

Ari B. Friedman, M.D., Ph.D.

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Education and Training

2006 - B.A., College of Arts and Sciences, *Magna Cum Laude*, University of Pennsylvania

- *Major*: Biological Basis of Behavior, with Distinction. *Minors*: Economics, BBB/Health Care Systems

2008 - Post-Bachelor's Fellowship, Initiative for Global Health, Harvard University

- *Advisors*: Majid Ezzati, Christopher Murray

2010 - M.S., Health Care Management and Economics, The Wharton School, University of Pennsylvania

- *Thesis*: "Insurer Incentives to Improve Health"

2016 - M.D., The Perelman School of Medicine, University of Pennsylvania

2016 - Ph.D., Health Care Management and Economics, The Wharton School, University of Pennsylvania

- *Dissertation*: "Firm Response to Low-Reimbursement Patients in the Market for Unscheduled Outpatient Care," *Defended August 1, 2014*
- *Committee*: Mark Pauly (Chair), Daniel Polsky, Guy David, Kevin Volpp, Brendan Carr

Present - Residency, Harvard Affiliated Emergency Medicine Residency at Beth Israel Deaconess Medical Center

Publications

Peer-Reviewed

Grischkan J, George BP, Chaiyachati K, **Friedman AB**, Dorsey ER, Asch DA. Distribution of Medical Education Debt by Specialty, 2010-2016. *JAMA Intern Med* 2017.

Friedman AB. The Uncertain Economics of Insurance Enabling More Emergency Department Visits. *Annals EM*. 19 June 2017.

Schwartz AL, **Friedman AB**. Comments on Geographic Variations in Controlled Trials. *New Eng J Med*. 2017.

Rhodes KV, Basseyn S, **Friedman AB**, Kenney GM, Dissoker D, Polsky D. Access to Primary Care Appointments Following 2014 Insurance Expansions. *Ann Fam Med*. 2017.

Friedman AB, Grischkan JA, Dorsey ER, George BP. Forgiven But Not Relieved: Workforce Consequences of Changes to Public Service Loan Forgiveness. *JGIM*. 2016.

Friedman AB, Owen DD, Perez VIE. Trends in Hospital ED Closures Nationwide and Across Medicaid Expansion, 2006-2013. *Am J Emerg Med*. 2016.

Hsia RY, **Friedman AB**, Niedzwiecki M. Urgent Care Needs Among Nonurgent Visits to the Emergency Department. *JAMA Int Med*. 2016.

Marill KA, Chang Y, Wong KF, **Friedman AB**. Estimating Negative Likelihood Ratio Confidence When Test Sensitivity is 100%: A Bootstrapping Approach. *Stat Methods Med Res*. 2015. 1-16.

Friedman AB, Saloner B, Hsia RY. No Place to Call Home – Policies to Reduce ED Use In Medicaid. *N Engl J Med*. 2015. 2382-2385.

Saloner B, Polsky D, **Friedman AB**, Rhodes KV. Primary Care Appointment Availability and Preventive Care Utilization Evidence From an Audit Study. *Med Care Res Review*. 2015. 1-19.

Friedman AB. Comment on Economic Incentives and Use of the Intensive Care Unit. *JAMA* 2014. 311(22):2336-2337.

Rhodes KV, Kenney GM, **Friedman AB**, Saloner B, Lawson CC, Chearo D, Wissoker D, Polsky D. Primary Care Access for New Patients on the Eve of Health Care Reform. *JAMA Int Med* 2014. 174(6):861-869.

Friedman AB. Comment on Preparing for Responsible Sharing of Clinical Trial Data. *N Engl J Med* 2014. 370(5):484-485.

Becker NV, **Friedman AB**. Emergency Department, Heal Thyself. *Am J Emerg Med* 2014. 32(2):175-177.

Friedman AB. Comment on Effects of Medicaid on Clinical Outcomes. *N Engl J Med* 2013. 369(6):581-583.

Friedman AB, Mendola T. To Cover Their Child, One Couple Navigates A Health Insurance Maze In Pennsylvania. *Health Affairs* 2013. 32(5):994-997.

Rooney MS, Arku RE, Dionisio KL, Paciorek C, **Friedman AB**, Carmichael H, Zhou Z, Hughes AF, Vallarino J, Agyei-Mensah S, Spengler JD, Ezzati M. Spatial and temporal patterns of particulate matter sources and pollution in four communities in Accra, Ghana. *Science of the Total Environment* 2012. 435-6:107-114.

Dionisio KL, Rooney MS, Arku RE, **Friedman AB**, Hughes AF, Vallarino J, Agyei-Mensah S, Spengler JD, Ezzati M. Within-neighborhood patterns and sources of particle pollution: mobile monitoring and geographic information system analysis in four communities in Accra, Ghana. *Environmental Health Perspectives* 2010. 118(5):607-13.

Ezzati M, Horwitz MEM, Thomas DSK, **Friedman AB**, Roach R, Clark T, Murray CJL, Honigman B. Altitude, life expectancy and mortality from ischaemic heart disease, stroke, COPD and cancers: national population-based analysis of US counties. *Journal of Epidemiology and Community Health* 2011. 66(7).

Danaei G, **Friedman AB**, Oza S, Murray CJL, Ezzati M. Diabetes Prevalence and Diagnosis in US States: analysis of health surveys. *Population Health Metrics* 2009. 7(16).

Ezzati M, **Friedman AB**, Kulkarni SC, Murray CJL. Reversal of Fortunes: Trends in County Mortality and Cross-County Mortality Disparities in the United States. *PLoS Medicine* 2008. 5(4):e66.

Li X, **Friedman AB**, Zhu W, Wang L, Boswell S, May RS, Davis LL, Jope RS. Lithium regulates GSK3b in human peripheral blood mononuclear cells: implication in the treatment of bipolar disorder. *Biol Psych* 2007. 61(2):216-22.

Li X, **Friedman AB**, Roh MS, Jope RS. Anesthesia and post-mortem interval profoundly influence the regulatory serine phosphorylation of GSK3 in mouse brain. *J Neurochem* 2005. 92(3):701-4.

Li X, Rosborough KM, **Friedman AB**, Zhu W, Roth KA. Regulation of mouse brain glycogen synthase kinase-3 (GSK3) by atypical antipsychotics. *Int J Neuropsychopharm* 2007. 10(1):7-19.

Li X, Zhu W, Roh MS, **Friedman AB**, Rosborough K, Jope RS. In vivo regulation of GSK3b by serotonergic activity in mouse brain. *Neuropsychopharm* 2004. 29(8):1426-31.

Other Scholarly Writing

Friedman AB, Weiner J. What's the Story with Drug Prices? *Health PolicySense*. May 2016.

Becker NV, **Friedman AB**. *King v Burwell* Through the Lens of Economics. *LDI Health Economist*. March 2015.

Friedman AB, Ndwandwe S. Relative Value Health Insurance And Pay For Performance For Insurers: Complements, Not Substitutes. *Health Affairs Blog*. September 19, 2014.

Van den Broeck J, Brestoff JR, **Friedman AB**, Becker N, Hoaglin MC, Robberstad B. The Measurement Plan. In: *Epidemiology*: Van den Broeck J, Brestoff JR, eds. Principles and Practical Guidelines. 1st ed. New York, NY: Springer; 2013:197-240.

Friedman AB, Becker N. Understanding the Individual Mandate's SCOTUS Pivot Points. *LDI Health Economist*. April 2012.

Friedman AB. Insurer incentives to improve health. *figshare* 2011.

Friedman AB. Delivering health. *figshare* December 19, 2010.

Friedman AB. Senior Honors Thesis. Advisor: Peter Klein. Biological Basis of Behavior, University of Pennsylvania. 2006.

Friedman AB. Internal report on emergency response times for the Penn Department of Public Safety. 2004.

Journalism (Selected Articles)

Health-IT World, Freelance Reporter (2006-07)

- “Small Practice Urges E-Prescribing, Looks Forward to EHRs.” *Health-IT World*. 25 April 2006.
- “Athenahealth Aims to Streamline Small Practice Collection Process.” *Health-IT World*. 6 April 2006.

The Daily Pennsylvanian, Health System Reporter (2006)

- “Student-run clinic serves community with care.” *The Daily Pennsylvanian*. 22 February 2006.
- “Study links IT use with hospitals’ finances.” *The Daily Pennsylvanian*. 16 February 2006.

The Daily Pennsylvanian, Senior Photo Editor on 120th editorial board (2004)

- “A grueling rotation.” *The Daily Pennsylvanian*. 14 February 2006.

Presentations

Samuels-Kalow M, Niedzwiecki M, **Friedman AB**, Sokolove P, Hsia R. Urgent care needs for pediatric emergency department patients assigned non-urgent triage status. Society for Academic Emergency Medicine (SAEM). May 18, 2017.

Perez VE, **Friedman AB**. Impact of Medicaid Expansion on Hospital Closures. Association for Public Policy Analysis and Management Fall Conference (APPAM). November 3, 2016.

Perez VE, **Friedman AB**. Impact of Medicaid Expansion on Hospital Closures. 86th Annual Conference of the Southern Economic Association. November 19-21, 2016.

Perez VE, **Friedman AB**. The Impact of the Affordable Care Act on Hospital Market Structure and Patient Access. Sixth Biennial Conference of The American Society for Health Economists (ASHEcon). June 12, 2016.

Friedman AB. Some Simple Economics of Emergency Medicine. Society for Academic Emergency Medicine (SAEM) Annual Conference. New Orleans, LA. May 12, 2016.

Friedman AB. Why Wait? An Econometric Analysis Of The Supply Of Emergency Department Care. Society for Academic Emergency Medicine (SAEM) Annual Conference. New Orleans, LA. May 13, 2016.

Perez VE, **Friedman AB**. The Impact of the Affordable Care Act on Hospital Market Structure and Patient Access. American Economic Association (AEA) Annual Meeting. San Francisco, CA.

Nguyen BM, Bounds G, **Friedman AB**. Exploring the ‘Dean’s Lie’: Which Specialties Medical Schools Report as Primary Care in the Match. North American Primary Care Research Group (NAPCRG) Annual Meeting. Cancun, MX. June 29-30, 2015.

Jesus JE, Elliot B, Cooksey L, **Friedman AB**, Allen MB, Arnold R. Effect of Do-Not-Resuscitate Orders on the Disposition of Patients with Severe Sepsis. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 15, 2015.

Li KC, Griff JE, Heisler EK, Grossestreuer AV, **Friedman AB**, Leary M, Abella BS, Becker LB. Association of Bystander CPR Rates with County-level Median Household Income in Pennsylvania. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 12-16, 2015.

Friedman AB, Trueger NS. Differences in Probability of Admission and Triage Status Across Race, Ethnicity, and Insurance Status. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 12-16, 2015.

Friedman AB, Basseyn S, Rhodes KV. Waiting, Here Or There: The Relationship Between Primary Care Access and Emergency Department Wait Times in New Jersey. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 12-16, 2015.

Friedman AB, Smith S. Assessing the Rule-of-Thumb For QT Prolongation Rule-out. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 12-16, 2015.

Lawson C, Basseyn S, **Friedman AB**, Rhodes KV. “There’s not really an incentive to do it another way”: Barriers to unscheduled ambulatory care. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 12-16, 2015.

Rhodes KV, Basseyn S, **Friedman AB**. Changes in Access to Primary Care in the Aftermath of Insurance Expansions: Early Results. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 12-16, 2015.

Marill K, **Friedman AB**. Bootstrapping: What, When, and How. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 15, 2015.

Friedman AB. Tools for Reproducible Research. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 15, 2015.

Friedman AB, Rhodes KV, Kocher K, Lee M. Natural Experiments in Emergency Medicine. Society for Academic Emergency Medicine (SAEM) Annual Conference. San Diego, CA. May 15, 2015.

Friedman AB. Why Wait? An Econometric Analysis of the Supply of Emergency Department Care. National Conference for Physician-Scholars in the Social Sciences and Humanities. April 18-19, 2015.

Friedman AB, Davis BJ, Reese C, Jesus J. Urgencies And Emergencies: The Differential Impact Of Urgent Care Centers On Emergency Department Visits From Low-severity, Privately-insured Patients. University of Pennsylvania Medical Scientist Training Program Annual Conference. Philadelphia, PA. August 7, 2014.

Friedman AB, Prager E. Competition Through Wait Times in the Market for Unscheduled Care. American Society of Health Economists (ASHEcon) Fifth Biennial Conference. Los Angeles, CA. June 24, 2014. “Health & Healthcare in America: From Economics to Policy.”

Saloner B, Polsky D, Rhodes K, **Friedman AB**. Access to Primary Care for New Medicaid Patients and Preventive Care Utilization: Evidence from an Audit Study. American Society of Health Economists (ASHEcon) Fifth Biennial Conference. Los Angeles, CA. June 25, 2014. “Health & Healthcare in America: From Economics to Policy.”

Friedman AB, Polsky D, Saloner B, Rhodes KV. Waiting, Here Or There: The Relationship Between Primary Care Access and Emergency Department Wait Times. AcademyHealth Annual Research Meeting. San Diego, CA. June 9, 2014.

Friedman AB, Berdahl C, Hsia R, Seabury S. The Out-of-Pocket Costs Of Emergency Department Visits According To Patient Insurance Status. Society for Academic Emergency Medicine (SAEM) Annual Conference. Dallas, TX. May 14, 2014.

Friedman AB, Davis BJ, Reese C, Jesus J. Urgencies And Emergencies: The Differential Impact Of Urgent Care Centers On Emergency Department Visits From Low-severity, Privately-insured Patients. Society for Academic Emergency Medicine (SAEM) Annual Conference. Dallas, TX. May 16, 2014.

Jesus J, Rifai N, **Friedman AB**, Bracey A, Allen MB, Fisher J, Shogilev D. Actual Treatment Choices of Patients with Do-Not-Resuscitate/Do-Not-Intubate Orders: a Two-year Follow-up Study. Society for Academic Emergency Medicine (SAEM) Annual Conference. Dallas, TX. May 15, 2014.

Friedman AB, Davis BJ, Reese C, Jesus J. Urgencies And Emergencies: The Differential Impact Of Urgent Care Centers On Emergency Department Visits From Low-severity, Privately-insured Patients. Hospital of the University of Pennsylvania Emergency Department Research Day. Philadelphia, PA. April 9, 2014.

Friedman AB. Competition in the Unscheduled Care Market. Jefferson School of Population Health Lunch and Learn. Philadelphia, PA. March 12, 2014.

Friedman AB, Rhodes KV, Polsky D. Waiting, Here Or There: The Relationship Between Primary Care Access and Emergency Department Wait Times. Association for Public Policy Analysis and Management (APPAM) Annual Conference. Washington, DC. November 8, 2013.

Rhodes KV, Kenney G, **Friedman AB**, Lawson C, Wissoker D, Chearo D, Polsky D. Measuring Primary Care Access: Evidence From a 10 State Audit Study. Association for Public Policy Analysis and Management (APPAM) Annual Conference. Washington, DC. November 8, 2013.

Saloner B, Rhodes K, Kenney G, **Friedman AB**, Polsky D. How Does Primary Care Access Promote Utilization of Preventive Health Care? Evidence From An Experimental Audit Study. Association for Public Policy Analysis and Management (APPAM) Annual Conference. Washington, DC. November 8, 2013.

Saloner S, Rhodes KV, Kenney G, **Friedman AB**, Polsky D. How Does Primary Care Access Promote Utilization of Preventive Health Care? Evidence from an Experimental Audit Study. AcademyHealth Annual Research Meeting. Baltimore, MD. June 24, 2013.

Lawson CC, **Friedman AB**, Carroll K, Rhodes KV. Financial Drivers of Access: Barriers to Unscheduled Outpatient Care. AcademyHealth Annual Research Meeting. Baltimore, MD. June 24, 2013.

KV Rhodes, Kenney G, **Friedman AB**, Wissoker D, Chearo D, Lawson CC, Saloner B, Polsky D. Access to Primary Care on the Eve of ACA Implementation. AcademyHealth Annual Research Meeting. Baltimore, MD. June 24, 2013.

Friedman AB, Rhodes KV, Polsky D. The Impact of Retail and Urgent Care on Conventional Primary Care Appointment Availability. AcademyHealth Annual Research Meeting. Baltimore, MD. June 24, 2013.

Friedman AB, Rhodes KV, Polsky D. The Impact of Retail and Urgent Care on Conventional Primary Care Appointment Availability. 19th Annual AHRQ NRSA Research Trainees Conference. Baltimore, MD. June 22, 2013.

Friedman AB, Carr BG, David G. Does The “Invisible Hand” Optimally Regionalize Acute Care Providers? Society for Academic Emergency Medicine (SAEM) Annual Conference. Atlanta, GA. May 17, 2013.

Friedman AB, Carr BG, David G. Does The “Invisible Hand” Optimally Regionalize Acute Care Providers? Penn Emergency Medicine Department Research Day. Philadelphia, PA. March 13, 2013.

Friedman AB. Paying for Health: Insurer incentives to achieve the goals of health reform. University of Pennsylvania Medical Scientist Training Program Annual Conference. Philadelphia, PA. August 8, 2012.

Dionisio KL, Rooney MS, Arku RE, **Friedman AB**, Paciorek C, Hughes AF, Vallarino J, Carmichael H, Agyei-Mensah S, Spengler JD, Ezzati M. Within-neighborhood variation of particle pollution in developing country cities: mobile monitoring and GIS analysis in four neighborhoods in Accra. International Society of Environmental Epidemiology Conference. Dublin, Ireland. August 2009.

Dionisio KL, Arku RE, Hughes AF, Vallarino J, Carmichael H, **Friedman AB**, Agyei-Mensah S, Spengler JD, Ezzati M. Particle pollution in Accra neighborhoods: spatial and socioeconomic patterns. International Society of Environmental Epidemiology Conference. Dublin, Ireland. August 2009.

Ezzati M, **Friedman AB**, Oza S, Murray CJL. Improving estimates of state diabetes prevalence. Lancet/IHME Launch Conference. Seattle, WA. 10 April 2008.

O'Brien WT, O'Donnell M, **Friedman AB**, Klein PS. Role of GSK in Behavior and Neurobiology. U. Penn. Institute on Aging: Sylvan M. Cohen Annual Retreat. Philadelphia, PA. 4 May 2006.

Friedman AB, Li X, Roh MS, Jope RS. Anesthesia and postmortem interval profoundly influence the regulatory serine phosphorylation of GSK3 in mouse brain. Society for Neuroscience Annual Meeting. Baltimore, MD. 16 Nov 2005.

Grants and Awards

William L. Kissick Health Policy Research Prize, University of Pennsylvania. 2016.

Top 50 Peer Reviewer, Annals of Emergency Medicine. 2015.

Fellow, Leonard Davis Institute of Health Economics, University of Pennsylvania. 2013-present.

Emergency Care Policy and Research Travel Grant. 2013.

“Cost-shifting between public and private insurers.” Russell Ackoff Doctoral Student Fellowship. 2013.

Fellow, Center for Emergency Care Policy and Research, University of Pennsylvania. 2012-present.

“The Adoption of Cost-Effective Interventions.” Mack Center for Technological Innovation. 2012.

“Insurer incentives in an international context.” Penn Lauder CIBER Program. 2010.

“Insurance Churn and Investment in Preventive Care.” Medical Student Health Services and Policy Summer Research Fellowship. 2009.

“IKONOS imagery of Accra, Ghana.” With Carmichael H, Ezzati M. The GeoEye Foundation. 2008.

Benjamin Franklin Scholar, University of Pennsylvania, 2002-2006.

National Merit Scholar. 2001.

Teaching Experience

Wharton Doctoral Programs Data Camp. “Reproducible Research.” University of Pennsylvania. (Invited guest lecture, August 15, 2014).

SOCI111: Health of Populations. “The Economics of the U.S. Health System.” University of Pennsylvania. (Invited guest lecture, April 4, 2014).

Wharton Healthcare Statistical Programming Workshop Series (Spring 2011, Fall 2011, Spring 2013).

Post-Bachelor’s Fellowship Boot Camp, Harvard University and University of Washington (August 2007, 2008).

Sudanese Education Fund, Volunteer Tutor (2007).

Access Science, National Science Foundation Undergraduate Teaching Fellow (2003-2006).

Service

Peer Review

Health Affairs (2016)

American Journal of Emergency Medicine (2015)

Society for Academic Emergency Medicine (SAEM) Annual Conference (2015)

Health Economics (2015)

Academic Emergency Medicine (2015)

Annals of Emergency Medicine (2013, 2014, 2015)

Medical Care (2015)

Scandinavian Journal of Trauma, Resuscitation, and Emergency Medicine (2014)

Social Science & Medicine (2009)

Leadership

Chair, Penn Emergency Medicine Interest Group, 2010-2011.

Mentorship

Siyabonga Ndwandwe, LDI SUMR Scholar, 2014.

Selected Acknowledgments

Ioannides KH, Mamtani M, Shofer FS, et al. Medical students in the emergency department and patient length of stay. *JAMA*. 2015;314(22):2411-2413. doi:10.1001/jama.2015.16476.

Programming Experience

Language proficiency

- Expert: R (“Top R User” on noted programming site StackOverflow.com)
- Advanced: Stata
- Intermediate: C++
- Basic: Perl, Matlab, SAS, bash script

Software Written

- bootLR: Bootstrapped confidence intervals for (negative) likelihood ratio tests. R, 2014.
- taRifx: Collection of utility functions. R, 2013.
- taRifx.geo: Collection of geospatial utility functions. R, 2013.
- maRketSim: Exact-formula bond market simulation. R, 2011.
- TOUCH: Create a blank data file. Stata, 2008.
- IFIN: Select multiple if values. Stata, 2008.
- OPENALL: Open all specified files with append. Stata, 2008.
- UNIQUESTRATA: Ensure variables collectively account for every observation. Stata, 2008.

Society Memberships

- AcademyHealth (2011-)
- The Society for Academic Emergency Medicine (2012-)
- Foundation for Open Access Statistics (2013-)
- Association for Public Policy Analysis and Management (2013-)
- American Society of Health Economists (2013-)
- American College of Emergency Physicians (2014-)
- Emergency Medicine Residents' Association (2014-)

Selected Press Coverage

Anderson, David. "The Doctor is Out: PCP Availability Beyond 2020." *The Incidental Economist*, 23 June 2017.

Caffrey, Mary. "Medicaid Expansion Fueled ED Visits, but More Patients Had Insurance, Study Finds." *AJMC Managed Markets Network*, 19 June 2017.

MacDonald, Ilene. "The Impact of Medicaid Expansion: More Trips to the ER, but Fewer Patients are Uninsured." *FierceHealthcare*, 19 June 2017.

Hiltzik, Michael. "A Big Health Insurer is Planning to Punish Patients for 'Unnecessary' ER Visits." *LA Times*, 2 June 2017.

Weissmann, Jordan. "Betsy DeVos Wants to Kill a Major Student Loan Forgiveness Program." *Slate*, 17 May 2017.

Mitchell, Josh. "Government on Track to Forgive Up to \$131,000 Each in Student Debt for Thousands of Doctors." *The Wall Street Journal*, 20 Jul 2016.

Frieden, Joyce. "Health spending to grow by nearly 6% a year through 2025." *MedPage Today*, 13 Jul 2016.

Hiltzik, Michael. "Here's why it's so difficult to solve soaring drug prices." *LA Times*, 1 June 2016.

Doyle, Kathryn. "'Nonurgent' patients might still end up being hospitalized." *Reuters Wire*, 18 April 2016.

Caffrey, Mary K. "NEJM Authors Seek Solutions to Keep Medicaid Clients out of the Emergency Department." *AJMC Journal*, 18 June 2015.

Frakt, Austin. "Shortage of Medicaid Doctors? Not if You Ask Patients." *The Upshot, The New York Times*, 10 Nov, 2014.

Wynne, Bill. "Health Wonk Review - T.G.I.R. Edition." *Health Care Lighthouse*, 25 Sep, 2014.

U.S. Agency for Healthcare Research and Quality, Effective Healthcare Program's Scientific Resource Center (SRC). "Comparative Effectiveness Research Methodology." 11 Feb, 2014.

Zylberberg, Nadine. "Penn Med, HUP see reform's effects." *The Daily Pennsylvanian*. 1 April, 2010: A1.

Rea, Katherine. "Accessing Medication." *The Daily Pennsylvanian*. 12 November 2009.

Brown, David. "Life Expectancy Hits Record High in United States." *Washington Post*. 12 June 2008.

Brown, David. "Life Expectancy Drops for Some U.S. Women." *Washington Post*. 22 April 2008.

Bakalar, Nicholas. "Life Expectancy is Declining in Some Pockets of the Country." *New York Times*. 22 April 2008.

The Patt Morrison Show. Ari Friedman, Patt Morrison (Interview). "Women's Life Expectancy on the Decline." *National Public Radio*. 22 April 2008.

Francis, Theo. "Life-Expectancy Study Shows Regional Declines." *Wall Street Journal*. 22 April 2008.

“Life Expectancy Falls in Poorer U.S. Counties: Study.” *Reuters*. 22 April 2008.

“Can Wikipedia Survive Its Own Success?” *Knowledge@Wharton*. 25 January 2006.

“Statistical Analysis of Copyright Registrations.” *Slashdot*. 16 July 2003.

Medical observership

Emergency Medicine at Université de Paris 13/SAMU 93. (Summer 2011).

Certifications

- AHA ACLS, BLS, PALS, ATLS
- FEMA ICS-100b and ICS-200b
- IRB Good Clinical Practice and CITI
- Wilderness Emergency Medical Responder