ADHS Recommendations and Findings for the Arizona Extreme Heat Preparedness Plan

Heat Resilience: Shaping Arizona's Future

March 1, 2024

ARIZONA DEPARTMENT OF HEALTH SERVICES

Revised July 9, 2024

Table of Contents

Acknowledgements

The Arizona Department of Health Services (ADHS) extends our heartfelt appreciation to everyone who contributed to ADHS Recommendations and Findings for the *ADHS Recommendations and Findings for the Arizona Extreme Heat Preparedness Plan* to enhance heat resiliency work in Arizona.

We want to express our sincere gratitude to our partners in the community, universities, and local, state, federal, and tribal agencies. We are grateful for their time, experiences, and insights shared with us during the Arizona Heat Planning Summit. We appreciate your willingness to engage in focused conversations and consensus workshops. With your support, involvement, and expertise, ADHS was able to turn Arizonans' vision into an actionable plan.

Our workgroups, consisting of cooling center facility managers, university researchers, public health and healthcare practitioners, first responders, emergency preparedness professionals, city planners and managers, outreach and communication experts, and policy and decision-makers, deserve our deepest gratitude for your invaluable input and assistance. We could not have completed this plan without your tireless dedication and insights, and we appreciate all the hard work to make this happen.

Finally, we would like to extend our gratitude to Governor Hobbs. We appreciate the opportunity to continue building on existing work and identifying new partners and opportunities for collaboration. Together, we were able to advance our efforts to make Arizona communities more equitable and resilient to extreme heat.

March 1, 2024

Dear Arizonans,

As we approach the hotter months, I want to emphasize the importance of being prepared to support our communities through extreme heat. Extreme heat can have serious implications to our health, especially for vulnerable populations (e.x. Older adults, people experiencing homelessness, people taking certain medications, etc.). The preliminary data for 2023 shows a record number of heat-related emergency department visits and, unfortunately, we expect summer temperatures to continue to increase.

I am so proud of the collaborative approach used to develop Arizona's first *Extreme Heat Preparedness Plan*. The recommendations and findings herein are a testament to what we can achieve when we come together with a shared purpose.

Our commitment to the safety and well-being of our communities is unwavering, and as such, we must take proactive measures to mitigate the challenges posed by rising temperatures. The Arizona Department of Health Services (ADHS) is honored to fill the role of convener and gather our trusted partners throughout the state to support the actions outlined in the *Extreme Heat Preparedness Plan.*

It is with great pleasure that I share Dr. Eugene Livar has agreed to serve as the nation's first-ever statewide Chief Heat Officer. This position created under Governor Hobbs' Heat Preparedness Plan will work to coordinate partnerships between the state, county health departments, local municipalities, communities, the private sector, and community-based organizations.

Heat-related illnesses and deaths can be prevented when we implement community-wide comprehensive approaches. ADHS may not be able to directly impact rising temperatures, but with a collaborative approach we can help communities become more resilient to the effects of heat.

I look forward to working with you to ensure health and wellness for all Arizonans.

Sincerely,

Jennie Cunico
Cabinet Executive Officer, Executive Deputy Director

Executive Summary

Extreme heat events are of particular concern in Arizona because of its dangerously hot summers. Year after year, nearly 3,000 people visit Arizona emergency rooms because of heat-related illnesses. In 2022, there were a record 671 deaths due to heat-related illnesses, almost seven times greater than a decade earlier.

In 2023, Arizona experienced 73 days over 100°F. June 30-July 30, 2023 broke the record for most days (31) in a row with the temperature over 110°F. Observed warming trends and projections suggest that some Arizona counties may see warming of up to 4.5° F above current temperatures by 2060. As a result, nearly half the days in the year will be over 100°F. The largest temperature changes are likely to occur in Arizona's more rural areas.

The Arizona Governor's Executive Order (EO) 2023-16: Extreme Heat Planning and Preparedness directed the Arizona Department of Health Services (ADHS) to submit findings and recommendations in the interagency Extreme Heat Preparedness Plan and to include additional resources needed, recommended statutory changes, additional data requirements needed, proposals to centralize and formalize cooling centers and heat-relief facilities, as well as developing public awareness materials to promote best practices in managing extreme heat.

This report, which incorporates long-standing relationships with climate and health partners across the state, is intended to be an action plan that will serve as a catalyst for reducing heat-related illnesses and deaths and prepare Arizona for extended periods of heat in future years.

Goals

The ultimate goal of this plan is to protect Arizona communities from the growing threats of extreme heat. Through the collaboration of knowledge, expertise, and unwavering commitment, ADHS aims to develop a comprehensive and flexible plan that bolsters the state's resilience and ensures the well-being of all Arizona residents during extreme heat events. Specific goals addressed in the plan include:

- Driving Heat Relief Activities,
- Reducing Heat-Related Illnesses and Deaths,
- Preparing for Extreme Heat, and
- Fostering Innovative Solutions.

Recommendations

Through stakeholder engagement in workgroups, the following recommendations were created to address the above goals:

1. Unify coordination of grassroots heat response activities with state agency efforts
2. Propose impactful policy change to be accomplished through legislative actions
3. Invest in heat mitigation through grant and funding opportunities
4. Implement a multi-modal communication plan promoting heat mitigation activities and resources
5. Develop multilingual and tailored education and outreach materials to reach vulnerable populations
6. Improve statewide heat relief coordination to mitigate heat risk
7. Improve current data systems for management of resources and data-driven decision making
8. Activate emergency response protocols
9. Support tailored approaches for rural and urban areas with special consideration for regional needs
10. Build capacity and increase stakeholder input through year-round heat coordination
11. Improve consistency through collective standards of heat relief operations, data, and messaging
12. Support emerging initiatives and research

How To Use This Report & Long-Term Implications

- **Strategic Plan:** serves as the dashboard for the action plan, with major accomplishments and primary data, and identifies the main recommendations along with the performance measures to ensure the recommendations are accomplished.
- **Recommendation Briefs:** provide greater detail into each recommendation, including data to support the recommendation, proposal, action plan for implementation and the agencies responsible.
- **Process Measures:** measure monthly progress on the implementation of each action item and display data to measure whether the goal is being reached.

Introduction & Background

Extreme heat has claimed more lives than any other extreme weather condition in the U.S., outranking hurricanes, tornadoes, flooding, and earthquakes. Arizona's climate is prone to extreme heat and is of particular concern because of its impact on public health. In 2023, Arizona experienced 73 days over 100°F. June 30-July 30, 2023 broke the record for most days (31) in a row with the temperature over 110°F. The temperature is projected to continue increasing, and by 2030 Arizona is projected to experience up to 117 days over 100°F. The largest temperature changes are likely to occur in Arizona's more rural areas. Significant and extended durations of extreme heat can lead to an increase in heat-related illness, emergency room visits, and loss of human life.

Year after year, nearly 3,000 people visit Arizona emergency rooms because of heat-related illnesses. Some heat-related illnesses can even be fatal. More than 3,200 deaths from exposure to excessive natural heat have occurred in Arizona from 2012 to 2022. In 2022, there were a record 671 deaths, almost seven times greater than a decade earlier.

Anyone can be susceptible to heat-related illness; however, vulnerable populations at greatest risk for heat-related illness may include, but are not limited to, older adults, infants and young children, persons experiencing homelessness, persons in larger bodies, persons who overexert during work or exercise, and persons who are physically ill or on certain medications, such as for depression, insomnia, or poor circulation.

Living in Arizona for a long time does not make someone immune to the summer heat. In fact, from 2012 to 2022, the most heat-related and heat-caused fatalities occurred among those who have been here the longest. Those who have lived in Arizona at least 20 years appear to be most likely to fall victim to desert heat. From 2012 to 2022, long-time Arizonans accounted for 933 heat-related deaths, or about 85 per year. Among those here less than 3 years, there were about 19 such fatalities each year.

Heat relief work began in 2005 when the Maricopa Association of Governments (MAG) launched the Heat Relief Network. ADHS has been building resilience against climate effects (BRACE) by collaborating with stakeholders to help Arizonans be prepared for extreme heat since 2010. In 2013, ADHS held the first Statewide Heat Preparedness meeting, facilitating information exchange between local health departments, decision-makers from local, state, tribal, and federal agencies; and representatives from nonprofit organizations and universities regarding the surveillance, prevention, and treatment of heat-related illnesses. See the Spotlights section for key milestones over the years.

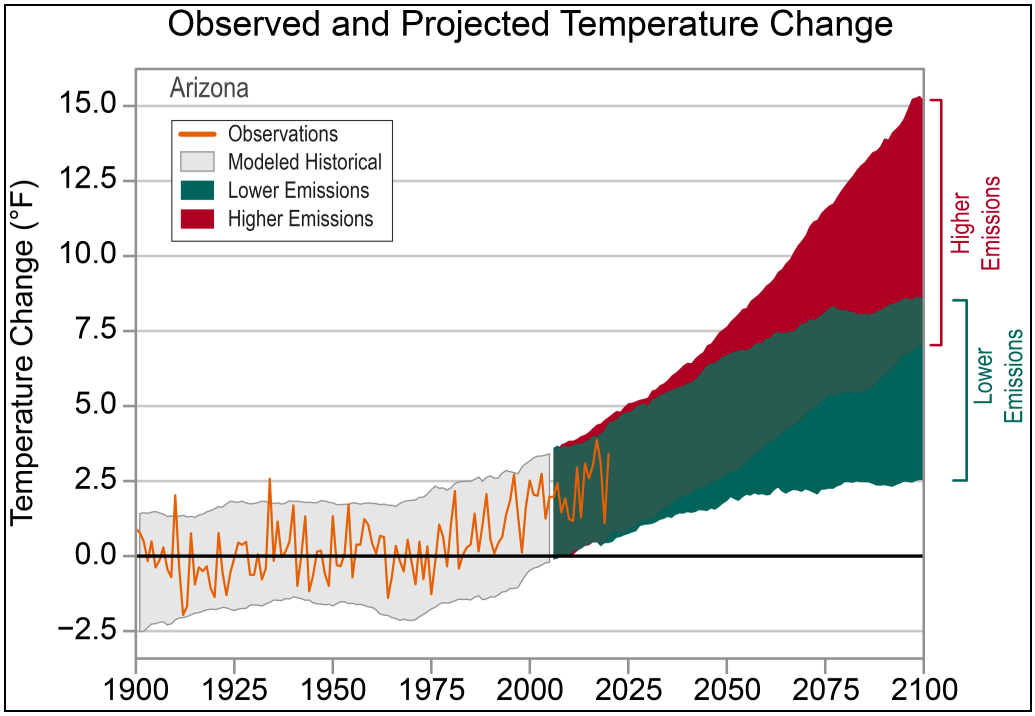
To continue building on existing work and identify new partners and opportunities for collaboration, ADHS convened the first Arizona Heat Planning Summit in November 2023 to bring together nearly 50 partner organizations from various sectors to collectively craft the *ADHS Recommendations and Findings for the Arizona Extreme Heat Preparedness Plan*.

Case for Change

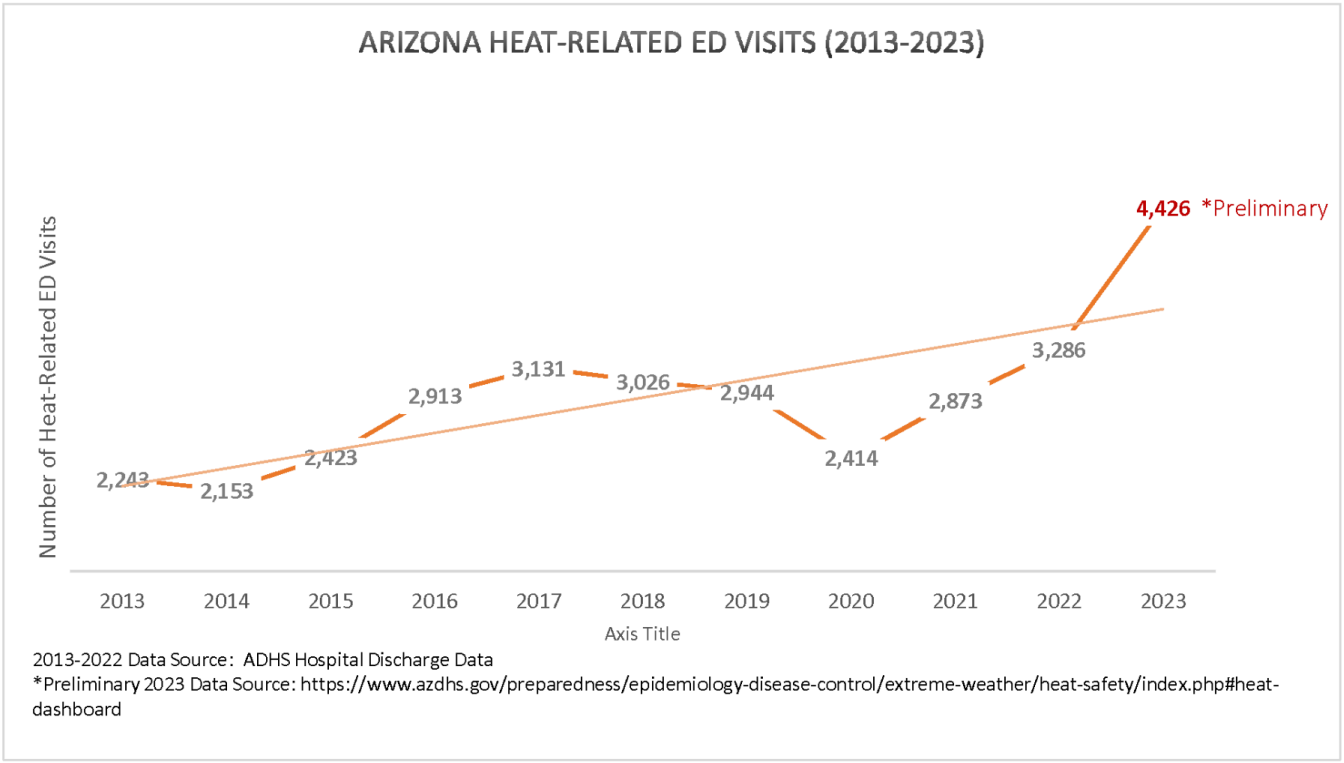
Heat is a significant threat to health and well-being in Arizona.

- **It is getting hotter in Arizona.** Observed warming trends and projections suggest that some Arizona counties may see warming of up to 4.5° F above current temperatures by 2060. As a result, nearly half the days in the year will be over 100°F[3].
- **Heat-related illnesses and deaths are increasing.** More than 3,200 deaths from exposure to excessive natural heat have occurred in Arizona from 2012 to 2022. In 2022, there were a record 671 deaths, almost seven times greater than a decade earlier.
- **More people will be vulnerable to heat-related illness in Arizona.** Population increases will lead to an increased number of persons in vulnerable populations, such as older adults and persons experiencing homelessness, who are at an increased risk of heat-related illness. As of 2022, approximately 1.4 million people are over the age of 65, and 13,553 persons experiencing homelessness in Arizona. Persons experiencing homelessness in Arizona have increased nearly 25% since 2020[5].
- **Heat impacts both physical and mental health.** Heat can cause more fatigue, irritability, and anxiety as well as exacerbating conditions like depressive episodes. More than 1 million adults in Arizona are living with a mental health condition, and 87,000 Arizonans ages 12–17 have depression[1].
- **Heat affects student learning.** Heat has been linked to poorer academic performance for children at school. Hot days reduce performance by up to 14% and lead to lasting impacts on high school graduation status[2].
- **Healthcare costs are rising.** Emergency department costs due to heat-related illnesses were six times higher in 2022 compared to 2008; hospitalizations were eight times higher during that same timeframe. For hospitalizations, total charges increased from $11 million in 2008 to $87 million in 2022. Emergency Room Visits total charges increased from $4.7 million in 2008 to $28 million by 2022.

[1] National Alliance on Mental Illness. Arizona. Mental Health in Arizona. https://www.nami.org/NAMI/media/NAMI-Media/StateFactSheets/ArizonaStateFactSheet.pdf
[2] Jisung Park. 2018. Hot Temperature and High Stakes Exams: Evidence from New York City Public Schools. https://scholar.harvard.edu/files/jisungpark/files/paper_nyc_aejep.pdf



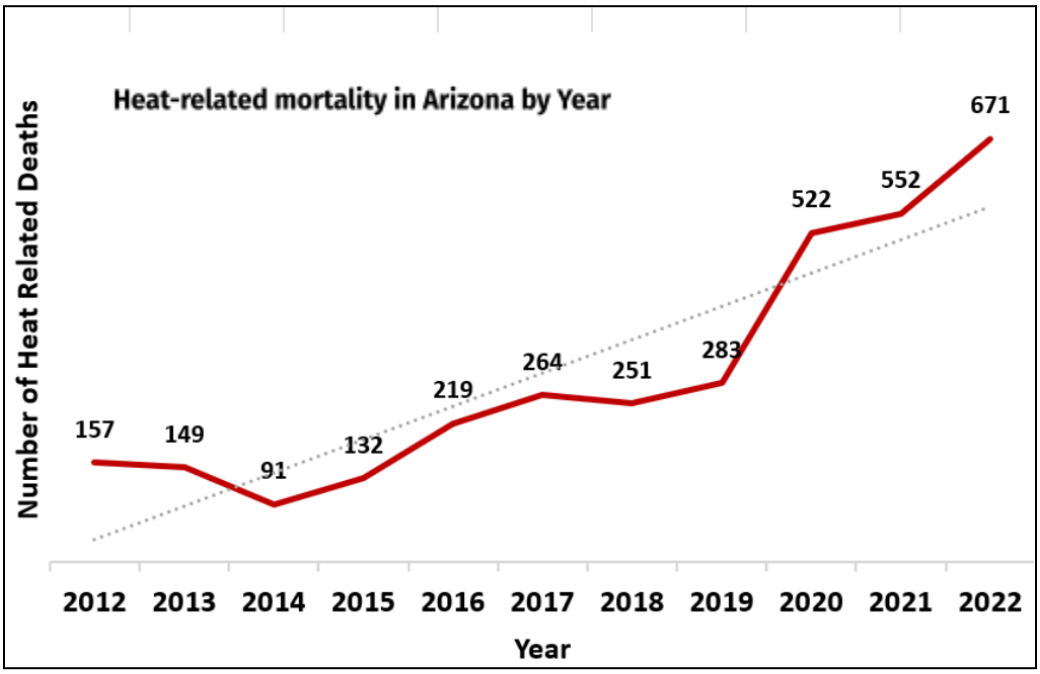
Temperatures in Arizona have risen about 2.5°F since the beginning of the 20th century. The first 21 years of this 21st century have been the warmest period on record for the state[3].



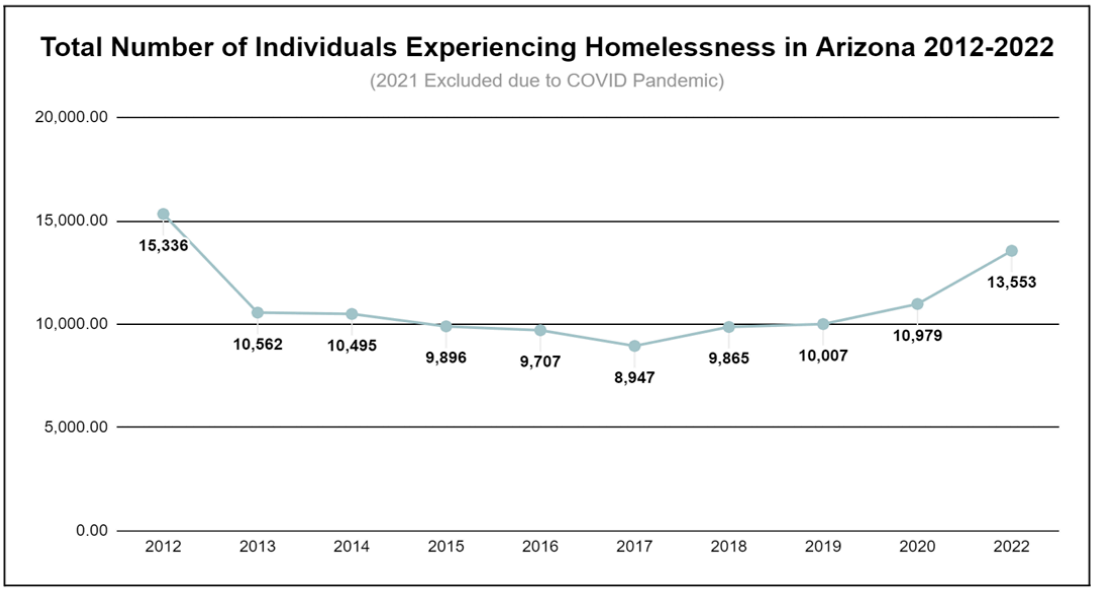
2013-2022 Data Source: ADHS Hospital Discharge Data
*Preliminary 2023 Data Source: https://www.azdhs.gov/preparedness/epidemiology-disease-control/extreme-weather/heat-safety/index.php#heat-dashboard

Heat-related illnesses in Arizona have been trending upward since 2013. Preliminary (syndromic surveillance) data suggest that 2023 saw the most ED visits in the last decade.

[3] Frankson, R., K.E. Kunkel, L.E. Stevens, D.R. Easterling, T. Brown, N. Selover, and E. Saffell, 2022: Arizona State Climate Summary 2022. NOAA Technical Report NESDIS 150-AZ. NOAA/NESDIS, Silver Spring, MD, 5 pp

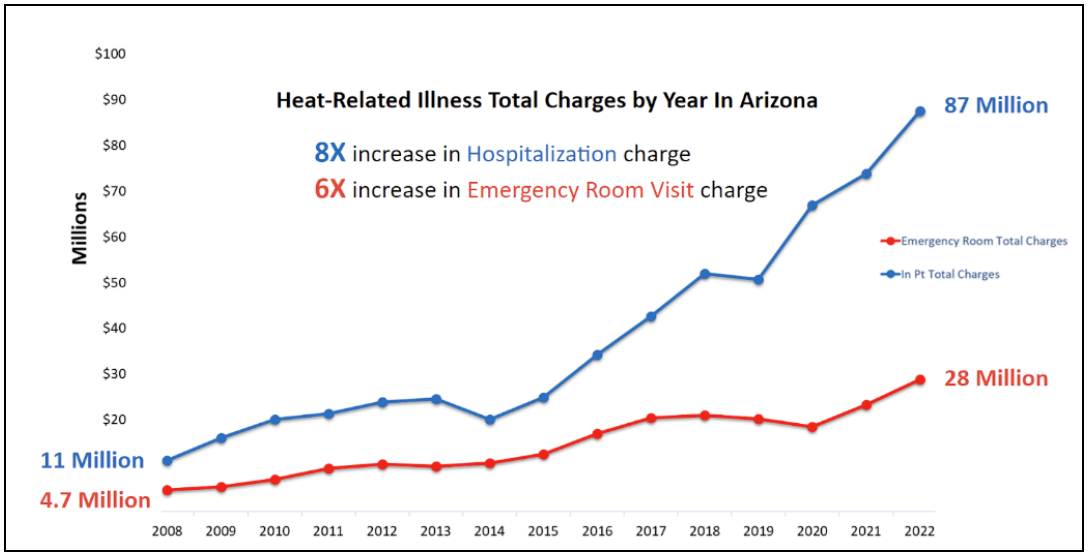


The risks of heat-related deaths increased as extreme heat events became more frequent and intense. Extreme heat continues to take Arizona lives. Since 2010 heat deaths have quadrupled from 157 to 671 per year[4].



The Homeless population in Arizona has steadily risen, with a 62% increase since 2012[5]. Homeless populations are prone to extreme heat effects. The risk of a heat-related death is two to three hundred times higher for people who are unsheltered than for the population at large[6].

[4] Heat-Related Mortality in Arizona by Year (2012 to 2022)
[5] Arizona Department of Economic Security. State of Homeless. Homelessness in Arizona Annual Report 2022.
[6] For unhoused people in America's hottest large city, heat waves are a merciless killer, Yale Climte Connections July, 24, 2023



The healthcare cost of heat-related illnesses has continued to increase. In 2022, extreme heat-related emergency room visits cost Arizona approximately 28 million dollars, which is six times greater than the cost in 2008. During the same timeframe, hospitalization costs increased 8-fold as well.

Cross-Collaboration

Effective heat response requires multi-sectoral collaboration with partners with varying expertise at the state and local levels, including grassroots organizations. Through brainstorming and collective problem-solving, stakeholders, organizations, cities, counties, state agencies, and tribal governments identified priorities and common interests. This plan not only builds understanding and relationships across sectors but also facilitates collaboration and coordination. Governor Hobbs established the Interagency Resiliency Forum to bring together agency leads, universities, and stakeholders to find innovative solutions to ensure a resilient Arizona.

ADHS proposes to convene a steering committee reporting up to the Interagency Resiliency Forum, steered by ADHS, Arizona Department of Emergency and Military Affairs (DEMA), and Arizona Department of Housing (ADOH), and establish an all-partner working group (the Arizona Heat Preparedness Network). The Arizona Heat Preparedness Network will form workgroups and task forces to ensure statewide interests are incorporated into all activities.

The Steering Committee will set priorities and the direction for heat preparedness and relief work and make decisions as needed. The Arizona Heat Preparedness Network will meet at least quarterly, more frequently as needed, to review and finalize products, recommendations, and other deliverables that come from the task forces and workgroups.

Community Lifeline / Threshold for Impact

Declaring a heat emergency is a complex issue, because susceptibility to heat varies greatly by location, demographics, and the environment/built environment. The benefits of declaring a heat emergency include opening up resources and authorities to respond, letting the public know the seriousness of the threat, and allowing agencies and organizations to dedicate resources and mobilize support.

ADHS will collaborate with the Governor's Office of Resiliency, other state agencies, and Tribes through Steering Committee meetings to review recommendations from workgroups. Workgroups will research existing definitions and practices across the country and analyze existing data to make recommendations to the Arizona Heat Preparedness Network.

Data

Data is key for public health and population-based strategic actions. Data is used to monitor trends over time, better understand risk factors, and the people most affected. ADHS has been addressing heat for over a decade to support its mission. Gold standard disease reporting and analysis typically uses Hospital Discharge (HDD), Emergency Room Visits, and Death data. Syndromic surveillance is reported near real-time and comes from emergency department or inpatient visits to hospitals. Syndromic surveillance allows public health agencies to take a pulse of the disease burden in the community, statewide and can compare data over time to allow public health to see when trends are different than typical for more immediate decision-making during heat emergencies and responses. Syndromic surveillance is based on an individual's reported symptoms during an emergency department visit (compared to HDD, ED, and death data which are based on an official diagnosis).

New knowledge sets / Gained knowledge and best practices

Through the collaborative activities listed in *ADHS Recommendations and Findings for the Arizona Extreme Heat Preparedness Plan*, agencies and organizations will gain a better understanding and develop best practices that can be used for years to come. Arizona is working towards a national model for heat response that can be shared with other jurisdictions. Some examples will include trigger points for emergency declarations or response activation, centralized cooling center coordination framework, policies and legislation, and heat-relief collaboration framework.

How Will Success Be Measured?

The following key performance measures were identified on how well the action plan is addressing the goals. Each performance measure will be monitored according to their data reporting schedule.

Performance Measure	Frequency of Data Updates
By June 30, 2025, made progress in 100% of recommendations in the Extreme Heat Action Plan.	Monthly

By June 30, 2025, increase the number of facilities reporting heat-related illnesses into the syndromic surveillance system.	Annually
By June 30, 2025, stabilize the number of heat-related Emergency Department visits.	Annually
By June 30, 2025, stabilize the number of heat-related hospitalizations.	Annually
By June 30, 2025, decrease the number of heat-related deaths.	Annually
By June 30, 2025, complete a baseline assessment of the AZ Heat Preparedness Network collaboration effectiveness using a third-party assessment tool.	Annually

Statewide Resources

The following statewide resources have been used to support heat relief:

- Arizona 2-1-1 connecting individuals with resources for extreme heat
- Extreme Weather and Public Health Webpage and a statewide map sharing hydration and cooling center locations and heat relief resources
- Heat Resource Guide (a directory of partners and resources)
- Heat Toolkits for school aged children, older adults, and outdoor workers
- Heat Safety Website
- ADHS All Hazards Public Health Emergency Response Plan with Heat Annex
- Heat Related Illness Syndromic Surveillance Dashboard
- Heat Reports, e.g. surveillance data, vulnerability assessment, and adaptation plan
- Low Income Home Energy Assistance Program (LIHEAP) providing assistance with energy bills, allowing families to stay cool in the summer

Media Campaigns / Public Service Announcements (PSAs)

A multifaceted marketing approach will be needed to try to reach all Arizonans to inform the public of safety precautions and heat relief resources. Marketing campaigns on TV, radio, billboards, local newspapers, social media, and other digital media will reach the majority of those who need this information to be safe in the heat. Print and radio will reach Arizona's senior and rural population and digital and social media will reach the widest audience quickly and ensure all constituents have access to this information. The following ideas were generated as part of the summit and Communication workgroup:

- Annual Extreme Heat Planning Workshop (spring)
- Annual Heat Debriefing Meeting (fall)
- Billboards
- Collaborate with key stakeholders such as the Heat Relief Network
- Collaborate with local partners to engage community leaders and organizations, e.g. HOAs
- Heat Alert Email Distribution List

- Materials e.g. brochures, flyers,
- Social media, e.g. blogs, Facebook, Twitter, LinkedIn, etc.
- Website updates, banners

Extreme Heat Planning & Preparedness Executive Order 2023-16

Under EO 2023-16, the ADHS is charged to

A. By March 1, 2024, provide findings and recommendations in the interagency Extreme heat preparedness plan, including additional resource needs and recommended statutory changes, to ensure long-term readiness for addressing extended periods of extreme heat in future years.
B. Develop additional data requirements to ensure successful allocation and management of resources for responding to extreme heat, including emergency room visits, heat-related death and illness, heat-related workplace incidents, morgue capacity, distribution of cooling and heat relief centers, and other information to ensure the people of Arizona are safe and healthy from extended extreme heat waves.
C. Develop proposals to centralize and formalize coordination for cooling centers and heat relief facilities into a network that can be relied upon for years to come.
D. Develop public awareness materials to promote best practices in managing extreme heat that can be made available to workplaces, schools, and congregate care facilities.

Key Populations & Settings

Heat vulnerability considers the demographics and health status of an individual, their socioeconomic status, and their geographical location. Vulnerable populations may include, but may not be limited to, the following:

- older adults (people over the age of 65)
- infants (people under the age of 1)
- young children (people between the ages of 1 and 10)
- adolescents (people between the ages of 10 and 19)
- persons living with a cognitive/mental, emotional, or physical disability
- persons experiencing homelessness
- persons who are homebound
- persons who overexert during work or exercise
- persons who are in larger bodies
- persons who are physically ill or on certain medications (e.g., medications for depression, insomnia, or poor circulation)
- persons who cannot regulate or adjust their body temperature well
- persons who work outdoors (e.g., farm workers, electric line workers, construction workers, etc.)
- persons living with a substance use disorder
- persons living in rural communities

U.S Census Bureau data indicated that nearly 1 in 4 people in the United States are socially vulnerable and have low resilience to extreme heat exposure[7]. Individuals may be more vulnerable to health impacts from extreme heat when they must navigate additional barriers, such as unstable housing, high energy bills, living in neighborhoods with insufficient shade, needing to walk long distances to use public transportation, and fear of retaliation when advocating for themselves at work. See SVI maps in Figure 7 in Appendix A.

Arizona needs a regional approach in deciding thresholds and key recommendations. People acclimatize to heat in the location where they live, work, and play. This means that people who live in warmer regions will be able to withstand higher temperatures during their regular work or school days than people who live in cooler regions.

Urban heat island effects are a particular concern for more urban areas. Urban heat islands are caused by the uneven, inequitable spread of land covers in the urban landscape, leading to more heat-absorbing buildings and pavements and fewer cool spaces with trees and greenery. Residents of intra-urban heat islands are more likely to experience heat-related illnesses and even death. The urban heat island effect makes low-income communities more vulnerable to heat[8,9].

Rural and Tribal populations are uniquely vulnerable to health impacts from extreme heat. Rural populations are often characterized by lower socioeconomic status, greater portions of older adults, greater portions of outdoor workers, less shaded structures, less health care, less access to media communications, and disadvantages in transportation. The factors contributing to urban and rural vulnerability may differ significantly. Most of the research, interventions, and real-world experience in responding to extreme heat has revolved around urban settings. However, the interventions that are developed in an urban setting might not be feasible or have the same positive effect in a rural or Tribal setting. For example, a rural farmer may not be able to leave the farm and take advantage of a cooling center, because they need to tend to their animals. An older adult may not be able to travel long distances to find a cooling center.

What is Extreme Heat?

The U.S. Centers for Disease Control and Prevention (CDC) generally defines extreme heat as one or more days of unusually hot and/or humid weather. However, the definition of extreme heat varies based on many factors, such as location and average temperature. The Arizona

[7] https://www.census.gov/library/stories/2023/07/almost-a-quarter-of-population-vulnerable-to-rising-heat.html
[8] https://www.epa.gov/heatislands/heat-islands-and-equity
[9] https://climas.arizona.edu/blog/understanding-urban-heat-vulnerability-and-need-resilient-design-practice

Emergency Information Network has defined extreme heat as **a period of at least 2-3 days of high heat with temperatures above 90 degrees Fahrenheit.**

Extreme heat can potentially harm human health. Without proper preparation and response, exposure to extreme heat can lead to symptoms of heat-related illness (HRI), which may include: dehydration, heat cramps, heat exhaustion, heat stroke, or death. An individual's response to extreme heat can vary based on a number of factors including pre-existing health conditions, such as cardiovascular (heart) disease and respiratory illness.

The impacts of extreme heat are seen at the individual level as people experience HRI, but extreme heat events, especially those that are prolonged, can overburden the health system. During extreme heat events, hospitals across Arizona see an increase in emergency room visits and hospitalizations, stretching capacity across the system. In summer 2023, there were approximately 4,426 heat-related illness emergency department visits, up from 3,291 in summer 2022, according to the syndromic surveillance data.

Extreme heat and wildfire smoke co-occurring events have increased recently, especially in the Southwest West regions. Smoke exposure in conjunction with extreme heat exacerbates health outcomes. Both extreme heat and wildfire smoke are harmful to cardiovascular and respiratory systems. When we are exposed to both at the same time, the impact can be greater than their combined individual effects, which can overburden the health system. Periodical extreme heat events can stress the power grid by demand surge as families and businesses try to stay cool. Prolonged power outages during extreme heat events would lead to increased mortality and hospitalization due to HRIs and other illnesses (e.g., gastrointestinal illness, cardiovascular, and renal disease), especially for individuals relying on electricity-dependent medical equipment. In addition, climate-related natural disasters such as flooding and prolonged extreme heat events have been associated with mental health conditions like elevated levels of anxiety, depression, and post-traumatic stress.

Heat Response Activation Tiers, Thresholds, and Activities

Tier 0: Pre- & Post- Heat Season

October 1- April 30

Activities include:

- AZ Heat Planning Summit, Annual State Heat Workshop
- Heat Awareness Week and other educational campaigns and awareness
- Update heat resources, e.g. toolkits

Tier 1: Heat Season

May 1- September 30

Pre-posturing and providing life-saving assistance throughout the Arizona summer. NWS Heat Risk 1 - 4.

Examples include:

- Opening heat relief centers (cooling centers, hydration stations, and respite centers)
- Heat Alerts
- Partner meetings
- Cooling center workgroups
- 211 assistance
- Social media campaigns
- Heat relief centers map
- Coordinate resources, e.g. Narcan, cooling towels, water
- Heat Illness Dashboard
- Free or reduced bus passes and/or rideshare vouchers (rural areas)

Tier 1A: Cautionary Period

The NWS has issued an Excessive Heat Warning.

HeatRisk Values When the HeatRisk Value is:	Risk of Heat Effects ...the risk of heat effects are:	Level of Heat Concern ...as symbolized by this color:
0	Little to None	Green
1	Minor	Yellow
2	Moderate	Orange
3	Major	Red
4	Extreme	Magenta

Generally, a Heat Watch is issued by the NWS when there is potential to reach a value of 3 or 4 in the next 2-7 days. **A Heat Warning is issued by the NWS when the heat risk value will reach 3 or 4 within the next 12-24 hours.** NWS Extreme Heat Warnings in the Southwest account for regional and temporal differences and incorporate health outcome data (deaths) as displayed in the heat risk map.

Activities include:

ADHS to provide real-time communications of cautionary periods to partners. Partners to plan to ramp up heat interventions, e.g. extended cooling center hours.

Tier 1B: Exceptional Heat Events

Exceptional Heat Events are defined when the **National Weather Services (NWS) has issued Excessive Heat Warnings for 2 days in a location**

AND

Health heat outcomes exceed the extreme threshold as defined below on a heat warning day or on one of the following 3 days.

- HRI Emergency Department visits are considered extreme when they are in the top 10% when compared to the previous 3 years

  OR
- The number of Heat-Related EMS dispatches are considered extreme when they are in the top 10% when compared to the previous 3 years

The **response returns to Tier 1A: Cautionary Period** when no new Excessive Heat Advisory, Watch, or Warning is issued for the next 3 days **AND** HRI ED visits and EMS dispatches have returned to below the top 10% when compared to the previous 3 years.

Activities include: Enhanced public health response, e.g. extended cooling center hours, media release, HANs.

Tier 1C: Multiple Emergencies Occurring Simultaneously

Examples: Power Outages, Transportation Interruptions, Outbreaks, Healthcare System Overload, Extreme Weather (Monsoon, Floods, Air Quality, and Smoke).

Activities include:

- Enhanced communication, coordination, prioritization of resources, response, and public messaging
- Multiple agencies involved, including DEMA

Tier 1D: Recovery

After heat emergency is rescinded

Evaluate Recovery Support Functions (RSF) needs outlined in the State Emergency Response and Recovery Plan (SERRP) which includes: infrastructure systems, economic recovery, natural and cultural resources, health and social services, community assistance, and housing.

Activities include:

- Coordinate with the community to address latent impacts post event.
- Multiple agencies involved, DEMA leads

HEOC activation may occur at any time as requested by ADHS Leadership

Last revised 5/14/24

Tier 0: Pre- and Post-Heat Season
ADHS will collaborate with the Governor's Office of Resiliency, other state agencies, and Tribes through Steering Committee meetings to review recommendations from workgroups. Workgroups will research existing definitions and practices across the country and analyze existing data to make recommendations to the Arizona Heat Preparedness Network.

During the pre- and post-heat season (October 1 to April 30), the Steering Committee and partners will focus on evaluation and planning, specifically: the AZ Heat Planning Summit, Annual State Heat Workshop, Heat Awareness Week, other educational campaigns and awareness, and update heat resources, e.g. toolkits.

Tier 1: Heat Season
The Steering Committee and partner activities will focus on pre-posturing and providing life-saving assistance throughout the Heat Season (May 1st to September 30th). Examples include:

- Opening heat relief centers (cooling centers, hydration stations, and respite centers)
- Heat Alerts
- Partner meetings
- Cooling center workgroups
- 211 assistance
- Social media campaigns
- Heat relief centers map
- Coordinate resources, e.g. naloxone, cooling towels, water
- Heat Illness Dashboard
- Free or reduced bus passes and/or ride-share vouchers (rural areas)

Tier 1A: Cautionary Period
The National Weather Service has issued Warning.

HeatRisk Values When the HeatRisk Value is:	Risk of Heat Effects ...the risk of heat effects are:	Level of Heat Concern ...as symbolized by this color:
0	Little to None	Green
1	Minor	Yellow
2	Moderate	Orange
3	Major	Red
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regional and temporal differences and incorporate health outcome data (deaths) as displayed in the heat risk map.

During the Cautionary Periods, ADHS will provide real-time communications to partners and encourage them to start **planning to ramp up** heat interventions. Examples include:

- Planning to extend heat relief center hours
- Assessing resource inventory and restocking
- Communicating needs and gaps
- Communicating planned disruptions in services
- Planning staffing and backup support
- Increase outreach to at-risk populations

Tier 1B: Exceptional Heat Events

ADHS analyzed health outcome data (Heat-related emergency room visits and emergency medical service dispatches) to identify a threshold where cases above which are considered extreme. Heat EMS calls and will serve as an early warning to the Steering Committee, Interagency Resiliency Forum, and decision-makers.

Exceptional Heat Events are defined when the National Weather Service has issued Excessive Heat Warnings for 2 days in a location

AND

Health heat outcomes exceed the extreme threshold as defined below on a heat warning day or on one of the following 3 days.

- HRI Emergency Department visits are considered extreme when they are in the top 10% when compared to the previous 3 years

  OR

- the number of Heat-Related EMS dispatches are considered extreme when they are in the top 10% when compared to the previous 3 years

The **response returns to Tier 1A: Cautionary Period** when no new Excessive Heat Advisory, Watch, or Warning is issued for the next 3 days **AND** HRI ED visits and EMS dispatches have returned to below the top 10% when compared to the previous 3 years.

During excessive heat events, ADHS will increase communications such as media releases and alerts to healthcare providers and public health departments through the Health Alert Network (HAN) and alert partners to initiate emergency response interventions. Examples include:

- Extension of heat relief center hours and locations, including state-run centers
- Increased distribution of resources, e.g. water
- Moratoriums on energy shut-offs and non-emergent repairs that require a disruption of service

- Increase water distribution to heat relief centers
- Free or reduced-cost transportation to heat relief centers

Tier 1C: Multiple Emergencies Occurring Simultaneously

Multiple emergencies occurring simultaneously creates unique challenges, such as, increased burden on communities and resources, exacerbated health outcomes, and complicated response efforts. In addition, extreme heat can exacerbate other emergencies such as increasing the likelihood of wildfires.

When multiple hazards occur simultaneously ADHS will ramp up its operation and collaboration with state, federal, local, and non-governmental agencies as identified by the HEOC managers.

ADHS will collaborate with partners to identify and assess impacted areas including identification of Assess and Functional Needs (AFN) and vulnerable populations to prioritize response and resources. ADHS will collect essential elements of information from licensed facilities in impacted and surrounding areas. ADHS will prepare public health messaging to address environmental health and safety, medication safety, respite/refuge locations, and resources. ADHS will explore alternative means for message delivery as needed.

Tier 1D: Recovery

Recovery efforts after a heat emergency is rescinded will be led by DEMA and report to the Steering Committee. ADHS will provide support as needed.

Spotlights

The following list includes key milestones for extreme heat efforts.

- 2005 Maricopa Association of Governments launches Heat Relief Network
- 2006 Maricopa County Department of Public Health initiates heat surveillance
- 2010 Tucson launches annual urban heat island workshops
- 2010 ADHS Extreme Weather & Public Health Program established
- 2011 ADHS launches Heat Safety Toolkit for Outdoor Workers
- 2013 ADHS convenes first statewide heat-related illness meeting
- 2014 ADHS publishes Arizona Heat Safety Resource Guide
- 2014 ADHS, MCDPH, ASU, and MAG conduct cooling center evaluation
- 2014 Maricopa County Attorney's Office launches heat safety awareness campaign
- 2015 ADHS, MCDPH, and ASU conduct CASPER household survey on heat
- 2015 ADHS & ASU publish first Arizona Climate and Health Profile
- 2015 MCDPH launches Bridging Climate Change and Public Health initiative
- 2016 ADHS, MCDPH authoring to CSTE national heat syndrome definition
- 2016 MCDPH publishes Accessing the Cooling Needs of Homebound Individuals in Maricopa County
- 2017 ADHS, ASU, & UA publish Trends in Morbidity & Mortality From Exposure to Excessive Natural Heat in AZ
- 2017 ADHS publishes first Arizona Climate and Health Adaptation Plan
- 2017 ADHS, NWS, ASU, and UA begin annual Extreme Heat Planning Workshops
- 2017 Nature Conservancy launches Nature's Cooling Systems program
- 2018 Cooling center evaluation efforts begin in Yuma County
- 2018 ADHS, ASU, & UA publish Addendum to the Arizona Climate & Health Adaptation Plan
- 2018 Enhanced heat surveillance study in Pinal County
- 2020 MCDPH launches Energy Insecurity workgroup
- 2020 ADHS, ASU publishes Operating Cooling Centers in Arizona Under COVID-19 and Record Heat Conditions
- 2020 Arizona Heat Resilience Workgroup launched
- 2021 ADHS publishes Managing Extreme Heat Recommendations for Schools: Pilot Version
- 2022 ADHS launches Heat Related Illness Data Dashboard
- 2023 Governor declares heat emergency and issues executive order
- 2023 Interagency Resiliency Forum Creation
- 2023 ADHS convenes statewide summit to inform heat preparedness plan
- 2023 ADHS submits draft ADHS Recommendations and Findings for the A*rizona Extreme Heat Preparedness Plan*
- 2024 Southern Arizona Heat Planning Summit
- 2024 ASU Knowledge Enterprise submits community-gathered feedback
- 2024 AZ Extreme Heat Preparedness Plan

Extreme Heat Recommendations Strategic Plan

Goal	Recommendations	Performance Measures
Drive Heat Relief Activities	**Statewide Coordination:** Unify coordination of grassroots heat response activities with state agency efforts	By June 30, 2025, make progress on 100% of recommendations in the Extreme Heat Action Plan. By June 30, 2025, increase the number of facilities reporting heat-related illnesses into the syndromic surveillance system. (baseline: n = 89/98). By June 30, 2025, stabilize the number of heat-related emergency department visits. (baseline: n = 3,286 (2022) HRI ED Visits). By June 30, 2025, stabilize the number of heat-related hospitalizations. (baseline: n = 1,039 (2022) HRI hospitalizations). By June 30, 2025, decrease the number of heat-related deaths. (baseline: n = 671 (2022) HRI Deaths). By June 30, 2025, complete a baseline assessment of the AZ Heat Preparedness Network collaboration effectiveness using a third-party assessment tool.
	Heat Relief Legislation: Propose impactful policy change to be accomplished through legislative actions	
	Sustainable Funding: Invest in heat mitigation through grant and funding opportunities	
	Public Policy Prioritization Framework: Create Public Policy and a Prioritization Framework	
Reduce Heat-Related Illnesses and Deaths	**Multi-Model Communication Approach:** Implement multi-modal communication plan promoting heat mitigation activities and resources	
	Tailored Education and Outreach: Develop multilingual and tailored education and outreach materials to reach vulnerable populations	
	Heat Relief Coordination: Improve statewide heat relief coordination to mitigate heat risk	
Prepare for Extreme Heat	**Data to Action**: Improve current data systems for management of resources and data-driven decision making	
	Emergency Response: Activate emergency response protocols	
Foster Innovative Solutions	**Building Capacity and Stakeholder Input:** Build capacity and increase stakeholder input through year-round heat coordination	
	Standardization: Improve consistency through collective standards of heat relief operations, data, and messaging	
	Innovative Solutions, Research, and Resources: Support emerging initiatives and research	

Recommendation Brief: Statewide Coordination

Recommendation

Unify coordination of grassroots heat response activities with state agency efforts.

Current State

Many organizations around Arizona have been working to reduce heat-related illnesses and deaths since 2005. By leveraging existing resources, many of these organizations connect regularly through meetings, shared projects, shared interests, and shared challenges. A few of ADHS' collaborative efforts include reports and data analysis; Arizona Heat Planning Summit and Annual Heat Planning Meeting; Heat Awareness Campaigns; and various workgroups. Heat may pose additional challenges in terms of infrastructure and healthcare availability as people move around seeking cooler weather in other locations.

Identified Gaps

The many organizations involved in heat response work recognize that a unified and coordinated approach will maximize the impact to reduce illnesses and deaths. The group noted that current gaps include:

- A need to establish a mechanism to activate resources and activities that accommodate a diverse need.
- Not all solutions are appropriate for all communities across the state.
- Cooling centers may not be a viable option for rural communities and individuals facing specific barriers such as ADA accessibility, accessible transportation, storage for belongings, accommodation for pets, provision for napping, and adherence to religious affiliations.
- Additionally, there are concerns about meeting the needs of homebound individuals dependent on medical devices at cooling centers. Some cannot utilize cooling centers.
    - In Arizona, approximately 70,000 people are identified as homebound and dependent on medical devices.

Implementation Needs

To successfully complete the activities below to accomplish the recommendation, ADHS and partners need dedicated staff, time, and resources. These two people alone cannot successfully complete all the activities. Lead and Co-lead agencies need to allow staff time and resources to contribute to these activities. Additional staff may be needed and will be assessed at a later date.

Health Equity

Most of the existing heat relief efforts in Arizona have focused on highly populated urban areas. Stakeholders should expand coordination efforts to include viable interventions that can be implemented in rural areas of the state. When developing outreach and communication materials, partners should use multiple languages to ensure people speaking languages other than English are reached.

Proposal

ADHS proposes to unify coordination of grassroots heat response activities with state agency efforts through the following activities:

- Prioritize the most impactful heat response activities and identity sustainable funding
- Leadership engagement to promote multi-sector inter and intra agency Heat Response Effort
- Conduct needs assessment for the resource sharing platform

Action Plan

Activity	Milestones / Timeline
Prioritize the most impactful heat response activities and identify sustainable funding	By December 2023, identify different activities to be implement in the short term and long term (this plan)
	By June 2024, hire grant administrator to identify and support grant funding opportunities
	By August 2024, identify potential funding sources
	Beginning September 2024, apply for funding and resources
	By September 2024, determine equitable distribution of the funding
Deliverables: Prioritized list of activities; attain sustainable funding	
Leadership engagement to promote multi-sector inter- and intra-agency Heat Response Effort	By April 2024, define who the leaders are e.g. leaders within agencies or government office
	By April 2024, develop training
	By April 2024, leadership is engaged with ongoing projects and trials
	By April 2024, leadership is establishing a learning and growth environment
	By April 2024, leadership supporting cross-collaboration “no-silos”
Deliverables: Leadership established cross-collaborative teams; % of management completes ongoing education to ensure a learning and growth environment (e.g. grade # and above, or outside of state, need definition)	
Conduct needs	By April 2024, develop a workgroup

assessment for the resource sharing platform	By April 2024, develop process to gather and maintain POC list
	By October 2024, develop template for heat-related preparedness resources current and needed
	By October 2024, develop documentation on the platform so that people are educated on how to enter data into the tool, but can also view data and connect with resources that (have) or (need)
	By January 2025, develop platform for visualizing existing or needed resources by organization/agency; e.g. captured with Survey123 using ESRI ArcGIS tools
Deliverables: POC list for every county down to the city level; define what resources exist for heat-related preparedness (people, equipment, facilities, money)	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of established cross-collaborative teams
- # of management completing ongoing education to ensure a learning and growing environment
- % of counties and cities with identified point of contact

Recommendation Brief: Heat Relief Legislation

Recommendation

Enact legislation that impacts heat-related illnesses and deaths by improving the heat relief infrastructure and cooling centers, reducing energy and housing burden among vulnerable populations, strengthening the coordinated statewide response, protecting outdoor workers, improving decision making through data enhancement and modernization, and improving access to cool places.

Current State

Public health infrastructure and emergency response; housing and energy; labor and outdoor workers; built environments; data sharing and reporting; local compliance, zoning, and codes; and the healthcare system are addressed through current legislation.

Legislation is needed to implement some of the most impactful activities and projects identified through the summit and subsequent workgroups. Legislation helps agencies prioritize their time and resources and provides funding when necessary.

Identified Gaps

Stakeholders and elected officials have identified an urgency and growing need to develop new legislation that specifically addresses heat, as it is a growing public health threat. Currently, no dedicated legislation to specifically prepare and respond to extreme heat exists.

Many of the legislative recommendations require funding, stakeholder, and internal and external agency coordination to maximize impact and address any gaps or unintended consequences of proposed legislation.

Stakeholders also identified gaps at the local level. However, this brief captures the gaps that can be addressed through state-level legislative change.

The legislative recommendations in the table below are connected to a specific gap or need.

Health Equity

The legislative ideas proposed in this brief are aimed at improving heat relief for vulnerable populations. When legislation is being developed and/or implemented, a focus on supporting the unique needs of vulnerable populations should continue.

Proposal

Submit a legislative package to comprehensively address the identified problems through the following legislative solutions (bolded solutions are considered high impact):

Topic Area	Problem	Legislative Solution	Funding Needed?
Heat Response Infrastructure and Emergency Response	Arizona lacks a platform to connect all heat relief work. 211 is an established platform that public health agencies and counties are familiar with, and would be a natural solution. Funding is limited to current activities. Additional funding is needed to expand services.	**Support a central call center (211) to connect people to resources**	Y
	Stakeholders identified numerous projects that would have tangible impacts on populations suffering from or at risk of suffering from heat-related illnesses. However, funds are needed for full, successful implementation.	Mini-grants to support • Cooling centers and temporary shelters • Transportation to cool spaces • Free or reduced bus passes and rideshare during summer months • Improve bus stops/routes to cooling centers • Communication and outreach campaigns • Connecting individuals to existing services • Equitable energy assistance • Innovative local solutions • Rural/frontier specific solutions • Optimizing cooling center locations	Y
	FEMA funds are very challenging to access. By declaring a heat-related emergency, it will be recognized as an emergency.	FEMA to recognize heat as an emergency to release public assistance funds and activate FEMA's Emergency Support Functions framework.	N
	Not all counties and municipalities have a plan to respond to heat emergencies. Some municipalities may not have the resources or capacity to respond without the support of the county.	Counties to collaborate with municipalities to develop and maintain action plans for heat including identified temporary cooling area solutions.	Y
	Persons experiencing homelessness is a complex and dynamic issue. Individuals who might not usually prefer or qualify for shelters will need access to cool spaces.	Encourage homeless shelters to have a plan to expand capacity during extreme heat.	y

	Although many agencies and partners have been working for the past two decades to reduce heat-related illnesses and deaths, it is still relatively understudied. Many interventions are just now being studied for their efficacy, and more understanding is needed to understand barriers and develop innovative solutions. Many other parts of the United States are just now gaining interest in the topic area. Most of the solutions we have were developed for localized or urban settings. There are gaps in equitable and effective solutions, e.g. rural areas.	**Make Arizona a Heat Center of Excellence in the country. Centers of Excellence bring together experts from various disciplines who focus on a specific topic area to provide leadership, expertise, best practices, and innovative solutions. Due to the network of experts and collaborative nature of the work, Centers of Excellence can be more competitive when applying for grants and support from funders.**	Y
	Cooling centers are an effective intervention to the effects of heat. However, costs are the burden of the facility, with no additional support for after-hours, weekends, or holidays.	**Create sustainable funding for heat relief interventions, e.g. cooling centers**	Y
Compliance, Zoning, and codes	Some cooling centers are not ADA accessible, for example, historic or exempted properties.	Create a fund for making non-ADA-accessible cooling centers and shelters ADA-accessible.	Y
Housing and Energy	Residents have faced barriers from landlords, mobile home park owners, and homeowners associations (HOAs) when trying to install air conditioners or cooling systems.	**Mobile home park owners, HOAs, and landlords must allow tenants to put in air conditioners or cooling systems**	N
	Residents of mobile home parks are often more vulnerable to heat, e.g. older adults, low-income income. Weatherization and energy costs are barriers to individuals maintaining access to life-saving air conditioning.	Make mobile home households eligible for weatherization and utility assistance programs or incentivize owners of mobile home parks to utilize these programs.	Y
	Disconnection to utility service will increase the risk of suffering from heat-related illness or death, especially among vulnerable populations.	Prevent mobile home park owners from disconnecting utilities during the hottest months (e.g. due to non-payment of rent).	Y
	People with a history of a felony face challenges in securing stable housing and qualifying for assistance.	People with a history of a felony have a path to housing.	Y

	People need time to find affordable housing in the face of eviction. Shelters fill up in summer months. People and pets living without access to housing are at an increased risk of heat-related illness and death.	Increase eviction prevention during summer months (extend time to evict e.g. from 5 days to 14 days)	Y
	The federally funded LIHEAP program underfunds hot states, and additional funds are needed to meet the needs of AZ citizens.	Rebate program or insurance coverage for medically needed, in-home generators	Y
	The federally funded LIHEAP program underfunds hot states, and additional funds are needed to meet the needs of AZ citizens.	**Establish utility assistance outside of LIHEAP to include emergency Air Conditioning (AC) repair.**	Y
	Although funding has been available to assist with air conditioners, many people who succumbed to heat had no working air conditioner in their homes. In addition, EPA phased out R-22 freon by 2020. Moving to non ozone depleting freons requires costly system replacements that are beyond the limits of some programs.	**Explore opportunities for AHCCCS to cover emergency air conditioner repairs, installation, and/or transportation to cooling centers.**	Y
	Access to working AC is one of the most effective prevention interventions to prevent heat-related illness and death. Cooling centers and shelters have limited capacity and are not viable answers for everyone, e.g. rural areas, people with special needs, and people with multiple pets.	**Establish a utility shutoff program to prohibit utility companies from terminating service to vulnerable residents during extreme heat conditions.**	Y
	Cooling demands can drastically increase electricity consumption for the duration of a heatwave. This stresses the generation, transmission, and distribution of electricity, which could lead to localized or widespread blackouts or a reduced electricity supply. Serious disruptions to the electricity supply, as a result of higher peak demand, can have a knock-on effect for other infrastructure (e.g. hospitals) and essential services that depend on the steady supply of	Plan for sudden increases in electricity demand. Ensure that there are alternative energy sources, such as backup generators, for critical facilities and communicate with the public about the possible cuts in electricity.	N

	energy such as water provision in high-rise buildings. This can cause an increase in vulnerability, especially for resource-constrained city residents.		
Labor and Outdoor Workers	Working in the heat puts people at increased risk of heat-related illness and death. Education of employees and employers ensures that vulnerable workers and their employers are knowledgeable about the symptoms, empowered to take precautions, and prevent illness and death.	**Increase requirements or education on labor/employee protections:** • **OSHA's guidelines or recommendations** • **Employer emergency planning** • **Water/hydration requirements** • **Breaks and Shade**	N
Enhanced Data	Not all hospitals report syndromic surveillance to ADHS even though syndromic surveillance is the best tool to gather real-time data and information around the burden of diseases on the healthcare system, including heat. Traditional disease reporting has a 6-12 month lag before it is available and can be used in analyses.	**EDs to report syndromic surveillance.**	Y
	Some data is not currently able to be shared amongst other state agencies without legislative changes.	**Data sharing among state agencies e.g. AHCCCS, ADOSH, ADES, ADHS, ADCRR.**	N
Healthcare System or Other Public Health Legislation	Discharging people from a healthcare setting into the heat without having a place to go is inefficient and risks re-admissions. Connecting people to services will reduce the chance people are re-injured from the heat.	Require licensed healthcare facilities to have a discharge plan for people seen for a heat-related illness to ensure the patient has a cool space to go.	N
	Some medications increase the risk of suffering from heat-related illnesses. Notifications or warnings will help individuals know when they should take precautions to protect themselves.	**Require pharmacies to indicate if a medication increases the risk of a heat-related illness.**	N

Legislative Action Plan

- By April 2024: Establish workgroup and agency points of contact
- By August 2024: Create public policy and a prioritization framework with workgroup
- By August 2024: Work with legislative council
- By September 2024: Identify bill sponsors
- By September 2024: Work with stakeholders (workgroup) to gather feedback/ideas
- By December 2024: Develop draft legislation including funding as needed
- By June 2025: Work bills through the legislative process

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

1. By June 30, 2025: Complete 100% of the action items in the Legislative Action Plan
2. By June 30, 2025: Legislation is passed that contains 100% of high-impact priorities

Short Term

- List of workgroup members
- Regular workgroup meetings
- Draft report
- List of policies and legislative recommendations with identified funding mechanisms
- Report of findings and activities
- Meeting agendas, timeline, etc.
- Report that covers: LIHEAP qualifications, challenges for hot states, opportunities for hot states, path to change

Recommendation Brief: Sustainable Funding

Recommendation

Invest in heat mitigation through grants and funding opportunities to improve the heat relief infrastructure and strengthen the coordinated statewide response.

Current Efforts

ADHS first began receiving funding related to heat from the Centers for Disease Control and Prevention (CDC) in 2010. This funding was used to establish and maintain the Climate and Health program that continues to collaborate with partners today. ADHS currently receives federal funding to support heat preparedness, response, and relief activities. These are:

- CDC BRACE grant
- Federal grant to support heat emergency

ADHS and partners are currently engaged in heat projects and activities that utilize different funding sources and will require additional funding to expand and remain sustainable. These are:

- 2-1-1 transportation support in Maricopa County
- County death investigations
- Cooling center visitor surveys
- Climate Assessment for the Southwest (CLIMAS) at UA
- Heat Relief Network at ASU
- Free air-conditioned bus in the City of Tucson and partially free transit in other cities
- Free access to park splash pads, water bottle filling stations, installed bus stop shelters in Pima County (some services available in other counties dependent on location)
- City of Phoenix Cool Callers

Identified Gaps

Funding is a major limiting factor for heat-related activities and coordination. Current funding received is inadequate to fully address needs and many areas receive no funding at all. Below is a list of gaps identified:

- Some funding streams support limited activities, but are not sufficient to support all counties or stakeholders.
- The terms of funding that is available is restricted to specific uses (e.g. preparedness and planning but not heat relief response such as cooling centers).
- No funding for nonprofits, communication campaigns, cooling/heat-relief center operations (e.g. extended operating hours), or transportation.
- Insufficient funding for housing assistance, homelessness prevention, energy assistance, rental assistance, air conditioning repair or replacement, and temporary housing during utility outages.
- Limited staff time dedicated to heat relief.
- Arizona currently receives a low share of federal LIHEAP funds compared to cold states despite heat causing more deaths annually than cold weather.

Implementation Needs

More funding is needed to invest in heat mitigation activities in Arizona to successfully achieve new initiatives and projects to reduce heat-related illnesses and deaths. Stakeholders have identified numerous interventions with great impact potential. However, current resources are not sufficient. In addition, current agency leads need to continue to support the staff and resources that have been working on heat-related projects.

Health Equity

Funding allocation and distribution should take into consideration efforts that will reach the most vulnerable of populations. Funding should be evaluated annually and redirected as needed to continue to reach those most vulnerable. Heat relief solutions are identified with consideration of rural and urban perspectives, and vulnerable populations (e.g., renters, residents of manufactured housing/Recreational Vehicles (RVs), older adults, and persons experiencing homelessness or economic insecurities, etc.

Proposal

ADHS proposes to invest in heat mitigation through grant and funding opportunities to improve the heat relief infrastructure and strengthen the coordinated statewide response by:

- Establishing a multi-agency cross-cutting workgroup to apply for grants and identify and gather resources to dedicate focus on identifying funding opportunities and maximizing distribution of resources.

Action Plan

Activity	Milestones / Timeline
Establish a multi-agency, cross-cutting working group to identify grants, funding, and donations, solutions	Between February and September 2024, form Heat Relief Funding workgroup to identify funding sources (federal, state, municipal, private), including funding mechanism, applicable activities, and amounts supporting current activities
	By end of March 2024, identify current water/donation collection sites through MAG Heat Relief Network, and supplies/donations needed to support heat relief
	By end of June 2024, collaborate with infrastructure workgroup to identify tracking/inventory mechanism for donations Identify agencies and organizations willing to participate in the heat relief donation drive
Deliverables: List of funding sources for Heat Relief Funding (federal, state, municipal), including funding mechanism, applicable activities, and amounts supporting current activities; list of heat relief solutions needed across the state; organizations onboarded to heat relief donation platform	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of organization utilize the heat relief funding source list to apply grants
- # of heat relief solution recommendations that are funded

Recommendation Brief: Public Policy Prioritization Framework

Recommendation

Create Public Policy and a Prioritization Framework to guide statewide heat preparedness and response efforts.

Current Efforts

Stakeholders meet regularly to discuss successes and challenges in active heat response activities. Several projects have been identified that need to be connected to funding in order to be implemented. When federal agencies provide funding, it is for a specific purpose, and it is unknown how current federal funding initiatives could apply to heat activities.

Identified Gaps

Many of the projects and ideas that stakeholders discuss are not cataloged, tracked, or prioritized, and there is no lead agency or person to organize efforts. This leads to re-work and lack of readiness if or when funding becomes available. Arizona needs to be poised and ready to apply for funding.

Implementation Needs

In order to implement this recommendation, Arizona needs dedicated leadership and committed staff to meet regularly to brainstorm and prioritize the innovative ideas and policies that stakeholders develop. In addition, staff time is needed to research and catalog the existing and potential projects and funding sources. Depending on the workload of current staff, additional staff may be needed to successfully complete these activities.

Health Equity

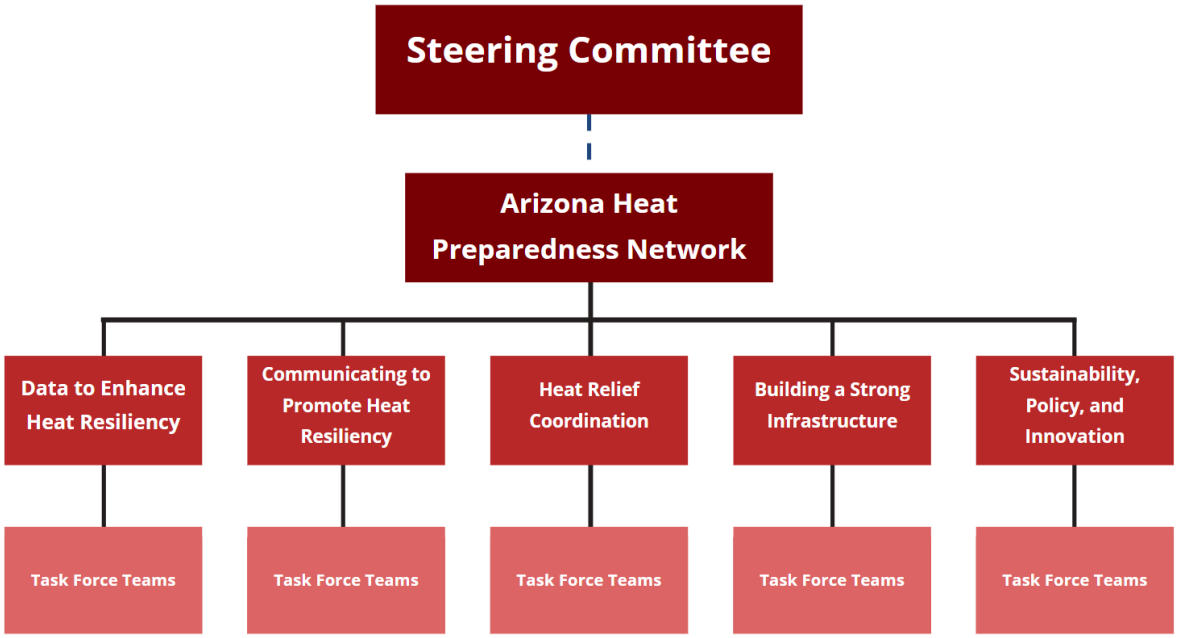
Current activities in Arizona have been developed by and for urban areas, persons experiencing homelessness, and socially vulnerable populations. Special attention should be given to rural areas, and vulnerable individuals not benefiting from current heat response efforts.

Proposal

ADHS proposes to convene a steering committee, from which the workgroups discussed throughout this document will be determined. Work coming from these workgroups will be submitted to the committee for leadership review and implementation. The structure proposed to efficiently execute the tasks and goals outlined in this document is as follows (graphic provided below):

1) Steering Committee - This group will consist of cross-sector state agency members who have decision-making authority within their organization (e.g. agency-lead or their designee). Information from the multi-sector workgroups and task force teams will be shared with them for guidance and to ensure successful implementation across the state.

2) AZ Heat Preparedness Network - This group will consist of all the members in the workgroups and any other member or organization that would like to stay up to date on heat relief activities occurring in the state.
3) Multi-Sector Workgroups - This group will consist of 5 topic areas to address heat relief which include - Data to Enhance Resiliency, Communicating to Promote Heat Resilience, Heat Relief Coordination, Building a Strong Infrastructure, Sustainability, Policy and Innovation - and members will include stakeholders from the contributing organization section of the report.
4) Task Force Teams - This group will consist of members actively involved in these workgroups who will be assigned a specific task to complete the activities outlined in the recommendation briefs. Each workgroup will have multiple task force teams to complete all the activities outlined in the recommendation briefs. Regional needs will be addressed through task force teams.



Action Plan

Activity	Milestones / Timeline
Create a stakeholder committee	By March 2024, identify and invite stakeholder committee members
	By April 2024, review member list with group to identify missing partners and determine meeting frequency
	By May 2024, create sub-groups by focus area
Deliverables: List of members and list of sub-groups	

Research current and potential initiatives and funding	By September 2024, research current initiatives and funding
	By September 2024, research potential initiatives and funding
Deliverables: List of current initiatives; list of potential initiatives; list of current funding; list of potential funding	
Prioritize projects and connect to potential or real funding	By November 2024, identify leads for opportunities - agencies, elected officials, and partner organizations
	By November 2024, create prioritized lists
	By January 2025, centralize and distribute findings
Deliverables: Prioritized list of projects with potential or real funding	
Provide leadership, guidance, and support to workgroups	Between May and December 2024, meet regularly as a whole, determine additional frequency for workgroups and task forces.
	By May 2024, create a centralized location for shared documents
	By May 2024, engage agency leadership (AZ Heat Steering Committee)
Deliverables: Centralized location for shared documents and resources	
Disseminate Resources and findings	By May 2024, create a centralized website for AZ heat resources
	Continuously update website with new resources as determined by the Steering Committee and workgroups
Deliverables: Centralized website for heat data, reports, and resources	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

- 211
- ADES
- ADHS
- ADOSH
- AHCCCS
- ALHOA
- AZ DEMA
- AZ Faith Network
- AZ Housing Authority
- Corporation Commission
- Counties
- Heat Relief Network (ASU Led)
- MAG
- Municipalities
- Office of Resiliency
- Red Cross
- Salvation Army
- UA - Arizona Center for Rural Health
- Universities
- Utilities

Process Measures

- # of organizations
- # of prioritized projects with identified funding

Recommendation Brief: Multimodal Communication Approach

Recommendation

Implement a multi-modal communication approach promoting heat mitigation activities and resources.

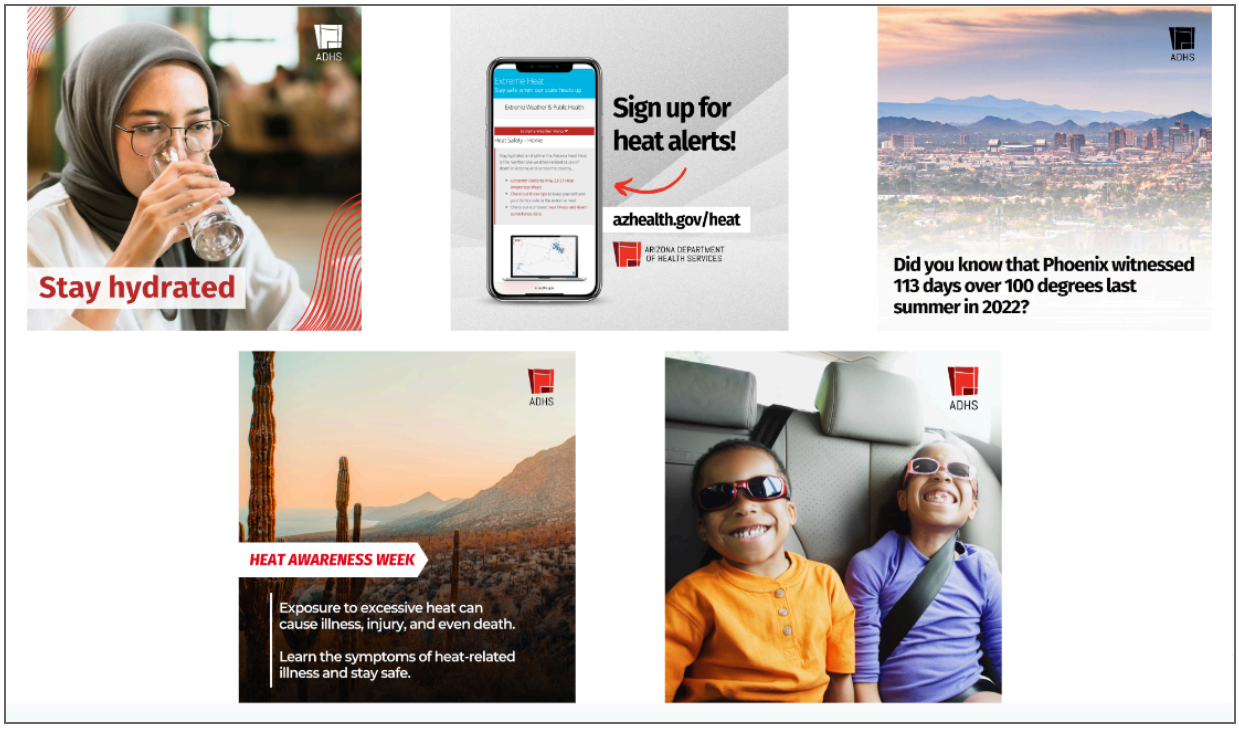
Current State

Current heat response efforts include ADHS announcing/promoting heat safety practices throughout the heat season in a continuous and extensive manner. Current heat relief communications include excessive heat warnings via Govdelivery, social media messages, website updates, ADHS Director's Blog, heat awareness week, and maintaining a heat safety website. During the 2023 Heat Season the website received 15,992 views and 8,300 users (81% of which were new users). This website contains information on how to prevent heat-related illnesses, signs and symptoms, stages of heat-related illness, and general care for heat emergencies. ADHS has developed school heat recommendations to provide schools with guidance on how to protect children during extreme heat conditions. Upon request, ADHS provides health education materials on extreme heat safety to local governments and community members.

Identified Gaps

Areas identified for improvement in heat response communication include:

- Use risk-based communications to emphasize the importance of preventing heat illness
- Focus more efforts on vulnerable populations - write materials from their perspective
- Promote and offer options for low-income individuals concerning housing, food, and cooling expenses
- Help to reduce stigma in communication messages and utilize inclusive images for older adults
- Create tourist-targeted communication materials
- Promote phone outreach and wellness checks
- Develop heat warnings similar to other natural disaster alerts
- Ensure information about cooling centers and resources to reach these places, eg. transportation or maps are widely distributed



Social media campaigns: ADHS had 349 social media posts across platforms; 655,229 views; and 13,788 engagements on heat related messaging in summer 2023.

Implementation Needs

To fully implement the action steps below, the following resources would be needed:

- Dedicated staff to coordinate meetings, prepare materials, and distribute information to partners are needed.
- Funding to develop communication materials and pay for advertising when appropriate.

Health Equity

Communication materials developed and disseminated as recommended by this brief will include information for vulnerable populations that require special attention, including:

- Persons experiencing homelessness
- Low income and energy-insecure communities
- Persons living with a cognitive/mental, emotional, or physical disability
- Older adults
- Tourists

Proposal

ADHS proposes to implement a multi-modal communication plan promoting heat mitigation activities and resources. ADHS will develop an extensive statewide heat safety communication network, including private and public media outlets. The network will improve coordination, accessibility, and amplification of heat-related messaging, using all advertisement streams (bus ads, billboards, TV, radio) to promote heat safety, and ensure

heat-relief information is distributed widely, particularly among communities who need it the most.

Action Plan

Activity	Milestones / Timeline
Utilize all communication platforms in multiple languages	By end of March 2024, key message creation and finalization, translation of materials completed
	By end of April 2024, material designs are finalized
	By end of May 2024, materials distributed to partners
Deliverables: Marketing toolkit including posters; exhibition canvas stands; adjustable signage that shows the heat level for the day; flyers, pamphlets, cooling center maps	
Maintain situational awareness with weekly updates	By end of March 2024, meeting held to discuss newsletter, create communication templates, discuss main point of contacts/representative from different offices
	By end of March 2024, weekly send date determined
	By end of May 2024, launch newsletter
Deliverables: Point-person identified from each community/city/stakeholder; newsletter template created; newsletter topics determined; Google space chat with all heat contacts for updates/quick chats	
Utilize public transportation & school buses to get the message out	By end of March 2024, budget determined to run campaign
	By end of April 2024, logistic plan determined to work with public and school bus systems
	By end of May 2024, messages and campaigns are finalized
	By end of June 2024, bus campaign starts
Deliverables: Heat campaign messages/images for bus campaign	
Distribute information about cooling centers and resources	By end of April 2024, identify resources/cooling centers - manage through ADHS website
	By end of April 2024, template developed for partners to enter their own specific information

	By end of April 2024, partners identified to get information out to their clients/population
	By beginning of May 2024, cooling center information distributed
Deliverables: Print material; press releases; blogs; social media; public facing website; target distribution list using community partners created	
Expansion of 211 heat-specific emergency response system	By end of March 2024, convene stakeholders to develop a plan and form a task force team with decided roles and responsibilities
	By end of April 2024, identify resource gaps and requirements, formalize heat-specific training protocols, and refine heat-related informational resources and communications
	Between June and September 2024, engage private and public media outlets to facilitate widespread public awareness
Deliverables: A proposal to improve efficiency and effectiveness of 211 to operate a heat-specific emergency response system and provide information and resources to the public; public messaging to advertise the emergency heat hotline	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of materials distributed and where
- # Impressions from paid/earned media

Recommendation Brief: Tailored Education / Outreach & Toolkits

Recommendation

Develop multilingual tailored education and outreach materials to reach vulnerable populations.

Current Efforts

Heat illness is preventable. ADHS has collaborated with partners to create heat awareness campaigns and tool kits to promote heat awareness, educate the public on heat hazards, and provide resources to keep everyone safe. Some of the highlighted activities are:

- Social media campaigns: ADHS had 349 social media posts; 655,229 views; and 13,788 engagements in summer 2023
- Excessive heat warnings for the general public: provide warning and safety tips to 34,178 subscribers on extreme heat days
- Excessive heat warnings for schools: provide warning and recommendations to 10,156 subscribers on extreme heat days
- Recommendations for schools to manage extreme heat: the report was shared with 2,421 public schools in Arizona, and is available on ADHS' website
- Heat safety tool kits for older adults, outdoor workers, and school-aged children: 7,705 toolkits shared via the ADHS website since 2020

Identified Gaps

Tailored communication and health education materials are more effective. It takes into consideration the specific needs of the target audiences and helps them make informed decisions. Recommendations may differ from population to population based on their needs.

Current outreach methods do not fully address inequities in health literacy, internet access, and mobility e.g. homebound individuals, resulting in some Arizonans not receiving the right information to protect themselves. Partnering with community groups to identify additional ways to share safety messages and alerts can fill these gaps. Additional tailored materials, such as toolkits, and distribution methods are needed to address the needs of diverse vulnerable populations, because people have different learning styles and places to get trusted information.

Implementation Needs

To fully implement the action steps below, the following resources would be needed:

- Dedicated staff time and resources to coordinate meetings among partners, develop targeted outreach materials, and conduct outreach to vulnerable populations.
- Funding for translation of materials
- Funding for graphic design and printing

Health Equity

Outreach materials will be developed to specifically reach vulnerable populations. Populations may include, but are not limited to: persons experiencing homelessness, persons who work outdoors (e.g. farm workers, electric line workers, construction workers, etc.), older adults, persons living with a cognitive/mental, emotional, or physical disability, young children, persons living in rural communities, and persons living with substance use disorder.

Proposal

ADHS proposes to reach vulnerable populations by:

- Creating standardized messages around heat safety and translating to languages needed in the community.
- Conducting comprehensive outreach to vulnerable populations and communities.
- Creating and updating population-specific toolkits (workplaces, schools, and congregate care facilities).

Action Plan

Activity	Milestones / Timeline
Standardize messages and translate to community needed languages	By end of February 2024, review current messaging from different groups and create key messages
	By end of March 2024, meet with community organizations for input in key messages
	By end of March 2024, languages for translation identified
	By end of April 2024, translation of finalized copy
	By end of May 2024, development of print and digital materials
	By end of May 2024, share and distribute materials to ALHOA, partners, counties, cities, and other organizations
Deliverables: Set of key messages; calls to action to share with partners; plain language training guide; print materials for partners to use (room for co-branding)	
Outreach to vulnerable populations	By end of February 2024, vulnerable populations identified
	By end of March 2024 identify list of partners who work with vulnerable populations
	By end of April 2024, outreach/dissemination plan completed
	By June 30, 2024 create and update toolkits or other target material for vulnerable groups such as persons experiencing homelessness, persons living in rural communities, persons who work outdoors (e.g.,

	farm workers, electric line workers, etc.), and young children, etc.
	By August 2024, Share toolkits with decision-makers and partners
Deliverables: List of vulnerable populations; list of contacts for distribution of materials and education, toolkits for workplaces, schools, and congregate care facilities	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of standardized communication materials translated and shared with partners
- # of outreach materials distributed

Recommendation Brief: Heat Relief Coordination

Recommendation

Improve statewide heat relief coordination to mitigate heat risk

Current Efforts

ADHS and our partners have been actively engaged in heat relief since 2005 when Maricopa Association of Governments established the Heat Relief Network. Over the years, there have been additional sites added and sites that return and evolve each year. Each center is unique in how it looks and operates depending on the building purpose, (i.e., library, church, government building). A few highlights from the 2023 heat season include:

- There were 244 cooling centers in Maricopa County that were widespread to accommodate the population in need.
- Pima County, Pinal County, Yuma County, and Salt River Pima Maricopa Indian Community operated cooling centers as part of their heat relief efforts.
- Many centers saw very high utilization and/or reached capacity. The Arizona Faith Network (AFN) cooling centers had just under 26,000 visits during the summer of 2023.
- Select cooling centers allowed for visitors to bring pets.
- Some heat relief sites acted as respite centers. Respite centers are geared toward those experiencing homelessness and provide additional services, such as a comfortable place to rest.

Wrap-Around Services

Heat-relief sites largely provide services to those who are unsheltered or experiencing homelessness, and many who use drugs. Many Heat Relief Network sites engage in and provide wrap-around services to their visitors as part of their operations. Many cooling centers engage in the following practices:

- Providing naloxone and other emergency services on-site, given the high occurrence of heat-related illness and overdose that have occurred in these settings.
- Connected with other homeless and human services providers and are able to offer visitors resources addressing substance use, food, health, hygiene, housing, and utilities, etc.

Best Practices & Innovative Solutions

From experience, different groups of cooling center sites, counties, and tribes have identified best practices that work in their specific situation, and have potential to be utilized across Arizona. These include:

- The AFN and ASU's guidebook with rules and regulations/how-to's
- Free transportation whether public buses in Pima County or specific cooling center rides in Maricopa County
- Automatic qualifiers to alleviate application processes in Pima County
- Inventory management systems to manage donations.

Collaboration / Coordination

Best practices and experiences can be shared at the workgroups held by the state and ASU twice per month during the heat season. Partners also identify that the existing network and collaboration efforts keep open communication and provide opportunities for coordination in areas such as volunteers and donated supplies. These conversations have led to identified needs being filled by way of state and county cooling center coordinators.

Identified Gaps

Although there are efforts being made among and between organizations and agencies working on heat relief, there were a number of gaps identified through collaborative conversations with stakeholders.

Coordination

ADHS and our partners identified that there is a general lack of coordination and consistency among cooling centers. A few examples of inconsistencies include:

- Cooling centers operating days and hours.
- Data collection using an intake form is only a standard practice at select cooling centers.
- Cooling center optimization has only been done in certain areas, whereas others are in need of informed and strategic cooling center placement.
- Identifying, communicating about, and receiving donation supplies.

In addition, there are identified gaps in who is involved in the conversations regarding planning for and operating cooling centers. For example, in some conversations law enforcement or transportation agencies need to be included, as do human service providers.

Capacity & Operations

While hundreds of sites act as cooling centers each year, they generally each experience challenges concerning their ability to provide comprehensive services due to other responsibilities, staffing, and resource availability. A few gaps include:

- Difficulties hiring for a temporary position and providing adequate training in a short period of time.
- No available volunteers limit a site's ability to provide full services for those using the site as a cooling center as well as in the operations of the site's regular duties.
- Scaling operations related to homeless and human services.
- Inadequate staff, transportation, and buildings to meet the needs of the population.
- Determining what resources and services to offer at a center to ensure that services can be delivered consistently.
- Little additional support if a site reaches capacity, particularly in rural areas.

Providing Wrap-Around Services

Wrap-around services are identified as a critical component to cooling centers, provided the population frequently visiting them is largely comprised of those experiencing homelessness. However, not all sites have a case manager or are able to provide case management services. Some jurisdictions are unwilling to provide homeless services and other sites are working to ensure they are not duplicating services available through human service providers. There is a general need to identify how to bring human services into cooling centers without exhausting funds and duplicating services.

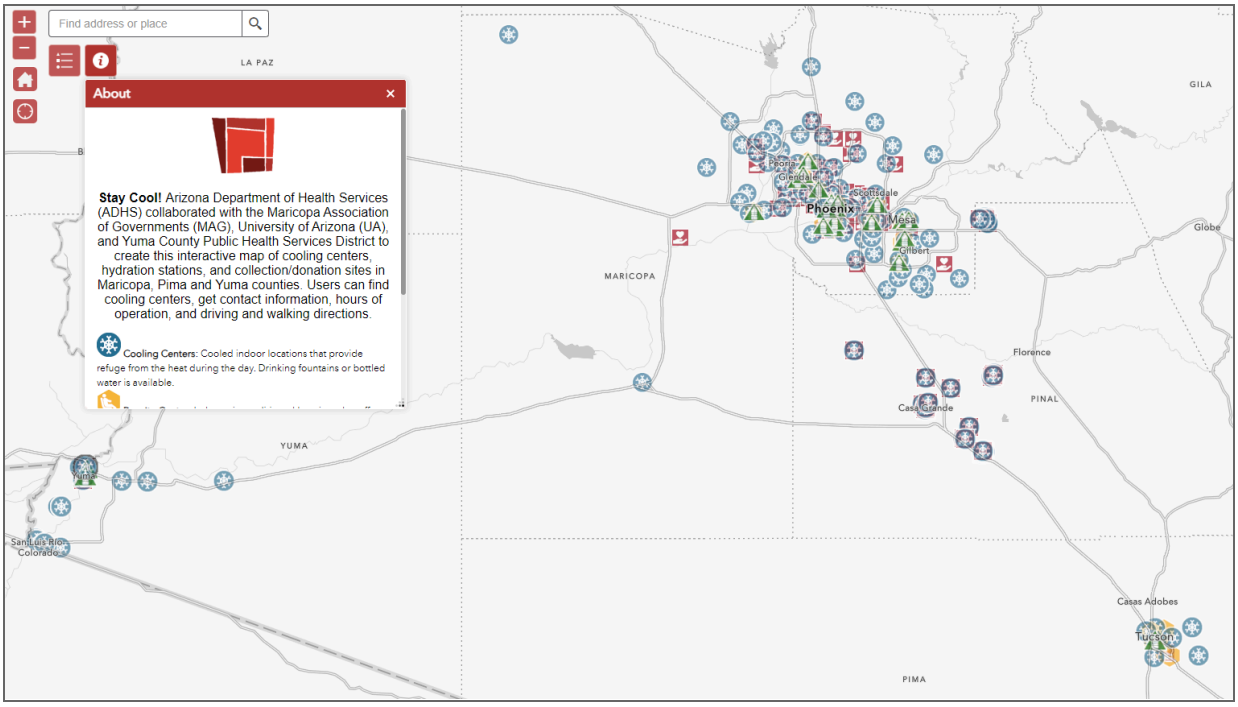
Populations Utilizing Services

Cooling centers are open to anyone; however, there are gaps in who knows about them, is able to reach them, and is willing to visit. Historically, persons experiencing homelessness have utilized this service in high numbers and spread awareness by word of mouth. However, this communication method is not as effective in reaching other vulnerable populations. Other vulnerable populations include:

- Older adults who live in a home and are isolated without anyone who checks in on them.
- Persons living with a cognitive/mental, emotional, or physical disability
- In Tribal communities, there is no centralized map or mode of communication to provide information on where to locate a cooling center.

Stakeholders identified barriers to visiting cooling centers in addition to a lack of awareness. A few commonly identified barriers include:

- People do not want to leave their homes if they do not have to.
- People do not want to leave their pets behind if a center does not accept animals.
- Lack of mobility and transportation.
- People may avoid utilizing public transportation because they cannot bring all of their belongings on a bus.



4 out of Arizona's 15 counties participate in ADHS' cooling center map

Implementation Needs

To successfully complete the recommended activities, ADHS and partners will need:

- Funding for heat safety kit components (e.g., cooling towels, water bottles)
- Additional staff or volunteers to assemble and distribute kits

Health Equity

Heat relief coordination efforts have historically been centered in urban areas. As barriers to coordination, utilization, and operations are addressed, there will be an increased focus on heat relief in rural and tribal communities. Additionally, the proposed activities will encourage increased participation in services by vulnerable populations and improve the connections to human and social services.

Proposal

ADHS proposes to improve statewide heat relief coordination to mitigate heat risk by:

- Hiring a Heat Relief Coordinator to work in collaboration with Maricopa County's coordinator.
- Developing a social services guide to inform the efforts made by cooling center operators in referring visitors to other resources.
- Promote the use of appropriate human resources providers by cooling center operators by identifying site needs, identifying site navigators, and implementing a referral process.
- Providing current heat preparedness, response, and relief resources on a centralized virtual platform for access by partners and the public.
- Developing heat relief kits and implementing a sustainable distribution plan.
- Improving the identification and coordinated distribution efforts of donated materials.

Action Plan

Activity	Milestones / Timeline
Hire heat relief coordinators	By end of January 2024, heat relief coordinator hired by ADHS
	By end of January 2024, cooling center coordinator hired by MCDPH
	By April 2024, publish synergistic work plan coordinating efforts by ADHS and MCDPH cooling center coordinators
Deliverables: Cooling center coordinator hired; synergistic coordination work plan developed	
Develop a social service resource guide	By end of March 2024, workgroup members identified and assembled
	By end of June 2024, list of city, county, and state social service agencies willing to participate in heat relief
	By September 2024, finalized social services guide available
Deliverables: Social service resource guide published	
Improve access to human service providers in cooling centers	By end of March 2024, workgroup members identified and assembled
	Between May and September 2024, determine list of all heat relief network locations
	By September 2024, determine list of navigators who can guide those needing resources at cooling centers
	By November 2024, determine list of centers by priority of need for human service providers onsite
	By January 2025, finalize human services training for cooling center staff and volunteers
	By January 2025, finalize referral process for if no provider is present
Deliverables: List of centers by priority of need for human service providers onsite; staff volunteer human services training; referral process developed	
Utilize a platform of resources	By end of March 2024, workgroup members are identified and assembled
	By June 2024, research existing platforms list items to include and provided to 211 or other platform host
	By October 2024, platform mock up and user testing is conducted

	By January 2025, platform is launched and disseminated
Deliverables: Updated list of available resources/participating organizations; platform	
Distribute heat safety resources and/or heat safety kits/bags	By end of March 2024, workgroup leads and stakeholders identified
	By May 2024, kit materials and distribution networks identified
	By May 2024, plan for sustainability developed
	Between May and September 2024, kits materials gathered and assembled
	Between May and September 2024, kits distributed
	By January 2025, After Action Review and Analysis Report completed
Deliverables: Heat safety kits; long-term sustainability of distribution plan; After Action Review and Analysis Report	
Identify donation supplies	By March 2024, identify organizations/stakeholders participating in heat relief, including outreach programs
	By March 2024, invite and engage stakeholders/subject matter experts to identify: • existing sources of supplies • resource gaps/needs • potential solutions to address gaps/needs • a list of appropriate donations • request process
	By May 2024, create list of existing sources of donations
	By June 2024, identify potential methods to pursue additional donations (e.g., donation drives, private donation requests, etc.)
Deliverables: Donation Management Plan completed	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone

who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of navigators trained
- # of individuals referred to services

Recommendation Brief: Data to Action

Recommendation

Improve current data systems to maximize data availability for management of resources and data-driven decision making.

Current Efforts

State & County Illness & Death Data Dashboards & Reports

ADHS has trained staff and the information technology (IT) infrastructure to analyze and display statewide data. The following data and dashboards are currently available:

- Heat-Related Illness (HRI) Dashboard
- HRI Emergency Department (ED) Visits and HRI Mortality surveillance reports
- A statewide heat relief site map

In addition, our partners also have a number of reports and dashboards available. For example, the National Weather Service provides a Heat risk map, a color-numeric-based index providing a forecast risk of HRI to occur over a 24-hour period. Additionally, data is available at the county level through data dashboards, published surveillance reports, cooling center surveys, and medical examiner reports.

Available Data & Uses

In addition to the data dashboards and reports already published, ADHS and partners have datasets and sources that can/are to be utilized to inform future reports, visualizations, and decisions.

- **ADHS**
  - Analysis around regional differences and triggers for schools: Managing Extreme Heat Recommendations for Schools
  - ADHS Heat website analytics
  - Data used to determine trigger points for heat response and planning
  - Utilize databases to gather information on energy usage for emergency response
  - Databases to gather metrics on inventory management and resources
- **Partners**
  - Cooling center visitor intake data
  - Trigger points for heat response and planning activities
  - City of Phoenix 911 call data
  - Arizona Department of Emergency and Military Affairs (DEMA) - power outage energy data
  - Heat.Gov - National Integrated Health Health Information System
    - CDC Heat and Health Tracker
    - OSHA NIOSH Heat Safety Tool
    - NEMSIS Heat-Related EMS Activation Surveillance Dashboard
    - Extreme Heat Vulnerability Mapping Tool
    - Climate and Health Outlook Portal
  - National Weather Service

- Data and extreme heat warnings: e.g. extreme heat days, historical temperatures
- Heat risk map

Identified Gaps

Data Availability

Not all of the data necessary to make decisions is available to all partners. For example, heat-related illness is not universally defined or reportable, leading to a lack of data indicating the accurate number of illnesses. In addition, there is not currently a centralized location or platform to incorporate statewide data on variables such as air quality or power outages. There is, however, a statewide heat-related illness dashboard that provides data near real-time with syndromic surveillance, although, indicators still lag, and no heat death data is visualized due to the availability of data. Therefore, partners may not have access to data showing real-time current impacts in their community.

ADHS and our partners have also identified that there are gaps in the data availability to support emergency response decisions. There is not adequate or sufficient reporting of heat death data by coroner offices across counties, which limits the number of heat deaths identified and used in decision-making by ADHS. Additionally, there is an insufficient amount of data showing the effects of declaring an emergency.

Missing Groups / Populations / Indicators

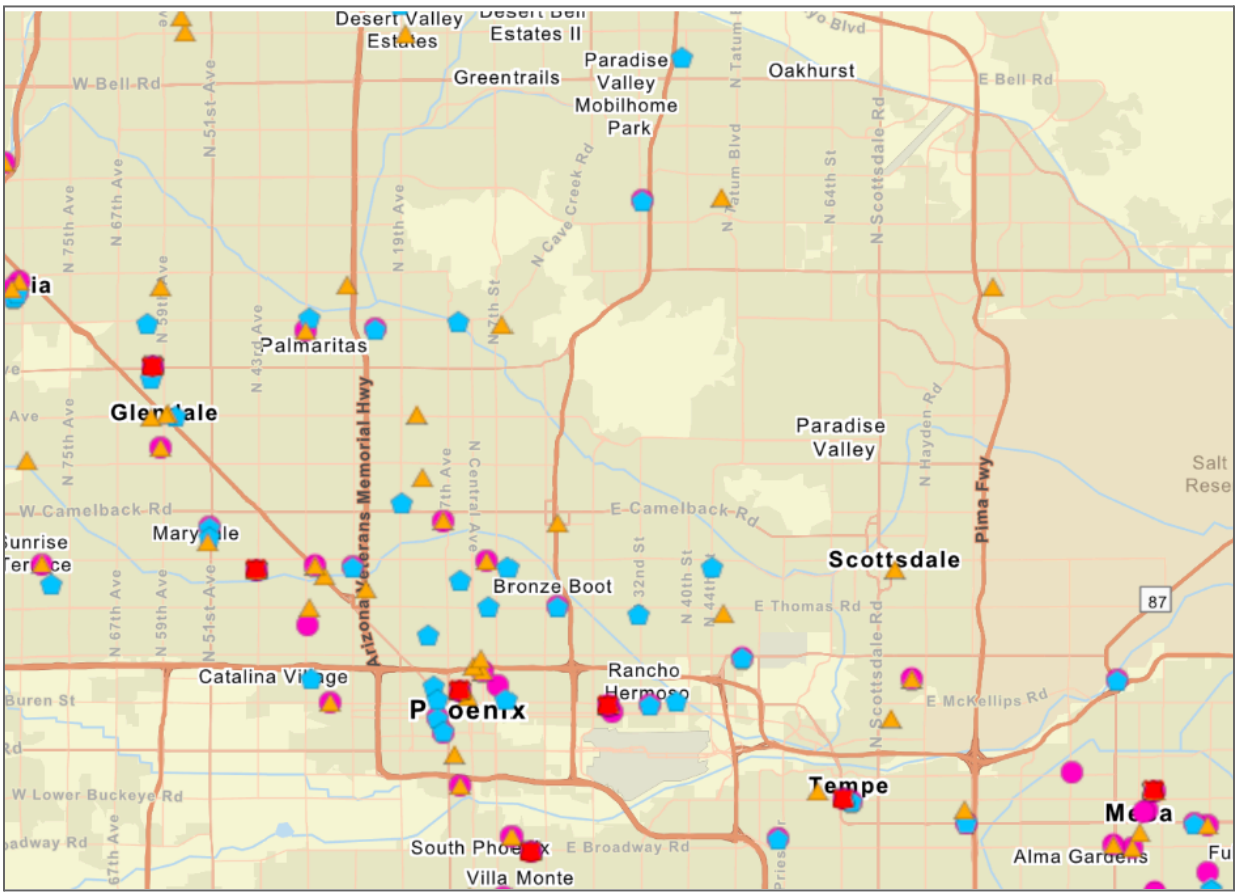
Heat-related data may be available aggregated by general demographic indicators. However, there are still many groups not accounted for in current practices and datasets. ADHS and partners have identified the following as crucial missing populations and indicators:

- AC status and related heat impacts
- ADOSH Worker's compensation data
- Data indicating drugs that have the highest safety risks in heat
- Data qualifying and measuring the risks of heat using thresholds
- Heat mapping and natural shading
- Low-income resource availability - access to drinking water, communications, indoor places
- Persons living with disabilities and HRI and heat deaths
- Persons who are homebound and HRI and heat deaths
- Tribal center heat emergency visits

Coordination

In the current heat response efforts throughout Arizona, there is a lack of coordination in data collection, sharing, and reporting. Arizona agencies and partners are not using a shared/common-tiered approach for thresholds and triggers and not using public health surveillance to develop them. Heat relief activities are conducted by agencies and organizations at varying levels, but there are inconsistent or non-existing data-sharing agreements between levels of government, which limits the amount of data partners have access to when making data-informed decisions. This gap is related to the knowledge that not

all jurisdictions and agencies record the same amount of data and there are no standardized data collection or analysis methods to support comparison and interpretation.



Maricopa County's optimization map shows locations of potential new cooling center locations. Only two jurisdictions have used optimization methodologies.

Implementation Needs

To fully implement the action steps below, the following resources would be needed:

- Engagement from subject matter experts and stakeholders
- Dedicated staff time
- Funding for rural counties to submit data
- Funding for IT infrastructure

Health Equity

When choosing indicators to collect and analyze, ADHS will implement those that are currently missing and will provide a lot of insight on the heat impacts and response effect on vulnerable populations. When conducting cooling center optimization, there is an opportunity to identify and incorporate new variables into the optimization model. These variables will be utilized to customize the model to a location or population's needs. For example, it can use different walking distances depending on if the model is being run in an

area with a large population of persons experiencing homelessness, and can include transportation variables in rural areas.

Proposal

ADHS proposes to improve current data systems for the management of resources and data-driven decision-making by:

- Identifying optimal locations to increase cooling center availability by using modeling to create maps,
- Identifying and using trigger points to step up heat response activities, e.g. Health Emergency Operations Center, opening of added cooling centers, etc., and
- Centralizing state & county data dashboards that display heat-related illness and death data to maximize data accessibility to stakeholders.

Action Plan

Activity	Milestones / Timeline
Utilize the cooling center optimization model to identify cooling center locations across the state.	By March 2024, workgroup members identified and assembled
	By April 2024, updated list of variables to be used in the existing optimization model
	By May 2024, draft and finalized optimization data request process
	By June 2024, stakeholder meeting to review final variable list and share optimization data request process
Deliverables: List of variables available to be included in the optimization model; standardized process to request optimization data map	
Develop trigger points for activation of response activities	By February 2024, invite all contributing subject matter experts
	By March 2024, identify the correct lead agencies (i.e. DEMA)
	By April 2024, identify what • will activate the tier of response or trigger points (Meteorological/ Thermostat Trigger, Death Total Trigger, Infrastructure Failure Trigger) • activities would be part of the response
	By May 2024, create an outline of trigger points
	By July 2024, review, finalize, and publish the outline of trigger points
Deliverables: Outline of activation and corresponding response activities	
Update Annual Report and Dashboards	By August, update the annual report dashboard

	By June 2024, update heat dashboard to include EMS dispatch data
Deliverables: Updated dashboards and annual report	
Centralized state & county data dashboards	Between March and December 2024, form workgroup of ADHS IT, ADHS GIS, and meet with counties
	By end of March 2024, centralization of analysis outputs from counties, establish IT network to intake and store data
	By end of June 2024, develop dashboard to visualize the data
Deliverables: Outputs of centralization analysis; SOP for IT network to intake data and store data; GIS dashboards	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of regional areas with cooling center optimization model applied
- # of new optimal locations for cooling centers identified
- # agencies showing the centralized state & county data dashboards that display heat-related illness and death data

Recommendation Brief: Emergency Response

Recommendation

Activate emergency response protocols to enhance coordinated efforts.

Current Efforts

Emergency Planning & Response

Existing response plans, guidance documents, and data sets developed by various organizations and jurisdictions throughout Arizona can be leveraged when developing a threshold for declaring an emergency or for activating response activities.

- All Hazards Emergency Response Plan: provides guidance for all types of public health emergencies and disasters. It describes roles, responsibilities, and the all-hazards concept of operations for a public health response.
- Extreme Heat Index Annex: outlines and defines a coordinated response to a heat emergency in Arizona and supports the All Hazard Emergency Response Plan.
- Military limitations on outdoor activities when temperatures are greater than 110°F
- Tohono O'odham Nation's trigger point for opening cooling centers and coordination between cooling centers
- Data - Datasets previously discussed in the Data to Action, as well as, morgue capacity, energy outages, medical examiner data, and hospital capacity.
- ADHS Heat Safety website: connects users to resources and educational materials, including cooling center locations, heat-related illness information, the ADHS excessive heat warning communications, ADOT's extreme heat road kit, outdoor activity safety information, and other resources from other state agencies.
- Arizona Emergency Information Network (AzEIN) Extreme Heat website: provides public health and safety educational materials for before, during, and after extreme heat emergencies, and links to external resources from federal and state agencies.
- 211 Arizona Heat Relief: provides emergency contact information for heat relief assistance and links to resources from other agencies and institutions, including heat relief maps, weatherization programs, utility assistance, AZ tenant rights and repairs, and heat-related illness education.

Identified Gaps

Damage of extreme heat is not as 'visible' as other emergencies and cannot necessarily be shown in infrastructure damage. Emergency Planning and Response planning is not typically triggered for localized power outages, which could impact cooling centers and congregate care settings. The newly developed Heat Emergency Declaration Threshold has not yet been tested in real-time. County health departments and emergency management do not have access to the emergency notification system.

Essential information is missing and/or is not available for all jurisdictions and partners. There are particular datasets and indicators that are missing and critically impact the ability for ADHS and partners to effectively engage in heat emergency planning and response. Some of these include Tribal geography; access to water, shade, and AC; and pre-hospital indicators.

Not all jurisdictions have established response plans that specifically consider heat. Inter and intra-agency communication suffers if there is no established or practiced response plan in place. Delays in communication can result in slower response times, ineffective decision-making, and inaction or distrust in the community.

Extreme heat emergency communications and information are decentralized, which decreases the efficiency of public messaging. 211 Arizona could be leveraged since they have expanded their efforts to include heat-specific emergency response within their operations and provide immediate assistance and guidance during extreme heat emergencies. There is also a need to increase the accessibility of public health communications for hard-to-reach and at-risk populations. Communication materials are distributed in a limited number of languages and population-specific messaging to effectively communicate with diverse communities from various racial, ethnic, socio-economic, and educational backgrounds.

Implementation Needs

To successfully complete the recommended activities, ADHS and partners will need funding to support staff time, exercise planning and execution, and communication platform upgrades or implementation.

Health Equity

Heat emergency response efforts will focus on ensuring that all communities in Arizona are aware of heat events and emergencies, and that response efforts are effective depending on location. By developing a statewide alert system, concerns of communication barriers in rural areas are alleviated, as well as those of vulnerable populations in urban areas, such as older adults or homebound individuals.

Proposal

ADHS proposes to activate emergency response protocols to enhance coordinated efforts by:

- Collaborating with stakeholders to develop a statewide heat communication plan.
- Improving stakeholder access to essential data and information.
- Developing a standardized heat risk communication tool.
- Development of standardized heat emergency alert network.

Action Plan

Activity	Milestones / Timeline
Create a Communication Model for Heat Emergencies	By March 2024, identify stakeholders for the communication model
	By March 2024, engage with different stakeholders throughout the state • Communicating guidelines/recommendations when it is too hot

	By June 2024, invite all contributing subject matter experts to: • Discuss pre-activation inputs • Identify what you want to communicate–overall preparedness, and/or what to do in case of emergencies • Reinforce preparedness measures (Staying Hydrated Messages, Cooling Center Awareness)
	By September 2024, create an outline of a communication model.
	By November 2024, review, finalize, and publish the outline of communication model
	By November 2024, provide extreme weather information to the public as guided by the communication model
Deliverables: Communication Model for Heat Emergencies	
Create list of elements needed to establish thresholds for action	By end of March 2024, form team and decide on roles and responsibilities
	Between March and December 2024, hold quarterly meetings to track progress in data collection
	Between March and December 2024, create data sharing agreements
	Between March and December 2024, share and use the list of data needed with stakeholders
Deliverables: List of available elements and needed elements; data sharing and usage agreements	
Express heat risk in levels of emergency	By end of March 2024, bring together experts to discuss tipping points for risk to human health
	By end of April 2024, finalize definition of each level, specify actions to take at each level
	By end of March 2024, develop talking points and graphics
	By end of April 2024, release talking point and graphics to counties
Deliverables: Risk level tool developed; list of talking points and action steps at each level, talking points and risk visual translated into multiple languages; templated graphics to brand for counties and partners developed	

Heat Emergency Alerting network	By end of February 2024, representative team assembles to work on cross-platform communication plan
	By end of March 2024, research completed on best practices for developing consistent messaging
	By end of April 2024, test alerts with local audiences
	Between May and September 2024, heat alerts utilized through summer season
Deliverables: Centralized communication plan accessible across jurisdictions; sample language for all levels of heat emergency alerts developed; evaluation completed of which channels are used most in the community; communication tree developed for which agency handles what types of messaging	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of jurisdictions using heat emergency alerts

Recommendation Brief: Building Capacity & Stakeholder Input

Recommendation

Build capacity and increase stakeholder input through year-round heat coordination.

Current Efforts

ADHS and partners around Arizona work together to reduce the impacts of extreme heat by monitoring heat forecasts, collecting data, sharing best practices, encouraging collaboration, and developing novel responses, such as:

- Annual Arizona Extreme Heat Workshop to convene stakeholders and share initiatives responding to extreme heat
- Arizona Heat Resilience Network to connect stakeholders and organizations to share heat relief approaches and resources
- Arizona Cooling Center Workgroup to discuss coordination and challenges of cooling centers
- Arizona Tribal Epidemiology Center to help coordinate data sharing and collection
- Maricopa County Medical Reserve Corp, a community-based volunteer group, to assist with cooling center surveys and heat relief activities
- Tribal Nations to assist with community engagement

Identified Gaps

Building capacity to foster multi-sectoral collaboration takes time and effort. The challenges arise largely as a result of the complexities involved when engaging in collaborative heat-relief activities. Stakeholders identified gaps that, if filled, would build the capacity necessary to strengthen, implement, and sustain effective heat relief work:

- Expand existing collaboration and partnership by including and partnering with:
    - Local health departments (including cities and counties) statewide
    - Law enforcement
    - Organizations assisting field and construction workers (and other outdoor workers statewide)
    - Universities such as ASU Healthy Urban Environments, Global Institute of Sustainability and Innovation, UA Extreme Heat Network
- Include missing voices from the community and underrepresented populations
- Increase participation to meetings and accessibility to resources by accounting for language barrier
- Enhance data capacity by identifying additional indicators, standardizing data collection, and improving data quality and quantity.

Implementation Needs

To fully implement the action steps below, the following resources would be needed: funding to support staff, printing, and heat safety materials, and event planning.

Health Equity

Secure organizations who work with vulnerable populations to be a part of planning activities and a member of the ongoing stakeholder group so that activities can be effectively targeted.

Proposal

ADHS proposes to build capacity and increase stakeholder input through year-round heat coordination to understand and address community needs, include missing voices, train leaders, improve coordinated efforts in data collection and analysis, and increase the visibility of heat messaging in the community prior to the heat season.

Action Plan

Activity	Milestones / Timeline
Build a foundation of collaboration and partnership	By March 2024, identify agencies and organizations that support heat-vulnerable populations
	April 15, 2024, host annual heat planning workshop
	By June 2024, gather input through agencies and organizations to identify community needs
	By August 2024, identify the necessary resources to remediate the need
	By September 2024, engage with organizations and connect them with the appropriate resources
	By December 2024, establish Memorandum of Understanding (MOU) and/or Memorandum of Agreement (MOA), as needed to engage resources
Deliverables: List of partners involved with heat related activities	
Include missing voices	By April 2024, identify community leaders by February 2024
	By May 2024, develop and complete survey of need
	By November 2024, review data to engage community leaders and bring in ongoing needs demonstration

Deliverables: List of stakeholders; community needs survey created; evaluation completed of community needs and desire	
Establish leadership network/best practices	By March 2024, review other jurisdictions' heat plans and equivalent cities' plans by heat response professionals
	By August 2024, identify who will receive the trainings
	By September 2024, review partner cities' leadership response
	By December 2025, develop a training program that includes a structured communication system among state, Tribal, counties, and municipalities to avoid miscommunications
	By January 2025, run first leadership training program
	By March 2025, sharing best practices throughout heat relief network
Deliverables: Established training program for heat resilience measures, strategies, and effects	
Vulnerability assessment to identify target populations and barriers	By end of March 2024, complete literature review establishment of models that are in use and can be applicable to AZ and identification of measurable targets to assess the effects of heat as a function to SVI
	By end of June 2024, develop and disseminate assessment tool kit with selected standard targets and models to counties for the identification of affected groups
	By end of September 2024, send evaluation data back from counties
Deliverables: List of models that are in use and can be applicable to AZ; list of SVIs and environmental variables; set of standard targets of heat vulnerable populations and effects of heat; assessment tool	
Expand/develop heat workgroups	By end of March 2024, identify relevant agencies and staff from each agency to participate in workgroup
	By end of June 2024, identify the needs and priorities of rural communities
	By end of December 2024, assess what projects are already being done to connect
Deliverables: Listserv of potential workgroup participants; data dictionaries to interpret data being collected and analyzed	

Intra/inter-agency collaboration	By end of April 2024, determine point of contact, capacity, and ongoing projects at each agency/program
	By end of April 2024, determine top priorities and needs for each agency
	By end of June 2024, establish data sharing agreements, MOUs, etc. needed to share information across agencies
Deliverables: Centralized database/repository; data sharing agreements	
Collaborate with statewide workgroups and task forces	By the end of March 2024, identify group membership (counties, cities, health, education, tourism, transportation, etc.); establish meeting cadence, communication method, and goals with task force
	By end of May 2024, set up a method and encourage organizations to share events/campaigns/projects they are working on so that we can support each other and amplify messaging
	By end of April 2024, work to determine what info to amplify on social media, website, etc. and what organizations are planning so we can align appropriately
Deliverables: Task force meetings, communications materials	
Pre-summer education event	By end of April 2024, distribute messaging toolkits
	By end of May 2024, finalize education presentations and train presentation administrators
	By end of April 2024, distribute materials and hold events throughout March
Deliverables: Message toolkit for schools, message toolkit for student athletes/coaches, child care, summer camps, develop heat illness training assembly presentation for schools, home visits WIC, family education for pets, children heat safety	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone

who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- % of stakeholders completing community needs survey
- # of agencies/programs have access to the data
- Digital analytics (social, website)
- # of users visiting resources like cooling centers

Recommendation Brief: Standardization

Recommendation

Improve consistency through collective standards of heat relief operations, data, and messaging.

Current Efforts

The Heat Relief Network was launched by the Maricopa Association of Governments in 2005, and government, faith-based, business, and non-profit organizations have been participating in heat relief activities since. While stakeholders have identified the need for standardization of many activities and operations, the Heat Relief Network facilitates coordination in the following ways:

- Coordinated sign-up for cooling center operators in Maricopa and Pima Counties.
- Formal reporting and publishing of procedures. For example, the Arizona Faith Network is working with Arizona State University to build a comprehensive guidebook for cooling centers that includes rules, regulations, and how-to's.

Identified Gaps

Although partners throughout the state are participating in effective heat relief, conversations with stakeholders across Arizona have informed the identification of gaps in the standardization of efforts. In general, there is a gap in the overall cooling center coordination, which prevents standardization across sites run by different organizations and municipalities. Identified needs for standardization across sites include minimum operating requirements, minimum operating hours, pet policies, safety, staff/volunteer training, and accessibility.

Data gaps and activities are expanded upon in the Data to Action Brief. Messaging gaps and activities are expanded upon in the Multi-Modal Communication Brief.

Implementation Needs

To fully implement the action steps below, the following resources would be needed:

- Funding for a central data collection platform, (i.e., REDcap)
- Maricopa County's 2023 Cooling Center Evaluation results
- Additional staff to coordinate activities

Health Equity

The standardization recommendations will improve data collection and analysis and ensure consistency across heat relief sites to improve transparency with the public. Data collected at heat relief sites will be able to improve site selection in future years, increase the network's understanding of visitors' needs, and ultimately improve and tailor services to the population.

Proposal

ADHS proposes to improve consistency through collective standards of heat relief operations, data, and messaging by:

- Standardizing the data collected from cooling center visitors across all sites.
- Identifying and implementing minimum operating standards for heat relief sites.
- Developing and utilizing a comprehensive evaluation plan to determine the efficacy of heat relief activities throughout the Heat Relief Network.

Action Plan

Activity	Milestones / Timeline
Standardize data collection at cooling centers	By April 2024, workgroup members are identified and assembled
	By July 2024, final list of variables is created to be included on intake form
	By October 2024, a standardized survey administration process is developed
	By January 2025, training for cooling center staff and volunteers on data collection, form, and platform is finalized
Deliverables: Workgroup member list created; standardized cooling center intake form developed; standardized operating procedure for intake form administration created; data collection staff/volunteer training conducted	
Develop minimum standards for heat relief operations	By April 2024, workgroup members are identified and assembled
	By June 2024, develop list of conditional minimum standards for cooling center operations
	By June 2024, finalize standard operating procedures and quality assurance methods
	By September 2024, standard operating procedures are implemented into Heat Relief Network sign up process
Deliverables: Workgroup member list developed; list of minimum standards by heat relief type developed; compliance and enforcement procedures developed	
Heat relief evaluation plan	By April 2024, workgroup members identified and assembled
	By May 2024, list of current and needed data component sources and contacts
	By August 2024, evaluation plan drafted

	By October 2024, stakeholder feedback received
	By January 2025, finalize evaluation plan
Deliverables: Workgroup member list; list of review participants; evaluation plan	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- % of sites that record data
- % of sites with compliance agreement
- % of counties represented in evaluation feedback

Recommendation Brief: Innovative Solutions, Research, & Resources

Recommendation

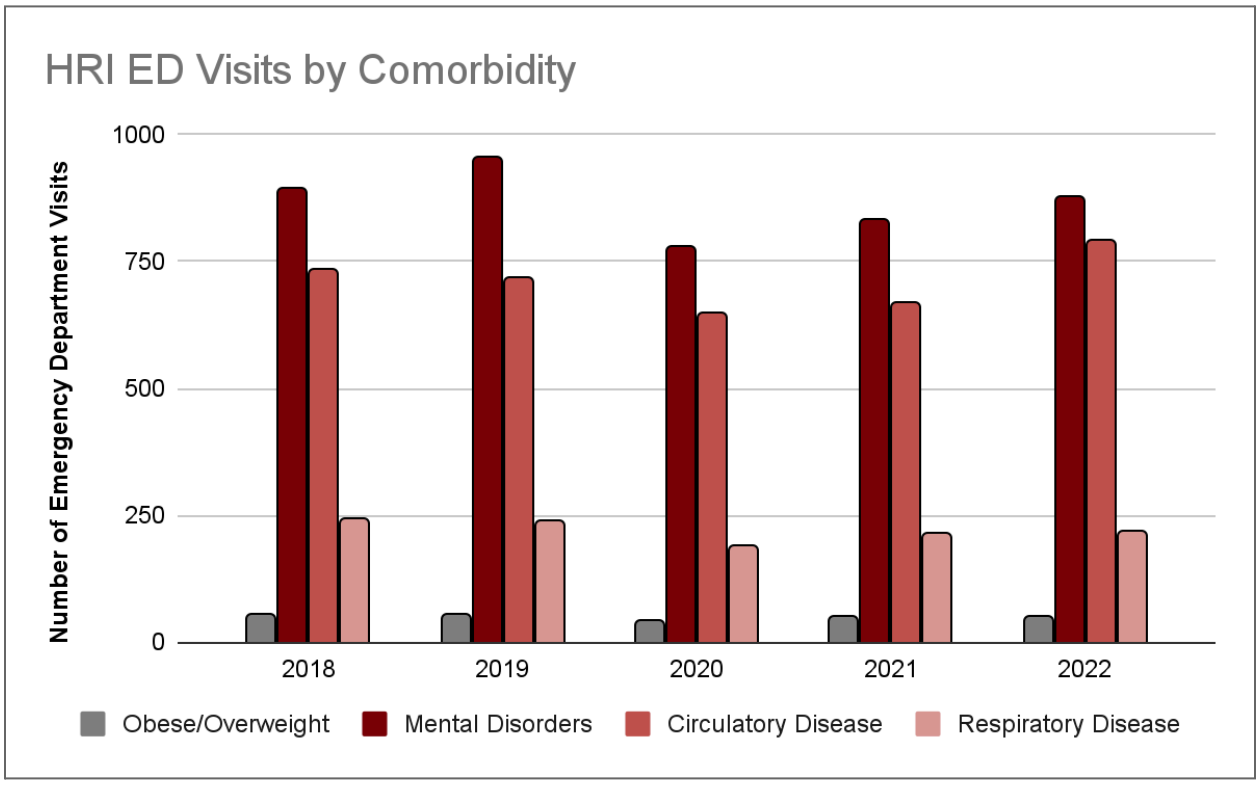
Support emerging initiatives and research.

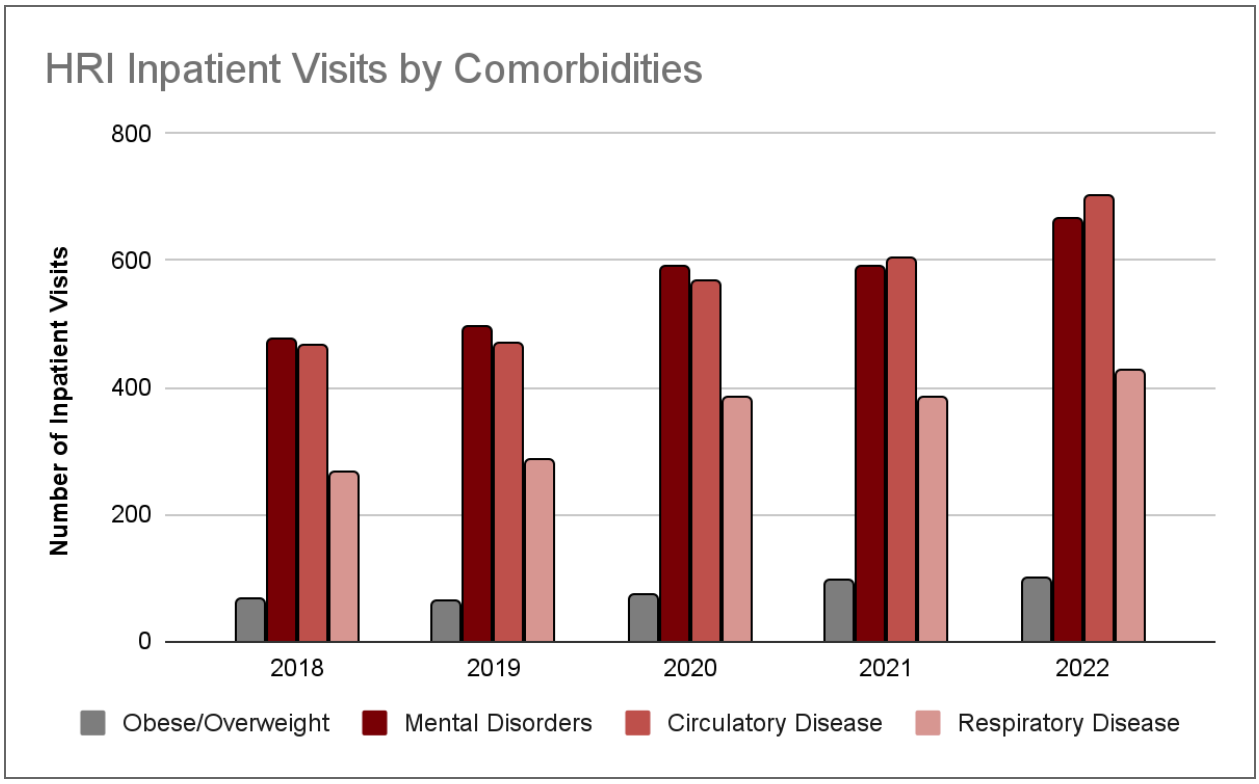
Current Efforts

ADHS and partners collaborated to examine risk factors, comorbidities, and environmental factors and to develop guidance documents and evaluations. ADHS and stakeholders have used these documents to guide future work, focus resources and efforts, and promote risk-reduction behaviors to stay safe in the heat.

To assist in the triangulation of comorbidities and environmental factors, ADHS uses the current data and efforts collected and analyzed. ADHS has hospitalization and death data. In addition, ADHS has experience collaborating with counties and universities to conduct heat projects and evaluations, such as those on cooling centers.

ADHS and partners have decades of experience reviewing available data and resources and maintaining cross-sectoral partnerships that enhance knowledge exchange and distribution of resources.





Partner organizations have implemented innovative solutions to reduce the heat burden on Arizonans include:

- Closing trailheads on extreme heat days to minimize illnesses, deaths, and risky rescues.
- Free transportation in the summer via public systems or cooling center transport in select jurisdictions.
- Utility service assistance, including SRP subsidizing tree planting and smart thermostats.

Identified Gaps

Community members and partners lack awareness of available resources. In addition to awareness, there are a number of gaps in the resources available. Those identified in conversations with stakeholders include:

- Staff expertise and capacity. Some jurisdictions do not have a climate and health epidemiologist, limiting the ability to make data actionable.
- Limited credible messaging channels to support accessible resources
- Little to almost no free convenient public transportation to different resources
- Lack of stable power infrastructures in regional, rural, and urban areas
- Overwhelmed power infrastructures in clinics, hospitals, etc. due to high admittance
- Lack of federal assistance to supplement local, state, tribal, and territorial area
- Re-greened spaces with natural and artificial shade
- Heat prevention and relief resources available to the public, (e.g., water bottles, sunscreen, hats, Narcan/naloxone, cooling towels)

Implementation Needs

To fully implement the action steps below, the following resources would be needed:

- Funding to support increased staff capacity
- Support for subject matter experts to conduct analysis

Health Equity

Conducting a network analysis and identifying available resources will allow Arizona to also identify resource gaps. ADHS will assess gaps through a health equity lens to ensure that factors preventing vulnerable populations from receiving or accessing resources will be identified and addressed.

Proposal

ADHS proposes to support emerging initiatives and research by conducting an infrastructure assessment, developing a volunteer management plan, looking for associations between environmental conditions and comorbidities, identifying and synthesizing current heat research and global solutions, and informing cooling center placement with network analysis.

Action Plan

Activity	Milestones / Timeline
Identify Available Regional Resources	By March 2024, identify criteria for specific infrastructure assessment
	By April 2024, identify stakeholders operating in specific infrastructure
	By May 2024, invite all contributing subject matter experts to identify: • resource gaps • request process • potential solutions to address resource gaps, including volunteer support
	By August 2024, develop list of existing resources
	By August 2024, develop list of resource gaps
	By October 2024, develop Volunteer Management Plan
	By November 2024, stakeholders review the Volunteer Management Plan
	By December 2024, finalize the Volunteer Management Plan

	By December 2024, publish the outline of the Volunteer Management Plan
Deliverables: List of existing regional resources; list of existing resource gaps; Volunteer Management Plan	
Triangulate comorbidities and environmental conditions	By end of March 2024, form workgroup to create a list of relevant environmental conditions and comorbidities
	By end of June 2024, identify data sources and subject matter experts for data analysis
	By end of September 2024, collect data and conduct data analysis
	By end of December 2024, publish final data analysis report
Deliverables: Report on literature review of how environmental conditions affect comorbidities; report on Arizona-specific data analysis of how environmental conditions affect comorbidities	
Analysis of heat research and solutions	By end of March 2024, form workgroup to select paper for literature review
	By end of June 2024, identify key priority areas
	By end of September 2024, literature review working group report out
	By end of December 2024, synthesize into final report
Deliverables: Report of a literature review on current heat research and solutions happening globally	
Network analysis (utility, NGOs, etc) - Sources of Data	By end of March 2024, identify available utility information to inform decisions
	By end of June 2024, share health data to inform cooling center locations
	By end of September 2024, disseminated information on network analysis results
Deliverables: Optimization map to show cooling center locations; SOP for dissemination of information on the sources of data	

*Timely completion of deliverables is dependent on adequate funding and resources.

Contributing Organizations

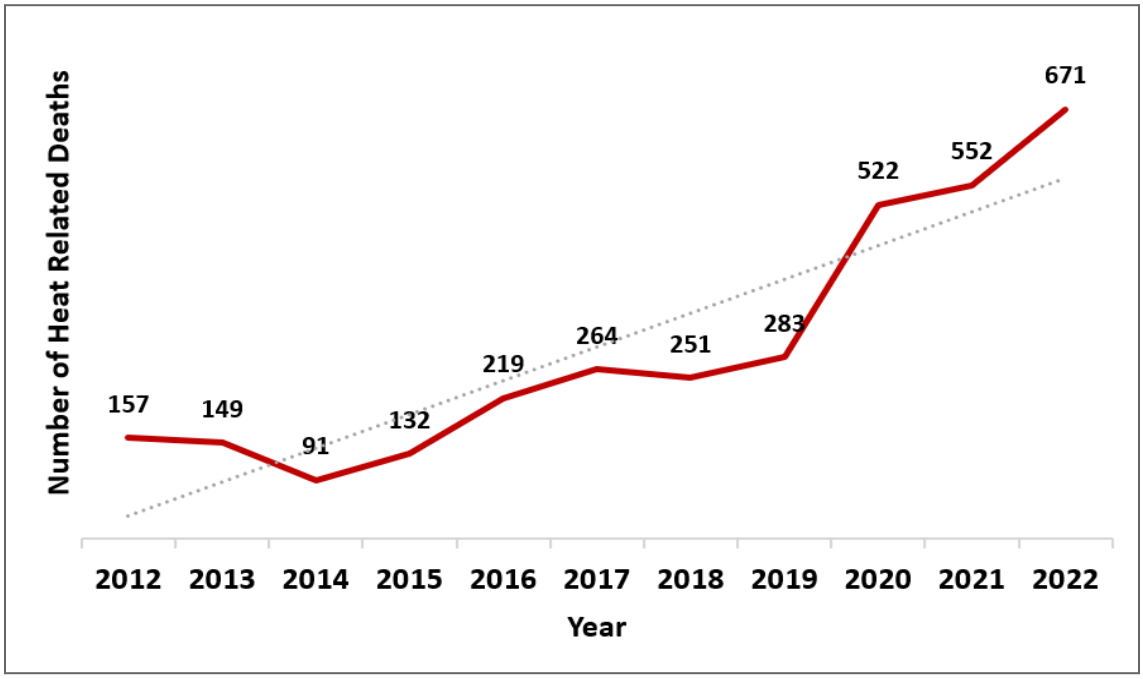
State Agencies (ADHS, ADOSH, AHCCCS, AZ DEMA, AZ DES, ADOH, ADOT, ADCR, ADE, ADVS, Corporation Commission, Office of Resiliency, Office of Tourism); **Local Agencies** (ALHOA, Counties, MAG, Municipalities); **Tribal; Federal** (NWS, NOAA, CDC, FEMA, EPA**); Community Partners** (211, Faith-based Organizations, Cooling center managers and decision-makers, Heat Relief Network-ASU Led, Red Cross, Salvation Army, Small Business Association- or someone who works with landlords, Utilities); **Academia** (UA - Arizona Center for Rural Health, Universities)

Process Measures

- # of download/views of the report
- # of cooling centers established/recruited (matching the locations on the optimization map)

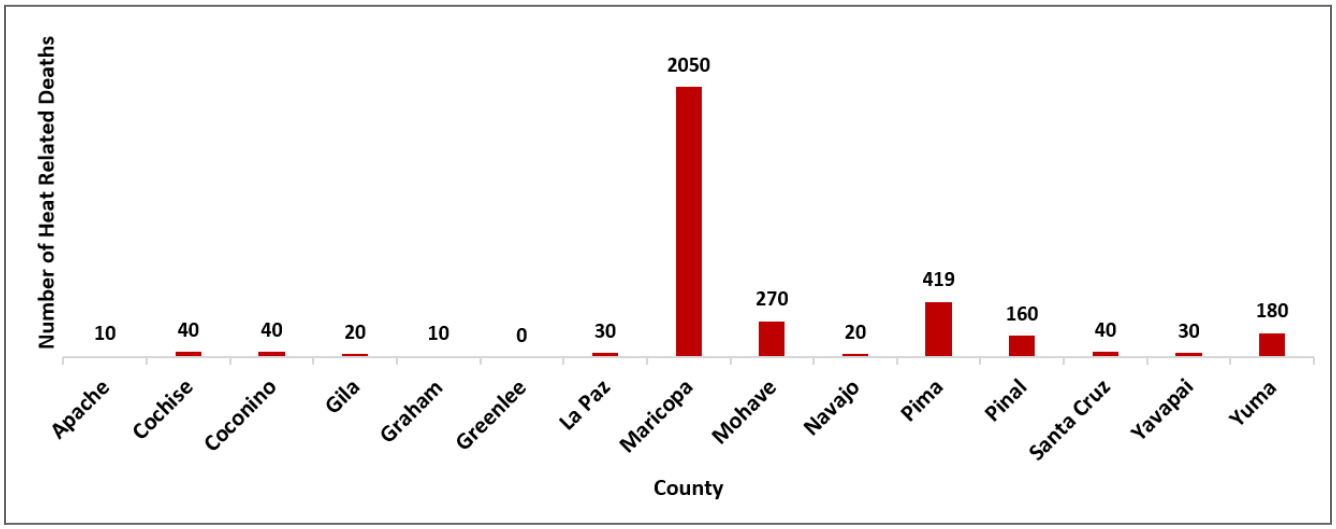
Appendix A: Extreme Heat Data Summary

Figure 1. Arizona Heat-Related Deaths by Year (2012-2022)



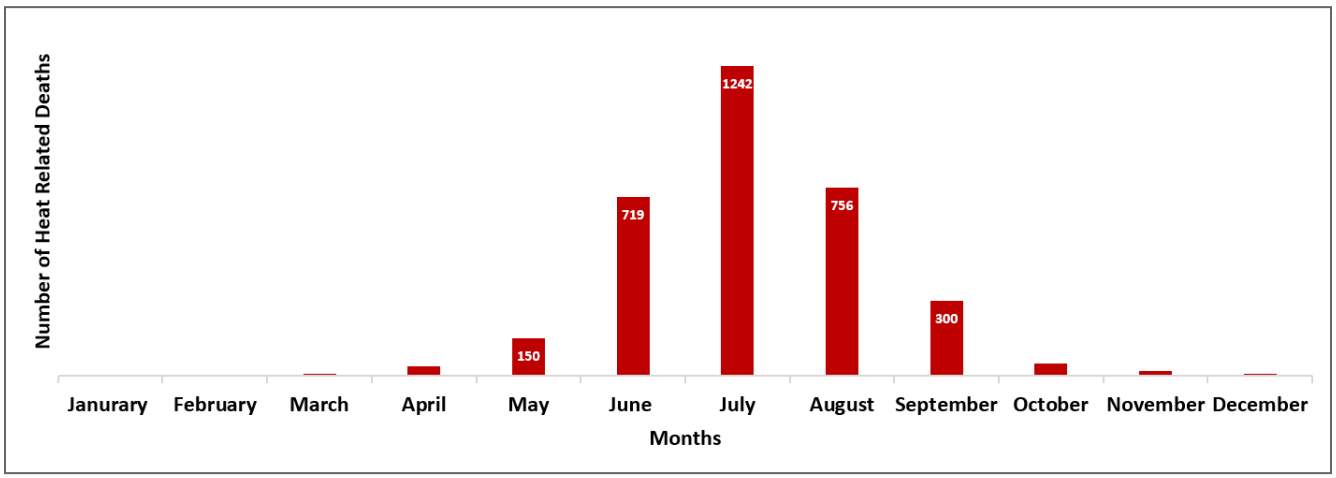
YEAR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
HEAT RELATED DEATHS	157	149	91	132	219	264	251	283	522	552	671

Figure 2. Arizona Heat-Related Deaths by Counties (2012-2022)



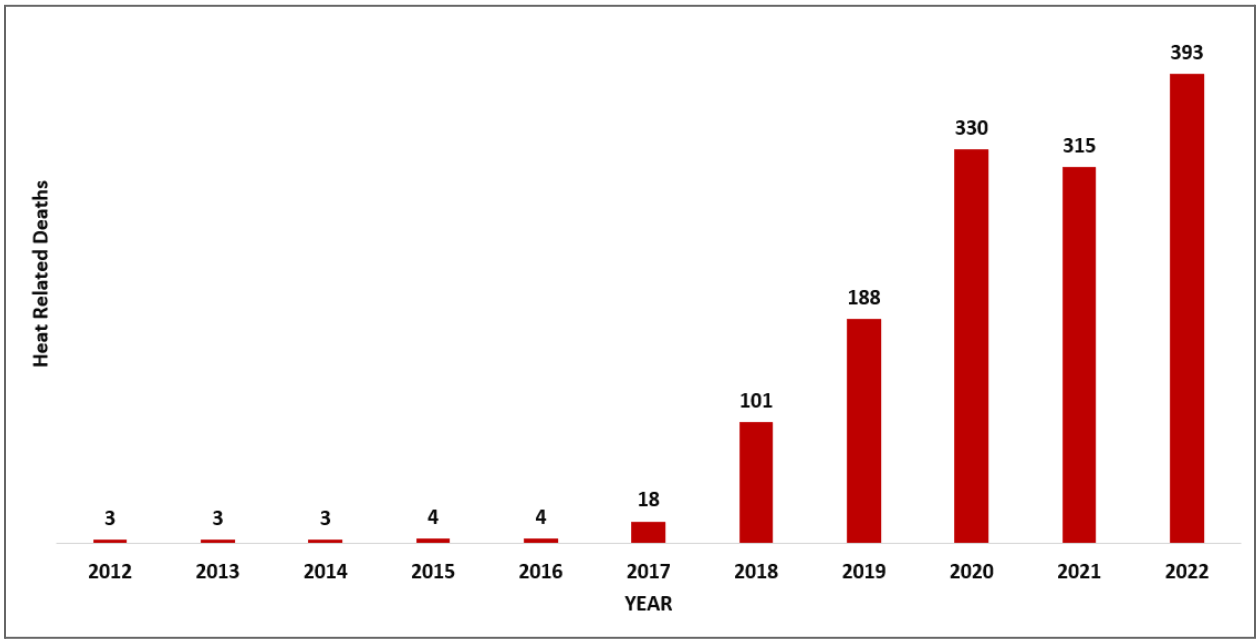
County	Apache	Cochise	Coconino	Gila	Graham	Greenlee	La Paz	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz	Yavapai	Yuma
Heat Related Deaths	10	40	40	20	10	0	30	2050	270	20	419	160	40	30	180

Figure 3. Arizona Heat-Related Deaths by Months (2012-2022)



Year	Janurary	February	March	April	May	June	July	August	September	October	November	December
Heat Related Deaths	0	0	10	40	150	719	1242	756	300	50	20	10

Figure 4. Arizona Heat-Related Deaths by Place of Injury (2012-2022)



YEAR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
OUTDOOR WORKERS	3	3	3	4	4	18	101	188	330	315	393

Figure 5. Maricopa County Heat Related Death in the Homeless Population (2012-2022)

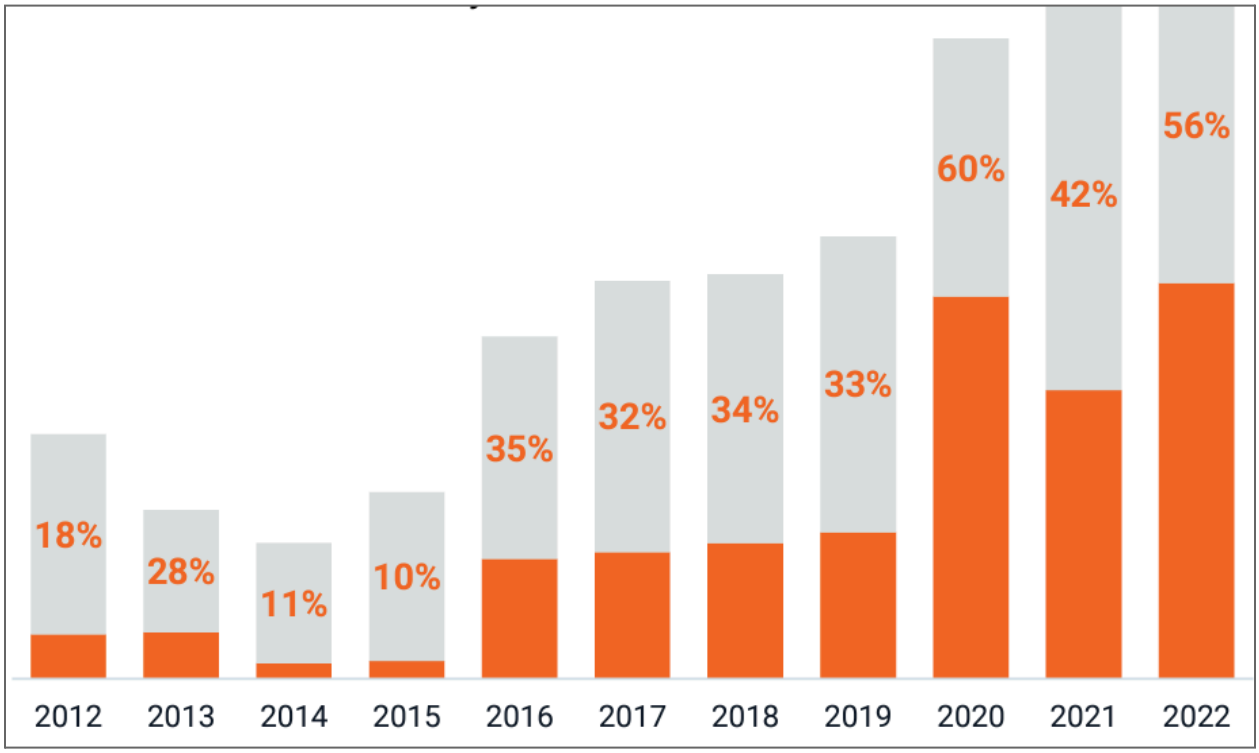


Figure 6. Arizona SVI by Census Tract (2020)

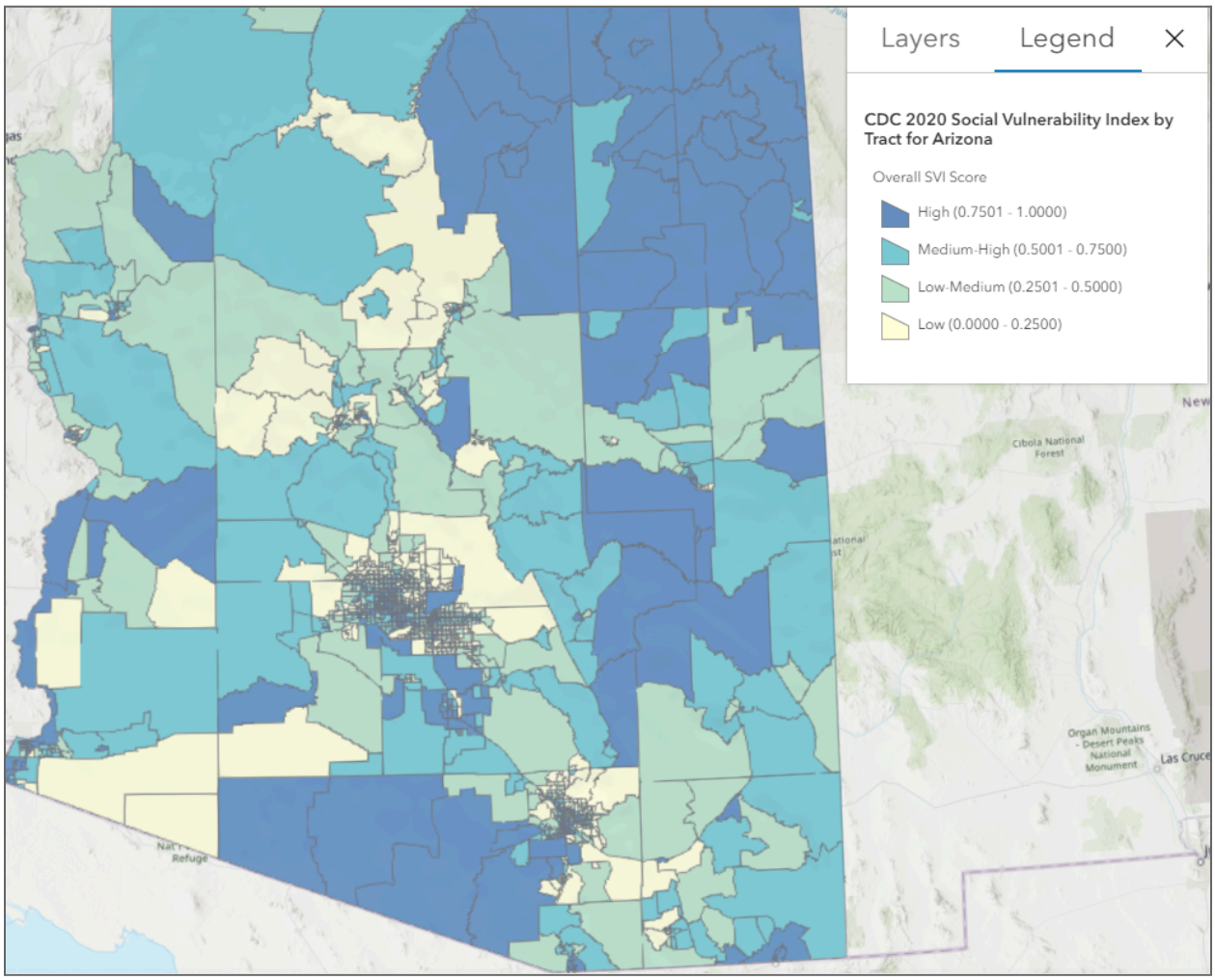


Figure 7. Arizona Durable Medical and Assistive Equipment (DME) Dependence (2023)

All Power Dependent	Power Dependent Devices and DME									
# Electricity-Dependent Devices and DME	# Cardiac Devices (5 years)	# Ventilators (13 months)	# BiPAPs (13 months)	# O2 Concentrators (36 months)	# Enteral Feeding (13 months)	# IV Infusion Pumps (13 months)	# Suction Pumps (13 months)	# At-Home ESRD Dialysis (3 months)	# Motorized Wheelchairs or Scooters (13 months)	# Electric Beds (13 months)
70,166	1,014	1,655	3,980	56,716	1,408	2,723	462	972	2,187	3,805

Appendix B: Extreme Heat Planning Summit

Extreme Heat Planning Summit

The Arizona Department of Health Services hosted the *Extreme Heat Planning Summit* to engage stakeholders throughout Arizona in response to EO2023-16. The Summit was held October 30, 2023 at the Arizona State University's Memorial Union with nearly 150 people in attendance.

Participating Organizations		
AHCCCS American Lung Association Arizona State University ASA AZ Dept. of Corrections AZ Dept. of Education AZ Dept. of Emergency and Military Affairs AZ Dept. of Health Services AZ Dept. of Veteran Affairs AZ Faith Network AZ Health Care Association AZ PIRG Education Fund AZ Statewide Independent Living Council AZCHER AZHEALTHTXT AZHHA	Banner Plans & Network BORR City of Glendale City of Phoenix City of Surprise City of Tempe Coconino County Copa Health Coyote Crisis Collaborative Gila County Gila River Indian Community HonorHealth Maricopa Association of Governments Maricopa County National Weather Service	Pascua Yaqui Tribe Phoenix Fire Department Pima County Pinal County Salt River Pima Maricopa Indian Community Salt River Project Santa Cruz County Tenet Healthcare The Salvation Army Tohono O'odham Nation Town of Youngtown University of Arizona Valley of the Sun United Way Wildfire Yavapai County

The day included presentations from leading and emerging heat experts:

- Jennifer Cunico, Arizona Department of Health Services - *AZ Heat Planning Summit 2023*
- Maren Mahoney, Office of Resiliency, Office of Governor Katie Hobbs - *Welcome*
- Margaret Hinrichs, Arizona State University - *Heat Data in Arizona*
- Fátima Luna, City of Tucson - *Heat Resilience Strategy*
- Jessica Bell, Maricopa County Department of Public Health - *2023 Cooling Center Evaluation: Preliminary Results*
- Mona Aurora, University of Arizona - *Collaborations to Address Extreme Heat Risk & Build Health Equity in Arizona Communities*
- Rev. Katie Sexton-Wood, Arizona Faith Network - *Call to action, AFN Heat Relief Video*

Facilitated workshops brought together diverse groups of stakeholders in both the morning and afternoon. The following aims were used to develop the facilitated sessions:

Summit Rational Aim
To identify what statewide cross-sector collaborative work needs to be done to keep Arizonans safe from the heat.

Summit Experiential Aim
For all participants to contribute their expertise and feel represented in Arizona's response to heat.

Participants self-selected their breakout topic at the time of registration. Breakout rooms were organized and described as outlined below but conversations were allowed to flow freely and respond to who was present in the room:

- ➔ **Sustainability, Policy, and Innovation**: Discuss innovative approaches to ensure sustainability. Topics may include built environment, legislative changes, funding, emergency declaration threshold.
- ➔ **Data to Enhance Heat Resiliency:** Discuss questions that data can answer. Topics may include available data, data needs, recommended indicators, data approaches, data management and sharing, threshold for outdoor workers, heat vulnerability index, explore non-traditional surveillance approaches, update data dashboard.
- ➔ **Communicating to Promote Heat Resiliency:** Discuss approaches to promote heat awareness in Arizona and reduce heat burden among vulnerable populations. Topics may include marketing, PIO/media, standardized language, vulnerable populations.
- ➔ **Heat Relief Coordination:** Discuss heat relief coordination of cooling centers, hydration stations, and respite centers. Topics may include intake questionnaire, optimization of locations, training & education for workers/volunteers of cooling centers, network.
- ➔ **Building a Strong Infrastructure:** Discuss the network and infrastructure to ensure smooth operations. Topics may include supplies, logistics, transportation, network communication (partners, HC, responders), intersections with other areas/agencies.

By the end of the Summit, each breakout topic had a set of prioritized strategies, along with a list of potential activities, for the virtual workgroups to take and build out into the action plans included herein.

Appendix C: Glossary

Glossary

- **Cooling Center Optimization** is a process in which a geospatial model is utilized to provide an area with the best locations to implement cooling centers to provide access to heat relief for the population.
- **Excessive Heat Warning** refers to a weather notification meaning "Major" (dangerous) or "Extreme" (deadly) risk of significant heat-related illness and health impacts are occurring or imminent based on the "HeatRisk" forecast. There is high (80%+) confidence that excessive heat will occur.
- **Extreme Heat** is generally defined as one or more days of unusually hot or humid weather conditions that can potentially harm human health. The definition of extreme heat varies based on many different factors, including location and weather. The Arizona Emergency Information Network has defined extreme heat as a period of at least 2-3 days of high heat with temperatures above 90 degrees.
- **Heat Caused Death** - A death where the underlying cause that led to death was exposure to excessive natural heat.
- **Heat Mitigation** refers to limiting the impacts of extreme heat by providing reduced indoor and outdoor heat exposure.
- **Heat-Related Death** - A death where exposure to excessive natural heat was identified as a contributing cause of death anywhere in the death record. This term generally is inclusive of heat-caused.
- **Heat-Related Illness**
    - **Heat Cramps** are painful muscle spasms that occur in individuals who perform strenuous activities that cause them to sweat excessively, leading to a loss of salt and moisture in their bodies. Such cramps may also be a sign of heat exhaustion.
    - **Heat Exhaustion** is a condition where the body loses too much water and salt due to excessive sweating. It is a dangerous condition that can affect anyone, but some people are more susceptible than others. Older adults, people with high blood pressure, and those working in hot environments are the most likely to suffer from heat exhaustion.
    - **Heat Stroke** is a potentially deadly medical condition that results from the body being unable to regulate its own temperature due to prolonged exposure to hot and humid conditions. During heat stroke, the body temperature rapidly rises, the sweat glands shut down, and the body becomes unable to cool itself down, leading to organ failure and even death. It is a severe medical emergency that requires immediate medical attention.
- **Heat Relief** refers to ways to stay cool and obtain refuge from extreme heat. **Heat relief sites** provide opportunities for the public to experience heat relief and include:
    - **Collection Sites** are locations where water bottles can be donated for use at hydration and cooling locations. Some sites also accept other donations, such as cash; light-colored, long-sleeved T-shirts; socks; underwear; hats; lip balm; sun block; and pre-packaged snacks.

    - **Cooling Centers** are cooled indoor locations that provide refuge from the heat during the day. Drinking fountains or bottled water is available.
    - **Hydration Stations** are locations where individuals can go to receive bottled water and other collected donated items. Can be indoors or outdoors.
    - **Respite Centers** are indoor, air-conditioned locations that offer hydration and allow for uninterrupted rest, sitting, or lying down (depending on each facility) during hours of operation.
- **Heat Risk** is a tool from the National Weather Service that offers a comprehensive forecast of heat-related impacts within a 24-hour period. With a color-numeric-based index, this tool is designed to consider the heat's uniqueness during that particular time of the year, as well as the duration of heat, encompassing both day and night temperatures. By utilizing the latest data from the CDC, it's possible to determine if those temperatures could potentially pose an increased risk of heat-related health impacts to different populations.
- **Heat Season** refers to the hottest months of the year, generally between May and September.
- **Human Service Providers** work directly with community members to assist them in finding stability. They provide assistance and resources for needs including, but not limited to food, housing, substance use, and other guidance.
- **Social Services** is a network of programs and services that address the social and economic needs of the population. Social service programs include, but are not limited to food assistance, unemployment and disability assistance, employment assistance, and shelter and housing.
- **Syndromic Surveillance** is a type of public health surveillance that "provides public health officials with a timely system for detecting, understanding, and monitoring health events in near real-time (within 24 hours). By tracking symptoms of patients in emergency departments—before a diagnosis is confirmed—public health can detect unusual levels of illness to determine whether a response is warranted (CDC, 2023)." Currently, 91% (89/98) of emergency departments in Arizona report to the CDC's National Syndromic Surveillance Program, representing an estimated 96% of emergency department visits in Arizona. Public health practitioners in Arizona have access to this data through the BioSense ESSENCE tool to analyze data.
- **Trigger Points** are pre-decided cues that aid in situation assessment and lead to decisions on action for implementation or change.
- **Vulnerable Populations** may include, but may not be limited to, the following:
    - older adults (people over the age of 65)
    - infants (people under the age of 1)
    - young children (people between the ages of 1 and 10)
    - adolescents (people between the ages of 10 and 19)
    - persons living with a cognitive/mental, emotional, or physical disability
    - persons experiencing homelessness
    - persons who are homebound
    - persons who overexert during work or exercise
    - persons who are in larger bodies

- persons who are physically ill or on certain medications (e.g., medications for depression, insomnia, or poor circulation)
- persons who cannot regulate or adjust their body temperature well
- persons who work outdoors (e.g., farm workers, electric line workers, construction workers, etc.)
- persons living with a substance use disorder
- persons living in rural communities
- low-income and/or energy insecure communities

Appendix D: Acronym List

Acronym List

- AC Air Conditioning
- ADA Americans with Disabilities Act
- ADCRR Arizona Department of Corrections, Rehabilitation, and Reentry
- ADES Arizona Department of Economic Security
- ADHS Arizona Department of Health Services
- ADOSH Arizona Division of Occupational Safety and Health
- ADOT Arizona Department of Transportation
- AFN Arizona Faith Network
- AHCCCS Arizona Health Care Cost Containment System
- ALHOA Arizona Local Health Officers Association
- ASU Arizona State University
- AZ Arizona
- BRACE Building Resilience Against Climate Effects
- CDC Centers for Disease Control and Prevention
- CLIMAS Climate Assessment for the Southwest
- DEMA Department of Emergency and Military Affairs
- ED Emergency Department
- EM Emergency Management
- FEMA Federal Emergency Management Agency
- GIS Geographic Information System
- HOA HomeOwners Association
- HRI Heat-Related Illness
- IHS Indian Health Service
- IT Information Technology
- LIHEAP Low Income Home Energy Assistance Program
- MAG Maricopa Association of Governments
- MCDPH Maricopa County Department of Public Health
- MOA Memorandum of Agreement
- MOU Memorandum of Understanding
- NGO Non-Governmental Organization
- NEMSIS National Emergency Medical Services Information System
- NIOSH National Institute for Occupational Safety and Health
- NWS National Weather Service
- OSHA Occupational Safety and Health Administration
- OTG Office of the Governor
- PIO Public Information Officer
- PHEP Public Health Emergency Preparedness
- POC Point of Contact
- PSA Public Service Announcement
- RMA Roadside Motorist Assist
- SOP Standardized Operating Procedure
- SVI Social Vulnerability Index
- UA University of Arizona
- VOAD Voluntary Organizations Active in Disaster
- WIC Women, Infants, and Children