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# THE HEALTH IMPACTS OF CLIMATE CHANGE ON AMERICANS

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JUNE 2014

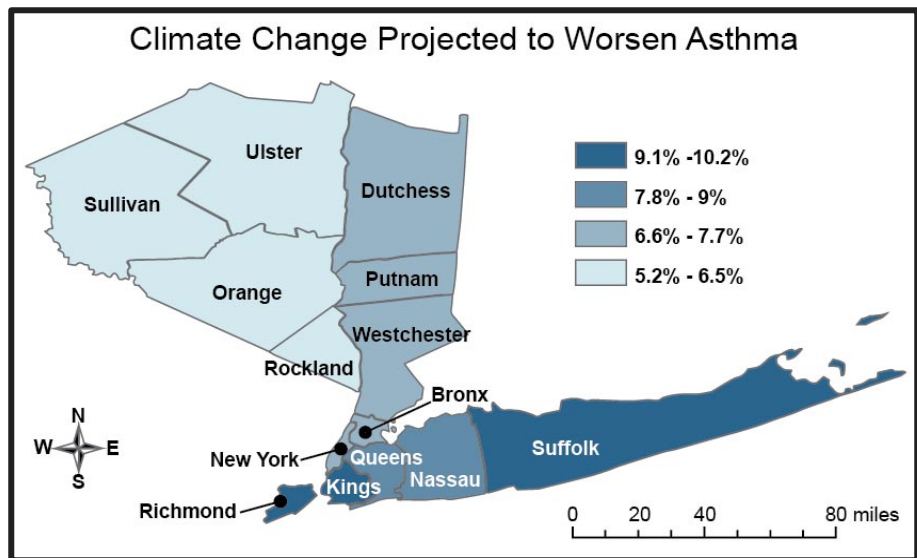
We have a moral obligation to leave our children a planet that’s not irrevocably polluted or damaged. The effects of climate change are already being felt across the Nation. In the past three decades, the percentage of Americans with asthma has more than doubled, and climate change is putting those Americans at greater risk of landing in the hospital. And extreme weather events are becoming more frequent across the country – from more rain falling in downpours in many regions, to longer and hotter heat waves in others, to more severe droughts and wildfires in some areas, notably the West and Southwest. Through common-sense measures to cut carbon pollution we can protect the health of our Nation, while stimulating the economy and helping to prevent the worst impacts of climate change.

**CLIMATE CHANGE CAUSED BY CARBON POLLUTION IS IMPACTING OUR COMMUNITIES**

Climate change, caused primarily by carbon pollution threatens the health and well-being of Americans in many ways, from increasing the risk of asthma attacks and other respiratory illnesses to changing the spread of certain vector-borne diseases. Some of these health impacts are already underway in the United States and climate change will, absent other changes, amplify some of the existing health threats the Nation now faces. Certain people and communities are especially vulnerable to the health effects of climate change, including children, the elderly, those with chronic illnesses, the poor, and some communities of color. In the coming years, communities are expected to experience the following impacts in regions across the United States.

**Increasing Ground-Level Ozone**

Climate change, fueled by increasing levels of carbon pollution, is projected to harm human health by increasing ground-level ozone, a key component of smog. As temperatures rise, the amount of ozone tends to increase. Ozone which is associated with the increased risk of premature death in adults and diminished lung function, also can result in increased hospital admissions emergency room visits for asthma, particularly in children. Scientists have projected that ozone concentrations in the New York metropolitan region will increase as a result of climate change, driving up the number of ozone-related emergency room visits for asthma in the area by percent—more than 50 additional ozone-related emergency room visits per year in the 2020s, compared to the 1990s.



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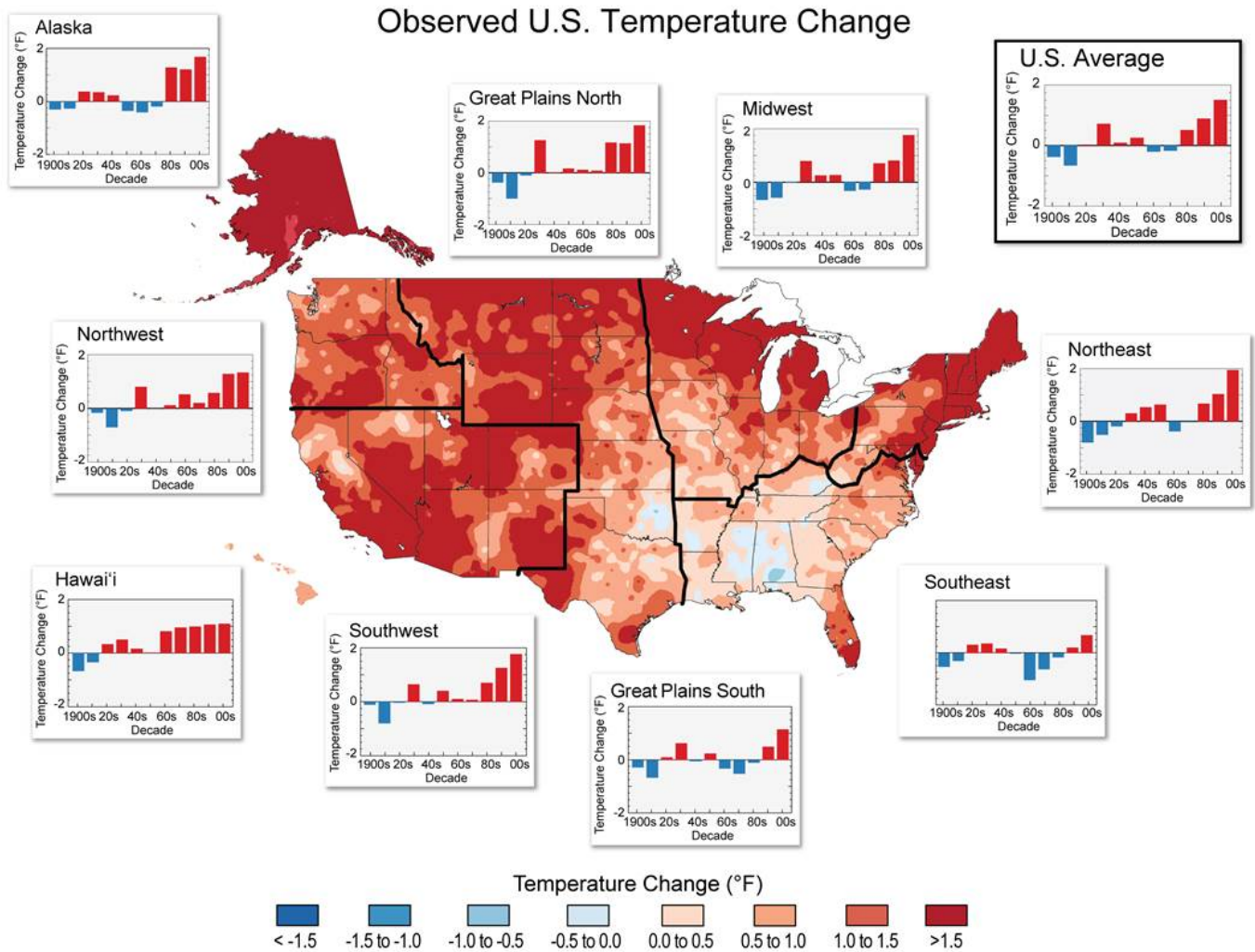
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**Driving Up Particle Pollution**

Climate change is projected to increase the frequency and severity of wildfires in the American West and Southwest. Wildfire smoke contains particulate matter, carbon monoxide, nitrogen oxides, and other pollutants that can significantly reduce air quality, both locally and in areas downwind of fires. Smoke exposure can lead to respiratory and cardiovascular hospitalizations, medical and emergency room visits for lung illnesses, and increased episodes of asthma, bronchitis, chest pain and respiratory infections. As the frequency and severity of wildfires in the United States increase, these health impacts will increase.

## Contributing to More Extreme-Heat Events

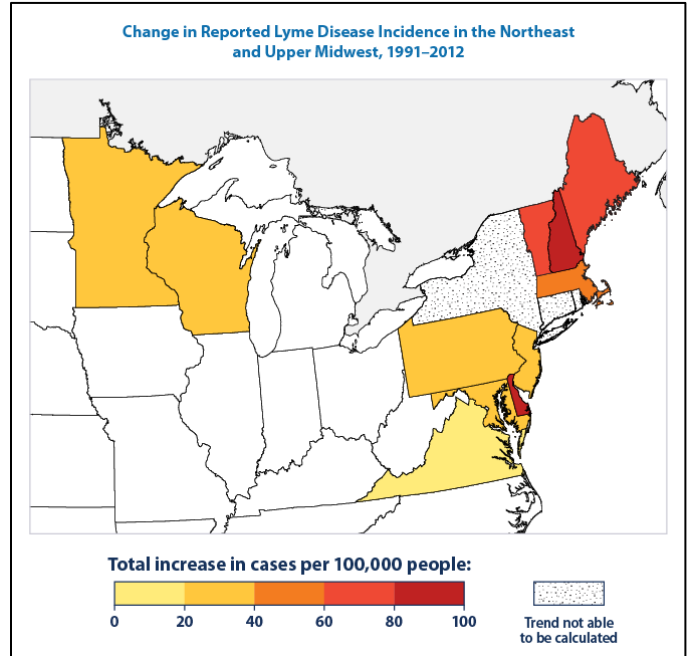
From 1999 through 2009, extreme heat exposure caused more than 7,800 deaths in the United States. Extreme heat events are increasing in the United States in frequency, intensity, and duration. As climate change causes temperatures to continue to rise, heat waves are expected to become more frequent and severe in the coming decades. Already, nationwide, unusually hot summer day and nights have become more common over the last few decades. Extreme heat also increases hospital admissions for cardiovascular, respiratory, cerebrovascular diseases, and deaths from heat stroke and other related conditions. Many cities, including St. Louis, Philadelphia, Chicago, and Cincinnati, have already suffered dramatic increases in death rates during recent heat waves.



## Increasing Infectious Diseases

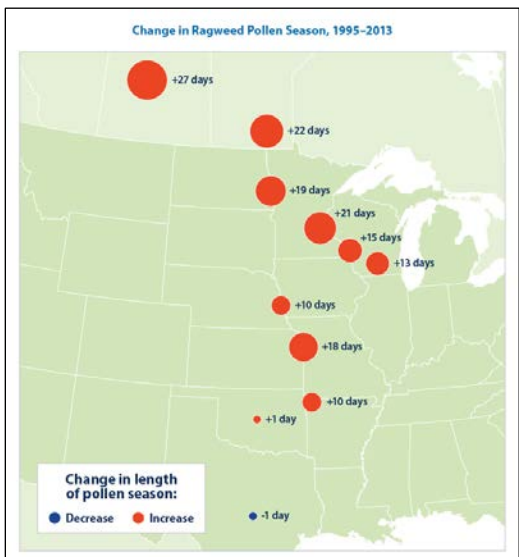
Many communities in the U.S. are at risk from numerous vector-borne diseases, including Lyme, dengue fever, West Nile virus and Rocky Mountain spotted fever. The Centers for Disease Control and Prevention estimates that there were more than 30,000 reported cases of Lyme disease in 2012. The distribution of diseases spread by pests, including ticks and mosquitoes, is influenced by climate change.

Different regions of the country are likely to experience different infectious disease impacts from climate change. The incidence and distribution of reported cases of Lyme disease in particular, which is linked to many factors including climate change, appears to be increasing over time. Among the states where Lyme disease is most common, New Hampshire and Delaware have experienced the largest rise in reported case rates since 1991, followed by Maine, Vermont, and Massachusetts. On average, these five states now report 50 to 90 more cases per 100,000 people than they did in 1991.



## Leading to Higher Pollen Concentrations

Climate change has resulted in more frost-free days and warmer air temperatures which can, in turn, cause a greater production of plant-based allergens. For example, the length of ragweed seasons has increased in some communities in the northern states - Minneapolis, Minnesota's season increased by 21 days, while the ragweed season in Fargo, North Dakota increased by 19 days. Higher pollen concentrations and longer pollen seasons can increase pollen-related allergies and asthma episodes that lead to diminished productivity and lost school days.

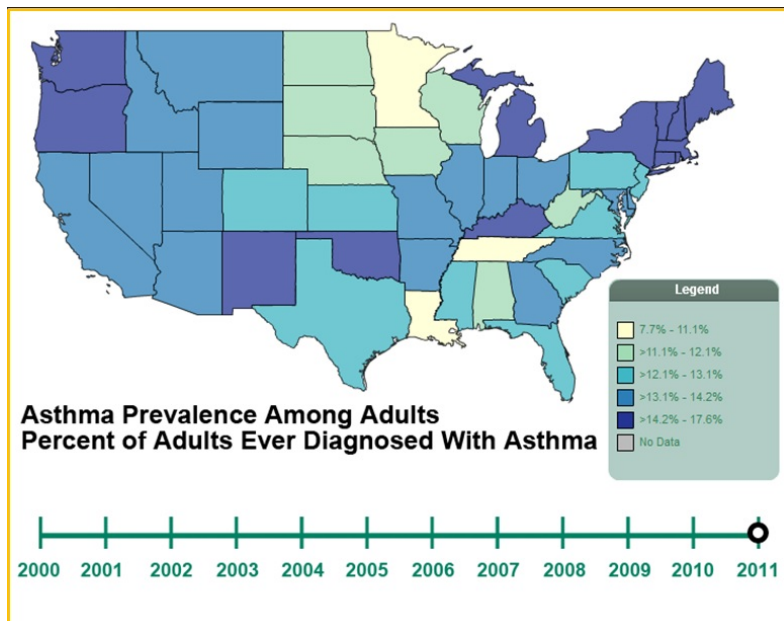


## Increasing the Frequency of Heavy Rainfall and Flooding

Floods are among the deadliest of all weather-related hazards in the United States, accounting for approximately 98 deaths per year over the period from 1957-2005, most due to drowning. Flash floods and flooding associated with tropical storms result in the highest number of deaths. The frequency of heavy precipitation events has increased for the nation as a whole, and is projected to increase in all U.S. regions, leading to more severe flooding events in certain regions. In addition to the immediate health hazards associated with extreme precipitation events when flooding occurs, other hazards can often appear once a storm event has passed. Elevated waterborne disease outbreaks have been reported in the weeks following heavy rainfall, although other variables may affect these associations.

## CLIMATE CHANGE IMPACTS THE MOST VULNERABLE AMERICANS

We know climate change will put vulnerable populations at greater risk – including the elderly, our kids, and people already suffering from burdensome allergies, asthma, and other illnesses. Pre-existing health conditions make older adults susceptible to the cardiac and respiratory impacts of air pollution. Higher rates of diabetes, obesity, or asthma in some communities may place them at greater risk of climate-related health impacts. Children, who breathe more air relative to their size than adults, are also at higher risk of worsened asthma and respiratory symptoms from air pollution.



Already, more than 8 percent of Americans are living with asthma, including more than 9 percent of children. In fact, asthma is the third leading cause of hospitalizations for children. It also hits some communities particularly hard. For instance, African Americans children are twice as likely to be hospitalized for asthma as whites, and are more likely to die from asthma. Latino children are 40 percent more likely to die from asthma than white children.

Asthma is not just making people sick, it is costing taxpayers. According to the Centers for Disease Control, the U.S. is spending billions of dollars in Medicaid expenses related to asthma each year.

In addition, climate change also increases the number and severity of heat waves. Older individuals who have a higher risk of dying during extreme heat events will bear a disproportionate share of the impacts. Heat waves and other extreme weather events can also disproportionately affect low-income communities and some communities of color, raising environmental justice concerns.

## TAKING ACTION TO IMPROVE THE HEALTH OF OUR COMMUNITIES

While no single step can reverse the effects of climate change, we have a moral obligation to future generations to leave them a planet that is not irrevocably polluted and damaged. Through steady, responsible action to cut carbon pollution, we can protect our children's health and begin to slow the effects of climate change so that we leave behind a cleaner, more stable environment. That is why, last year, President Obama put forward a Climate Action Plan to cut the carbon pollution that causes climate change and in turn affects public health. The Plan includes steps to cut carbon pollution, help prepare the United States for the impacts of climate change, and continue American leadership in international efforts to combat global climate change.

Earlier this week, the Environmental Protection Agency released a vital component of the President's Climate Action Plan – common-sense carbon pollution standards for existing power plants. Today, about 40% of America's carbon pollution comes from power plants. Although we already set limits for arsenic, mercury and

lead, we let power plants release as much carbon pollution as they want. EPA's flexible Clean Power Plan protects children and other vulnerable Americans from the health threats posed by a range of pollutants and will move us toward a cleaner, more stable environment for future generations.

Putting EPA's proposed guidelines for carbon pollution from power plants in place will not only help reduce the health impacts from climate change; it will also lead, through the measures implemented to achieve the carbon reductions, to reduction in emissions of other air pollutants that are directly harmful to human health. Since air pollution from power plants can worsen asthma and other breathing problems, putting these guidelines in place will help protect the health of vulnerable Americans, including children and the elderly. While cutting carbon emissions from the power sector by about 30 percent from 2005 levels by 2030, EPA's plan will also decrease that sector's emissions of particulate matter, nitrogen oxides, and sulfur dioxide by about 25 percent. From the soot and smog reductions alone, for every dollar invested through the Clean Power Plan, American families will see up to \$7 in health benefits. In the first year that these standards go into effect, up to 100,000 asthma attacks and up to 2,100 heart attacks will be prevented. These standards will also help more kids to be healthy enough to show up to school – with up to 72,000 fewer absences in the first year. The benefits increase each year from there.

In 2025, up to 130,000 asthma attacks and up to 2,800 heart attacks will be prevented. In 2030, the health benefits rise to preventing 150,000 asthma attacks and up to 3,300 heart attacks, as well as avoiding:

- 2,700 to 6,600 premature deaths;
- more than 1,800 visits to the hospital for cardiovascular and respiratory illnesses;
- 3,700 cases of bronchitis in children;
- 310,000 lost work days; and
- 180,000 school absences.

**EPA's Clean Power Plan building off existing progress.** Since President Obama took office, a number of programs have been put in place to reduce carbon pollution, soot, smog, and toxic air pollutants to ensure a healthy and sustainable environment for all Americans, including:

- *Decreasing Methane Emissions:* In March 2014, the Administration released a Strategy to Reduce Methane Emissions. The Strategy builds on our progress to date and takes steps to further cut methane emissions in landfills, coal mining, agriculture, and oil and gas systems through cost-effective voluntary actions and common-sense standards that will also improve the quality of the air we breathe. Methane is a contributor to ground level ozone, which is associated with higher rates of asthma attacks. Moreover, methane is often co-emitted with volatile organic compounds, some of which are hazardous air pollutants, and many measures can cost-effectively reduce both pollutants.
- *Reducing Pollution from New Power Plants:* In September 2013, EPA took the first in a series of common sense steps under President Obama's Climate Action Plan by limiting carbon pollution from new power plants, which will ensure that the next generation of power plants employ widely available, American-made technologies to produce electricity more cleanly and efficiently.

- *Improving Appliance Efficiency:* Since the beginning of 2013, energy efficiency conservation standards put in place by the Department of Energy will reduce nearly 400 million metric tons of carbon pollution and 550,000 tons of SO<sub>2</sub> by 2030.
- *Decreasing Pollution from Cars and Light-Duty Trucks:* The Obama Administration finalized historic fuel economy standards that will nearly double the fuel efficiency of cars and light-duty trucks by 2025, saving consumers \$1.7 trillion at the pump and eliminating 6 billion metric tons of carbon pollution. Complementing these standards, in March 2014, EPA issued final “Tier 3” gasoline and vehicle standards to address non-greenhouse gas air pollution – including smog-forming pollutants, soot, and air toxics – from the light duty vehicle fleet. The rule will deliver immediate public health gains when implemented in 2017, and, by 2030, is projected to provide \$6.7 to \$19 billion in annual health benefits.
- *Improving the Efficiency Heavy Duty Vehicles:* Heavy and medium duty vehicles are the second largest oil consumer and the second largest source of carbon pollution in the transportation sector. The Obama Administration completed first-ever fuel economy and greenhouse gas standards for these trucks and buses, which will reduce emissions from the U.S. heavy-duty fleet by approximately 76 million metric tons of carbon pollution annually by 2030 and also lead to \$1.3 to \$4.2 billion health benefits in 2030.
- *Reducing Mercury and Other Toxic Pollutants:* In 2011, the EPA finalized the first-ever national limits for mercury and arsenic from power plants. By 2016, these rules would prevent 4,200 to 11,000 premature deaths, 4,700 heart attacks, 130,000 cases of aggravated asthma, 5,700 hospital and emergency room visits, and 540,000 missed workdays. The value of the air quality improvements to people's health alone totals \$37 billion to \$90 billion. For every dollar spent to reduce this pollution, Americans get \$3-9 in health benefits. The benefits are especially important to minority and low income populations who are disproportionately impacted by asthma and other debilitating health conditions.
- *Taking Action through the Clean Air Act:* In 2010 alone, programs implemented as part of the Clean Air Act Amendments of 1990 are estimated to have reduced premature mortality risks equivalent to saving over 160,000 lives, saved Americans more than 100,000 hospital visits, and prevented millions of cases of respiratory problems, including bronchitis and asthma attacks.

**The Obama Administration is working with communities to address other health implications of pollution and climate change.** In addition to cutting harmful air pollution from a wide range of sources, the Administration is working with State, local, and indigenous communities to help them plan for the impacts of climate change we cannot avoid and to promote environmental justice.

- *The Climate Ready States and Cities Initiative (CRSCI).* The Centers for Disease Control and Prevention (CDC) is working with 16 states and two cities to develop and implement public health adaptation plans for climate change. Awardees use the Building Resilience Against Climate Effects (BRACE) framework to identify climate change impacts in their communities, potential health effects associated with these impacts, and their most at-risk populations and locations. BRACE uses a five-step process to forecast climate impacts, project disease burden, assess health interventions, develop health adaptation plans, and evaluate progress to improving health. With this information, communities can develop and implement strategies to protect and promote health and address gaps in critical public health functions and services.

- *Creating a Task Force to Identify Solution for Enhanced Preparedness:* State, local and tribal leaders across the country are already contending with more frequent or severe heat waves, droughts, wildfires, storms and floods, and other impacts of climate change. The State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience will provide recommendations to the President this year on removing barriers to resilient investments, modernizing Federal grant and loan programs to better support local efforts, and developing the information and tools they need to prepare. The Task Force established a working group to identify how programs related to public health, poverty alleviation, social development and environmental justice can better integrate considerations of climate change-related impacts and risks.
- *Recommitting to Environmental Justice:* To ensure that communities overburdened by pollution – particularly minority, low-income, and indigenous communities – have the opportunity to enjoy the health and economic benefits of a clean environment the Administration reconvened the Environmental Justice Interagency Working Group and engaged more than 100 environmental justice leaders at a White House forum. Federal agencies signed a Memorandum of Understanding on environmental justice and released strategies for integrating environmental justice into Federal decision-making and programs in areas such as transportation, labor, health services, and housing.
- *Improving how the Federal Government Prepares for Climate Change:* More than 30 Federal agencies developed their first-ever Climate Adaptation Plans, outlining strategies to protect their operations, programs, and investments to better serve communities and safeguard our public resources in the face of climate change. In addition, Federal agencies have partnered with states, cities, tribes, and the private sector to develop strategies to address the impacts of climate change on our freshwater resources, oceans and coasts, and wildlife. Agencies have also built new, data-driven tools to help decision makers and resource manager’s map and plan for future sea level rise.