Beyond the Urban Heat Island: Rural Arizona's Hidden Heat Crisis

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MEL & ENID ZUCKERMAN COLLEGE OF PUBLIC HEALTH
Center for Rural Health

LAND ACKNOWLEDGEMENT

We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.

Session Objectives

1. Understand trends in extreme heat temperatures that influence health and wellbeing across communities in Arizona
2. Describe rural heat risk and vulnerability
3. Support planning by leveraging existing tools and resources
4. Raise awareness and propose actionable strategies for building resilience

US National Weather Service Phoenix Arizona

September 28, 2024 ·

Record high temperatures were shattered at both Phoenix and Yuma today with highs at 117°F and 112°F, respectively. For Phoenix, the 117°F high is the highest temperature ever registered in the month of September.

The Heat Challenge in Arizona

1. Summers of 2023 & 2024 were the **hottest** in **Arizona** ever recorded
2. Tucson and Phoenix are among the **top five fastest warming cities in the nation**
3. Arizona is **third** fastest **warming** state in the nation.
4. In 2023, Arizona had 73 days with temperatures over 100°F and broke a record with 31 consecutive days above 110°F.

SUMMARY REPORT OF HEAT-RELATED DEATHS IN 2023

990 Heat-related deaths occurred in Arizona during 2023

Around **65%** of the heat-related deaths occurred in Maricopa

The rate of Heat-related deaths among Arizona residents per 100,000 population is highest among La Paz, Mohave and Pima counties

3 out of every **4** heat-related deaths are among males

63% of the heat-related deaths were age 50 years or older

A significant proportion of heat-related deaths occurred during the months of May, June, July, August and September and over **60%** of the annual heat-related deaths occurred in the month of July

Over **69%** of the Arizona residents who died of heat-related illness during 2023, lived in the state for 20+ years

52% of heat-related deaths involved substance use in 2023

SUMMARY REPORT OF HEAT-RELATED ILLNESS (HRI) CASES IN 2023

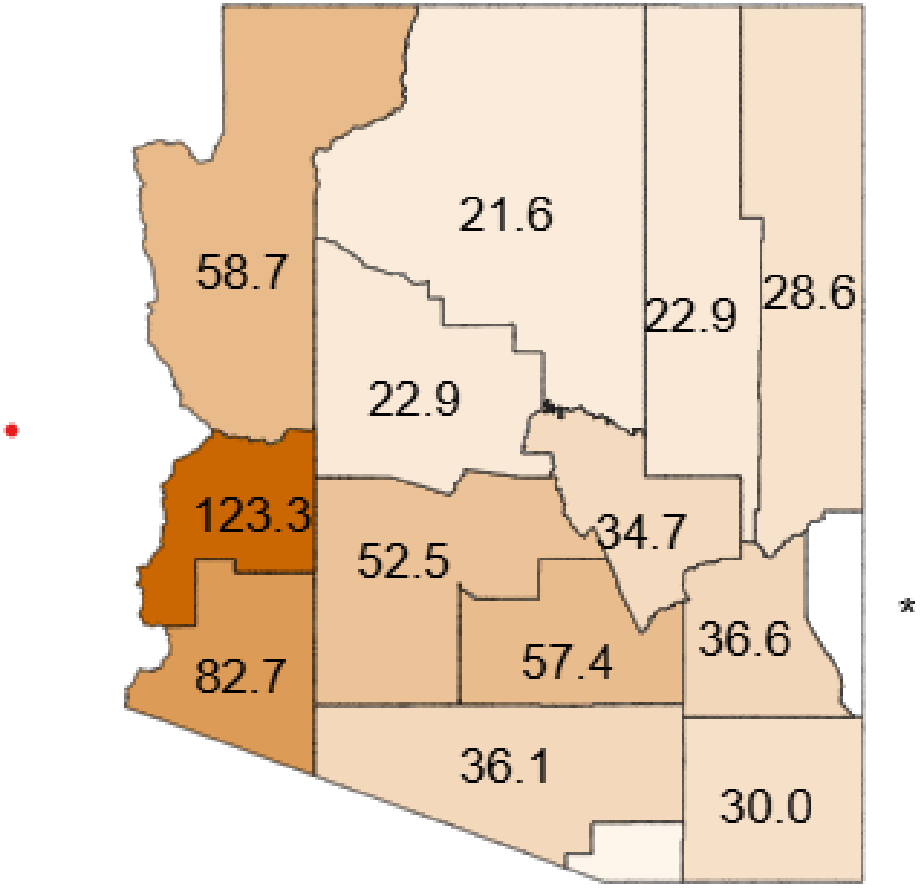
Emergency Department Visits		Inpatient Admissions (Hospitalizations)
Total number of heat-related illness emergency department visits in Arizona during 2023 is **4,298**		Total number of heat-related illness Inpatient admissions in Arizona during 2023 is **1,322**
Approximately **68%** of the heat-related illness emergency department visits by males		Around **77%** of the heat related illness Inpatient admissions are males
Most of the heat-related emergency department visits occurred in **Maricopa, Pima and Pinal counties**		Most of the heat-related hospitalizations occurred in **Maricopa, Pima and Pinal counties**
The rate of ED visits among Arizona residents per 100,000 population is highest in La Paz, Yuma and Mohave counties		The rate of hospitalizations among Arizona residents per 100,000 population is highest in Gila, Mohave and Maricopa counties
59% of heat-related cases occurred among Non-Hispanic Whites & **26%** among Hispanics		**62%** of heat-related cases occurred among Non-Hispanic Whites & **21%** among Hispanics
45% of the heat-related illness cases are seen in 20-44 years of age group		**35%** of the heat-related illness cases are seen in 45-64 years of age group
Over **21%** of heat-related illness cases had cardiovascular disease as a comorbidity		Over **66%** of heat-related illness cases had cardiovascular disease as a comorbidity
Among the listed activities, over **52%** of the heat-related illness cases involved engaging in recreational activities		Among the listed activities, **40%** of the heat-related illness cases involved engaging in recreational activities

2023

Select visit counts or rates (for the county map below):

Rate per 10,000 ED Visits

Select a county to filter



Heat and Healthcare in Arizona

- Rate of Emergency Department Visits per 100,000 Arizona population is highest in La Paz, Yuma, and Mohave counties.
- Rate of Hospitalizations among Arizona residents per 100,000 Arizona population is highest in **Gila**, **Mohave**, and Maricopa counties.

Source: ADHS

2024

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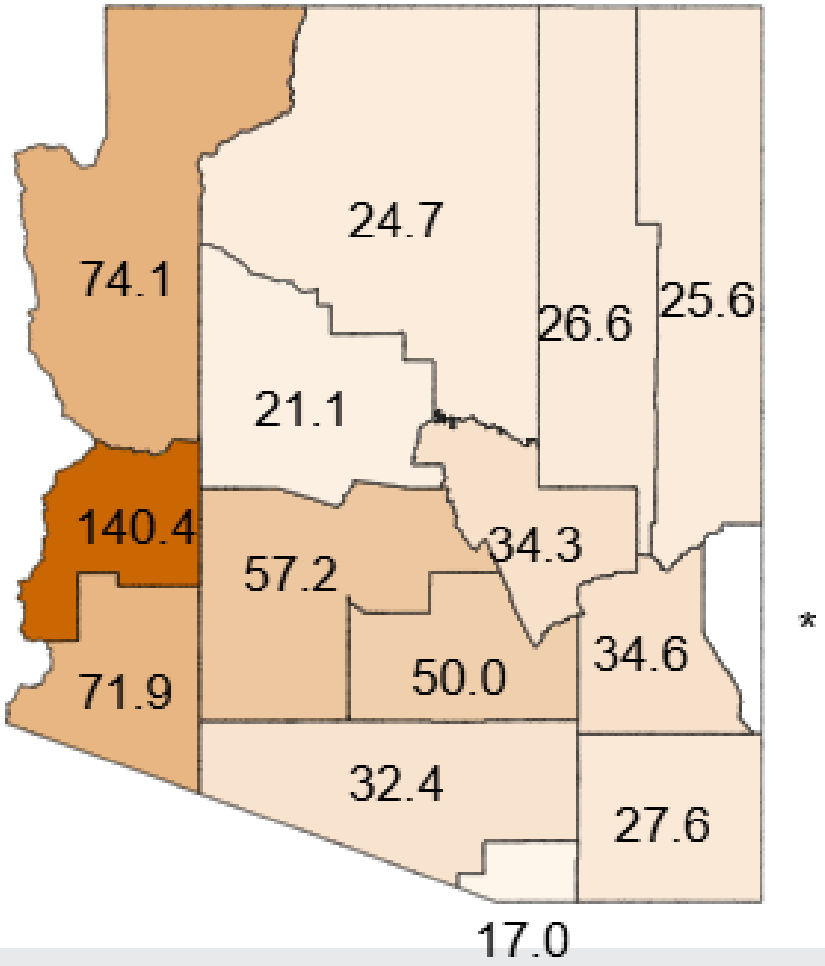

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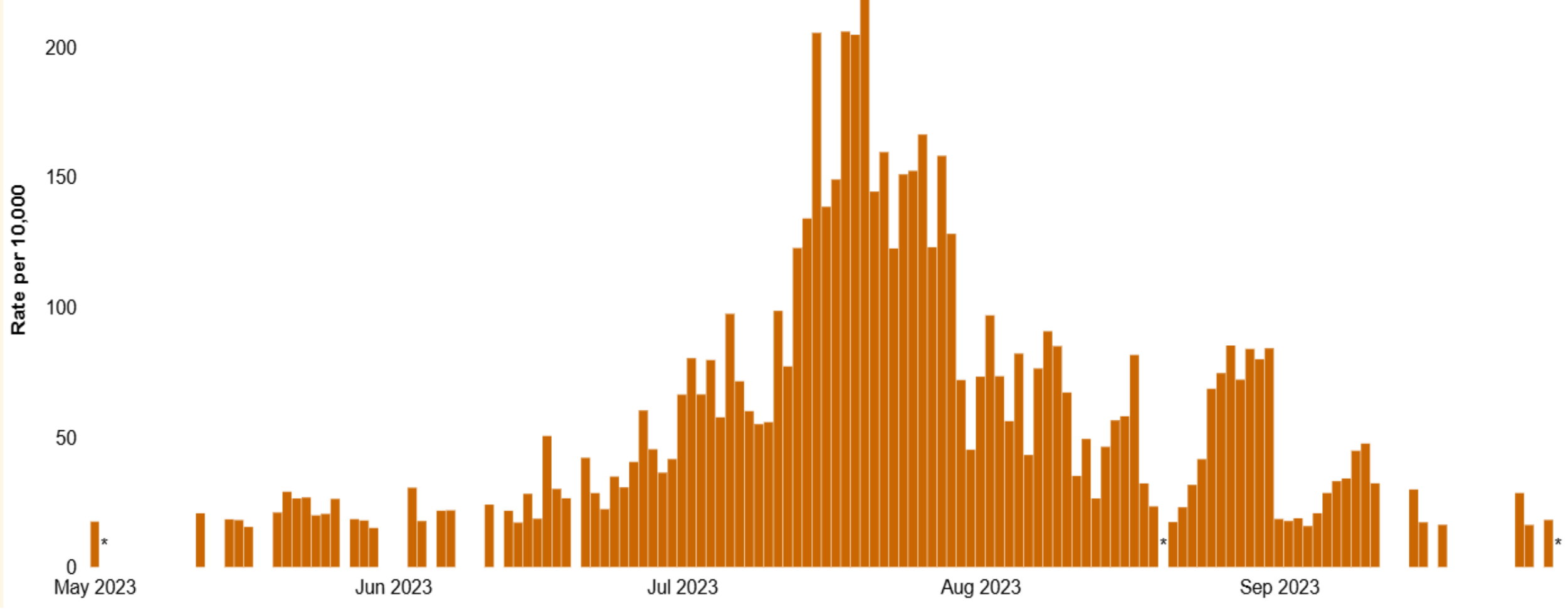
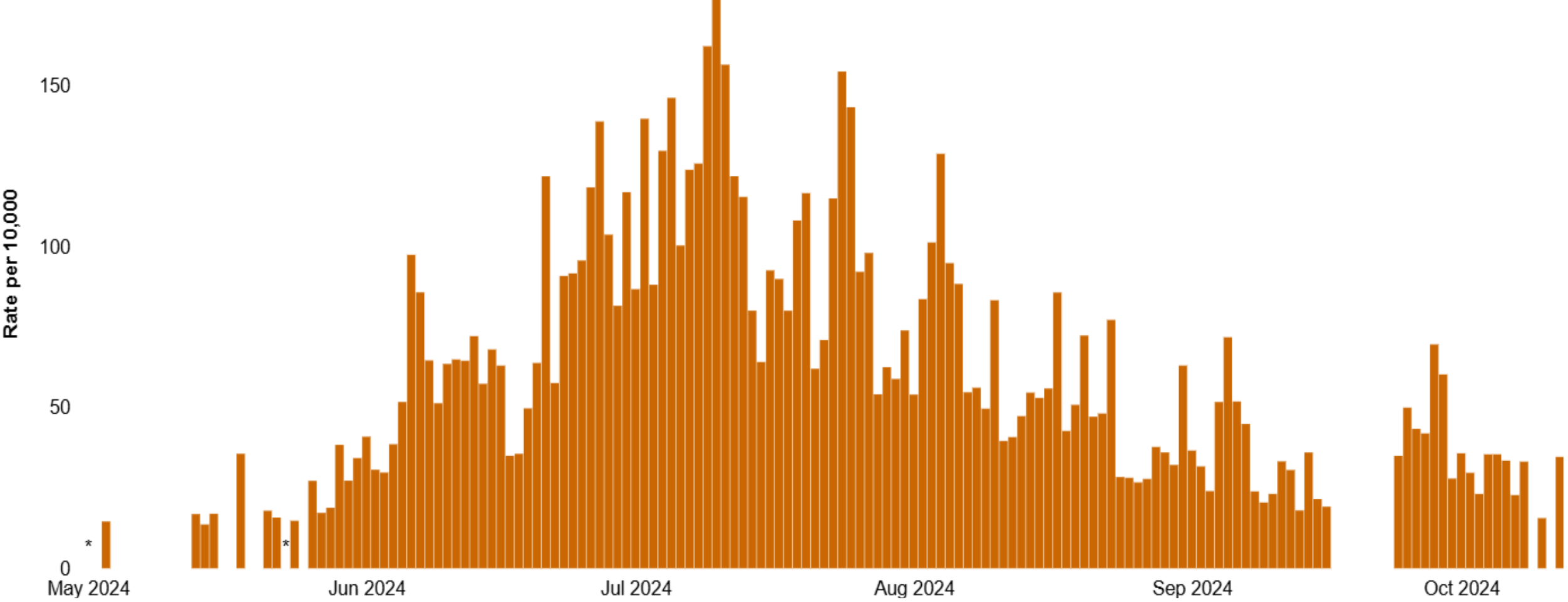


2023 ADHS Heat Related Illness ED Visits

Source: ADHS Heat Related Illness Dashboard



2024 ADHS Heat Related Illness ED Visits

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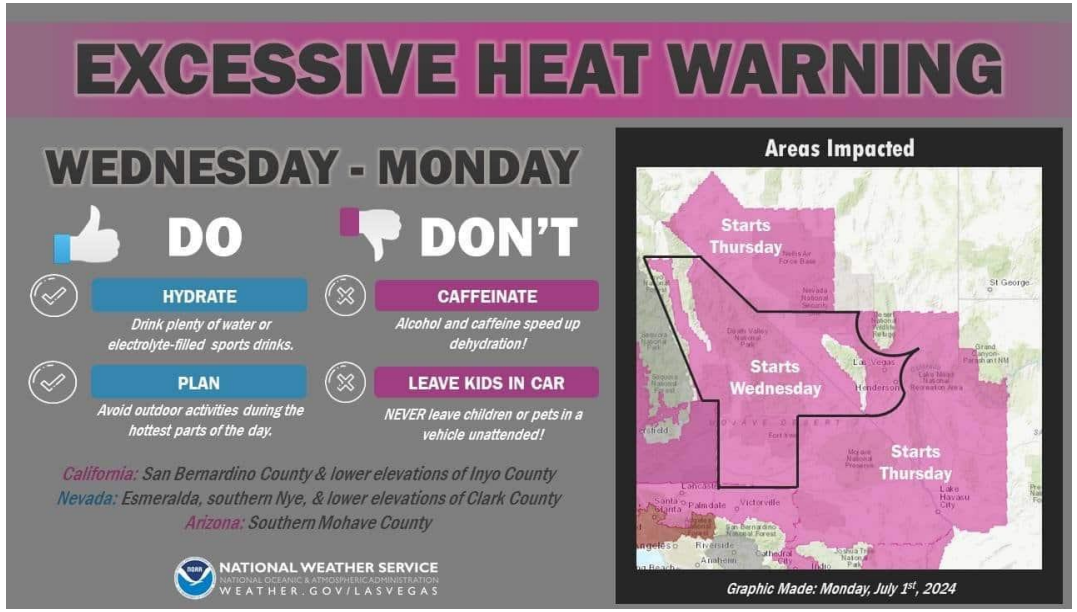


Implications of Shifting Paradigms

- Extension in heat season as early as late-April to October
- Individuals are not acclimated to the rising heat early in the year.
- Heat relief communication and activities (e.g., cooling relief) have not been implemented and may not be prepared to remain active for up to 6 months of the year.

Source: The Bee News

Understanding Rural Heat Vulnerability

- Rural areas in Arizona are likely to experience the largest changes in temperature.
- By 2060, some Arizona counties are projected to see warming up to 4.5°F above current temperatures.

Key Factors Contributing to Rural Heat Risk

- **Socioeconomic considerations:** income, unemployment, housing cost, high school education, health insurance
- **Household characteristics:** aging population, persons with disabilities
- **Housing factors:** mobile homes
- **Heat vulnerability factors:** heat exposure related to housing quality, energy burden, mode of transportation, and type of commute
  - Financial hardship of heat: Whether the household's housing costs are greater than 50% so that electricity bills are represented

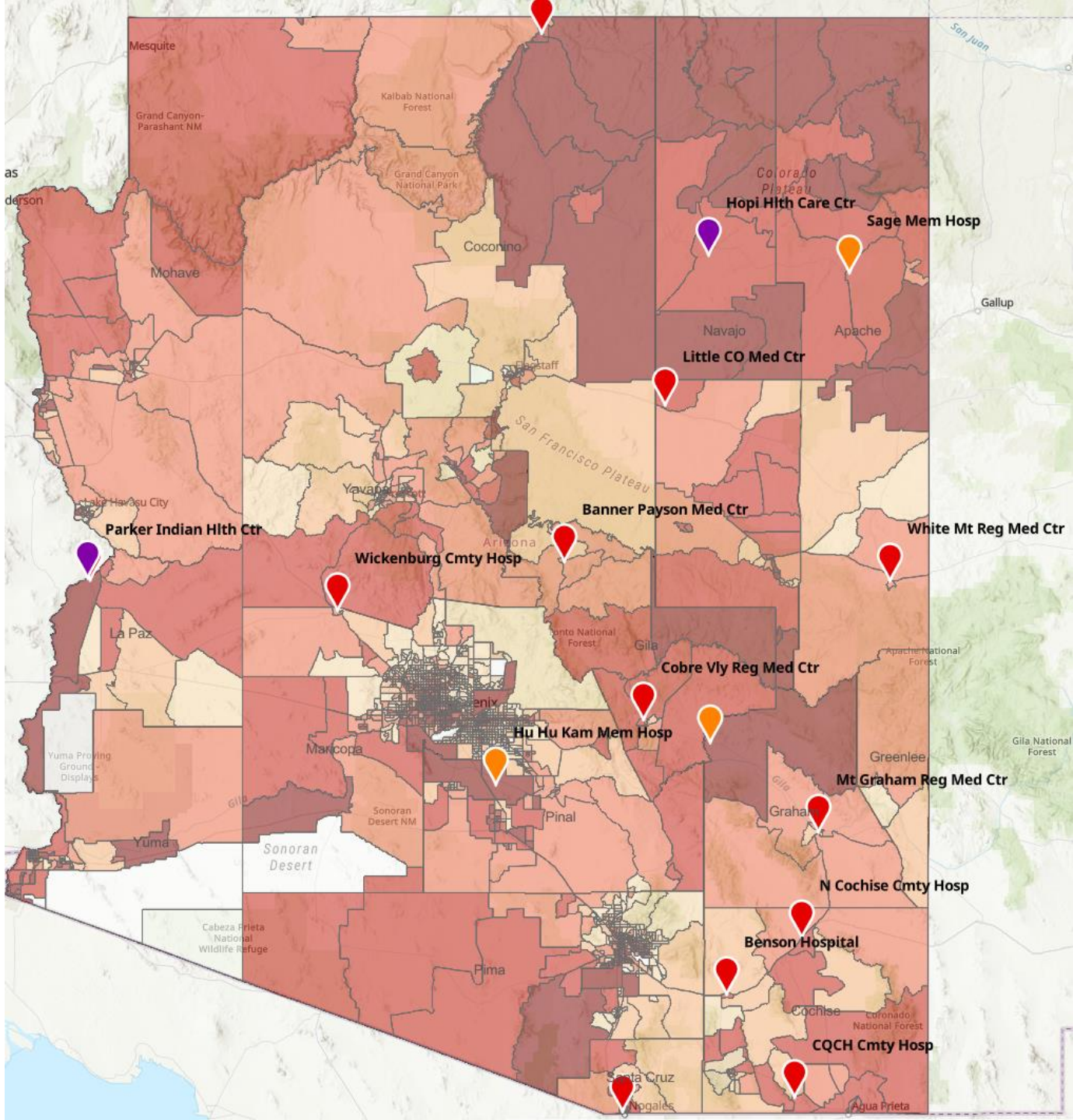
Source: Arizona Social Vulnerability Index

Examining Arizona's Rural Healthcare Communities More Closely

- Critical Access Hospital (CAH) Communities are highlighted for reference on the following maps
- CAHs are small (25 beds or less) rural hospitals at least 35 miles or more from another hospital that provide 24/7 emergency care services
- Includes the communities of Benson, Bisbee, Ganado, Globe, Nogales, Page, Parker, Payson, Peridot, Polacca, Sacaton, Safford, Springerville, Wickenburg, Willcox, Winslow

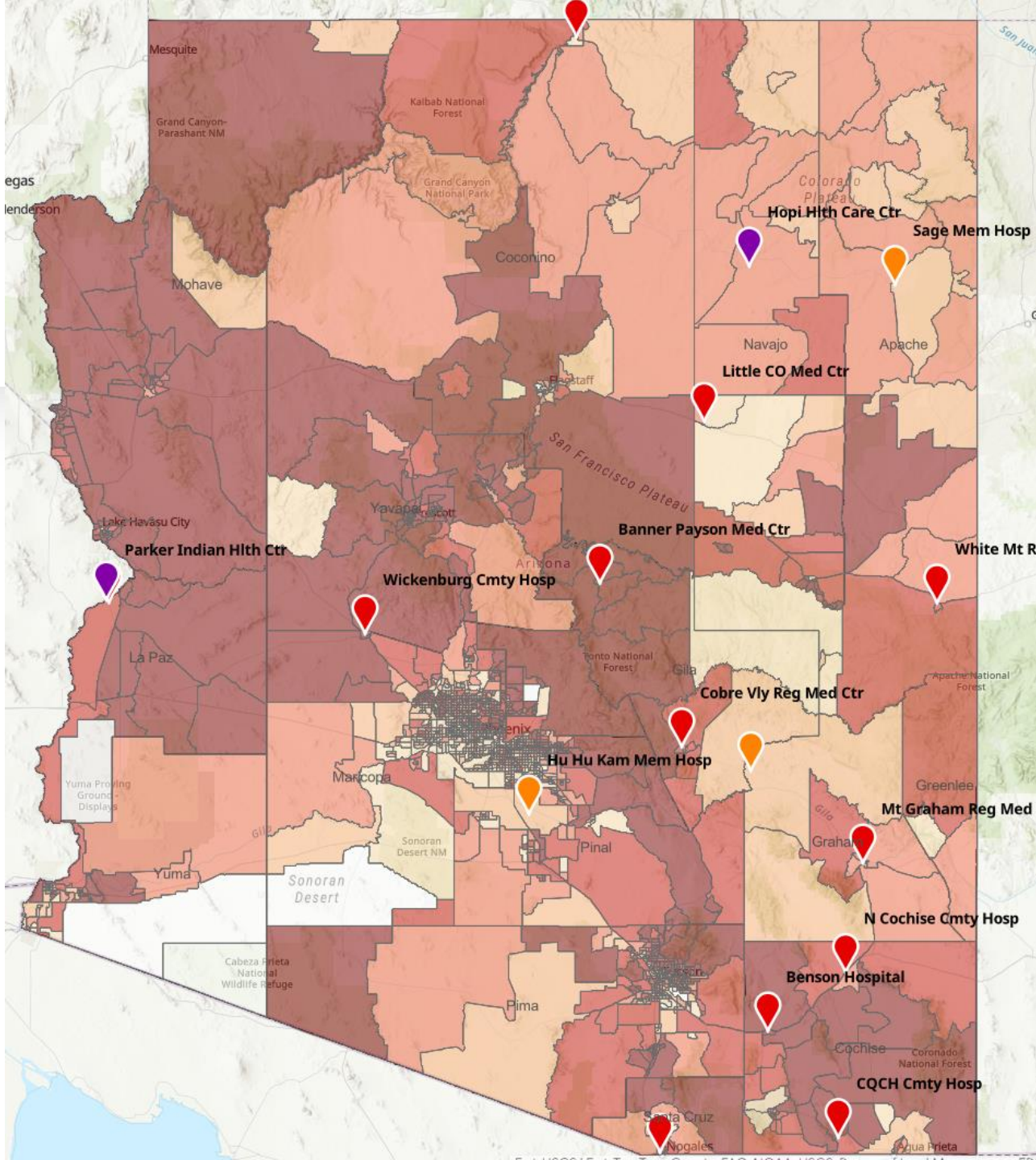
Socioeconomics

- Income
- Unemployment
- Housing cost
- High school education
- Health insurance



Household Characteristics: Age 65+

Percentage of persons aged 65 and older estimate, 2018-2022 ACS

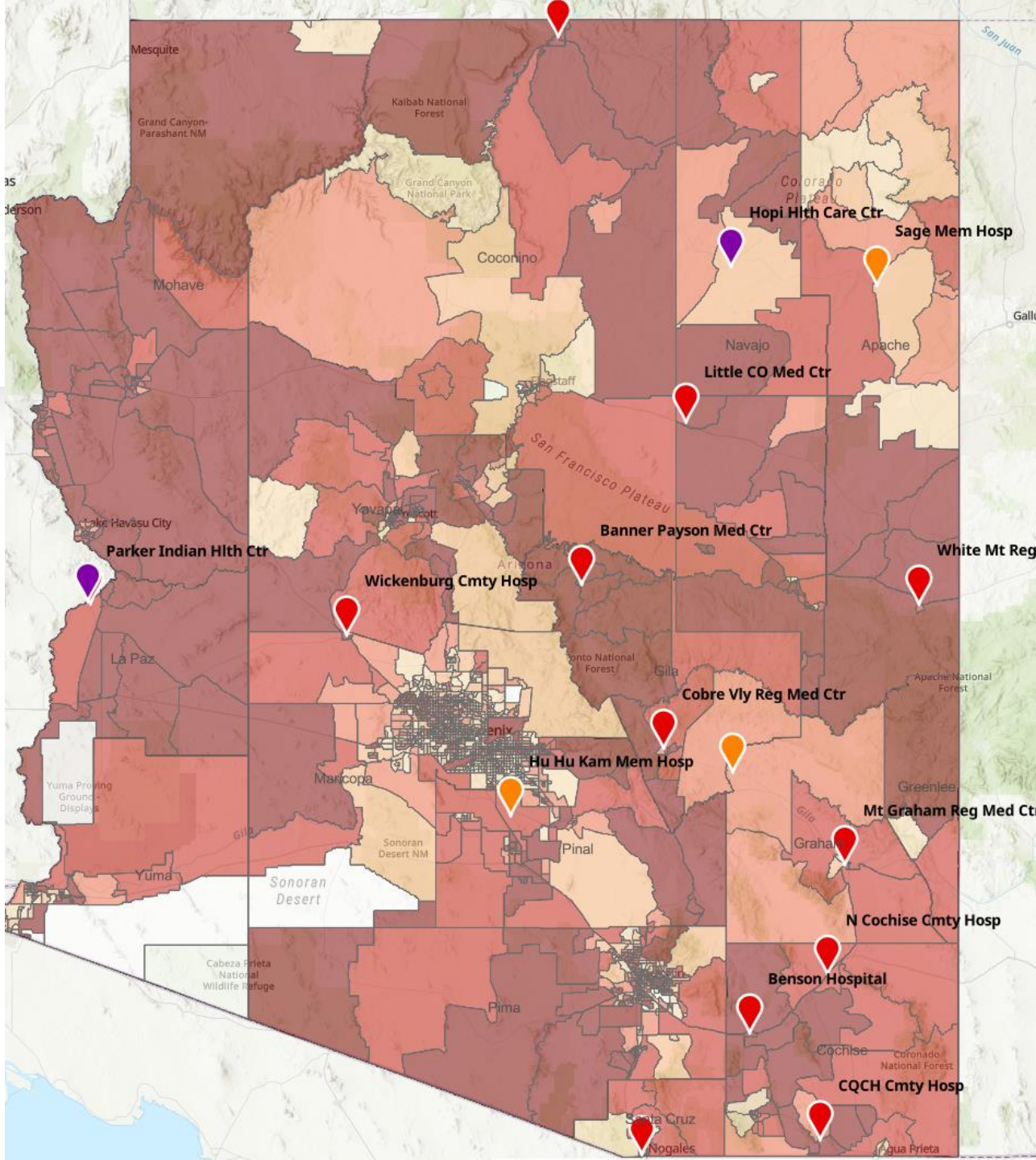


Household Characteristics: Individual with a Disability

Percentage of civilian noninstitutionalized population with a disability estimate, 2018-2022 ACS

Disability Percentile Rank

- High Vulnerability
- Medium High Vulnerability
- Medium Vulnerability
- Medium Low Vulnerability
- Low Vulnerability
- No Data

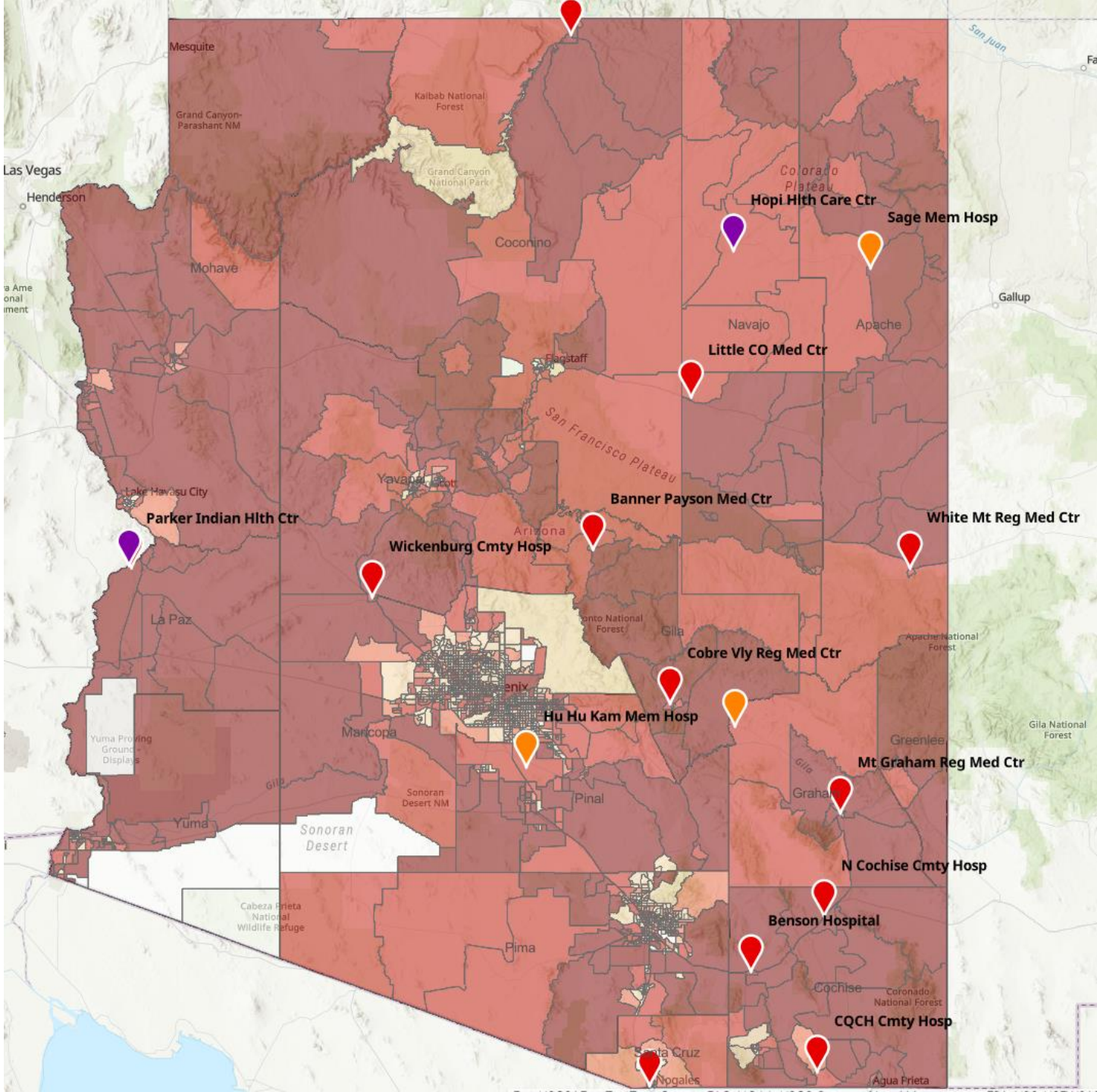


Housing Type: Mobile Homes

Percentage of total housing units designated as mobile homes

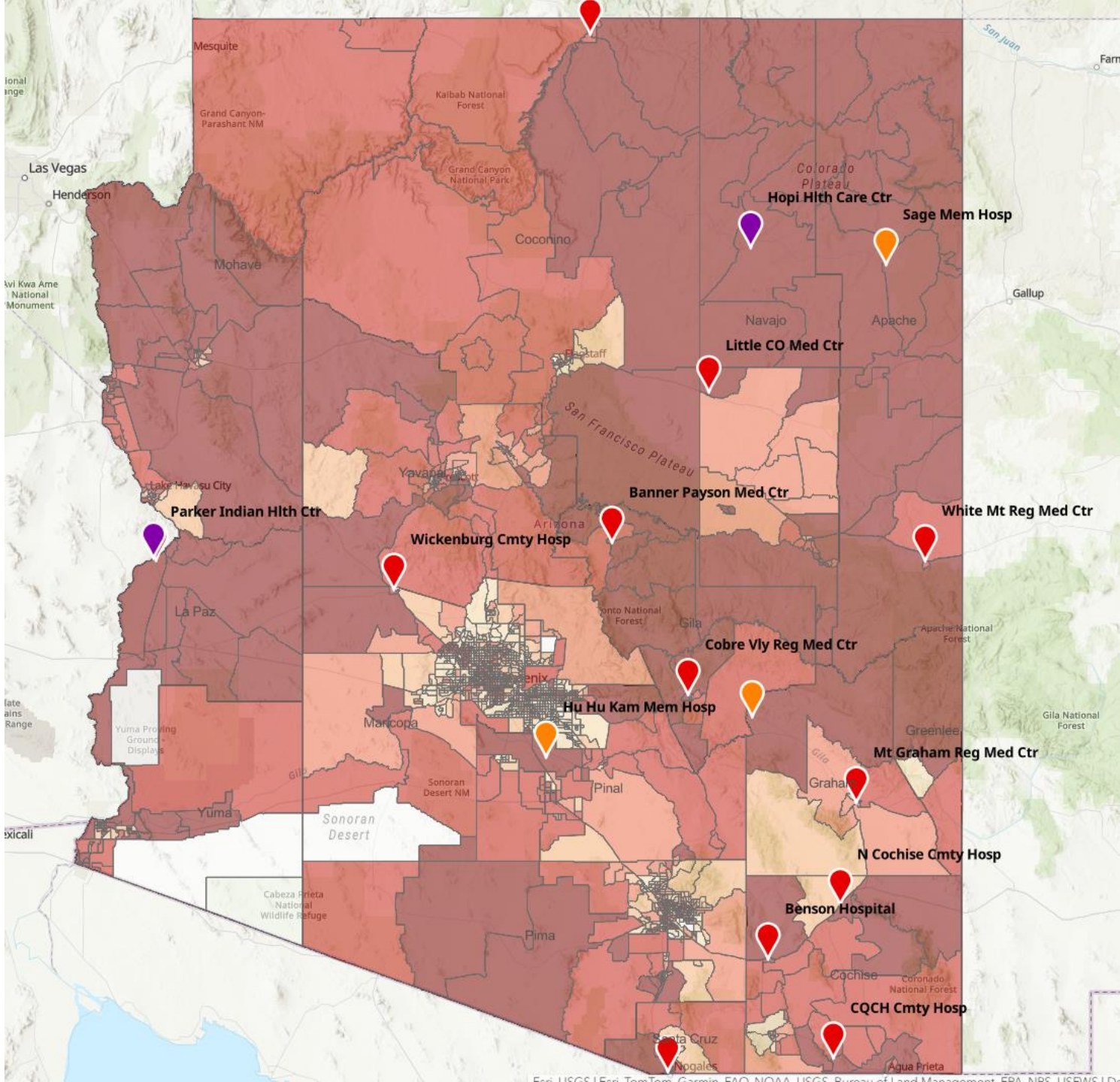
Mobile Homes Percentile Rank

- High Vulnerability
- Medium High Vulnerability
- Medium Vulnerability
- Medium Low Vulnerability
- Low Vulnerability
- No Data



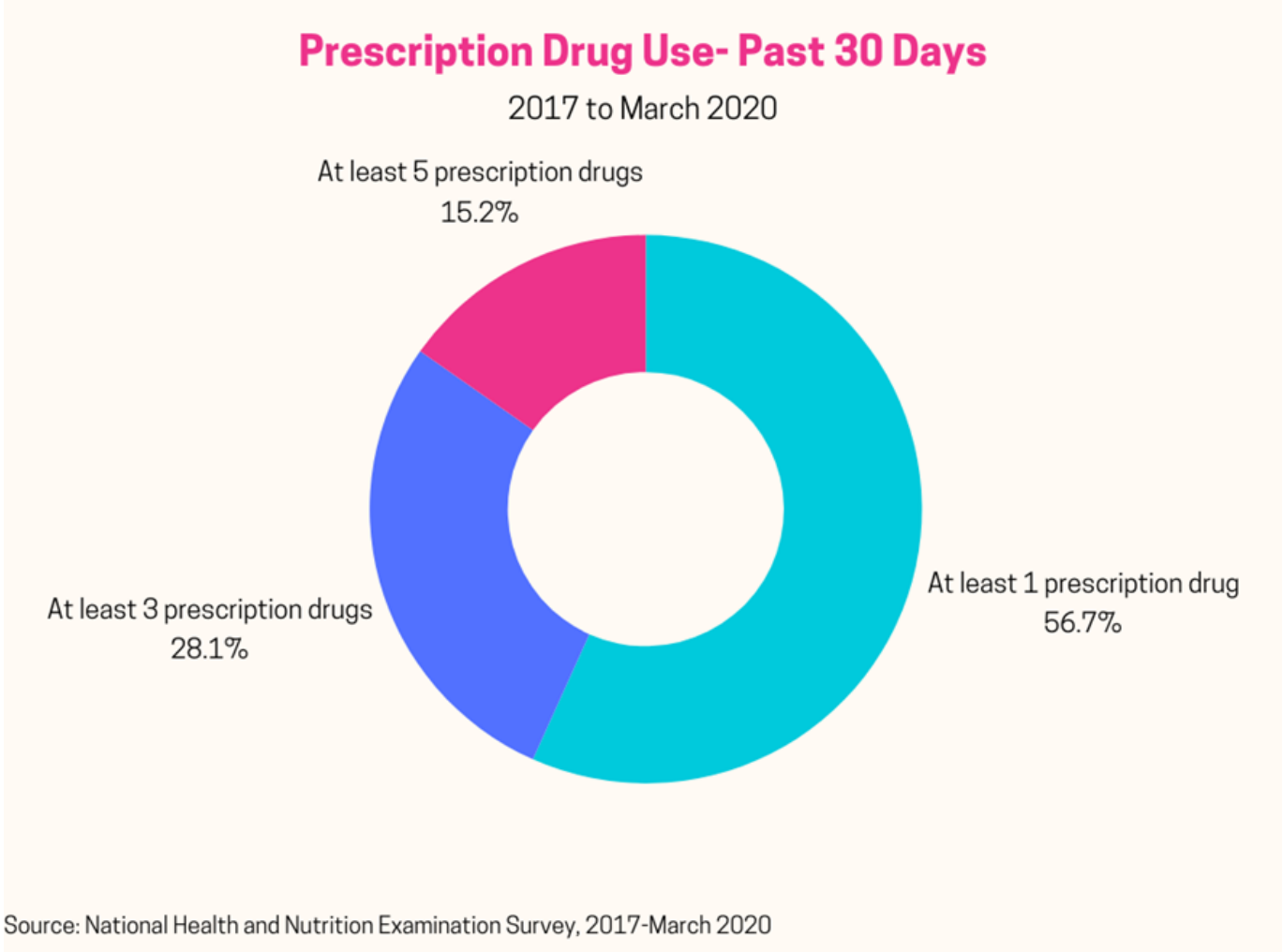
Heat Risk

Percentage of population with three or more heat vulnerability factors estimate, CRE 2019

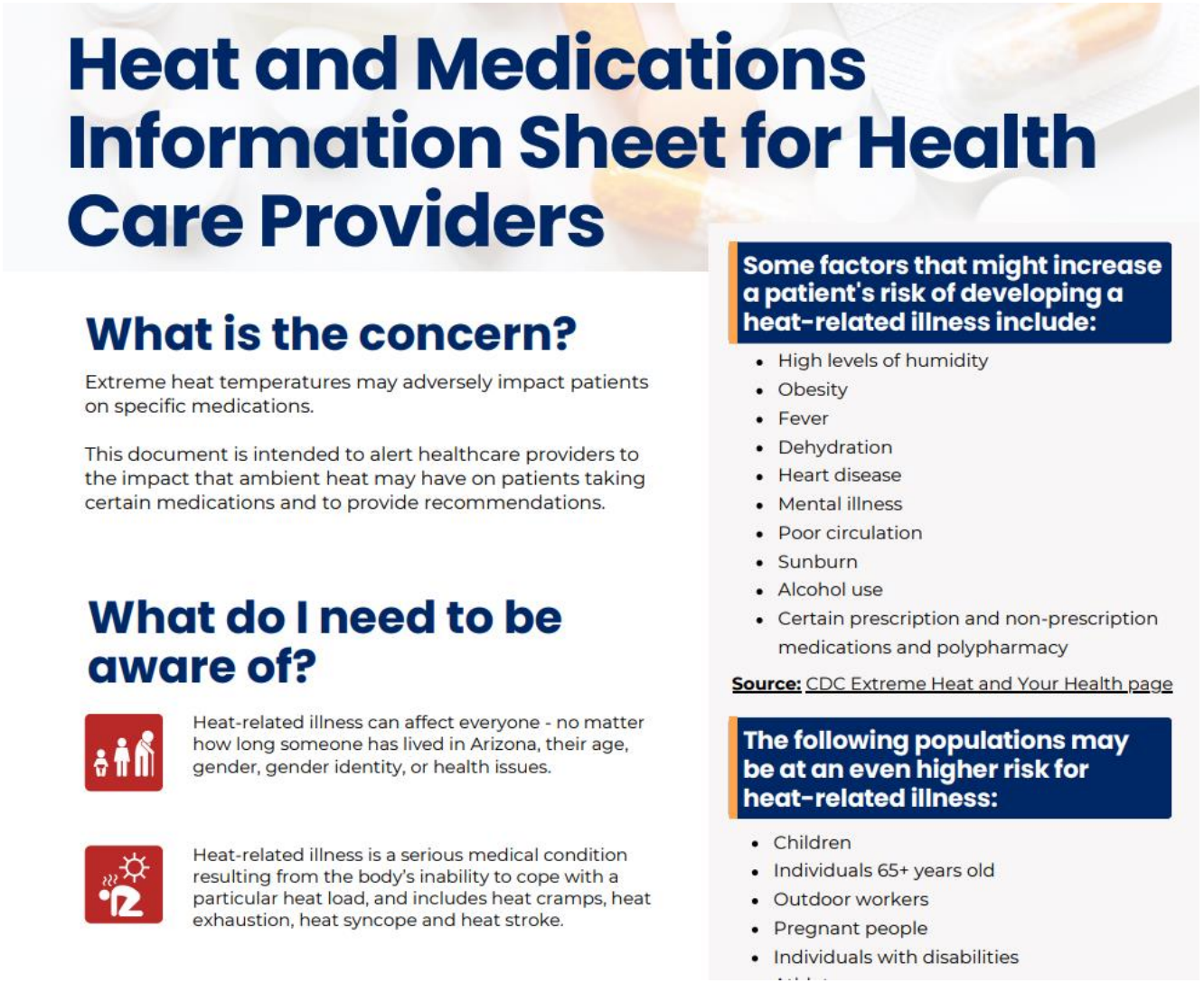


Healthcare Considerations: Heat and Medications

- Taking certain medications increases the risk of adverse heat related health outcomes for persons taking those medications.
- When individuals are on these types of medications, extra education and precautions are necessary in extreme heat situations.
- Some medications (prescription and non-prescription):
  - Interfere with thermoregulation or fluid balance
  - Increase skin sensitivity to sun exposure.



Heat and Medications Resources



Heat and Medications Information Sheet for Health Care Providers

What is the concern?

Extreme heat temperatures may adversely impact patients on specific medications.

This document is intended to alert healthcare providers to the impact that ambient heat may have on patients taking certain medications and to provide recommendations.

What do I need to be aware of?

Heat-related illness can affect everyone - no matter how long someone has lived in Arizona, their age, gender, gender identity, or health issues.

Heat-related illness is a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

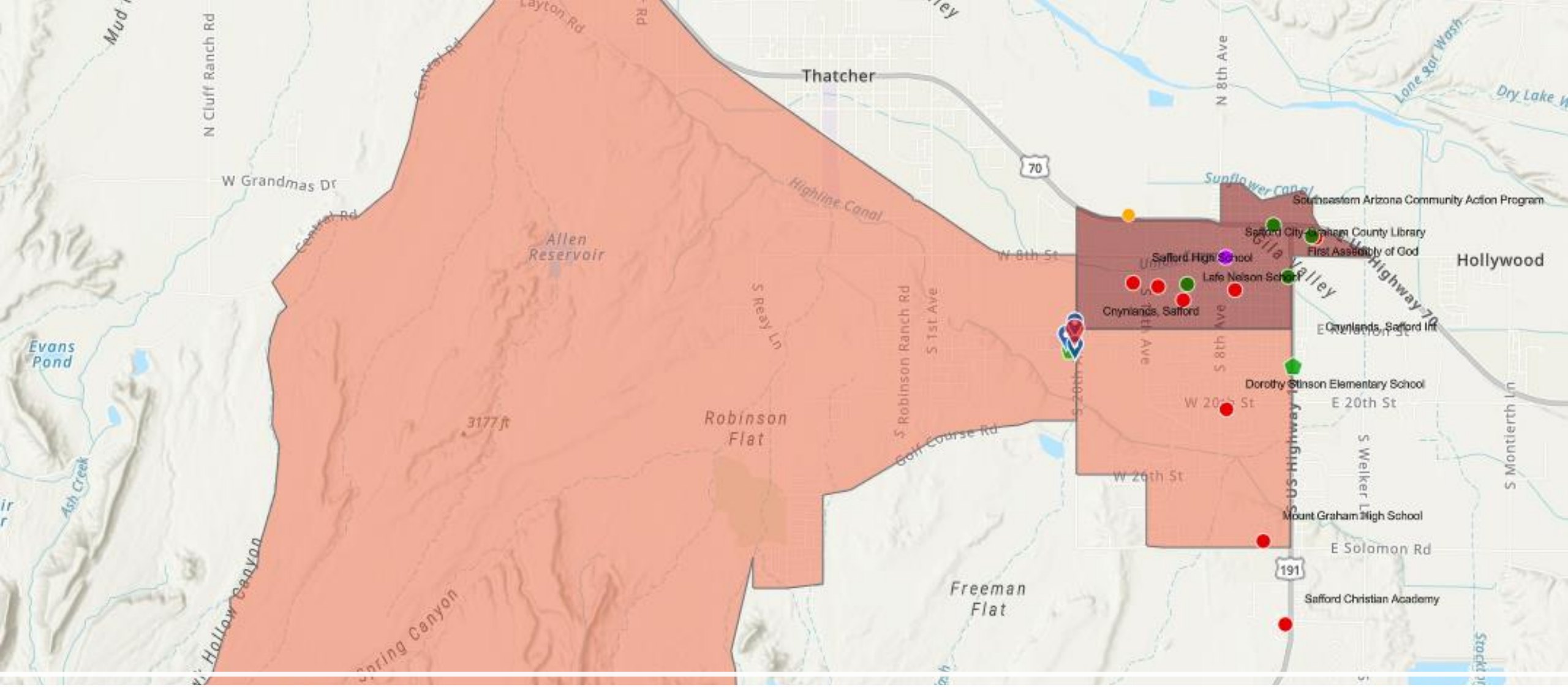
Some factors that might increase a patient's risk of developing a heat-related illness include:

- High levels of humidity
- Obesity
- Fever
- Dehydration
- Heart disease
- Mental illness
- Poor circulation
- Sunburn
- Alcohol use
- Certain prescription and non-prescription medications and polypharmacy

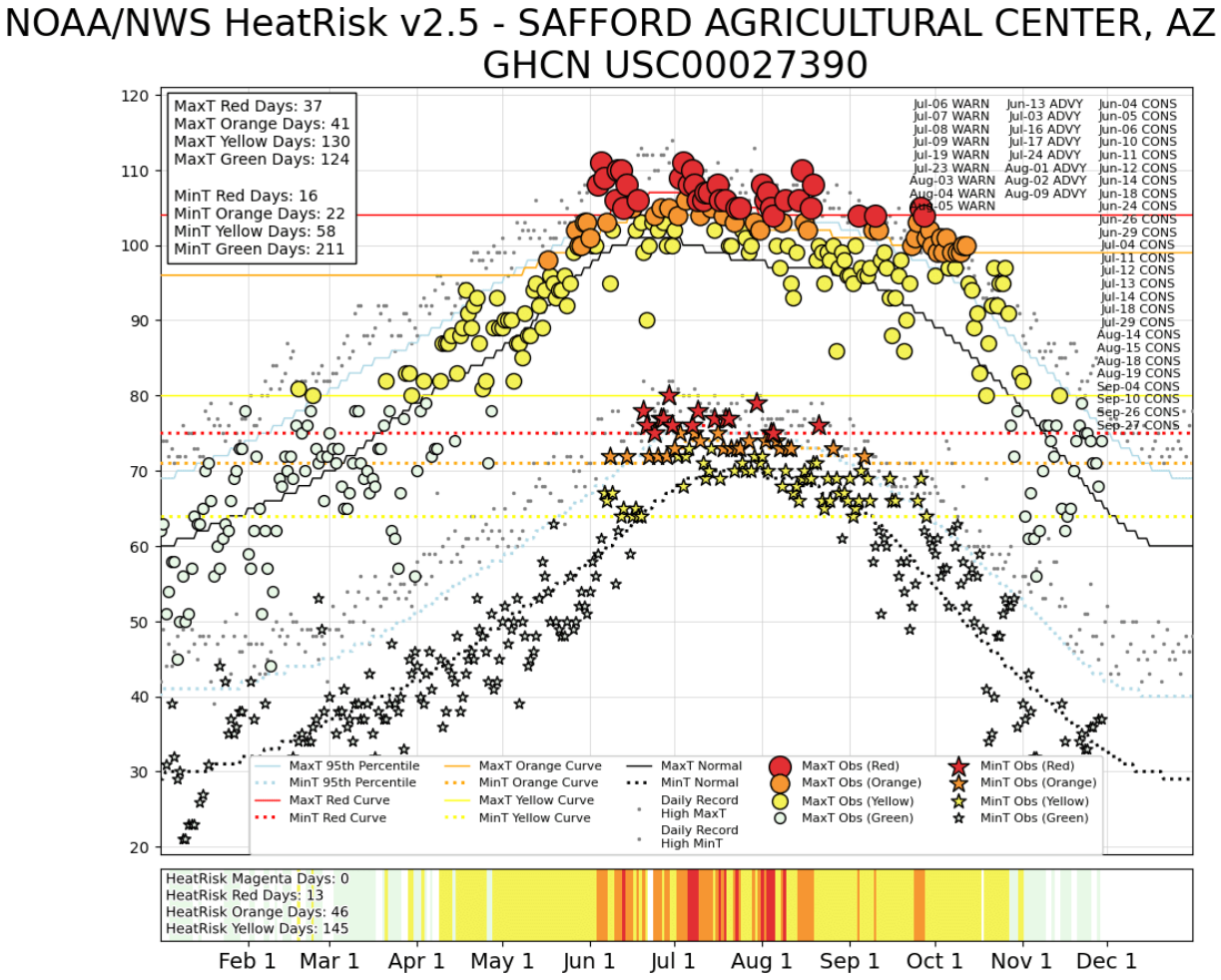
Source: CDC Extreme Heat and Your Health page

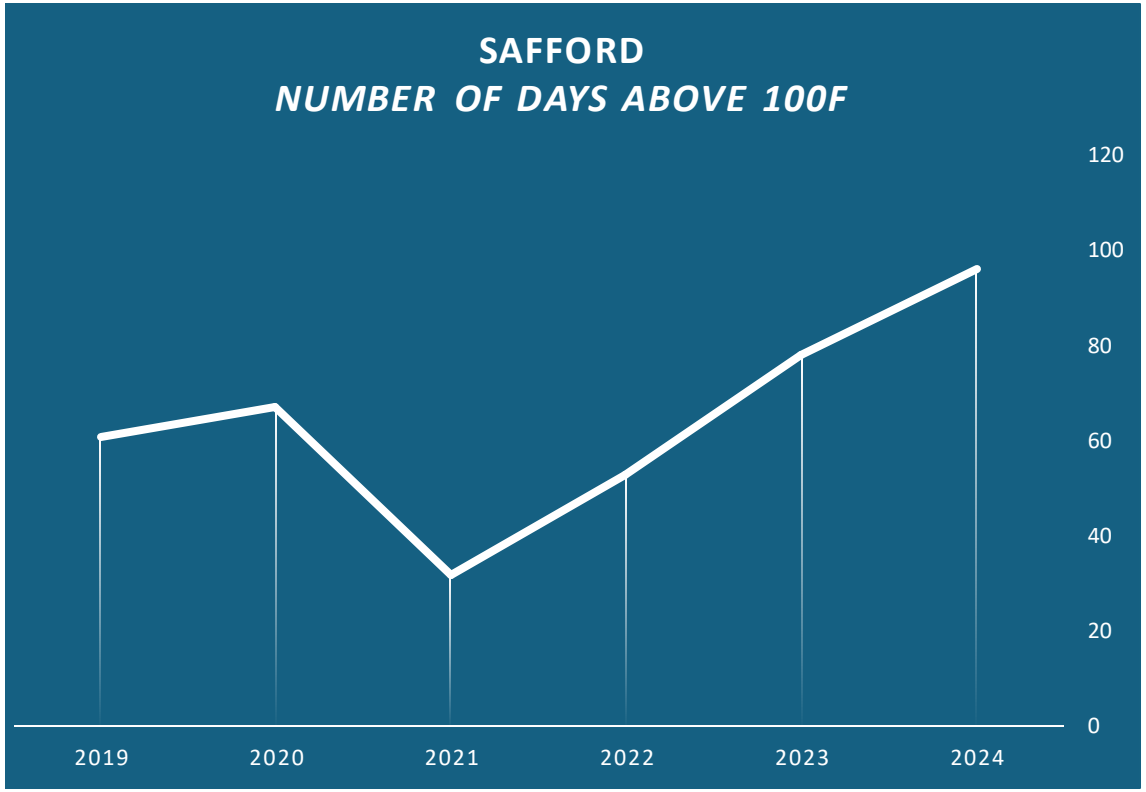
The following populations may be at an even higher risk for heat-related illness:

- Children
- Individuals 65+ years old
- Outdoor workers
- Pregnant people
- Individuals with disabilities



Case Study: Safford, AZ Community Heat Risk by Census Tract





Safford HeatRisk Trends

Safford Census Tracts Zoomed In

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Arizona Heat Risk

High Vulnerability

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Arizona Heat Risk

Medium Vulnerability

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Arizona Heat RIsk

Medium Vulnerability

Safford Safety Net facilities

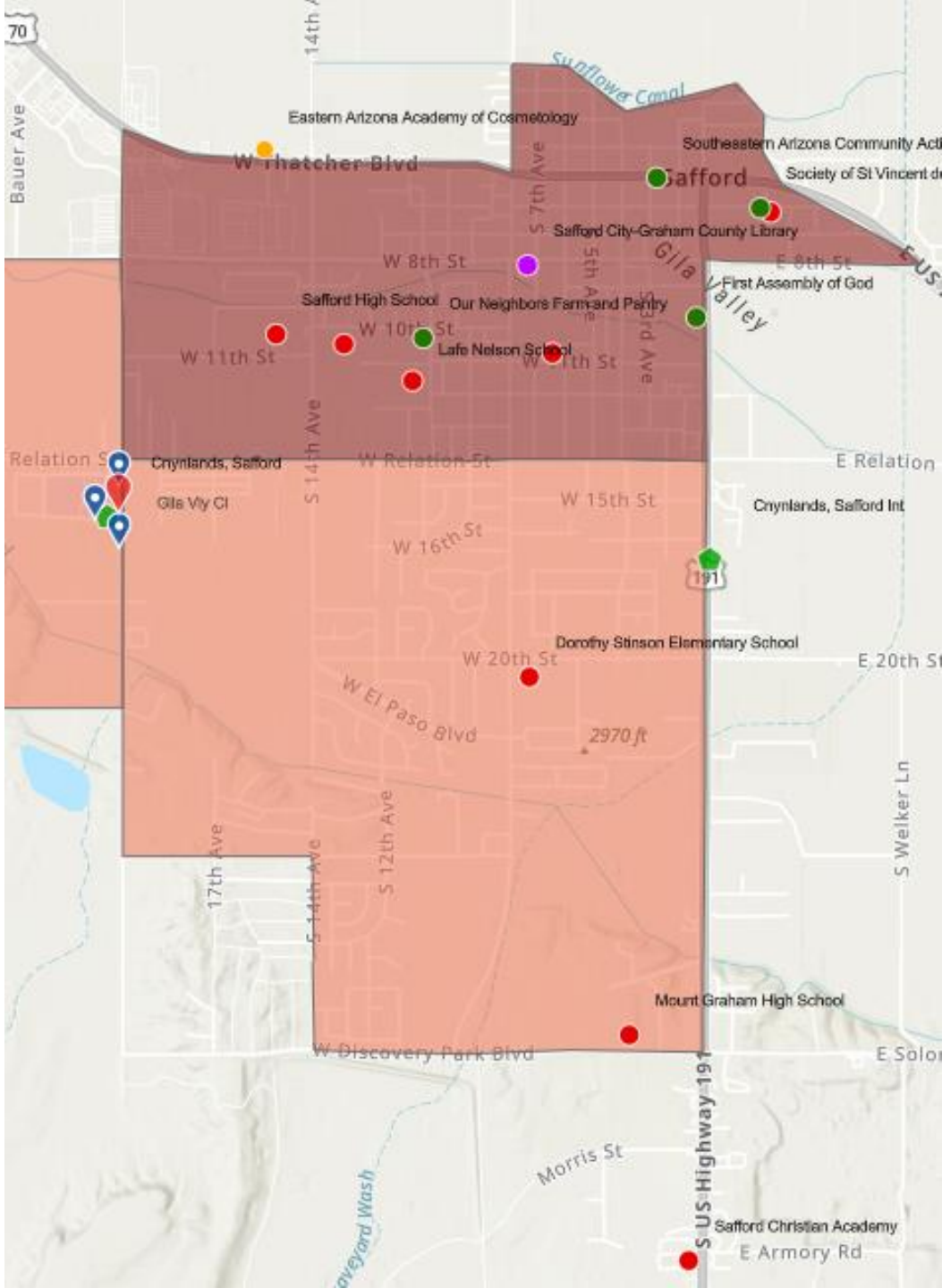
Category

- Critical Access Hospital (CAH)
- Federally Qualified Health Center
- Rural Health Clinic

Safford Resources

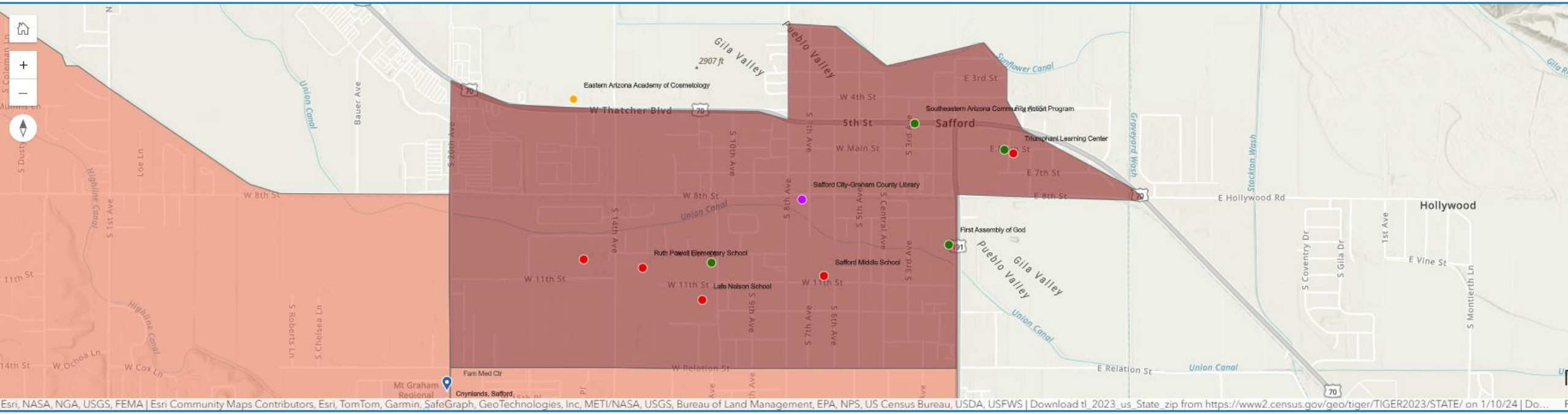
Type

- Educ-School
- Educ-Tech/Trade School
- Food Bank Related
- Library



Mt. Graham Regional Medical Center Census Tract Select Social Vulnerability Indicators

Safford Community Heat Risk by Census Tract



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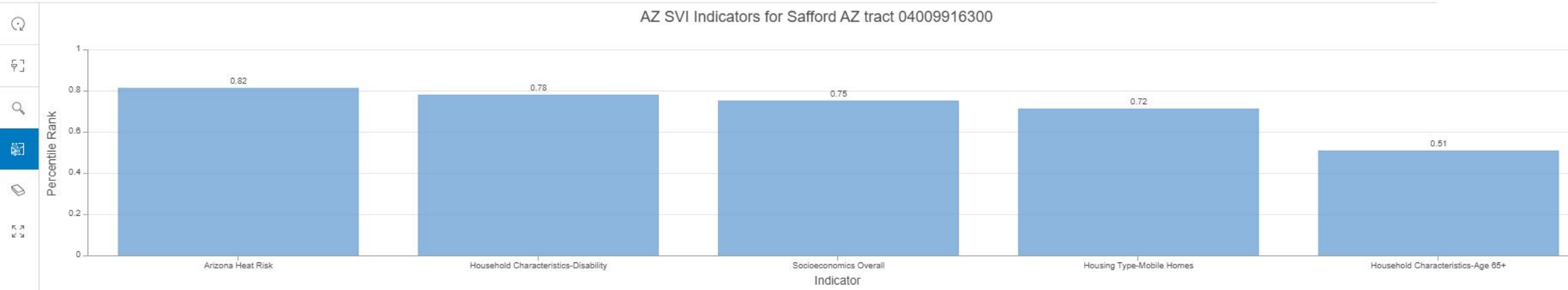

Actionable Recommendations- Healthcare

- Implement extra monitoring for patients and community events at high risk for heat-related illness
- Educate staff on heat illness symptoms and preventative measures
- Distribute waterfall education cards for emergency medical services, home health, schools, and libraries
- Understand the impacts prescription medications may have on an individual's body to response to extreme heat and provide appropriate guidance

Actionable Recommendations- Public Health

- Engage community groups, organizations to co-create solutions
- Develop targeted messaging campaigns- adapt existing material
- Mitigate heat risk by implementing messaging campaigns early
- Conduct a mobile home risk assessment
- Amplify education for individuals who may be more vulnerable: age 65+, outdoor workers and employers
- Collaborate with community organizations to establish cooling centers
  - Understand the limits and barriers to cooling center use for your community
  - Develop solutions that address community members' needs (e.g., unhoused, pets, individuals with disabilities)

Immediate Action

Register to receive ADHS Excessive Heat Warnings

Arizona Department of Health Services' Excessive Heat Warnings Sign-Up

The Arizona Department of Health Services shares the National Weather Service's Excessive Heat Warnings to warn people of dangerous temperatures that can result in illness or even death. Along with warnings, ADHS offers tips for avoiding heat-related illness and staying safe and cool during high temperatures.

There are two types of heat warnings ADHS offers you can subscribe to below: Excessive Heat Warnings for the general public and Excessive Heat Warnings tailored specifically for schools to help them ensure student safety.

The National Weather Service issues Excessive Heat Warnings depending on the time of year, if it's hotter than normal for the time of the year, if there's an increased risk of heat-illness, and the duration of heat.

Data show that when there is an Excessive Heat Warning, more people visit the emergency department because of the heat. But even on days without a warning, you can still get sick from the heat if you don't take steps to stay safe.

Policy Implications

Informs grant proposals or funding opportunities

Supports Critical Access Hospital requirements for Centers for Medicare and Medicaid Services

Provides data to inform emergency declarations

Discussion

Join at mentimeter.com with code 2302 6058

Join at menti.com | use code 2302 6058

Mentimeter

What strategies are being implemented to protect your patients/community members to address extreme heat?

All responses to your question will be shown here

Each response can be up to 200 characters long

Turn on voting to let participants vote for their favorites

BR

Menti

Rural Health Policy Foru...

Choose a slide to present

Questions