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Education

PhD, Environmental Engineering, Georgia Institute of Technology

Key Interests

Air Pollution | Risk Assessment | Health Outcomes | Environmental Regulation |
Environmental Exposure | Policy Analysis | Mortality | Morbidity

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SELECT PUBLICATIONS

- › Henneman, L. R. *et al.* (2021). Four decades of United States mobile source pollutants: Spatial-temporal trends assessed by ground-based monitors, air quality models, and satellites. *Environmental Science & Technology*, 55(2), 882-892.
- › Henneman, L. R. *et al.* (2019). Accountability assessment of health improvements in the United States associated with reduced coal emissions between 2005 and 2012. *Epidemiology*, 30(4), 477-485.
- › Casey, J. A. *et al.* (2020). Improved asthma outcomes observed in the vicinity of coal power plant retirement, retrofit and conversion to natural gas. *Nature Energy*, 5(5), 398-408.

Research Focus

I am an environmental engineer interested in the health and air quality benefits of environmental regulations. My research investigates the complex relationships between environmental policy, air quality, climate, and public health using large datasets and environmental models. Evidence from this research is important to assess the efficacy of existing regulatory programs, evaluate, in a broad sense, the findings of previous studies that find associations between elevated air pollution concentrations and adverse health outcomes, and in the continuing refinement of air pollution regulations.

This work's importance is reflected in the public debates surrounding environmental regulations - many people wonder whether the substantial costs of these regulations outweigh the benefits. In many cases, the benefits of a healthier population with a longer life expectancy far exceed the costs of installing emissions controls on polluting sources; however, accurately calculating these costs and benefits requires detailed air quality modeling and combining the output with large population health datasets.

Current Projects

- Virginia is home to a diverse population of 8.5 million people and many air pollution sources, from automobiles to planes, power plants, industrial sources, and more. I am using information about these sources and population demographics to identify sources that contribute more to air pollution exposure disparities. In addition, I will identify groups that are exposed to poorer air quality relative to other groups.
- Regulations promulgated under the 1990 Clean Air Act Amendments substantially reduced emissions from coal power plants over recent decades. Using various methods, I am directly estimating benefits of emissions reductions at air pollution sources across the United States.