretical framework: Human capacity formation model
 - (b) Life course epidemiology
 - (c) Fetal origins

- i. A conceptual framework: scarring vs. cohort inversion
 - ii. Relationship between maternal mortality rates and maternal influenza infection
4. Human capacity formation: Part 2
 - (a) Capacity formation model and natural experiments
 - (b) Reinforcing or compensating investments
 - (c) Nurture or nature (Lindahl & Palme (2014))
5. Healthcare delivery - Health and the hospital: Part 1
 - (a) Healthcare spending
6. Healthcare delivery - Health and the hospital: Part 2
 - (a) Returns to health care
 - (b) Physician financial incentives
7. Regression discontinuity designs in health
8. Global health: Part 1
 - (a) Worms
 - (b) Malaria eradication
9. Global health: Part 2
 - (a) HIV/AIDS
 - (b) Unaccompanied refugee children
10. Social and disability insurance: Part 1

11. Research in practice - data + writing articles
 - (a) Swedish databases (data, availability, application procedure etc.)
 - (b) Examples of leveraging existing datasets (Almond and Currie, 2010)
 - (c) Writing advice (McCloskey, STROBE Checklist, Cochrane's "Writing tips for Ph.D. students")
12. In-class presentations of research sketches (15 min presentations to class using slides)

3 Required activities

Research proposal. Propose a new research design that can be used to evaluate a question of interest to you. Key to this exercise is your argument as to why the treatment/policy is not related to other determinants of the outcome of interest. Following Angrist & Pischke (2009), you should describe:

1. What is the causal relationship of interest?
2. Leaving cost and ethical considerations aside, what is the ideal experiment you would run?
3. In an observational setting, what is the identification strategy? (This is the critical piece of the assignment.)

You should identify the real-world dataset in which your research question can be evaluated. No results are necessary, just a viable action plan. I.e., you must propose an analysis of existing data that are available to researchers. Submit 4-5 page description (1.5 spaced) of your proposed analysis by May 29. Consult with Mårten or Torsten in advance on your topic choice either

by email or in office hours. Ideally, this assignment will serve as a platform for executing the analysis in the future.

Referee report. Write a referee report on a paper in health economics, with your assessment of whether the paper should be published in a top journal (leaving aside whether/where it is already published). This report is not a summary of the paper, but a critique of the analysis, its contribution relative to the existing literature, and especially, the soundness of the identification strategy. Eligible papers are those listed in Section 4, along with other papers that have not been covered in detail in class. If you select a paper that is not listed in Section 4, you need to clear it with Mårten or Torsten by Tuesday, April 18. The report itself (roughly 2-3 pages 1.5 spaced) is due Thursday, May 4.

Presentation of a paper in-class. Present an assigned paper from the compulsory reading to the class (using slides), we will do a 10 minute presentation per class. The slots are assigned after the first class. The paper for the presentation is always assigned one class in advance.

4 Papers to referee

1. Halla M, Zweimüller M. The Social gradient in the impact of the chernobyl accident: The case of austria. Unpublished manuscript, 2016.
2. Figlio D, Guryan J, Karbownik K, Roth J. The effects of poor neonatal health on children's cognitive development. Forthcoming in *American Economic Review*
3. Aizer A, Stroud L, Buka S. Maternal stress and child well-being: Evidence from siblings. *Journal of Human Resources*, 2015.
4. Dahl G, Mogstad M, Kostol A. Family welfare cultures, Forthcoming in *Quarterly Journal of Economics*, 2014.

5. Amin V, Behrman JR, Kohler HP. Schooling has smaller or insignificant effects on adult health in the US than suggested by cross-sectional associations: new estimates using relatively large samples of identical twins. *Soc Sci Med* , 2015
6. Aizer A, Eli S, Ferrie J, Lleras-Muney A. The long term impact of cash transfers to poor families. *American Economic Review*, 2016.
7. Oreopoulos P, Stabile M, Walld R, Roos LL. Short-, medium-, and long-term consequences of poor infant health an analysis using siblings and twins. *Journal of Human Resources* 2008;43(1): 88-138.
8. Royer H, Stehr M, Sydnor J. Incentives, commitments and habit formation in exercise: Evidence from a field experiment with workers at a Fortune-500 company. Forthcoming in *American Economic Journal: Applied Economics*, 2015
9. Downs JS, Wisdom J, Wansink B, Loewenstein G. Supplementing menu labeling with calorie recommendations to test for facilitation effects. *American Journal of Public Health* 2013;103(9):1604-1609.

5 Litterature

*=required readig for class

1. Human capital model - Health and education: Part 1

Amin V, Behrman JR, Kohler HP. Schooling has smaller or insignificant effects on adult health in the US than suggested by cross-sectional associations: new estimates using relatively large samples of identical twins. *Soc Sci Med* 2015;127:181-189.

Boardman JD, Fletcher JM. To cause or not to cause? That is the question, but identical twins might not have all of the answers. *Soc Sci Med* 2015;127:198-200.

Gilman S, Loucks E. Another casualty of sibling fixed-effects analysis of education and health: An informative null, or null information? *Soc Sci Med* 2014;118:191-193.

Grossman M. On the concept of health capital and the demand for health. *Journal of Political Economy* 1972;80(2): 223–255.

Grossman M. The demand for health, 30 years later: A very personal retrospective and prospective reflection. *Journal of Health Economics* 2004;23, 629–636.

Lundborg P. The health returns to schooling—what can we learn from twins? *Journal of Population Economics* 2013;26:673–701.

Madsen M, Andersen PK, Gerster M, Andersen AMN, Christensen K, Osler M. Are the educational differences in incidence of cardiovascular disease explained by underlying familial factors? A twin study. *Soc Sci Med* 2014;118:182–190.

*Zweifel P, Breyer HJ, Kifmann M. *Health Economics*. (Chapter 3.1-3.3), 3. ed. Oxford University Press.

2. Human capital model - Health and education: Part 2

Deaton AS, Health, inequality, and economic development. *Journal of Economic Literature* 41.1 (2003): 113-158.

Cutler DM, Deaton AS, Lleras-Muney A. The determinants of mortality. No. WP11963. National Bureau of Economic Research, 2006.

Cutler DM, Lleras-Muney A. Education and health: evaluating theories and evidence. No. w12352. National Bureau of Economic Research, 2006.

Cutler DM, Lleras-Muney A. Understanding differences in health behaviors by education. *Journal of health economics* 2010;29(1):1-28.

Cutler DM, Lleras-Muney A, Vogl TS. Socioeconomic status and health: Dimensions and mechanisms. NBER Working Paper w14333 (2008).

Cutler DM, Lleras-Muney A. Education and health: insights from international comparisons. No. w17738. National Bureau of Economic Research, 2012.

Glied S, Lleras-Muney A. Technological innovation and inequality in health. *Demography* 2008;45(3): 741-761.

*Lleras-Muney A. The relationship between education and adult mortality in the United States. *The Review of Economic Studies* 2005;72(1): 189-221.

*Clark D, Royer H. The effect of education on adult mortality and health: Evidence from Britain. *The American Economic Review* 2013;103(6): 2087-2120.

Meghir C, Palme M, Simeonova E. Education, cognition and health: Evidence from a social experiment. No. w19002. National Bureau of Economic Research, 2013.

3. Human capacity formation: Part 1

Almond D. Is the 1918 influenza pandemic over? Long-term effects of *in utero* influenza exposure in the post-1940 U.S. population. *Journal of Political Economy* 2006;114(4): 672-712.

*Almond D, Currie J. Human Capital Development before Age Five. In *Handbook of Labor Economics 4B*, ed. Orley A. Aschenfelter and David E. Card, 2011;1322-1328 (Section 2 of Chapter 15). Elsevier.

Barker DJP. (ed). 1992. *Fetal and Infant Origins of Adult Disease*. London: British Medical Journal.

Ben-Shlomo Y, Kuh D. A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. *Int J Epidemiol* 2002;31(2):285-293.

Cunha F, Heckman JJ. The technology of skill formation. *American Economic Review* 2007; 97(2):31-47.

*Heckman JJ. The economics, technology, and neuroscience of human capability formation. *PNAS* 2007;104(33):13250-13255.

4. Human capacity formation: Part 2

(a) Capacity formation model and natural experiments

*Almond D, Currie J. Human capital development before age five. In *Handbook of Labor Economics 4B*, ed. Orley A. Ashenfelter and David E. Card, 2011;1315-1486 (Chapter 15). Elsevier.

Case A, Lubotsky D, Paxson C. Economic status and health in childhood: The origins of the gradient. *The American Economic Review* 2002;92(5):1308-1334.

Case A, Fertig A, Paxson C. The lasting impact of childhood health and circumstance. *Journal of Health Economics* 2005;24(2): 365-389.

(b) Reinforcing or compensating investments

*Almond, D, Edlund L, Palme M. Chernobyl's subclinical legacy: Prenatal exposure to radioactive fallout and school outcomes in Sweden. *Quarterly Journal of Economics* 2009;124(4).

*Halla M, Zweimüller M. The social gradient in the impact of the Chernobyl accident: The case of Austria. Manuscript, 2015.

Del Bono E, Ermisch J, Francesconi M. Intrafamily resource allocations: a dynamic structural model of birth weight. *Journal of Labor Economics* 2012;30(3): 657-706.

(c) Infant health

Currie J, Moretti E. Biology as Destiny? Short- and long-run determinants of intergenerational transmission of birth weight. *Journal of Labor Economics* 2007;25(2)

Oreopoulos P, Stabile M, Walld R, Roos LL. Short-, medium-, and long-term consequences of poor infant health an analysis using siblings and twins. *Journal of Human Resources* 2008;43(1): 88-138.

Figlio D, Guryan J, Karbownik K, Roth J. The effects of poor neonatal health on children's cognitive development. Forthcoming in *American Economic Review*

(d) Nurture or nature

5. Healthcare delivery - Health and the hospital: Part 1

Manning WG, Newhouse JP, Duan N, Keeler EB, Leibowitz A. Health insurance and the demand for medical care: Evidence from a randomized experiment. *The American Economic Review* 1987;77(3): 251-277.

Manning WG, Zweifel P. Moral hazard and consumer incentives in health care. Ch. 8 in (eds.) Culyer AJ, Newhouse JP. *Handbook of Health Economics* Volume 1, Part A, 2000, Pages 409–459

Baicker K, Chandra A, Skinner JS. Saving money or just saving lives? Improving the productivity of US health care spending. *Annual Review of Economics* 2012;4:33-56.

Chandra A, Staiger DO. Productivity spillovers in healthcare: Evidence from the treatment of heart attacks. *Journal of Political Economy* 2007;115:103-140.

*Doyle J. Returns to local-area healthcare spending: Using health shocks to patients far from home. *American Economic Journal: Applied Economics* 2011;3(3):221-243.

6. Healthcare delivery - Health and the hospital: Part 2

Almond D, Doyle JJ, Kowalski A, Williams H. Estimating marginal returns to medical care: Evidence from care for at-risk newborns. *Quarterly Journal of Economics* 2010;125(2):591-634.

*Doyle JJ, Graves J, Gruber J, Kleiner S. Measuring returns to hospital care: Evidence from ambulance referral patterns. Forthcomin in *Journal of Political Economy*.

Gruber J, Owings R. "Physician financial incentives and cesarean section delivery." *Rand J Econ* 1996;27(1): 99-123.

7. Regression discontinuity designs in health

*Almond D, Doyle JJ, Kowalski A, Williams H. Estimating marginal returns to medical care: Evidence from care for at-risk newborns. *Quarterly Journal of Economics* 2010;125(2):591-634.

*Almond D, Doyle JJ, Kowalski A, Williams H. The role of hospital heterogeneity in measuring marginal returns to medical care: A reply to Barreca, Guldi, Lindo, and Waddell *Quarterly Journal of Economics* 2011;126(4): 2117-2123.

*Almond D, Doyle JJ. After midnight: A regression discontinuity design in length of postpartum hospital stays. *American Economic Journal: Economic Policy* 2011;3(3):1-34.

*Barreca A, Guldi M, Lindo J, Waddell G. Saving babies? Revisiting the effect of very low birth weight classification. *Quarterly Journal of Economics* 2011;126(4): 2117-2123.

Imbens GW, Lemieux T. Regression discontinuity designs: A guide to practice. *Journal of Econometrics* 142(2): 615-636.

8. Global Health: Part 1

Deaton A. Health, inequality, and economic development. *Journal of Economic Literature* 2003;41(1): 113-158.

(a) Worms

Bobonis GJ, Miguel E, Puri-Sharma C. Anemia and school participation. *Journal of Human Resources* 2006;41(4): 692-721.

Bleakley H. Disease and development: Evidence from hookworm eradication in the American South. *The Quarterly Journal of Economics* 2007;122(1)

*Miguel E, Kremer M. Worms: identifying impacts on education and health in the presence of treatment externalities. *Econometrica* 2004;72(1): 159-217.

(b) Malaria

Bleakley H. Malaria eradication in the Americas: A retrospective analysis of childhood exposure. *American Economic Journal: Applied Economics* 2010;2(2): 46-71

Cutler D, Fung W, Kremer M, Singhal M, Vogl T. Early-life Malaria exposure and adult outcomes: Evidence from Malaria eradication in India. *American Economic Journal: Applied Economics* 2010;2(2): 72-94.

Lucas A. Malaria eradication and educational attainment: Evidence from Paraguay and Sri Lanka. *American Economic Journal: Applied Economics* 2010;2(2): 1-45

Sabot O, Cohen JM, Hsiang MS, Kahn JG, Basu S, Tang L, et al. Costs and financial feasibility of malaria elimination. *Lancet* 2010;376(9752):1604–1615.

Venkataramani AS. Early life exposure to malaria and cognition in adulthood: Evidence from Mexico. *Journal of Health Economics* 2012;31(5): 767-780.

9. Global Health: Part 2

(a) HIV/AIDS and health behavior

Banerjee AV, Duflo E. The experimental approach to development economics. *Annual Review of Economics* 2009;1: 151 -178.

Banerjee AV, Duflo E. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. 2011. Chapter 3. Public Affairs

Dupas P. Health behavior in developing countries. *Annual Review of Economics* 2011;3:425-449.

*Dupas P. Do teenagers respond to HIV risk information? Evidence from a field experiment in Kenya. *American Economic Journal: Applied Economics* 2011; 3: 1-34.

*Thornton RL. The Demand for, and impact of, learning HIV status. *American Economic Review* 2008;98(5): 1829-1863.

Downs J, Loewenstein G, Wisdom J. Strategies for promoting healthier food choices. *American Economic Review* 2009;99(2): 159–64.

(b) Unaccompanied refugee children

Fazel M, Reed RV, Panter-Brick C, Stein A. Mental health of displaced and refugee children resettled in high-income countries: risk and protective factors. *Lancet* 2012;379:266-82.

*Gilman SE. Invited commentary: the life course epidemiology of depression. *Am J Epidemiol* 2007;166:1134-7.

*Pesonen AK, Räikkönen K, Heinonen K, Kajantie E, Forsén T, Eriksson JG. Depressive symptoms in adults separated from their parents as children: a natural experiment during World War II. *Am J Epidemiol* 2007;166:1126-33.

Santavirta N, Santavirta T. Child protection and adult depression: evaluating the long-term consequences of evacuating children to foster care during World War II. *Health Econ* 2014;23:253-67.

*Santavirta T, Santavirta N, Bethancourt TS, Gilman SE. Long term mental health outcomes of Finnish children evacuated to Swedish families during the second world war and their non-evacuated siblings: cohort study. *BMJ* 2015;350:g7753.

Sedgwick P. Bias in observational study designs: prospective cohort studies. *BMJ* 2014;349:g7731.

10. Disability

Autor DH, Duggan MG. The rise in the disability rolls and the decline in unemployment. *Quarterly Journal of Economics* 2003;118(1):157-205.

Bound J. The health and earnings of rejected disability insurance applicants. *American Economic Review* 1988;79(3):482-503.

Gruber J. Disability insurance benefits and labor supply. *Journal of Political Economy* 2000;108(6):1162-1183

Dahl G, Mogstad M, Kostol A. Family welfare cultures, Forthcoming in *Quarterly Journal of Economics*.

Dahl G, Loken KV, Mogstad M. Peer effects in program participation. *American Economic Review* 2014;104(7):2049-74.

*Mogstad M, Kostol A. How financial incentives induce disability insurance recipients to return to work. *American Economic Review*, 2014;104(2):624-55.

Von Wachter, Till, Jae Song, and Joyce Manchester. "Trends in employment and earnings of allowed and rejected applicants to the social security

disability insurance program.” *American Economic Review* (2011): 3308-3329.

11. Data + writing

Almond D, Currie J. Human capital development before age five. In *Handbook of Labor Economics 4B*, ed. Orley A. Aschenfelter and David E. Card, 2011;1315-1486 (Chapter 15). Elsevier.

*Cochrane JH. Writing tips for PhD students. 2005, Unpublished

McCloskey D. Economical writing. *Economic Inquiry* 1985;24(2):187-222.

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