PROTECTING THE HEALTH OF AMERICANS IN THE FACE OF EXTREME WEATHER

A Roadmap for Coordinated Action

Supported by

statnetwork

The Rockefeller Foundation

rwjf robert wood johnson foundation

School of Public Health
BROWN UNIVERSITY

TABLE OF CONTENTS

1 INTRODUCTION

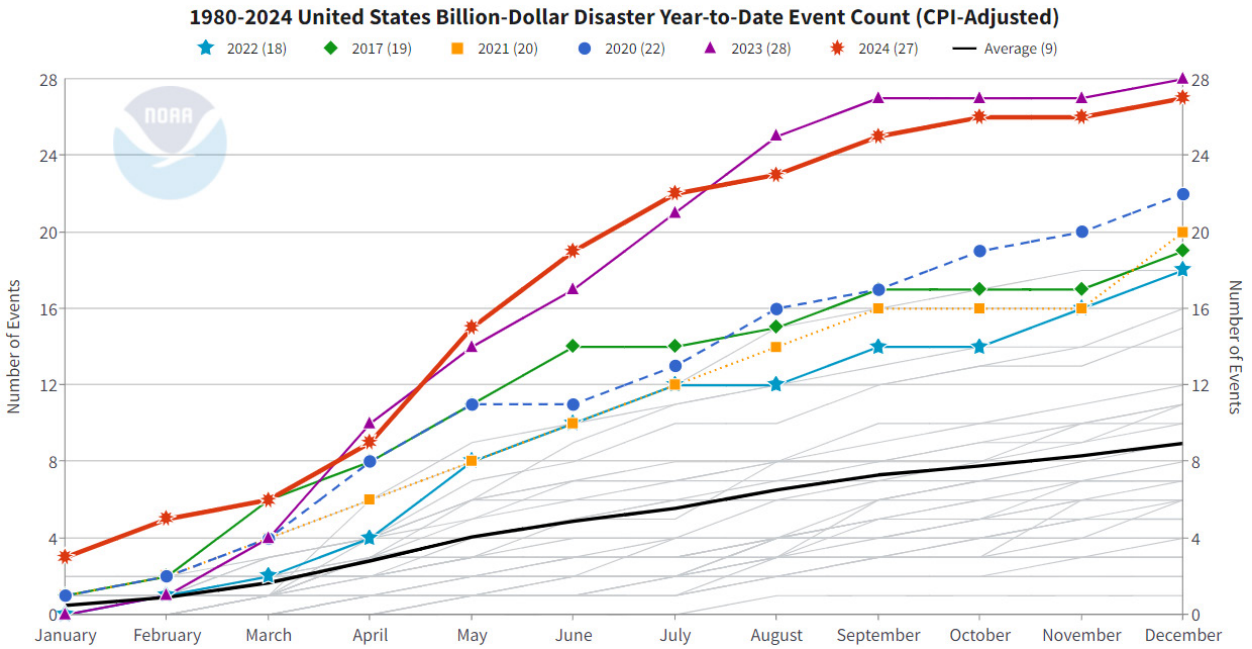
Welcome to the STAT Network Report about how state public health departments and their partners are responding to increasing threats from extreme weather events such as storms, air pollution, and heatwaves. This chapter features a brief introduction of Network's Extreme Weather and Heath work supporting 45 U.S. states in protecting the health of American communities and infrastructure, and how and why we co-created this report.

Across the U.S. extreme weather events, such as hurricanes, wildfires and heatwaves, are becoming more frequent, longer-lasting, and more severe—jeopardizing the health, safety and economic prospects of Americans.

They also compound health disparities and strain public health systems. While awareness of the health impact of extreme weather is growing, rapid federal disinvestment in 2025 has increased state-level responsibility, creating a dynamic environment in which states are rewriting playbooks in real time to protect American health, safety and economic vitality.

Since August 2024, the STAT Network has supported state public health officials and their partners in this work. While individual states have unique cultures, opportunities and vulnerabilities, they face the same broad challenges and threats. When shared, innovation in one state can inspire action in another.

This report was created to support state and local officials in health, emergency preparedness and related agencies at this moment of evolving challenges, needs and opportunities. It covers the intersection of health and natural disasters, such as wildfires and hurricanes; weather extremes, such as extreme temperatures, air quality and flooding; and weather-related harms, such as vector-borne and fungal diseases that are impacted by weather conditions. It provides framing and specific details on how states are pivoting their preparedness playbooks, showcases replicable new models, and identifies pressing gaps that funders, policymakers and thought leaders must still fill.



About the data and narratives you will find in this report

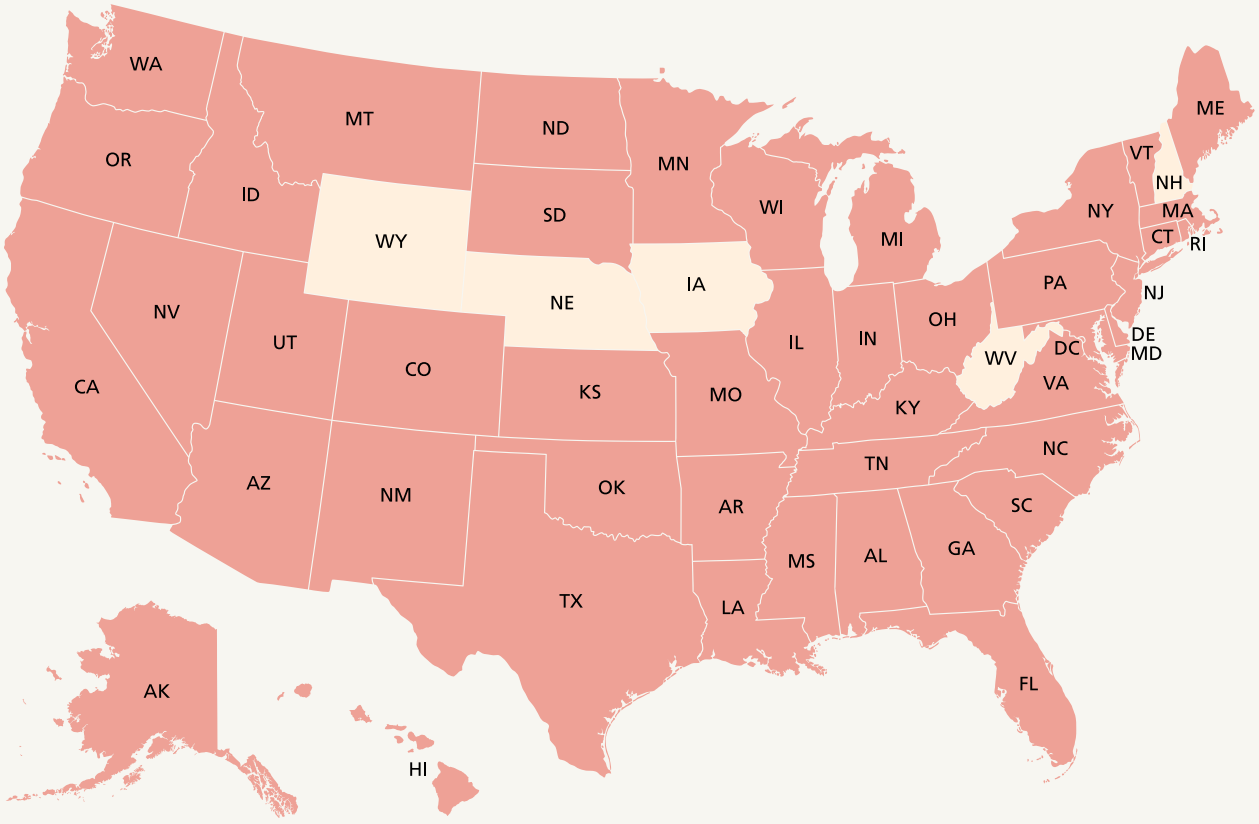
This report summarizes findings from three forms of engagement with state health officials and their partners:

1. Presentations and discussions at monthly convenings of the STAT Extreme Weather and Health Network. Over 480 state officials from public health, preparedness and related departments in 45 states as well as some counties have attended these sessions since August 2024 (average session participation: 93).

2. The STAT Extreme Weather & Health Network Survey, an online, anonymous, voluntary survey delivered between May and July 2025 to STAT Network members. Of 136 responses, 78% came from state officials, 10% from local health officials, and 12% from federal, academic and other partners to state teams. Responses came from 34 states, with near equal participation across the political spectrum.

3. Key informant interviews: 44 interviews with teams in 26 states and the District of Columbia, as well as 4 interviews with some of their partners, conducted between December 2024 and September 2025.

The STAT Network team also conducted a comprehensive peer and gray literature ans state public health website review to inform the work. Specific information about the methodology and sources are detailed in the About section at the end of this report.



2 STATE OF PLAY: A CHANGED LANDSCAPE

Across the country, extreme weather is rewriting the rules: In this chapter, we summarize key findings from a year of work supporting state officials responding to extreme weather and health threats.

Extreme weather is happening more often. The events themselves are more extreme. States and regions are facing new or rare extreme weather threats.

Across the nation, the patterns of what's considered normal are shifting, for both states that have been on the front lines of extreme weather for a long time and states that are just beginning to experience extreme weather.

Prolonged heatwaves, unprecedented floods, unseasonable hurricanes, and other extreme weather events once considered uncommon, are becoming increasingly routine. For example, officials in **Florida** are well-prepared to manage and respond to hurricanes, but may be thrown off by rare snowfall events, which can shut down roads and services. **Hawaii**, historically unaccustomed to wildfires, experienced a devastating wildfire in 2023 in Maui that killed over 100 people and destroyed the town of Lahaina. In **North Carolina**, Hurricane Helene highlighted hurricanes are not limited to coastal and eastern regions, but can impact all areas of the state, including the mountainous region in the western part of the state. This highlights the need for statewide hazard preparedness plans that account for regional differences in geography/topography, existing social vulnerabilities, and potential for exposures that may increase the risk of negative health outcomes.

> "Similar to Covid, you couldn't take vacation or have time off because you were responding to disasters so frequently."
>
> **Michael McNulty**, *Director, Bureau for Agency Preparedness,* **Kansas** *Department of Health and Environment*

The time between extreme weather events is disappearing. Extreme weather events are happening in rapid succession, overlapping or even occurring at the same time.

While the specific climate threats within U.S. regions vary, states are increasingly managing multiple hazards at the same time — fighting a wildfire in one part of the state while a tornado forms in another; navigating a heat wave on the heels of severe flooding.

The domino effect of overlapping crises strains fragile public health preparedness and recovery efforts, and is directly correlated with greater infrastructure damage, deeper socioeconomic disruption and disproportionate harm to vulnerable populations. For example, a record heat dome in the Pacific Northwest in June 2021 pushed hospitals in **Washington State**, already strained by COVID-19, to capacity. Combined with equipment failures, power outages, and a surge in heat-related emergency visits, it became the state's largest disaster since records began in Western populations. In 2024-2025 **New Mexico** faced a series of compounding disasters beginning with the devastating South Fork wildfire. Heavy rains followed that triggered severe flash flooding in wildfire-damaged areas, resulting in multiple deaths and trapping residents.

In the face of new threats, the existing playbooks no longer work.

Facing less predictable threats, traditional emergency response staffing protocols, policies, guidance and hazard-specific response plans are pushed to their limits. The growing complexity places immense strain on public health systems and critical infrastructure. For example, when back to back disaster events occur, states can find themselves following guidelines that are no longer fit for purpose. In **Vermont**, severe flooding overlapped with wildfire smoke and extreme heat, creating major logistical and staffing challenges. For example, officials were concerned that the emergency shelters for people impacted by floods may not have air conditioning or be equipped to keep indoor air clean from wildfire smoke.

5%
of respondents reported that their department was 'very prepared' to manage the health impacts of extreme weather events;

55%
said that their state leadership is either moderately or extremely concerned about the impacts of extreme weather.

Adapting Staffing Protocols and Organizational Structure to Meet Today's Needs

As extreme weather events stress the public health system, states on the frontlines are exploring new ways to ensure staff coverage for emergency responses.

After **Kansas** experienced four presidentially declared disaster events in 2007-2008, staff burnout was immensely high. To leverage the breadth of expertise across agencies, officials dedicated 5% of all staff job descriptions to disaster response. Similarly, **Florida**, another disaster prone state, uses an emergency duty policy that requires staff to be actively engaged during crises.

After witnessing the severe impact of Harvey across a large geographic swath of the region amid the COVID-19 pandemic, **Harris County, Texas**, developed a disaster response structure specifically designed to address compounding threats. The public health department focused on developing a deep bench of staff members trained on public health emergency responses and in the Incident Command System (ICS). To ensure enough staff are trained and prepared to take on leadership roles in ICS, the agency trains a cohort of 20-25 supervisors and managers each year and requires participation in an annual exercise. In the event of multiple, overlapping events, the public health department now is able to activate concurrent trained teams for each event - and will allow staff and leaders to rotate assignments to prevent burnout.

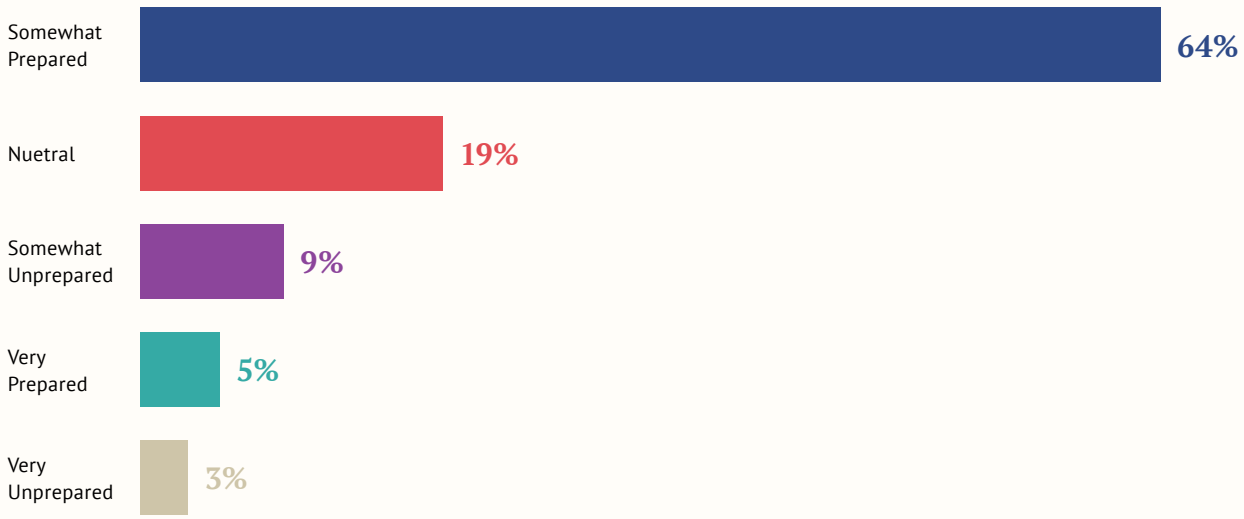
Facing repeated and frequent extreme heat threats, **Arizona** created the nation's first State Chief Heat Officer in 2024 in addition to long-standing local actions. The position has redefined how Arizona coordinates, communicates and responds to extreme heat through establishing a centralized point of leadership. In the same year, Arizona reported the first year-over-year decline in state-associated health deaths since 2018.

With significant cuts to the federal government in 2025, a key backbone of funding, planning and response has largely been lost.

A key function of the federal government over the past two decades has been to build state capacity to respond to extreme weather events and the related health impacts, providing funding, data and tools, and expertise. States now find themselves on the frontlines of extreme weather preparation and response without the resources their response

PREPAREDNESS TO MANAGE HEALTH IMPACTS OF EXTREME WEATHER

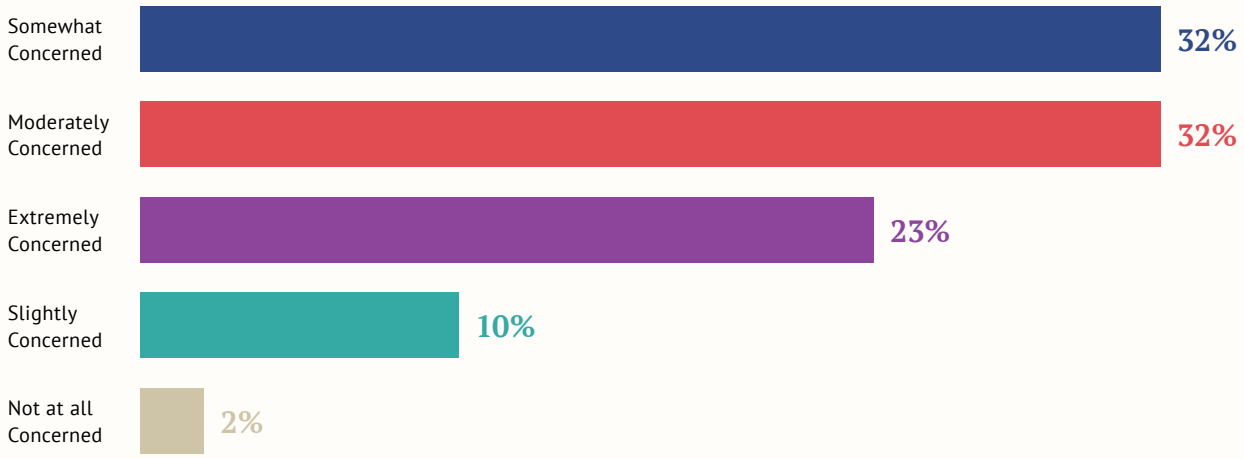
How would you rate your department's current capacity to respond to the health impacts of extreme weather events?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

LEVEL OF CONCERN AMONG STATE LEADERSHIP ABOUT FUTURE HEALTH IMPACTS OF EXTREME WEATHER

How concerned is your state's leadership about the future impact of extreme weather on health?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

structures were built around. In this new reality, no state can or should tackle these challenges alone.

For example, states are adapting to major cuts and changes in federal extreme weather and health initiatives. Data-tracking tools at the Centers for Disease Control and Prevention (CDC) have been taken offline, reinstated or eliminated all together. The current administration's Fiscal Year 26 budget proposal includes a request for substantial reductions to CDC programming on public health preparedness and response and a 55% cut to the Environmental Protection Agency, which plays a critical role in monitoring extreme weather and providing public health guidance. Nearly half of National Weather Service offices are critically understaffed, threatening timely visibility into dangerous weather events.

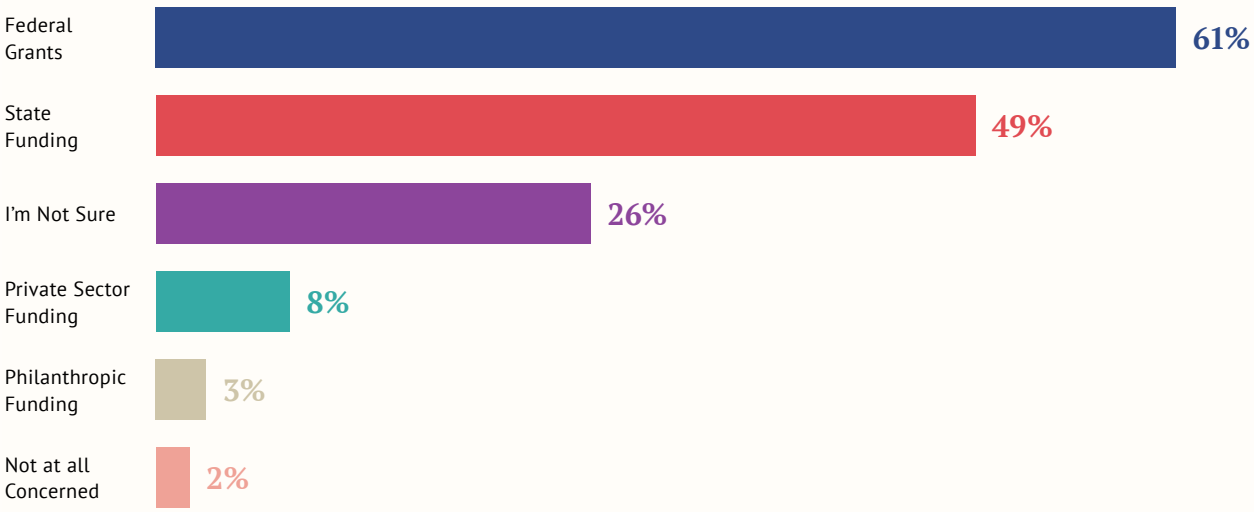
61%
of respondents reported relying on federal funds to support their extreme weather and health efforts, and

49%
reported also having some state funding for this work.

For many states, federal grants are the main source of funding for programs that address the health impacts of extreme weather, especially states that do not have dedicated state-funded programs. Few states remain untouched as these changes undermine states' ability to prepare for and respond to extreme weather by reducing access to real-time data and timely health insights, while compromising federal-state coordination during emergencies.

FUNDING SOURCES FOR EXTREME WEATHER AND HEALTH WORK

What funding sources does your state currently utilize to address extreme weather and health issues?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

The swift and unexpected funding cuts and uncertainties left many states scrambling to stabilize budgets and minimize impact. Many states are working to fill gaps internally. Where there isn't a back-up plan, some positions are left vacant. Others struggle to maintain equipment and services.

Looking more closely at the effects in a few states:

In **North Carolina**, the state Department of Health and Human Services' Climate and Health Program is currently supported in its entirety by the CDC's Building Resilience Against Climate Effects (BRACE) award. **Alaska** also depends heavily on federal funding for its work at the intersection of extreme weather and health. It is unclear how these programs will be sustained if federal support declines.

In **Michigan**, the extreme weather and health initiative was originally launched through the CDC's Climate-Ready States and Cities Initiative (CSCRI). In the most recent round of CRSCI funding, the program's proposal was "approved but unfunded", like several other previously funded states. Subsequently, the program has restructured to better leverage other funding sources including the CDC Public Health Infrastructure Grant and State dollars. This has allowed the program to build around expertise across the Michigan Department of Health and Human Services Environmental Health Bureau for functions such as epidemiology and surveillance, health education and community engagement, and emergency preparedness and response planning.

> **39%**
> **of respondents** said federal partnerships have historically been one of the most effective ways to address the public health impacts of extreme weather.

In 2025, the federal administration removed thousands of government webpages and data, including significant environmental and health resources. Some datasets and webpages, like the CDC Social Vulnerability Index, were temporarily removed and replaced with modifications. Others, like EJ Screen, an environmental justice tool, were removed entirely. The loss of federal environmental and health data from agencies like the National Oceanic and Atmospheric Administration, National Weather Service, Federal Emergency Management Agency and the CDC has disrupted states ability to monitor and respond to the health impacts of extreme weather. For example, the **Arizona** Department of Health Services (ADHS) collaborated with federal partners to analyze the heat season closely and understand the impact of mitigation efforts beyond fatalities. However, this effort was paused in 2025 due to unforeseen federal funding and staffing challenges affecting partner federal agencies.

Federal staff are experts in their fields and have insight into work happening across the country. They have typically been a reliable source of technical assistance and institutional knowledge for states, offering advice and guidance on technical problems to reviewing materials and documents. The scale and speed of Reductions in Force (RIF) and resignations among federal agencies means providing this assistance is no longer possible in many cases. In **Hawai'i**, teams had been working with the CDC's Climate and Health Program to incorporate advanced modeling into its heat mapping efforts. Although not a formal grantee, the state relied heavily on CDC's technical assistance and data, and plans for this collaborative effort are now in limbo.

3 THE NEW PLAYBOOKS: HOW STATES ARE ADAPTING TO PROTECT THE HEALTH OF AMERICANS

In this chapter, we outline how states are adapting, responding and innovating in real time. Collaboration, data and communication emerge as both key challenges and key opportunities for improved responses.

State public health departments are emerging as strategists and orchestrators of collaborations to address extreme weather and health.

> **Key Challenge:** Increased threats, loss of resources and support.
>
> **Key Recommendation:** Collaborate - within states, between states and across communities.

With sweeping impacts across physical infrastructure and human health, extreme weather preparedness and response efforts are complex, involving many different government agencies. In **Arizona**, for example, 15 state agencies are collaborating on heat work alone, meeting monthly to coordinate efforts. As federal leadership wanes, collaboration across government agencies and community partners is becoming a key way of resetting priorities, aligning resources, and generating momentum. As federal leadership wanes, collaboration across government agencies and community partners is becoming a key way of resetting priorities, aligning resources and generating momentum.

> "Before, public health was just kind of going along on its own, doing all the work it was doing. But this actually brings us into the fold, allows the different types of responders to understand the important work we're doing and how it coincides and coordinates with theirs."
>
> **Alison Hare**, *Director, Public Health Preparedness & Response Division, Harris County Public Health, speaking on utilizing the FEMA Community Lifelines Toolkit during Hurricane Beryl.*

Public health teams can foster and drive interagency collaboration, which is long overdue.

Extreme weather is still often first thought of as an emergency response or environmental agency function. Because earlier work at the intersection on the environment and health focused on air quality and toxic chemical releases, public health teams can now play a key role in communicating across responding agencies about the immediate and long-term health impacts of extreme weather.

Public health agencies are increasingly demonstrating the connections between health and the environment, showcasing their capacity in this space and building relationships. Evolving the extreme weather response system to adequately respond to today's hazards requires strategic change through collaboration.

In **Harris County**, **Texas**, an unexpected derecho followed by a Hurricane Beryl marked a turning point in how public health is integrated into emergency operations. By using one of FEMA's frameworks, public health was formally recognized as a critical function within both response and recovery alongside core sectors like energy, transportation and communications. During the dual disaster response, local officials used FEMA's Community Lifelines framework, a federally recognized system that outlines the essential functions needed to stabilize a community after a crisis. Before, public health's role was not clearly understood among emergency response teams. FEMA's tool brought visibility into the unique value added by public health and how it coincides and coordinates with broader emergency operation efforts. The result has been more coordinated, inclusive and comprehensive emergency responses. The transformed relationships and recognition during the storms have strengthened public health operation roles in Harris County, setting a precedent for future disaster and response efforts.

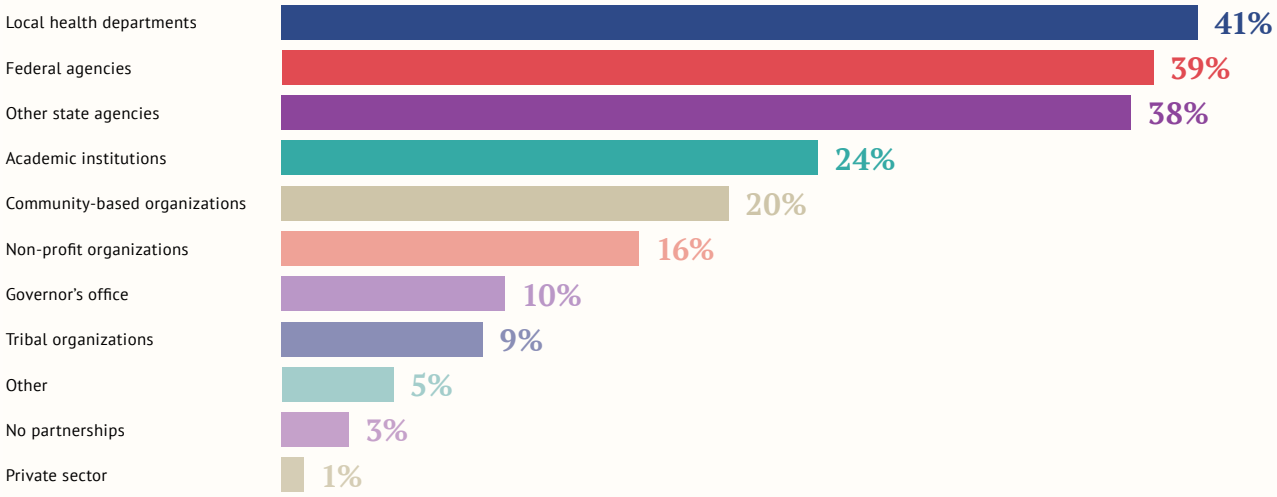
> "Taking action at any level helps people move from paralysis to purpose… When things feel too heavy, they can shut us down. But telling people, "Here's how to get trained, get your vest, and join us on the front lines," is powerful. It replaces helplessness with hope."
>
> **Steve Crimando**, *Director of Training, Disaster & Terrorism Branch, Division of Mental Health & Addiction Services, New Jersey Department of Human Services*

In **California**, a major focus area is on statewide cross-sector climate change policy, planning and programs. The California Department of Public Health (CDPH) provides a "climate, health and equity in all policies" lens to the work. CDPH's Climate Change and Health Equity (CCHE) Branch works with local, state and national partners to assure that climate change mitigation and adaptation activities have beneficial effects on health while not worsening existing inequities. CCHE implements California's climate change laws and executive orders, contributing health equity considerations and working externally with other agencies leading statewide climate and health initiatives.

Since 2015 the CCHE Branch has collaborated to integrate health equity objectives, tools, metrics and considerations into more than $9 billion of other State agencies' climate-related funds that have flowed to California communities. For example, CDPH worked extensively with the California Air Resources Board on the health analysis content for the State's Climate Change Scoping Plan (California's plan for achieving carbon neutrality); and provided health equity input and resilience metrics for the State Adaptation Strategy, led by the California Natural Resources Agency and the Governor's Office of Land Use and Climate Innovation. CDPH also contributes to interagency efforts on extreme heat in particular, for example by participating in the process to update the Statewide Extreme Heat Action Plan, working with the Department of

MOST EFFECTIVE PARTNERSHIPS FOR ADDRESSING IMPACT OF EXTREME WEATHER ON PUBLIC HEALTH

Which specific partnerships have been most effective in addressing the impact of extreme weather events on public health outcomes?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

Housing and Community Development to develop policy recommendations for ensuring homes do not overheat, and being a key partner in working with the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment in rolling out the new statewide heat warning system, CalHeatScore.

In **New Jersey**, interagency collaboration in a climate council focused on flooding laid the foundation for a coordinated response to extreme heat. The New Jersey Interagency Council on Climate Resilience (IAC) brings together 26 state agencies under a coordinated resilience strategy led by the state's Chief Resilience Officer within the Department of Environmental Protection. The IAC was initially focused on flooding, the most immediate extreme weather threat in New Jersey and the basis for most federal disaster declarations in the state. When extreme heat emerged as an increasingly urgent and under-recognized risk, collaborated on the development of the Extreme Heat Resilience Action Plan, which integrated public health into infrastructure, housing and emergency response systems; and created a dedicated workgroup to ensure coordinated communications around extreme heat. This marks a significant shift in how the state approaches current and future climate threats and signals future opportunities for cross-agency collaboration on other pressing hazards.

> Collaborations with non-governmental organizations offer a valuable way to expand capacity, explore innovative approaches, and allow health departments to focus on urgent priorities.

Public health agencies can seek partnerships with academic institutions, community-based organizations, and even businesses. For partner institutions, these relationships create an arrangement for working with real-world data, strengthen credibility, and create opportunities to drive meaningful, on-the-ground impact.

Officials in **Minnesota** leveraged an academic partnership to help local officials address extreme heat, a priority for the state, without adding to their workload. Historically, all-hazards plans have focused on risks prioritized by local emergency managers, and extreme heat has rarely made the list. The **Minnesota** Department of Health (MDH) partnered with the University of Minnesota U-Spatial program - which is frequently contracted to assist counties with their FEMA-required hazard plans - to develop and integrate heat vulnerability assessments into county-level all-hazard plans across the state. U-Spatial developed a heat-specific module that includes localized vulnerability data, climate projections, and strategy references tailored to local conditions. This new module will now be automatically incorporated into future all-hazard county plans, building local capacity across the state.

In **Wisconsin**, the Department of Health Services (DHS) developed an evolving flooding risk assessment tool that is shaped by community needs and feedback, called The Risk Assessment Flood Tool (RAFT), using an online geographic information system software. DHS proactively collects input from users and real-world events to inform routine updates. After a flood in Milwaukee, for instance, residents and local officials pointed out that including data on people who don't drive would have helped emergency response leaders communicate evacuations in advance. Individuals without access to personal transportation are at high-risk to negative health outcomes, as they face greater challenges in evacuating quickly to safety. In response, DHS worked with emergency management and public health preparedness to add three new data layers.

A unique public-non-profit partnership is helping **Hawai'i** sustain and expand its climate and health efforts through the Hawai'i Climate Change and Health Working Group. What began in 2020 within the Hawai'i Department of Health (DOH), has grown

into a thriving, community-centered initiative thanks to collaboration with the Hawai'i Public Health Institute (HIPHI). Under HPHI's leadership, the working group has evolved into an active advocacy coalition, ensuring that climate-related policies are grounded in community needs. The collaboration between DOH and the Hawai'i Climate and Health Working Group remains strong: DOH staff continue to participate, and DOH recently awarded HIPHI a small grant focused on elderly health and climate resilience. The model offers a strong example of how strategic partnerships can extend the reach of an initiative, especially as priorities remain dynamic and uncertain.

When Hurricane Helene hit Western **North Carolina**, an area not accustomed to tropical storms, it brought flooding and high winds that knocked out city water and sewer services. Many restaurants faced potentially indefinite closures. In response, the North Carolina Division of Public Health partnered with local businesses to develop an innovative emergency protocol that enabled food service businesses to reopen safely, even under non-standard conditions. The Department created a checklist for businesses to self-certify their compliance with temporary sanitation guidelines. If they could meet the outlined requirements, they were allowed to reopen without waiting for an in-person inspection. This pragmatic approach allowed food service operations to resume more quickly, supported recovery, and built credibility across sectors — from business leaders to legislators to local government. It demonstrated how flexible, real-time public health guidance can support resilience during complex emergencies.

Interstate collaboration ignites real-time problem-solving, resource sharing, and solidarity.

While states face different organizational systems, obstacles, and opportunities, many of the overarching challenges are the same. Collaborating across state lines requires vulnerability and transparency, trusted relationships, and takes many forms. Formal partnerships establish mutual aid and contractual relationships between states to provide assistance or collaborate, often through interstate compacts. Some relationships, like emergency management agreements, have been in place for decades.

> **38%**
> **of respondents** reported partnering with other state agencies.

Emergency Management Assistance Compacts (EMAC) enable states to provide mutual aid during emergencies. For example, during the 2004 and 2005 hurricane seasons, Southeastern states provided aid to impacted areas in Florida, Alabama, Mississippi, and Louisiana through an EMAC. That experience revealed the value and need for a formalized structure that would support shared systems, streamlined communication and trusted relationships that didn't have to be built in crisis — and the Region IV Emergency Support Functions (ESF) Unified Planning Coalition (UPC) was created.

Formed by public health and emergency preparedness leaders from 8 southeastern states and with support from federal partners, the UPC meets monthly to improve coordination and support each other through integrated, interoperable and all-hazards public emergency response. **Florida** has benefited directly from the relationships built through the UPC. During Hurricane Michael in 2018, Mississippi deployed an Incident Management Team to Florida in the third week of response, an offer that was coordinated quickly and helped relieve the relentless operational burden on Florida teams. In an era of increasingly frequent and complex extreme weather events, the Region IV UPC offers a model that demonstrates the value of collective planning and trust among neighboring states.

Learning Across Shared Networks

As the demands of extreme weather events increase, states can ease some of the burden by learning from each other through knowledge sharing networks, such as the STAT Network that is authoring this report.

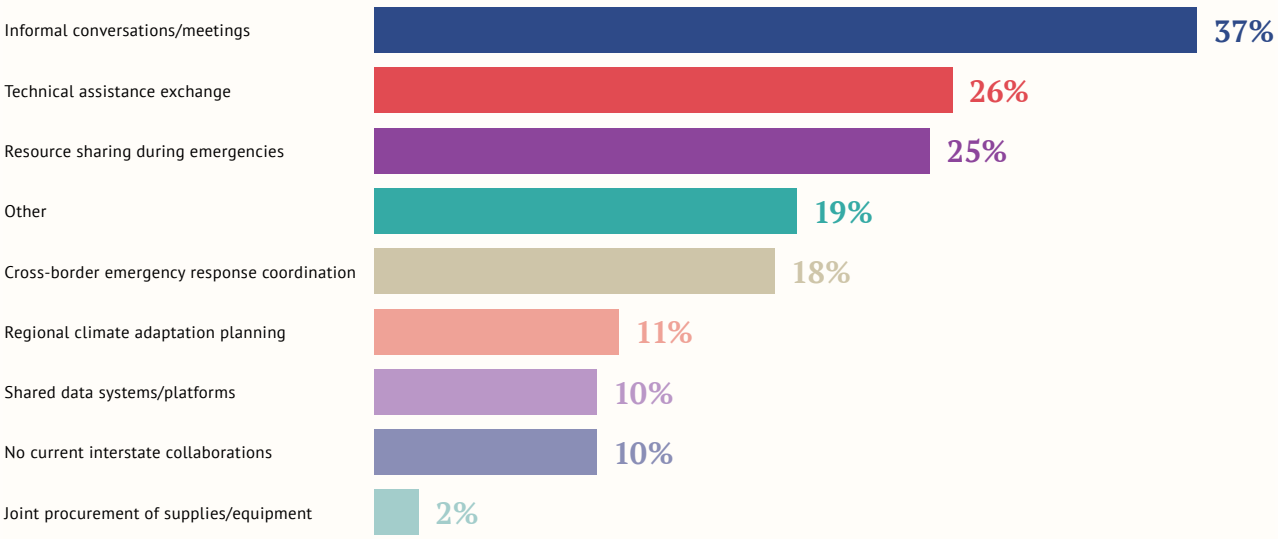
Experience with extreme weather events is as expansive as the US is, and regions emerge as hubs of expertise - for example, extreme heat in the southeast and southwest, wildfire smoke in the northwest. States that frequently face the same extreme weather events learn painful lessons in preparedness and response. Knowledge sharing allows states to leverage these hard-won insights and adapt them to their local context, increasing efficiency and potentially saving lives and preventing suffering.

Formal networks, facilitated by external organizations, offer peer-to-peer learning opportunities. These networks create dedicated spaces to discuss emerging issues that allow states at any level of readiness or experience to participate or benefit.

During this crucial time, support organizations outside of the federal government have been hard at work strengthening the resources available to state and local public health officials, including from extreme weather and health. The Association of State and Territorial Health Officials (ASTHO) has a peer group for state and territorial environmental health directors; a Climate Change Collaborative; and a Directors of Public Health Preparedness peer network that routinely convenes. The Council for State and Territorial Epidemiologists (CSTE) has a climate, health and equity subcommittee that meets regularly. The Federation of American Scientists works with experts and practitioners from a diverse range of sectors to co-develop shared missions and agendas for action at the climate-health nexus.

TYPES OF INTER-STATE COLLABORATIONS ON EXTREME WEATHER AND HEALTH

How does your state partner or collaborate with other states on extreme weather and health impacts?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

> **37%**
> **of respondents** reported they engage in informal partnerships and meetings with other states, making it the most common type of inter-state partnership among participants.

While weather and environmental data present a complex web of challenges, they drive development of innovative tools.

> **Key Challenge:** Novel data needs rise amidst broken, fragmented data systems.
>
> **Key Recommendation:** Identify your 3 top data challenges and start there.

As extreme weather intensifies, and the acute and long-term health impacts become more pervasive, state agencies are looking to data to help them understand the impacts and formulate solutions. Health departments use data to meet a wide range of needs, including identifying links between extreme weather events and health outcomes; informing real-time situational awareness during disasters; guiding the development of alert thresholds; and powering both internal and public-facing dashboards.

> Public health practitioners reported drawing from a range of data sources, including environmental monitoring (**64%**), syndromic surveillance (**62%**) and meteorological data (**50%**).

While incredibly useful, environment and weather-related data also have unique challenges. While syndromic surveillance enables real-time monitoring of outbreaks and health events, its purview is inherently limited. Officials in **Miami-Dade County** described now syndromic surveillance captures only a fraction of the true health burden from extreme heat; serious conditions such as cardiac arrests, chronic disease complications, preterm births, asthma exacerbations and heat-stroke deaths often go uncounted.

Through intergovernmental and academic partnerships, states are improving tools built with syndromic surveillance. For example, **North Carolina** developed heat health-based thresholds for activating heat mitigations across the state with Duke University. These thresholds became the basis for the North Carolina Department of Health and Human Service's (NCDHHS) Heat Health Alert System (HHAS). The NCDHHS Climate and Health Program monitors the forecasted daily maximum heat index and sends out county-level heat alerts when the heat index meets or exceeds the heat index threshold for that county's region. The thresholds were developed from modeling that used historical emergency department visit data from NC DETECT (North Carolina's syndromic surveillance system). In 2025, HHAS was updated with season-specific thresholds to account for how the body acclimatizes to heat. It now divides the heat season into early, mid, and late periods, across eight regions in the state.

Climate-sensitive diseases are often underreported. Valley Fever (coccidioidomycosis), a fungal infection emerging in **California**, is often misdiagnosed due to similar presentation to COVID-19 and other repository illnesses.

It can be difficult to establish links between weather and health outcomes, especially when there is not a corresponding ICD-10 code - the codes used by healthcare systems for record keeping and billing. In many states, officials face challenges in determining whether increases in emergency room visits during a wildfire event are directly attributable to wildfire smoke exposure. There is no ICD-10 code specific to wildfire smoke, so current data often captures a range of smoke inhalation visits, including those resulting from house fires or fireworks. In **Kansas**, cold-related deaths frequently involve older adults falling on ice, raising questions

about whether these cases should be classified as extreme weather impacts or as preventable injuries.

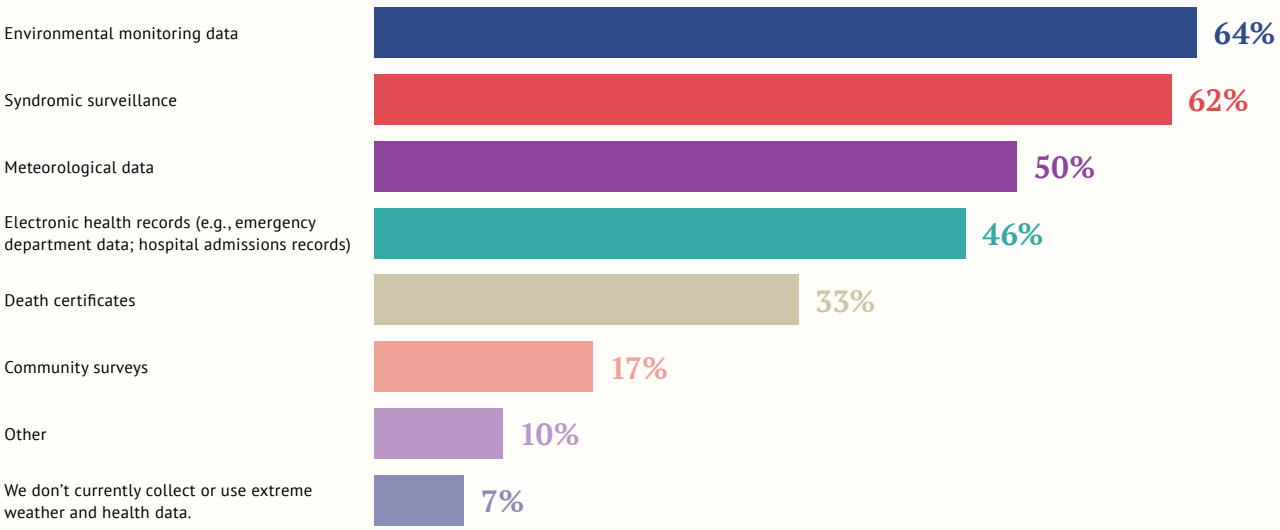
At times, quantitative data lacks contextual information and overlooks broader social and economic impacts of climate-related events. Vulnerable groups may be entirely excluded from the data, including individuals without access to care, those who delay treatment until conditions improve, and those who seek care in evacuation areas outside their home jurisdiction. Consider heat-related illness. In many states, emergency department records often do not include occupational information, housing conditions, or exposure locations, which can make it difficult for teams to track heat-related illnesses to high-risk populations, such as outdoor workers.

Following floods in **Vermont**, officials realized the data collected did not reflect the broader human consequences, such as bankruptcies, job loss, missed school days, and mental health struggles, that profoundly affect community well-being. Recognizing that these cascading effects often go untracked in traditional health surveillance systems, the Climate and Health Program has found that working with trusted community partners is a valuable strategy for obtaining high-quality, relevant data on resilience and local needs.

Similarly, when data is highly localized and fragmented, it can be difficult to integrate into statewide systems and to share back actionable insights in local jurisdictions. During the 2016 Zika virus outbreak in **North Carolina**, a fragmented data collection and storage system undermined public health officials' ability to understand the scale and scope of mosquito-borne threats - such as the number of disease species and post-storm mosquitoes at any given place and time - and develop a targeted response strategy. Mosquito and vector-borne diseases are sensitive to weather conditions. They turned to the integrated, nationwide VectorSurv system, which has largely solved that problem. Before, mosquito surveillance data was scattered across decentralized local county programs, often stored in Excel files or paper binders with limited standardization.

DATA SOURCES USED TO MONITOR EXTREME WEATHER AND HEALTH IMPACTS

What type(s) of extreme weather and health data does your organization collect or use to monitor extreme weather and health impacts?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

North Carolina is one of the 36 states and territories that uses VectorSurv, a public tool that helps state and local health departments, manage, analyze, and share vector data, as real-time digital management is essential in the face of a large-scale public health emergency. The future of the tool is unclear, however, as VectorSurv was previously funded by federal grants and now relies heavily on support from the state of California, leaving the national program at risk.

In **Oregon**, shared data systems, statewide coordination protocols and collaboration, and collective metrics help insure integration and coordination across the state. For example, the state has a robust syndromic surveillance system that is shared with local public health partners. Oregon has a statewide interagency coordination protocol for severe wildfire smoke episodes. Through this protocol, the Oregon Health Authority (OHA) team shares health impacts which inform responsive and timely public health interventions and advisories. The team has also worked with partners to develop additional data queries to characterize health impacts to environmental hazards, particularly extreme heat, cold, and smoke. Oregon's public health system collectively creates Public Health Accountability Metrics, which set benchmarks and track progress the OHA and local public health partners are making specifically on reducing health impacts of heat and smoke.

> "We try to quantify what are the harms of climate change… The things that we can count in terms of ER visits, hospital, hospitalizations and deaths just seem to be sort of the tip of the iceberg of what a community goes through… We're missing the depth of the human experience."
>
> **David Grass**, *Senior Environmental Health Program Manager, Vermont Department of Health*

> **53%**
> **of survey respondents** indicated lack of staff expertise and training as a key barrier to utilizing data for extreme weather.

> Despite challenges, states are creating meaningful environment- and weather-related data tools utilizing both internal expertise and partnerships.

Tools range from providing actionable, data-driven health messaging to the public to a community-based observation network and platform.

Illinois built a tool that uses syndromic surveillance to help local health departments track the health effects of weather events, which was developed in partnership with University of Illinois. The tool enables health officials to monitor spikes in emergency visits tied to heat-related illness or detect increases in injuries during snowstorms, offering a localized and timely picture of how dangerous conditions impact the health of their communities. The next phase of the project aims to incorporate predictive modeling, allowing local health departments to issue early warnings to hospitals and emergency services ahead of extreme weather events - transforming the system from reactive to proactive. This collaboration expands the state's public health capacity while providing a valuable training ground for students, who apply their data and modeling skills to real-world challenges with direct impact.

The **Alaska** Native Tribal Health Consortium's (ANTHC) Local Environmental Observer (LEO) Network, which allows people to report unusual occurrences in their environment, filling an important gap in vector surveillance and connecting community members with experts and resources. This community-based observation network provided officials with an early warning for high

pathogenic avian influenza and allowed them to prepare. A monthly newsletter also summarizes observations, keeping communities and agencies informed. For example, following a severe storm and significant flooding in a coastal town, members of the public reported jellyfish in a new part of town and that dogs were eating the jellyfish and getting sick. Through the LEO Network, ANTHC connected the public to veterinarians to provide guidance. When the presence of jellyfish raised a research question, researchers were able to connect with community members for more detailed information. This early warning system has become an important bridge between local observations and expert response, improving Alaska's ability to identify and respond to environmental health risks.

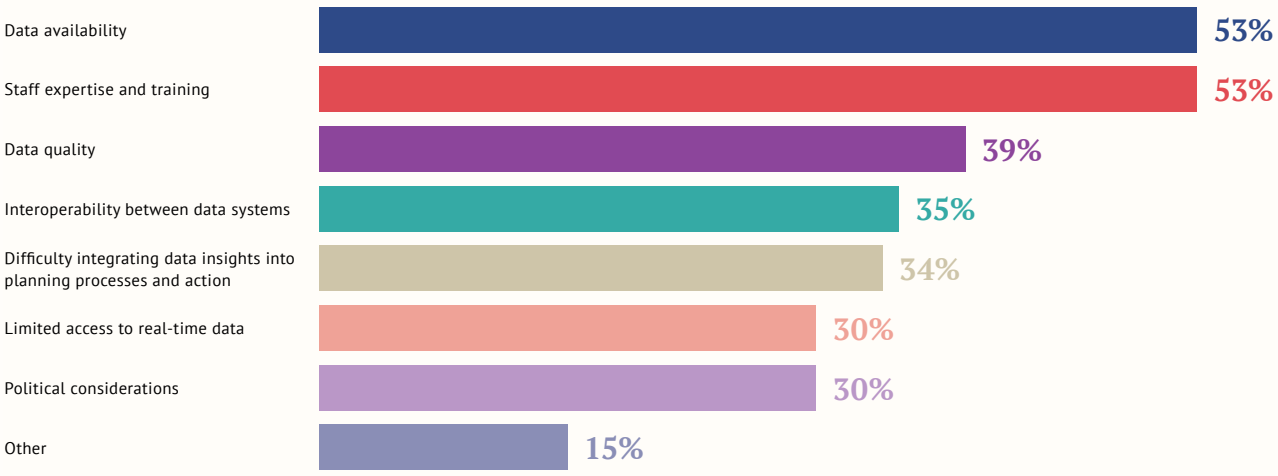
Overcoming the trust deficit calls for new communications strategies that focus on building relationships, storytelling and demonstrating impact.

> **Key Challenge:** Rapid changes in communication ecosystems amidst outdated communications practices, information overload, prevalence of low quality information, and trust losses.
>
> **Key Recommendation:** Invest in communications training to move past social media posts, build trusted networks, focus on storytelling.

Effective communication is more important and more difficult than it has ever been. In the event of extreme weather, officials need to be able to quickly reach community members with critical information. But, where and how people get information has changed drastically and rapidly -

BARRIERS IMPACTING EXTREME WEATHER AND HEALTH DATA USE FOR DECISION-MAKING

Which factors impact your organization's usage of extreme weather and health data for decision-making?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

and communication strategies haven't kept up. In a fragmented information environment, the public is getting information from a greater range of sources. Communicators are making tough choices about what platforms to use and how to allocate limited resources - and they're concerned those choices aren't effective.

87%
of respondents were not highly confident in the effectiveness of their communication strategies (rated their communications strategies as moderately effective, slightly effective, or not effective at all).

Owned channels aren't reaching our communities - it's time to move beyond.

Without funding for innovative communications approaches, outreach to the public often relies on owned channels: health department's websites and unpaid content on its social media platforms. But, states don't have the bandwidth to consistently engage on these platforms. As a result, they haven't built a substantial audience, and the reach for these unpaid social media posts is limited. This approach relies on the outdated model that the government's role is to issue directives and the public will find the information they need.

75%
of survey participants cited social media as the most frequently used communications tool.

Effective communication facilitates the development of trusted relationships between individuals and government.

It is clear across states that public health communicators want to do better for their communities and be more present and engaged, but often lack the resources, training and, at times, recognition of the importance of communication amidst competing response needs.

"There is a limit of the number of people who are going to either proactively or casually engage with communications from a State Department of Public Health,"

... said **Tim Depin**, *Deputy Chief of Staff and Climate Officer, Massachusetts Executive Office of Health and Human Services.*

"We're recognizing where we're able to reach folks and where we're not able to reach folks."

The evolving information landscape – and its impact on how people make sense of health threats and who they trust with information – call for new communications playbooks.

While leveraging trusted messengers is a long-standing best practice, new strategies involve addressing high priority needs identified by communities and co-creating resources and messaging with community partners.

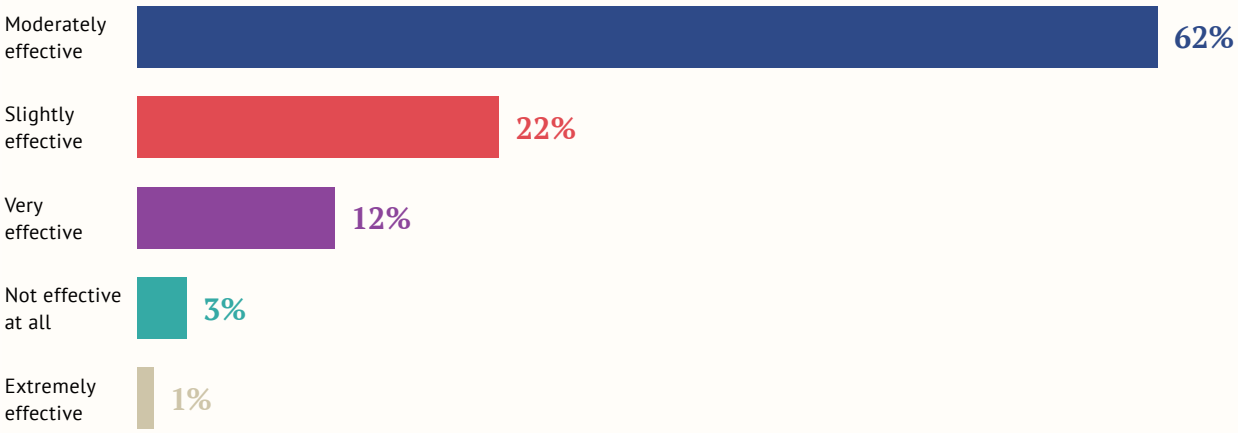
Rather than relying solely on state-owned communications channels (e.g., webpages and social media), **Massachusetts** leveraged trusted partnerships with medical providers, community groups, local media, and others to raise awareness of health risks from EEE (Eastern equine encephalitis) and West Nile virus outbreaks in the state. EEE and West Nile virus are mosquito-borne diseases. Working with partners requires flexibility and adaptability are key, as the state cannot fully control how media or social platforms present health messages. With this approach, emphasis is placed on ensuring the public, healthcare professionals and local boards of health receive actionable information, regardless of the source, whether directly from the state or indirectly via community connections.

Involving community partners in the development process ensures messaging and materials address priority needs and are culturally appropriate. In **Kansas**, community-based organizations were invited to join the Kansas Extreme Weather Workgroup, a cross-sector working group within the Kansas Department of Health and Environment. The group meets on a monthly basis, and offers an inclusive engagement approach, encouraging CBOs to participate and co-create resources as their capacity allows. Together, this group has developed materials including the Kansas Cold Weather Toolkit and Kansas Extreme Heat Toolkit.

California is leveraging both community input on materials and trusted messengers by developing an interactive curriculum for community health workers (CHWs) about protecting health during poor air quality events in English and Spanish. CHWs are a critical connection point between vulnerable communities and health systems. Often members of the community they work with, community health workers have lived experience and provide culturally tailored health education and advocacy. The curriculum helps CHWs support community members, including people with social vulnerabilities like language barriers or access to health care, with specific air quality-related health

SELF-RATED EFFECTIVENESS OF STATE COMMUNICATIONS IN PREPARING RESIDENTS FOR EXTREME WEATHER EVENTS AND HEALTH RISKS

How effective do you believe your state's public communication strategies are in preparing residents for extreme weather events and associated health risks?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

risks and actions to take. As part of the curriculum development process, they are testing the curriculum with trusted community partners.

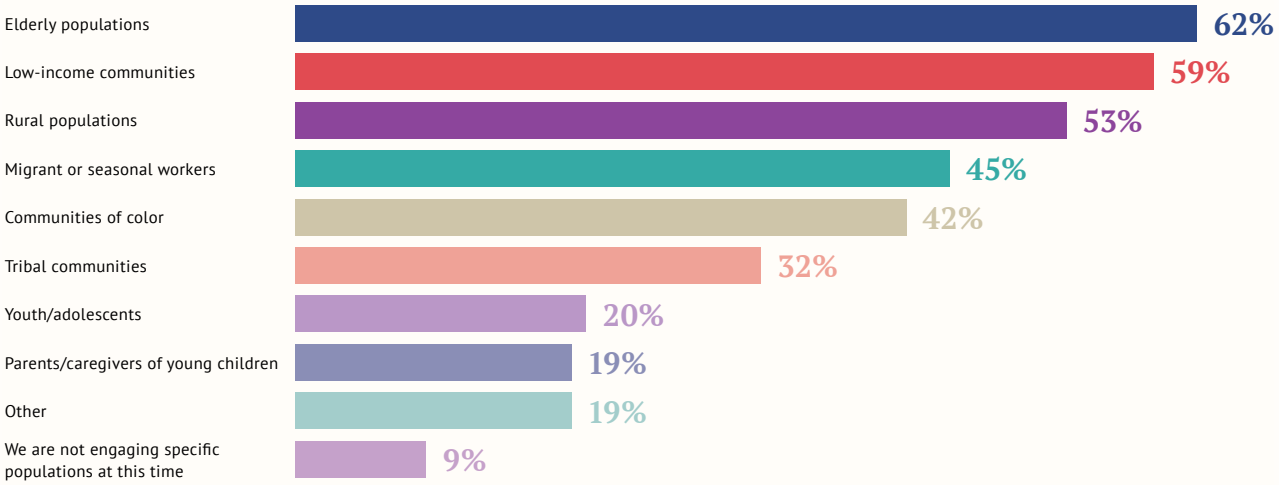
> Some states are updating their communication approaches to focus on rebuilding public trust and credibility at the department level.

For example, through perception research, the **North Carolina** Department of Health and Human Services concluded, "When people know us, they trust us." Trust improves in areas that have direct engagement with local health departments. They are pairing a new, overarching brand for governmental public health with sustained, community-level interaction. Supplementing these interactions, North Carolina is explaining what public health does in "Day in the Life"-style videos, billboards, and social media posts. Staff are empowered as ambassadors with public health and equipped with common talking points, slide decks, and giveaway items.

Similarly, after conducting a statewide survey, **Wisconsin** is working to transition from a traditional approach focused on issuing guidance to a storytelling approach that explains the work that is done and its impact. The Wisconsin Department of Health Services is considering how to engage their closest audiences as advocates and how to engage harder to reach audiences through a "ripple effect" of trusted messengers.

PRIORITY POPULATIONS FOR ENGAGING IN EXTREME WEATHER AND HEALTH INITIATIVES

Which populations are you most concerned about engaging with on extreme weather and health initiatives?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

4 SUSTAINING THE MISSION: PROTECTING THE MOST VULNERABLE

Key challenge: In times of crisis and rapid change, those who are most vulnerable need to be prioritized and supported.

Key recommendation: Identify systems interventions wherever possible in addition to supporting individual readiness.

Amidst the many changes and challenges outlined in this report, state public health teams remain focused on their core mission to protect those most at risk of suffering more severe health outcomes from extreme weather events. High-risk groups during extreme weather events include those who may not be able to evacuate as quickly due to advanced age, mobility limitations, or lack of resources; people who are disconnected from modern communication, and people with underlying health conditions. Geographic isolation, housing and income insecurity, and employment conditions are also factors that can put people at higher risk.

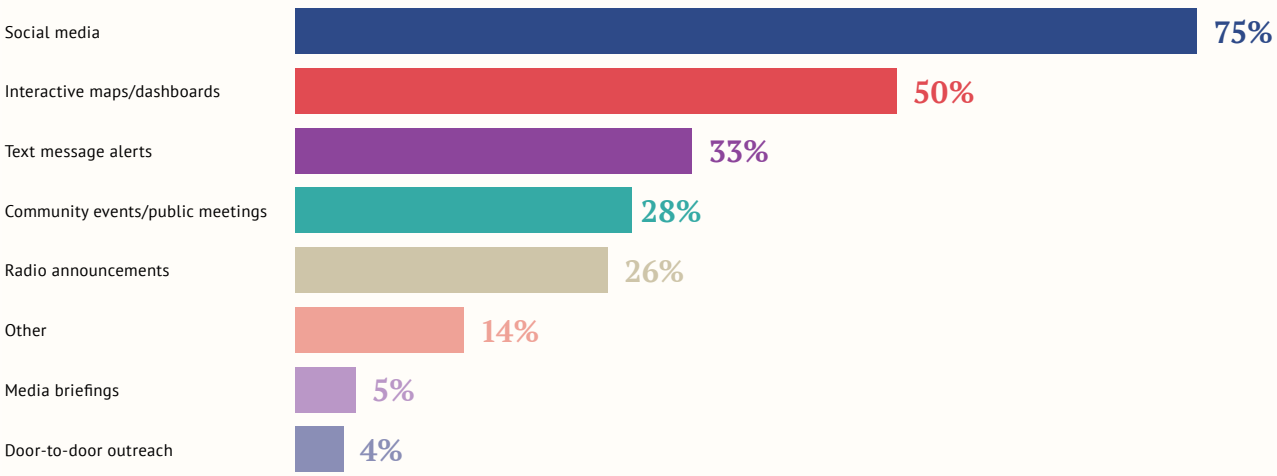
Our survey found that the majority of state health officials and their partners identified older adults (**62%**), low-income (**59%**) and rural populations (**53%**) as the top groups they are most concerned about.

Considering the rapid shifts and overlapping crises states are navigating, many in the public health workforce are voicing unease about the feasibility of protecting the most vulnerable in the current landscape.

Survey respondents shared their concerns about socioeconomic disparities moderately (**27%**) or significantly impacting (**67%**) unequal health outcomes during extreme weather events.

TOOLS AND STRATEGIES USED BY STATES TO COMMUNICATE EXTREME WEATHER AND HEALTH IMPACTS

What communication strategies and tools does your state use to communicate about extreme weather and health impacts?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

> Extreme weather amplifies existing health and social inequities, with the greatest impacts occurring where multiple vulnerabilities overlap.

Underserved communities, including people of color, the elderly, people living with chronic conditions, and socioeconomically disadvantaged groups, have greater vulnerability to the impacts of extreme weather.

Vulnerability is not just a result of physical exposure to climate hazards, but also of structural inequities that limit access to resources, services, and protections (ref). A low income household in a rural area may face increasing frequency of storms but lack access to health services, reliable transportation or emergency shelters. An elderly person with a chronic medical condition may experience heightened risk during heatwaves due to limited mobility to access a cooling center, social isolation and outdated A/C systems that can't function in such extremes.

Communities of color in historically disinvested neighborhoods experience disproportionate exposure to health hazards—such as extreme heat and poor air quality —yet have fewer adaptive resources, such as tree cover, air filtration and cooling shelters.

> Public health professionals see first-hand the disproportionate impact of extreme weather and its very real consequences - and are moved to action.

Vulnerability assessments are a valuable tool for identifying the people and places that are most susceptible to negative impacts from a specific health risk - in this case extreme weather - through a systematic process. Vulnerability assessments are used to anticipate risks and develop and implement targeted public health strategies.

Conducting a vulnerability assessment helped officials in Miami-Dade County, Florida identify populations at higher risk of heat-related illness and specific behaviors or circumstances that contributed. Specifically, officials found that South Dade, home to many low-income outdoor agricultural workers, was experiencing heat related illness rates four to five times higher than other parts of the county. While most residents technically have access to air conditioning, many cannot afford to constantly run them (ref). In response, the county partnered with the National Weather Service, Florida Department of Health and others to develop a collective action plan to specifically help these populations stay safe from extreme heat.

Following a record breaking heat dome in the Pacific Northwest in June 2021, legislators in **Oregon** created new equity-focused programs and allocated funds to strengthen resilience in the communities most impacted by the extreme heat. The heat dome brought on days of unrelenting extreme heat, and the impacts were felt unequally, with tribal communities, communities of color, and rural Latine populations experiencing worse health outcomes. These groups faced barriers such as delayed evacuation notices, limited access to emergency information, and fewer resources like air quality monitoring and filtration.

That same year, the state legislature appropriated significant funds to local health agencies, community-based organizations, and Tribes to address community-identified priorities in environmental health risks and climate adaptation strategies. The legislature also established and invested in grants to help Oregonians make their homes more resilient to climate and weather impacts and to ensure safe housing for essential employees. In 2022, Oregon received approval for a Medicaid waiver renewal application to cover climate change expenses for certain low-income

patients under its Medicaid Program. Oregon Occupational Safety and Health also adopted new rules to protect outdoor workers from extreme heat.

Officials in Arizona, which routinely experiences triple digit temperatures, are working to protect vulnerable populations. In 2024, Arizona appointed its first Chief Heat Officer. Arizona's notoriously hot climate demonstrates the health risks of extreme heat. **Maricopa County**, home to Arizona's most populous city (Phoenix), accounted for 76% of the state's heat-related deaths in 2024. Extreme temperatures in Phoenix and other cities are intensified by the urban heat island effect, which traps heat in densely built environments. Vulnerable populations were disproportionately affected: In 2024, 65% of the deaths statewide were 50 years or older, and 50% of the deaths in 2024 occurred in individuals with a substance use disorder. Heat exacerbates underlying health conditions, including heart disease, diabetes, respiratory illnesses, and substance use disorders, making high temperatures especially deadly. Despite over 113 consecutive days with temperatures exceeding 100°F in Phoenix and surrounding areas in 2024, the state experienced the first year-over-year decline in heat-related deaths in Maricopa County since 2014.

> Access to affordable energy, which is critical for sustaining health, is an equity issue that is exacerbated during extreme weather events.

Access to energy intersects with vulnerability in multiple ways. Some people rely on electricity-dependent medical equipment to survive. Some medicines have specific temperature storage requirements. Loss of power can directly threaten their health and survival.

The high cost of energy can also limit people's ability to prepare and adapt to extreme weather, making them more vulnerable. In **Wisconsin**, rising temperatures and a fragile energy grid are raising concerns in the Northwoods region, where a high proportion of elderly residents face increased health risks from heat events and may have delayed power restoration due to their location.

In general, energy is critical for maintaining a healthy and comfortable indoor temperature. Many low income Americans face a high energy burden - which means they spend more of their income on energy bills than the average household in their area. This can force people to make difficult choices between paying energy bills during heat or cold spells and affording medicine, food, or other necessities. In cold winters, this is known as 'heat or eat'.

When **Winter Storm Uri** swept across Texas in February 2021, it did more than drop temperatures, it exposed the fragility of the state's energy infrastructure. The result was catastrophic: power grids failed, natural gas supply lines froze, water treatment plants shut down, and hospitals struggled to operate under crisis conditions. For many, especially those with medical conditions, those living in rural areas, and low-income families the storm became a life threatening crisis. In the aftermath, lawmakers passed bills requiring power generators to weatherize their facilities so they can operate under extreme weather.

> States can take steps at the system level to help protect people who are especially vulnerable to negative health effects during power outages and extreme weather.

By strengthening energy systems, states reduce the risk of cascading failures that endanger the most vulnerable and help ensure hospitals, heaters, and critical services can continue when they're needed most. In Minnesota, an innovative utility policy protects vulnerable populations during poor air

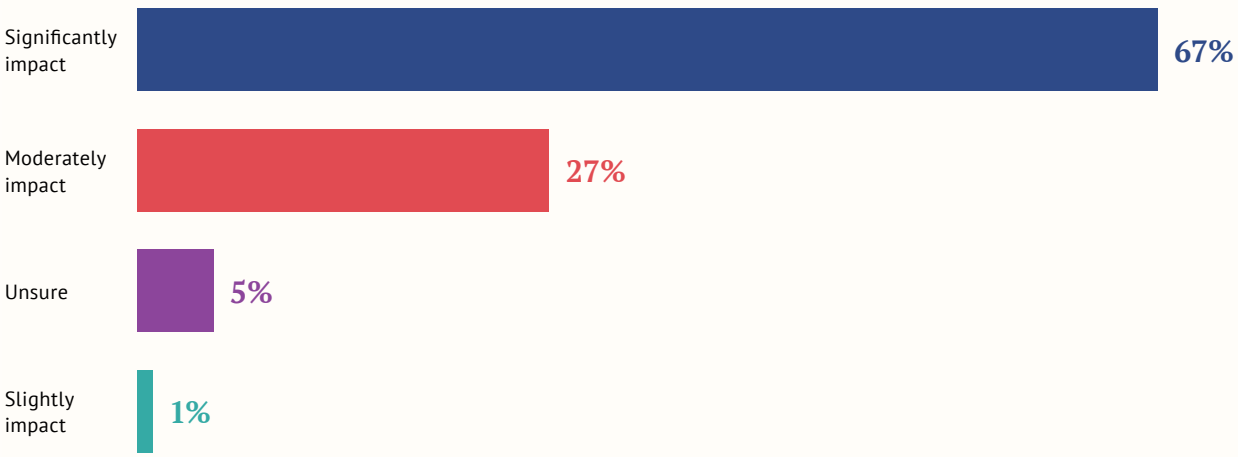
quality events. Xcel Energy, a utility regulated by Minnesota's Public Utility Commission, submitted a first-in-nation policy to reconnect electricity or health disconnections when air quality reaches an AQI of 150 or above. Through the Minnesota Climate Action Framework, the Department of Commerce identified this policy could have health implications and notified the Minnesota Department of Health (MDH) and encouraged MDH to weigh in. The development of the Minnesota Climate Action Framework connected different state agencies and helped them recognize when decisions have health implications and when those decisions should involve input from public health experts. Due to the interagency nature of the framework, MDH established a relationship with a utility for the first time. MDH providing comment on the rule and consultation to the utility represented a significant change. Since the initial consultation with Xcel Energy, another utility has reached out to MDH to confer on a policy they are considering related to air quality.

> States can empower communities on the frontlines by embracing them as a critical source of knowledge and solutions.

Community-based organizations (CBOs) hold a unique position as they are in relationships with residents and often have nuanced knowledge of neighborhood dynamics, cultural contexts, and generational practices. By listening deeply and offering partnerships to co-create preparedness and response approaches, states and their local partners can overcome blind spots and strengthen trust, leveraging the strengths of each collaborator. True co-creation means sharing decision-making authority with CBOs and/or community members whose important insights into community beliefs, needs, and priorities make approaches and policies more effective.

IMPACT OF SOCIOECONOMIC STATUS ON UNEQUAL HEALTH OUTCOMES DURING EXTREME WEATHER

To what extent do socioeconomic disparities within your state contribute to unequal health outcomes during extreme weather events?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

> **35%**
> **of respondents** indicated they have regular meetings or partnerships, 24% are co-developing initiatives with CBOs and 20% of respondents said they were funding or resource-sharing with CBOs.

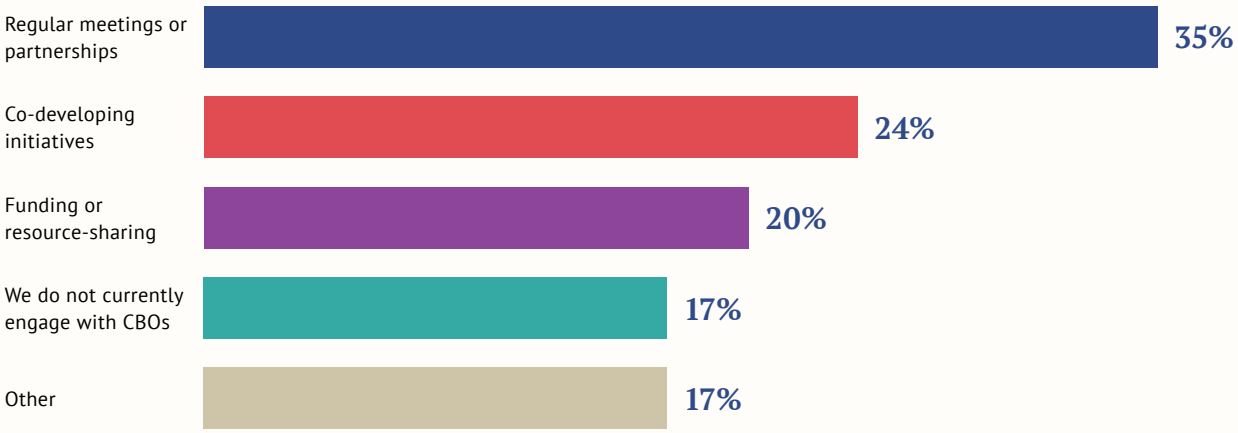
> "All disasters start local and end local."
>
> **Victor Wells**, *Texas Emergency Medical Task Force Assistant Program Director, Southwest Texas Regional Advisory Council (STRAC), in reference to devastating floods in Texas.*

The Disaster Resilience Learning Network (DRLN) in **Oregon** offers a model for mutually-beneficial partnerships between CBOs and State Health Departments. With support from the Public Health Equity Grant from the **Oregon** Health Authority, the DRLN was created with the aim of strengthening the leadership, coordination, and collective power of CBOs serving communities most impacted by climate-related disasters - and has become a critical pathway for knowledge and resource sharing during emergencies. With the support of partner organization the United Way of the Columbia-Willamette, DLRN has also provided over $400,000 in mini-grants to CBOs in support of building resilience and social connectedness for communities impacted by climate-related disasters. Funding mini-grants decentralizes disaster response and empowers the community at the forefront of the response.

The DRLN established two-way communication pathways that enable CBOs to alert public health officials about emerging situations, while OHA

ENGAGEMENT WITH COMMUNITY-BASED ORGANIZATIONS ON EXTREME WEATHER AND HEALTH

How does your organization engage with community-based organizations (CBOs) on extreme weather and health efforts?



STAT Network extreme weather and health survey of U.S. officials, May - July 2025

navigates systems to unlock resources and share critical information - which proved critical during the mpox outbreak. Through this network, OHA rapidly channeled resources for education and vaccine distribution to high-risk communities.

In **Washington**, an open-ended climate adaptation grants program provided funding to CBOs to implement projects addressing locally-identified priorities. Community engagement through this program provided the state with insights on existing priorities, like resilience hubs, and gaps in how climate resilience is approached and youth empowerment. The grants program was created under the Department of Health's Climate and Health Adaptation Initiative. CBOs identify issues and propose solutions. Grants were reviewed by a committee, which was composed mostly of community members who were compensated for their time. This approach gave the community the power to determine which projects were funded. Funded projects ranged from addressing housing resilience among the African diaspora community in South Seattle, to engaging communities in Vancouver in the local comprehensive planning process, and funding a Swinomish Tribe resilience project in their house of awakened culture.

Moving Forward: Four recommendations for coordinated action

As this report has laid out, states are responding to a new normal of extreme weather crises while simultaneously strengthening local infrastructure to cope with losses in data, technical assistance, and guidance from the federal government. It's a moment of rapid retooling – and though states are stepping up with new and creative playbooks, they cannot shoulder the burden alone.

Protecting the health, safety, and prosperity of Americans and their communities will require an all-of-society approach. Funders, policymakers, researchers, community leaders, and other stakeholders all have roles to play in supporting state public health officials. Some needs are already clear:

- Targeted, timely investment from philanthropy, businesses, and regional and local governments is necessary. Near-term funding to help communities close funding gaps left by federal pullbacks is especially important and will give communities the runway to transition towards alternative, sustainable funding models for the longer term.

- State and local policymakers have an urgent mandate to advance legal frameworks (e.g., workplace heat standards or weather-resilient building codes) that protect especially vulnerable populations from extreme-weather impacts.

- Durable approaches to managing the health threats of extreme weather must be evidence-based and, wherever possible, community-led. Policymakers and other officials should prioritize involvement from local leaders, community members, and researchers at all stages and levels of decision making.

- Every organization, stakeholder and elected leader can become part of creating broad narrative change. Creative partnerships are crucial for communicating effectively in today's fractured information ecosystems, ensuring all people have access to information about the risks of extreme weather and understand how they can be part of the solution.

As new strategies are tested, and evidence builds about which tactics are working best and which are falling short, additional needs will inevitably emerge. The STAT Network, the Federation of American Scientists and other partners in this work will continue to support public health officials, policymakers, researchers, funders, and communities on collaborative, practice-based solutions to address evolving challenges and seize emerging opportunities at the intersection of extreme weather and health.

METHODOLOGY: HOW WE SOURCED AND CO-CREATED THIS REPORT

Protecting Americans in the Face of Extreme Weather summarizes findings from three forms of engagement with state health officials and their partners:

1. Monthly STAT Extreme Weather and Health Network meetings.
2. A STAT Extreme Weather and Health Network survey.
3. Key informant interviews.

Once the STAT Network team had compiled and analyzed the data from the sources listed above, draft findings and framings were discussed with a group of state extreme weather and health leads who have been active participants in the network (including asynchronous work on a shared digital whiteboard). These leads provided essential context, additional framing, and adjustments to the draft findings. In addition, all states who are referenced in the report reviewed, verified, and at times added to the examples shared about their work, in the context of the overall narrative.

Monthly STAT Extreme Weather and Health Network Meetings

Insights were drawn from presentations and discussions from monthly convenings of the STAT Extreme Weather and Health Network. Over 480 state officials from public health, preparedness and related departments in 45 states, 1 territory, Washington, D.C., and several counties have attended 14 Network sessions between August 2024 and September 2025 (average session participation: 93). These sessions grounded the report's narrative in real-world experiences, validated, contextualized and expanded upon findings from the survey, and helped guide the selection of representatives for in-depth key informant interviews.

The STAT Extreme Weather & Health Network Survey

An online, anonymous, voluntary survey was delivered between May and July 2025 to STAT Network members. The survey was designed to capture insights primarily from state and local agencies on perspectives, priorities, and challenges related to preparing for, responding to and recovering from the health impacts of extreme weather. Hosted on Qualtrics, the survey included 38 questions across topic areas, including: extreme weather and health priorities; challenges and opportunities; communications; collaboration and partnerships; policy and advocacy; and future directions.

The survey was developed through a collaborative process involving the project team and external advisors, and a pilot version was tested internally to ensure clarity, logical flow and reasonable length. The final survey was emailed to members of the STAT Network and high-level policymakers via direct outreach and the STAT newsletter (n=1,017); recipients were asked to forward the survey to colleagues who had relevant experience. Data from the survey was analyzed with R software and summarized using descriptive statistics. To account for varying response rates across states, data were weighted by the inverse frequency of responses per state to ensure overrepresented states did not skew overall results.

A total of 180 survey responses were received; responses that were less than 16% complete (n=50) were excluded from the analysis, as this was consistent with only completing the demographics section of the survey. The final dataset included 136 valid responses from 34 unique states, with near equal participation across the political spectrum. 78% of answers came from state officials, 10% from local officials, and 12% from federal, academic and other partners to state teams.

Key Informant Interviews

A total of 48 key informant interviews were conducted between December 2024 and September 2025 with teams from 26 states (37 interviews), the District of Columbia (1), county-level governments (6), academic partners (2) and nonprofit organizations focused on extreme weather and health (2). To ensure broad representation, states were selected through a mixed approach that combined a review of grey literature, state websites and existing assessments of specific extreme

weather threats to health across the U.S. with input gathered from network session discussions and consultations with federal, academic and other state partners. States were selected with considerations for differences such as public health system structure (centralized vs. decentralized), CDC region, population density, racial and ethnic composition, socioeconomic conditions and political context. Themes from interviews were synthesized across interviews to capture shared experiences, patterns and actionable insights. Participants provided consent for the inclusion of specific examples and direct quotations in the report.literature, state websites and existing assessments of specific extreme weather threats to health across the U.S. with input gathered from network session discussions and consultations with federal, academic and other state partners. States were selected with considerations for differences in public health system structure (centralized vs. decentralized), CDC region, population density, racial and ethnic composition, socioeconomic conditions and political context. Themes from interviews were synthesized across interviews to capture shared experiences, patterns and actionable insights. Participants provided consent for the inclusion of specific examples and direct quotations in the report.

ABOUT

About the STAT Network

At a time of unprecedented disruption in the U.S. public health system, the STAT Network serves as a strategic, nonpartisan, practice-focused partner to the state public health workforce in all 50 states as well as three territories. Originally created as the State and Territory Alliance for Testing by the Rockefeller Foundation in 2020 to meet the urgent need for more state-to-state collaboration during the COVID-19 pandemic, the network convenes state health leaders across the country on a weekly basis to problem-solve ongoing threats, share best practices, and support one another. Learn more about STAT.

About the Extreme Weather & Health Network

Formed in September 2024, the Extreme Weather & Health Network convenes officials from state and county-level public health and environmental agencies to share knowledge and strengthen public health capacity to respond to extreme weather conditions. Topics have included wildfires and air quality, extreme heat and cold, data tools, communicating about extreme weather risks, and more. The goal of the Network is to equip public health leaders with the necessary tools and resources to effectively prioritize their responses to the threats extreme weather poses for people and communities.

Disclaimer

The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies for The Rockefeller Foundation or the Robert Wood Johnson Foundation.

Funding

Support for this report was provided by The Rockefeller Foundation and the Robert Wood Johnson Foundation.

Acknowledgements

We are grateful to the state- and county-level public health staff who have been active participants in the STAT Extreme Weather and Health Network, from contributing to and speaking at Network sessions, to joining interviews and our survey, to sending us updates, questions and insights. The realities of the on-the-ground challenges and opportunities shared by these teams are the foundation on which this report is built. We also appreciate our non-profit partners working in the extreme weather and health space who have been thought partners, connectors and contributors to this collective work in inspiring ways. Specifically, we'd like to thank the BlueGreen Alliance, the Association of State and Territorial Health Officials (ASTHO), the Council of State and Territorial Epidemiologists (CSTE), the Clean Energy Group, Health Care Without Harm, the National Governors Association, the The Medical Society Consortium on Climate and Health, and the Federation of American Scientists. Thank you to all the leaders uplifting extreme weather and health policy at the local, state, and federal levels.

Report Authors

Stefanie Friedhoff
STAT Network Lead
Professor of the Practice
Brown University School of Public Health
Megan Diamond
Advisor
Caroline Hoffman
Assistant Director, Content and Strategy
Sarah Brigid Konefal
Research Assistant
Anna Omojola
Research Assistant
Lee Taylor-Penn
Associate Director

Contributors

Hannah Laue
Assistant Professor of Epidemiology, School of Public Health and Health Sciences, University of Massachusetts Amherst

REFERENCES

Introduction

Duan, T., Li, Q., Zhang, F., Xi, D., & Lin, N. (2025). *Situational Preparedness Dynamics for Sequential Tropical Cyclone Hazards* (No. arXiv:2504.16878). arXiv. doi.org/10.48550/arXiv.2504.16878

McDaniel, E. (2021, September 7). Weather Disasters Have Become 5 Times As Common, Thanks In Part To Climate Change. *NPR*. www.npr.org/2021/09/07/1034607602/weather-disasters-have-become-five-times-as-common-thanks-in-part-to-climate-cha

Seneviratne, S. I., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Luca, A. D., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S. M., Wehner, M., Zhou, B., & Allan, R. (2021). *Weather and climate extreme events in a changing climate* (V. P. Masson-Delmotte, A. Zhai, S. L. Pirani, & C. Connors, Eds.; pp. 1513–1766). Cambridge University Press. centaur.reading.ac.uk/101846/

Thomson, M. C., & Mason, S. J. (Eds.). (2018). *Climate Information for Public Health Action*. Routledge. doi.org/10.4324/9781315115603

State of Play: A Changed Landscape

AP News. (n.d.). *Arizona's health department has named the first statewide heat officer to address extreme heat | AP News*. Retrieved October 30, 2025, from apnews.com/article/arizona-heat-officer-2a1aeec6dd56bf23bd76b399ff1f0101

Arizona Department of Health and Human Services. (2025). *HRI Death Annual Report*. www.azdhs.gov/documents/preparedness/epidemiology-disease-control/extreme-weather/pubs/heat-related-mortality-year-2013-2024.pdf

Banacos, P. (n.d.). *The Great Vermont Flood of 10-11 July 2023: Preliminary Meteorological Summary*. NOAA's National Weather Service. Retrieved October 30, 2025, from www.weather.gov/btv/The-Great-Vermont-Flood-of-10-11-July-2023-Preliminary-Meteorological-Summary

Borenstein, -Seth, & Borenstein, A. P. S. (2025, April 4). *Nearly half of National Weather Service offices are critically understaffed, experts warn*. PBS News. www.pbs.org/newshour/politics/nearly-half-of-national-weather-service-offices-are-critically-understaffed-experts-warn

Center for Disease Control. (n.d.). *FY 2026 Congressional Justification Detail Table*. www.cdc.gov/budget/documents/fy2026/fy-2026-cj-detail-table.pdf

Center for Disease Control. (2024, July 2). *Climate-Ready States & Cities Initiative*. Climate and Health. www.cdc.gov/climate-health/php/climate_ready/index.html

Center for Disease Control. (2025, September 5). *CDC Social Vulnerability Index*. Community Stress Resource Center. www.atsdr.cdc.gov/community-stress-resource-center/php/resources/social-vulnerability-index.html

Davenport, L. F. J., & Mineiro, M. (2025, July 13). Trump Is Gutting Weather Science and Reducing Disaster Response. *The New York Times*. www.nytimes.com/2025/07/13/climate/floods-trump-cuts-disaster-preparedness-fema.html

Deivanayagam, T. A., English, S., Hickel, J., Bonifacio, J., Guinto, R. R., Hill, K. X., Huq, M., Issa, R., Mulindwa, H., Heizal, P. N., Sato, P. de M., Selvarajah, S., Sharma, C., & Devakumar, D. (2023). Envisioning environmental equity: Climate change, health, and racial justice. *The Lancet*, *402*(10395), 64–78. doi.org/10.1016/S0140-6736(23)00919-4

EDGI_Team. (2025, February 12). EPA Removes EJScreen from Its Website. *Environmental Data and Governance Initiative*. envirodatagov.org/epa-removes-ejscreen-from-its-website/

Environmental Protection Network. (n.d.). Facts: Trump FY26 EPA Skinny Budget Factsheet. *Environmental Protection Network*. Retrieved October 30, 2025, from www.environmentalprotectionnetwork.org/epafacts/fy26-budget-factsheet/

Estien, C. O., Wilkinson, C. E., Morello-Frosch, R., & Schell, C. J. (2024). Historical Redlining Is Associated with Disparities in Environmental Quality across California. *Environmental Science & Technology Letters*, *11*(2), 54–59. doi.org/10.1021/acs.estlett.3c00870

Fortin, J., & Hassan, A. (2024, August 9). Death Toll of Maui Wildfire Now at 102. *The New York Times*. www.nytimes.com/article/maui-wildfire-victims.html

Korfmacher, M., Hartwell, C., Hill, K., Matthews-Trigg, N., Hess, J., Nori-Sarma, A., Wellenius, G., & Errett, N. (2025). Lessons learnt from the 2021 Pacific Northwest heat dome: A qualitative study of western Washington's healthcare community response. *BMJ Open*, *15*(4), e089093. doi.org/10.1136/bmjopen-2024-089093

McDaniel, E. (2021, September 7). Weather Disasters Have Become 5 Times As Common, Thanks In Part To Climate Change. *NPR*. www.npr.org/2021/09/07/1034607602/weather-disasters-have-become-five-times-as-common-thanks-in-part-to-climate-cha

Office of the Press Secretary. (n.d.). *Statement on Federal Disaster Assistance for Kansas*. The White House, President George Bush. Retrieved October 31, 2025, from georgewbush-whitehouse.archives.gov/news/releases/2007/12/20071212-13.html

Oregon Forest Resources Institute. (n.d.). *The 2020 Labor Day Fires | Oregon Forest Resources Institute*. Retrieved October 30, 2025, from oregonforests.org/2020-labor-day-fires

Rumbach, A., McTarnaghan, S., Curran-Groome, W., & Lloyd, K. (2025). *Proposed Cuts to Federal Disaster Assistance Will Hit States Just as Hurricane Season Ramps Up*. Urban Institute. www.urban.org/urban-wire/proposed-cuts-federal-disaster-assistance-will-hit-states-just-hurricane-season-ramps

Sanders, M. (n.d.). *Fire, Then Flood? How Some Weather-Related Disaster Types Increase Risk of Others*. Retrieved October 14, 2025, from pew.org/3XRJa9m

Seneviratne, S. I., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Luca, A. D., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S. M., Wehner, M., Zhou, B., & Allan, R. (2021). *Weather and climate extreme events in a changing climate* (V. P. Masson-Delmotte, A. Zhai, S. L. Pirani, & C. Connors, Eds.; pp. 1513–1766). Cambridge University Press. centaur.reading.ac.uk/101846/

Singer, E. (2025, February 2). Thousands of U.S. Government Web Pages Have Been Taken Down Since Friday. *The New York Times*. www.nytimes.com/2025/02/02/upshot/trump-government-websites-missing-pages.html

Smith, A. (2025, January 10). *2024: An active year of U.S. billion-dollar weather and climate disasters | NOAA Climate.gov*. www.climate.gov/news-features/blogs/beyond-data/2024-active-year-us-billion-dollar-weather-and-climate-disasters

Sommer, L. (2024, October 2). Hurricanes are dangerous far from the coast. Communities are struggling to prepare. *NPR*. www.npr.org/2024/10/01/nx-s1-5133530/hurricane-helene-rain-flooding-climate-change

Stobbe, M. (2025, May 4). *Cuts have eliminated more than a dozen US government health-tracking programs*. AP News. apnews.com/article/cdc-disease-tracking-health-surveillance-554eb9aa20b758714eba8b835dcde856

Thompson, A. (n.d.). *Here's What Caused the Rare, Record Florida Snow*. Scientific American. Retrieved October 31, 2025, from www.scientificamerican.com/article/rare-record-florida-snow-explained/

Wickerson, G., Burton, A., & Holland, A. (n.d.). Summer, Wrapped: The 2025 "State of the Heat." *Federation of American Scientists*. Retrieved October 30, 2025, from fas.org/publication/summer-wrapped-the-2025-state-of-the-heat/

Wickerson, G., & Safford, Hannah. (n.d.). America's Heating Up, and We're Even More Unprepared. *Federation of American Scientists*. Retrieved October 31, 2025, from fas.org/publication/summer-heating-up-underprepared/

Zissu, A. (2023, July 13). Extreme Weather Makes for Dangerous East Coast Summer. *Moms Clean Air Force*. www.momscleanairforce.org/east-coast-flooding/

The New Playbooks: How States Are Adapting to Protect the Health of Americans

Agosto Filión, N., Knutsen, M., & Phillips, S. (2024). *New Jersey Extreme Heat Resilience Action Plan*. dep.nj.gov/wp-content/uploads/climatechange/extreme_heat_rap_071924-screen-version.pdf

Association of State and Territorial Health Officials. (n.d.). *Prioritizing Environmental Public Health*. Retrieved October 30, 2025, from www.astho.org/topic/environmental-public-health/

CalEPA. (n.d.). *OEHHA - California Communities Extreme Heat Scoring System*. Retrieved October 31, 2025, from calheatscore.calepa.ca.gov/

California Air Resources Board. (n.d.). *AB 32 Climate Change Scoping Plan | California Air Resources Board*. Retrieved October 31, 2025, from ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan

California Department of Public Health. (n.d.-a). *Valley Fever is on the Rise*. Retrieved October 30, 2025, from www.cdph.ca.gov/Programs/CID/DCDC

California Department of Public Health. (n.d.-b). *Wildfire Health Plan Initiative*. Retrieved October 30, 2025, from www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHIB/CPE

Center for Disease Control. (2025a, January 14). *Vector-Borne Diseases*. Climate and Health. www.cdc.gov/climate-health/php/effects/vectors.html

Center for Disease Control. (2025b, September 30). *Zika Cases in the United States*. Zika Virus. www.cdc.gov/zika/zika-cases-us/index.html

Council of State and Territorial Epidemiologists. (n.d.). *Council of State and Territorial Epidemiologists*. Retrieved October 30, 2025, from www.cste.org/group/ClimateChange

Federal Emergency Management Agency. (2025, February 11). *Community Lifelines | FEMA.gov*. www.fema.gov/emergency-managers/practitioners/lifelines-toolkit/community-lifelines

Federation of American Scientists. (n.d.-a). *2025 Heat Policy Agenda*. fas.org/wp-content/uploads/2025/01/FAS_2025-Heat-Policy-Agenda.pdf

Federation of American Scientists. (n.d.-b). *Federation of American Scientists*. Federation of American Scientists. Retrieved October 31, 2025, from fas.org

Kansas Department of Health and Environment. (n.d.). *Kansas Cold Weather Toolkit: Planning for Cold Weather Safety in Kansas*. keap.kdhe.ks.gov/Ephtm/EphtContent/documents/Kansas%20Cold%20Weather%20Toolkit%20.pdf

Kansas Department of Health and Environment. (2019). *Kansas Extreme Heat Toolkit*. keap.kdhe.ks.gov/Ephtm/EphtContent/documents/Toolkit%2020140519.pdf

Local Environmental Observer (LEO) Network. (n.d.). Www.Leonetwork.Org. Retrieved October 30, 2025, from www.leonetwork.org

Madamala, K., Beaudrault, S., Menza, T., & Biddlecom, C. (2024). Oregon's Approach To Demonstrating The Value Of A Modern Public Health System Through Accountability Metrics: Article describes Oregon's public health system and accountability metrics. *Health Affairs*, *43*(6), 864–872. doi.org/10.1377/hlthaff.2024.00012

McClenagan, K. (2025, May 16). *A year after the Houston derecho, researchers are still studying the storm's effects*. Houston Public Media. www.houstonpublicmedia.org/articles/news/weather/2025/05/16/521673/a-year-after-the-houston-derecho-researchers-are-still-studying-the-storms-effects/

Minnesota Department of Health, U-Spatial, & NEHA. (n.d.). *Heat Vulnerability in Minnesota*. Retrieved October 30, 2025, from maps.umn.edu/climatehealthtool/heat_app/

New Jersey Department of Environmental Protection. (n.d.). NJDEP| Climate Change | Interagency Council on Climate Resilience. *Climate Change*. Retrieved October 30, 2025, from dep.nj.gov/climatechange/resilience/resilience-council/

North Carolina Department of Health and Human Services. (n.d.-a). *NC DETECT*. Retrieved October 30, 2025, from ncdetect.org

North Carolina Department of Health and Human Services. (n.d.-b). *NC Heat Health Alert System | Division of Public Health*. Retrieved October 30, 2025, from www.dph.ncdhhs.gov/programs/epidemiology/occupational-and-environmental-epidemiology/climate-and-your-health/extreme-heat/nc-heat-health-alert-system

North Carolina Department of Health and Human Services. (n.d.-c). *North Carolinians Trust Public Health | Division of Public Health*. Retrieved October 30, 2025, from www.dph.ncdhhs.gov/about-us/north-carolinians-trust-public-health

Northern Climate Observer #520—Local Environmental Observer (LEO) Network. (n.d.). Www.Leonetwork.Org. Retrieved October 30, 2025, from www.leonetwork.org/en/newsletters/newsletter/CBBB4E8D-5E47-49B0-9D62-BFBBE980EAD4

Sommer, L. (2024, October 2). Hurricanes are dangerous far from the coast. Communities are struggling to prepare. *NPR*. www.npr.org/2024/10/01/nx-s1-5133530/hurricane-helene-rain-flooding-climate-change

State of California. (n.d.). *California Climate Adaptation Strategy*. Retrieved October 30, 2025, from climateresilience.ca.gov/priorities/public-health/

State of California. (2022). *Protecting Californians From Extreme Heat: A State Action Plan to Build Community Resilience*.

State of Oregon. (n.d.). *Oregon Wildfire Response Protocol for Severe Smoke Episodes*. www.oregon.gov/deq/FilterDocs/WFresponse.pdf

The California Department of Housing and Community Development. (2025). *Policy Recommendations: Recommended Maximum Safe Indoor Air Temperature*.

Wickerson, G., & Guardaro, M. (n.d.). *Framework for a Heat Ready Nation*. fas.org/wp-content/uploads/2025/01/FAS_2025-Heat-Policy-Agenda.pdf

Wisconsin Department of Health Services. (2020, October 2). *Flooding: Risk Assessment Flood Tool (RAFT) | Wisconsin Department of Health Services*. www.dhs.wisconsin.gov/flood/raft.htm

Sustaining the Mission: Protecting the Most Vulnerable

Deivanayagam, T. A., English, S., Hickel, J., Bonifacio, J., Guinto, R. R., Hill, K. X., Huq, M., Issa, R., Mulindwa, H., Heizal, P. N., Sato, P. de M., Selvarajah, S., Sharma, C., & Devakumar, D. (2023). Envisioning environmental equity: Climate change, health, and racial justice. *The Lancet*, *402*(10395), 64–78. doi.org/10.1016/S0140-6736(23)00919-4

Disaster Resilience Learning Network. (n.d.). Retrieved October 30, 2025, from drln.org

Littler, K., Sheather, J., Singh, J., & Wright, K. (2023). Why climate change health policy needs ethics to achieve health equity and climate justice—A call to action. *BMJ : British Medical Journal (Online)*, *381*, p1368. doi.org/10.1136/bmj.p1368

Manangan, A. P., Uejio, C. K., Saha, S., Schramm, P. J., Marinucci, G. D., Brown, C. L., Hess, J. J., & Luber, G. (n.d.). *Climate and Health Technical Report Series*.

Maricopa County. (n.d.). *2024 Shows First Decline in Heat Deaths in a Decade*. Maricopa County, AZ. Retrieved October 17, 2025, from www.maricopa.gov/CivicAlerts.aspx?AID=3222

Maricopa County Public Health. (n.d.). *2024 Heat-Related Deaths Report*. www.maricopa.gov/ArchiveCenter/ViewFile/Item/5934

Mental Health and Climate Change: Policy Brief. (2022). World Health Organization. ebookcentral.proquest.com/lib/brown/detail.action?docID=30479805

Miami-Dade County. (2025, March 6). *Understanding Heat Exposure in Miami-Dade County*. ArcGIS StoryMaps. storymaps.arcgis.com/stories/6f1e91cf8a8e4d5d9bd67525575c042e

Minnesota's Climate Action Framework. (n.d.). climate.state.mn.us/sites/climate-action/files/Climate%20Action%20Framework.pdf

MN PUC passes nation-leading protections against extreme heat and unhealthy air quality | Citizens Utility Board. (n.d.). Retrieved October 30, 2025, from cubminnesota.org/mn-puc-passes-nation-leading-protections-against-extreme-heat-and-unhealthy-air-quality

Nejat, A., Solitare, L., Pettitt, E., & Mohsenian-Rad, H. (2022). Equitable community resilience: The case of Winter Storm Uri in Texas. *International Journal of Disaster Risk Reduction*, *77*, 103070. doi.org/10.1016/j.ijdrr.2022.103070

Oregon Health Authority. (n.d.-a). *Baseline Report: Public Health Modernization (2015-Present)*. www.oregon.gov/oha/PH/ABOUT/TASKFORCE/Documents/Public%20Health%20Modernization%20Progress%20%26%20Impact%20Baseline%20Report.pdf

Oregon Health Authority. (n.d.-b). *Climate and Health in Oregon 2021-2022 report*. sharedsystems.dhsoha.state.or.us/DHSForms/Served/le-105251_23.pdf

Oregon Health Authority. (n.d.-c). *PUBLIC HEALTH EQUITY GRANT – 2023-2025*. www.oregon.gov/oha/PH/ABOUT/MODCET%20CBO%20Documents/PH%20Equity%20CBO%20Fiscal%20Guidance%20-%20AY25%20%20DRAFT-%2002.28.24.pdf

Rede Group. (2023). *Public Health Response to the COVID-19 Pandemic in Oregon*. www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/CLIMATECHANGE/Documents/le-105251_23.pdf

Sciences--4300, E.-P.-E. P. H. (n.d.). *Climate and Health Adaptation Initiative (CHAI) | Washington State Department of Health*. Retrieved October 30, 2025, from doh.wa.gov/community-and-environment/climate-and-health/climate-and-health-adaptation-initiative-chai

Sec. 216B.0975 MN Statutes. (n.d.). Retrieved October 30, 2025, from www.revisor.mn.gov/statutes/cite/216B.0975

Young, S. (2024, April 30). AC, Power Banks, Mini Fridges: Oregon Equips Medicaid Patients for Climate Change. *California Healthline*. californiahealthline.org/news/article/oregon-medicaid-patients-climate-benefits/

Zhou, R. Z., Hu, Y., Zou, L., Cai, H., & Zhou, B. (2024). Understanding the disparate impacts of the 2021 Texas winter storm and power outages through mobile phone location data and nighttime light images. *International Journal of Disaster Risk Reduction*, *103*, 104339. doi.org/10.1016/j.ijdrr.2024.104339

CONTACT

STAT Network

Brown University School of Public Health
155 South Main Street
Providence, Rhode Island 02912

statnetwork@brown.edu

sites.brown.edu/stat