LOUISIANA DEPARTMENT OF HEALTH

HEAT-RELATED MORTALITY IN LOUISIANA, 2023

September 2024

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OVERVIEW

This report summarizes heat-related deaths occurring in Louisiana in 2023. Exposure to extreme heat is a significant public health problem and the primary cause of weather-related mortality in the U.S. The summer of 2023 was the hottest summer on record for Louisiana. In 2023, the statewide maximum temperature was above 95°F for 56 days. In comparison, between 1991 and 2020 the average number of days the statewide maximum temperature exceeded 95°F was 15 days.

Extreme summer heat is increasing in Louisiana and the U.S. and projections indicate that extreme heat events will become more frequent and intense in coming decades. Louisiana's hot temperatures are compounded by high humidity which worsens the impact of heat because it is harder for the body to cool itself.

Prolonged exposure to high temperatures can cause heat-related illness, including heat cramps, heat syncope, heat exhaustion, heat stroke, and death. Heat-related illness happens when the body is unable to maintain a normal body temperature resulting in mild to moderate signs and symptoms including heavy sweating, weakness, dizziness, fatigue, fainting, nausea or vomiting, and headache. If the body temperature continues to overheat, these signs and symptoms may progress to heat stroke resulting in altered mental state or behavior, such as confusion, seizures or coma, and damage to internal organs. Heatstroke requires emergency medical treatment. The damage to internal organs worsens the longer treatment is delayed, increasing the risk of death.

The risk of heath-related illness is heightened for people who are older, have chronic illnesses, are socioeconomically disadvantaged, or work outside or in hot indoor environments. Air conditioning is the primary protective factor: unhoused individuals and individuals who live in buildings with no or limited air-conditioning for extended periods of time are at an increased risk because they are unable to regulate their body temperature.

Methods:

Heat-related deaths in Louisiana were identified using International Classification of Diseases, Tenth Revision (ICD-10) codes and key words on the death certificate. Selected heat-related deaths included those listing ICD-10 codes X30 (exposure to excessive natural heat), P81.0 (environmental hyperthermia of newborn), or T67 (effects of heat and light) as the underlying cause of death or as one of the contributing causes. Records were also selected if the death certificate contained the word "heat" or "hyperthermia" in any cause of death field. Death certificates with key word(s) and no supporting heat-related cause of death code were reviewed to confirm that environmental heat caused or contributed to the fatality.

OVERVIEW CONTINUED

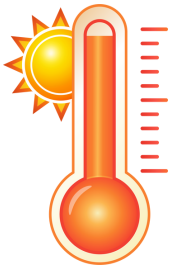
To assess the burden and risk factors associated with warm weather, we limited our analysis to Louisiana's warm season: April through October. Details about the circumstances of the heat exposure and associated risk factors were obtained through review of death certificates, medical records, coroner investigation reports, and OSHA work-related fatal injury reports. Coroner investigation reports were available only for fatalities in Orleans Parish due to a collaboration with the New Orleans Health Department.

For the purposes of this report, heat-related deaths include heat caused and heat contributed deaths. Heat caused deaths are those in which environmental heat was directly involved in the sequence of conditions causing deaths. Heat contributed deaths are those in which environmental heat was a significant condition contributing to the death.

Limitations:

This report may not capture all heat-related deaths during the reporting period. Heat-related fatalities are underreported on death certificates for several reasons including the challenges diagnosing heat-related fatalities, lack of a standardized definition, and limited resources for investigating potential heat-related deaths. Deaths directly caused by heat are relatively straightforward to diagnose; however, determining when heat contributed to a death is more challenging. High temperatures can elevate the risk of fatalities from heart attacks and other cardiovascular diseases, and prolonged heat exposure can strain the body in many ways. Medical examiners, coroners, physicians, and other professionals responsible for completing death certificates do not consistently apply criteria to assess whether heat contributed to a death. Additionally, they often lack the resources to thoroughly investigate the circumstances, such as whether the individual had a pre-existing medical condition(s) or access to air conditioning. These gaps result in an undercount of heat-related deaths and inconsistent reporting across different jurisdictions.

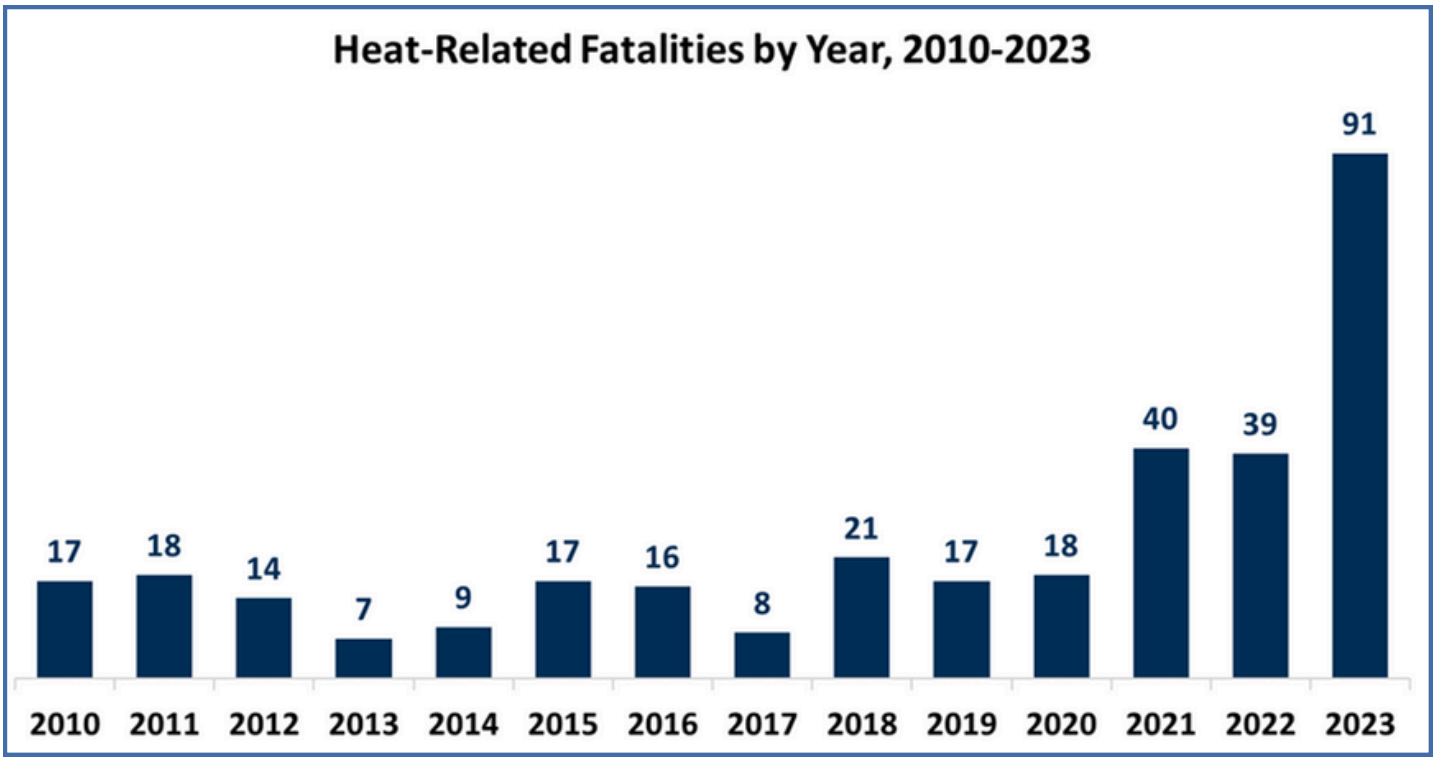
To improve heat mortality reporting in Louisiana, the Louisiana Department of Health is developing training resources for coroners and medical examiners on recognizing heat-related deaths and recording them on the death certificate. The guidance stresses the "but-for" principle: "but for" the heat, would someone have died? This approach considers the deceased person's general health, the ambient outdoor and indoor (if relevant) temperature, and the circumstances of death such as where they were and what they were doing. These details are critical to assessing the health impacts of heat, identifying common risk factors, and informing prevention strategies to reduce morbidity and mortality.



Visit the Louisiana Department of Health's Heat-Related Illness: Data Dashboard and Guidance webpage for current heat-related morbidity and mortality data. The dashboard is updated weekly from April through October.

HEAT-RELATED FATALITIES: 2010-2023

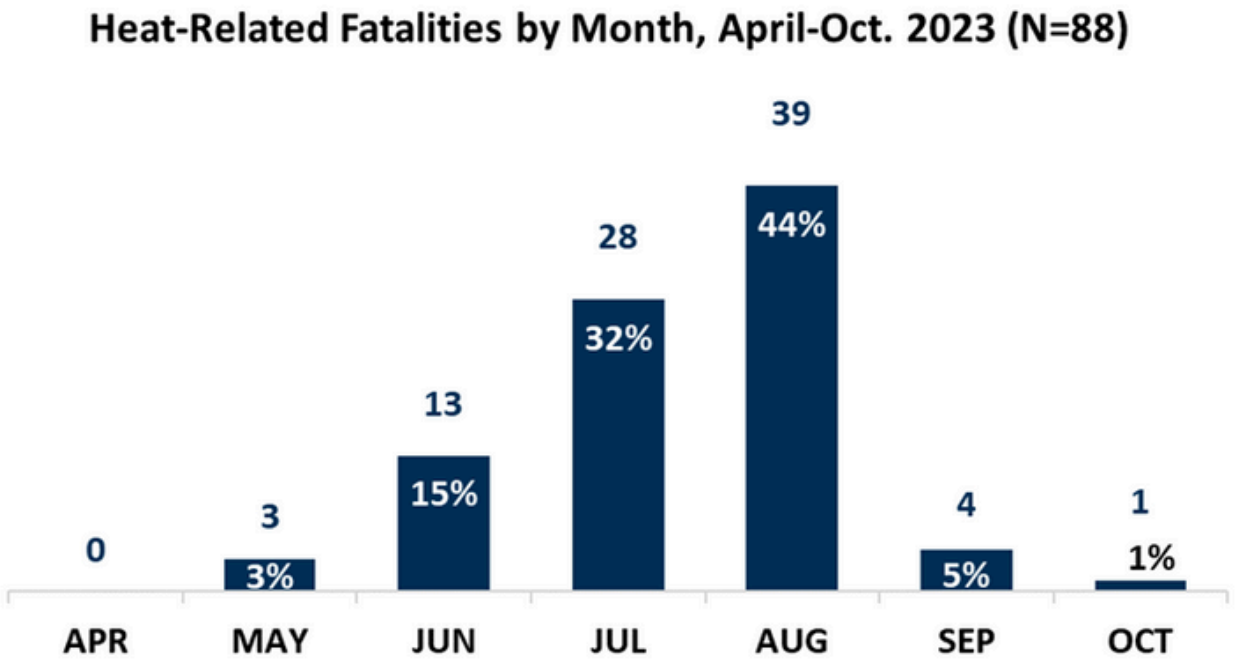
In 2023, Louisiana recorded 91 heat-related fatalities, the highest number ever documented in the state. This number represents a significant increase from previous years. For comparison, the annual average number of heat-related deaths between 2010 and 2022 was 18. The number of deaths in 2021 (40) and 2022 (39) was more than double this average. This increase during those two years was partially attributed to heat-related deaths after Hurricanes Laura (2021) and Ida (2022). However, 2023 saw an even more dramatic rise, with more than five times more deaths (91) than the average for the 13 previous years.



HEAT-RELATED FATALITIES: APRIL - OCTOBER 2023

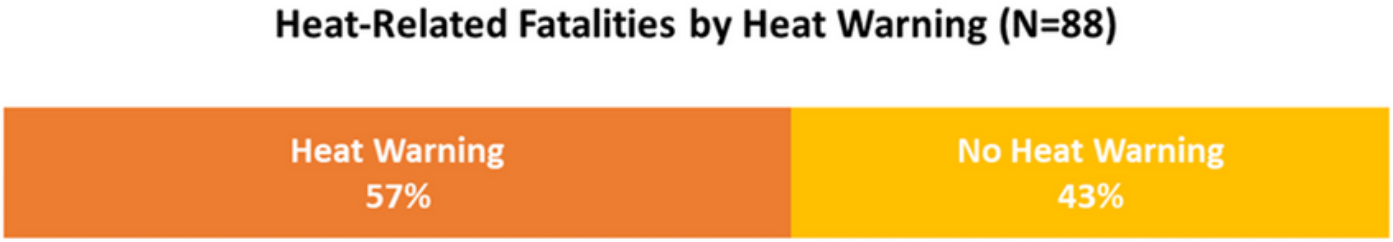
MONTH:

The following data refers to deaths that occurred between April and October 2023. There were 88 heat-related deaths during this seven-month period. August had the most deaths at 39 (44%).



HEAT WARNING DAYS:

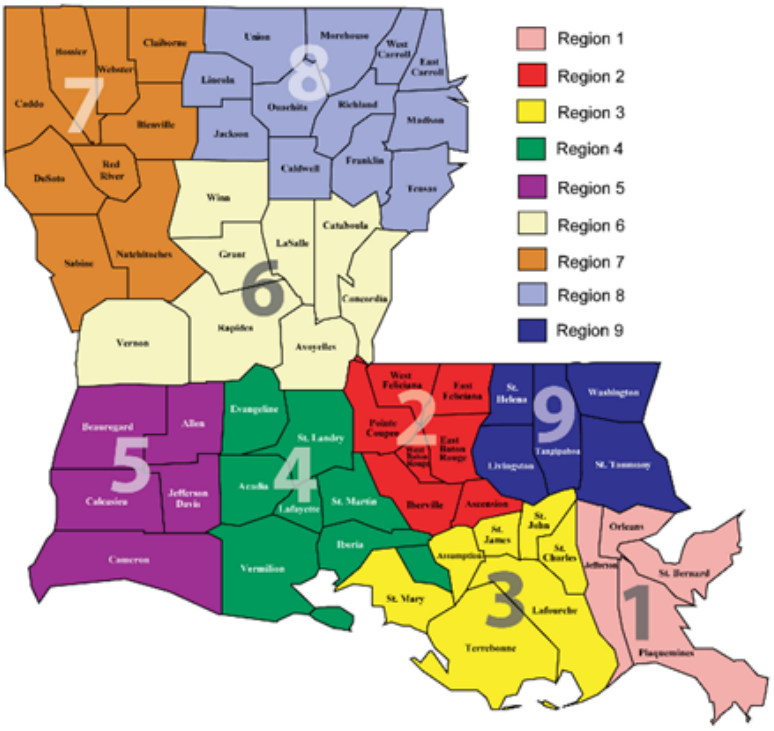
The National Weather Service issued heat warnings on days when 57% (N=50) of the fatalities occurred. Excessive Heat Warnings are issued for southern part of the state when the heat index is >= 113°F or the temperature is >= 105°F, and for the northern part of the state when the heat index is >= 110°F or the temperature is >= 105°F.



LOCATION OF OCCURRENCE:

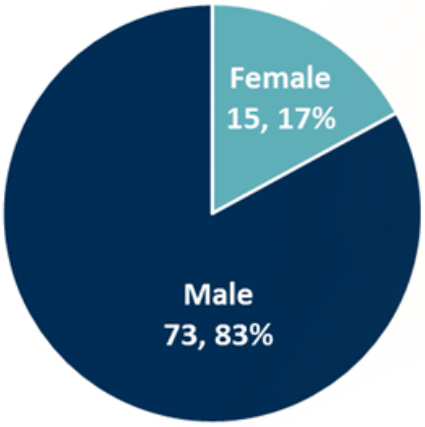
Fatalities were categorized based on the Louisiana Department of Health region where the death occurred. One-third (34%) of all heat-fatalities occurred in Southeast Louisiana (Region 1). This region includes Orleans, Jefferson, St Bernard and Plaquemines parishes. The Northshore (Region 9) had the second highest number of deaths (14, or 16%). All decedents were Louisiana residents except for one.

LDH REGION	Number (%) of Fatalities
1- SOUTHEAST	30 (34%)
2- CAPITAL REGION	11 (13%)
3- SOUTH CENTRAL	4 (5%)
4- ACADIANA	5 (6%)
5- SOUTHWEST	1 (1%)
6- CENTRAL	4 (5%)
7- NORTHWEST	12 (14%)
8- NORTHEAST	7 (8%)
9 -NORTHSHORE	14 (16%)
Total	**88 (100%)**



DEMOGRAPHICS:

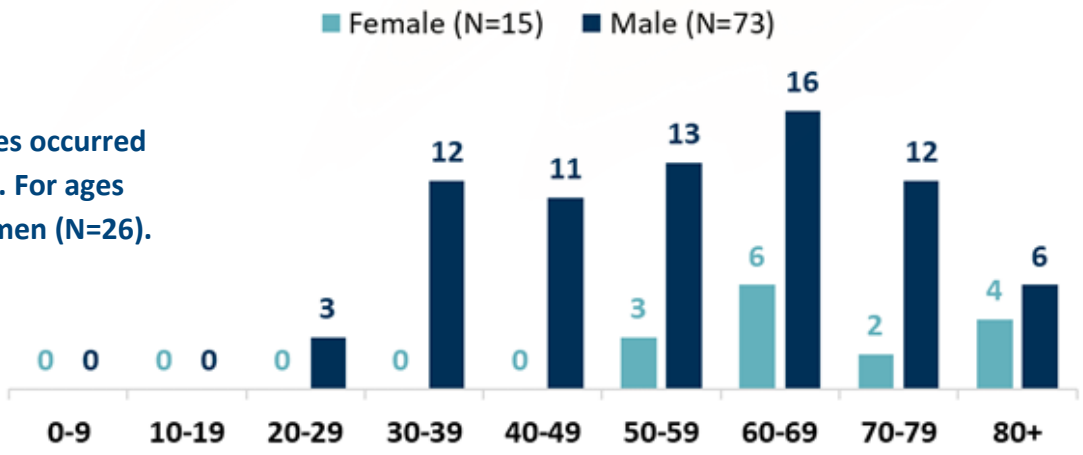
Heat-Related Fatalities by Sex, April-Oct. 2023



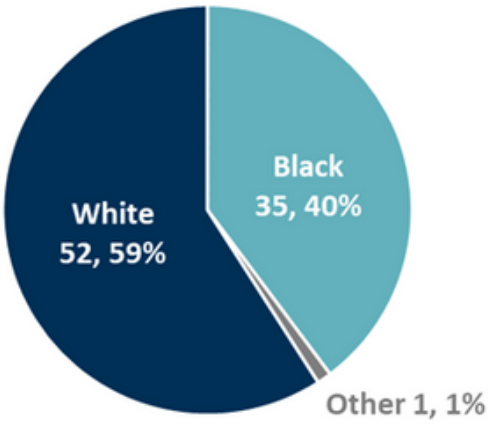
Males accounted for 83% of all fatalities (N=73).

Heat-Related Fatalities by Age and Sex, April-Oct. 2023

Fifty-two percent of all fatalities occurred to individuals aged 60 or older. For ages 20 - 49, all the fatalities were men (N=26).



Heat-Related Fatalities by Race, April-Oct. 2023

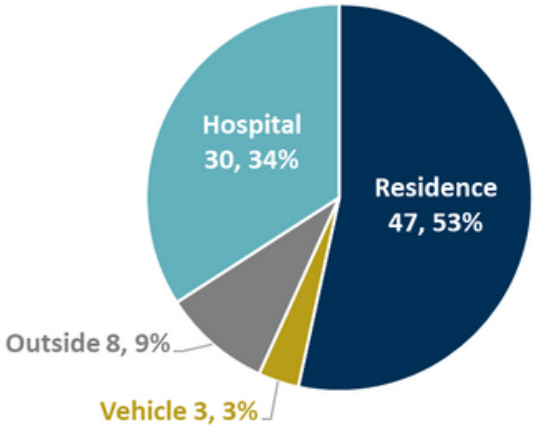


White residents made up 59% of heat-related fatalities. Two fatalities were Hispanic.

PLACE OF DEATH:

We grouped the place of death into four main categories: residence, hospital, outside, and vehicle. Residence includes decedent's home (N=43), friend's home (N=1), prison (N=1), nursing home (N=1), and unknown residence (N=1). Hospital includes emergency department (N=23) and inpatient care (N=7). Outside includes urban areas (N=5) and rural or agricultural areas (N=3). Vehicle includes cars (N=3).

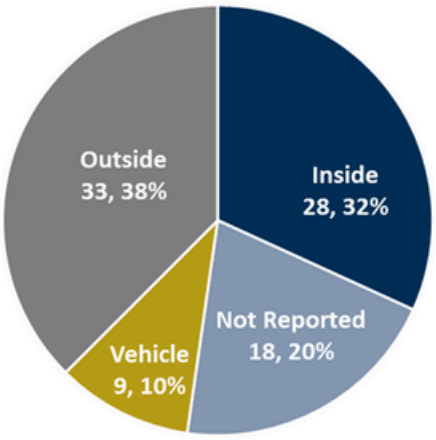
Heat-Related Fatalities by Place of Death, April-Oct. 2023



PLACE OF INJURY:

Place of injury is where the heat exposure occurred and usually reflects where the person was found. Information about the place of injury was obtained from death certificates, medical records, and coroner investigation reports. Seventy fatalities (89%) had place of injury information. The place of injury was outside for 38% of the fatalities (N=33). This includes outside of decedent's residence, working outside, and public areas (e.g., sidewalks, parking lots, and streets). Twenty-eight (32%) fatalities were inside. This includes residence (N=26) and prison (N=2). Vehicle (N=9) includes car and trucks. Not reported includes 18 fatalities that did not have any information about the place of injury.

Heat-Related Fatalities by Place of Injury, April-Oct. 2023



RISK FACTORS:

Information about factors contributing to heat exposure was available for 32 fatalities. Unhoused individuals accounted for 17% of all heat-related deaths; most unhoused individuals died in Orleans parish. No or limited air conditioning was listed as a factor in 12 fatalities (14%). Five of the fatalities were due to work-related heat exposure (6%). The worker fatalities were all men; they ranged in age from 27 to 69 years.

Factors Contributing to HEAT Fatality	Number (%) of Fatalities
Unhoused	**15 (17%)***
No or limited A/C	**12 (14%)**
Working	**5 (6%)****

2 are potentially unhoused.
****2 work-related fatalities are pending investigation.***

HEALTH CONDITIONS:

Certain health conditions put individuals at increased risk of heat-related illness. Fifty-six percent of the heat-related deaths had a diagnosis of cardiovascular disease. Thirty-one percent (N=27) of the fatalities involved substance use. Substance use includes alcohol and/or drug use. Other health conditions listed on the death certificate include diabetes and endocrine disorders (15%) and respiratory conditions (7%).

Health Conditions	Number (%) of Fatalities*
Cardiovascular Diseases	**49 (56%)**
Substance Use	**27 (31%)**
Diabetes Mellitus and Endocrine Disorders	**13 (15%)**
Respiratory Conditions	**6 (7%)**

Some fatalities had more than one health condition.

RECORDED BODY TEMPERATURE:

Thirty-three of the fatalities had body temperature data. The figure below shows body temperature data for 25 fatalities with a recorded body temperature above 100°F. Eighteen individuals had a body temperature greater than 105 °F. The highest reported body temperature was 111°F.