

Irina Firsova

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Education

2019-Present	Ph.D. Economics, University of California, Davis Fields: Environmental Economics, Applied Microeconomics, Industrial Organization, Econometrics <i>Expected Completion: June 2026</i>
2019-2020	M.A. Economics, University of California, Davis
2016-2019	B.Sc. Mathematics and Economics, University of London (LSE supervised)
2015-2019	B.Sc. Economics, NRU HSE, International College of Economics and Finance

Working Papers

Does air pollution affect the likelihood of a fatal car crash? Evidence from the US, Job Market Paper

Abstract: This paper examines the impact of fine particulate matter ($PM_{2.5}$) on fatal car accidents across the United States, using instrumental variable (IV) analysis with wind direction as an instrument for air pollution. Results indicate that a $1 \mu\text{g}/\text{m}^3$ increase in $PM_{2.5}$ is associated with a 1.34% increase in daily fatal accidents after controlling for weather conditions and fixed effects. Further analysis at the hourly level shows that pollution exposure one hour prior to an accident raises fatal crash likelihood by 1.97%, suggesting that short-term pollution exposure impairs cognitive function in real time, increasing accident risks. The Chicago case study validates these findings while revealing that pollution affects crash severity, suggesting pollution impairs drivers' ability to avoid or mitigate severe outcomes. Individual crash-level analysis confirms that $PM_{2.5}$ increases injury severity conditional on a crash occurring. These findings contribute to the literature on the cognitive effects of air pollution and suggest that the social costs of pollution may be underestimated.

Effect of the Clean Air Act (1970) on Mental Health Outcomes

Abstract: This study examines the impact of the 1970 Clean Air Act on mental health outcomes, with a focus on changes in suicide and depression rates following regulatory-driven reductions in air pollution. Using county-level data and an instrumental variable approach with non-attainment status as an instrument, I analyze the relationship between air quality improvements and mental health. The results indicate no significant effect of air quality improvements on mental health outcomes, underscoring the inconsistency of findings across

existing literature on pollution and mental health. These findings suggest that while environmental regulations may yield substantial physical health benefits, their influence on mental health outcomes remains uncertain.

Work in Progress

Air Pollution and Road Safety: An Analysis of Fatal and Non-Fatal Car Crashes in Chicago
Does Location of Exposure to Air Pollution Matter? Evidence from Commuting Patterns and Accident Risk

Teaching Experience (UC Davis)

Associate Instructor (fully responsible for the course), Principles of Microeconomics, 2025

Associate Instructor (fully responsible for the course), Intermediate Microeconomics, 2024

Associate Instructor (fully responsible for the course), Industrial Economics, 2023

Teaching Assistant, 2019-2024

Courses: Principles of Microeconomics, Intermediate Microeconomics, Game Theory, Industrial Organization, Energy Economics, International Microeconomics

Presentations

2025	UC Davis Energy and Environmental Economics Dissertation Group, UT Arlington, Bryant University
2024	UC Davis Energy and Environmental Economics Dissertation Group UC Davis Public/Labor Seminar
2022	UC Davis Undergraduate Womxn in Economics Association

Awards and Fellowships

2019-2022	UC Davis Graduate Fellowship
2015-2019	International College of Economics and Finance, Merit-based Scholarship
2015	AP Scholar with Honors (Calculus, Statistics, Economics)

Other Service

2014-2019	Academic Representative, NRU HSE
2020-2022	Graduate Student Mentor, Economics Department, UC Davis
2021-2023	Event planner for Economics Graduate Student Association, UC Davis
2022-2023	Vice President of Economics Graduate Student Association, UC Davis

Personal Information

Citizenship: Russian

Languages: Russian (native), English (fluent)

Programming skills: R, Matlab, Stata, Julia, L^AT_EX, Jupyter Notebooks, GitHub

References

Professor Erich Muehlegger (Chair)

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Professor Marianne Bitler

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Professor Janine Wilson

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