



COUNTY OF SAN DIEGO
HHSA
HEALTH AND HUMAN SERVICES AGENCY

LIVE WELL
SAN DIEGO



2021 Annual Excessive Heat Report

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

October 2022

2021 Annual Excessive Heat Report

October 7, 2022

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2021 Annual Excessive Heat Report

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Introduction

Heat-related deaths and illnesses are preventable. Still, more than 600 people in the United States are killed by extreme or excessive heat every year according to the Centers for Disease Control and Prevention (CDC). Heat is the number one weather related killer in the U.S.¹ On average, more people are killed by heat in the U.S. than by other natural disasters (i.e., tornadoes, earthquakes, hurricanes, floods) combined.¹

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 had 8 heat events during 2021, ranging from 2 to 8 days long, with the longest occurring in September. 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); Aging and Independence Services (AIS) activities, such as Cool Zone coordination and electric fan distribution; 2-1-1 activities; and the outreach efforts that County Communications Office (CCO) completed. An Appendix is included with trend data for the years up to 2020.



¹ National Weather Service, National Oceanic and Atmospheric Administration. *Heat Safety*. <https://www.weather.gov/psr//Heat>

Historical Assessment: Heat Alerts Issued by Year

Three phases of the Excessive Heat Response Plan (EHRP) are recognized.²

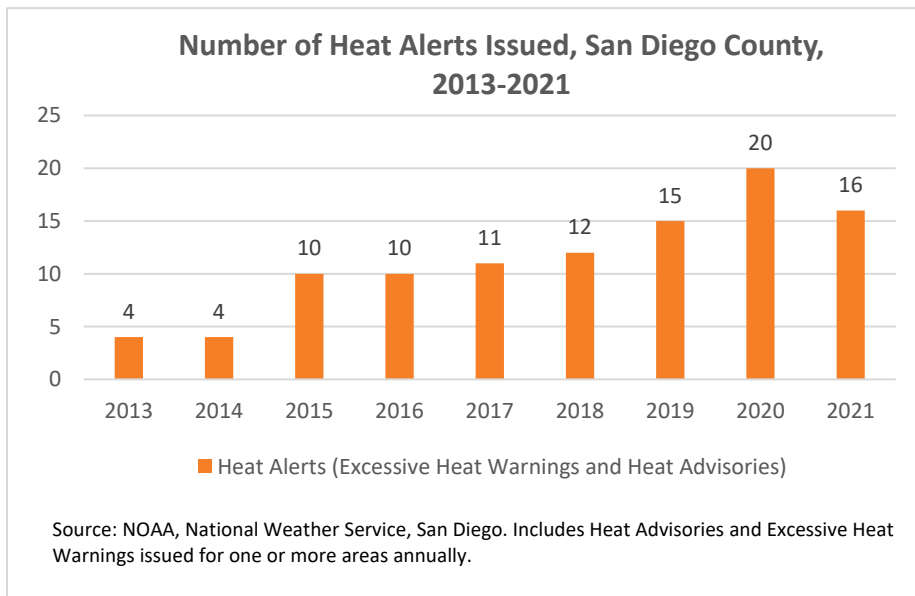
- **Phase I:** Seasonal Readiness
- **Phase II:** Heat Alert
- **Phase III:** Heat Emergency

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 excessive Heat Alerts. With increasing temperatures due to climate change, even in the coastal areas, it is vital to adequately prepare for excessive temperatures.

Figure 1 shows that over the past nine years, the combined number of heat advisories and excessive heat warnings has generally increased, from 2013 through 2021. The highest numbers of Heat Alerts were issued in 2020 (20) and 2021 (16).

FIGURE 1: NUMBER OF HEAT ALERTS ISSUED.

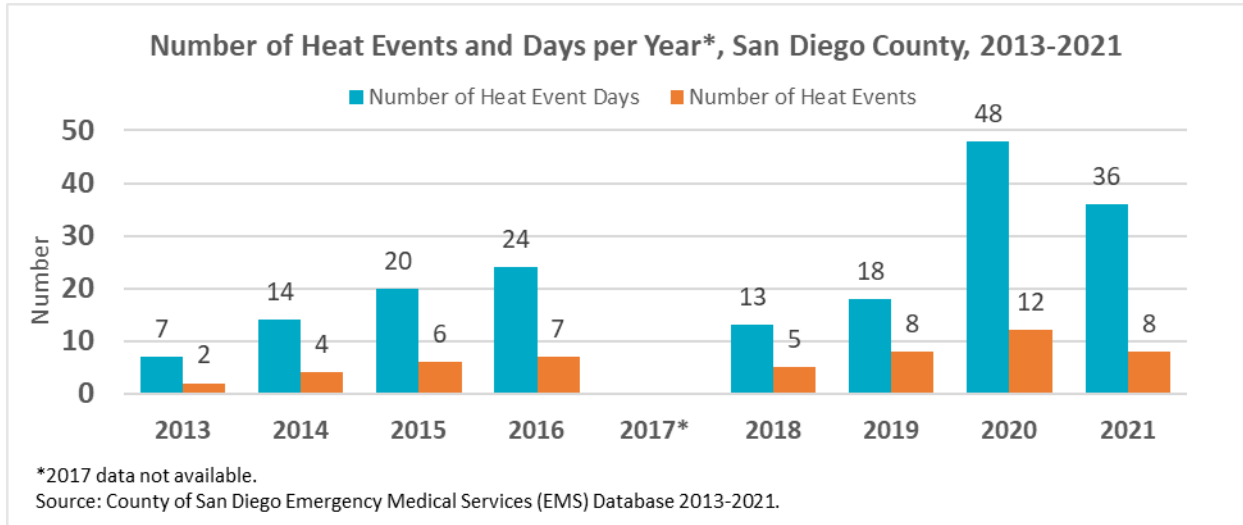


Heat advisories and excessive heat warnings are issued for affected areas within the county, therefore there may be multiple Heat Alerts for a single heat event. Overall, the *heat event* indicates the weather condition where phase II or phase III action was taken.

² County of San Diego, Health and Human Services Agency, Public Health Services. *Consumer Version Excessive Heat Response Plan*. 30 August 2021. https://www.sandiegocounty.gov/content/dam/sdc/hhsa/programs/phs/ExtremeHeat/EHRP_Consumer_Version.pdf

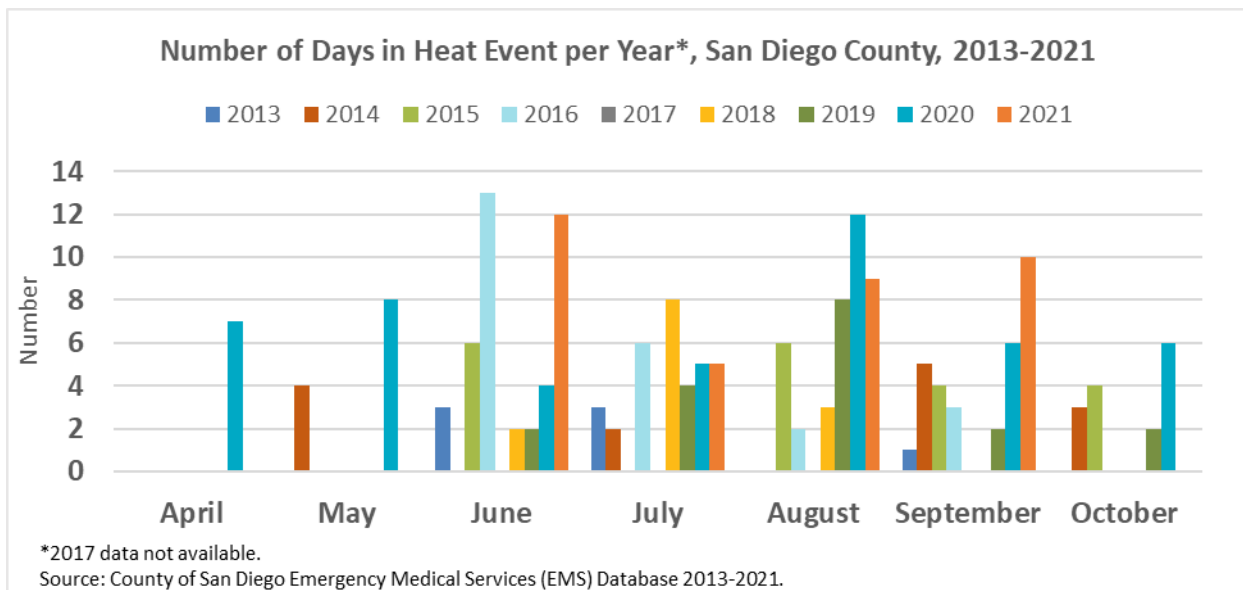
In 2021, the NWS issued 16 heat advisories (8) and excessive heat warnings (8) for San Diego County, which resulted in 8 heat events, lasting a total of 36 days. Both the number of days and events were lower than the previous year (2020), as seen in **Figure 2**.

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



Heat Alerts generally occur from May to September. In 2021, heat events occurred in four consecutive months, June through September. Compared to previous years, this is a similar pattern, with the exception of 2020, when heat events occurred in seven consecutive months - starting as early as April and lasting to October. **Figure 3** shows the number of days in a heat event from 2013 to 2021.

FIGURE 3: NUMBER OF DAYS IN HEAT EVENT PER YEAR.



Prehospital Calls Related to Excessive Heat

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.³

In 2021, there were 223 heat-related prehospital calls on heat event days, as seen in **Figure 4**. This was an average of 6.2 prehospital calls on heat event days, which is lower than the overall (multi-year) average of 10.1.

FIGURE 4: NUMBER OF HEAT-RELATED PREHOSPITAL CALLS ON HEAT EVENT DAYS PER YEAR.

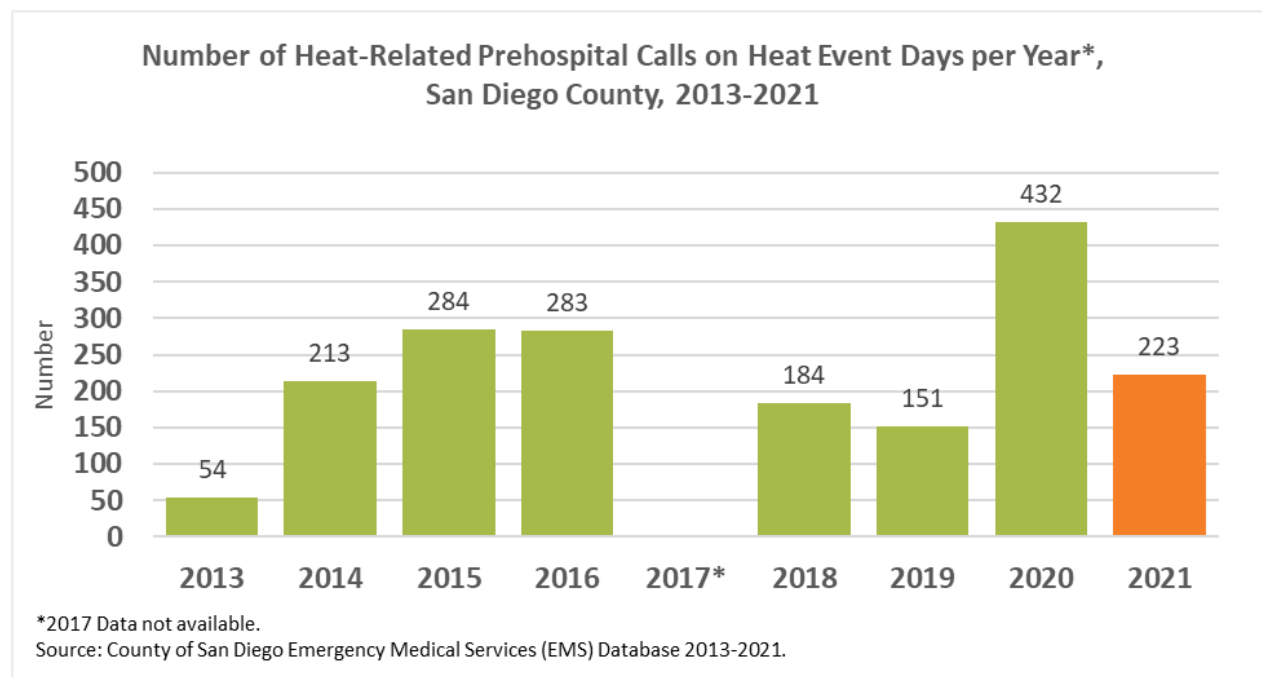


Table 1 shows how many calls were made for each heat event. The heat event starting on September 5th, 2021, was the longest event, lasting 8 days. During this heat alert, there were 55 total calls, with the majority of individuals being transported to an emergency department (ED) (44).

³ Committee on Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations; Institute of Medicine. *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*. Washington (DC): National Academies Press (US); 21 March 2012. 6, Prehospital Care Emergency Medical Services (EMS). <https://www.ncbi.nlm.nih.gov/books/NBK201058/>

TABLE 1: PREHOSPITAL CALLS RELATED TO EXCESSIVE HEAT, SAN DIEGO COUNTY, 2021.

Heat Alert Start Date	Length of Alert (days)	Total Calls	Run Outcome*	Run Outcome Count
6/1/2021	3	9	Transported	8
			AMA	1
			DOS	0
6/14/2021	7	46	Transported	30
			AMA	16
			DOS	0
6/27/2021	3	8	Transported	7
			AMA	1
			DOS	0
7/8/2021	6	38	Transported	29
			AMA	8
			DOS	1
8/2/2021	4	23	Transported	17
			AMA	6
			DOS	0
8/25/2021	5	30	Transported	25
			AMA	5
			DOS	0
9/5/2021	8	55	Transported	44
			AMA	11
			DOS	0
9/21/2021	2	14	Transported	11
			AMA	3
			DOS	0

*AMA - Against Medical Advice

*DOS - Dead On-Scene

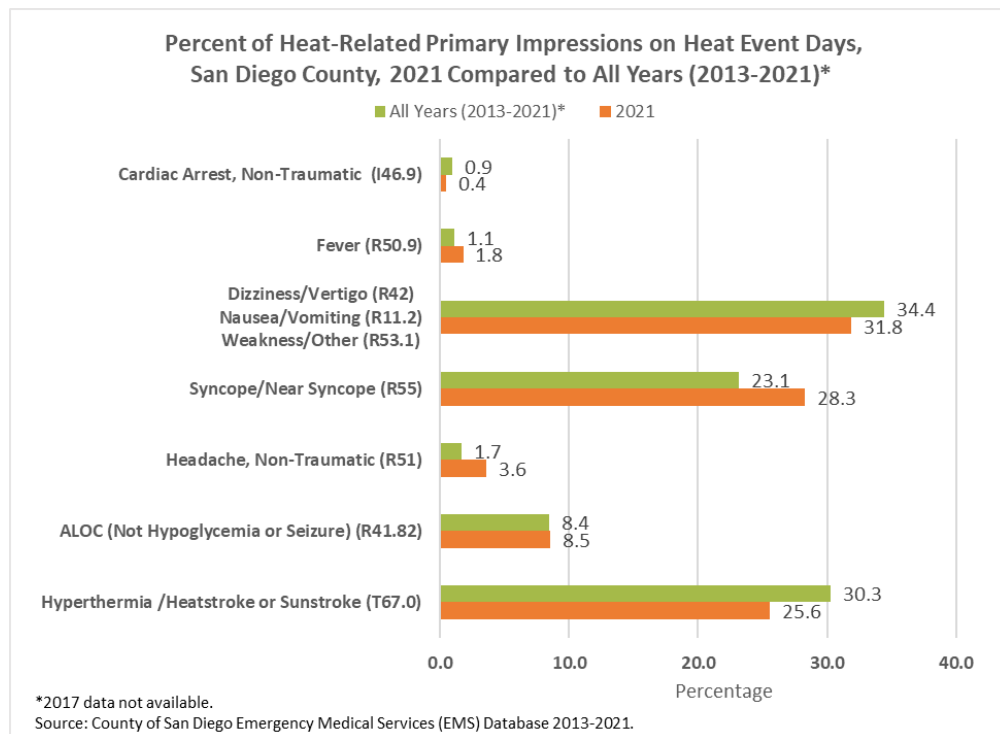
Data compiled and reported by County of San Diego Emergency Medical Services (EMS).

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 extra hard 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.⁴

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 5 shows the percent of heat-related primary impressions on heat event days. In 2021, the percent of each heat-related prehospital primary impression was similar to the overall percent. The dizziness/vertigo, nausea/vomiting, and weakness/other groups were most commonly reported, followed by syncope/near syncope and hyperthermia/heatstroke or sunstroke.

FIGURE 5: PERCENT OF HEAT-RELATED PRIMARY IMPRESSIONS ON HEAT EVENT DAYS.



⁴ National Weather Service, National Oceanic and Atmospheric Administration. *Heat Safety*. <https://www.weather.gov/psr//Heat>

The severity of the calls is also recorded, as seen in **Figure 6**. The percent of acuity/status for prehospital heat-related calls for 2021 was similar to previous years and the overall percent. The majority of calls were mild status.

FIGURE 6: PERCENT OF ACUITY/STATUS FOR PREHOSPITAL HEAT-RELATED CALLS ON HEAT EVENT DAYS.

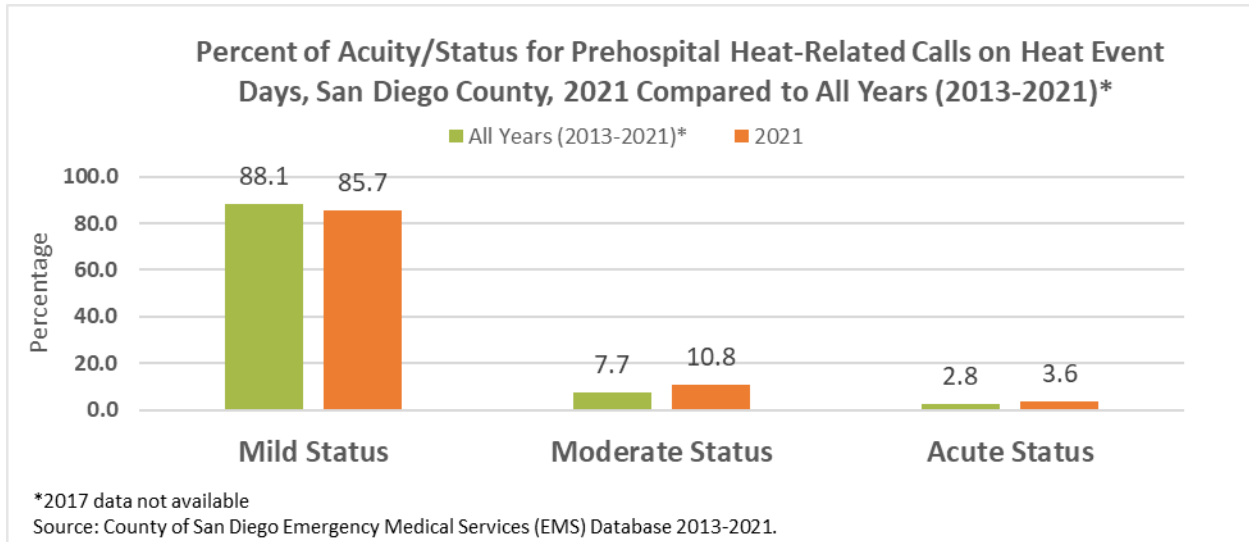
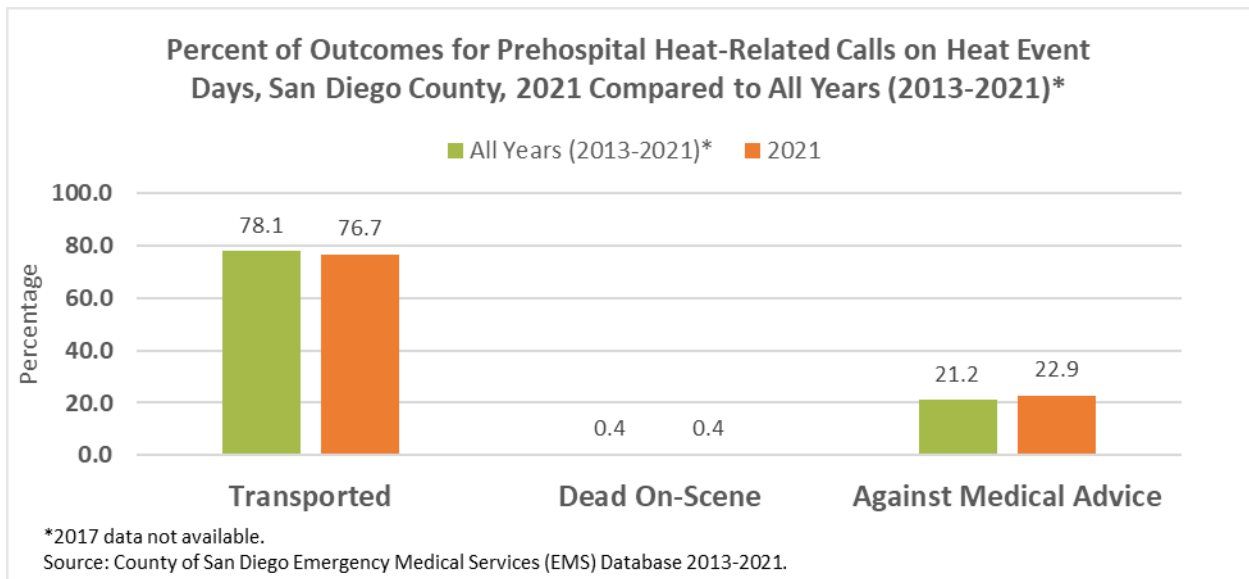


Figure 7 shows the percent of outcomes for prehospital heat-related calls for 2021 was similar to previous years and the overall percent. The majority of calls were transported to an emergency department (ED).

FIGURE 7: PERCENT OF OUTCOMES FOR PREHOSPITAL HEAT-RELATED CALLS ON HEAT EVENT DAYS.



The health data available through 2020 show there has historically been an upward trend in the number of people experiencing heat illness or injury outcomes in the months from May to September. Between 1991 and 2020, there were 77 heat illness or injury deaths among San Diego County residents. On average, there have been 3 deaths per year; 6 deaths occurred in both 2004 and 2018. In 2020, there were 5 deaths from heat illness or injury (**Appendix A**). Discharges from hospitals for heat illness or injury among San Diego residents gradually increased since 1991, from 1 discharge reported in 1993 to a high of 53 discharges in 2018. There were 40 hospital discharges reported in 2020 (**Appendix B**). There have been 2,911 ED discharges for heat illness/injury among San Diego County residents since 2006. Numbers have fluctuated but have gradually increased from 111 in 2010 to a peak of 288 in 2018. There were 178 ED discharges in 2020 (**Appendix C**).



See the **Appendix** section for the historical trends of heat illness or injury outcomes through 2020.

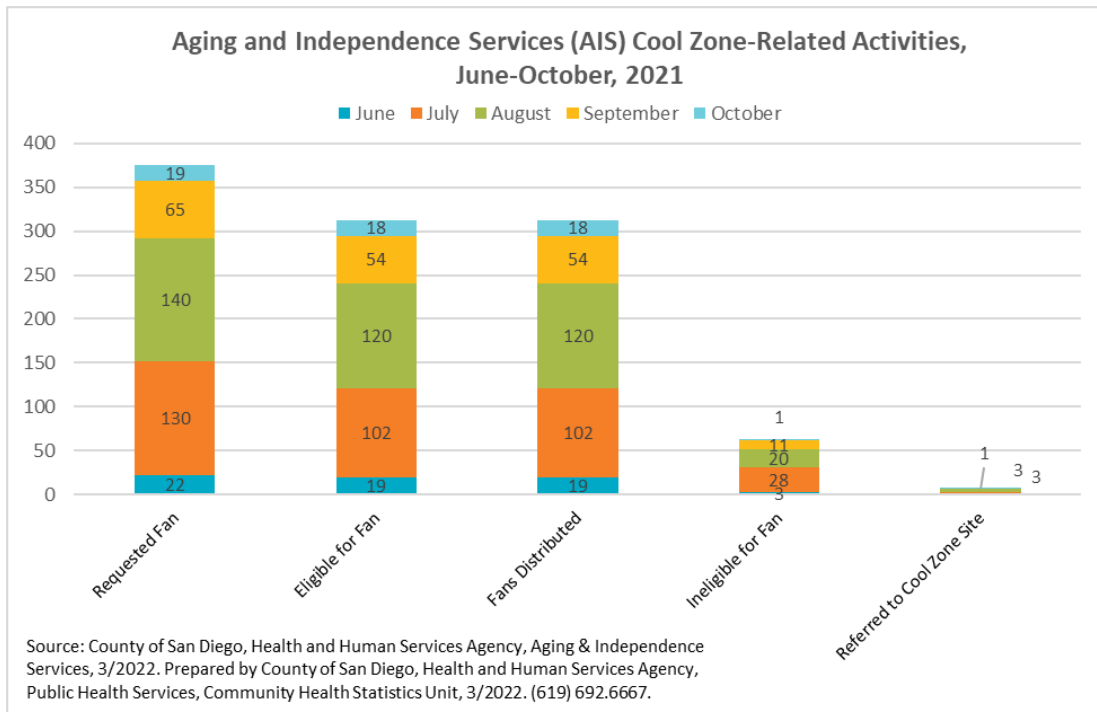
Aging and Independence Services (AIS) Activities

Anyone can be affected by extreme or excessive heat, but the elderly are at increased risk. 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.⁵ 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, such as San Diego County Libraries or County of San Diego Parks and Recreation spaces, for anyone looking to escape excessive heat. This program was launched out of concern for seniors, persons with disabilities, and those with health concerns that could be complicated by the effects of heat. Cool Zones are 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 from June to October 2021. In 2021, between June and October, the AIS Call Center received 376 requests for fans. Of those, 313 requests were eligible to receive fans (83%). Most fans were distributed in July and August (71%). In addition, the Call Center referred 7 requesters to Cool Zones in San Diego County.

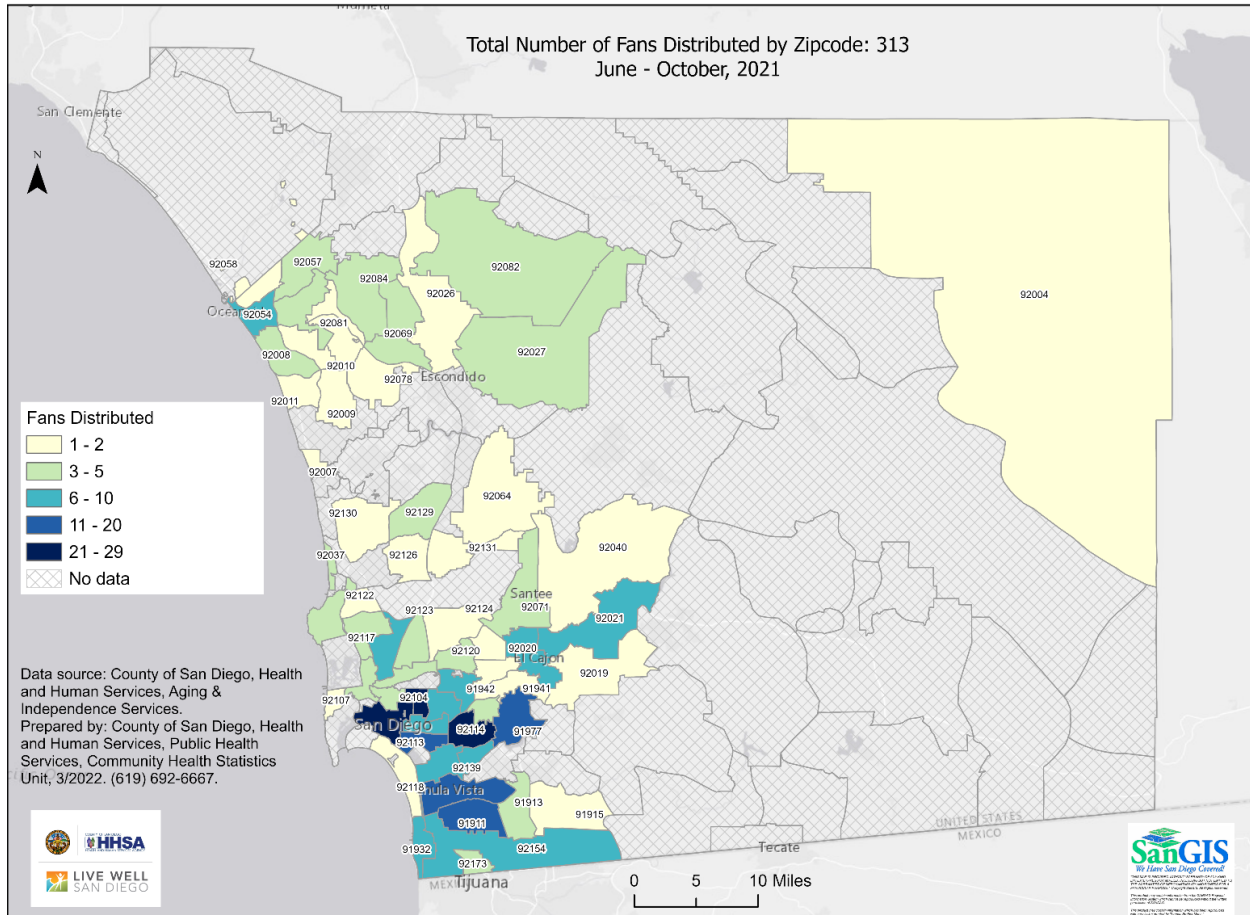
FIGURE 8: AGING AND INDEPENDENCE SERVICES (AIS) COOL ZONE-RELATED ACTIVITIES.



⁵ County of San Diego, Health and Human Services Agency, Aging and Independence Services. *Aging and Independence Services*. <https://www.sandiegocounty.gov/content/sdc/hhsa/programs/ais.html>

In 2021, between June and October, 313 fans were distributed to residents of San Diego County in response to inquiries to the AIS Call Center. Most fans were provided for residents in the south-west part of the county (zip codes 92101, 92114, and 92104 were provided 29, 24, and 23 fans, respectively). **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>.

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.⁶ 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.

Between June and October 2021, 2-1-1 received a total of 106 inquiries. There were 11 referrals for transportation. The highest number of inquiries (69) and transportation referrals (6) were in August. See **Table 2** for the number of inquiries received through 2-1-1 and the number of transport referrals, per month.

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

Month (2021)	Inquiries Received Through 2-1-1	Number of 2-1-1 Transport Referrals
June	0	0
July	28	3
August	69	6
September	9	2
October	0	0
Total	106	11

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.

⁶ 2-1-1 San Diego. *About Us*. <https://211sandiego.org/mission-values/>

County Communications Office Excessive Heat Outreach Activities

The County Communications Office 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. **Table 3** lists the CCO actions taken during Heat Alerts and provides links to related events, if available.

TABLE 3: COUNTY COMMUNICATIONS OFFICE (CCO) ACTIONS TAKEN DURING HEAT ALERTS.

Heat Alert Start Date	Action Taken	Links
6/1/2021	Prepared information for posting to website and social media.	https://www.twitter.com/SanDiegoCounty
6/14/2021	Posted information to social media sites and website.	https://www.countynewscenter.com/stay-cool-during-weeklong-heatwave/ https://www.countynewscenter.com/county-opens-more-cool-zones-in-rural-areas/
6/27/2021	Distributed information on Cool Zone availability over the weekend and into Monday, including extended hours at Borrego Library.	https://www.countynewscenter.com/cool-zones-free-fans-can-help-san-diegans-beat-the-heat/
7/8/2021	Posted information to social media sites and website. Stood by to assist with information dissemination.	
8/2/2021	Posted heat warning and Cool Zones social posts.	
8/25/2022	Posted information to social media sites and website.	
9/5/2021	Posted information to social media sites and website.	
9/21/2021	Posted social media promotion with general staying cool tips and Cool Zone locations.	

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. Strategies include alerting San Diegans to upcoming hazards and assisting with resources to keep them safe, such as opening Cool Zones, assisting with transportation to these locations, and providing fans to those who may need them.

In effort to prevent heat-related illnesses and injuries, there are several ways to keep yourself and those around you safe during heat events.⁷

- 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 who are at increased risk, especially if they live alone.



⁷ County of San Diego, Health and Human Services, Public Health Services. *Extreme Heat*. https://www.sandiegocounty.gov/hhsa/programs/phs/extreme_heat/

Sources

¹ National Weather Service, National Oceanic and Atmospheric Administration. *Heat Safety*.
<https://www.weather.gov/psr//Heat>

² County of San Diego, Health and Human Services Agency, Public Health Services. *Consumer Version Excessive Heat Response Plan*. 30 August 2021.
https://www.sandiegocounty.gov/content/dam/sdc/hhsa/programs/phs/ExtremeHeat/EHRP_Consumer_Version.pdf

³ Committee on Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations; Institute of Medicine. *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*. Washington (DC): National Academies Press (US); 2012 March 21. 6, Prehospital Care Emergency Medical Services (EMS).
<https://www.ncbi.nlm.nih.gov/books/NBK201058/>

⁴ National Weather Service, National Oceanic and Atmospheric Administration. *Heat Safety*.
<https://www.weather.gov/psr//Heat>

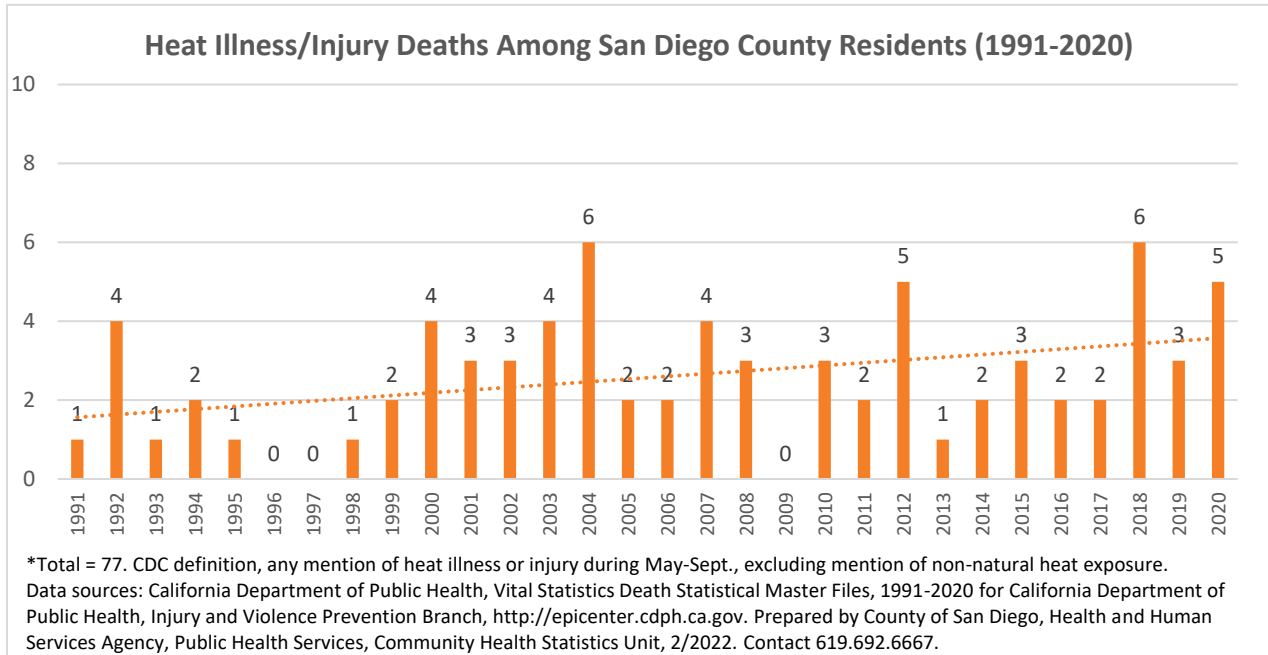
⁵ County of San Diego, Health and Human Services Agency, Aging and Independence Services. *Aging and Independence Services*. <https://www.sandiegocounty.gov/content/sdc/hhsa/programs/ais.html>

⁶ 2-1-1 San Diego. *About Us*. <https://211sandiego.org/mission-values/>

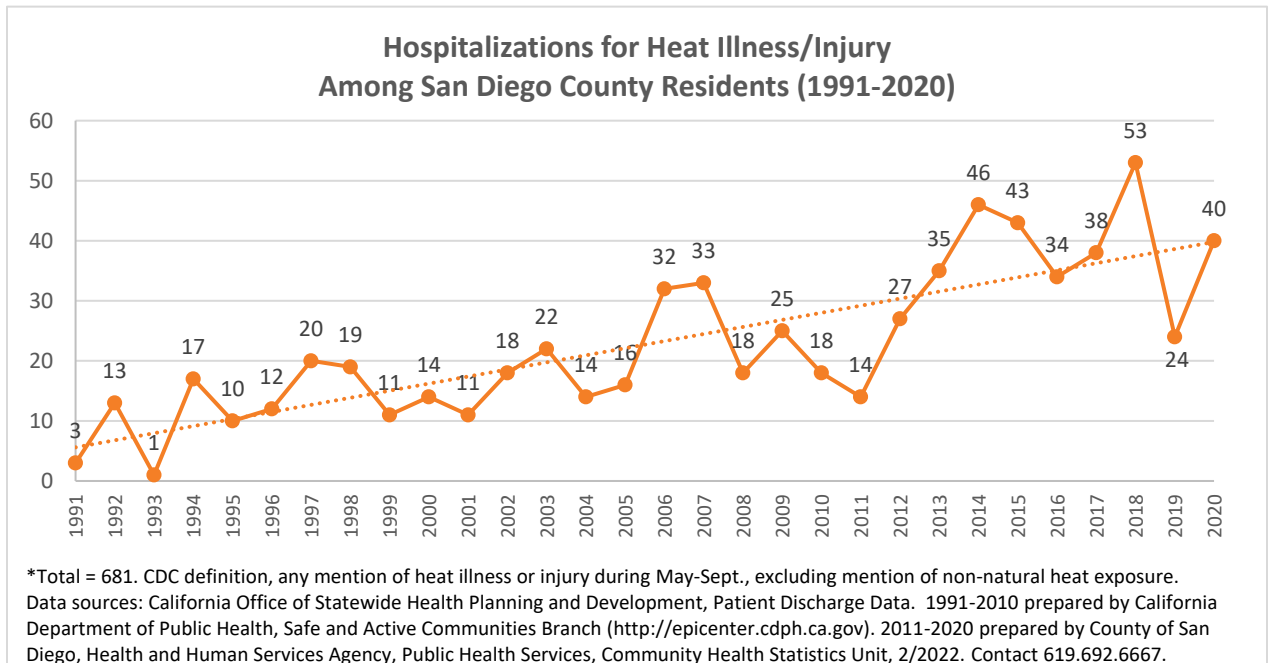
⁷ County of San Diego, Health and Human Services, Public Health Services. *Extreme Heat*.
https://www.sandiegocounty.gov/hhsa/programs/phs/extreme_heat/

Appendix: Historical Trends Through 2020

APPENDIX A: HEAT ILLNESS/INJURY DEATHS AMONG SAN DIEGO COUNTY RESIDENTS (1991-2020).



APPENDIX B: HOSPITALIZATIONS FOR HEAT ILLNESS/INJURY AMONG SAN DIEGO COUNTY RESIDENTS (1991-2020).



APPENDIX C: EMERGENCY DEPARTMENT DISCHARGES FOR HEAT ILLNESS/INJURY AMONG SAN DIEGO COUNTY RESIDENTS (2006-2020).

