



LIVE WELL  
SAN DIEGO

# 2023 Annual Excessive Heat Report

County of San Diego  
Health and Human Services Agency  
Public Health Services

June 2024



## 2023 Annual Excessive Heat Report

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COUNTY OF SAN DIEGO  
HEALTH AND HUMAN SERVICES AGENCY



LIVE WELL  
SAN DIEGO



# 2023 Annual Excessive Heat Report

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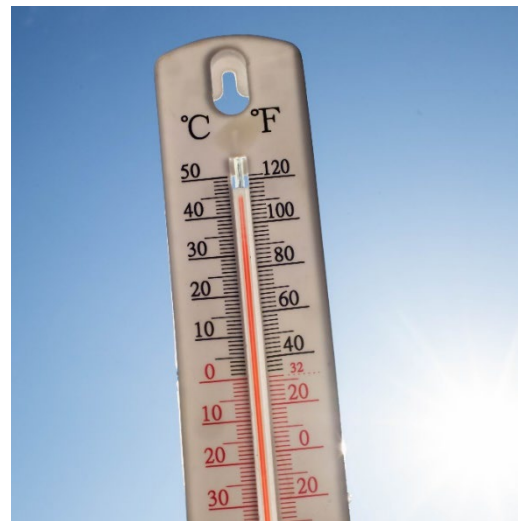
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## Introduction

Heat-related deaths and illnesses are preventable, yet heat is one of the leading weather-related killers in the U.S.<sup>1</sup> From May to September 2021, there were 1,543 deaths due to heat-related illnesses in the United States, with provisional mortality estimates indicating even greater numbers of death in 2022 and 2023.<sup>2</sup>

Extreme heat is defined as temperatures that are much hotter and/or humid than average for a particular location and the time of year. Extreme heat events are becoming more frequent, due to the warming of our planet. Prolonged hot weather can cause dehydration and increase the body's core temperature, making it difficult for the body to function normally.

In an excessive heat event, the Public Health Services (PHS) branch of the County of San Diego Health and Human Services Agency is responsible for coordinating response efforts with other County departments and external partners to disseminate information relevant to the heat emergency to the public. San Diego County experienced 8 heat events during 2023, occurring between July and October. The tables and figures contained in this report show the number of activations year-to-year; prehospital data and outcomes, provided by County of San Diego Emergency Medical Services (EMS); medical encounter and death data; Aging and Independence Services (AIS) activities, such as Cool Zone coordination, electric fan distribution, and collaborations with the Epidemiology and Immunization Services Branch; 2-1-1 activities; and the outreach efforts that County Communications Office (CCO) completed. An appendix is included with trended health data for the years through 2022.



## Historical Assessment: Heat Alerts Issued by Year

Three phases of the *Excessive Heat Response Plan (EHRP)* are recognized.<sup>3</sup>

- **Phase I:** Seasonal Readiness
- **Phase II:** Heat Alert (Advisories)
- **Phase III:** Heat Emergency (Warnings)

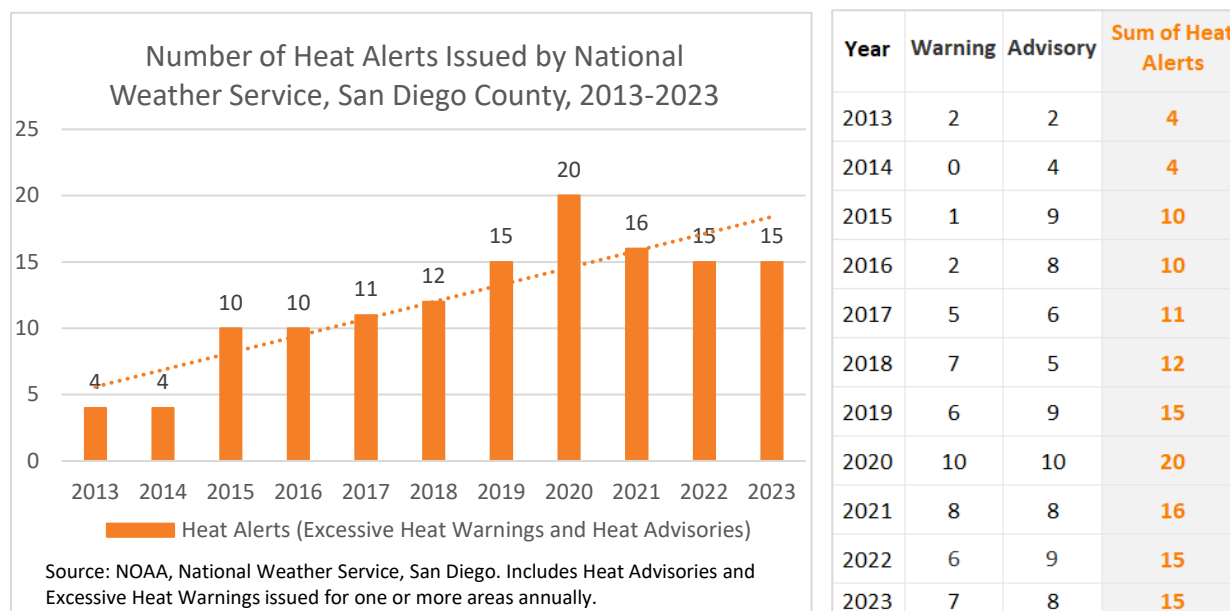
Phase I is dedicated to planning and awareness, while Phases II and III are initiated based on Heat Advisory and Excessive Heat Warnings, collectively called heat alerts, from the National Weather

Service (NWS). When the County of San Diego receives this information, Public Health Services (PHS) initiates the activation procedures.

During the past 15 years, the region has seen increasing temperatures, evidenced by an increased number of heat alerts. With increasing temperatures due to climate change, even in the coastal areas, it is vital to adequately prepare for excessive temperatures.

When temperatures are forecast to be significantly above normal, as compared to a 30-year climatology average, the NWS will issue a heat alert for the area (climate zone) at risk. If temperatures will be excessively hot, NWS issues an Excessive Heat Warning, the highest alert level. When temperatures are significantly higher than normal, but not the most extreme, a lower-level alert, the Heat Advisory, will be issued. **Figure 1** shows that over the past eleven years, the combined number of Excessive Heat Warnings and Heat Advisories has generally increased from 2013 through 2023, peaking in 2020. The highest numbers of heat alerts were issued by NWS in 2020 (20) and 2021 (16).

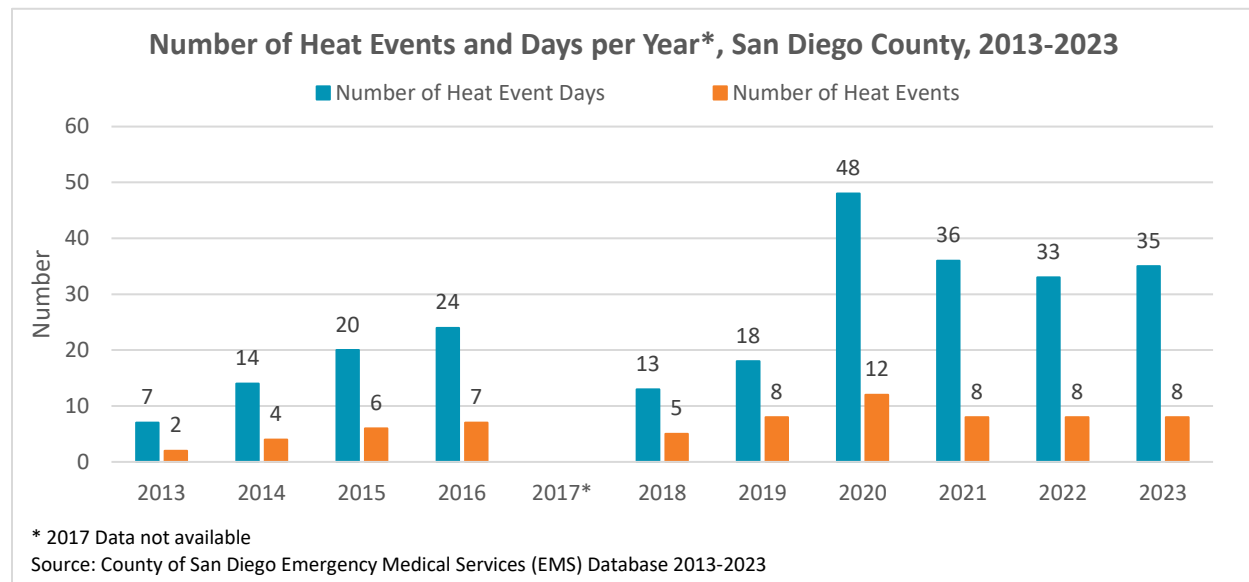
**FIGURE 1: NUMBER OF HEAT ALERTS ISSUED.**



Since heat alerts are issued for affected areas within the county, there may be multiple heat alerts issued by NWS for a single heat event. Overall, the *heat event* indicates the weather condition where the *EHRP* is activated to Phase II or III. In 2023, NWS issued 15 heat alerts – seven Excessive Heat Warnings and eight Heat Advisories – for San Diego County, which resulted in eight heat events that lasted a total of 35 days. The number of events was the same as the previous two years, with a similar number of heat event days, as seen in **Figure 2**. Notably, 2023 had five times as many heat event days than 2013.



FIGURE 2: NUMBER OF HEAT EVENTS AND DAYS PER YEAR.



Typically, heat events occur from June through September. However, 2023 saw a later, more intense heat season. In 2023, heat events occurred between July and October, with 21 of the 35 total heat event days occurring in the month of July. **Table 1** shows the number of days in a heat event, by month, from 2013 to 2023.

TABLE 1: NUMBER OF DAYS IN HEAT EVENT BY YEAR AND MONTH.

	2013	2014	2015	2016	2017*	2018	2019	2020	2021	2022	2023	Total
January	0	0	0	0	*	0	0	0	0	0	0	0
February	0	0	0	0	*	0	0	0	0	3	0	3
March	0	0	0	0	*	0	0	0	0	0	0	0
April	0	0	0	0	*	0	0	7	0	3	0	10
May	0	4	0	0	*	0	0	8	0	0	0	12
June	3	0	6	13	*	2	2	4	12	7	0	49
July	3	2	0	6	*	8	4	5	5	5	21	59
August	0	0	6	2	*	3	8	12	9	2	9	51
September	1	5	4	3	*	0	2	6	10	13	2	46
October	0	3	4	0	*	0	2	6	0	0	3	18
November	0	0	0	0	*	0	0	0	0	0	0	0
December	0	0	0	0	*	0	0	0	0	0	0	0
Total	7	14	20	24	*	13	18	48	36	33	35	248

\* 2017 Data not available

Source: County of San Diego Emergency Medical Services (EMS) Database 2013-2023

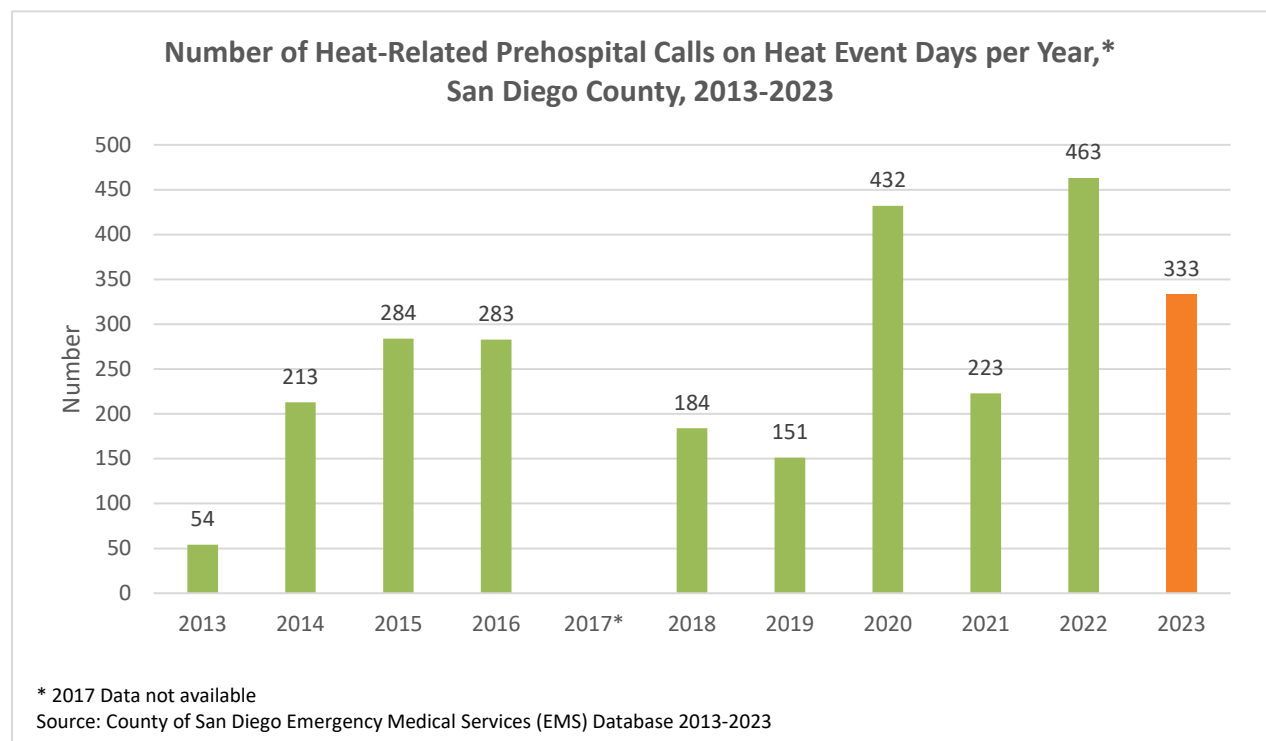
## Prehospital Calls Related to Excessive Heat

During extreme or excessive heat events, the risk of heat-related illnesses increases. Heat illness occurs when the body cannot cool down. The body normally cools itself by sweating, however, sometimes that is not enough. In excessive heat, especially when humidity is high, sweat does not evaporate as quickly, and the body must work harder to maintain its normal temperature. Other factors can also contribute to how our body regulates temperature, such as age, health conditions, and medication or drug use.<sup>1</sup>

Prehospital care is an essential part of emergency health care that is frequently initiated by a 911 call to a dispatch center. Trained personnel, such as emergency medical technicians (EMT) and other emergency medical services (EMS) responders, triage, treat, and transport the patient(s) to the appropriate health care facility, where definitive care is ultimately provided.<sup>4</sup>

In 2023, there were 333 heat-related prehospital calls on heat event days, which was a decrease from the number of calls in 2022, as seen in **Figure 3**. This was an average of 10.0 heat-related prehospital calls on heat event days, which is similar to the overall (multi-year) average of 10.7.

FIGURE 3: NUMBER OF HEAT-RELATED PREHOSPITAL CALLS ON HEAT EVENT DAYS PER YEAR.





**Table 2** shows how many calls were made for each heat event. The heat event starting on July 11, 2023, was the longest event, lasting 12 days. During this heat alert, there were 151 total calls related to excessive heat. Over the course of the eight heat events, 80% individuals were transported to an emergency department (ED).

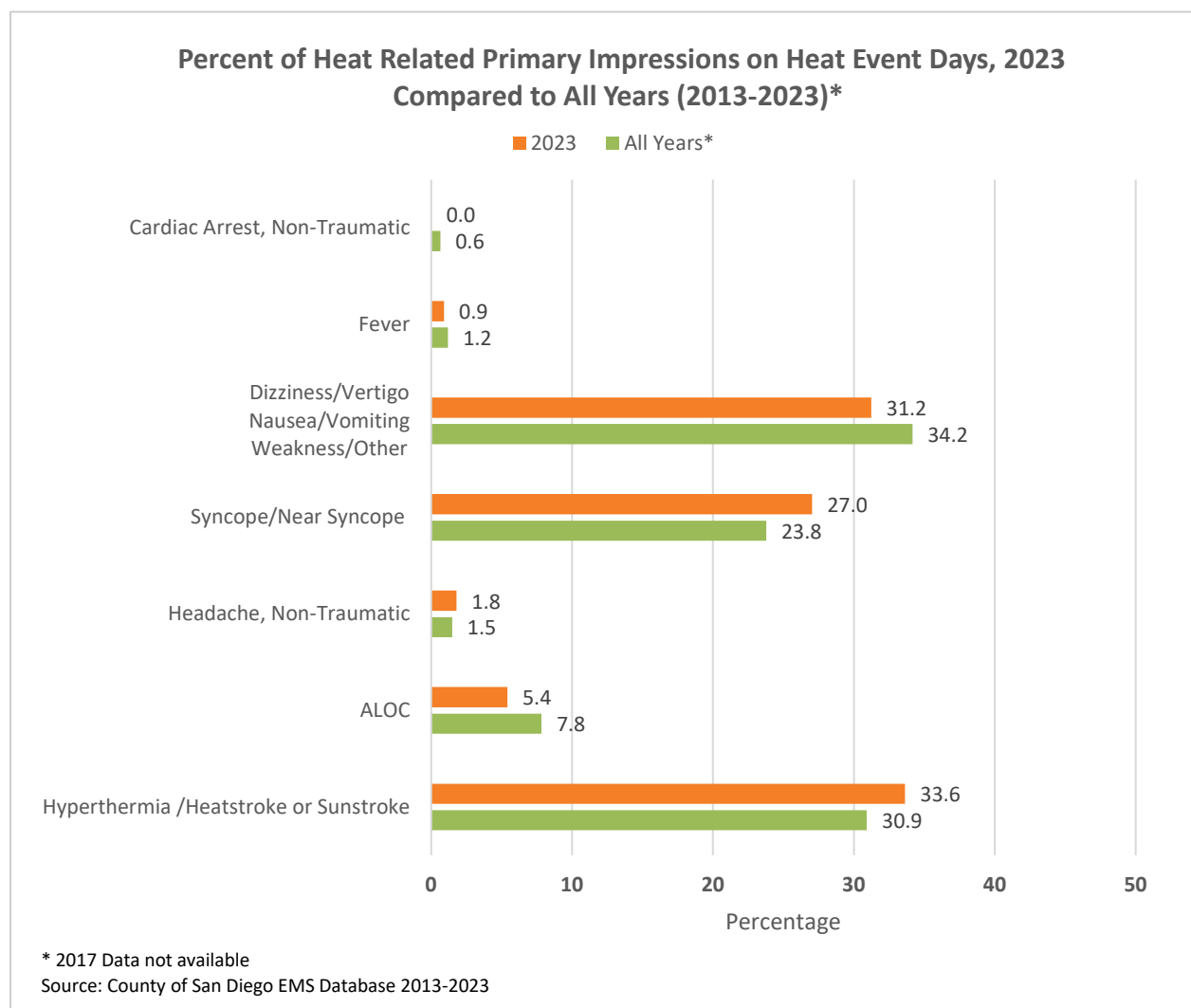
TABLE 2: PREHOSPITAL CALLS RELATED TO EXCESSIVE HEAT, SAN DIEGO COUNTY, 2023.

Heat Event Start Date	Length of Event (days)	Total Calls	Run Outcome*	Run Outcome Count
7/1/2023	3	15	Transported	11
			AMA	4
			DOS	0
7/11/2023	12	151	Transported	121
			AMA	30
			DOS	0
7/25/2023	6	58	Transported	44
			AMA	14
			DOS	0
8/5/2023	3	17	Transported	14
			AMA	3
			DOS	0
8/15/2023	3	19	Transported	18
			AMA	1
			DOS	0
8/28/2023	3	36	Transported	33
			AMA	3
			DOS	0
9/9/2023	2	21	Transported	15
			AMA	6
			DOS	0
10/5/2023	3	16	Transported	11
			AMA	5
			DOS	0
*AMA - Against Medical Advice *DOS - Dead On-Scene Data compiled and reported by County of San Diego Emergency Medical Services (EMS).				

Some heat-related illnesses include heat rash, heat cramps, heat exhaustion, and heat stroke. Effects of these illnesses include, but are not limited to, dizziness, nausea or vomiting, muscle cramps or spasms, headache, fainting, or unconsciousness. When first responders arrive for prehospital calls, they record their primary impressions of the individual.

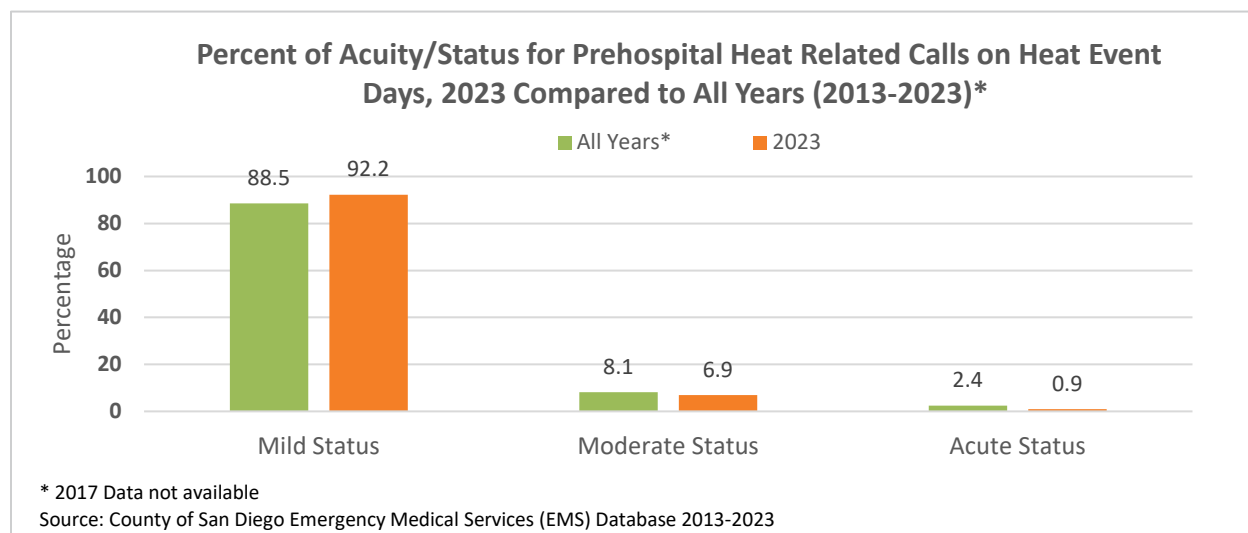
**Figure 4** shows heat-related primary impressions on heat event days. In 2023, hyperthermia/heatstroke or sunstroke was most commonly reported, followed by the dizziness/vertigo, nausea/vomiting, or weakness/other group, all with proportions similar to the multi-year average from 2013 to 2023.

**FIGURE 4: PERCENT OF HEAT-RELATED PREHOSPITAL PRIMARY IMPRESSIONS ON HEAT EVENT DAYS.**



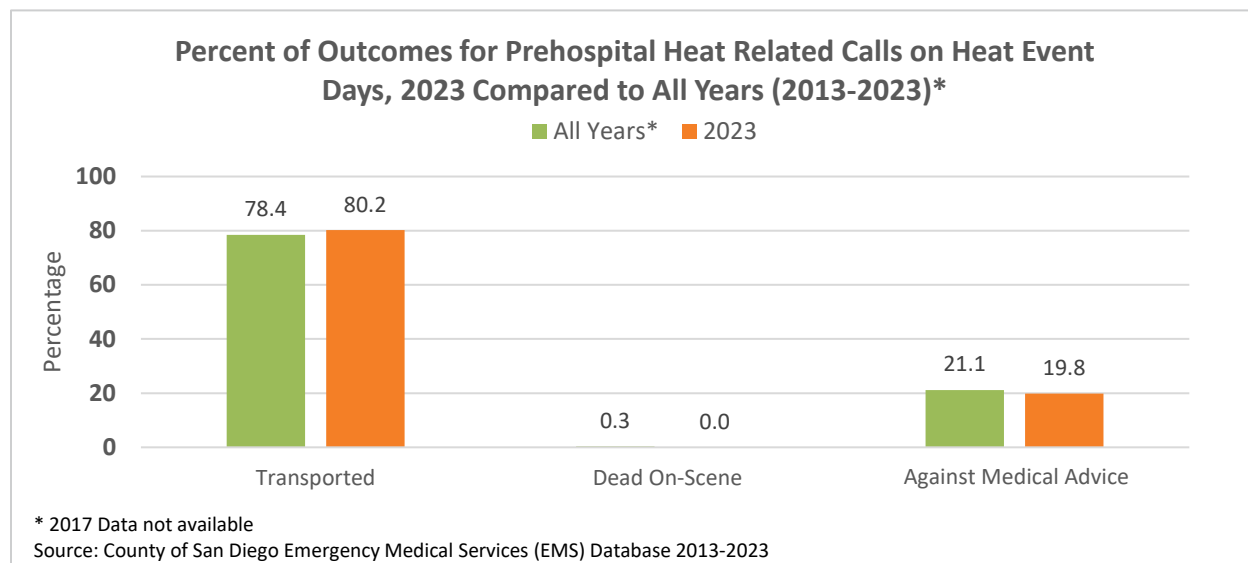
The severity of the calls is also recorded, as seen in **Figure 5**. The percent of mild acuity/status for prehospital heat-related calls for 2023 was slightly higher than the overall percent between 2013 and 2023 (92.2% compared to 88.5%) and moderate and acute status were proportionately lower.

**FIGURE 5: PERCENT OF ACUITY/STATUS FOR PREHOSPITAL HEAT-RELATED CALLS ON HEAT EVENT DAYS.**



Outcomes for prehospital heat-related calls for 2023 were similar to previous years and the overall percent (**Figure 6**). Most calls (80.2%) resulted in transportation to an emergency department (ED).

**FIGURE 6: PERCENT OF OUTCOMES FOR PREHOSPITAL HEAT-RELATED CALLS ON HEAT EVENT DAYS.**

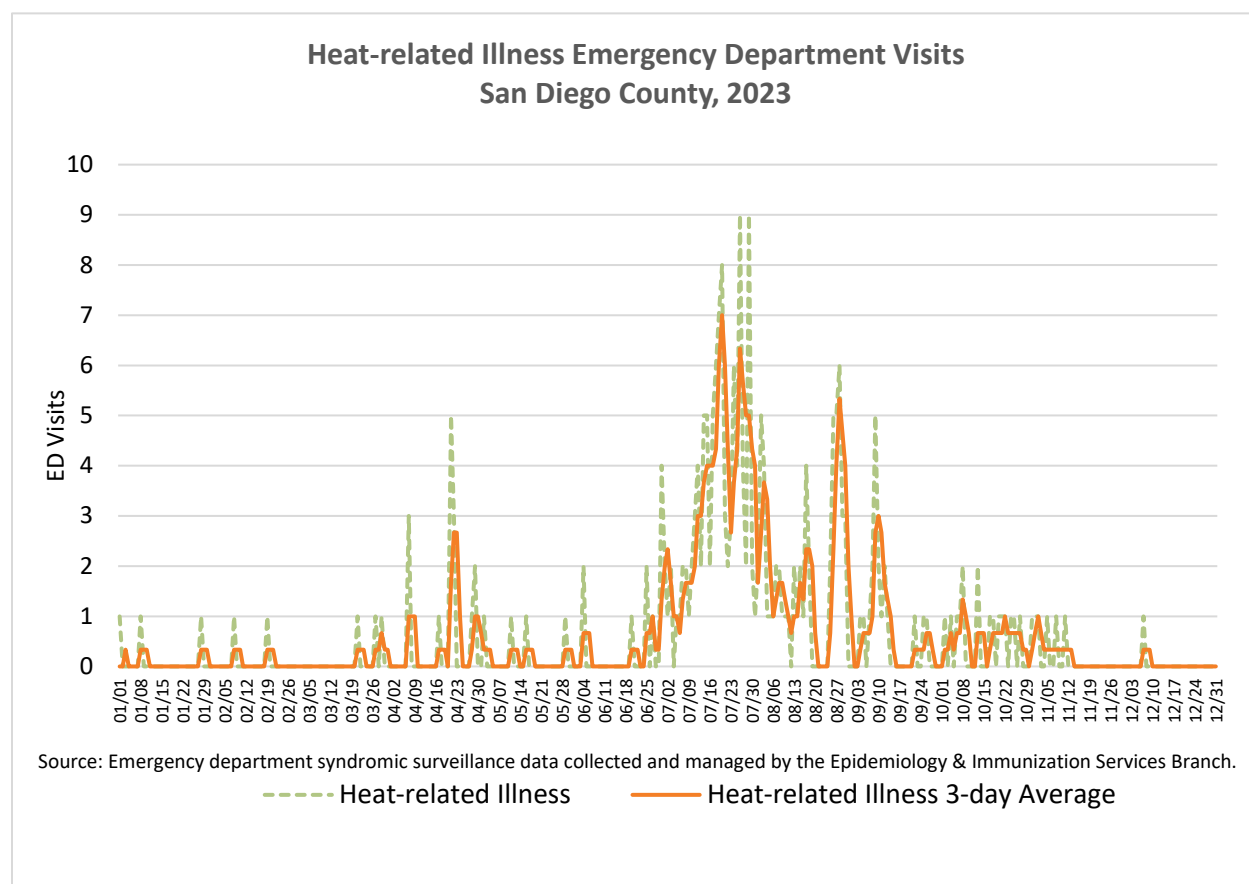


## Trends in Medical Encounters and Death Due to Heat Illness or Injury

### SYNDROMIC SURVEILLANCE (DAY-TO-DAY MONITORING)

Throughout 2023, there were increased emergency department (ED) visits due to heat-related illness surrounding heat event days, with the exception of the visits in April. **Figure 7** shows the increase in ED visits due to heat-related illness peaking over the month of July, when the majority of heat event days occurred.

FIGURE 7: HEAT-RELATED ILLNESS EMERGENCY DEPARTMENT VISITS.



### HISTORICAL TRENDS

Historical trends in emergency department discharge, hospitalization, and death due to heat illness or injury are shown in the appendix. The health data available through 2022 (the most recent data available to trend) show an upward trend in the number of residents experiencing heat illness or injury during May to September.

## Emergency Department

Between 2006 and 2022, there were 3,291 emergency department (ED) discharges for heat illness/injury among San Diego County residents (**Appendix A**). The average number of discharges per year was 194. There were 227 ED discharges due to heat illness/injury reported in 2022. This was a 48% increase in the number of ED discharges from the year prior (153).

## Hospitalization

Between 1991 and 2022, there was a total of 786 hospitalizations for heat illness/injury (**Appendix B**). The average number per year was 25. There were 59 hospital discharges due to heat illness/injury reported in 2022. This was a 28% increase in the number of hospital discharges from the year prior (46).

## Death

Between 1991 and 2022, there were 92 heat illness/injury deaths among San Diego County residents (**Appendix C**). On average, there have been 3 deaths per year. In 2021, there were 8 deaths, the highest number of deaths from heat illness/injury since 1991, followed by 7 deaths in 2022.

## Aging and Independence Services (AIS) Activities

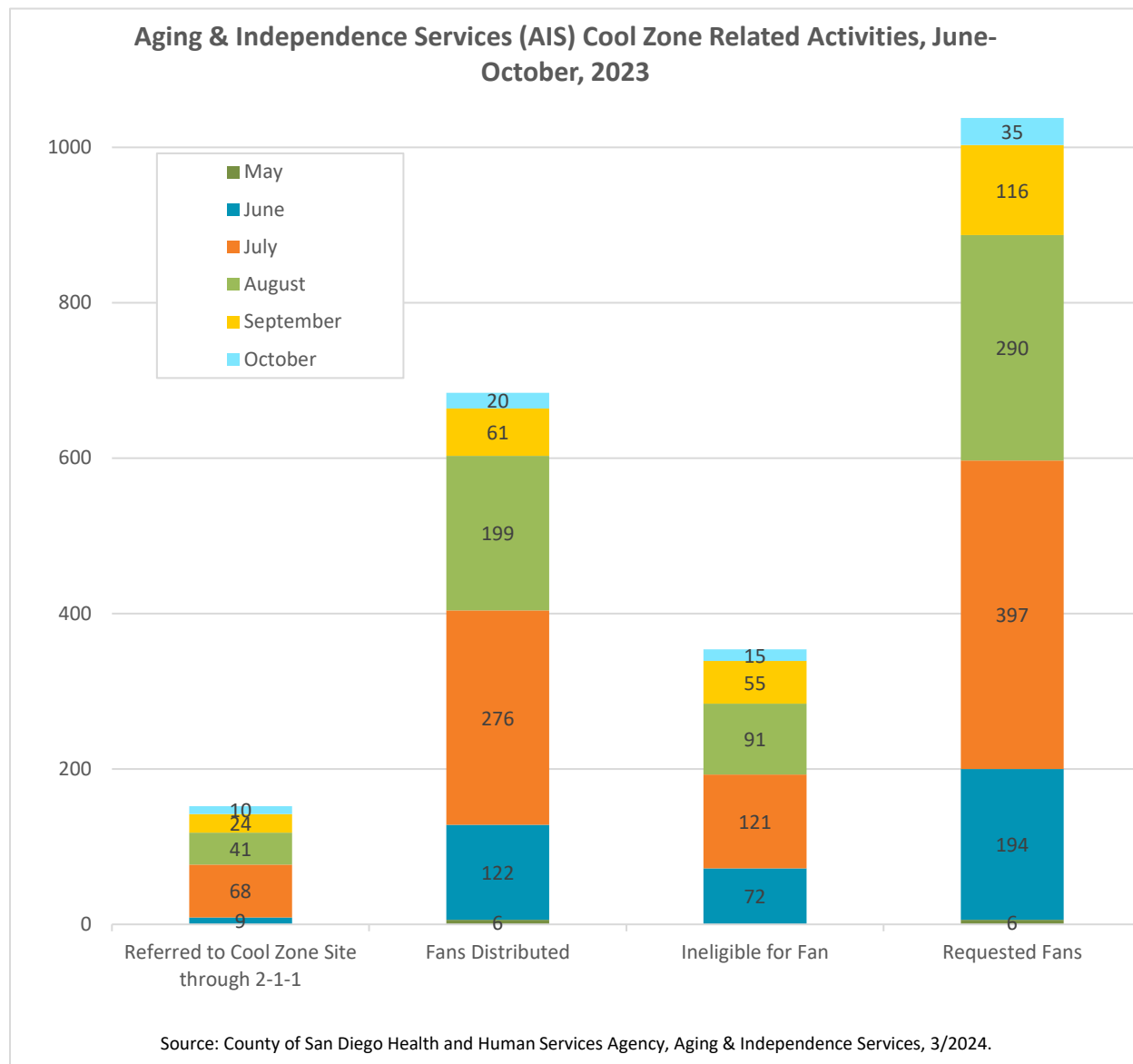
Anyone can be affected by extreme or excessive heat, but heat risk increases with age. Aging and Independence Services (AIS), part of the County of San Diego Health and Human Services Agency, provides assistance, information, and referrals to older adults, those with disabilities, and their family members.<sup>5</sup> For assistance, individuals can call the AIS Call Center.

AIS manages the Cool Zone program, which is a network of free, air-conditioned settings across the county, including San Diego County libraries and County of San Diego Parks and Recreation spaces, for anyone looking to escape excessive heat. This program was launched out of concern for older adults, persons with disabilities, and those with health conditions leading to increased heat illness risk. Cool Zones are also a way for residents to lower individual utility usage and help conserve energy for the whole community.

**Figure 8** details the AIS Cool Zone-related activities. In 2023, between June and October, the AIS Call Center received 1,038 requests for fans. Of those, 684 requests were eligible and received fans (66%) in 2023. The number of fans distributed continues to increase each year, from 313 in

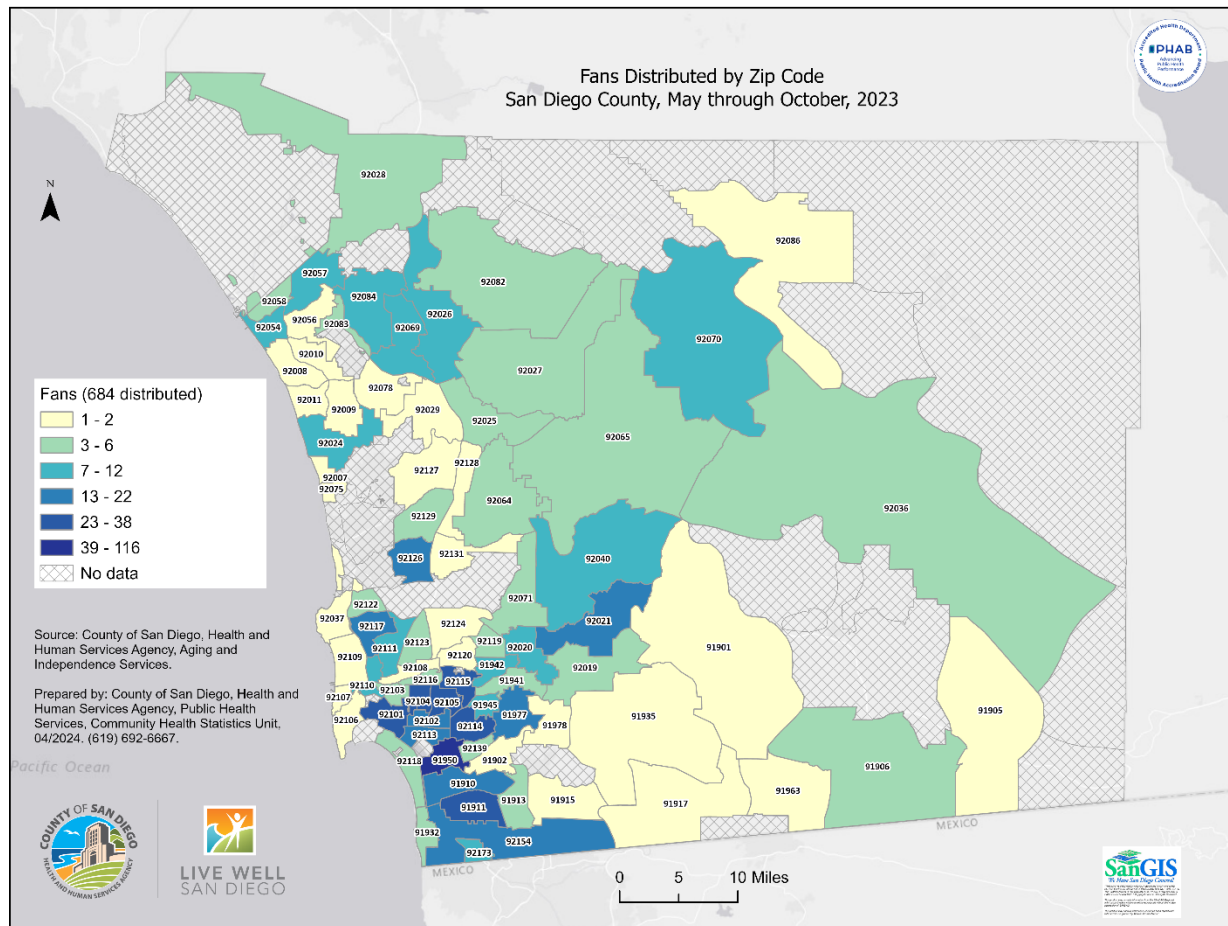
2021 to 553 in 2022. In 2023, most fans were distributed in July (40%). In addition, 2-1-1 San Diego referred 152 callers to Cool Zone sites throughout the county.

FIGURE 8: AGING AND INDEPENDENCE SERVICES (AIS) COOL ZONE-RELATED ACTIVITIES.



Most fans were provided for residents in the south-west part of the county. Zip code 91950 was provided the greatest number of fans (116), followed by 92105 (38). **Figure 9** shows a map of the total number of fans distributed by zip code.

FIGURE 9: TOTAL NUMBER OF FANS DISTRIBUTED BY ZIP CODE.



For more information about Aging and Independence Services, visit their website at <https://www.sandiegocounty.gov/content/sdc/hhsa/programs/ais.html>.

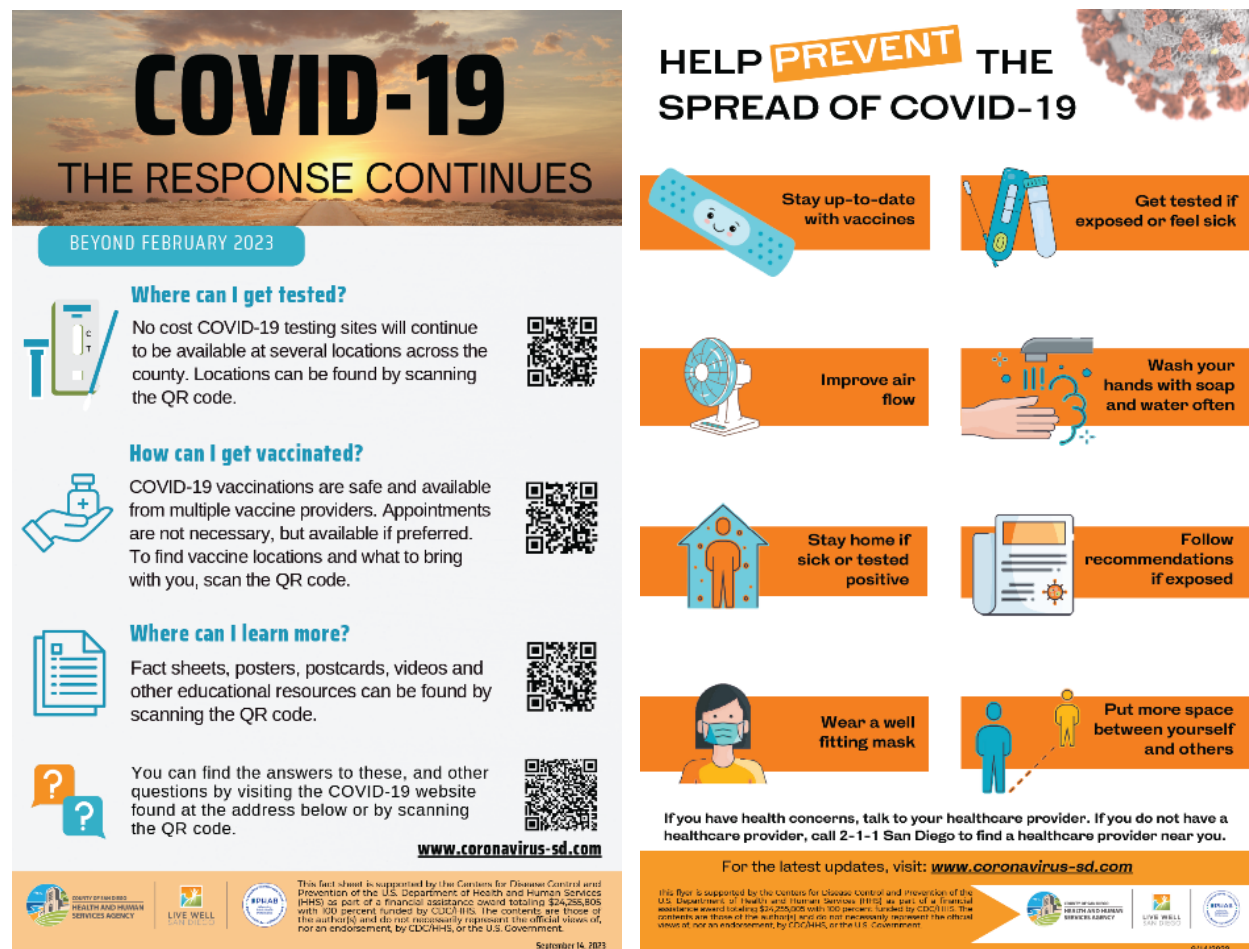
#### COLLABORATION WITH EPIDEMIOLOGY AND IMMUNIZATION SERVICES BRANCH

In early Summer 2023, increasing rates of respiratory illness, including COVID-19, prompted the Epidemiology and Immunization Services Branch (EISB), in partnership with Aging and Independence Services and Public Health Preparedness and Response Branch, to pilot a 2-month respiratory disease prevention outreach and education program. The program was intended to assist Cool Zones implement revised California Department of Public Health (State) guidance for the reduction in transmission risk of respiratory illnesses among their visitors and staff. On September 6, 2023, all Cool Zones in San Diego County were notified of the State's guidance and



offered an opportunity to partake in the program activities. These included an on-site visit by EISB's Code Enforcement Officer to discuss site-specific infection prevention recommendations, provision of multilingual posters on respiratory infection prevention practices (as seen in **Figure 10**), and distribution of County resources, such as At-Home COVID-19 test kits, face masks, and hand sanitizer, for visitor and staff use.

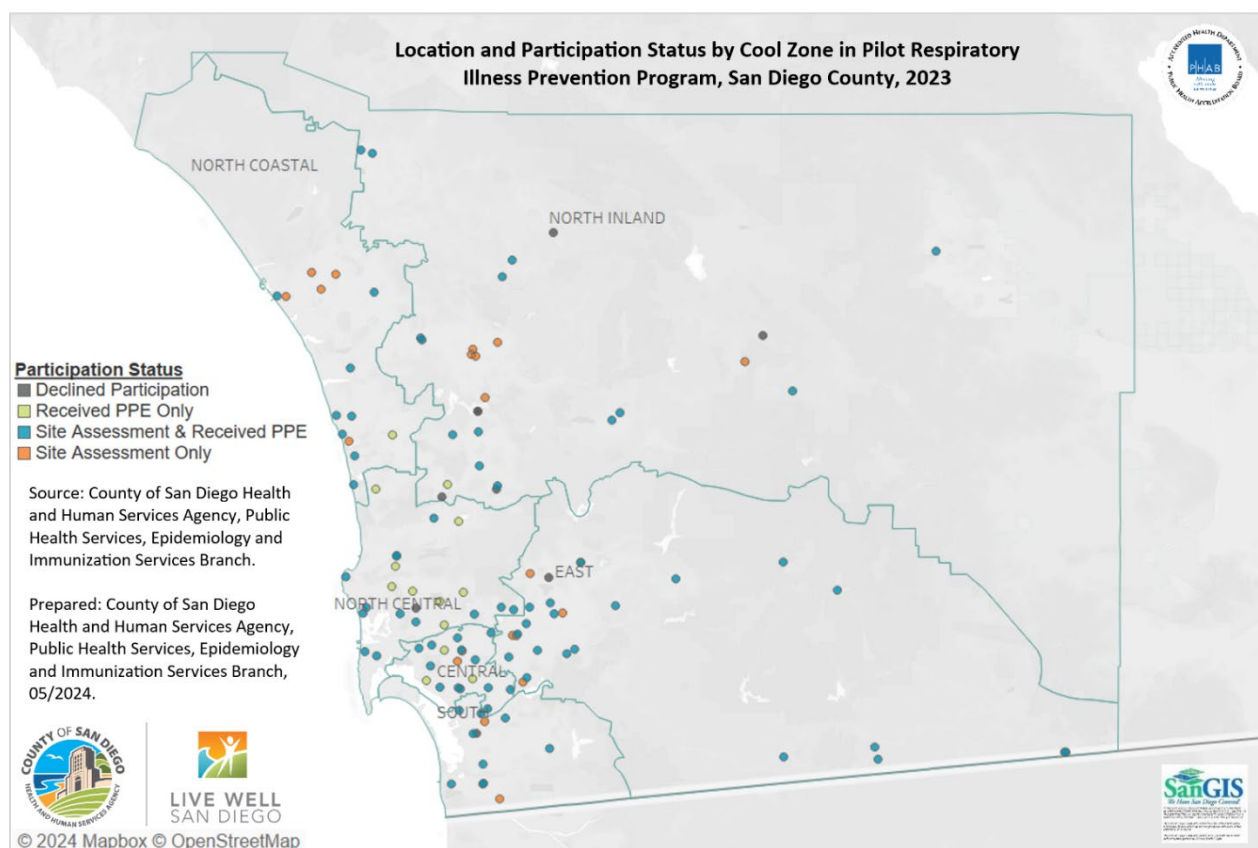
FIGURE 10: POSTERS OF RESPIRATORY INFECTION PREVENTION PRACTICES.



Source: County of San Diego, Public Health Services, Epidemiology & Immunization Services Branch, 2023.

As seen in **Figure 11**, programmatic response was overwhelmingly positive, with 111 of 120 (92.5%) Cool Zones taking part in at least one of the infection prevention program activities. Between September 6 and October 31, 2023, 98 Cool Zones participated in the on-site visit and 90 Cool Zones requested and received County resources. During this pilot, 128,651 At-Home COVID-19 test kits, 979 boxes of surgical masks, and 1,561 bottles of hand sanitizer were distributed. In addition, over 200 sets of the public health poster packages were distributed in both English and Spanish languages. Posters were also available in Arabic, Chinese, Tagalog, Farsi, Vietnamese, Somali, and Korean, with Arabic and Chinese being requested by several Cool Zones. Upon the conclusion of 2023 Cool Zone Program (October 31, 2023), participating Cool Zones were provided a weblink to offer feedback of their experience.

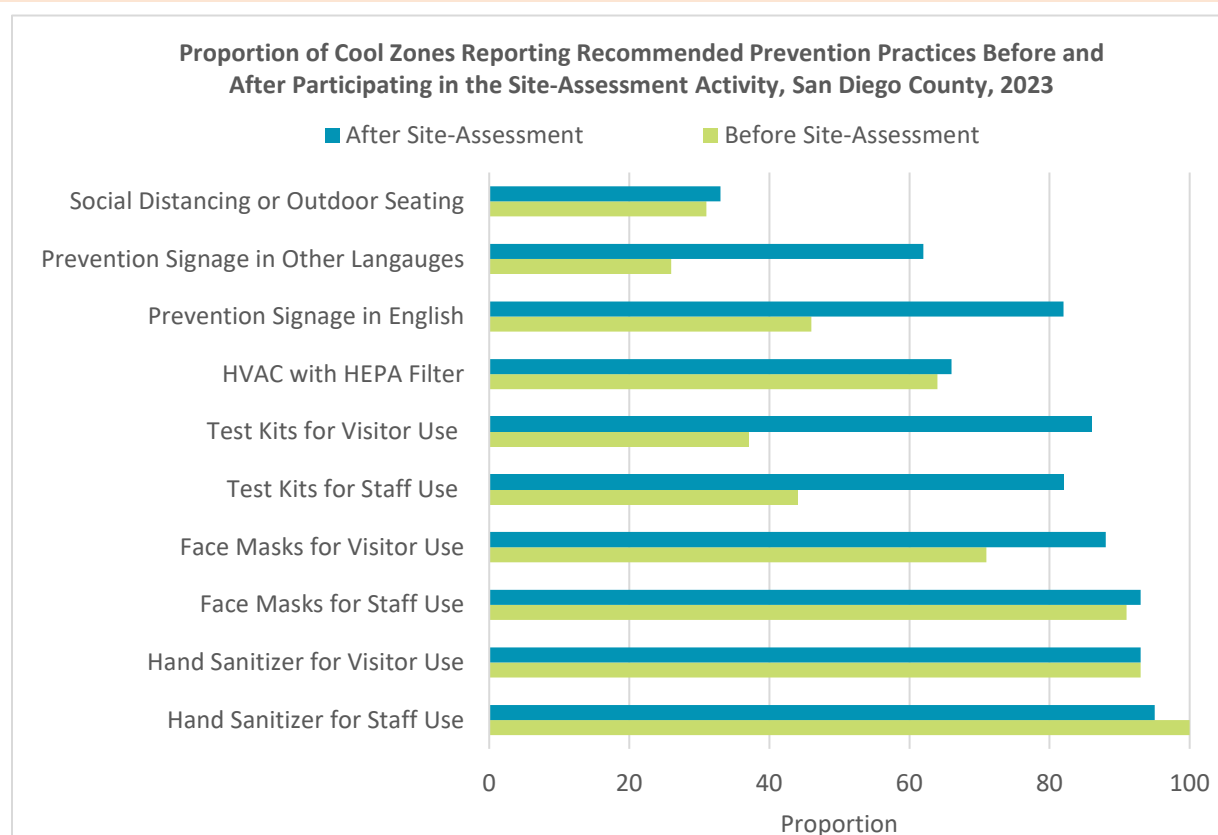
**FIGURE 11: LOCATION AND PARTICIPATION STATUS BY COOL ZONE IN PILOT RESPIRATORY ILLNESS PREVENTION PROGRAM, SAN DIEGO COUNTY, 2023.**



Abbreviation: PPE, Personal Protection Equipment

Based on feedback (40% response rate), most respondents (70%) stated implementing at least one new site-specific recommendation. As seen in **Figure 12**, Cool Zones reporting an increase in the distribution of At-Home COVID-19 test kits to staff by 38% and to visitors by 49%. In addition, Cool Zones reported an increase in posting of English and/or non-English respiratory illness prevention practice posters by 36%. The infection prevention program showcased both feasibility and acceptability among Cool Zones, highlighting promising avenues for future initiatives.

**FIGURE 12: PROPORTION OF COOL ZONES REPORTING RECOMMENDED PREVENTION PRACTICES BEFORE AND AFTER PARTICIPATING IN THE SITE ASSESSMENT ACTIVITY, SAN DIEGO COUNTY, 2023.**



Source: County of San Diego, Health and Human Services Agency, Public Health Services, Epidemiology & Immunizations Services Branch, 2023.

## 2-1-1 San Diego Activities

As a local nonprofit organization, 2-1-1 San Diego is the region’s trusted source for information and connections to community, health, and disaster resources. Help is available 24 hours a day, every day of the week, and in more than 200 languages.<sup>6</sup> During excessive heat events, 2-1-1 assists in connecting people in San Diego without transportation assistance, such as older adults, people with disabilities, or people who are homebound, to a transportation or rideshare service at no cost. These resources transport San Diego County residents to and from Cool Zone locations.

Between May and October 2023, 2-1-1 received a total of 386 inquiries. There were 41 referrals for transportation. The highest number of inquiries (162) occurred in July, while the highest number of transportation referrals (27) were in August. See **Table 3** for the number of inquiries received through 2-1-1 and the number of transport referrals, per month.

TABLE 3: 2-1-1 SAN DIEGO ACTIVITIES BY MONTH.

Month (2023)	Inquiries Received Through 2-1-1	Number of 2-1-1 Transport Referrals
May	1	0
June	50	0
July	162	7
August	113	27
September	44	3
October	16	4
<b>Total</b>	<b>386</b>	<b>41</b>
Source: 2-1-1 San Diego.		

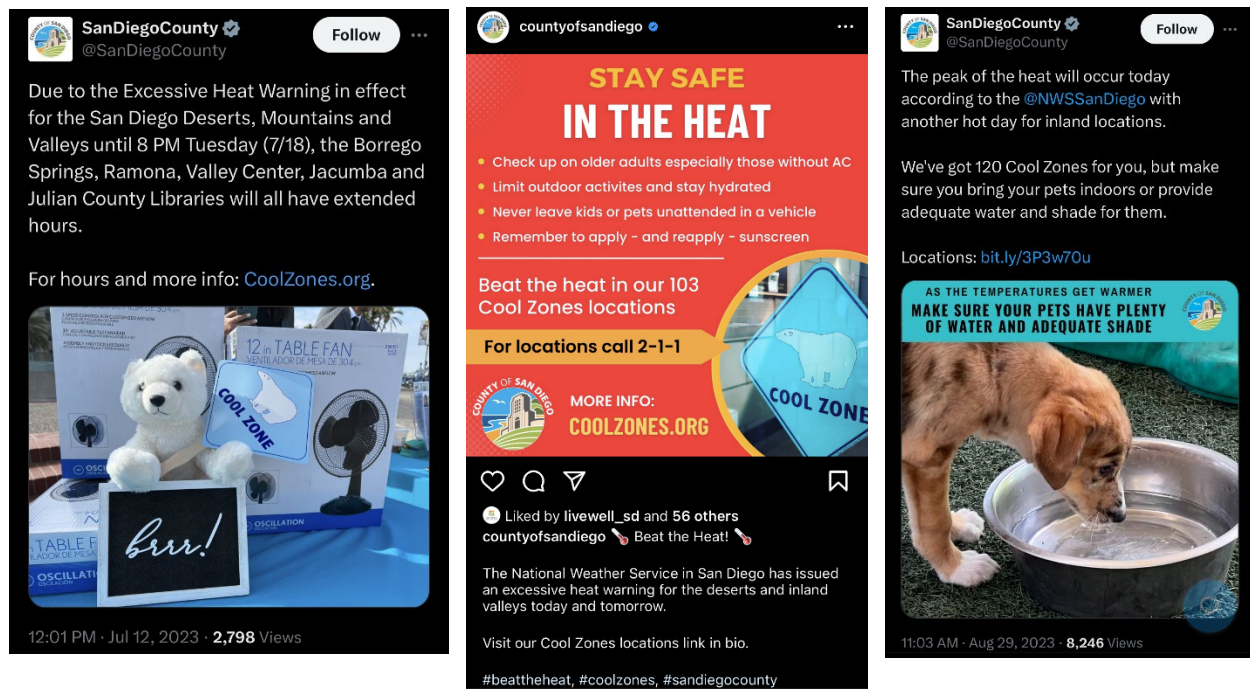
More information about 2-1-1 San Diego’s services is available at <https://211sandiego.org/> or by calling 2-1-1.

## County Communications Office Excessive Heat Outreach Activities

The County Communications Office (CCO) recognizes the importance of communicating directly with the public about programs and services that add value to their health, safety, neighborhood, and environment. To that end, CCO uses a variety of communication tools including social media, the Internet, and traditional media to keep San Diegans informed. When excessive heat is expected, the County Communications Office works with Public Health Services and other County departments to determine public messaging and whether those messages will be delivered via social media, a news release, or both.

Examples of social media communications are shown in **Figures 13-15**. These examples provide up-to-date Cool Zone information, tips for staying safe in the heat, and reminders to keep pets in mind during heat events.

FIGURES 13-15: SOCIAL MEDIA COMMUNICATIONS DURING HEAT EVENTS.



Information and resources are posted to the County's X/Twitter ([@SanDiegoCounty](https://twitter.com/SanDiegoCounty)), Instagram ([@countyofsandiego](https://www.instagram.com/countyofsandiego)), and Facebook ([County of San Diego - Government](https://www.facebook.com/CountyofSanDiegoGovernment)) accounts.

CCO also publishes articles to the [County News Center](https://www.sandiegocounty.gov/newscenter). These articles alert readers to upcoming extreme heat events and provide information about how to stay safe, reaching an estimated

1,000 to 2,500 people for each heat-related article. Links are embedded into the articles to direct people to Cool Zone sites, to learn more about the fan program, to learn the signs of heat illness, and to learn general safety tips, among other topics. Examples of County News Center articles are shown in **Figures 16-17**.

FIGURE 16-17: COUNTY NEWS CENTER ARTICLES DURING HEAT EVENTS.


HEALTH

## Summer's Coming, County Opens Cool Zone Program

Jun. 1, 2023 | 12:15 PM

Reading Time: 2 minutes

With summer just around the corner, the County of San Diego opened its annual Cool Zones program Thursday to give people free, safe, air-conditioned sanctuaries to escape extreme heat.




HEALTH

## Stay Safe During Upcoming Heat Wave

Jul. 10, 2023 | 5:17 PM

Reading Time: 3 minutes

Temperatures will rise and continue to build all week everywhere in San Diego County but particularly in the deserts, mountains and inland valleys. The hottest days are expected this weekend.





## Conclusion

As temperatures, and subsequent excessive heat events, increase, the County of San Diego's focus is on preventing adverse health effects in an equitable manner for all residents. Typically, heat events occur from June through September. However, 2023 saw a later, more intense heat season. In 2023, heat events occurred between July and October, with 21 of the 35 total heat event days occurring in the month of July. Over the course of the year, 8 heat events occurred, with the longest lasting 12 days.

The health effects of increasing heat events are evident. In 2023, there were 333 heat-related prehospital calls on heat event days. Over the course of the eight heat events, 80% individuals were transported to an emergency department (ED). Hyperthermia/heatstroke or sunstroke was the most commonly reported prehospital primary impression, followed by the dizziness/vertigo, nausea/vomiting, or weakness/other group. Historical surveillance, updated through 2022, continued to show an upward trend in ED and hospital visits among residents experiencing heat illness or injury. Between 2021 and 2022, there have been 15 deaths due to heat illness/injury.

The County Communications Office continues to provide public messaging to social media and news to alert San Diegans to upcoming hazards. Additional strategies to address excessive heat include opening Cool Zones, assisting with transportation to these locations, and providing fans to those who may need them. AIS received over 1,000 requests for fans and distributed 684 to eligible residents – an increase from prior years. The majority of fans went to residents with zip codes in the southwestern part of San Diego County. Similarly, 2-1-1 San Diego supported 41 transport referrals to Cool Zones in 2023. The collaboration between AIS and EISB increased the proportion of infection prevention activities, as well as health education, at these public spaces.

There are several ways to keep yourself and those around you safe during heat events to prevent heat-related illnesses and injuries.<sup>7</sup>

- Stay somewhere cool or get to one of the Cool Zones.
- Take a cold shower or bath.
- Stay hydrated and drink plenty of water.
- Avoid drinks that contain alcohol, caffeine, and lots of sugar.
- Wear light clothing and hats.
- Avoid being outdoors during hottest part of the day (10am-4pm).
- Avoid strenuous activity.
- Do not leave children in cars on hot days.
- Do not leave pets in cars.
- Check in on neighbors, family, or friends at increased risk, especially if they live alone.

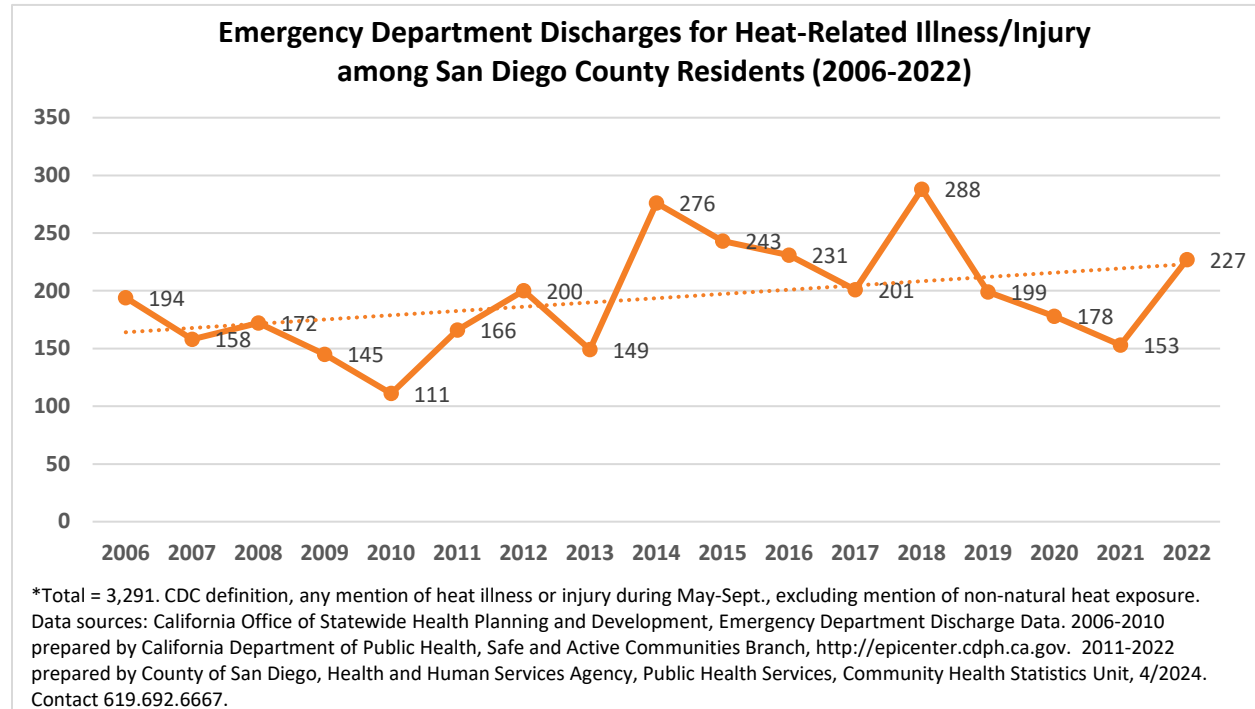


## Sources

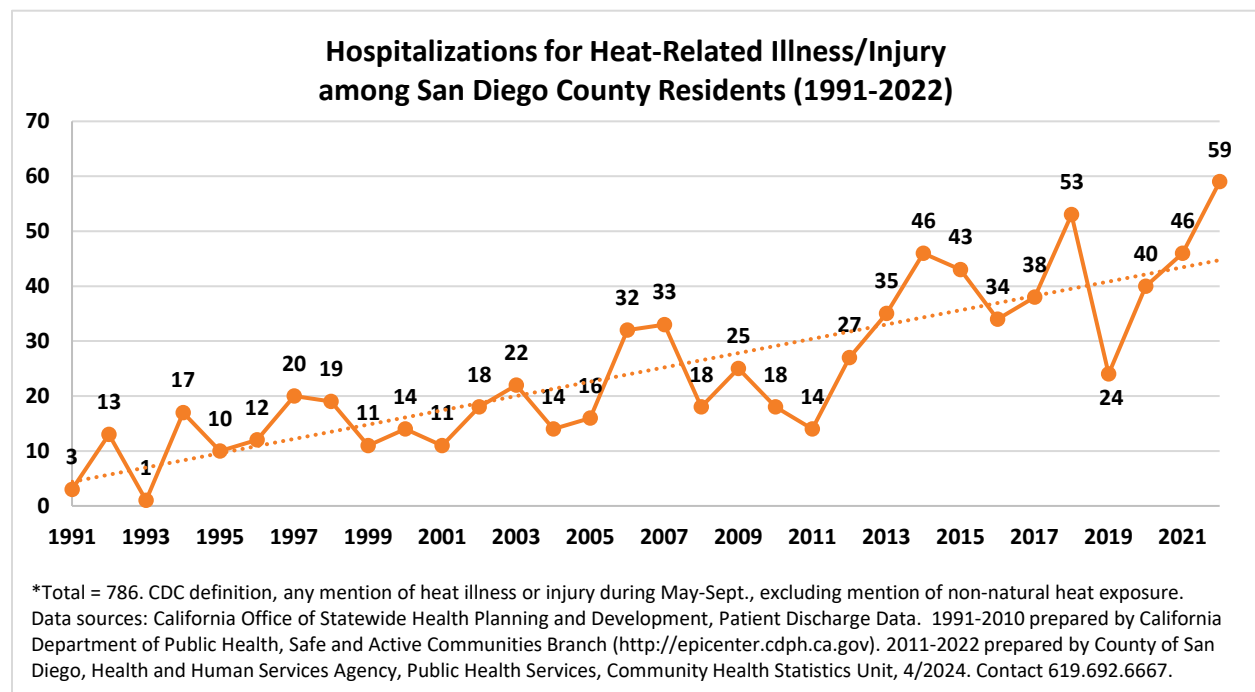
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## Appendix: Historical Trends Through 2022

### APPENDIX A: EMERGENCY DEPARTMENT DISCHARGES FOR HEAT ILLNESS/INJURY AMONG SAN DIEGO COUNTY RESIDENTS (2006-2022).



### APPENDIX B: HOSPITALIZATIONS FOR HEAT ILLNESS/INJURY AMONG SAN DIEGO COUNTY RESIDENTS (1991-2022).



APPENDIX C: HEAT ILLNESS/INJURY DEATHS AMONG SAN DIEGO COUNTY RESIDENTS (1991-2022).

