



February 2021 Winter Storm-Related Deaths – Texas

Dec. 31, 2021

The Texas Department of State Health Services (DSHS) conducts disaster-related mortality surveillance for major disasters per the State of Texas Emergency Management Plan's [Public Health and Medical Services Annex](#). In this role, the DSHS State Medical Operation Center's Disaster Mortality Surveillance Unit (SMOC DMSU) analyzed the causes of death related to the February 2021 winter storm.

Mortality surveillance measures death within a population to help determine the scope of a disaster's effects on the population. The goal is to inform planning, prevention, and communication preparations for future disasters. Deaths during disasters can be directly or indirectly related to the disaster itself; these are all important to record and analyze to help individuals, communities, and entities understand better how to prepare themselves for potential future disasters.

For the winter storm in February 2021, DSHS identified and analyzed deaths that were indirectly, directly, or possibly attributable to the storm. The exact circumstance for the death can vary widely, and DSHS has categorized these circumstances for further insights [Table 3]. For example, a fall or motor vehicle accident could be categorized as a winter storm-related death, if that fall or accident was attributable to the storm. This approach is consistent with federal standards published by the National Center for Health Statistics within the Centers for Disease Control and Prevention. See [A Reference Guide for Certification of Deaths in the Event of a Natural, Human-induced, or Chemical/Radiological Disaster](#). DSHS only reports a death as related to the winter storm when verified by a medical certifier.

DSHS used CDC guidance and standard tools to identify deaths related to the winter storm. DSHS surveillance began on February 15, 2021 and concluded on October 27, 2021. The data in this report is current as of October 27, 2021. DSHS identified winter storm-related deaths through three mechanisms: mortality surveillance forms, death certificates, and verification of informally reported deaths. From February 16 through August 27, 2021, medical certifiers reported deaths related to the winter storm to the SMOC DMSU via [disaster related mortality surveillance forms](#) (DRMSFs).

Additionally, DSHS reviewed and verified February 9 – August 30, 2021 death certificate data to identify deaths related to the winter storm. DSHS searched for death certificate narratives that noted “February 2021 winter storm” or different versions of this phrase. DSHS also searched death certificates for similar phrases (e.g., winter storm Uri, etc.), including combinations of exact, abbreviated or misspelled terms (e.g., winter storm of Feb 2021). DSHS also searched death certificates for language suggestive of winter storm involvement (icy, freezing weather, winter storm, etc.).

DSHS also investigated death certificates having no wording suggestive of winter storm involvement but with causes of death anticipated during a winter storm such as hypothermia, fire-related injuries, or carbon monoxide poisoning. DSHS similarly investigated situations where the media or internal response partners reported deaths as winter storm related. In these two scenarios, DSHS identified the death certificate, and verified with medical certifiers whether the death was winter storm related. DSHS has only categorized deaths as winter storm related when there is verification by a medical certifier, including death scene investigation records.

As of October 27, 2021, DSHS has confirmed 246 deaths as winter storm-related using a combination of death certificate records, disaster related mortality surveillance forms, and information from death scene investigation records. These deaths can include a variety of circumstances. Centers for Disease Control and Prevention definitions for [direct, indirect and possible related disaster deaths](#) were used for case ascertainment.

The 246 confirmed winter storm-related deaths occurred across 77 Texas counties. Among the 244 (99.2%) decedents with available state residency information, 229 (93.9%) were Texas residents, and 15 (6.1%) resided in other states or countries.

Decedents ranged in age from less than one to 102 years with the majority of deaths occurring among males, among non-Hispanic white decedents, and among those aged 60 years and older [Table 2]. Dates of death were known for 245 (99.6%) decedents whose winter storm-related deaths spanned from February 11, 2021 to June 4, 2021 [Figure 1]. Deaths with dates in March, April and June are either deaths from winter storm-related injuries sustained during the storm but not leading to death until later, decedents who died during the winter storm but whose bodies were found later, or deaths during the recovery period involving repair of damaged homes.

By circumstance and cause of death, 161 (65.4%) winter storm-related deaths were extreme cold exposure-related injuries comprising 158 (64.2%) deaths from hypothermia and three (1.2%) from frostbite. Among decedents succumbing to

hypothermia, 107 (67.7%) were aged 60 years or older, 22 (13.9%) had a history of alcohol abuse or were actively drinking during the winter storm, eight (5.0%) had illicit drug use cause or contribute to death, and three (1.9%) had both alcohol and drug abuse. Other behavior or risk factors associated with increased risk of hypothermia among decedents included engaging in outdoor repair activity during the storm, not wearing appropriate clothing or enough layering, experiencing homelessness or returning to homelessness during the storm, and refusing to evacuate to heated sheltering or warming centers.

There were 25 (10.2%) winter storm deaths from exacerbation of pre-existing illness. These were related to disruptions to dialysis or oxygen treatment, the freezing of medical devices and medication, disruption of hospice care, engaging in outdoor repair activity, or loss of power while on electricity dependent equipment required to sustain life. Hazardous road conditions during the storm gave rise to many motor vehicle accidents resulting in 22 (8.9%) fatalities. The loss of electricity and resulting loss of regular heating sources during the winter storm also led many to use alternate sources of heat. Nineteen (7.7%) fatal carbon monoxide poisonings resulted from inappropriate use of generators, grills, heaters, vehicles running in enclosed spaces, and ice obstructing vents in gas powered heating equipment. Ten (4.1%) winter storm-related deaths were from fire-related injuries sustained during house fires or while space heaters were in close proximity to ignitable materials. The remaining nine (3.7%) winter storm-related deaths were from trauma or fractures sustained during falls and slips on ice, a fall-through ice resulting in drowning, and injury complications that developed after a fall, such as pulmonary embolism from deep vein thrombosis or hemorrhagic stroke from head trauma.

Table 1. Number of winter storm-related deaths by county where death occurred, Texas, February 11 – June 4, 2021, N=246.

County of Death	No. Reported Deaths	County of Death	No. Reported Deaths	County of Death	No. Reported Deaths
Angelina	1	Hale	1	Nacogdoches	4
Aransas	1	Harris	43	Parker	1
Armstrong	1	Harrison	1	Pecos	1
Bandera	1	Henderson	3	Polk	2
Bastrop	1	Hill	2	Randall	1
Bexar	16	Hockley	2	Rusk	1
Brazoria	1	Hopkins	1	San Jacinto	1
Brazos	1	Howard	1	San Saba	1
Brooks	1	Hunt	1	Schleicher	1
Burnet	2	Jasper	1	Sutton	1
Cass	1	Jefferson	1	Tarrant	11
Cherokee	1	Kaufman	1	Taylor	7
Clay	1	Kendall	1	Terry	1
Coleman	2	Kerr	1	Travis	28
Collin	2	Kimble	1	Trinity	1
Culberson	4	Lamar	1	Tyler	1
Dallas	22	Lavaca	2	Uvalde	1
Ector	1	Lee	1	Val Verde	1
Ellis	2	Leon	2	Webb	3
Falls	1	Limestone	1	Wharton	1
Fayette	1	Llano	1	Wichita	3
Fort Bend	7	Lubbock	1	Williamson	6
Freestone	2	Maverick	2	Wise	1
Frio	1	McLennan	3	Wood	2
Galveston	10	Milam	1	Zapata	1
Grayson	1	Montgomery	3		

Map 1. Number of winter storm-related deaths by county where death occurred, Texas, February 11 - June 4, 2021, N=246.

Table 2. Select Demographics of Winter Storm-Related Deaths, N=246

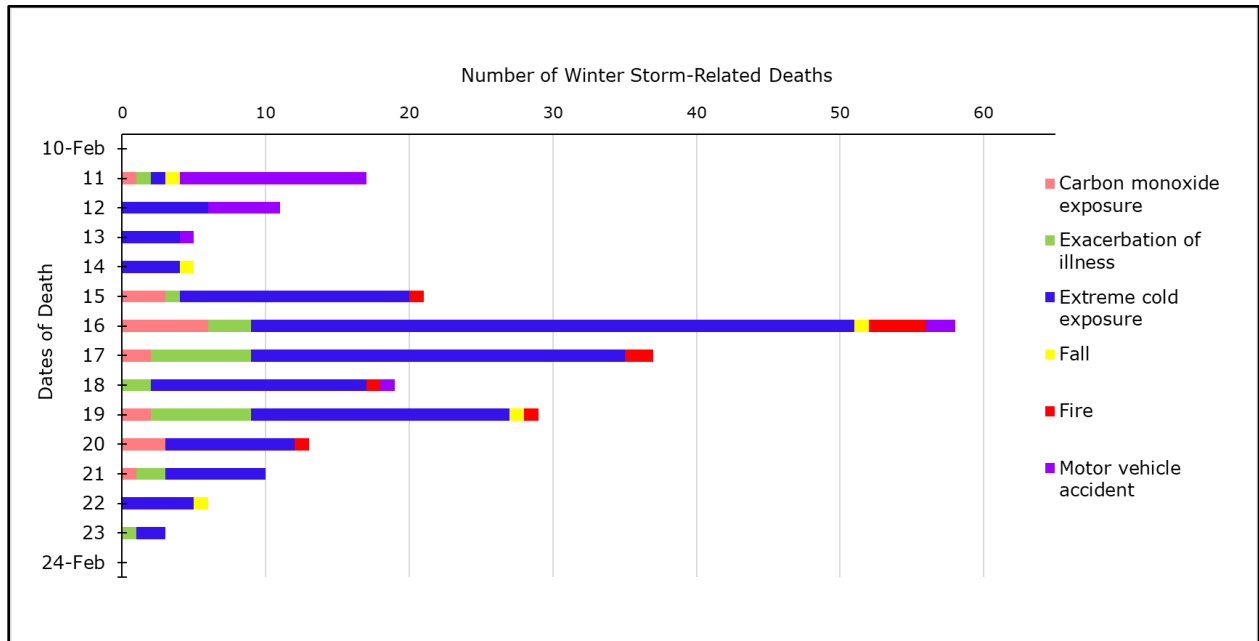
Characteristic	n (%)*
Sex	
Male	161 (65.4)
Female	85 (34.6)
Age (years)	
0-19	8 (3.3)
20 - 39	30 (12.2)
40 - 59	60 (24.4)
60 - 79	100 (40.7)
80 - 99	43 (17.5)
100+	4 (1.6)
Missing	1 (0.4)
Race/Ethnicity	
White, Non-Hispanic (NH)	132 (53.7)
Hispanic	53 (21.5)
Black, NH	48 (19.5)
Asian, NH	9 (3.7)
American Indian, NH	1 (0.4)
Other, NH	2 (0.8)
Missing	1 (0.4)

*May not equal 100% due to rounding

Table 3. Number of deaths and their relationship to the February 2021 winter storm by circumstance and cause of death, N=246

Circumstance and cause of death	Direct	Indirect	Possible	n (%)
<i>Extreme cold exposure</i>	148	11	2	161 (65.4)
Hypothermia	146	10	2	158 (64.2)
Frostbite	2	1	-	3 (1.2)
<i>Exacerbation of pre-existing illness</i>	-	25	-	25 (10.2)
Respiratory illness	-	8	-	8 (3.3)
Renal failure/illness	-	6	-	6 (2.4)
Cardiovascular illness	-	5	-	5 (2.0)
Other	-	6	-	6 (2.4)
<i>Motor vehicle accident</i>	-	22	-	22 (8.9)
Blunt/other trauma	-	20	-	20 (8.1)
Drowning	-	2	-	2 (0.8)
<i>Carbon monoxide exposure</i>	-	18	1	19 (7.7)
Carbon monoxide poisoning	-	18	1	19 (7.7)
<i>Fire</i>	-	7	3	10 (4.1)
Burns or soot/smoke inhalation	-	7	3	10 (4.1)
<i>Fall</i>	-	9	-	9 (3.7)
Blunt/other trauma	-	5	-	5 (2.0)
Post-trauma condition	-	3	-	3 (1.2)
Drowning	-	1	-	1 (0.4)
<i>Total</i>	148	92	6	246 (100)

Figure 1. Number and type of winter storm-related deaths by date of death, February 11 – June 4, 2021, n=234*.



*The date of death for one decedent was unknown when surveillance activities ended and is not included in this graph. Eleven other deaths occurring from February 27 through June 4, 2021 were not included by date to protect the identity of individuals.