CSIS BRIEFS

Three Steps to Protect the United States Against Extreme Heat

A Report of the CSIS Alliance Working Group on Climate and Health

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THE ISSUE

Extreme heat is becoming an urgent priority in the United States and beyond. The threat posed by extreme heat has become a matter of national security, impacting U.S. military readiness, while threatening economic growth, productivity, and global competitiveness. The negative health, social, and economic effects of extreme heat have become a common, lived experience among broad sectors of the American public, cutting across income, racial, ideological, and geographic lines. As extreme heat events have become more politically salient, they have raised popular expectations and prompted state, municipal, and local leaders, working in partnership with universities, community groups, businesses, and philanthropies, to seek pragmatic solutions that draw support across the partisan divide. In the fall of 2024, the CSIS Bipartisan Alliance for Global Health Security launched a working group to develop policy recommendations for addressing climate-related health challenges that have implications for national security. The working group argues that three actions lay the foundation of a strategy to better protect Americans, strengthen preparedness, and protect U.S. national interests: the launch of a high-level bipartisan panel, the establishment of a data consortium, and the strengthening of essential core federal functions. In combination, these measures will make the United States stronger, more secure, and more prosperous.

INTRODUCTION

Extreme heat is swiftly becoming an urgent priority in America and beyond.[1] The threat posed by extreme heat has become a matter of national security, impacting U.S. military readiness, while threatening economic growth and productivity, including U.S. global competitiveness.

Americans see and feel the threat. Heat waves, wildfires sparked by drought and increased temperatures, and storms and flooding driven by warming oceans are ever-more prominent aspects of the lived experience of the American people, and indeed, a large portion of the world's population.[2] People across the country are familiar with dangerous temperature spikes that lead to heat-based chronic illness, negative pregnancy outcomes, and excess deaths; increase emergency room visits; drive activity indoors; depress productivity; and strain infrastructure. At the same time, the greater number and expanding geographic range and duration of heat events indirectly affect human health through increases in illnesses caused by exposures to wildfire smoke, environmental pathogens and contaminants, harmful algal blooms, and dust storms.

The impact of extreme heat on the nation's economic and national security is real and growing. Recognizing the growing risk, many areas of the U.S. government and civil society have implemented mitigation measures over the past 30 years. Since the mid-1980s, the Uniformed Services

University has conducted research and regularly published updated guidance to protect military members from the risks of operating in hot environments.[3] From 2018 to 2022, the Department of Defense (DOD) documented over 11,000 cases of heat-related illness among military members.[4] In 2014 and in 2021, the DOD published roadmaps to provide for the continuity of DOD operations in support of national security priorities in the face of increasingly frequent extreme heat and related events.[5] In 2024, the DOD published a heat resilience plan to address the impact of extreme heat on logistical support, deployed operations, and training.[6] Both civilian and military aviation authorities globally have recognized the risk to safe aircraft operation in high heat and mandated changes in operations. The Department of the Interior published an Aviation Accident Prevention Bulletin on heat-related mishaps in 2009.[7] A recent study projected up to a 49 percent increase in airline passenger recovery costs by 2050 due to infrastructure and operational changes driven by extreme heat.[8]

In 2025, the new administration began to realign the federal government's climate, energy, and health priorities, including proposals to end support for extreme heat monitoring and mitigation measures.[9] These actions remain subjects of continued deliberation among Americans, including in Congress. In the meantime, Americans increasingly expect to see action. In response, states and cities, many of which have already taken numerous steps to combat extreme heat, have jumped to the fore, leading determined new efforts. The result: a de facto coalition, including members of Congress, states, cities, universities, medical providers, civil society groups, corporations, and philanthropies, has begun to form, motivated by a commitment to bring greater attention and coherence to efforts to meet the health challenges associated with extreme heat.

In this brief—the first report of the working group on climate and health of the CSIS Bipartisan Alliance for Global Health Security (CSIS Alliance)—the working group recommends urgent action on extreme heat to make the United States stronger, safer, and more prosperous, as rising temperatures lead to increased heat waves, along with flooding, wildfires, and dangerous storms. The brief is written with select target audiences in mind: members of Congress; state and local officials; university-based data and weather experts; opinion experts; and the business and foundation sectors. Top-line priorities are to strengthen U.S. productivity, economic growth, and global competitiveness, while ensuring far better protection of the health of the most vulnerable American communities. The CSIS Alliance working group calls for action in three core areas:

1. The rapid launch of a one-year, independent, high-level bipartisan commission mandated to move swiftly to lay out a long-range, sustainable plan of action that can begin to be put into force beginning in early 2027.
2. The rapid establishment of a data consortium of states, universities, philanthropies, and private sector medical providers and other businesses, mandated to upgrade data tracking of the economic, health, infrastructure, and migration-related impacts of extreme heat.
3. Strategic action by Congress to ensure essential federal functions that cannot be fulfilled by other levels of government. These include reforming and updating of the mandate of the Federal Emergency Management Agency (FEMA) to provide new emergency and preparedness capabilities in the area of extreme heat; improving weather monitoring and forecasting through the National Oceanic and Atmospheric Administration (NOAA) and other agencies; more robust Earth system monitoring and forecasting through interdisciplinary, expert scientific agencies, including the U.S. Geological Survey (USGS), parts of NOAA and the National Aeronautics and Space Administration (NASA), and the U.S. Department of Agriculture (USDA); and strengthening programs that provide essential support to the most vulnerable, such as the Low-Income Home Energy Assistance Program (LIHEAP).

Each of these proposed actions is a critically important starting point. Each will require careful additional work to make them operational realities.

FROM CLIMATE AND HEALTH TO EXTREME HEAT

The CSIS Bipartisan Alliance for Global Health Security launched a working group on climate and health in October 2024, with the generous support of the Wellcome Trust and GSK. Its ambitious, one-year mandate was to deepen bipartisan understanding of the evolving impacts of climate on health; review the steps taken by the U.S. government

and other governments and international bodies to adapt and better protect the health and well-being of vulnerable populations; and sketch a concrete vision for a sustainable U.S. national security approach that could draw enduring political support from across the aisle—in the executive branch, Congress, and beyond.

The CSIS Alliance working group enlisted highly active, generous participation from diverse senior experts: in public health, environmental sciences, biomedical research, opinion research, data, economics, the business and philanthropic sectors, and diplomacy. It prioritized select sectors and issues: data and surveillance, biomedical research gaps, financing requirements, current and projected migration, and geopolitics. Over the course of the initial phase of work, strategic weaknesses in climate and health policy became clear. Agency initiatives were fragmented, without adequate long-term funding and executive branch policy and legislative guidance that would promote a coordinated, whole-of-government strategy laying out clear agency roles, priorities, and budgeting plans. Climate efforts pioneered by the Obama and Biden administrations often failed to win bipartisan support, despite efforts to build bridges among conservative ranks. This gap left both domestic and global climate initiatives far more susceptible to shifts in political control at the White House and in Congress. The Trump administration's declaration in January 2025 of a national energy emergency and U.S. withdrawals from the Paris Climate Agreement and the annual COP negotiations spotlighted the gap in long-term, bipartisan strategies on how to address challenges related to climate and health in the global context.[10]

By mid-2025, the CSIS Alliance working group concluded that a pragmatic, promising course is to focus on the domestic health implications of extreme heat and heat-associated extreme weather events. That decision makes sense for several reasons:

- Extreme heat is an area that offers the opportunity to build bipartisan consensus on climate-related health challenges.
- Extreme heat events have been in full view in recent years: intensive tornado seasons, severe wildfires, widespread summer heat waves, increasing frequency of extreme rainfall and flooding events, and ever-more dangerous and long-lasting hurricane seasons.
- These events have become a common, lived experience of an ever-larger share of Americans, cutting across economic, racial, ideological, and geographic lines.[11]
- Extreme heat events have become politically salient, prompting many state, municipal, and local leaders to seek solutions that draw support across the political divide and draw on the expertise and goodwill of civil society organizations, businesses, and philanthropies.
- While there has been debate over the response by federal, state, and local officials to extreme heat and related disasters, it remains possible to speak factually about how to improve preparations and responses to extreme heat and related extreme weather while sidestepping, for the present moment, the nationally divisive debate over the root causes of climate change.[12]

What follows is a summary of the findings of the working group's focus on extreme heat and heat-based disasters, together with a concluding section that lays out key recommendations.

PLAYING WITH FIRE: THE HEALTH CONSEQUENCES OF EXTREME HEAT

Extreme heat is already the deadliest weather-related hazard in the United States, taking more lives than hurricanes, floods, or tornadoes.[13] Since 1970, average temperatures in the United States have risen 60 percent above the global average increase.[14] Data from the Environmental Protection Agency (EPA) and NOAA show that across 50 large metropolitan areas, heat waves are becoming more frequent, longer, and more intense.[15] Children, pregnant women, the elderly, and other vulnerable groups face the highest risks as extreme heat hazards intensify.

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Rural areas of the United States are also affected by extreme heat events. These regions experience many impacts similar to those in urban spaces, but rural areas are also affected by

unique issues that increase residents' vulnerability to extreme heat. Examples include fewer homes and schools with cooling features, more limited access to healthcare, large populations of underinsured and uninsured people, delayed emergency response times due to distance or reduced resources, and a greater proportion of labor undertaken outdoors, including farming, construction, and forestry, with concomitant heat impacts on worker productivity and health risks.

In this sense, extreme heat stands as a unifying issue—an observable, lived reality that touches communities across the political spectrum. But it is an issue that requires special care in how it is presented and far better data to capture more accurately, and in a timely manner, the multiple health and other impacts. Despite extreme heat's reach, the scale of extreme heat impacts is frequently underestimated.[16] Unlike the visible wreckage of a hurricane or wildfire, the toll of heat unfolds more quietly, measured in lost workdays, diminished crop yields, strained health systems, pregnancy complications, and higher mortality among vulnerable groups. A 2021 report by the Atlantic Council's Adrienne Arsht-Rockefeller Foundation Resilience Center projected sharp consequences for U.S. labor productivity, agricultural output, and health outcomes, while highlighting socioeconomic and geographic disparities in exposure and resilience.[17]

The cascading environmental effects of extreme heat can also cause a variety of dangerous, compound health impacts in humans and other organisms in rural, metropolitan, and wildland areas. Wildfire smoke contains elevated respirable particulate matter and a variety of different organic, mineral, and elemental toxicants that can trigger heart attacks, pulmonary problems, and longer-term illnesses in populations close to and well downwind of active fires.[18] Heat waves can promote the development of harmful algal blooms in surface waters, which can in turn cause hypoxic conditions detrimental to aquatic life and produce a range of toxins that pose a threat to humans and animals that drink the water. Warming temperatures and heat-related events can also expand the range and enhance the development of, and exposures to, various water-, soil-, and dust-borne pathogens, leading to increased disease incidence and resulting health treatment costs. The endemic range of soil fungus, *Coccidioides*, which causes Valley Fever in humans, wildlife, and domestic animals, has expanded over the last 25 years, with treatment costs for humans and animals surpassing several billion dollars annually.[19]

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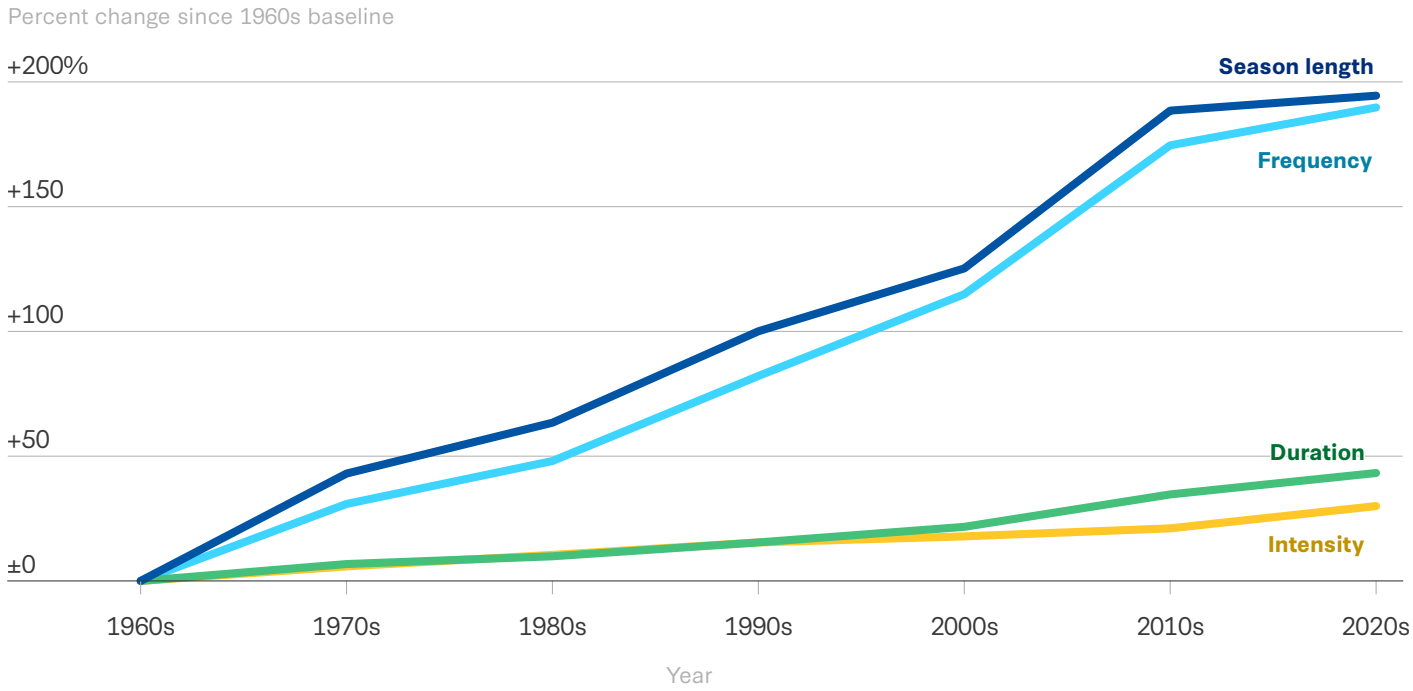
Table 1: Extreme Heat: The Economic and Social Consequences for the United States

	Core Findings	Baseline (2021)	Projection (2050)
Context	Rise in frequency and geographic spread of extreme heat, conservative analysis of "normal" years	~5 percent of the U.S. (~16.5 million people) experience 100+ days over 90 degrees annually	Anticipated increase to ~30 percent of the population
Labor Productivity	Heat-induced losses in gross value added (GVA) due to slower work and more breaks	~$100 billion/year; Texas accounts for nearly one-third national labor productivity loss	~$500 billion a year (~1 percent GDP)
Agricultural Yields	Reductions in crop yields for corn, soy, and wheat due to heat stress	Yield losses due to heat are estimated at 2 percent for corn, 1 percent for soy, and minimal losses for wheat	Without adaptation, crop yield losses could increase to 13 percent for corn, 11 percent for soy, and 11 percent for wheat
Health Outcomes	Heat-related deaths and occupational injuries increase	~8,500+ heat-related deaths and ~120,000 work injuries per year	Increase to ~59,000 deaths per year and ~450,000 injuries
Disparities	Disproportionate effects on certain states and demographic groups	Black and Hispanic workers face ~18 percent higher productivity loss; southern states are disproportionately affected	Disparities persist; geographic risk will worsen in previously less affected regions

Source: Data adapted from Atlantic Council, *Extreme Heat: The Economic and Social Consequences for the United States* (Washington, DC: Atlantic Council, 2021), https://www.atlanticcouncil.org/wp-content/uploads/2021/08/Extreme-Heat-Report-2021.pdf.

The health effects of extreme heat disproportionately affect vulnerable populations, including the elderly, children, pregnant women, outdoor workers, and underserved communities. In addition to mortality and occupational injuries, extreme heat is associated with other adverse health outcomes, including increased emergency room admittance, pregnancy loss, mental health issues, and increased healthcare costs.[20] Extreme heat is also associated with an increased number of burns in areas where temperatures soar. Data from the Arizona Burn Center show an increase in the severity and frequency of heat-related burns after temperatures exceed 105 degrees. In these situations, asphalt and other surfaces can reach up to 180 degrees and cause life threatening injuries.[21]

Figure 1: Percentage Change in Heat Wave Characteristics by Decade, 1961–2023



Heat waves in the United States have been increasing in frequency, duration, intensity, and the length of the warm season since the 1960s. This chart plots the percent change in each heat wave characteristic decade over decade.

Note: There are various scientific definitions of a heat wave. This chart follows NOAA's definition.

Source: United States Environmental Protection Agency, "Climate Change Indicators in the United States," https://www.epa.gov/climate-indicators.

Disproportionate exposure to extreme heat is also compounded by limited access to air-conditioning, with analysis showing that Asian, Black, and Hispanic households are less likely to report cooling features in the home.[22] Heat extremes are also a threat to public safety as they can impact critical infrastructure, such as by causing roadways, runways, and railways to buckle and triggering secondary effects, such as heat-related power outages, blackouts, and their resulting impacts.[23] A multicity analysis found that higher temperatures are also associated with increased violent crime and that cities with lower air-conditioning ownership had even higher risks of violent crime on hot days.[24]

EXTREME HEAT AND ARTIFICIAL INTELLIGENCE (AI): KEEPING AI COOL IN THE HEAT

More than 60 countries have developed national AI strategies, and by 2034 AI is predicted to be a fixture in many areas of personal life and business.[25] The scale-up of AI technologies will have a two-pronged impact on climate change, simultaneously increasing the demand for energy to power and cool AI data centers and potentially serving as a tool for mitigation efforts.[26] The construction of data centers across the United States raises questions about costs and environmental impacts.[27] The power and cooling needs for an AI data center are so high that they consume at least 10 times as much electricity as regular servers.[28]

The boom of AI data centers is threatened by increases in extreme heat, as hot weather affects water resources as well as electricity that cools the centers, and in turn communities are affected by data center power and water usage due to outages and rising costs.[29] Phoenix, Arizona, has faced these challenges. One of the fastest-growing regions from 2010 to 2020, the Phoenix area has one of the highest concentrations of data centers, and some of the highest projected future growth in data center capacity.[30] Phoenix is also regarded as the hottest city in the United States, with 113 consecutive days over 100 degrees in 2024, creating competition for water and energy usage.[31] Across the country, cities that bid to host lucrative data centers will have to assess the benefits compared to the costs—particularly those related to power and water.

Former federal administrations, as well as state and municipal governments, have taken actions to address extreme heat and its impacts, even as the current administration suspends some initiatives as it realigns energy and health priorities. Given uncertainties in the federal policy and funding environment, state and local actions related to extreme heat and human health only increase in importance. A KFF study revealed that states are responding to the health effects of extreme heat through legislation, action plans, and worker protections.[32] Several states have adopted comprehensive worker heat safety standards, and several others are developing similar rules.

Cities in the United States, in response to popular pressures and in parallel with cities outside the United States, have piloted chief heat officer (CHO) positions to serve as a unifying entity for municipal responses to extreme heat. The role and structure of CHO positions and offices vary, but core responsibilities include raising awareness, identifying vulnerable communities, improving planning and response, coordinating stakeholders, and implementing longer-term projects aimed at heat risk-reduction.[33] They have proved in a period of a few years that it is possible to forge a community consensus behind these initiatives that bridges political divides.

States and local jurisdictions are also increasingly working to help build resilience to extreme heat in rural communities.

There are several municipalities at the forefront of extreme heat risk mitigation, notably Miami, Florida, and Phoenix, Arizona. States and local jurisdictions are also increasingly working to help build resilience to extreme heat in rural communities. Examples of local plans include counties of the Sandhills area in North Carolina, the City of Boston's extreme heat primer for engaging the business community, and the state of Minnesota's Extreme Heat tool kit.[34]

CASE STUDY: PHOENIX, ARIZONA

With an average summer temperature of 93.7 degrees Fahrenheit and an unprecedented 113 consecutive days over 100 degrees Fahrenheit in 2024, Phoenix holds the title of the "hottest city" in the United States.[35]

In September 2021, Phoenix piloted the United States' first dedicated heat team.[36] The Heat Response Team focuses on both heat response and heat mitigation in an effort to lower urban temperatures and protect public health.[37] The county has made a number of investments to address extreme heat, including keeping cooling centers open overnight, hiring a full-time county-wide cooling center coordinator, allocating funds to cover cooling center transportation, and increasing the number of operators who respond to heat-related questions.[38] However, many of these investments have been financed through the American Rescue Plan Act pandemic relief funds, which will expire in 2026.[39]

While heat-related deaths in Maricopa County, the county where Phoenix is located, surged tenfold from 61 in 2014 to 608 in 2024, the county actually saw a decrease of 37 deaths from a high of 645 in 2023.[40] This was the first time in a decade that the county had seen a year-to-year reduction in heat-related deaths, with local officials noting the reduction could be a result of their efforts and investments in protecting vulnerable populations from the heat.[41]

CASE STUDY: MIAMI, FLORIDA

The number one weather-related killer in Miami, Florida, is not hurricanes or coastal flooding—it is extreme heat. Miami-Dade County estimates that there are an average of 600 excess deaths due to extreme heat annually and that the economic impact of heat on labor productivity in South Florida is $10 billion a year.[42] In 2021, Miami-Dade County used an Adrienne Arsht-Rockefeller Foundation Resilience Center grant to establish the position of "chief heat officer," responsible for coordinating and reducing the impacts of extreme heat in the county.[43] This year the county has restructured its program, consolidating the chief heat officer role with chief resilience officer and chief bay officer.[44]

As a part of its heat resilience efforts, the county has focused on educating residents regarding affordable cooling, training employers and employees on best heat safety practices, providing grants to small businesses, improving weather service collaboration, and expanding cooling sites to mitigate the effects of extreme heat.[45] These efforts have led to a reduction in heat-related ER visits, giving Miami-Dade County the lowest rates of any county in Florida.[46]

However, Miami still faces many challenges, including the provision of affordable cooling. A study published by the University of Miami found that, because of the high costs of operating air-conditioning and repairing broken systems, many homes are hotter inside than outside.[47] In April, workforce reductions at the Department of Health and Human Services (HHS) included the entire administrative staff of the Low-Income Home Energy Assistance Program, or LIHEAP, which had provided support to Miami and other communities in heating and cooling.[48] While the future of LIHEAP is uncertain, in September the House Labor-HHS-Education Appropriations Subcommittee advanced a spending bill that included an increase of $10 million for the popular program.[49]

CONGRESSIONAL EXTREME HEAT CAUCUS

U.S. Representatives Greg Stanton (D-AZ) and Mike Lawler (R-NY) launched the bipartisan Congressional Extreme Heat Caucus to advocate for federal resources that aid communities across the country in responding to extreme heat events.[50] The caucus membership includes representatives from Arizona, New York, Colorado, Florida, Nevada, Louisiana, Oregon, and California.[51] The new caucus will coordinate legislative efforts between caucus members to advance common-sense solutions to the challenges presented by deadly temperatures.[52] Extreme heat is the number one weather-related cause of death in the United States, killing more Americans each year than any other weather event.[53] Stanton and fellow caucus member U.S. Representative Dina Titus (D-NV) introduced H.R. 3661, the Extreme Weather and Heat Response Modernization Act, to improve FEMA's ability to address extreme heat and heat-related illnesses and hospitalizations.[54] Another priority of the group is to secure funding from LIHEAP to help with air-conditioning costs.[55]

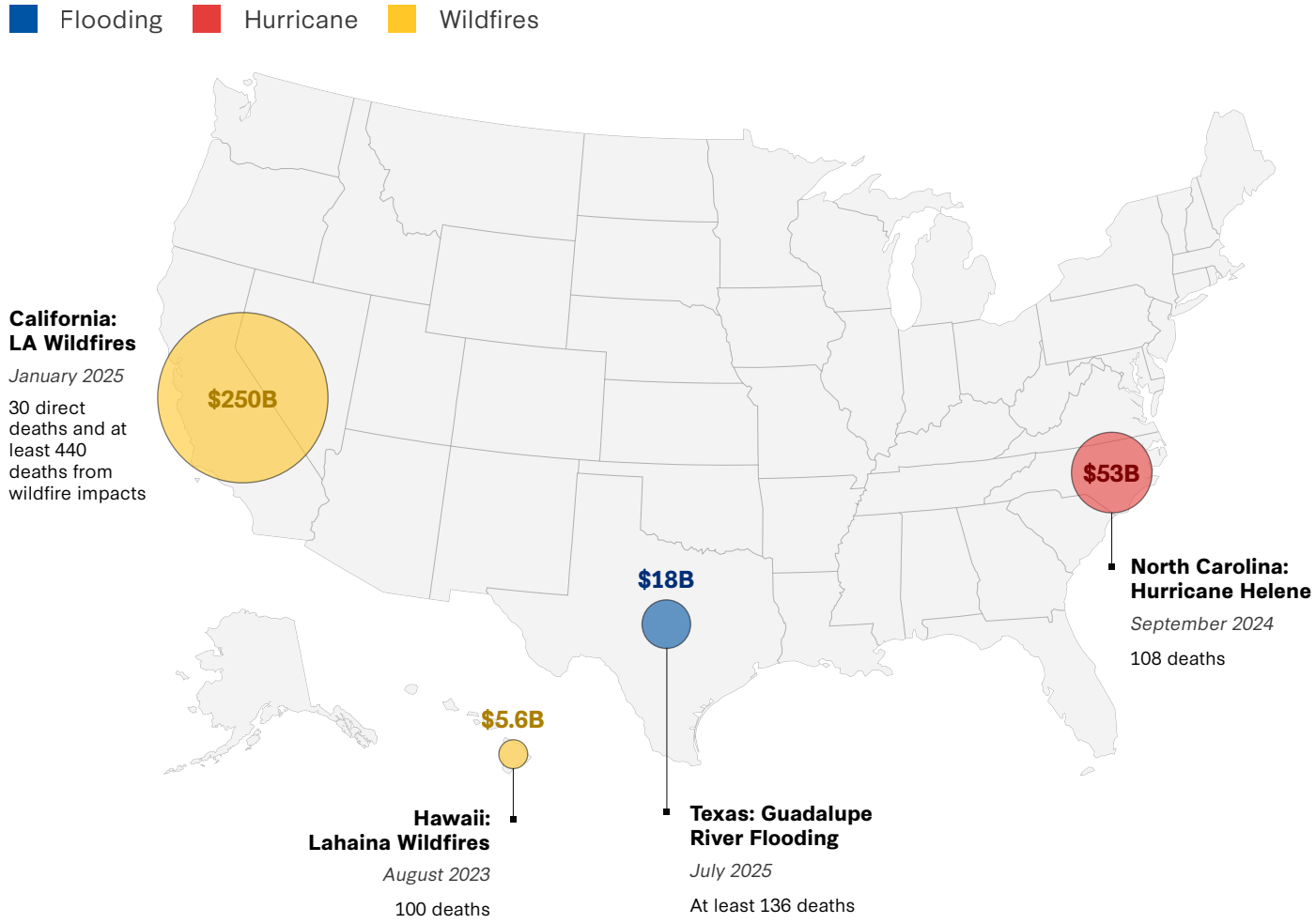
As the examples of Miami-Dade County and Phoenix show, extreme heat mitigation is a cross-sectoral challenge that necessitates coordinated action from government, communities, and stakeholders. However, these efforts often face resistance ranging from "not in my backyard" local hesitation to employers and developers who want to avoid further regulation. Public opinion, however, reflects a different sentiment, with 70 percent of respondents noting that large businesses are doing too little to help reduce the effects of climate change. Similarly, a majority, 60 percent of respondents, also report feeling that state officials are doing too little.

EXTREME HEAT AND HEAT-ASSOCIATED DISASTERS: A DEADLY CONNECTION

While extreme heat is the deadliest weather-related hazard in the United States, communities also face several other weather-related health threats, including floods and intense storms, droughts and water shortages, wildfires, and rising sea levels. Many of these hazards are driven by increasing

temperatures and extreme heat. The last year has seen several major disasters, notably Hurricane Helene in North Carolina; the wildfires in Los Angeles, California; and the Kerr County floods in Texas. And yet, as the United States faces continued severe weather and disaster threats, the future of FEMA remains in question. This is an opportune moment to press for the reform and strengthening of FEMA's mandate, organization, and budgeting to ensure that it develops and exercises response and preparedness plans for extreme heat and related extreme weather. In the first year of the second Trump administration, the president has sought to shrink the agency, and the Government Accountability Office (GAO) has found that the number of active FEMA employees has dropped by about 10 percent (from 25,800 on January 1, 2025 to 23,350 by June 1, 2025), affecting the agency's ability to mobilize funding and resources for states and localities during emergencies and disasters.[56]

Figure 2: Recent Billion-Dollar U.S. Extreme Weather Disasters



Note: Data represented here are estimates of cost and mortality and other sources may vary.

Source: Data compiled from Blue Ridge Public Radio, WBTV, *JAMA*, the *Los Angeles Times*, NOAA, AP News, and the *Houston Chronicle*.[57] Please see endnotes for full citations.

NORTH CAROLINA: HURRICANE HELENE (SEPTEMBER 2024)

Hurricane Helene, the deadliest hurricane to hit the mainland United States since Hurricane Katrina in 2005, devastated communities in western North Carolina, a region not usually victim to the brunt of a hurricane's wrath.[58] The health impacts of the storm far exceeded the historic death toll, and the affected regions faced both immediate and long-term health challenges. Immediate health concerns included complications from injuries, compromised food and water supplies, and limited access to medical supplies and treatments due to road closures and power

outages.[59] These immediate impacts were catastrophic to the region but do not reflect the long-term health impacts. A large-scale evaluation of the long-term effects of hurricanes and cyclones on human mortality found that the effects of these storms will continue to lead to deaths for up to 15 years after the storm, underscoring the need for comprehensive disaster planning that considers both immediate and prolonged health impacts.[60]

CALIFORNIA AND HAWAII: LA AND LAHAINA WILDFIRES (JANUARY 2025 AND AUGUST 2023)

The devastating series of January 2025 wildfires in the Los Angeles area of California led to a reported 30 direct deaths and destroyed more than 50,000 acres of land and 16,000 homes and businesses.[61] However, beyond the 30 direct fatalities, it is estimated that 440 deaths between January 5 and February 1, 2025, could be attributed to the wildfire impacts, including air quality and healthcare delays.[62] Exposure to wildfire smoke is a growing health concern across the United States as the risk and intensity of wildfires increase. The exposure can lead to detrimental health effects for all—especially firefighters and other first responders—but it disproportionately affects those with pre-existing cardiovascular or respiratory conditions and lead to increased risks for cardiovascular and cardiopulmonary emergencies months after the exposures have occurred.[63] Longer-term effects from the fires are still felt among the most affected communities. Two years after the fires in Lahaina, Hawaii, the community continues to face mental health and economic challenges, including limited access to food, housing, schooling, and healthcare: 40 percent of adults lack stable housing, 25 percent are unemployed, more than 70 percent have hypertension, and nearly one-third are facing difficulties accessing healthcare or medications.[64]

TEXAS: GUADALUPE RIVER FLOODING (JULY 2025)

The July 2025 flash flooding of the Guadalupe River, which claimed over 100 lives, including many children, further highlighted the need for increased preparedness for extreme inland storms. Despite the area's reputation as "Flash Flood Alley," local officials rejected proposals to fund an early warning system.[65]

Despite the growing number of Americans who are experiencing extreme weather and heat, and the growing percentage of Americans who attribute the cause a little or a lot to climate change, political affiliation still drives perceptions of extreme weather events themselves, with Republicans less likely to report extreme weather events as linked to climate change than Democrats.[66]

RECOMMENDATIONS

The United States, and indeed the world, has entered a new era of ever-more dangerous extreme heat and heat-based extreme weather. Extreme heat is swiftly becoming an urgent priority in the United States and beyond. The threat posed by extreme heat has become a matter of national security, impacting U.S. military readiness while threatening economic growth and productivity, including U.S. global competitiveness. These forces also threaten the health and well-being of large numbers of Americans; imperil infrastructure for health, housing, and transportation; impose stark economic costs on households and communities; and call into serious question the advisability of investing long-term in the most impacted areas.

Solutions depend above all on leadership. Progress will require sustained political will and financial commitment, informed by much-improved data and a much more coherent understanding of the big picture, including which interventions are most cost effective and how those costs will be covered.

Special care will be needed to navigate political divisions, build broad-based trust and confidence, and forge a foundational bipartisan consensus. It will be important, in the future, that leaders who do step forward and place their reputations on the line succeed in delivering concrete results that meaningfully improve lives. While actors outside of the federal government are called upon now to lead in so many areas, the federal government itself cannot be forgotten or written out of the script. Special action is needed to ensure the federal government fulfills essential functions that others cannot perform.

Any solutions will rest on diverse disciplines and areas of expertise. In addition to public health and the delivery of medical services, expertise will be needed in data systems and analytics, including the application of artificial intelligence to understand and predict trends in extreme heat and evaluate potential interventions to protect health. Other essential expertise to improve health outcomes will comprise weather science; disaster management; economics and other social sciences such

as psychology, sociology, risk communication, structured decisionmaking, and cultural anthropology; environmental health sciences that examine linkages between the health of humans, wildlife, domestic animals, and the environment; engineering; urban planning; and landscape design.

The threat posed by extreme heat has become a matter of national security, impacting U.S. military readiness while threatening economic growth and productivity, including U.S. global competitiveness.

Awareness of innovations and strategies evolving outside of the United States will remain valuable. The tracking and study of heat-related stressors that originate in other countries but directly affect the security of the United States will be essential. Heat-driven refugee migration to U.S. borders is already happening and may increase. Heat-related environmental stressors within the United States are increasingly recognized as having originated outside U.S. borders—for example, wildfire smoke, transoceanic dust clouds carrying pathogens and toxicants, and changing patterns of vector-borne or zoonotic diseases.

The time is now to bring greater coherence and focus to extreme heat and heat-based extreme weather. The CSIS Alliance working group on climate and health recommends three core measures to strengthen the United States' national interest, preparedness, and response, including the protection of the health of the most vulnerable communities, as rising temperatures lead to increased heat waves, along with flooding, wildfires, and dangerous storms. This report is written with select target audiences in mind: Congress, state and local officials, university-based data and weather experts, opinion experts, and the business and foundation sectors. The CSIS Alliance working group calls for three actions:

1. **The launch of a one-year independent high-level bipartisan commission to lay out a long-range, sustainable vision—a plan of action that can begin to be put into force at several levels in early 2027.**
    - The commission should prioritize tracking impacts and defining the key actions that best strengthen preparedness, response, and resilience. It should clarify the breakdown of roles and responsibilities for federal, state, and local actors; universities; the private sector; and civil society organizations.
    - The commission should raise the visibility and understanding of extreme heat and heat-related extreme weather events, affirm the critical importance of these issues, and build trust and confidence around a common set of facts about impacts. It should demonstrate the possibility of building bipartisanship and coalitional approaches.
    - The commission should be led by respected, known bipartisan leaders. It should be populated by state and municipal figures and experts in public health, medical services, data sciences, weather, and other earth system sciences; media and communications; disaster management; urban and rural design; and national security.
    - The commission should include state and regional tours, online listening sessions, and focus groups. It should include an opinion survey partnership with an established survey firm with a proven record of working in politically and geographically diverse communities.
    - While remaining independent, the commission should establish regular outreach and consultation with Congress, federal agencies, the National Governors Association, and the National League of Cities.

2. **The establishment of a data consortium, comprising states, universities, private sector medical providers and other businesses, media, nonprofits, and philanthropies.**
    - The consortium's core mandate should be to upgrade data tracking of the economic, health, infrastructure, and migratory impacts of extreme heat and heat-based extreme weather. A related mandate should be to ensure consistency of data collection across the United States so that data collected in one region are directly comparable to data collected elsewhere.
    - To encourage a long-term stream of funding and support, the consortium will need to rest

on a funding model not overly dependent on federal sources. That will require a dedicated campaign that pulls together contributions from federal, university, philanthropic, and private sector sources.
- Special consideration should be given as to where the consortium should be housed and how diverse data sets (e.g., from education, agriculture, first responders, etc.) should be integrated into the system over time.

3. **Strategic action by Congress to ensure essential federal functions that cannot be fulfilled by other levels of government.**
   - Strengthened FEMA capabilities and authorities could support states and localities in assessing, planning for, and responding to extreme heat events.
   - Sustained support for the National Integrated Heat Health Information System (NIHHIS), a collaboration started by NOAA and the U.S. Centers for Disease Control and Prevention, would help ensure the engagement of a range of federal agencies focused on domestic and international issues.[67]
   - More robust Earth system monitoring and forecasting through interdisciplinary, nonregulatory, nonpartisan science agencies such as the USGS, parts of NOAA and NASA, and USDA, as well as improved weather monitoring and forecasting through NOAA and other expert scientific agencies, would maintain data useful to state and local officials for planning purposes.
   - Sustaining and strengthening programs such as LIHEAP would continue to provide cooling support for the most vulnerable populations.

Each of these proposed actions is a critically important starting point but will require careful additional work to make them operational realities.

Today, the CSIS Alliance working group sees grounds for hope and optimism, amid the urgency to act on extreme heat. There is rising recognition that extreme heat threatens U.S. productivity, economic growth, and global competitiveness. Leaders at state and local levels are demonstrating resolve and ingenuity. The Congressional Extreme Heat Caucus has launched with considerable promise. Americans see and feel the problem. Opinion surveys continue to confirm a rising shared consciousness of the multiple threats posed by extreme heat and heat-based extreme weather. These developments underscore the urgency to better protect the health and economic well-being of all Americans, while building infrastructure across housing, parks, workspaces, transport, and health delivery that is better equipped to meet new threats. The door remains open to reforming and strengthening FEMA, NOAA, and other key federal agencies, while building support programs for the most vulnerable. A long-term integrated vision, one that rests on strong bipartisan leadership and draws upon the expertise and goodwill of many diverse Americans operating in many different sectors, is within reach. ■

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This paper conveys a majority consensus of the signatories, who are participating in their individual capacity, not as representatives of their respective organizations. No expert is expected to endorse every point contained in the paper. In becoming a signatory to the paper, experts affirm their broad agreement with its findings and recommendations. Language included in this report does not imply institutional endorsement by the organizations the experts represent.

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ENDNOTES

1 "How many people are already being killed by climate change?," *The Economist*, October 30, 2025, https://www.economist.com/graphic-detail/2025/10/30/how-many-people-are-already-being-killed-by-climate-change; and Marina Romanello et al., "The 2025 report of the Lancet Countdown on health and climate change," The Lancet (October 2025): https://doi.org/10.1016/S0140-6736(25)01919-1.

2 U.S. Government Accountability Office, "Extreme Heat: Limited FEMA Assistance Highlights Need for Reevaluation of Agency's Role," GAO-25-107474, September 2025, https://www.gao.gov/products/gao-25-107474.

3 Sharon Holland, "Staying Safe When the Heat Is On: Understanding Heat-Related Illnesses," Uniformed Services University News, July 2, 2025, https://news.usuhs.edu/2025/07/staying-safe-when-heat-is-on.html.

4 U.S. Department of Defense, *Report to the Committees on Armed Services of the Senate and the House of Representatives: Heat Illness Report* (Washington, DC: November 2023), https://www.health.mil/Reference-Center/Reports/2023/11/28/Heat-Illness-Report.

5 U.S. Department of Defense, "DoD Releases 2014 Climate Change Adaptation Roadmap," October 13, 2014, https://www.war.gov/News/Releases/Release/Article/605221/dod-releases-2014-climate-change-adaptation-roadmap/; and U.S. Department of Defense, *Department of Defense Climate Adaptation Plan* (Washington, DC: September 1, 2021), https://www.sustainability.gov/pdfs/dod-2021-cap.pdf.

6 U.S. Department of Defense, *Reducing the Effects of Extreme Heat* (Washington, DC: December 2024), https://councilonstrategicrisks.org/wp-content/uploads/2025/01/Department-of-Defense-Heat-Resilience-Plan-signed-15Jan2025.pdf.

7 U.S. Department of the Interior, "Aviation Accident Prevention Bulletin," April 28, 2009, https://www.doi.gov/sites/default/files/migrated/aviation/safety/upload/PB_2009-02.pdf.

8 Jane Lee, Lavanya Marla, and Parth Vaishnav, "The impact of climate change on the recoverability of airline networks," *Transportation Research Part D: Transport and Environment* 95 (June 2021), https://doi.org/10.1016/j.trd.2021.102801.

9 Nambi Ndugga, Alisha Rao, Drishti Pillai, and Samantha Artiga, "Impacts of Federal Actions on Extreme Heat and Health," KFF, July 17, 2025, https://www.kff.org/racial-equity-and-health-policy/impacts-of-federal-actions-on-extreme-heat-and-health/; and "Putting America First in International Environmental Agreements," The White House, January 20, 2025, https://www.whitehouse.gov/presidential-actions/2025/01/putting-america-first-in-international-environmental-agreements/.

10 The White House, "Putting America First in International Environmental Agreements," Presidential Actions, January 20, 2025, https://www.whitehouse.gov/presidential-actions/2025/01/putting-america-first-in-international-environmental-agreements/.

11 A March 2025 Gallup poll showed that 37 percent of Americans have personally been affected by an extreme weather event in the past two years, an increase from 33 percent from 2022 to 2023, with an even sharper increase in western states—up to 43 percent from 30 percent. Lydia Saad, "Record-High 48% Call Global Warming a Serious Threat," Gallup, April 16, 2025, https://news.gallup.com/poll/659387/record-high-call-global-warming-serious-threat.aspx; and Alec Tyson and Brian Kennedy, "Americans' Views on How to Address the Impacts of Extreme Weather," Pew Research Center, May 29, 2025, https://www.pewresearch.org/science/2025/05/29/americans-views-on-how-to-address-the-impacts-of-extreme-weather/.

12 "Overall, 74% of Americans say they've experienced at least one of five forms of extreme weather [floods/storms, long periods of unusually hot weather, droughts/ water shortages, major wildfires, rising sea levels, and rising sea levels that erode beaches/shorelines] in the past 12 months. Among those reporting any of these experiences, the majority view climate change as a contributor to the extreme weather. Among the roughly half of Americans who say they have experienced long periods of unusually hot weather in the last year, 91% say climate change contributed either a lot (64%) or a little (27%) to this." Alec Tyson and Brian Kennedy, "Americans' Views on How to Address the Impacts of Extreme Weather," Pew Research Center, May 29, 2025, https://www.pewresearch.org/science/2025/05/29/americans-views-on-how-to-address-the-impacts-of-extreme-weather/.

13 John Muyskens, Andrew Ba Tran, Anna Phillips, Simon Ducroquet, and Naema Ahmed, "More Dangerous Heat Waves Are on the Way: See the Impact by ZIP Code," *Washington Post*, August 15, 2022, https://www.washingtonpost.com/climate-environment/interactive/2022/extreme-heat-risk-map-us/.

14 "Extreme Heat," Environmental Protection Agency, https://www.epa.gov/climatechange-science/extreme-heat.

15 "Climate Change Indicators: Heat Waves," Environmental Protection Agency, https://www.epa.gov/climate-indicators/climate-change-indicators-heat-waves#ref4.

16 Kathy Baughman McLeod, "Heat Is Killing Us—and the Economy, Too," Atlantic Council, September 7, 2021, https://www.atlanticcouncil.org/content-series/the-big-story/heat-is-killing-us-and-the-economy-too/.

17 Atlantic Council, *Extreme Heat: The Economic and Social Consequences for the United States* (Washington, DC: Atlantic Council, 2021), https://www.atlanticcouncil.org/wp-content/uploads/2021/08/Extreme-Heat-Report-2021.pdf.

18 C. G. Jones-Ngo et al., "Joint Effects of Wildfire Smoke and Extreme Heat on Hospitalizations in California, 2011-2020," *GeoHealth* 9, no. 6 (June 2025), https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2024GH001237.

19 Morgan E. Gorris, Kathleen K. Treseder, Charles S. Zender, and James T. Randerson, "Expansion of Coccidioidomycosis Endemic Regions in the United States in Response to Climate Change," *GeoHealth* 3, no. 10 (August 2019), https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2019GH000209; and Morgan E. Gorris, James E. Neumann, Patrick L. Kinney, Megan Sheahan, and Mar-

cus Sarofim, "Economic Valuation of Coccidioidomycosis (Valley Fever) Projections in the United States in Response to Climate Change, *Weather, Climate, and Society* 13, no. 1 (December 2020): 107–123, https://journals.ametsoc.org/view/journals/wcas/13/1/wcas-d-20-0036.1.xml.

20 Kristie L. Ebi et al., "Hot Weather and Heat Extremes: Health Risks," *The Lancet* 398, no. 10301 (August 2021): 698–708, https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01208-3/fulltext.

21 Maggie Astor, "Homeless and Burning in America's Hottest City," *New York Times*, August 13, 2025, https://www.nytimes.com/2025/08/13/well/homeless-heat-phoenix.html.

22 Nambi Ndugga, Aubrey Winger, Drishti Pillai, Matthew Rae, and Samantha Artiga, "Disparities in Access to Air Conditioning and Implications for Heat-Related Health Risks," KFF, August 16, 2024, https://www.kff.org/racial-equity-and-health-policy/disparities-in-access-to-air-conditioning-and-implications-for-heat-related-health-risks/.

23 "Extreme Weather," CISA, https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/extreme-weather.

24 Seulkee Heo, Hayon Michelle Choi, Jesse D. Berman, and Michelle L. Bell, "Temperature, Violent Crime, Climate Change, and Vulnerability Factors in 44 United States Cities," *Environment International* 195 (January 2025), https://www.sciencedirect.com/science/article/pii/S016041202400833X.

25 Tim Mucci, "The Future of AI: Trends Shaping the Next 10 Years," IBM Think, October 11, 2024, https://www.ibm.com/think/insights/artificial-intelligence-future.

26 Ibid.

27 FT reporters, "Inside the relentless race for AI capacity," *Financial Times*, July 31, 2025, https://ig.ft.com/ai-data-centres/.

28 Ibid.

29 Sara Schonhardt, "Heat Waves Endanger Data Centers That Power AI," *Scientific American*, July 10, 2025, https://www.scientificamerican.com/article/extreme-heat-endangers-ai-data-centers/.

30 Jack Healy, "No large city grew faster than Phoenix," *New York Times*, August 12, 2021, https://www.nytimes.com/2021/08/12/us/phoenix-census-fastest-growing-city.html; and Felicity Barringer, "Thirsty for power and water, AI-crunching data centers sprout across the West," *& the West*, April 8, 2025, https://andthewest.stanford.edu/2025/thirsty-for-power-and-water-ai-crunching-data-centers-sprout-across-the-west/.

31 Jamie Forbes, "The 10 Hottest Cities in the U.S.," Redfin, May 27, 2025, https://www.redfin.com/blog/hottest-cities-in-the-us/.

32 Ndugga et al., "Impacts of Federal Actions on Extreme Heat and Health."

33 Climate Resilience Center, "Chief Heat Officers," One Billion Resilient, https://onebillionresilient.org/project/chief-heat-officers/.

34 See U.S. Climate Resilience Toolkit, "Case Study: Developing Outreach for Heat Resilience in North Carolina's Sandhills Region," North Carolina DHHS - Climate and Health Program, 2024, https://toolkit.climate.gov/case-study/developing-outreach-heat-resilience-north-carolina%E2%80%99s-sandhills-region; Minnesota Department of Health, Minnesota Climate & Health Program, "Minnesota Extreme Heat Toolkit," 2025, https://www.health.state.mn.us/communities/environment/climate/docs/mnextremeheattoolkit.pdf; and "Addressing Extreme Heat in Boston: Engaging the Business Community in Heat Resilience Solutions," May 2023, https://www.abettercity.org/docs-new/extreme%20heat%20primer%2051123.pdf.

35 Forbes, "The 10 Hottest Cities in the U.S."

36 Nina Lakhani, "Phoenix Heat Team: The Hottest City in the U.S.," *The Guardian*, August 2, 2022, https://www.theguardian.com/us-news/2022/aug/02/phoenix-heat-team-hottest-city-us.

37 "Meet the Heat Response Team," City of Phoenix, https://www.phoenix.gov/administration/departments/heat/meet-heat-response.html.

38 Katherine Davis-Young, "Heat-Related Deaths Decreased in Maricopa County During the Hottest Year on Phoenix's Record," KJZZ, March 10, 2025, https://www.kjzz.org/kjzz-news/2025-03-10/heat-related-deaths-decreased-in-maricopa-county-during-the-hottest-year-on-phoenixs-record.

39 Ibid.

40 Ibid; and "2024 Heat-Related Deaths Report," Maricopa County, Department of Public Health, May 2025, https://www.maricopa.gov/ArchiveCenter/ViewFile/Item/5934; and "2025 Heat Response Plan," City of Phoenix, https://www.phoenix.gov/content/dam/phoenix/heatsite/documents/FINAL%20-%202025%20HEAT%20RESPONSE%20PLAN.pdf.

41 Davis-Young, "Heat-Related Deaths."

42 "Extreme Heat Action Plan," Miami-Dade County, https://www.miamidade.gov/global/economy/environment/extreme-heat-action-plan.page.

43 "Chief Heat Officer," Miami-Dade County, https://www.miamidade.gov/global/economy/environment/chief-heat-officer.page.

44 "Press Release: Mayor Daniella Levine Cava Appoints Loren Parra as Chief Resilience Officer," Miami-Dade County, February 20, 2025, https://www.miamidade.gov/global/release.page?Mduid_release=rel1740089704544 88.

45 "2025 Heat Season Summary," Miami-Dade County, https://www.miamidade.gov/environment/library/heat/2025-heat-season-summary.pdf.

46 Ibid.

47 Alex Harris, "On sweltering Miami summer days, it can be hotter inside homes an out, study finds," *Miami Herald*, March 21, 2025, https://www.miamiherald.com/news/local/environment/climate-change/article302503419.html.

48 J.J. McCorvey, "Entire staff responsible for utility assistance included in HHS cuts, sources say," NBC News, April 1, 2025, https://www.nbcnews.com/business/business-news/trump-admin-fires-staff-liheap-agency-utilities-assistance-program-rcna199177.

49 Andres Picon, "Spending Bills Highlight Republican Energy Rifts,"

E&E News, September 5, 2025, https://www.eenews.net/articles/spending-bills-highlight-republican-energy-rifts/.

50 "ICYMI: As Temps in Phoenix Climb, Stanton Launches Bipartisan Extreme Heat Caucus," Stanton.house.gov, June 2, 2025, https://stanton.house.gov/2025/6/icymi-as-temps-in-phoenix-climb-stanton-launches-bipartisan-extreme-heat-caucus-introduces-legislation-improving-federal-emergency-response-to-heat.

51 Katherine Davis-Young, "Stanton Creates New Congressional Caucus to Focus on Extreme Heat," *KJZZ*, June 3, 2025, https://www.kjzz.org/politics/2025-06-03/stanton-creates-new-congressional-caucus-to-focus-on-extreme-heat.

52 "Stanton Launches Bipartisan Extreme Heat Caucus," Stanton.house.gov.

53 Ariel Wittenberg, "Lawmakers Form Heat Caucus: 'We've Had Too Many Deaths,'" *E&E News*, May 27, 2025, https://www.eenews.net/articles/lawmakers-form-heat-caucus-weve-had-too-many-deaths/.

54 "H.R. 3661—Extreme Weather and Heat Response Modernization Act," Congress.gov, 119th Congress (2025-2026), https://www.congress.gov/bill/119th-congress/house-bill/3661.

55 Ariel Wittenberg, "Lawmakers Form First Extreme Heat Caucus, Citing 'Deadly Risk,'" *Scientific American*, May 30, 2025, https://www.scientificamerican.com/article/lawmakers-form-first-extreme-heat-caucus-citing-deadly-risk/.

56 Lisa Friedman, "Watchdog Warns Trump's Cuts at FEMA Pose a 'Major Challenge'," *New York Times*, September 3, 2025, https://www.nytimes.com/2025/09/03/climate/fema-cuts-government-accountability-office.html.

57 Lilly Knoepp, "NC list of Helene casualties updated to include trucker and missing man from Tennessee," Blue Ridge Public Radio, July 9, 2025, https://www.bpr.org/bpr-news/2025-07-09/nc-list-of-helene-casualties-updated-to-include-trucker-and-missing-man-from-tennessee; Luke Tucker, "Helene death toll climbs to 108 in North Carolina after truck driver's death attributed to storm," WBTV, June 27, 2025, https://www.wbtv.com/2025/06/27/truck-drivers-death-western-north-carolina-attributed-helene/; Eugenio Paglino, Rafeya V. Raquib, Andrew C. Stokes, "Excess Deaths Attributable to the Los Angeles Wildfires From January 5 to February 1, 2025," *JAMA* 334, no. 11 (September 2025): 1018-1019, doi:10.1001/jama.2025.10556; Andrea Chang, Roger Vincert, Marisa Gerber, "Behind the staggering economic toll of the L.A. wildfires," *Los Angeles Times*, February 12, 2025, https://www.latimes.com/business/story/2025-02-12/la-wildfires-economic-impact-insurance-construction-real-estate-rebuild-los-angeles; Adam B. Smith, "2023: A historic year of U.S. billion-dollar weather and climate disasters," NOAA Climate.gov, January 8, 2024, https://www.climate.gov/news-features/blogs/beyond-data/2023-historic-year-us-billion-dollar-weather-and-climate-disasters; Nadia Lathan, "Texas lawmakers scrutinize state's response to catastrophic floods," AP News, July 23, 2025, https://apnews.com/article/texas-legislature-floods-kerr-county-d3443a4d70b-28328540105069147c4ca; and Roberto Villalpando, "AccuWeather says economic cost of Texas Hill Country flooding is at least $18 billion," *Houston Chronicle*, July 8, 2025, https://www.houstonchronicle.com/news/houston-weather/article/texas-hill-country-flood-accuweather-damage-cost-20760613.php.

58 Bruce Schreiner, "Death Toll from Hurricane Helene Rises to 227 as Grim Task of Recovering Bodies Continues," AP News, October 5, 2024, https://www.apnews.com/article/hurricane-helene-death-toll-asheville-north-carolina-34d1226bb31f79d-fb2ff6827e40587fc.

59 Melody Schreiber, "Helene-ravaged areas will feel health effects for years: 'It's unprecedented'," *The Guardian*, October 6, 2024, https://www.theguardian.com/us-news/2024/oct/06/helene-damaged-infrastructure-health-effects.

60 Rachel Young and Solomon Hsiang, "Mortality Caused by Tropical Cyclones in the United States," *Nature* 635 (November 2024): 121-128, https://doi.org/10.1038/s41586-024-07945-5.

61 Jillian McKoy, "Death Count for 2025 LA County Wildfires Likely Hundreds Higher than Official Records Show," Boston University School of Public Health, August 7, 2025, https://www.bu.edu/sph/news/articles/2025/death-count-for-2025-la-county-wildfires-likely-hundreds-higher-than-official-records-show/.

62 Eugenio Paglino et al., "Excess Deaths Attributable to the Los Angeles Wildfires From January 5 to February 1, 2025," JAMA 334, no. 11 (2025): 1018-1019, https://doi.org/10.1001/jama.2025.10556.

63 Alejandra Borunda, "Monstrous Wildfires Blanket Southern California with Smoky Air Quality," AP News, January 8, 2025, https://www.npr.org/2025/01/08/nx-s1-5252485/la-fire-air-quality.

64 Nina Lakhani, "Mental health and poverty remain a struggle for Maui wildfire survivors, new study says," *The Guardian*, June 18, 2025, https://www.theguardian.com/us-news/2025/jun/18/maui-wildfires-mental-health.

65 David Wallace-Wells, "We Can Adapt and Prepare for Floods. But Will We?," *New York Times*, July 9, 2025, https://www.nytimes.com/2025/07/09/opinion/texas-floods-adaptation.html.

66 Alec Tyson and Brian Kennedy, "Americans' Views on How to Address the Impacts of Extreme Weather," Pew Research Center, May 29, 2025, https://www.pewresearch.org/science/2025/05/29/americans-views-on-how-to-address-the-impacts-of-extreme-weather/.

67 "About NIHHIS," heat.gov, https://heat.gov/about-nihhis/.