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Education

PhD, Public Policy and Management, Carnegie Mellon University (Expected May 2021)

M.S., Economics and Public Policy, Carnegie Mellon University (2017)

B.A., Economics (*summa cum laude*), Emory University (2011)

Fields

Environmental and Energy Economics, Public Economics, Applied Microeconomics

Publications

“Considering the Nuclear Option: Hidden Benefits and Social Costs of Nuclear Power in the U.S. Since 1970,” joint with Akshaya Jha and Edson Severnini, *Resource and Energy Economics* 59 (2020): 101127.

Working Papers

“Network Effects of Climate Change: Evidence from Airline Delays,” Job Market Paper.

The literature on the economic impacts of climate change has primarily focused on local effects, but in an increasingly interconnected world it is important to understand the network effects. However, in many cases it has proven difficult to empirically assess the importance of the non-local impact of weather shocks because of general equilibrium effects. In this paper, I present credible evidence of a network effect of climate change in the airline industry by extending the traditional origin-destination pair to include the previous flight from the source airport. I utilize a detailed dataset of daily flights in the U.S. for all major domestic U.S. airports from 2010-2017 to understand how weather shocks at the flight’s source, origin, and destination airports affect on-time flight performance. I find that high temperatures at any of these airports increase both the probability and duration of departure delays, and ignoring the network structure leads one to underestimate the local effects at the origin by nearly 50%. Using climate projections from NEX-GDDP, I project total summer departure delays will increase 110,000 hours by mid-century due to rising temperatures, at a minimum cost to airlines and passengers of \$1.0-\$1.4 billion.

“Timing Matters: Shifting Economic Activity and Intra-day Variation in Ambient Ozone Concentrations,” joint with Edson Severnini. *IZA Discussion Paper No. 13428*.

Ground-level ozone has been shown to have significant health consequences from short-term exposure, and as such has been regulated in the U.S. since the 1970s by the Environmental Protection Agency (EPA). Ozone is not emitted directly; instead formation occurs due to a complex, Leontief-like combination of air pollutants and sunlight that results in high levels mid-day and low levels at night. Despite this known relationship, EPA regulations only consider the total emissions of ozone precursors and not when these emissions occur. Using hourly data on ambient ozone across the U.S. (1980-2017) near time zone borders, we provide evidence that the 1-hour time difference on either side of a border leads to a significant change in ozone levels over the course of the day. We then examine a recent cap-and-trade program targeting ozone precursor emissions, finding that while the program reduced ozone overall it did not have an economically significant effect on shifting when these emissions occurred. We

conclude by examining a possible policy solution to account for the time value of reductions in precursor emissions.

“The Economics of Local Air Quality Alerts,” joint with Edson Severnini and Sarah Taylor.

Many local air quality control agencies choose to issue air quality alerts for days when pollutant levels are predicted to be unhealthy. Although they usually rely on air quality forecasts, the decision to issue an alert may also reflect interests in opposing goals. In this study, we set up a simple theoretical framework for the purpose of understanding the nature of such policies, highlighting the potential trade-off between: (1) erring on the side of caution to protect public health, i.e., a “pro-health” stance, and (2) avoiding disengagement in everyday activity to protect the business community, i.e., a “pro-economy” stance. Using air quality index forecast and ozone alert data for U.S. cities from 2004-2017, we provide evidence that local agencies implement strikingly different policies when issuing air quality alerts. The typical stance is more “pro-economy,” but that hides substantial heterogeneity. For instance, cities where residents tend to hold strong beliefs in climate change or where residents face greater health risks are more “pro-health” in issuing air quality alerts – suggesting that local factors may play a key role in the implementation and effectiveness of environmental policy.

Works in Progress

"Climate Change Will Undo the Benefits of the Clean Air Act," joint with Antonio Bento, Noah Miller, and Edson Severnini.

Short-Term Effects of Zero Emission Credits in Illinois and New York on Wholesale Power Market and Emissions Outcomes, joint with Lynne Kiesling.

“Public Health or the Economy? Evidence from Air Pollution Action Days across U.S. Cities,” joint with Edson Severnini and Sarah Taylor.

Teaching Experience

Teaching Assistant, Heinz College, Carnegie Mellon University

Applied Econometrics I (Masters)

Spring 2019 (Mini III) for Prof. Akshaya Jha

Fall 2018 (Mini I); Fall 2018 (Mini 2) for Prof. Edson Severnini

Applied Econometrics II (Masters)

Spring 2019 (Mini III); Spring 2019 (Mini IV) for Prof. Akshaya Jha

Fall 2018 (Mini II) for Prof. Edson Severnini

Related Research Experience and Employment

Institute of Regulatory Law and Economics

Graduate Fellow

Pittsburgh, PA

Fall 2019 – Present

Heinz College of Public Policy, Carnegie Mellon University

Research Assistant

Pittsburgh, PA

Fall 2017- Fall 2018

The Brattle Group

Research Analyst

Washington D.C.

July 2011-July 2015

Honors and Awards

Graduate Fellowship, Institute for Regulatory Law and Economics
Best Poster (non-STEM), Carnegie Mellon University Energy Week

Fall 2019 - Present

March 2017

Highest Honors (*summa cum laude*), Department of Economics
Omicron Delta Epsilon, International Economics Honor Society
Technical Assistant, *A Portrait of Older Underbanked and Unbanked Consumers: Findings of a National Survey* published by the AARP Public Policy Institute

May 2011
Inducted Fall 2010

Conferences and Presentations

“Timing Matters: Shifting Economic Activity and Intra-day Variation in Ambient Ozone Concentrations”, Virtual AERE Summer Conference, June 2020.

“Timing Matters: Shifting Economic Activity and Intra-day Variation in Ambient Ozone Concentrations”, 89th Annual Meeting of the Southern Economic Association, November 2019.

“Will Climate Change Undo the Benefits of the Clean Air Act? Evidence from Ambient Ozone”, 2019 Carnegie Mellon Electricity Industry Center Advisory Committee, Carnegie Mellon University, October 2019.

“Considering the Nuclear Option: Hidden Benefits and Social Costs of Nuclear Power in the U.S. Since 1970”, 6th World Congress of Environmental and Resource Economists, University of Gothenburg. June 2018.

“Considering the Nuclear Option: Hidden Benefits and Social Costs of Nuclear Power in the U.S. Since 1970”, Heartland Environmental & Resource Economics Workshop, University of Illinois at Urbana-Champaign. September 2017.

“Considering the Nuclear Option: Hidden Benefits and Social Costs of Nuclear Power in the U.S. Since 1970”, 10th International Workshop on Empirical Methods in Energy Economics, University of Southern California. June 2017.

Technical Skills

Software: Stata, LaTeX, MS Office, ArcGIS, R, Visual Basic.

References

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