

## EDUCATION

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**Columbia University**, School of International and Public Affairs & the Earth Institute

2017–2024 (expected; on leave AY 22/23): PhD in Sustainable Development

*Dean's Fellowship*

*Committee: Wolfram Schlenker, Jeffrey Shrader, Douglas Almond, John Mutter*

**University of California, Berkeley**

2015–2017: Master of Public Policy (Goldman School of Public Policy)

*Departmental Fellowship*

*Jacob K. Javits Political Leadership Scholarship*

2008–2012: Bachelor of Arts in Political Economy

## RESEARCH INTERESTS

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*Environmental economics, environmental health, climate change, remote sensing, ecosystem health*

## RESEARCH PAPERS

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Andrew J. Wilson\*, Jaecheol Lee\*, and Solomon Hsiang. “**Health damage from transboundary and domestic air pollution in mixture.**” ([current version](#); presented at the Seminar on Planetary Management, the Environment and Resource Economics and GPL Doctoral Fellows seminars at UC Berkeley, the Sustainable Development Seminar and Colloquium at Columbia University, the Coase Project at University of Chicago, American Geophysical Union, and the Occasional Workshop at UC Santa Barbara; talk with this paper [here](#))

Coauthors and I show that the toxicity of particulate matter depends on its origin. We accomplish this by combining universal health expenditure records with high-frequency estimates of pollution transport in a generalizable framework for estimating the effects of exposure to a mixture of pollutants. In our study area, South Korea, we compute that transboundary sources contribute only 43% of anthropogenic PM load to our study population, but generate more than 70% of its associated respiratory health costs. Our results complicate how we think about assigning responsibility for the harms of transboundary pollution.

Andrew J. Wilson\*, R. Daniel Bressler\*, Jeffrey Shrader, Radley Horton, Casey Ivanovich, Patrick Kinney, Colin Raymond, and Adam Sobel. “**Heat disproportionately kills young people: Evidence from population-level wet-bulb temperature exposure in Mexico.**” ([as under review](#); presented at the SusDeveR Occasional Symposium, the Northeast Workshop on Energy Policy and Environmental Economics, and Camp Resources)

Coauthors and I demonstrate that future warming is likely to redistribute the mortality burden of extreme temperature exposure from the elderly to the young. Prior work had failed to uncover this dynamic because it had not assessed the effect of humid heat on age-specific mortality rates. In our study area, Mexico, we project that by the end of the century in a high greenhouse gas emissions scenario, under-35-year-olds will experience a 42% increase in temperature-related deaths, while those over 35 will experience a 25% decrease. Globally, the hottest places also tend to have younger populations, which raises the possibility that climate-related mortality impacts are understated by current research.

**“Air pollution, weather, and criminal courts.”** ([draft](#); presented at the Northeast Workshop on Energy Policy and Environmental Economics)

I demonstrate that exposure to high ambient temperatures and air pollution increase the likelihood that criminal cases end in a guilty verdict and increase the severity of sentences imposed conditional on a guilty verdict, respectively. Across a five year period from 1998 to 2003, I find that these effects imply that solely the portion of air pollution above the EPA’s limit for “healthy air” may have led to the incarceration of 49,000 more people per year.

with Xinming Du, **“Temperature and the safety of U.S. railways.”** ([draft](#); presented at AERE@ASSA)

Xinming and I explore whether railway safety in the United States varies with temperature exposure and mechanisms through which railways adapt to these risks. We find that both hot and cold temperatures increase rail malfunctions, with very cold and hot days increasing rates by 30% and 16%, respectively. While rail operations appear to be adapted to their local climate and railway operators appear to be changing train lengths and speeds in response to temperature forecasts, we find no evidence that companies are better adapting over time. In the absence of regulation, rail operators would underinvest in weather risk mitigation as they bear only a portion of the total costs of rail accidents. Our findings suggest a role for enhanced safety standards.

with Wolfram Schlenker, **“Pollution and crime in New York City.”**

Wolfram and I show that air pollution exposure affects crime rates, broadly confirming claims made by a small set of prior papers. However, our use of hourly data also allows us to observe the temporal evolution of these effects: following exposure, crime tends to rise rapidly and then decay rapidly; at the end of five days of lags, the cumulative effect of exposure to most common pollutants approaches zero. We identify these effects by leveraging a novel instrument for urban air pollution: the spread between day-ahead and real-time location-based marginal electricity prices, which influences how and where peaker plants operate.

Andrew B. Martinez and Andrew J. Wilson. **“The Macroeconomic Effects of Physical Climate Risks.”** Forthcoming in *Handbook on Macroeconomic Forecasting*.

Andrew and I review the growing literature on the expected effects of a changing climate on the macroeconomy, providing guidance about the limitations and advantages of existing approaches. We then provide a detailed discussion of a framework that can be used to resolve some existing issues related to forecasting hurricane damages, a large fraction of projected climate damages.

Andrew J. Wilson and Ben Orlove. 2021. **“Climate urgency: evidence of its effects on decision making in the laboratory and the field.”** *Current Opinion in Environmental Sustainability*. ([link](#))

Ben and I review the literature (both behavioral experiments and observational studies) investigating the relationship between “urgency” and action to adapt to or mitigate climate change. We find that both very high and very low urgency are associated with less action.

Andrew J. Wilson and Ben Orlove, **“What do we mean when we say climate change is urgent?”** ([link](#))

Ben and I show that the time pressure framing of climate change affects the quantity and quality of information and the range of options (e.g., geoengineering) considered when individuals and groups are considering possible mitigation and adaptation actions, as well as the sequencing and timing of chosen plan elements. Taken as a whole, we argue that a “crisis” framing of climate change may polarize beliefs and actions, especially absent messages of self-efficacy and hope.

Ben Orlove, Pasang Sherpa, Neil Dawson, Ibidun O. Adelekan, Wilfredo Alanguí, Rosario Carmona, Deborah Coen, Melissa Nelson, Victoria Reyes-García, Jennifer Rubis, Gideon Sanago, and Andrew J. Wilson. 2023. **“Placing**

**diverse knowledge systems at the core of transformative climate research.”** *Ambio*. ([link](#))

We argue that solutions to the underlying drivers of climate change require partnership across diverse knowledge systems. We propose a set of instruments based on the principles of consent, intellectual and cultural autonomy, and justice to realize such partnerships.

## RESEARCH IN PROGRESS

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**“Ocean acidification, marine heat waves, deoxygenation, and the future of fish.”** (*presented at the 2023 Heartland Workshop*)

**“Landfills and infant health.”** (*presented at the 2022 Interdisciplinary PhD Workshop in Sustainable Development*)

**“Zoos and revealed preferences for biodiversity.”** (with Gabriel Englander and Solomon Hsiang; *presented at the Interdisciplinary PhD Workshop in Sustainable Development*)

**“Humid heat, labor markets, and the limits of adaptation: evidence from the Americas.”** (with R. Daniel Bressler and Jeffrey Shrader)

**“Temperature, air pollution, and the outcomes of criminal trials in India.”**

**“Helicopters, sleep, and crime.”**

**“Tradeoffs between medical spending and mortality under extreme heat exposure.”** (with Jaecheol Lee)

**“Road salt use accelerates arbovirus spread in North America.”**

## PROFESSIONAL EXPERIENCE

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**White House Council of Economic Advisors, Staff economist** (*August 2022–September 2023*)

Provided analysis supporting policy related to the social cost of carbon, environmental regulations, industrial policy, and forecasting the macroeconomic effects of climate change

**Global Policy Lab, Associate doctoral fellow** (*Aug 2019–present*); **Research assistant for Prof. Sol Hsiang** (*Aug 2016–Sept 2017*)

Participated in regular lab meetings and contributed to lab projects; as a research assistant, I developed a spatial lag model of the global atmosphere to extract biome level temperature–CO<sub>2</sub> interactions

**NextGen Policy Center, Consultant** (*Dec 2016–June 2017*)

Produced a report on the effects of natural gas peak generation facilities and pathways for their retirement in California: “Phasing out California’s natural gas-fired peak generation facilities” (nominated for the Eugene Smolensky Award for Outstanding Advanced Policy Analysis)

**U.S. Agency for International Development, Global Development Lab, Summer fellow** (*May–Dec. 2016*)

Performed retrospective impact evaluations of USAID-funded global development projects

**Secretariat of Environment and Natural Resources (SEMARNAT), Mexico, Consultant** (*Jan–May 2016*)

Produced a report on the viability of and potential for California Air Resources Board-compliant Mexican

carbon offsets in CA's cap-and-trade system: "Linking Mexico's Offset Market to California's Emissions Trading System"

### **Habitat for Humanity Greater San Francisco**

*Policy Analyst (July 2014–May 2015)*

Modeled a service line contribution cost analysis to inform grant applications and program growth projections and developed a dashboard to track vulnerability to displacement and home repair need in 150 neighborhoods

*Community Engagement Coordinator, AmeriCorps (August 2013–July 2014)*

Participated in community meetings and developed working relationships with community leaders and identified, planned, and tracked home repair, community facility repair, and park clean-up projects

*Construction Crew Leader, AmeriCorps (August 2012–July 2013)*

Trained and led more than 800 volunteers in the construction of a homeless shelter, youth clinic, and after-school program space

## **TEACHING EXPERIENCE**

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### **Columbia University**

Undergraduate-level

*Environmental science (fall 2023)*

*Global sustainable development challenges (spring 2021)*

Graduate-level

*Environmental chemistry (summer 2019 and 2020)*

*Risk and toxicology (summer 2019 and 2020)*

*Climate change policy (spring 2019)*

*Environmental economics (fall 2018)*

*Economics of energy (spring 2024)*

University-wide

*COVID-19: Policymaking in the Throes of a Global Crisis (fall 2020):* organized a university-wide seminar covering emerging issues surrounding SARS CoV-2 and advised a set of related semester-long independent research projects

Columbia U. Center for Teaching and Learning

*Lead Teaching Fellow (AY 21/22)*

### **UC Berkeley**

Undergraduate-level

*Wealth and Poverty (spring 2016 and 2017):* covering the political economy of inequality

*Global Poverty and Practice (fall 2015 and 2016):* lead graduate student instructor for a class of ~400 covering global poverty, inequality, and development

## **PROFESSIONAL AND UNIVERSITY SERVICE**

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**Referee for:** *PNAS, Population and Environment*

**UNESCO/IPCC/ICOMOS White Paper: Intangible cultural heritage, diverse knowledge systems, and climate change,** *Chapter scientist*

**6<sup>th</sup> Assessment Report of the Intergovernmental Panel on Climate Change, WGII, Ch. 17, Contributing author**

**Seminar on Planetary Management, Founding organizer (2020-2022):** with Solomon Hsiang and Kimberly Oremus, created a monthly interdisciplinary research seminar geared toward providing a home for feedback on work that draws from multiple fields and tackles global policy problems

**Sustainable Development Doctoral Society, President (AY 19/20), Vice President (AY 17/18 and 18/19)**

**Senate Office of Elizabeth Warren/Data for Progress, Consultant on BUILD GREEN Act (May-August 2019)**

**SIPA Prize for Data Analytics and Public Policy, Selection committee member (April 2019)**

**Interdisciplinary PhD Workshop on Sustainable Development (IPWSD), Lead organizer (April 2019), Organizer (April 2018)**

**Sustainable Development Research Symposium (SusDeveR), Lead organizer (September 2019)**

**Alliance Research Methods Summer School, Organizer (May/June 2018)**

**Berkeley Public Policy Journal, Editor-in-chief (August 2015-January 2017)**

**Larkin Street Youth Services, Board fellow (September 2015-May 2016)**

## PRESENTATIONS

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**2024:** AERE@ASSA

**2023:** Institute of Latin American Studies monthly seminar, Columbia Sustainable Development Seminar, Heartland Workshop, TWEEDS, Camp Resources, AEA CSQIEP Queer Economics PhD Student Mentoring Conference, the Occasional Workshop (UCSB), Online Summer Workshop in Environment, Energy, and Transportation (OSWEET)

**2022:** Interdisciplinary PhD Workshop in Sustainable Development, Northeast Workshop on Energy Policy and Environmental Economics, American Geophysical Union

**2021:** Interdisciplinary PhD Workshop in Sustainable Development, Seminar on Planetary Management

**2018:** Sloan/Berkeley Grad Camp in Environmental and Energy Economics

## MISCELLANEA

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Human languages: conversational Spanish and Mandarin Chinese, intermediate Japanese, basic Malay

Machine languages: R, Python, MATLAB, STATA, QGIS, Mathematica, Javascript (Google Earth Engine)

Other certifications: NIH Human Subjects Research certification; PADI Open Water Diver; American Red Cross CPR and First Aid certification; ABC certified bartender

## REFERENCES

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