ECON 8803 Syllabus*
Economics of Healthcare, TERM
DAYS, TIME, LOCATION

Instructor

Name:	Cici McNamara, Ph.D.
Email:	cmcnamara30@gatech.edu
Office:	OCE 207
Office hours:	By appointment only
	Schedule a meeting at https://cicimcnamara.as.me/

Overview

This course explores the economics of health care markets with a focus on supply-side agents. The objective of this course is to prepare you to do original empirical research in microeconomics, specifically in or at the intersection of health economics and industrial organization. Course outcomes will include (i) an ability to implement modeling and estimation techniques that are central to current health economics research and (ii) familiarity with the most important policy issues concerning healthcare and health insurance markets.

Many of the tools that we will learn and use in this course are relevant to other fields of empirical microeconomics. These tools include but are not limited to estimation of models of discrete choice demand, cost function estimation under adverse selection, and quantification of the effects of consolidation on market outcomes. Students whose research interests intersect with but are not primarily in supply-side health economics therefore still stand to benefit from taking this course.

Course expectations are centered around students becoming producers as well as consumers of original research. Students are expected to have completed the readings for each lecture's topic prior to lecture. All readings will be uploaded to Canvas. Students are expected to engage in discussion of course readings during lecture. Students are expected to have taken the first-year microeconomics and econometrics sequences prior to taking this course. Students who do not meet these prerequisites may struggle in this course.

Evaluation

Final grades are a weighted average of scores on graded components that is summarized below.

Assignment	Percent of final grade
Participation	5
Problem sets	10
Paper presentations	15
Proposal presentations	20
Final proposal	50

Your final numerical grade will be assigned as a letter grade according to the scale below.

Letter grade	Numerical grade
A	90.00-100%
B	80.00-89.99%
C	70.00-79.99%
D	60.00-69.99%
F	0-59.00%

*All elements of this syllabus are subject to change. This syllabus closely follows course materials developed by Dr. Qing Gong.

All deliverables should be uploaded as PDFs to Canvas by the specified deadline. The penalty for turning work in late is a reduction in the maximum score of 10 percentage points per day after the due date.

Participation

Students will be assessed based on their attendance and both the frequency and quality of contributions to class discussion.

Problem sets

There will be two problem sets assigned, both of which will require access to a statistical software. Feedback on problem sets will be minimal, and will be especially minimal for those completed using a statistical software other than Stata, which can be accessed via the IAC VLab remote desktop at the following link: https://mycloud.gatech.edu/Citrix/GTMyCloudWeb/. Problem set solutions should be written up in the word processing software of your choice and the relevant output from your code embedded in your answers. Solutions should be uploaded as PDFs to Canvas by midnight on the date specified in the course schedule.

Paper presentations

Each student will give three paper presentations over the course of the semester. The first two of these will be on pre-specified papers pertaining to a lecture topic and will take place during the last 25 minutes of lecture. Students will sign up for presentation slots on Canvas and can find the papers corresponding to these slots in the reading list. During our last regular meeting, each student will give a third "Emerging research" presentation lasting less than 10 minutes on a working paper of their choice related to a topic covered in class.

Good presentations provide just enough of a summary of the paper to facilitate a discussion of its main contribution. Presentations should be accompanied by slides, but presenters should not read off of the slides. Presentation slides should be uploaded to Canvas by midnight before the presentation.

Proposal presentations

Each student will develop four different preliminary research proposals and present them in class. The proposals must be related to supply-side health economics. Presentations will last less than 10 minutes and must address the following questions:

- What is your research question? Research questions must be answerable, actionable, and not have obvious answers.
- Why should we care about the answer to your research question?
- What is your model? This may be a stylized economic model or estimating equation.
- What data and variation will you use? You don't have to have access to the necessary data yet, but you need to identify some attainable data that has the measures and variation you need.

Students are not bound to pursue these proposals, but should present and defend them as if they planned to purse them. Presentation slides should be uploaded to Canvas by midnight before the presentation.

Final proposal

Each student will be required to develop a final research proposal. Presentation of the final research proposals will take place during the final exam time on 12/09 from 2:40-5:30pm and will last 20 minutes. A final proposal manuscript is due by noon on 12/09 and should be uploaded to Canvas as a PDF with two pages, single-spaced, 12-point font, 1-inch margins. The final presentation proposal and manuscript should address the same questions as the preliminary proposal presentations, but in much more detail. Students will be assessed on the merit of their research idea as well as on the clarity of their writing, ability to address feedback, presentation skills, and ability to address audience questions and comments.

Policies

Academic integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/. Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Communication

All email messages must originate from your Georgia Tech-sponsored email account. Please begin your email with a professional salutation, be specific in your request, and wait at least 48 hours for a reply. Please email me directly rather than through the Canvas messaging system. Students with questions or concerns about course material or other matters are also welcome to speak with me in office hours.

Recording classroom activities

Recording of our real-time classes in any format (e.g. using digital, tape, or audio devices) is not allowed. This policy can be waived for students with accommodations upon explicit recommendation from the Office of Disability Services. Students must receive the written consent of the instructor to sell or otherwise commercialize class notes, lecture slides, lecture videos, and materials such as homework assignments and answers. Students may not store or distribute class notes and materials in homework repositories or test banks under any circumstances. Students may not share or distribute lecture videos or lecture notes outside of this class.

Accommodations for students with disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at http://disabilityservices.gatech.edu/ or (404)894-2563 as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Freedom of expression

As a faculty member at Georgia Tech, I respect your rights to the freedom of speech and expression. I am also committed to maintaining an orderly learning environment for all students and ensuring that all facilities are used in a way that facilitate teaching, learning, and research. Therefore, you should treat your peers and instructor respectfully in discussion. Disagreements are likely to happen. When they do, you are expected to disagree respectfully and to keep your discussion focused on evidence. Discussions in this class are expected to take place solely within the course. Thus, statements made during class should not be quoted on social media unless the individual being quoted has provided their express permission. This applies to the instructor, students, and classroom guests. This policy is meant to protect student privacy and create a safe environment to learn.

Student-faculty expectations agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek.

List of topics and readings

Mandatory readings are marked with a dagger. Readings for paper presentations are marked a double dagger. For topics with multiple presentation assignments, whichever student is scheduled to present first should present the paper with a double dagger that is first alphabetically. Please email the instructor if you find any errors in the below references.

1 Introduction to supply-side health economics

Arrow, K. (1963). Uncertainty and the Welfare Economics of Medical Care. *The American Economics Review*, *53*(5), 941–973. https://assets.aeaweb.org/asset-server/files/9442.pdf

†Gaynor, M., Ho, K., & Town, R. J. (2015). The Industrial Organization of Health-Care Markets. *Journal of Economic Literature*, *53*(2), 235–284. https://doi.org/10.1257/jel.53.2.235

Handel, B., & Ho, K. (2021). The industrial organization of health care markets. In K. Ho, A. Hortaçsu, & A. Lizzeri (Eds.), *Handbook of Industrial Organization* (pp. 521–614). Elsevier. https://doi.org/10.1016/bs.hesind.2021.11.016

Mahoney, N. (2022). Principles for Combining Descriptive and Model-Based Analysis in Applied Microeconomics Research. *Journal of Economic Perspectives*, *36*(3), 211–222. https://doi.org/10.1257/jep.36.3.211

2 Discrete choice demand

Berry, S., Levinsohn, J., & Pakes, A. (1995). Automobile Prices in Market Equilibrium. *Econometrica*, *63*(4), 841–890. https://doi.org/10.2307/2171802

†Berry, S. T. (1994). Estimating Discrete-Choice Models of Product Differentiation. *The RAND Journal of Economics*, *25*(2), 242–262. https://www.jstor.org/stable/2555829

Conlon, C., & Gortmaker, J. (2020). Best Practices for Differentiated Products Demand Estimation with PyBLP. *The RAND Journal of Economics*, *51*(4), 1108–1161. https://doi.org/10.1111/1756-2171.12352

Grigolon, L., & Verboven, F. (2014). Nested Logit or Random Coefficients Logit? A Comparison of Alternative Discrete Choice Models of Product Differentiation. *Review of Economics and Statistics*, *96*(5), 916–935. https://doi.org/10.1162/REST_a_00420

†Nevo, A. (2000). A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand. *Journal of Economics & Management Strategy*, *9*(4), 513–548. https://doi.org/10.1111/j.1430-9134.2000.00513.x

Nevo, A. (2000). A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand. *Journal of Economics & Management Strategy*, *9*(4), 513–548. https://doi.org/10.1111/j.1430-9134.2000.00513.x

Train, K. (2012). *Discrete Choice Methods with Simulation*. Cambridge University Press. https://doi.org/10.1017/CBO9780511805271

3 Adverse selection

Cutler, D. M., Finkelstein, A., & McGarry, K. (2008). Preference Heterogeneity and Insurance Markets: Explaining a Puzzle of Insurance. *American Economic Review*, *98*(2), 157–162. https://doi.org/10.1257/aer.98.2.157

†Einav, L., Finkelstein, A., & Cullen, M. R. (2010). Estimating Welfare in Insurance Markets Using Variation in Prices. *The Quarterly Journal of Economics*, *125*(3), 877–921. https://www.jstor.org/stable/27867502

Einav, L., Finkelstein, A., & Cullen, M. R. (2010). Estimating Welfare in Insurance Markets Using Variation in Prices. *The Quarterly Journal of Economics*, *125*(3), 877–921. https://www.jstor.org/stable/27867502

Fang, H., Keane, M., & Silverman, D. (2008). Sources of Adverse Selection: Evidence from the Medigap Insurance Market. *The Journal of Political Economy*, *116*(2), 303–350.

‡Hackmann, M. B., Kolstad, J. T., & Kowalski, A. E. (2015). Adverse Selection and an Individual Mandate: When Theory Meets Practice. *American Economic Review*, *105*(3), 1030–1066. https://doi.org/10.1257/aer.20130758

Handel, B. R. (2013). Adverse Selection and Inertia in Health Insurance Markets: When Nudging Hurts. *American Economic Review*, *103*(7), 2643–2682. https://doi.org/10.1257/aer.103.7.2643

4 Moral hazard

†Brot-Goldberg, Z. C., Chandra, A., Handel, B. R., & Kolstad, J. T. (2017). What Does a Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics. *The Quarterly Journal of Economics*, *132*(3), 1261–1318. https://www.jstor.org/stable/26372703

Brot-Goldberg, Z. C., Chandra, A., Handel, B. R., & Kolstad, J. T. (2017). What Does a Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics. *The Quarterly Journal of Economics*, *132*(3), 1261–1318. https://www.jstor.org/stable/26372703

‡Cutler, D. M., McClellan, M., & Newhouse, J. P. (2000). How does managed care do it? *The Rand Journal of Economics*, *31*(3), 526–548. https://www.jstor.org/stable/2600999

‡Dranove, D., Ody, C., & Starc, A. (2021). A Dose of Managed Care: Controlling Drug Spending in Medicaid. *American Economic Journal: Applied Economics*, *13*(1), 170–197. https://doi.org/10.1257/app.20190165

Einav, L., & Finkelstein, A. (2018). Moral Hazard in Health Insurance: What We Know and How We Know It. *Journal of the European Economic Association*, *16*(4), 957–982. https://doi.org/10.1093/jeea/jvy017

Einav, L., Finkelstein, A., Ryan, S. P., Schrimpf, P., & Cullen, M. R. (2013). Selection on Moral Hazard in Health Insurance. *American Economic Review*, *103*(1), 178–219. https://doi.org/10.1257/aer.103.1.178

Lin, H., & Sacks, D. W. (2019). Intertemporal substitution in health care demand: Evidence from the RAND Health Insurance Experiment. *Journal of Public Economics*, *175*, 29–43. https://doi.org/10.1016/j.jpubeco.2019.04.006

5 Public health insurance

‡ Kreider, A., Layton, T., Shepard, M., & Wallace, J. (2024). Adverse Selection and Network Design Under Regulated Plan Prices: Evidence from Medicaid. *Journal of Health Economics*, *97*, 102901. https://doi.org/https://doi.org/10.1016/j.jhealeco.2024.102901

‡Card, D., Chan, D., & Taylor, L. (2023). Is There a VA Advantage? Evidence from Dually Eligible Veterans. *American Economic Review*, *113*(11), 3003–343. https://doi.org/10.1257/aer.20211638

Chan, D., & Dickstein, M. J. (2019). Industry Input in Policy Making: Evidence from Medicare. *The Quarterly Journal of Economics*, *134*(3), 1299–1342. https://doi.org/10.1093/qje/qjz005

†Clemens, J., & Gottlieb, J. D. (2017). In the Shadow of a Giant: Medicare's Influence on Private Physician Payments. *Journal of Political Economy*, *125*(1), 1–39. https://doi.org/10.1086/689772

Clemens, J., & Gottlieb, J. D. (2017). In the Shadow of a Giant: Medicare's Influence on Private Physician Payments. *Journal of Political Economy*, *125*(1), 1–39. https://doi.org/10.1086/689772

Geruso, M., & Layton, T. (2020). Upcoding: Evidence from Medicare on Squishy Risk Adjustment. *Journal of Political Economy*, *128*(3), 984–1026. https://doi.org/10.1086/704756

Ketcham, J. D., Kuminoff, N. V., & Powers, C. A. (2016). Choice Inconsistencies Among the Elderly: Evidence from Plan Choice in the Medicare Part D Program: Comment. *American Economic Review*, (12), 3932–3961. https://doi.org/10.1257/aer.20131048

6 Variation and agency in treatment decisions

‡Alexander, D. (2020). How Do Doctors Respond to Incentives? Unintended Consequences of Paying Doctors to Reduce Costs. *Journal of Political Economy*, *128*(11), 4046–4096. https://doi.org/10.1086/710334

Eliason, P. J., Grieco, P. L. E., McDevitt, R. C., & Roberts, J. W. (2018). Strategic Patient Discharge: The Case of Long-Term Care Hospitals. *American Economic Review*, *108*(11), 3232–3265. https://doi.org/10.1257/aer.20170092

†Finkelstein, A., Gentzkow, M., & Williams, H. (2016). Sources of Geographic Variation in Health Care: Evidence From Patient Migration. *Quarterly Journal of Economics*, (4), 1681–1726. https://doi.org/10.1093/qje/qjw023

Finkelstein, A., Gentzkow, M., & Williams, H. (2016). Sources of Geographic Variation in Health Care: Evidence From Patient Migration. *Quarterly Journal of Economics*, (4), 1681–1726. https://doi.org/10.1093/qje/qjw023

Johnson, E. M., & Rehavi, M. M. (2016). Physicians Treating Physicians: Information and Incentives in Childbirth. *American Economic Journal: Economic Policy*, *8*(1), 115–141. https://doi.org/10.1257/pol.20140160

‡Schnell, M. (2023). Physician Behavior in the Presence of a Secondary Market: The Case of Prescription Opioids. Working Paper.

7 Determinants of provider productivity

Abaluck, J., Agha, L., Kabrhel, C., Raja, A., & Venkatesh, A. (2016). The Determinants of Productivity in Medical Testing: Intensity and Allocation of Care. *American Economic Review*, *106*(12), 3730–3764. https://doi.org/10.1257/aer.20140260

Chan, D. C., Gentzkow, M., & Yu, C. (2022). Selection with Variation in Diagnostic Skill: Evidence from Radiologists. *The Quarterly Journal of Economics*, *137*(2), 729–783. https://doi.org/10.1093/qje/qjab048

Chandra, A., & Staiger, D. O. (2007). Productivity Spillovers in Healthcare: Evidence from the Treatment of Heart Attacks. *The Journal of Political Economy*, *115*, 103. https://doi.org/10.1086/512249

†Chandra, A., & Staiger, D. O. (2007). Productivity Spillovers in Healthcare: Evidence from the Treatment of Heart Attacks. *The Journal of Political Economy*, *115*, 103. https://doi.org/10.1086/512249

‡Currie, J., & MacLeod, W. B. (2017). Diagnosing Expertise: Human Capital, Decision Making, and Performance among Physicians. *Journal of Labor Economics*, *35*(1), 18977. https://doi.org/10.3386/w18977

Currie, J., & MacLeod, W. B. (2017). Diagnosing Expertise: Human Capital, Decision Making, and Performance among Physicians. *Journal of Labor Economics*, *35*(1), 18977. https://doi.org/10.3386/w18977

Doyle, J., Graves, J., Gruber, J., & Kleiner, S. (2015). Measuring Returns to Hospital Care: Evidence from Ambulance Referral Patterns. *The Journal of Political Economy*, *123*(1), 170–214. https://doi.org/10.1086/677756

8 Provider learning

†Ackerberg, D. A. (2001). Empirically Distinguishing Informative and Prestige Effects of Advertising. *The RAND Journal of Economics*, *32*(2), 316–333. https://www.jstor.org/stable/2696412

Ackerberg, D. A. (2001). Empirically Distinguishing Informative and Prestige Effects of Advertising. *The RAND Journal of Economics*, *32*(2), 316–333. https://www.jstor.org/stable/2696412

‡Agha, L., & Molitor, D. (2018). The Local Influence of Pioneer Investigators on Technology Adoption: Evidence from New Cancer Drugs. *The Review of Economics and Statistics*, *100*(1), 29–44. https://doi.org/10.1162/REST_a_00670

Coscelli, A., & Shum, M. (2004a). An Empirical Model of Learning and Patient Spillovers in New Drug Entry. *Journal of Econometrics*, *122*(2), 213–246. https://doi.org/10.1016/j.jeconom.2003.09.002

Crawford, G. S., & Shum, M. (2005a). Uncertainty and Learning in Pharmaceutical Demand. *Econometrica*, *73*(4), 1137–1173. Retrieved December 12, 2023, from https://www.jstor.org/stable/3598818

Crawford, G. S., & Shum, M. (2005b). Uncertainty and Learning in Pharmaceutical Demand. *Econometrica*, *73*(4), 1137–1173. https://www.jstor.org/stable/3598818

Dickstein, M. (2023). Efficient Provision of Experience Goods: Evidence from Antidepressant Choice. Working paper.

Singh, M. (2021). Heuristics in the delivery room. *Science*, *374*(6565), 324–329. https://doi.org/10.1126/science.abc9818

9 Price and quality determination

†Gaynor, M. (2006). What Do We Know About Competition and Quality in Health Care Markets? NBER Working Paper #12301.

Gowrisankaran, G., Nevo, A., & Town, R. (2015). Mergers When Prices Are Negotiated: Evidence from the Hospital Industry. *American Economic Review*, *105*(1), 172–203. https://doi.org/10.1257/aer.20130223

†Gowrisankaran, G., Nevo, A., & Town, R. (2015). Mergers When Prices Are Negotiated: Evidence from the Hospital Industry. *American Economic Review*, *105*(1), 172–203. https://doi.org/10.1257/aer.20130223

10 Horizontal integration

Dafny, L., Ho, K., & Lee, R. S. (2019). The price effects of cross-market mergers: theory and evidence from the hospital industry. *The RAND Journal of Economics*, *50*(2), 286–325. https://doi.org/10.1111/1756-2171.12270

‡Dafny, L., Ho, K., & Lee, R. S. (2019). The price effects of cross-market mergers: theory and evidence from the hospital industry. *The RAND Journal of Economics*, *50*(2), 286–325. https://doi.org/10.1111/1756-2171.12270

Lewis, M. S., & Pflum, K. E. (2017). Hospital systems and bargaining power: Evidence from out-of-market acquisitions. *The RAND Journal of Economics*, *48*(3), 579–610. https://doi.org/10.1111/1756-2171.12186

Prager, E., & Schmitt, M. (2021). Employer Consolidation and Wages: Evidence from Hospitals. *American Economic Review*, *111*(2), 397–427. https://doi.org/10.1257/aer.20190690

†Prager, E., & Schmitt, M. (2021). Employer Consolidation and Wages: Evidence from Hospitals. *American Economic Review*, *111*(2), 397–427. https://doi.org/10.1257/aer.20190690

Schmitt, M. (2017). Do hospital mergers reduce costs? *Journal of Health Economics*, *52*, 74–94. https://doi.org/10.1016/j.jhealeco.2017.01.007

Wollmann, T. G. (2019). Stealth Consolidation: Evidence from an Amendment to the Hart-Scott-Rodino Act. *American Economic Review: Insights*, *1*(1), 77–94. https://doi.org/10.1257/aeri.20180137

11 Other forms of integration

Baker, L. C., Bundorf, M. K., & Kessler, D. P. (2016). The effect of hospital/physician integration on hospital choice. *Journal of Health Economics*, *50*, 1–8. https://doi.org/10.1016/j.jhealeco.2016.08.006

Capps, C., Dranove, D., & Ody, C. (2018). The effect of hospital acquisitions of physician practices on prices and spending. *Journal of Health Economics*, *59*, 139–152. https://doi.org/10.1016/j.jhealeco.2018.04.001

Ciliberto, F., & Dranove, D. (2006). The effect of physician–hospital affiliations on hospital prices in California. *Journal of Health Economics*, *25*(1), 29–38. https://doi.org/10.1016/j.jhealeco.2005.04.008

Koch, T. G., Wendling, B. W., & Wilson, N. E. (2017). How vertical integration affects the quantity and cost of care for Medicare beneficiaries. *Journal of Health Economics*, *52*, 19–32. https://doi.org/10.1016/j.jhealeco.2016.12.007

‡Koch, T. G., Wendling, B. W., & Wilson, N. E. (2021). The Effects of Physician and Hospital Integration on Medicare Beneficiaries' Health Outcomes. *The Review of Economics and Statistics*, *103*(4), 725–739. https://doi.org/10.1162/rest_a_00924

†Lin, H., McCarthy, I. M., & Richards, M. (2021). Hospital Pricing Following Integration with Physician Practices. *Journal of Health Economics*, *77*, 102444. https://doi.org/10.1016/j.jhealeco.2021.102444

12 Provider entry

Abraham, J. M., Gaynor, M., & Vogt, W. B. (2007). Entry and Competition in Local Hospital Markets. *The Journal of Industrial Economics*, *55*(2), 265–288. https://doi.org/10.1111/j.1467-6451.2007.00311.x

Bresnahan, T. F., & Reiss, P. C. (1990). Entry in Monopoly Market. *The Review of Economic Studies*, *57*(4), 531–553. https://doi.org/10.2307/2298085

Bresnahan, T. F., & Reiss, P. C. (1991). Entry and Competition in Concentrated Markets. *Journal of Political Economy*, *99*(5), 977–1009. https://www.jstor.org/stable/2937655

†Bresnahan, T. F., & Reiss, P. C. (1991). Entry and Competition in Concentrated Markets. *Journal of Political Economy*, *99*(5), 977–1009. https://www.jstor.org/stable/2937655

‡Cohen, A., Freeborn, B., & McManus, B. (2013). Competition and Crowding Out in the Market for Outpatient Substance Abuse Treatment. *International Economic Review*, *54*(1), 159–184. https://doi.org/10.1111/j.1468-2354.2012.00729.x

Magnolfi, L., Mommaerts, C., Serna, N., & Sullivan, C. (2024). The Rise of Urgent Care Centers: Implications for Competition and Access to Health Care. *Journal of Political Economy Microeconomics*, *2*(2), 201–243. Retrieved March 13, 2025, from https://www.journals.uchicago.edu/doi/10.1086/727821

13 Pharmaceutical markets

Dubois, P., Gandhi, A., & Vasserman, S. (2023). Bargaining and international reference pricing in the pharmaceutical industry. NBER Working Paper #30053.

Duggan, M., & Scott Morton, F. (2010). The Effect of Medicare Part D on Pharmaceutical Prices and Utilization. *American Economic Review*, *100*(1), 590–607. https://doi.org/10.1257/aer.100.1.590

‡Duggan, M., & Scott Morton, F. M. (2006). The Distortionary Effects of Government Procurement: Evidence from Medicaid Prescription Drug Purchasing. *The Quarterly Journal of Economics*, *121*(1), 1–30. https://doi.org/10.1093/qje/121.1.1

Kakani, P., Chernew, M., & Chandra, A. (2022). The Contribution of Price Growth to Pharmaceutical Revenue Growth in the United States: Evidence from Medicines Sold in Retail Pharmacies. *Journal of Health Politics, Policy and Law*, *47*(6), 629–648. https://doi.org/10.1215/03616878-10041079

†Lakdawalla, D. N. (2018). Economics of the Pharmaceutical Industry. *Journal of Economic Literature*, *56*(2), 397–449. https://doi.org/10.1257/jel.20161327

†Scott Morton, F. M., Stern, A. D., & Stern, S. (2018). The Impact of the Entry of Biosimilars: Evidence from Europe. *Review of Industrial Organization*, *53*(1), 173–210. https://doi.org/10.1007/s11151-018-9630-3

14 Waste and fraud

‡Doyle, J. J., Graves, J. A., & Gruber, J. (2017). Uncovering Waste in US Healthcare: Evidence from Ambulance Referral Patterns. *Journal of Health Economics*, *54*, 25–39. https://doi.org/10.1016/j.jhealeco.2017.03.005

Eliason, P., League, R., Leder-Luis, J., McDevitt, R. C., & Roberts, J. W. (2025). Ambulance Taxis: The Impact of Regulation and Litigation on Health Care Fraud. *Journal of Political Economy*, *133*(5). https://doi.org/10.1086/734134

†Eliason, P., League, R., Leder-Luis, J., McDevitt, R. C., & Roberts, J. W. (2025). Ambulance Taxis: The Impact of Regulation and Litigation on Health Care Fraud. *Journal of Political Economy*, *133*(5). https://doi.org/10.1086/734134

Garber, A. M., & Skinner, J. (2008). Is American Health Care Uniquely Inefficient? *Journal of Economic Perspectives*, *22*(4), 27–50. https://doi.org/10.1257/jep.22.4.27

Shi, M. (2024). Monitoring for Waste: Evidence from Medicare Audits. *Quarterly Journal of Economics*, *139*(2). https://doi.org/10.1093/qje/qjad049

15 Quality and cost of emergency care

Chan, D. (2018). The Efficiency of Slacking Off: Evidence from the Emergency Department. *Econometrica*, *86*(3), 997–1030. https://doi.org/10.3982/ECTA13565

Cooper, Z., Scott Morton, F., & Shekita, N. (2020). Surprise! Out-of-Network Billing for Emergency Care in the United States. *Journal of Political Economy*, *128*(9), 3626–3677. https://doi.org/10.1086/708819

†Cooper, Z., Scott Morton, F., & Shekita, N. (2020). Surprise! Out-of-Network Billing for Emergency Care in the United States. *Journal of Political Economy*, *128*(9), 3626–3677. https://doi.org/10.1086/708819

‡Silver, D. (2021). Haste or Waste? Peer Pressure and Productivity in the Emergency Department. *The Review of Economic Studies*, *88*(3), 1385–1417. https://doi.org/10.1093/restud/rdaa054

Singh, M., & Venkataramani, A. (2024). Rationing by Race. NBER Working paper # 30380.