Xianru Han

E-mail: xhan1236@umd.edu **Website**: https://xianru-han.netlify.app

EDUCATION

University of Maryland, College Park, MD   08/2020 – expected 05/2025
Ph.D. in Agricultural and Resource Economics

Columbia University, New York, NY   09/2018 – 02/2020
M.A. in Statistics

University of Maryland, College Park, MD   08/2016 – 05/2018
B.S. in Agricultural and Resource Economics & Statistics

China Agricultural University, Beijing, China   09/2014 – 06/2016
B.A. in Economics

FIELDS OF SPECIALIZATION

Environmental & Energy Economics, Applied Econometrics

RESEARCH EXPERIENCE

Research Assistant for Rebecca Epanchin-Niell, University of Maryland   07/2022 – 01/2024
Research Assistant for Kenneth L. Leonard, University of Maryland   01/2021 – 08/2021
Research Assistant for Jack Willis, Columbia University   05/2019 – 12/2019
Research Assistant for Martin Rotemberg, New York University   05/2019 – 12/2019

WORKING PAPERS

The Distributional Effects of Tighter Regulations: New Evidence from the Sugarcane Burning in Florida

Abstract: The environmental regulations can affect the distribution of pollution and thus alter the burden of pollution costs. In South Florida, a wind-based sugarcane burning regulation was put in place to restrict burning when winds were likely to direct pollution towards higher-income and more densely populated areas. In 2019, additional burn restrictions were introduced to mitigate burning on days with poor air quality. Leveraging data from satellite-based active fire products and Aerosol Optical Depth (AOD) levels, this study empirically assesses the air quality and distributional impacts of the 2019 burning restrictions, using difference-in-differences and triple difference estimations. The analysis reveals that, on restricted days, the number of fires in the primary sugarcane growing region decreases by 41% relative to the protected zone. And the results may provide suggestive evidence that farmers strategically shift burnings to non-restricted days. Consequently, on non-restricted days, communities in the sugarcane-burning areas experience deteriorated air quality. These findings shed light on an unexplored implication of stringent regulations alongside the wind-based discriminatory regulation: distributional consequences.

A Burning Issue: The Effects of Wildfire Smoke Exposure on Consumer Behavior and Sales of Medical Supplies (joint with Wenying Li and Haoluan Wang)

Abstract: Wildfire events have increased in frequency and severity across the United States in recent decades. While a growing literature has documented the effects of wildfire smoke exposure on a wide range of health and socioeconomic outcomes, little is known about its impact on consumer behavior and household demand for adaptation in healthcare. We combine a newly developed and digitized dataset on daily wildfire smoke PM2.5 concentrations across the contiguous United States during 2006-2019 with weekly Nielsen retail scanner data to quantify how wildfire smoke exposure affects retail sales of air purifiers, bottled water, cold remedies, nasal products, cough products, and nutritional products. We find a positive and statistically significant impact of wildfire smoke exposure on the retail sales of these products. Dynamic effects are evident as wildfire smoke exposure in previous weeks also increases current sales. Nonlinear effects arising from the varying intensity of wildfire smoke exposure also reveal distinct patterns of demand for adaptation. We further explore how the effects of wildfire smoke exposure vary with socio-demographic characteristics, focusing on social vulnerability and highlighting the implications of environmental justice. Our results underscore the need for proactive policies to address the increased demand for medical and healthcare products as household adaptive measures during the wildfire season,

particularly targeting socioeconomically vulnerable populations who may be prone to limited access to other preventive measures against wildfire.

Coastal agricultural land use adaptation to sea level rise and saltwater intrusion (joint with Rebecca Epanchin-Niell, Alexandra Thompson, Jessica Post, Jarrod Miller, Dave Newburn, Keryn Gedan and Kate Tully)

Abstract: Coastal areas face increasing risks from sea level rise and storm surge, including agricultural lands susceptible to inundation and saltwater intrusion. This study examines how farmers adapt to these impacts in a low-lying, ecologically important region of the Mid-Atlantic USA. Using fine-scale land use data, we analyze shifts in agricultural lands, such as transitions away from salt-sensitive crops (e.g., corn) and conversion to wetlands. We relate field-level crop rotation and land cover to local sea level and soil conditions using multinomial logit models with bootstrapped sampling of fields across years. We find that lower elevation fields – likely to be affected by more frequent inundation and coastal influences – are more likely to have transitioned out of agriculture to woody or herbaceous wetlands and, if remaining in agriculture, are less likely to be planted in corn than in other grain crops. Our predictions suggest that by 2050, 10.5% of fields will convert to wetlands, with a decline in agricultural area. Understanding these land use changes aids in climate adaptation planning and resource management to support regional goals.

WORKS IN PROGRESS

- Movements of CO_2-intensive goods across more and less regulated jurisdictions

CONFERENCE & SEMINAR PRESENTATION

- 2023: Heartland Environmental & Resource Economics Workshop, 24th CU Environmental & Resource Economics Workshop, AAEA Annual Meeting, AERE Summer Conference, Interdisciplinary Ph.D. Workshop in Sustainable Development (IPWSD)
- 2022: UMD AREC Egg Timer

TEACHING EXPERIENCE

- Teaching Assistant, Applied Microeconomics (graduate), University of Maryland, Spring 2022
- Teaching Assistant, Gender in Economics and Development (undergraduate), University of Maryland, Fall 2021
- Teaching Assistant, Applied Machine Learning for Financial Modeling (graduate), Columbia University, Spring 2020
- Academic Math Tutor, ASCDU, University of Maryland, Spring 2017, Fall 2017, Spring 2018

HONORS & SCHOLARSHIPS

University of Maryland, College Park
- Dean's fellowship — **2020, 2023**
- Jacob K. Goldhaber Travel Grant — **2023**
- Magna Cum Laude Honor Graduate — **2018**
- Ray A. Murray Scholarship — **2016 – 2018**

China Agricultural University
- China Merited Undergraduate Student Scholarship — **2014 – 2016**
- China National Scholarship awarded by Chinese government — **2014 – 2015**

SKILLS

R, Stata, Matlab, Python, SQL, JavaScript