AEM 7510 – Environmental Economics – Fall 2021
Cornell Dyson School of Applied Economics and Management

Instructor:	Todd Gerarden
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Class Meetings:	TuTh 1:00PM - 2:15PM, Warren 138
Office Hours:	By appointment: aem7510.youcanbook.me

Course Description: The objective of this course is to provide a graduate-level survey of energy and environmental economics to prepare students to conduct original empirical research in the field. This course complements AEM 7500 (Resource Economics) in both its content and its methodology. The course format combines lectures to learn theoretical and methodological concepts with discussion of papers to understand how these concepts are applied in empirical research.

Prerequisites: Graduate-level microeconomics and econometrics. If you have not taken these courses, please contact me before enrolling.

Seminars: Students interested in research in energy and environmental economics should audit or enroll in AEM 7852: Sustainable Environment, Energy and Resource Economics (SEERE) Research. During Fall 2021 the seminar will meet on Mondays from 1:00pm-2:15pm in Warren B51.

Auditing: I encourage all students to take the course for credit to get as much out of it as possible. That said, I welcome auditors who are interested in the course but unable to take it for credit.

Academic Integrity: This class will follow Cornell University's Code of Academic Integrity: cuinfo.cornell.edu/aic.cfm. You may consult with other students and/or me (during office hours) for assistance on assignments, but each assignment must be completed individually unless stated otherwise.

Accessibility: Cornell is committed to ensuring access to learning opportunities for all students. If you have an access need, please contact me or Student Disability Services.

Assignments and Grading

Paper Summaries, Paper Presentations, and Class Participation (20%): To facilitate in-class discussions, students will submit short ($<$ one page) written summaries of designated readings before certain class meetings. Paper summaries should include the following sections: research question, contribution to the literature, data, research design, and results. Students will also present and lead class discussion of one or more papers throughout the semester.

Problem Sets (40%): There will be two problem sets that cover theoretical and empirical concepts introduced throughout the course.

Replication (20%): Each student will complete an independent replication of an empirical paper in environmental economics.

Research Proposal (20%): Each student should propose three research projects relevant to the course material. For each of the three proposals, students should submit an initial one-page summary for feedback throughout the semester. This initial summary should include the following sections: research question, motivation, contribution to the literature, data, and empirical strategy. You should also be prepared to discuss these proposals in class. Students will then develop one of the three ideas further. At the end of the semester students will present a short summary of their research proposal to the class and submit the slide deck and a final text version of the proposal (3-5 pages long).

All assignments should be submitted via canvas in PDF format before class on the due date unless otherwise specified. Late assignments will result in grade deductions.

Tentative Schedule

Date	Topic	Assignment Due
Theoretical Foundations		
August 26	Introduction	
August 31	Rationales for Environmental Policy	
September 2	Instrument Choice Overview	
September 7	Instrument Choice Overview	
September 9	Spatial Variation in Damages	Proposal 1
September 14	Policy Interactions	
September 16	Uncertainty & Fiscal Interactions	
September 21	Innovation	
Empirical Research Methods		
September 23	Overview and Experiments	Problem Set 1
September 28	IVs, Panel Data Methods	
September 30	Panel Data Methods	
October 5	Panel Data Methods (cont.)	Proposal 2
October 7	Matching	
October 12	No Class (Fall Break)	
October 14	Regression Discontinuity	
October 19	Regression Discontinuity in Time	Proposal 3
October 21	Discrete Choice Models	Paper Summary
October 26	Discrete Choice Models	Problem Set 2
Applications		
October 28	Electricity: Demand & Supply	Paper Summary
November 2	Renewable Energy	Replication Paper Choice
November 4	R&D and Innovation	
November 9	Energy Efficiency	Paper Summary
November 11	Energy Efficiency	
November 16	Transportation	Paper Summary
November 18	Pollution and Health	Paper Summary
November 23	Hedonics	Replication Report Paper Summary
November 25	No Class (Thanksgiving)	
November 30	Envirodevonomics	Paper Summary
December 2	Final Proposal Presentations	
December 7	Final Proposal Presentations	Final Proposal

Course Outline with Readings

While we will cover a large number of papers during the semester, students are not expected to read all the papers below. Students *are* expected to read papers that are designated for student presentation / group discussion (details will be posted on canvas). Other suggested readings are marked **S**.

No textbooks are required. However, students may find the following texts helpful in learning course material and exploring the field of environmental economics:

Daniel Phaneuf and Till Requate (2017). *A Course in Environmental Economics: Theory, Policy, and Practice.* Cambridge University Press.

William Baumol and Wallace Oates (1988). *The Theory of Environmental Policy (Second Edition).* Cambridge University Press.

Robert Stavins (Editor) (2019). *Economics of the Environment: Selected Readings (Seventh Edition).* Edward Elgar Publishing.

Scott Cunningham (2021). *Causal Inference: The Mixtape.* Yale University Press. [Free online.]

Joshua Angrist and Jorn-Steffen Pischke (2009). *Mostly Harmless Econometrics.* Princeton University Press.

Theoretical Foundations

Introduction

Stavins, R. N. (2008). Environmental Economics. In *The New Palgrave Dictionary of Economics*. London: Palgrave Macmillan

Rationales for Environmental Policy

S Phaneuf & Requate (2017): Chapters 1 and 3

S Samuelson, P. A. (1954). The Pure Theory of Public Expenditure. *The Review of Economics and Statistics 36*(4), 387–389

Coase, R. H. (1960). The Problem of Social Cost. *The Journal of Law & Economics 3*, 1–44

Farrell, J. (1987). Information and the Coase Theorem. *Journal of Economic Perspectives 1*(2), 113–129

Instrument Choice: Overview

S Phaneuf & Requate (2017): Chapter 3

Goulder, L. H. and I. W. H. Parry (2008). Instrument Choice in Environmental Policy. *Review of Environmental Economics and Policy 2*(2), 152–174

Goulder, L. H. (2013b). Markets for Pollution Allowances: What Are the (New) Lessons? *Journal of Economic Perspectives 27*(1), 87–102

Stavins, R. N. (1995). Transaction Costs and Tradeable Permits. *Journal of Environmental Economics and Management 29*(2), 133–148

Fowlie, M. and J. M. Perloff (2013). Distributing Pollution Rights in Cap-and-Trade Programs: Are Outcomes Independent of Allocation? *The Review of Economics and Statistics 95*(5), 1640–1652

Schmalensee, R. and R. N. Stavins (2013). The SO_2 Allowance Trading System: The Ironic History of a Grand Policy Experiment. *Journal of Economic Perspectives 27*(1), 103–122

Schmalensee, R. and R. N. Stavins (2017). Lessons Learned from Three Decades of Experience with Cap and Trade. *Review of Environmental Economics and Policy 11*(1), 59–79

S Holland, S. P., J. E. Hughes, and C. R. Knittel (2009). Greenhouse Gas Reductions under Low Carbon Fuel Standards? *American Economic Journal: Economic Policy 1*(1), 106–146

Holland, S. P. (2012). Emissions taxes versus intensity standards: Second-best environmental policies with incomplete regulation. *Journal of Environmental Economics and Management 63*(3), 375–387

Fowlie, M., M. Reguant, and S. P. Ryan (2016). Market-Based Emissions Regulation and Industry Dynamics. *Journal of Political Economy 124*(1), 249–302

Instrument Choice: Spatial Variation in Damages

S Phaneuf & Requate (2017): Example 3.6 and Section 8.1

S Muller, N. Z. and R. Mendelsohn (2009). Efficient Pollution Regulation: Getting the Prices Right. *American Economic Review 99*(5), 1714–1739

Fraas, A. and R. Lutter (2012). Efficient Pollution Regulation: Getting the Prices Right: Comment. *American Economic Review 102*(1), 602–607

Henry, D. D., N. Z. Muller, and R. O. Mendelsohn (2011). The social cost of trading: Measuring the increased damages from sulfur dioxide trading in the United States. *Journal of Policy Analysis and Management 30*(3), 598–612

Instrument Choice: Policy Interactions

S Phaneuf & Requate (2017): Section 8.6

Goulder, L. H. and R. N. Stavins (2012). Interactions between State and Federal Climate Change Policies. In D. Fullerton and C. Wolfram (Eds.), *The Design and Implementation of U.S. Climate Policy*, pp. 109–121. University of Chicago Press

Goulder, L. H., M. R. Jacobsen, and A. A. van Benthem (2012). Unintended consequences from nested state and federal regulations: The case of the Pavley greenhouse-gas-per-mile limits. *Journal of Environmental Economics and Management 63*(2), 187–207

Gerarden, T. D., W. S. Reeder, and J. H. Stock (2020). Federal Coal Program Reform, the Clean Power Plan, and the Interaction of Upstream and Downstream Climate Policies. *American Economic Journal: Economic Policy 12*(1), 167–199

Instrument Choice: Uncertainty

S Phaneuf & Requate (2017): Chapter 4

S Weitzman, M. L. (1974). Prices vs. Quantities. *The Review of Economic Studies 41*(4), 477–491

Roberts, M. J. and M. Spence (1976). Effluent charges and licenses under uncertainty. *Journal of Public Economics 5*(3), 193–208

Stavins, R. N. (1996). Correlated Uncertainty and Policy Instrument Choice. *Journal of Environmental Economics and Management 30*(2), 218–232

Pizer, W. A. (2002). Combining price and quantity controls to mitigate global climate change. *Journal of Public Economics 85*(3), 409–434

Instrument Choice: Fiscal Considerations

S Phaneuf & Requate (2017): Chapter 7

Goulder, L. H. (2013a). Climate change policy's interactions with the tax system. *Energy Economics 40*, S3–S11

Goulder, L. H., I. W. H. Parry, and D. Burtraw (1997). Revenue-Raising versus Other Approaches to Environmental Protection: The Critical Significance of Preexisting Tax Distortions. *The RAND Journal of Economics 28*(4), 708–731

Goulder, L. H., I. W. H. Parry, R. C. Williams III, and D. Burtraw (1999). The cost-effectiveness of alternative instruments for environmental protection in a second-best setting. *Journal of Public Economics 72*(3), 329–360

Bento, A. M. and M. Jacobsen (2007). Ricardian rents, environmental policy and the 'double-dividend' hypothesis. *Journal of Environmental Economics and Management 53*(1), 17–31

Instrument Choice: Innovation and Technical Change

S Phaneuf & Requate (2017): Chapter 11

Fischer, C., I. W. H. Parry, and W. A. Pizer (2003). Instrument choice for environmental protection when technological innovation is endogenous. *Journal of Environmental Economics and Management 45*(3), 523–545

Goulder, L. H. and K. Mathai (2000). Optimal CO2 Abatement in the Presence of Induced Technological Change. *Journal of Environmental Economics and Management 39*(1), 1–38

Fischer, C., L. Preonas, and R. G. Newell (2017). Environmental and Technology Policy Options in the Electricity Sector: Are We Deploying Too Many? *Journal of the Association of Environmental and Resource Economists 4*(4), 959–984

Jaffe, A. B., R. G. Newell, and R. N. Stavins (2002). Environmental Policy and Technological Change. *Environmental and Resource Economics 22*(1-2), 41–70

S Acemoglu, D., P. Aghion, L. Bursztyn, and D. Hemous (2012). The Environment and Directed Technical Change. *American Economic Review 102*(1), 131–166

Lemoine, D. (2017). Innovation-Led Transitions in Energy Supply. Working Paper 23420, National Bureau of Economic Research

See R&D and Innovation below for more papers on this topic.

Empirical Research Methods

Overview

S Mixtape: Chapter 4

Mostly Harmless: Chapter 1

Angrist, J. D. and J.-S. Pischke (2010). The Credibility Revolution in Empirical Economics: How Better Research Design Is Taking the Con out of Econometrics. *Journal of Economic Perspectives 24*(2), 3–30

Nevo, A. and M. D. Whinston (2010). Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference. *Journal of Economic Perspectives 24*(2), 69–82

Keane, M. P. (2010). A Structural Perspective on the Experimentalist School. *Journal of Economic Perspectives 24*(2), 47–58

Timmins, C. and W. Schlenker (2009). Reduced-Form Versus Structural Modeling in Environmental and Resource Economics. *Annual Review of Resource Economics 1*(1), 351–380

Deschenes, O. and K. C. Meng (2018). Quasi-Experimental Methods in Environmental Economics: Opportunities and Challenges. Working Paper 24903, National Bureau of Economic Research

Millimet, D. L. and J. Alix-Garcia (2020). Introduction to Causal Inference in Environmental and Resource Economics: Challenges, Developments, and Applications. *Journal of the Association of Environmental and Resource Economists 8*(2), 193–198

Experiments

S Mixtape: Chapter 4

Mostly Harmless: Chapter 2

S Jessoe, K. and D. Rapson (2014). Knowledge Is (Less) Power: Experimental Evidence from Residential Energy Use. *American Economic Review 104*(4), 1417–1438

Fowlie, M., C. Wolfram, C. A. Spurlock, A. Todd, P. Baylis, and P. Cappers (2017). Default Effects and Follow-On Behavior: Evidence from an Electricity Pricing Program. Working Paper 23553, National Bureau of Economic Research

Gosnell, G. K., J. A. List, and R. Metcalfe (2016). A New Approach to an Age-Old Problem: Solving Externalities by Incenting Workers Directly. Working Paper 22316, National Bureau of Economic Research

Allcott, H. (2015). Site Selection Bias in Program Evaluation. *The Quarterly Journal of Economics 130*(3), 1117–1165

Instrumental Variables

S Mixtape: Chapter 7

Mostly Harmless: Chapter 4

Angrist, J. D. and A. B. Krueger (2001). Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments. *Journal of Economic Perspectives 15*(4), 69–85

Schlenker, W. and W. R. Walker (2016). Airports, Air Pollution, and Contemporaneous Health. *The Review of Economic Studies 83*(2), 768–809

Panel Data Methods

S Mixtape: Chapters 8-9

Mostly Harmless: Chapter 5

S Deschênes, O. and M. Greenstone (2007). The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather. *American Economic Review 97*(1), 354–385

Fisher, A. C., W. M. Hanemann, M. J. Roberts, and W. Schlenker (2012). The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather: Comment. *American Economic Review 102*(7), 3749–3760

Burke, M. and K. Emerick (2016). Adaptation to Climate Change: Evidence from US Agriculture. *American Economic Journal: Economic Policy 8*(3), 106–140

S Hollingsworth, A. and I. Rudik (2021). The Effect of Leaded Gasoline on Elderly Mortality: Evidence from Regulatory Exemptions. *American Economic Journal: Economic Policy 13*(3), 345–373

Greenstone, M. (2002). The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures. *Journal of Political Economy 110*(6), 1175–1219

Walker, W. R. (2013). The Transitional Costs of Sectoral Reallocation: Evidence From the Clean Air Act and the Workforce. *The Quarterly Journal of Economics 128*(4), 1787–1835

Bertrand, M., E. Duflo, and S. Mullainathan (2004). How Much Should We Trust Differences-In-Differences Estimates? *The Quarterly Journal of Economics 119*(1), 249–275

Marcus, M. and P. H. C. Sant'Anna (2020). The Role of Parallel Trends in Event Study Settings: An Application to Environmental Economics. *Journal of the Association of Environmental and Resource Economists 8*(2), 235–275

Steigerwald, D. G., G. Vazquez-Bare, and J. Maier (2020). Measuring Heterogeneous Effects of Environmental Policies Using Panel Data. *Journal of the Association of Environmental and Resource Economists 8*(2), 277–313

Arkhangelsky, D., S. Athey, D. A. Hirshberg, G. W. Imbens, and S. Wager (2021). Synthetic Difference-in-Differences. *American Economic Review 111*(12), 4088–4118

Matching

S Mixtape: Chapter 5

Mostly Harmless: Section 3.3

Calel, R. and A. Dechezleprêtre (2014). Environmental Policy and Directed Technological Change: Evidence from the European Carbon Market. *The Review of Economics and Statistics 98*(1), 173–191

Fowlie, M., S. P. Holland, and E. T. Mansur (2012). What Do Emissions Markets Deliver and to Whom? evidence from Southern California's NOx Trading Program. *American Economic Review 102*(2), 965–993

Walls, M., T. Gerarden, K. Palmer, and X. F. Bak (2017). Is energy efficiency capitalized into home prices? evidence from three U.S. cities. *Journal of Environmental Economics and Management 82*, 104–124

Regression Discontinuity

S Mixtape: Chapter 6

Mostly Harmless: Chapter 6

Lee, D. S. and T. Lemieux (2010). Regression Discontinuity Designs in Economics. *Journal of Economic Literature 48*(2), 281–355

S Chen, Y., A. Ebenstein, M. Greenstone, and H. Li (2013). Evidence on the impact of sustained exposure to air pollution on life expectancy from China's Huai River policy. *Proceedings of the National Academy of Sciences*, 201300018

Gelman, A. and G. Imbens (2017). Why High-Order Polynomials Should Not Be Used in Regression Discontinuity Designs. *Journal of Business & Economic Statistics 0*(0), 1–10

Ebenstein, A., M. Fan, M. Greenstone, G. He, and M. Zhou (2017). New evidence on the impact of sustained exposure to air pollution on life expectancy from China's Huai River Policy. *Proceedings of the National Academy of Sciences 114*(39), 10384–10389

Wuepper, D., S. Wimmer, and J. Sauer (2020). Is small family farming more environmentally sustainable? evidence from a spatial regression discontinuity design in Germany. *Land Use Policy 90*, 104360

S Davis, L. W. (2008). The Effect of Driving Restrictions on Air Quality in Mexico City. *Journal of Political Economy 116*(1), 38–81

Hausman, C. and D. S. Rapson (2018). Regression Discontinuity in Time: Considerations for Empirical Applications. *Annual Review of Resource Economics 10*, 533–552

Discrete Choice Models

Phaneuf & Requate (2017): Chapter 16

Berry, S. T. (1994). Estimating Discrete-Choice Models of Product Differentiation. *The RAND Journal of Economics 25*(2), 242–262

Houde, S. (2018). How consumers respond to product certification and the value of energy information. *The RAND Journal of Economics 49*(2), 453–477

Berry, S., J. Levinsohn, and A. Pakes (1995). Automobile Prices in Market Equilibrium. *Econometrica 63*(4), 841–890

S Fowlie, M. (2010). Emissions Trading, Electricity Restructuring, and Investment in Pollution Abatement. *American Economic Review 100*(3), 837–869

Applications

Electricity: Demand

S Ito, K. (2014). Do Consumers Respond to Marginal or Average Price? evidence from Nonlinear Electricity Pricing. *American Economic Review 104*(2), 537–563

S Deryugina, T., A. MacKay, and J. Reif (2020). The Long-Run Dynamics of Electricity Demand: Evidence from Municipal Aggregation. *American Economic Journal: Applied Economics 12*(1), 86–114

S Allcott, H. (2011). Social norms and energy conservation. *Journal of Public Economics 95*(9), 1082–1095

Allcott, H. and T. Rogers (2014). The Short-Run and Long-Run Effects of Behavioral Interventions: Experimental Evidence from Energy Conservation. *American Economic Review 104*(10), 3003–3037

Allcott, H. and J. B. Kessler (2019). The Welfare Effects of Nudges: A Case Study of Energy Use Social Comparisons. *American Economic Journal: Applied Economics 11*(1), 236–276

Electricity: Supply

Borenstein, S., J. B. Bushnell, and F. A. Wolak (2002). Measuring Market Inefficiencies in California's Restructured Wholesale Electricity Market. *American Economic Review 92*(5), 1376–1405

Fabrizio, K. R., N. L. Rose, and C. D. Wolfram (2007). Do Markets Reduce Costs? assessing the Impact of Regulatory Restructuring on US Electric Generation Efficiency. *American Economic Review 97*(4), 1250–1277

Davis, L. W. and C. Wolfram (2012). Deregulation, Consolidation, and Efficiency: Evidence from US Nuclear Power. *American Economic Journal: Applied Economics 4*(4), 194–225

Cicala, S. (2015). When Does Regulation Distort Costs? lessons from Fuel Procurement in US Electricity Generation. *American Economic Review 105*(1), 411–444

Cicala, S. (2017). Imperfect Markets versus Imperfect Regulation in U.S. Electricity Generation. Working Paper 23053, National Bureau of Economic Research

Linn, J., E. Mastrangelo, and D. Burtraw (2014). Regulating Greenhouse Gases from Coal Power Plants under the Clean Air Act. *Journal of the Association of Environmental and Resource Economists 1*(1/2), 97–134

Renewable Energy

Borenstein, S. (2012). The Private and Public Economics of Renewable Electricity Generation. *Journal of Economic Perspectives 26*(1), 67–92

Cullen, J. (2013). Measuring the Environmental Benefits of Wind-Generated Electricity. *American Economic Journal: Economic Policy 5*(4), 107–133

Novan, K. (2015). Valuing the Wind: Renewable Energy Policies and Air Pollution Avoided. *American Economic Journal: Economic Policy 7*(3), 291–326

Aldy, J. E., T. D. Gerarden, and R. L. Sweeney (2018). Investment versus Output Subsidies: Implications of Alternative Incentives for Wind Energy. Working Paper 24378, National Bureau of Economic Research

Baker, E., M. Fowlie, D. Lemoine, and S. S. Reynolds (2013). The Economics of Solar Electricity. *Annual Review of Resource Economics 5*(1), 387–426

Borenstein, S. (2017). Private Net Benefits of Residential Solar PV: The Role of Electricity Tariffs, Tax Incentives, and Rebates. *Journal of the Association of Environmental and Resource Economists 4*(S1), S85–S122

Gowrisankaran, G., S. S. Reynolds, and M. Samano (2016). Intermittency and the Value of Renewable Energy. *Journal of Political Economy 124*(4), 1187–1234

Callaway, D. S., M. Fowlie, and G. McCormick (2018). Location, Location, Location: The Variable Value of Renewable Energy and Demand-Side Efficiency Resources. *Journal of the Association of Environmental and Resource Economists 5*(1), 39–75

R&D and Innovation

Newell, R. G., A. B. Jaffe, and R. N. Stavins (1999). The Induced Innovation Hypothesis and Energy-Saving Technological Change. *The Quarterly Journal of Economics 114*(3), 941–975

S Popp, D. (2002). Induced Innovation and Energy Prices. *The American Economic Review 92*(1), 160–180

Jaffe, A. B. and K. Palmer (1997). Environmental Regulation and Innovation: A Panel Data Study. *The Review of Economics and Statistics 79*(4), 610–619

Aghion, P., A. Dechezleprêtre, D. Hémous, R. Martin, and J. Van Reenen (2016). Carbon Taxes, Path Dependency, and Directed Technical Change: Evidence from the Auto Industry. *Journal of Political Economy 124*(1), 1–51

Acemoglu, D., U. Akcigit, D. Hanley, and W. Kerr (2016). Transition to Clean Technology. *Journal of Political Economy 124*(1), 52–104

Fried, S. (2018). Climate Policy and Innovation: A Quantitative Macroeconomic Analysis. *American Economic Journal: Macroeconomics 10*(1), 90–118

Gerarden, T. (2018). Demanding Innovation: The Impact of Consumer Subsidies on Solar Panel Production Costs. Working Paper, Harvard University

Energy Efficiency

Gerarden, T. D., R. G. Newell, and R. N. Stavins (2017). Assessing the Energy-Efficiency Gap. *Journal of Economic Literature 55*(4), 1486–1525

Allcott, H. and M. Greenstone (2012). Is There an Energy Efficiency Gap? *Journal of Economic Perspectives 26*(1), 3–28

Hausman, J. A. (1979). Individual discount rates and the purchase and utilization of energy-using durables. *Bell Journal of Economics 10*(1), 33

Allcott, H. (2013). The Welfare Effects of Misperceived Product Costs: Data and Calibrations from the Automobile Market. *American Economic Journal: Economic Policy 5*(3), 30–66

Busse, M. R., C. R. Knittel, and F. Zettelmeyer (2013). Are Consumers Myopic? evidence from New and Used Car Purchases. *American Economic Review 103*(1), 220–256

Allcott, H. and N. Wozny (2013). Gasoline Prices, Fuel Economy, and the Energy Paradox. *Review of Economics and Statistics*

Gillingham, K. T., S. Houde, and A. A. van Benthem (2021). Consumer Myopia in Vehicle Purchases: Evidence from a Natural Experiment. *American Economic Journal: Economic Policy 13*(3), 207–238

Davis, L. W., A. Fuchs, and P. Gertler (2014). Cash for Coolers: Evaluating a Large-Scale Appliance Replacement Program in Mexico. *American Economic Journal: Economic Policy 6*(4), 207–238

S Allcott, H. and D. Taubinsky (2015). Evaluating Behaviorally Motivated Policy: Experimental Evidence from the Lightbulb Market. *American Economic Review 105*(8), 2501–2538

Fowlie, M., M. Greenstone, and C. Wolfram (2018). Do Energy Efficiency Investments Deliver? evidence from the Weatherization Assistance Program. *The Quarterly Journal of Economics 133*(3), 1597–1644

Allcott, H. and M. Greenstone (2017). Measuring the Welfare Effects of Residential Energy Efficiency Programs. Working Paper 23386, National Bureau of Economic Research

Kitagawa, T. and A. Tetenov (2018). Who Should Be Treated? empirical Welfare Maximization Methods for Treatment Choice. *Econometrica 86*(2), 591–616

Knittel, C. R. and S. Stolper (2019). Using Machine Learning to Target Treatment: The Case of Household Energy Use. Working Paper 26531, National Bureau of Economic Research

Gerarden, T. and M. Yang (2021). Using Targeting to Optimize Program Design: Evidence from an Energy Conservation Experiment. Working Paper

Christensen, P., P. Francisco, E. Myers, H. Shao, and M. Souza (2021). Machine Learning can Increase the Impact of Energy Efficiency Programs. Working Paper

Transportation

Parry, I. W. H., M. Walls, and W. Harrington (2007). Automobile Externalities and Policies. *Journal of Economic Literature 45*(2), 373–399

Parry, I. W. H. and K. A. Small (2005). Does Britain or the United States Have the Right Gasoline Tax? *American Economic Review 95*(4), 1276–1289

Bento, A. M., L. H. Goulder, M. R. Jacobsen, V. Haefen, and R. H (2009). Distributional and Efficiency Impacts of Increased US Gasoline Taxes. *American Economic Review 99*(3), 667–699

Anderson, M. L. and M. Auffhammer (2014). Pounds That Kill: The External Costs of Vehicle Weight. *The Review of Economic Studies 81*(2), 535–571

Goldberg, P. K. (1998). The Effects of the Corporate Average Fuel Efficiency Standards in the US. *The Journal of Industrial Economics 46*(1), 1–33

Anderson, S. T. and J. M. Sallee (2011). Using Loopholes to Reveal the Marginal Cost of Regulation: The Case of Fuel-Economy Standards. *American Economic Review 101*(4), 1375–1409

Jacobsen, M. R. (2013). Evaluating US Fuel Economy Standards in a Model with Producer and Household Heterogeneity. *American Economic Journal: Economic Policy 5*(2), 148–187

Ito, K. and J. M. Sallee (2018). The Economics of Attribute-Based Regulation: Theory and Evidence from Fuel Economy Standards. *The Review of Economics and Statistics 100*(2), 319–336

Holland, S. P., E. T. Mansur, N. Z. Muller, and A. J. Yates (2016). Are There Environmental Benefits from Driving Electric Vehicles? the Importance of Local Factors. *American Economic Review 106*(12), 3700–3729

Zhang, W., C. Y. C. Lin Lawell, and V. I. Umanskaya (2017). The effects of license plate-based driving restrictions on air quality: Theory and empirical evidence. *Journal of Environmental Economics and Management 82*, 181–220

Li, S. (2018). Better Lucky Than Rich? welfare Analysis of Automobile Licence Allocations in Beijing and Shanghai. *The Review of Economic Studies 85*(4), 2389–2428

Gendron-Carrier, N., M. Gonzalez-Navarro, S. Polloni, and M. A. Turner (2021). Subways and Urban Air Pollution. *American Economic Journal: Applied Economics (Forthcoming)*

Pollution and Health

Graff Zivin, J. and M. Neidell (2013). Environment, Health, and Human Capital. *Journal of Economic Literature 51*(3), 689–730

Chay, K. Y. and M. Greenstone (2003). The Impact of Air Pollution on Infant Mortality: Evidence from Geographic Variation in Pollution Shocks Induced by a Recession. *The Quarterly Journal of Economics 118*(3), 1121–1167

Currie, J. and M. Neidell (2005). Air Pollution and Infant Health: What Can We Learn from California's Recent Experience? *The Quarterly Journal of Economics 120*(3), 1003–1030

Almond, D., L. Edlund, and M. Palme (2009). Chernobyl's Subclinical Legacy: Prenatal Exposure to Radioactive Fallout and School Outcomes in Sweden. *The Quarterly Journal of Economics 124*(4), 1729–1772

Currie, J. and R. Walker (2011). Traffic Congestion and Infant Health: Evidence from E-ZPass. *American Economic Journal: Applied Economics 3*(1), 65–90

Isen, A., M. Rossin-Slater, and W. R. Walker (2017). Every Breath You Take—Every Dollar You'll Make: The Long-Term Consequences of the Clean Air Act of 1970. *Journal of Political Economy 125*(3), 848–902

Firm Responses

Jaffe, A. B., S. R. Peterson, P. R. Portney, and R. N. Stavins (1995). Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us? *Journal of Economic Literature 33*(1), 132–163

Montero, J.-P. (1999). Voluntary Compliance with Market-Based Environmental Policy: Evidence from the U.S. Acid Rain Program. *Journal of Political Economy 107*(5), 998–1033

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