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Children and Climate Change

Future of Children

Woodrow Wilson School of Public and International Affairs and the Brookings Institution

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The debate about climate change is often framed in terms of the effects on our children. But what is the likely impact? This volume tries to get specific. There are four themes:

1.Climate change is already happening and will alter the climate in ways that threaten children's physical and mental wellbeing.

2.Today's children and future generations will bear a disproportionate share of the burden.

3.Poor children, children in developing countries, and children in countries with weak institutions face the greatest risks.

4.The substantial uncertainties surrounding climate change, and its uneven impact make the enactment of appropriate policy a heavy lift.

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The New York Times, May 3, 2016

Resettling the First U.S. 'Climate Refugees'

By CORAL DAVENPORT and CAMPBELL ROBERTSON 1:56 PM ET

A $48 million grant for Isle de Jean Charles, La., is the first allocation of federal tax dollars to move an entire community struggling with the effects of climate change.

Amiya Brunet, 3, on the bridge that leads to her home, which fills with up to a foot of mud during storms. Credit Josh Haner/The New York Times

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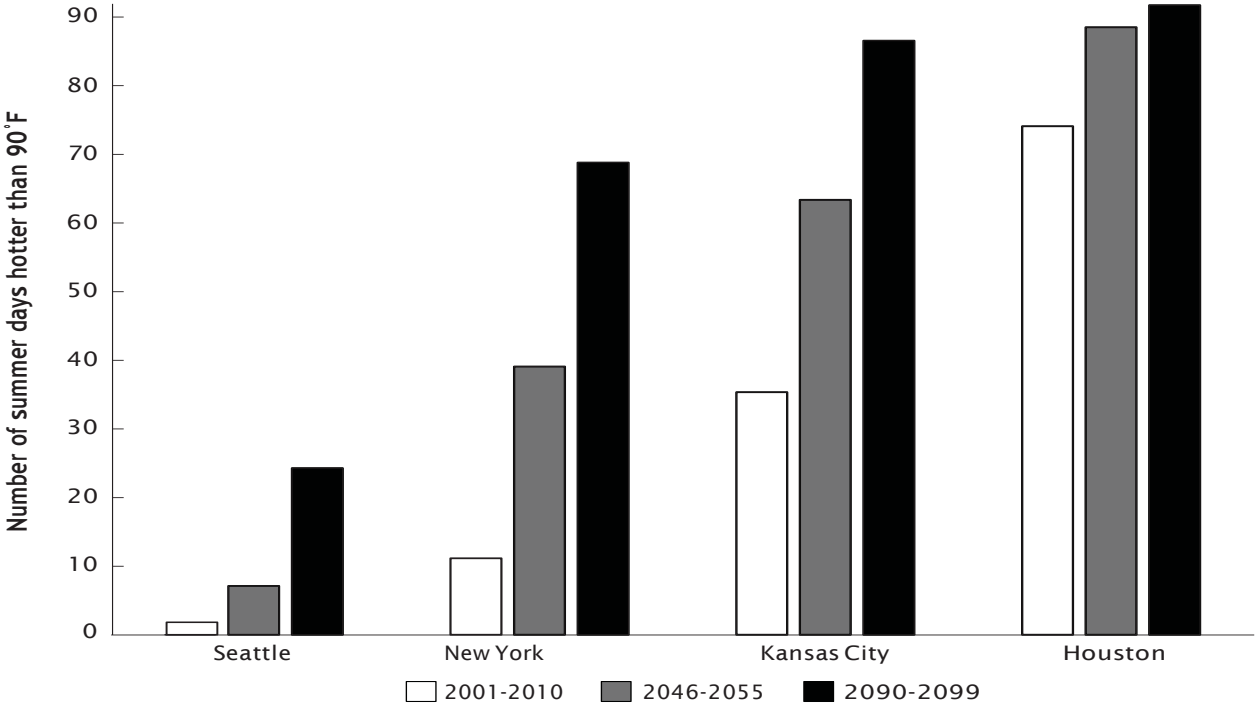
Figure 1. Projected number of summer days above 90˚F in four US cities



Note: Each projection is the ensemble average of business-as-usual scenario forecasts for the continental United States.

Sources: Katherine Hayhoe et al., "Development and Dissemination of a High-Resolution National Climate Change Dataset," *Final Report for United States Geological Survey,* USGS G10AC00248 (2013); Anne M. K. Stoner et al., "An Asynchronous Regional Regression Model for Statistical Downscaling of Daily Climate Variables," *International Journal of Climatology* 33 (2013): 2473–94; Melinda S. Dalton and Sonya A. Jones, comps., *Southeast Regional Assessment Project for the National Climate Change and Wildlife Science Center, U.S. Geological Survey* (Reston, VA: U.S. Geological Survey, 2010).

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Table 3. Projected Pollution Impacts on Child Wellbeing

Panel A. Impacts on infant mortality from contemporaneous exposure to $PM_{2.5}$

	Births	Infant deaths	No mitigation vs. 2001	Mitigation vs. 2001	Mitigation vs. no mitigation	No mitigation vs. 2001	Mitigation vs. 2001	Mitigation vs. no mitigation
West	832,065	5,076	28	−113	−141	0.56%	−2.23%	−2.79%
Plains	635,916	3,879	−11	−324	−314	−0.28%	−8.36%	−8.08%
Midwest	820,761	5,007	133	−753	−886	2.65%	−15.05%	−17.70%
Northeast	835,041	5,094	177	−731	−909	3.48%	−14.35%	−17.84
Southeast	798,891	4,873	−88	−1,053	−964	−1.81%	−21.60%	−19.79%
All	3,922,674	23,928	133	−2,501	−2,634	0.56%	−10.45%	−11.01%

Note: This panel presents estimates for the number and percentage of infant deaths avoided by region under various climate scenarios. Births are from 2012.

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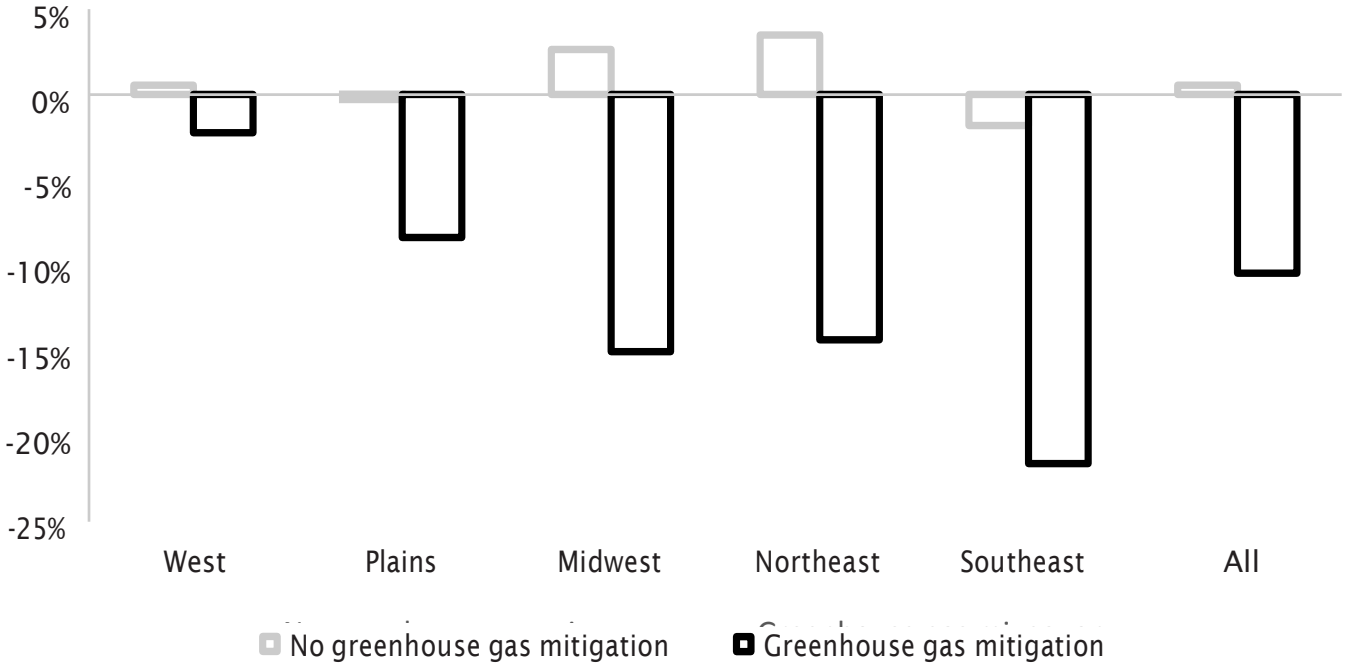
Figure 1. Percentage change in 2050 US infant mortality from $PM_{2.5}$ under two scenarios, by region



Note: This figure displays the percentage change in infant mortality rates, by region, from the projected change in $PM_{2.5}$ under scenarios of greenhouse gas mitigation and no greenhouse gas mitigation.

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Panel B. Impacts on adult earnings from early childhood exposure to $PM_{2.5}$

	Per capita income	No mitigation vs. 2001	Mitigation vs. 2001	Mitigation vs. no mitigation	No mitigation vs. 2001	Mitigation vs.2001	Mitigation vs. no mitigation
West	$44,589	–$30	$121	$151	–0.1%	0.3%	0.3%
Plains	$43,680	$15	$443	$429	0.0%	1.0%	1.0%
Midwest	$41,548	–$134	$759	$893	–0.3%	1.8%	2.1%
Northeast	$52,417	–$222	$913	$1,135	–0.4%	1.7%	2.2%
Southeast	$38,550	$85	$1,011	$926	0.2%	2.6%	2.4%
All	$44,455	–$30	$564	$594	–0.1%	1.3%	1.3%

Note: This panel presents estimates for the dollar and percentage change in adult earnings by region under various climate scenarios. Per-capita income is from 2012.

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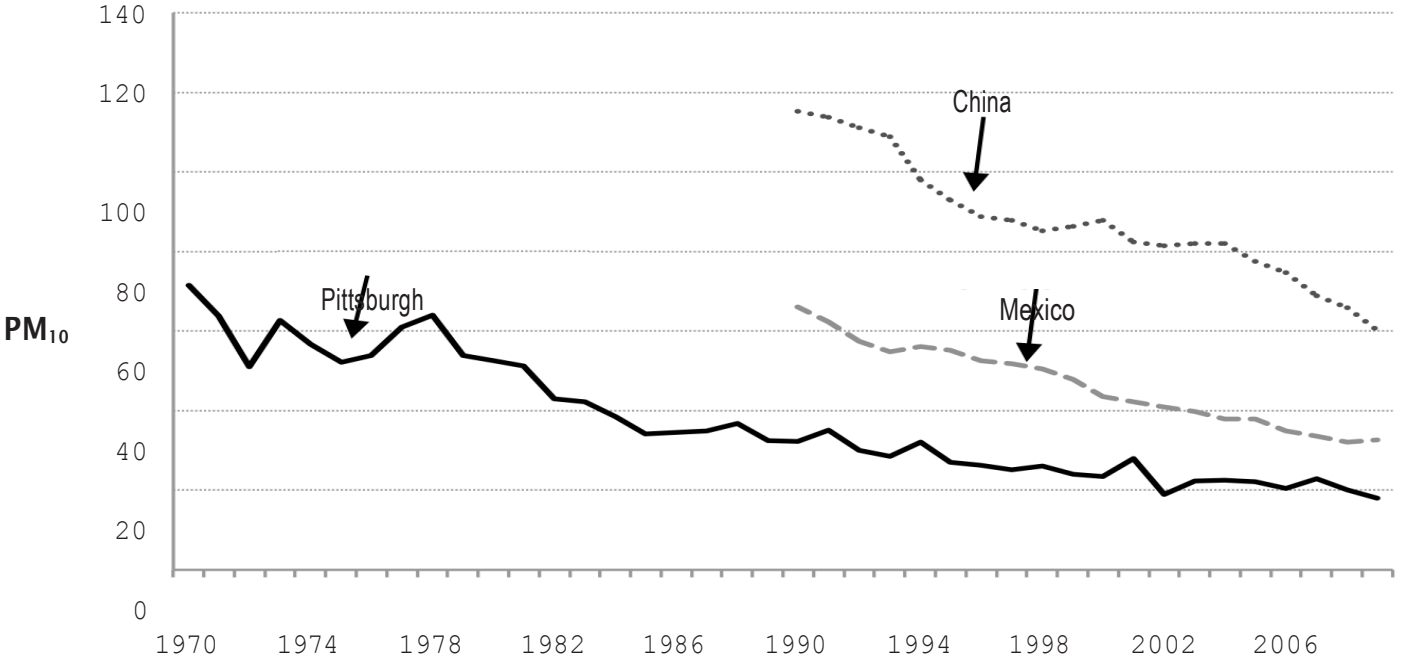
Figure 2. Trends in Air Pollution for Pittsburgh, China, and Mexico



Note: All data are annual averages of daily measures of particulate matter less than 10 microns in diameter (PM_{10}), measured in micrograms per cubic meter.

Sources: Data for Mexico and China are averages across all major cities, obtained from the World Bank's database of World Development Indicators. Pittsburgh data from 1990 to 2009 are from the US Environmental Protection Agency's Air Quality System Data Mart. Data from before 1990 are courtesy of Cliff Davidson via Thomas Rawski; these data are total suspended particles multiplied by 0.55, which is the ratio of PM_{10} to TSP, where missing values for total suspended particles are imputed by using dustfall.

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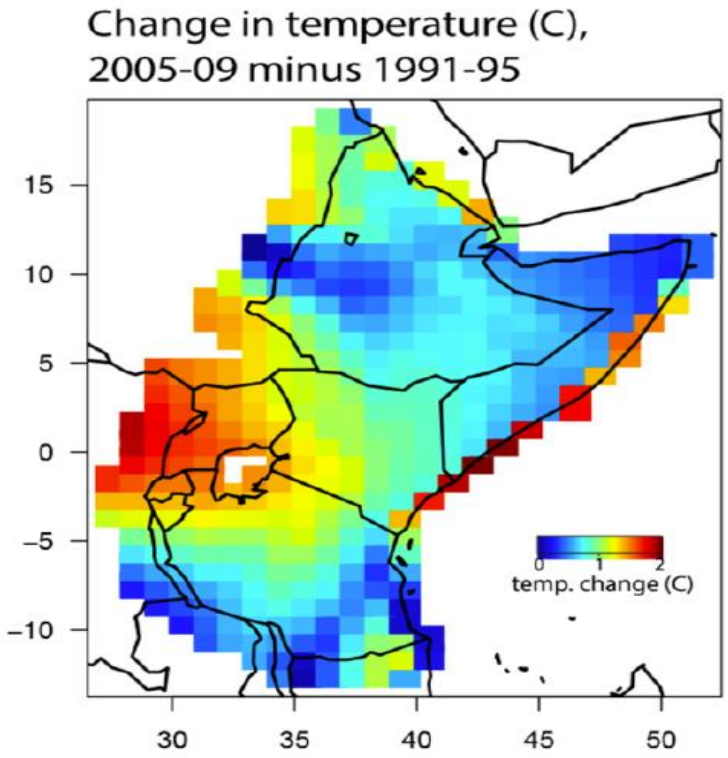
Illustration of the effect of temperature on conflict

Brook, Hsiang, and Miguel (2014)



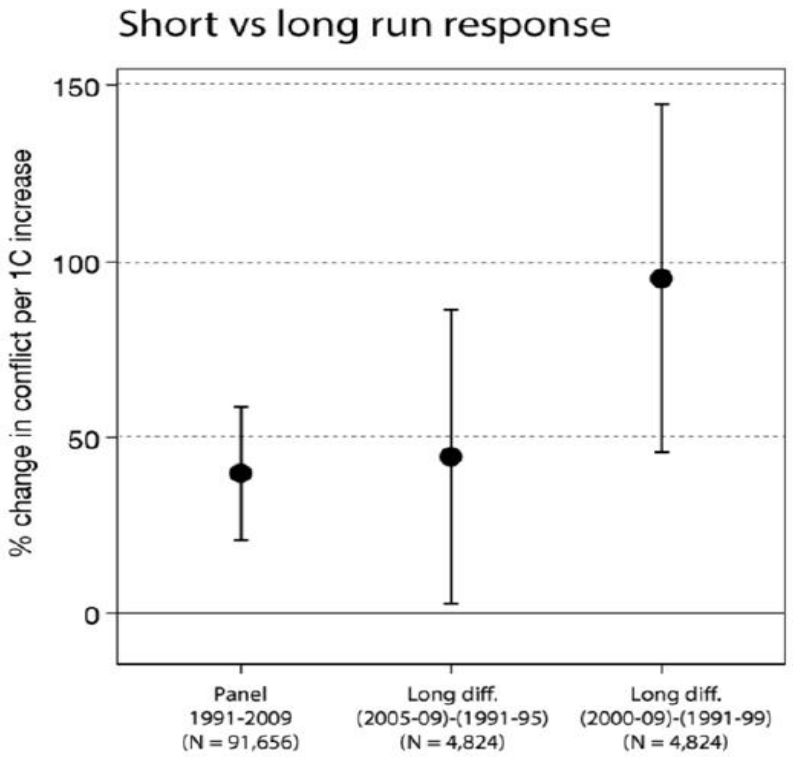


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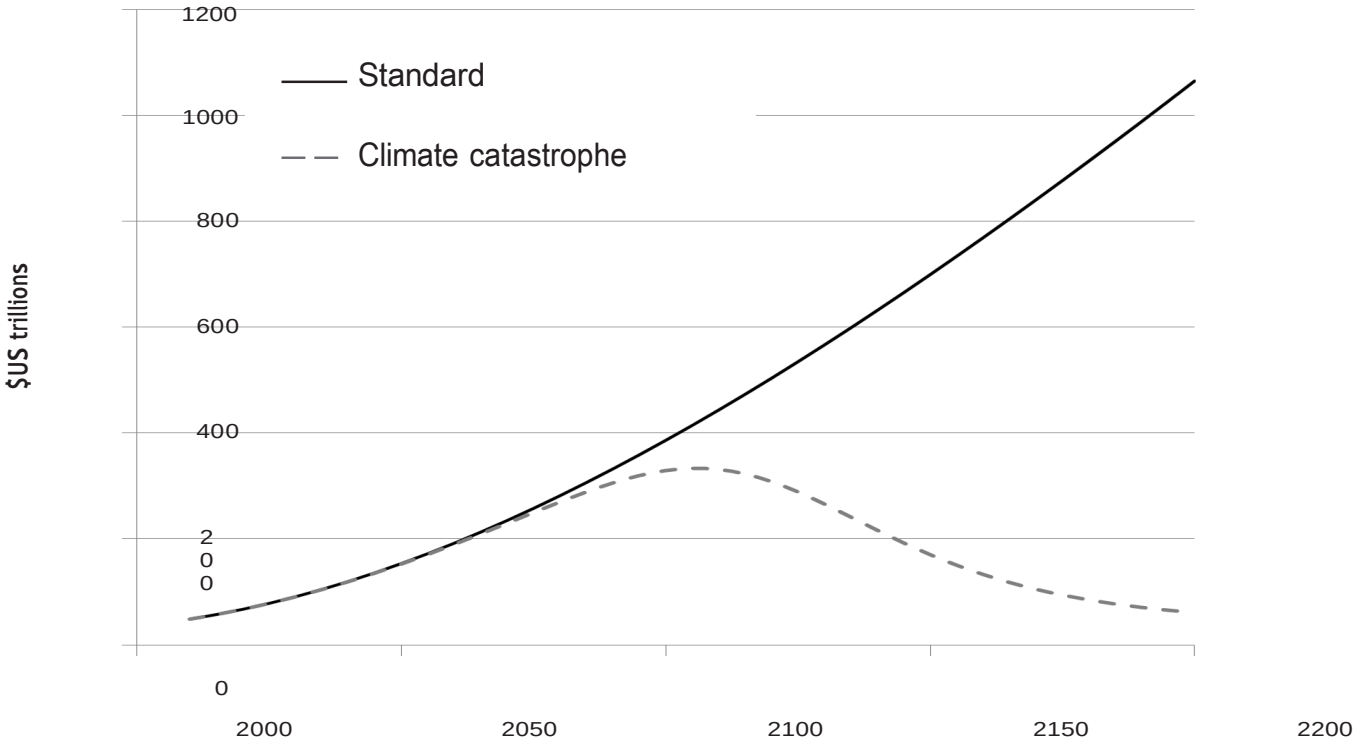
Figure 1. Aggregate Consumption under Standard and Catastrophic Climate Change Scenarios



Source: A version of the DICE model built by Dietz et al., which extends Nordhaus's DICE-2013R model. See Simon Dietz, Christian Gollier and Louise Kessler, "The Climate Beta," Working Paper no. 215 [Centre for Climate Change Economics and Policy] and no. 190 [Grantham Research Institute on Climate Change and the Environment] (London School of Economics and Political Science, London, UK, 2015) and William D. Nordhaus, "Estimates of the Social Cost of Carbon: Concepts and Results from the DICE-2013R Model and Alternative Approaches," *Journal of the Association of Environmental and Resource Economists* 1 (2014): 273–312.

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Table 1. Present Value of $1,000 in Climate Damages Occurring in 2050, 2100, and 2200 under Various Discount Rates

$1,000 in Damages Occurring in Year	Discount Rate 1.4%	2.5%	3.0%	5.0%
2050	$623	$269	$99	$19
2100	$311	$39	$3	$0.05
2200	$77	$0.82	$0.004	~$0

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About Waxman–Markey

The American Clean Energy and Security Act of 2009 (H.R. 2454), also known as the Waxman–Markey bill, introduced in March 2009, called for an economy-wide cap-and-trade program for greenhouse gas emissions. The program would have established binding emission caps that would have lowered US greenhouse gas emissions to 17 percent below 2005 levels by 2020, with further reductions each year until reaching 83 percent below 2005 levels by 2050. Though the bill passed the House of Representatives in June 2009, and a modified version—the Kerry–Boxer bill—passed the Senate Environment and Public Works Committee in November 2009, the bill did not receive a floor vote in the Senate and thus failed to become law.

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- www.futureofchildren.org