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The Economic Consequences of Environmental Change
(Dissertation)

I study the economic effects of environmental change. *Distant Early Warning: Forecasts and the Long-Term Effects of Hurricane Exposure* investigates the long-run consequences of prenatal hurricane exposure. Combining IRS and U.S. Census Bureau microdata with satellite-derived hurricane data, we estimate exogenous hurricane exposure for 1.4 million individuals born between 1980 and 1994. Employing a fixed effects regression model, we estimate that prenatal hurricane exposure has null effects on later-life earnings, economic mobility, and educational attainment when hurricanes are forecasted, despite evidence from past work that hurricanes adversely affect birth outcomes. We also estimate that prenatal exposure to hurricanes outside of the forecasted area is associated with substantial losses: a \$4,500 reduction in yearly adult earnings and a 5.4 percentile reduction in economic mobility. Back-of-the-envelope calculations suggest that in the absence of forecasts, total earnings lost from prenatal exposure would be \$33 billion over the sample period. This highlights the value of advanced information in mitigating the translation of environmental shocks into economic damages.

Who Weathers the Storm? The Unequal Effects of Hurricanes in the United States studies the effects of hurricanes on working age adults. We combine exogenous hurricane exposure data with administrative tax return and U.S. Census data and, using a fixed effects regression, estimate that hurricanes slightly reduce contemporaneous income and earnings in adults. We find that these effects are dampened by government transfer payments such as unemployment insurance and Social Security. Using Recentered Influence Functions, we estimate the causal effect of hurricanes on different parts of the income distribution. We find that marginal losses to income and earnings are larger in lower income adults. These marginal damages are even larger in low-income black and Hispanic individuals. Our results suggest that natural disasters may exacerbate economic inequality.

Air Pollution and Economic Opportunity in the United States examines the role of environmental quality in shaping economic opportunity. Combining satellite-derived pollution data with administrative data, we show that early-life pollution exposure is an important predictor of upward income mobility. Using variation from the 1990 Clean Air Act Amendments, we estimate that exogenous reductions in prenatal pollution exposure increase adult earnings and economic mobility. Our findings suggest that disparities in environmental quality may play a meaningful role in explaining income inequality and economic opportunity in the United States.

JEL Classifications: Q54, J13, D80, H53, J150, Q530, Q520, D63

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