

# Invisible Patients, Part 3: Extreme Heat Days Hit Unhoused Californians Hardest

June 2026

**Unhoused people in California were 38% more likely than the general population to visit the emergency department (ED) for heat-related illness** on extreme heat days. As extreme heat events grow more frequent and intense due to climate change, people experiencing homelessness face these conditions without access to cool indoor spaces, adequate water, or shelter.

The **Identifying Heat Effects Among the Unhoused Population in California (HEAT-UP)** project set out to quantify these disparities for the first time, using a 2019 improvement in California hospital discharge coding that now makes it possible to identify unhoused patients in ED data. The findings reveal that extreme heat poses a significantly greater health risk for unhoused Californians and that Black individuals and seniors among the unhoused are the most affected.

## BACKGROUND

As days with extreme heat become more common and intense in California, individuals with less capacity to adapt to the heat face severe health challenges.

Exposure to extreme heat is linked to increases in heat-related illness and exacerbation of chronic conditions including cardiovascular and respiratory illnesses such as asthma. Unhoused individuals are at particularly high risk during hot days because they may live in areas with hotter conditions, lack access to cool indoor spaces or adequate drinking water, and may have pre-existing health conditions that increase their susceptibility to heat.<sup>1,2</sup>

## KEY TAKEAWAYS

- **Unhoused Californians face substantially higher heat-related health risks** than the general population, with a **38% higher likelihood** of ED visits for heat-related illness on extreme heat days.
- **Extreme heat's health toll extends beyond heat stroke.** Unhoused people were also **11% more likely** to visit the ED for cardiorespiratory illness on extreme heat days, suggesting heat exacerbates a broader range of health conditions.
- **Black individuals and seniors bear the greatest burden** among the unhoused population, highlighting how race, age, and housing status compound climate-related health disparities.
- **The geographic pattern matters for intervention.** Heat-related illness is concentrated in California's hottest inland regions, while cardiorespiratory impacts cluster in coastal cities, suggesting different strategies are needed for different parts of the state.
- **These disparities were previously invisible** in routine health surveillance. The 2019 coding improvement that made this analysis possible is itself a critical public health tool.

While evidence on the health impacts of heat among different populations is growing, the specific impacts of extreme heat on unhoused individuals have not been well quantified. The absence of information on housing status in routine health surveillance has limited research on this topic. In 2019, California hospitals began more consistently documenting housing status in discharge data, following California Department of Health Care Access and Information (HCAI) directives and the passage of Senate Bill 1152.<sup>3,4</sup>

This policy change provides, for the first time, reliable information on whether individuals were experiencing homelessness at the time of an ED visit and allows for more accurate estimation of heat-related health risks among unhoused Californians.

## METHODS

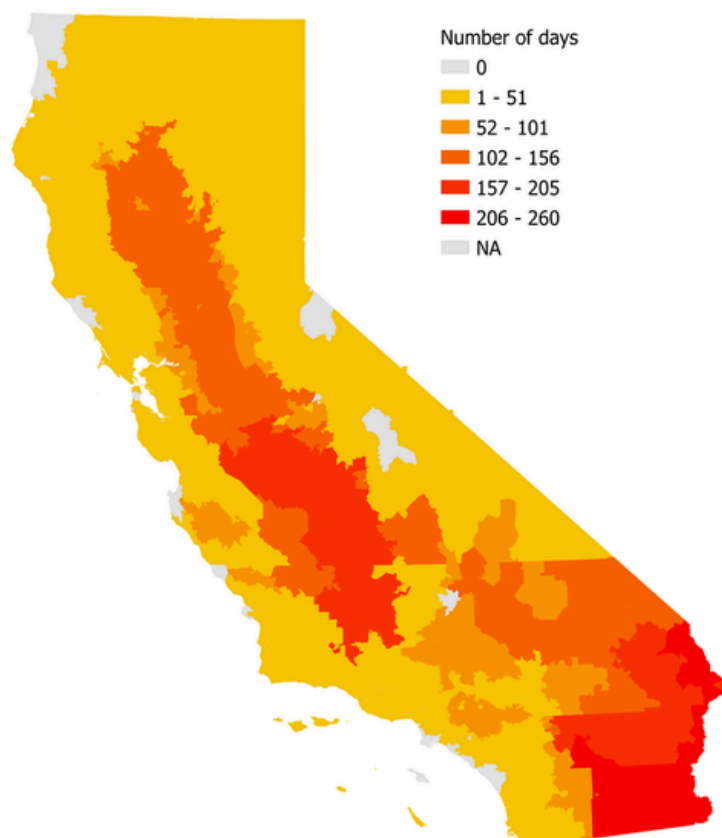
We analyzed ED visits in 2019 and 2020 to measure how extreme heat days affect the health of unhoused and housed individuals across the state.

We compared the likelihood of a heat-related illness (HRI) ED visit on extreme heat days versus non-heat days, separately for housed and unhoused patients. We also examined whether extreme heat days were associated with increased cardiovascular and respiratory ED visits, including asthma, chronic obstructive pulmonary disease (COPD), and heart attack, which are known to worsen with higher temperatures.

Exposure to extreme heat was estimated for unhoused people using the ZIP Code where the ED visit occurred.

Extreme heat days were defined as days from April through October when the daily maximum heat index (which combines temperature and humidity) in a ZIP Code exceeded the 95th percentile of historical measurements for that ZIP Code (1979–2019), or when the heat index exceeded 95 degrees Fahrenheit.

California ZIP codes had an average of **51 extreme heat days** over a two-year period, ranging from 1 to 260 days



## RESULTS

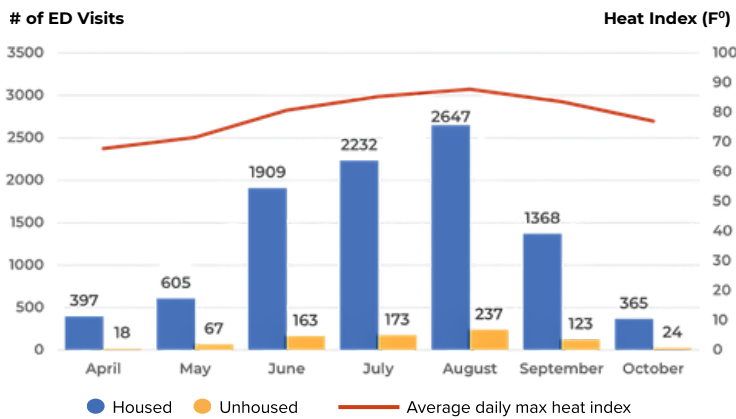
### Heat-Related ED Visits

During 2019–2020, unhoused people accounted for **8% of all heat-related ED visits** that occurred from April through October.

Over 50% of these visits occurred in July and August, when the average daily maximum heat index was 88°F. Figure 1 shows the number of ED visits for heat-related illness and the average daily maximum heat index by month.

Unhoused individuals were 38% more likely than housed individuals to visit the ED for heat-related illness during extreme heat days. Among the unhoused population, Black individuals and adults aged 65 and older had the highest likelihood of heat-related illness ED visits.

**Figure 1.** Heat-related Emergency Department Visits, 2019 -2020



**Results cont'd**

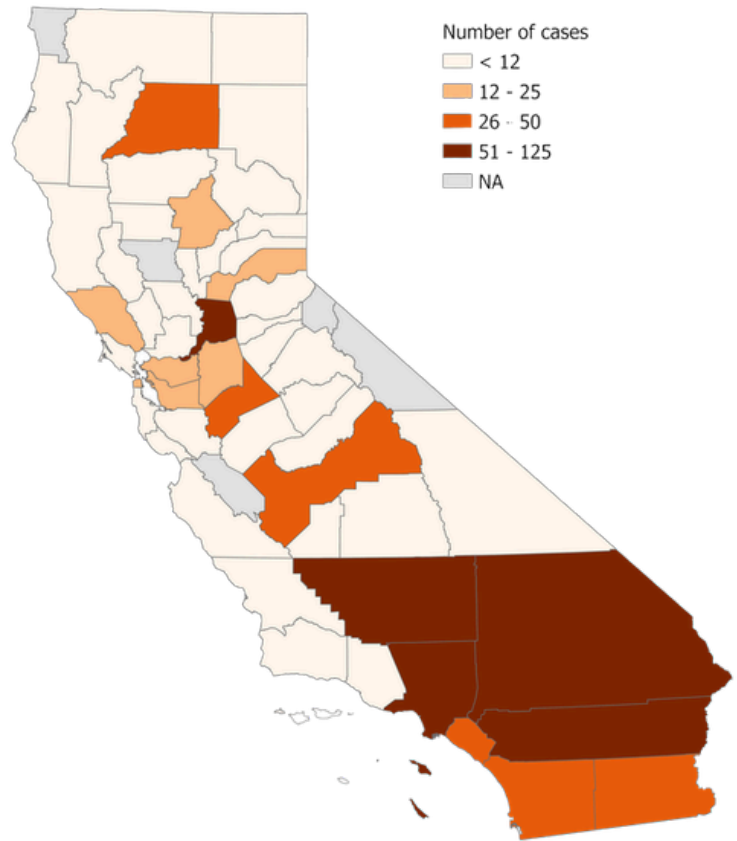
Heat-related ED visits among unhoused individuals occurred throughout the state, with nearly every county reporting at least one case. Figure 2 shows that counties in the Sacramento and Central Valleys and Southern California had the highest number of unhoused people visiting the ED for heat-related illness. Within these counties, Redding, Sacramento, Fresno, Bakersfield, and El Centro areas had the greatest number of heat-related ED visits among unhoused people.

**Cardiorespiratory ED Visits**

During 2019–2020, unhoused people made up 3% of all cardiovascular and respiratory ED visits that occurred in California from April through October. While the number of cardiorespiratory ED visits did not vary substantially month to month, during extreme heat days unhoused people were 11% more likely to visit the ED for cardiorespiratory illness compared to the general population. Among unhoused people, Black individuals had an elevated likelihood of visiting the ED for cardiorespiratory illness on extreme heat days.

The highest number of cardiorespiratory ED visits among unhoused people were seen in large coastal metropolitan areas including San Diego, Los Angeles, San Francisco, and Oakland.

**Figure 2.** Number of heat-related ED visits among unhoused people by county in California, 2019–2020.



**DISCUSSION AND OPPORTUNITIES**

The HEAT-UP findings demonstrate that unhoused people face substantially higher risks of heat-related and cardiorespiratory illness during extreme heat events compared with the general population.

Within the unhoused population, these risks are not evenly distributed. Black individuals had the highest likelihood of ED visits for both heat-related and cardiorespiratory illness on extreme heat days, pointing to compounding inequities of race, housing status, and environmental exposure. Seniors aged 65 and older also had elevated risk for heat-related ED visits, despite making up a relatively small share of the unhoused population.

These disparities highlight the limitations of routine health surveillance, which has historically excluded vulnerable populations such as unhoused individuals. Unhoused Californians experience intersecting health, social, and environmental challenges that increase their susceptibility to climate-driven hazards, including extreme heat.

These vulnerabilities manifest differently across the state. In California's hottest inland regions — the Central Valley and Southern California — direct exposure to high temperatures contributes to elevated heat-related illness among unhoused people. In coastal metropolitan areas, where much of the state's unhoused population lives, cardiorespiratory ED visits were more concentrated, suggesting the influence of overlapping stressors such as air pollution on hot days. These geographic patterns point to the need for place-based intervention strategies.

Future assessments of climate-related health impacts should continue to account for additional exposures relevant to unhoused populations, such as wildfire smoke, and explore other heat-exacerbated conditions including mental health and renal illness.

Tracking California is also working to expand this analysis to additional years of data as they become available, which will strengthen the evidence base for targeted interventions. These findings can inform heat action plans and cooling center placement strategies in the communities where need is greatest.

Funding: This work was supported by the CDC's National Environmental Public Health Tracking Program.

## ABOUT THE DATA

This analysis uses 2019–2020 emergency department data from the California Department of Health Care Access and Information (HCAI). Housing status is identified through patient zip code “ZZZZZ” or ICD-10-CM diagnosis code Z59.0 (homelessness). Extreme heat days were defined using ZIP Code-level heat index data. Cells with fewer than 12 observations are suppressed to protect patient privacy.

## REFERENCES

1. Gronlund CJ. Racial and socioeconomic disparities in heat-related health effects and their mechanisms: a review. *Curr Epidemiol Rep.* 2014;1(3):165-173.
2. Ramin B, Svoboda T. Health of the homeless and climate change. *J Urban Health.* 2009;86(4):654-664.
3. McConville S, Kanzaria H, Hsia R, Raven M, Kushel M. How Hospital Discharge Data Can Inform State Homelessness Policy. *Public Policy Institute of California*; 2022. <https://www.ppic.org/publication/how-hospital-discharge-data-can-inform-state-homelessness-policy/>
4. HCAI. Inpatient Hospitalizations and Emergency Department Visits for Persons Experiencing Homelessness in California: Patient Demographics By Facility; 2022.
5. Tracking California. Invisible Patients: How Improved Homelessness Coding Revealed Who Is Missing from California's Health Data. *Data Brief*, 2026.
6. Tracking California. Tracking the Impact of Heat on Unhoused Californians. *Data Brief*, 2026.