
U.S. Fire Administration
Working for a fire-safe America

# Firefighter Fatalities in the United States in 2021

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FEMA

# Firefighter Fatalities in the United States in 2021

Prepared by

U.S. Department of Homeland Security
Federal Emergency Management Agency
U.S. Fire Administration
National Fire Data Center
and
The National Fallen Firefighters Foundation
firehero.org

In memory of all firefighters who answered their last call in 2021.

To their families and friends.

For their service and sacrifice.

## Mission Statement

We support and strengthen fire and emergency medical services and stakeholders to prepare for, prevent, mitigate and respond to all hazards.

U.S. Fire Administration

**Working for a fire-safe America**


FALLEN FIREFIGHTERS
MEMORIAL
NATIONAL FIRE SERVICE TRAINING CENTER
EMMITSBURG, MARYLAND
Ronald Reagan
PRESIDENT
UNITED STATES OF AMERICA

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# Acknowledgments

This study of firefighter fatalities would not have been possible without the cooperation and assistance of many members of the fire service across the United States. Members of individual fire departments; chief fire officers; wildland fire service organizations, including the U.S. Forest Service (USFS), the National Park Service (NPS), the Bureau of Land Management (BLM), the Bureau of Indian Affairs (BIA) and the U.S. Fish and Wildlife Service (FWS); the U.S. Department of Justice (DOJ); the National Fire Protection Association (NFPA); and many others contributed important information to this report.

The National Fallen Firefighter Foundation (NFFF) was responsible for compilation of a large portion of the information used in this report. Their cooperation and work toward reducing firefighter deaths is gratefully acknowledged.

The ultimate objective of this effort is to reduce the number of firefighter deaths through an increased awareness and understanding of their causes and how they can be prevented. Firefighting, rescue and other types of emergency operations are essential activities in an inherently dangerous profession where unfortunate tragedies occur, often involving a responder. Firefighters accept a level of risk every time they respond to an emergency incident. These risks, however, can be greatly reduced through community risk reduction, firefighter training, sufficient emergency resource deployment, use of good strategy and tactics during on-scene operations, and overall firefighter health and safety.

# Background

Since 1976, the U.S. Fire Administration (USFA) has tracked the number of firefighter fatalities and conducted an annual analysis of the information related to these fatalities. Through the collection and analysis of information on firefighter deaths, the USFA can focus on specific problems and direct efforts toward finding solutions to reduce the number of firefighter fatalities in the future. This information is also used to measure the effectiveness of current programs directed toward firefighter

health and safety. Several programs have been developed by the USFA in response to this annual report. For example, the USFA has sponsored research to create safer operational environments for firefighters by increasing awareness about emergency vehicle operations safety, the health and safety of the female emergency responder, fire service risk management, fire station safety, and roadway incident safety.

In addition to performing this analysis, the USFA, working in partnership with the NFFF, develops a list of all on-duty firefighter fatalities and associated documentation each year. If certain criteria are met, the fallen firefighter's next of kin, as well as members of the individual's fire department, are invited by the NFFF to the annual National Fallen Firefighters Memorial Service. The service is held at the National Emergency Training Center (NETC) in Emmitsburg, Maryland, each year. The 41st Annual National Fallen Firefighters Memorial Weekend was held Oct. 8-9, 2022, and families who lost loved ones in 2021 were invited to attend the ceremony. Additional information can be found at https://www.firehero.org/events/memorial-weekend/ or by calling the NFFF at 301-447-1365.

Other resources and information regarding firefighter fatalities, including current fatality notices, the National Fallen Firefighters Memorial database and links to the Public Safety Officer Benefits (PSOB) program, can be found at https://apps.usfa.fema.gov/firefighter-fatalities/.


# Introduction

This report continues a series of annual studies initiated in 1986 by the USFA of on-duty firefighter fatalities in the U.S. The specific objective of this study is to identify all on-duty firefighter fatalities that occurred in the U.S. and its territories in 2021 and to analyze the circumstances surrounding each occurrence. The study is intended to help identify approaches that may reduce the number of firefighter deaths in future years.

## Who is a firefighter?

For the purpose of this study, the term "firefighter" covers all members of organized fire departments with assigned fire suppression duties in all 50 states; the District of Columbia; and the territories of Puerto Rico, the Virgin Islands, American Samoa, the commonwealth of the Northern Mariana Islands and Guam. It includes career and volunteer firefighters; full-time public safety officers acting as firefighters; fire police; state, Native American tribal authorities and federal government fire service personnel; and privately employed firefighters, including employees of contract fire departments and trained members of industrial fire brigades, including full time or part time. It also includes contract personnel working as firefighters or assigned to work in direct support of fire service organizations (e.g., air-tanker crews).

Under this definition, the study includes not only local and municipal firefighters, but also seasonal and full-time employees of the USFS, the NPS, the BLM, the BIA, the FWS, and other federal agencies, as well as state wildland agencies. The definition also includes prison inmates serving on firefighting crews; firefighters employed by other governmental agencies, such as the U.S. Department of Energy; military personnel performing assigned fire suppression activities; and civilian firefighters working at military installations.

## What constitutes an on-duty fatality?

An on-duty[1] fatality includes any injury or illness that was sustained while on duty and proves fatal. The term "on duty" refers to being involved in operations at the scene of an emergency, whether it is a fire or nonfire incident; responding to or returning from an incident; performing other officially assigned duties, such as training, maintenance, public education, inspection, investigations, court testimony or fundraising; and being on call, under orders or on standby duty (except at the individual's home or place of business). An individual who experiences a heart attack or other fatal injury at home while they prepare to respond to an emergency is considered on duty when the response begins. A firefighter who becomes ill while performing fire department duties and suffers a heart attack shortly after arriving home (or at another location) may be considered on duty since the inception of the heart attack occurred while the firefighter was on duty.

On Dec. 15, 2003, the president of the United States signed the Hometown Heroes Survivors Benefits Act of 2003 into law. After being signed by the president, the act became Public Law 108-182. This law presumes that a heart attack or stroke is in the line of duty if the firefighter was engaged in nonroutine, stressful or strenuous physical activity while on duty, and the firefighter became ill within 24 hours after engaging in such activity. The full text of the law is available at https://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ182.108.pdf.

The inclusion criteria for this study have been affected by this change in the law. Before Dec. 15, 2003, firefighters who became ill as the result of a heart attack or stroke after going off duty needed to register a complaint of not feeling well while still on duty to be included in this study. For firefighter fatalities after Dec. 15, 2003, firefighters are included in this report if they became ill as the result of a heart attack or stroke within 24 hours of a training activity or emergency response. Firefighters who became ill after going off duty, where the activities while on duty were limited to tasks that did not involve physical or mental stress, are not included.

A fatality may be caused directly by an accidental or intentional injury in either emergency or nonemergency circumstances, or it may be attributed to an occupationally related fatal illness. A common example of a fatal illness incurred on duty is a heart attack. Fatalities attributed to occupational illnesses also include a communicable disease, such as COVID-19, contracted while on duty that proved fatal when the disease could be attributed to a documented occupational exposure.

Firefighter fatalities are included in this report even when death is considerably delayed after the original incident. When the incident and the death occur in different years, the analysis counts the fatality as having occurred in the year in which the death took place.[2]

[1]As of March 2023, the USFA is collaborating with the NFFF, NFPA, and the International Association of Fire Fighters (IAFF) to consistently define line-of-duty and on-duty deaths. Any changes to historic tracking by each organization will be announced when complete.

[2]The USFA changed the analysis methodology beginning with its "Firefighter Fatalities in the United States in 2020" annual report. For the 2020 report and all subsequent annual firefighter fatality reports, firefighter fatalities are included in the total count and analyzed based on the date of death as opposed to previous annual reports where firefighter fatalities were included in the total count and analyzed based on the date of occurrence of the injury (that later resulted in death). All prior years in each graphic in this "Firefighter Fatalities in the United States in 2021" report, however, have been recalculated to reflect this change in methodology.

At present, there is no established mechanism for USFA to identify fatalities that result from illnesses, such as cancer, that develop over long periods of time and may be related to occupational exposure to hazardous materials or toxic products of combustion. Current state and federal laws linking on-the-job exposure to cancer in firefighters may better inform USFA tracking in the future.

## Sources of initial notification

As an integral part of its ongoing program to collect and analyze fire data, the USFA solicits information on firefighter fatalities directly from the fire service and from a wide range of other sources. These sources include the PSOB program administered by the DOJ, the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration, the U.S. Department of Defense, the National Interagency Fire Center, and other federal agencies.

The USFA receives notification of some deaths directly from fire departments, and from such fire service organizations as the International Association of Fire Chiefs, the IAFF, NFPA, the National Volunteer Fire Council, state fire marshals, state fire training organizations, other state and local organizations, fire service internet sites, news services, and fire service publications.

## Procedure for verifying and including a fatality in USFA's annual reports

In most cases, after notification of a fatal incident, the USFA initially contacts local authorities by telephone to verify that the fatality occurred and collect information on the incident, its location, the jurisdiction, and the fire department or agency involved. Further information about the deceased firefighter and the incident may be collected from the chief or designee of the fire department over the phone or by other forms of data collection. After basic information is collected, a notice of the firefighter fatality is posted at the National Fallen Firefighters Memorial site in Emmitsburg, Maryland, as well as on the USFA website. A notice of the fatality is also transmitted by email to a large list of fire service organizations and fire service members, as well as to approximately 40,000 GovDelivery subscribers.

Subsequently, more detailed information is routinely requested from fire departments that have experienced a fatality including National Fire Incident Reporting System (NFIRS)-1 (incident) and NFIRS-5 (fire service casualty) reports, the fire department's own incident and internal investigation reports, copies of death certificates and autopsy results, special investigative reports, law enforcement reports, photographs and diagrams, and newspaper or media accounts of the incident. Information on the incident may also be gathered from NFPA or NIOSH reports.

After obtaining this detailed information, a final determination is made as to whether the death qualifies as an on-duty firefighter fatality according to the previously described criteria. With the exception of firefighter deaths after Dec. 15, 2003, and the inclusion of COVID-19, the same criteria were used for this study as in previous annual studies. If needed, further detailed information may be requested by the USFA, either through follow-up with the fire department directly, from state vital records offices or other agencies. The final determination as to whether a fatality qualifies as an on-duty death for inclusion in its annual statistical analyses is made by the USFA.

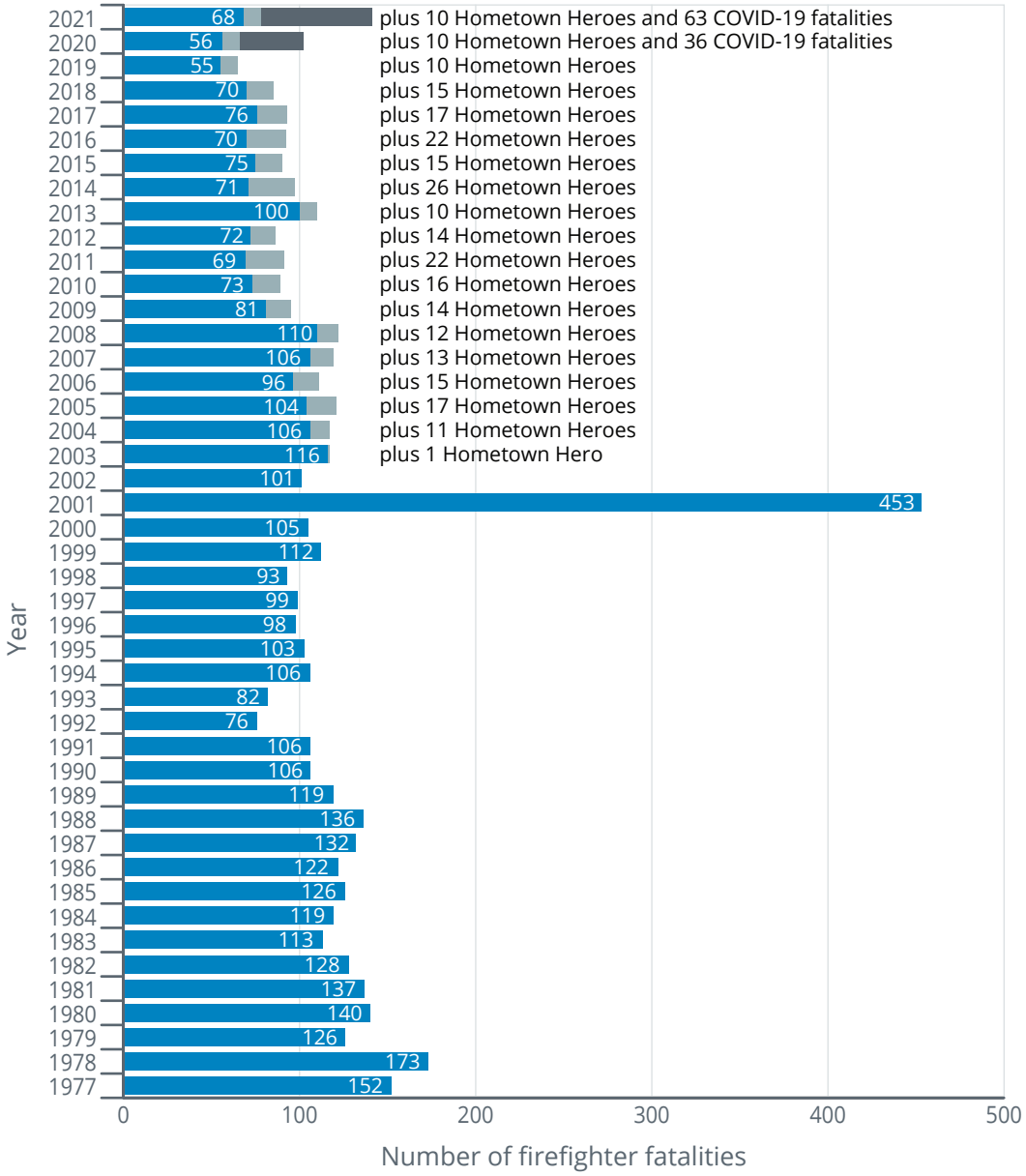
# 2021 Findings

In 2021, 141 firefighters died from injuries sustained while on duty. This is 39 more than the 2020 total of 102 firefighter fatalities, a 38% increase over the previous year. The 2021 total includes 10 firefighters who died under circumstances that were part of inclusion criteria changes resulting from the Hometown Heroes Survivors Benefits Act. It also includes 63 firefighters who died from complications of COVID-19, an increase of 27 deaths from the 2020 total of 36. It is important to note that COVID-19-related on-duty firefighter fatalities was the leading nature of fatal injury, surpassing heart attack-related fatalities by 30. When not including these fatalities, there were 68 firefighter fatalities in 2021 that were non-Hometown Hero or did not occur as a result of complications relating to COVID-19 (Figure 1).

An analysis of multiyear firefighter fatality numbers and trends needs to acknowledge the changes from the December 2003 Hometown Heroes Survivors Benefits Act as well as the inclusion of fatalities that occurred due to complications of COVID-19. As a result, some figures and tables in this report may not include the Hometown Heroes and COVID-19 fatalities in the total or may separate them. This does not, however, diminish the sacrifices made by any firefighter who died while on duty, or the sacrifices made by their family and peers.

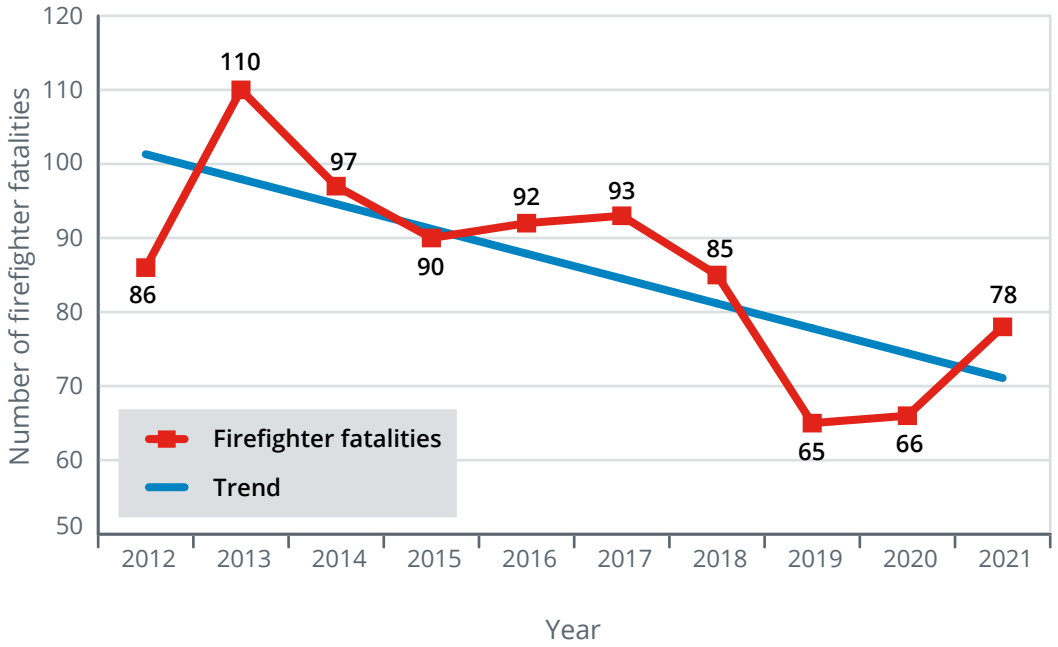
Figure 1 below shows the number of on-duty firefighter fatalities from 1977 through 2021.

**Figure 1. On-duty firefighter fatalities (1977-2021)**



From 2012 to 2021, there was a 30% decrease in on-duty firefighter fatalities (Figure 2).[3]

**Figure 2. On-duty firefighter fatalities (2012-2021)**

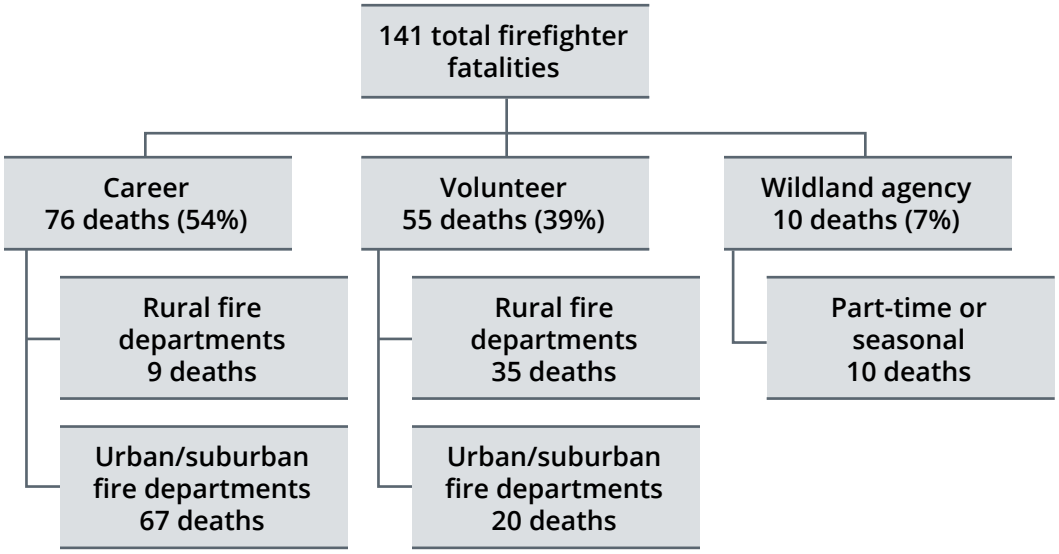



Note: Firefighter fatality counts include firefighters who died under circumstances that were part of inclusion criteria changes resulting from the Hometown Heroes Survivors Benefits Act but do not include COVID-19 fatalities for purposes of a trend analysis.

## Career, volunteer and wildland agency fatalities

In 2021, firefighter fatalities included 76 career firefighters (54%), 55 volunteer firefighters (39%), and 10 part-time or full-time members of wildland or wildland contract fire agencies (7%) (Figure 3).

**Figure 3. Career, volunteer and wildland agency firefighter fatalities (2021)**




[3]This trend analysis does not include 36 firefighter fatalities in 2020 and 63 firefighter fatalities in 2021 that occurred due to complications of COVID-19.

## Gender

The gender of the firefighters who died while on duty in 2021 consisted of 5 females and 136 males.

## Multiple firefighter fatality incidents

The 141 deaths in 2021 resulted from a total of 139 fatal incidents, including 2 multiple firefighter fatality incidents taking the lives of 2 firefighters each (Table 1).

**Table 1. Multiple firefighter fatality incidents (2012-2021)**

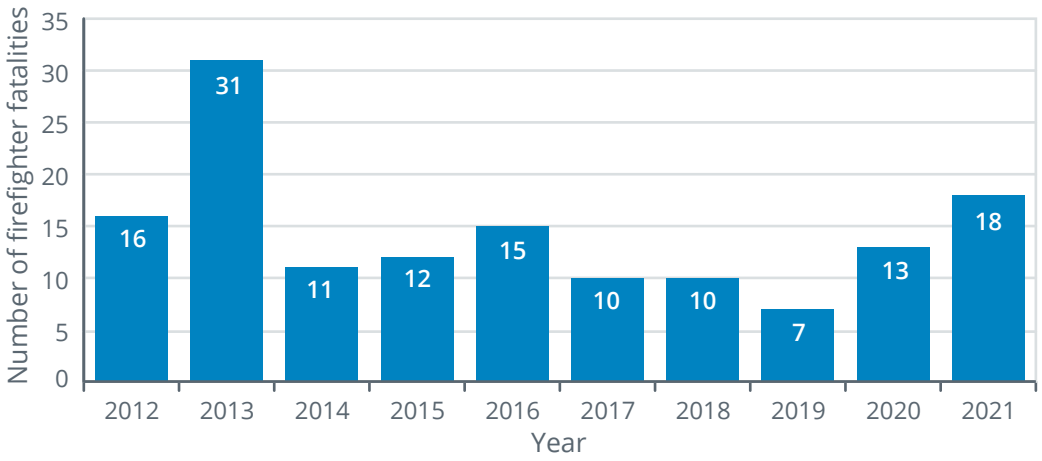
| Year | Number of multiple firefighter fatality incidents | Number of firefighter fatalities resulting from multiple firefighter fatality incidents |
|---|---|---|
| 2021 | 2 | 4 |
| 2020 | 3 | 6 |
| 2019 | 0 | 0 |
| 2018 | 2 | 4 |
| 2017 | 1 | 3* |
| 2016 | 3 | 7 |
| 2015 | 3 | 7 |
| 2014 | 2 | 4 |
| 2013 | 4 | 34* |
| 2012 | 4 | 10 |
| 10-year average | 2 | 8 |

*In 2013, there were 4 multiple firefighter fatality incidents that resulted in the deaths of 35 firefighters. Of these firefighters, 34 died in 2013 and 1 died in 2017.

## Wildland firefighting fatalities

In 2021, 18 firefighters (13%) were killed during activities involving brush, grass or wildland firefighting. This total includes part-time and seasonal wildland firefighters, full-time wildland firefighters, and municipal or volunteer firefighters whose deaths are related to a wildland fire (Figure 4).

**Figure 4. Firefighter fatalities related to wildland firefighting (2012-2021)**




In 2021, there was 1 incident related to wildland firefighting that resulted in 2 firefighter fatalities when a fixed-wing aircraft lost its left wing, entered a steep dive and impacted the terrain (Tables 2 and 3).

**Table 2. Firefighter fatalities associated with wildland firefighting (2012-2021)**

| Year | Number of firefighter fatalities related to wildland firefighting | Number of fatal incidents related to wildland firefighting | Number of firefighters killed in multiple-fatality incidents related to wildland firefighting |
|---|---|---|---|
| 2021 | 18 | 17 | 2 |
| 2020 | 13 | 12 | 2 |
| 2019 | 7 | 7 | 0 |
| 2018 | 10 | 10 | 0 |
| 2017 | 10 | 10 | 0 |
| 2016 | 15 | 13 | 4 |
| 2015 | 12 | 9 | 5 |
| 2014 | 11 | 11 | 0 |
| 2013 | 31 | 13 | 19 |
| 2012 | 16 | 12 | 6 |
| 10-year average | 14 | 11 | 4 |

**Table 3. Aircraft firefighter fatalities associated with wildland firefighting (2012-2021)**

| Year | Number of aircraft firefighter fatalities related to wildland firefighting | Number of aircraft fatal incidents related to wildland firefighting |
|---|---|---|
| 2021 | 2 | 1 |
| 2020 | 6 | 5 |
| 2019 | 1 | 1 |
| 2018 | 0 | 0 |
| 2017 | 0 | 0 |
| 2016 | 0 | 0 |
| 2015 | 2 | 1 |
| 2014 | 2 | 2 |
| 2013 | 0 | 0 |
| 2012 | 2 | 1 |
| 10-year average | 2 | 1 |

# Type of Duty

Activities related to emergency incidents resulted in the deaths of 92 firefighters (65%) in 2021 (Figure 5). This includes all firefighters who died responding to an emergency or at an emergency scene, returning from an emergency incident, and during other emergency-related activities. Nonemergency activities accounted for 49 firefighter fatalities (35%). Nonemergency duties include training, administrative activities and performing other functions that are not related to an emergency incident.

A multiyear historical perspective relating to the percentage of firefighter deaths that occurred during emergency duty is presented in Table 4.

**Figure 5. Firefighter fatalities by type of duty (2021)**

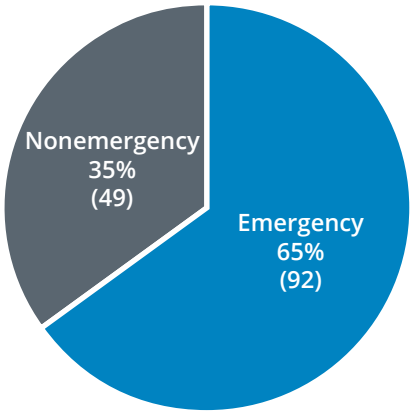
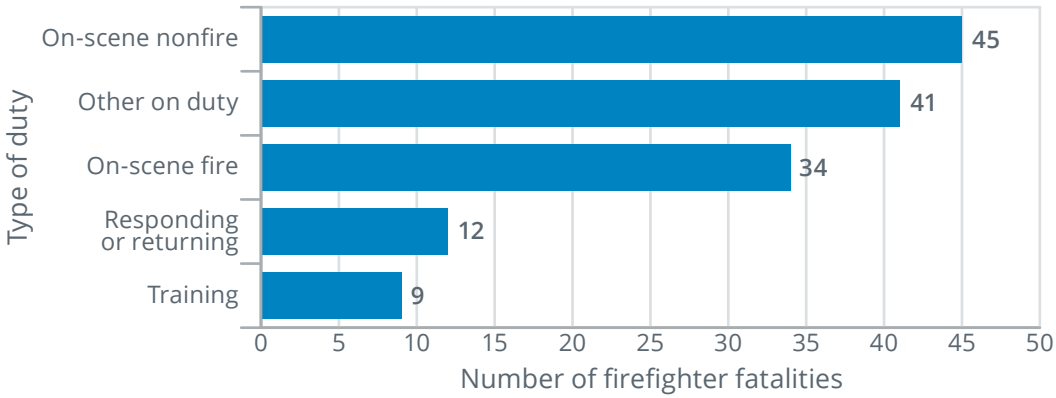



**Table 4. Emergency duty firefighter fatalities (2012-2021)**

| Year | Percentage of total firefighter fatalities |
|---|---|
| 2021 | 65.2 |
| 2020 | 70.6 |
| 2019 | 61.5 |
| 2018 | 52.9 |
| 2017 | 48.4 |
| 2016 | 41.3 |
| 2015 | 48.9 |
| 2014 | 45.4 |
| 2013 | 70.0 |
| 2012 | 53.5 |
| 10-year average | 56.5 |

The number of deaths by type of duty being performed for 2021 is shown in Figure 6.

**Figure 6. Firefighter fatalities by type of duty (2021)**




## Fireground operations

34 firefighters experienced fatal injuries during fireground operations (on-scene fire) in 2021. Of these fatalities, 17 were at the scene of a structure fire, 13 were at the scene of a wildland or outside fire, and 4 were at the scene of a vehicle fire. The average age of the firefighters killed during fireground operations was 49 years old, with the youngest being 21 years old and the oldest being 86 years old. Of those killed during fireground operations, 17 were volunteer, 9 were career and 8 were wildland firefighters. The nature of fatal injury for 9 of the firefighter deaths that occurred during fireground operations was heart attack (26%). The nature of fatal injury for the remaining 25 deaths were trauma (8), COVID-19 (5), asphyxiation (5), burns (3), crushed (2), cerebrovascular accident (CVA) (1) and other (1).

### Type of fireground activity during fireground operations

Table 5 shows the types of fireground activities in which firefighters were engaged when they sustained their fatal injuries or illnesses during fireground operations. This total includes all firefighting duties on the fireground, such as wildland firefighting and structural firefighting. In 2021, the most common type of on-scene fire activity was advancing hoselines.

**Table 5. Type of fireground activity (2021)**

| Type of fireground activity | Number of firefighter fatalities |
|---|---|
| Advance hoselines | 11 |
| Other | 5 |
| Incident command | 4 |
| Water supply | 3 |
| Support | 3 |
| Search and rescue | 3 |
| Scene safety | 2 |
| Pump operations | 2 |
| Responding | 1 |

## Fixed property use for structural firefighting fatalities

Of the fatalities that occurred during fireground operations in 2021, 17 were firefighters who became ill or injured while on the scene of a structure fire. Of these fatalities, 14 (82%) occurred while on the scene of a residential structure fire. Table 6 shows the distribution of these deaths by fixed property use.

**Table 6. Structural firefighting fatalities by fixed property use (2021)**

| Type of structure | Number of firefighter fatalities |
|---|---|
| Residential | 14 |
| Commercial | 3 |

## Responding/returning

In 2021, as shown in Table 7, 12 firefighters died or experienced an onset of symptoms while responding to or returning from incidents. Specifically, 9 were responding to, and 3 were returning from, an incident.

The average age of the 12 firefighters was 54 years old. The youngest was 21 years old, and the oldest was 89 years old.

**Table 7. Firefighter fatalities while responding to or returning from an incident (2012-2021)**

| Year | Number of firefighter fatalities that occurred while responding to or returning from an incident |
|---|---|
| 2021 | 12 |
| 2020 | 14 |
| 2019 | 8 |
| 2018 | 11 |
| 2017 | 12 |
| 2016 | 13 |
| 2015 | 8 |
| 2014 | 14 |
| 2013 | 15 |
| 2012 | 17 |
| 10-year average | 12 |

## Training

In 2021, 9 firefighters died while engaged in training activities (Table 8). Of these firefighters, 5 died from heart attacks, 2 from "other" (1 from an anoxic brain injury and 1 from complications of exertional rhabdomyolysis — the result of muscles breaking down and releasing proteins into the bloodstream which is associated with strenuous exercise or normal exercise under extreme circumstances), 1 from heat exhaustion, and 1 from trauma.

Of the 9 firefighters who died while engaged in training activities, 4 firefighters died while performing fire department-mandated physical fitness training, 1 died during a crawl through of a self-contained breathing apparatus (SCBA) prop, 1 died during a fire department drill, 1 died while attending an apparatus drill, 1 died while involved in an equipment drill, and 1 died during a live fire training exercise.

The average age of the 9 firefighters was 41 years old. 2 firefighters had the youngest age of 21 years old, and the oldest firefighter was 80 years old.

**Table 8. Firefighter fatalities while engaged in training (2012-2021)**

| Year | Number of firefighter fatalities that occurred during training |
|---|---|
| 2021 | 9 |
| 2020 | 7 |
| 2019 | 5 |
| 2018 | 9 |
| 2017 | 12 |
| 2016 | 9 |
| 2015 | 7 |
| 2014 | 10 |
| 2013 | 7 |
| 2012 | 8 |
| 10-year average | 8 |

## Other on duty

"Other on duty" refers to firefighters engaged in activities related to nonemergency situations, such as in-station duties, arson investigations and attending fire department-mandated meetings.

In 2021, 41 firefighters died under these circumstances.

- 26 firefighters died from exposure.
- 10 firefighters died from stress/overexertion.
- 1 firefighter died while performing in-station duties and was hit when the apparatus' tire exploded.
- 1 firefighter was shot and killed by an off-duty co-worker.
- 1 firefighter died in a utility terrain vehicle (UTV) crash while participating in a prescribed burn.
- 1 firefighter committed suicide.
- 1 firefighter died from polydrug intoxication.

The average age of the 41 firefighters was 49 years old. The youngest was 20 years old, and the oldest was 70 years old.

## Nonfire emergencies

In 2021, 45 firefighters were killed during emergency duties not related to fire. These response calls included 34 emergency medical services (EMS) calls and 11 motor vehicle accidents.

Of the 45 firefighters who died during nonfire emergencies, 32 died from COVID-19, 5 from heart attacks, 5 from trauma, 1 from a CVA, 1 from electrocution, and 1 from an aortic dissection. The average age of these firefighters was 51 years old. The youngest was 31 years old, and the oldest was 73 years old.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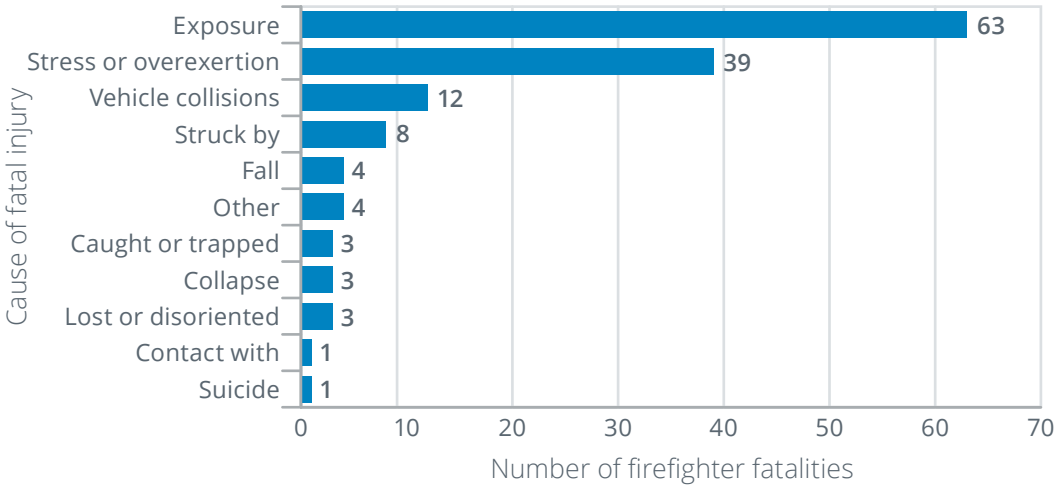
# Cause of Fatal Injury

The term "cause of fatal injury" refers to the action, lack of action or circumstances that directly resulted in the fatal injury. The term "nature of fatal injury" refers to the medical cause of the fatal injury or illness, which is often referred to as the physiological cause of death. A fatal injury is usually the result of a chain of events, the first of which is recorded as the cause.

Figure 7 shows the distribution of deaths by cause of fatal injury or illness in 2021. In 2021, the leading cause of fatal injury was exposure followed by stress/overexertion.

**Figure 7. Firefighter fatalities by cause of fatal injury (2021)**




## Exposure

Since 1986, when the USFA began publishing this annual report, 2021 is the first year when stress/overexertion was not the leading cause of fatal injury for firefighters. Instead, exposure was the leading cause of fatal firefighter injuries in 2021.

In early 2020, the COVID-19 pandemic spread to the United States. According to the Centers for Disease Control and Prevention, the pandemic has killed over 1 million individuals in the United States.[4] This pandemic has spared no one, including first responders. In 2021, 63 firefighters lost their lives due to exposure. All 63 firefighters died from complications of COVID-19.[5] Table 9 shows the cities and states where these firefighters were stationed.

[4]COVID Data Tracker Weekly Review. https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html

[5]The USFA includes in its on-duty firefighter fatality count those firefighters that contracted COVID-19 while on duty and died due to complications of the disease. All on-duty COVID-19 deaths have been verified with the fire department of which the firefighter was rostered.

**Table 9. COVID-19 on-duty firefighter fatalities (2021)**

| City/state | Number of fatalities |
|---|---|
| Columbus, Ohio | 2 |
| Oak City, North Carolina | 2 |
| Alice, Texas | 1 |
| Atlantic City, New Jersey | 1 |
| Bridgeport, California | 1 |
| Brooksville, Florida | 1 |
| Buckeye, Arizona | 1 |
| Burgaw, North Carolina | 1 |
| Carrollton, Georgia | 1 |
| Cascade, Montana | 1 |
| Cheyenne, Wyoming | 1 |
| Chicago, Illinois | 1 |
| Colerain, North Carolina | 1 |
| Cottonwood, Arizona | 1 |
| Cumberland, Maryland | 1 |
| Dallas, Texas | 1 |
| Elwood, Indiana | 1 |
| Ellenwood, Georgia | 1 |
| Fort Walton Beach, Florida | 1 |
| Garden Valley, Idaho | 1 |
| Grand Lake, Colorado | 1 |
| Gulfport, Mississippi | 1 |
| Hardeeville, South Carolina | 1 |
| Hohenwald, Tennessee | 1 |
| Huntersville, North Carolina | 1 |
| Indian Head, Maryland | 1 |
| Indianapolis, Indiana | 1 |
| Jacksonville, Florida | 1 |
| Knoxville, Tennessee | 1 |
| Kokomo, Indiana | 1 |
| Lake City, Florida | 1 |
| Laredo, Texas | 1 |
| Las Cruces, New Mexico | 1 |
| Los Angeles, California | 1 |
| Memphis, Tennessee | 1 |
| Morley, Michigan | 1 |
| Nashville, Tennessee | 1 |
| Newark, Ohio | 1 |
| North Little Rock, Arkansas | 1 |

**Table 9. COVID-19 on-duty firefighter fatalities (2021) (continued)**

| City/state | Number of fatalities |
|---|---|
| Pardeeville, Wisconsin | 1 |
| Philadelphia, Pennsylvania | 1 |
| Phoenix, Arizona | 1 |
| Pine Bluff, Arizona | 1 |
| Rancho Santa Fe, California | 1 |
| Reading, Pennsylvania | 1 |
| Rocky Top, Tennessee | 1 |
| Salt Lake City, Utah | 1 |
| San Benito, Texas | 1 |
| Sardis, Mississippi | 1 |
| Seguin, Texas | 1 |
| Shepherdsville, Kentucky | 1 |
| Shreveport, Louisiana | 1 |
| Sonora, California | 1 |
| South Point, Ohio | 1 |
| St. Louis, Missouri | 1 |
| Susanville, California | 1 |
| Tampa, Florida | 1 |
| Upsala, Minnesota | 1 |
| Vidor, Texas | 1 |
| Weirton, West Virginia | 1 |
| Winder, Georgia | 1 |
| | **Total: 63** |

## Stress or overexertion

Firefighting is extremely strenuous work, and it can be one of the more physically demanding of human activities. Stress or overexertion is a general category that includes all firefighter deaths that are cardiac or cerebrovascular in nature, such as heart attacks and strokes, as well as other events, such as extreme climatic thermal exposure. Classification of a firefighter fatality in this "cause of fatal injury" category does not necessarily indicate that a firefighter was in poor physical condition.

In 2021, 39 firefighters died due to stress or overexertion.

- 33 firefighters died due to heart attacks.
- 3 firefighters died due to CVAs.
- 2 firefighters died from "other" causes (1 from a pulmonary embolism; 1 from an aortic aneurysm).
- 1 firefighter died from heat exhaustion.

In addition, of the firefighters that died due to stress or overexertion, 10 (26%) were Hometown Heroes.

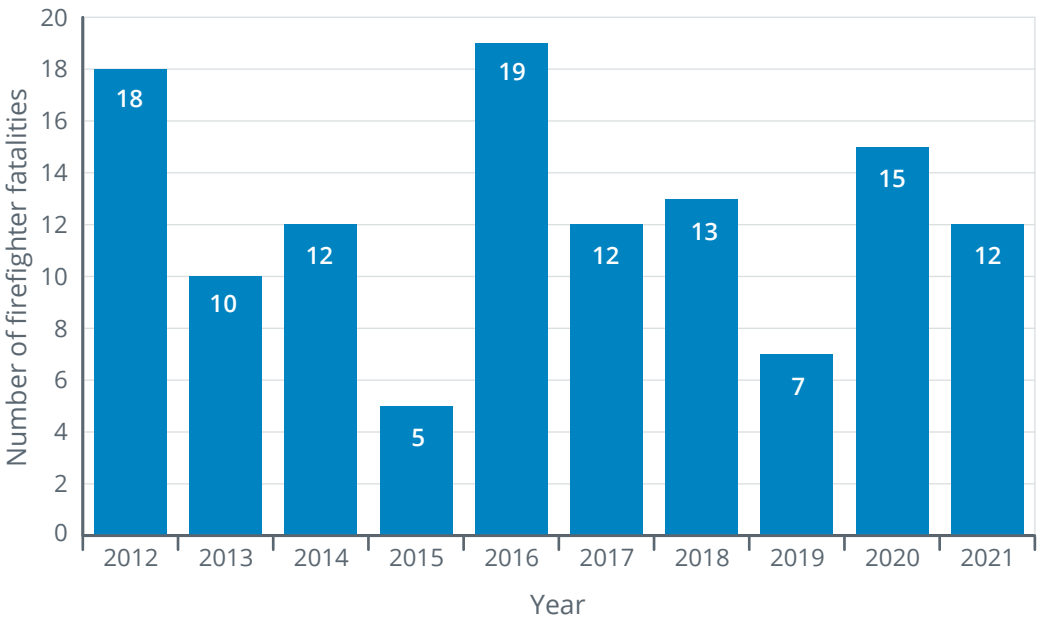
**Table 10. Firefighter fatalities caused by stress/overexertion (2012-2021)**

| Year | Number of firefighter fatalities caused by stress/ overexertion | Percentage of total firefighter fatalities caused by stress/ overexertion | Number of Hometown Hero fatalities caused by stress/ overexertion |
|---|---|---|---|
| 2021 | 39 | 27.7 | 10 |
| 2020 | 37 | 36.3 | 10 |
| 2019 | 37 | 56.9 | 10 |
| 2018 | 37 | 43.5 | 13 |
| 2017 | 54 | 58.1 | 16 |
| 2016 | 44 | 47.8 | 22 |
| 2015 | 61 | 67.8 | 15 |
| 2014 | 62 | 63.9 | 25 |
| 2013 | 40 | 36.4 | 10 |
| 2012 | 49 | 57.0 | 14 |
| 10-year average | 46 | 47.9 | 15 |

## Vehicle crashes

In 2021, 12 firefighters (6 volunteer, 4 wildland and 2 career) lost their lives due to vehicle crashes. Vehicle crashes were the third leading cause of fatal firefighter injuries for the year. In 2021, 4 deaths involved privately owned vehicles, 3 deaths involved fixed-wing aircraft, 2 deaths involved fire department brush trucks, 2 deaths involved staff support vehicles and 1 death involved a tanker (water tender).

**Figure 8. Firefighter fatalities in vehicle collisions (including aircraft) (2012-2021)**



- An assistant chief and members of his fire department were dispatched to respond to a vehicle crash on an interstate. The assistant chief had his fire department vehicle, a 2015 Ford Explorer, positioned in the roadway to protect the scene of the crash. He was sitting in his vehicle. A 2021 Freightliner Cascade 116 semitrailer approached the scene at speed, crashed into the assistant chief's vehicle and crashed into other vehicles at the scene. The assistant chief was trapped in his vehicle. He was extricated but did not survive the incident.
- A firefighter was participating in a prescribed burn when she was critically injured in a UTV crash. The firefighter was treated at the scene and in a hospital but did not survive her injuries.
- An assistant chief was responding to a vehicle crash as the driver and sole occupant of a 2001 Chevrolet Silverado brush truck. As he responded, the right wheels of the apparatus went off the right side of the roadway and traveled approximately 150 feet. The assistant chief steered the vehicle back onto the roadway but overcorrected and the apparatus went off the left side of the roadway. He steered to the right but overcorrected, and the apparatus rolled 2 to 3 times and flipped end over end. The assistant chief was not wearing a seat belt and was ejected in the crash. He was pronounced dead at the scene.
- A firefighter was the driver of a 2012 Ford F350 fire apparatus (brush truck). He and another firefighter were responding to a motor vehicle crash. The apparatus approached an 18-wheeler on the 2-lane road. As the apparatus overtook the truck, the firefighter steered into the left lane to pass the truck. As the apparatus began to pass the truck, the driver of the 18-wheeler began to make a left-hand turn. The firefighter made an evasive turn to avoid impact, but the apparatus collided with the 18-wheeler. The firefighter was fatally injured in the crash and was pronounced deceased at the scene. The firefighter was wearing his seat belt and multiple airbags activated in the crash. The driver of the 18-wheeler was cited for turning when unsafe.
- A firefighter was responding to a vehicle crash in his privately owned vehicle (POV), a 1994 Chevrolet van. As he responded into a curve, the vehicle left the right side of the roadway, struck a tree, struck a road sign, and came to rest against another tree. Other firefighters responding to the original incident came upon the crash and rendered aid, but the firefighter was killed in the crash. The law enforcement report on the incident estimates the vehicle's speed at 60 mph in a 45-mph zone. The firefighter was not wearing a seat belt, and he was not ejected from the vehicle.
- A firefighter was responding to a multiple vehicle crash in his POV, a 2001 Ford Mustang. As he responded in severe rain, he lost control of his vehicle and ran into the rear of another vehicle parked on the right shoulder due to weather. The firefighter had to be extricated from the vehicle. He was wearing a seat belt, and his driver's airbag deployed. Severe weather and speed too fast for conditions were cited in the law enforcement report as contributing to the crash.
- A captain was responding to a fire incident in a pickup truck. He was the driver and sole occupant of the vehicle. As he responded, he crashed into the rear of a tractor-trailer carrying a load of produce. The driver of the tractor-trailer felt the impact and stopped the truck. The captain was trapped in the pickup and could not be extricated by bystanders. The pickup was on fire and the fire eventually consumed the cab of the vehicle. He suffered severe blunt trauma and was killed in the crash.

- A firefighter was returning to the fire station in his POV from the scene of an incendiary fire set in the woods. He missed a stop sign at the road's intersection and crashed into another vehicle. He was ejected from the car and passed away from the injuries he sustained in the crash.

- A pilot was operating an Air Tractor AT-802A Single Engine Air Tanker to help fight a wildland fire. As the aircraft approached to make a water drop, witnesses on the ground saw the aircraft roll inverted and then disappear from their sight. Information from the CO Aviation company indicates that the aircraft was caught in a sudden wind gust and crashed, killing the pilot. Additional information about this incident can be found in the National Transportation Safety Board (NTSB) Case Analysis and Reporting Online (CAROL) system (https://data.ntsb.gov/carol-main-public/landing-page). The incident number for this crash is CEN22FA035.

- An Air Attack group supervisor and an Air Attack pilot were supporting operations at a wildland fire. They were operating in a 1980 Beech King Air C90 turboprop fixed-wing aircraft. The supervisor and the pilot had been on station at the fire for about 45 minutes at an altitude of approximately 2,500 feet. They had accomplished multiple orbits over the fire area. For reasons unknown, the aircraft lost its left wing, entered a steep dive and impacted the terrain. A post-crash fire ensued. The left wing of the aircraft was located about 0.79 miles northeast of the main wreckage and did not sustain thermal damage. Both firefighters were killed in the crash. Additional information about this incident can be found in the NTSB CAROL system (https://data.ntsb.gov/carol-main-public/landing-page). The incident number for this crash is WPR21FA266.

- 2 firefighters were returning from training in a fire department tanker (tender). For unknown reasons, the tanker swerved and rolled over. Both firefighters were ejected in the crash, and the firefighter who was the passenger in the tender became trapped under the apparatus. Other firefighters nearby tried to rescue him, but they were unsuccessful in saving his life.

## Struck by

In 2021, 8 firefighters were killed by being struck at the scene of vehicle accidents, wildland fires and while performing in-station duties.

- A firefighter and members of her fire department were working on the scene of a wildland fire. According to the driver's statement that is part of the law enforcement crash report, the Incident Commander ordered a rescue truck to be repositioned. The driver checked the area around the rescue truck, made eye contact with the firefighter and told her he was going to reverse the apparatus. The driver then sounded the air horn for several seconds and reversed the apparatus slowly. Other firefighters on the scene yelled and waved at the driver, and he stopped the apparatus. He was told that he had struck the firefighter. He dismounted the apparatus and found the firefighter deceased, near the rear axle of the apparatus.

- A firefighter/squad boss and his crew were working at a wildland fire. The crew was putting in a cold line on the edge of the fire. The sheriff's report on the incident determined that a green tree snapped, slid down the slope and struck the firefighter/squad boss. He suffered numerous, very serious injuries and was deceased before he could be extricated from under the 4-foot-diameter tree.

- A firefighter was on the scene of a vehicle crash on an interstate. Fire apparatus was placed in the left-hand lane of the 2-lane highway. As firefighters prepared to leave the scene, a 2004 Jeep Grand Cherokee entered the scene on the right shoulder and struck the firefighter, 2 other firefighters and a law enforcement officer. The firefighter was fatally injured. Other firefighters at the scene began CPR, and the struck firefighter was transported to the hospital but did not survive. The driver of the Jeep was charged with driving while intoxicated and third-degree murder.

- A fire police officer was working at the scene of a vehicle crash. As the incident was concluded and the scene cleared, a fire police vehicle was backed up by another fire police officer. The fire police officer was at the rear of the vehicle being moved and was struck. She was transported to a local hospital but did not survive her injuries.

- A firefighter and the members of her fire department were dispatched to a vehicle crash on a local section of an interstate. A fire department vehicle was being repositioned at the scene. As the vehicle was operated in reverse, the firefighter was fatally struck.

- A chief was on the scene of a vehicle crash on a highway. As firefighters were preparing to clear the scene, the chief entered the roadway to stop traffic so that an on-scene fire apparatus could make a U-turn. He was wearing a reflective jacket and was utilizing a flashlight. A 2015 Toyota Corolla approached the scene at an estimated speed of 60 miles per hour, straddled the shoulder, struck the chief and then collided with the fire apparatus making the U-turn. The chief was severely injured and was tended to by other firefighters. A medical helicopter arrived, but he was judged too unstable for helicopter transport. He was taken to a hospital by ground ambulance. The chief died the next day.

- A firefighter was performing maintenance on 1 of the department's firetrucks when the apparatus' tire exploded. He was immediately transported to the hospital where he passed away from his injuries a short time later.

- A firefighter was on duty in his assigned fire station. He was shot and killed by an off-duty co-worker in an instance of workplace violence.

## Fall

In 2021, 4 firefighters were killed from injuries sustained in falls, equal to the number of firefighters killed where the cause of fatal injury was classified as "Other."

- A lieutenant was on duty for a 24-hour shift that began at 7:00 a.m. At 11:04 p.m., he and his crew were dispatched to an automatic aid structure fire. Firefighters arriving on the scene found a fire in an attached garage that had extended into the house. The firefighters, including the lieutenant, advanced hoselines into the garage and house, extinguished most of the fire, and opened up the ceiling to access fire in the attic. The lieutenant and his crew were running low on air, so they were relieved by other firefighters. The lieutenant met face-to-face with the incoming firefighters and then headed outside. As he exited the building, he fell through a fire-weakened part of the floor into the basement. His fall was not observed by anyone on the scene. At approximately 12:42 a.m., firefighters determined that the lieutenant was not accounted for, and a Personnel Accountability Report (PAR) was ordered. It was determined that he was missing, and a search commenced.

The lieutenant was found unconscious in the basement of the house. Up to this point, the presence of a basement had been unknown to firefighters because the exterior basement windows had been painted over and access to the basement from the home was not obvious. The lieutenant was transported by ambulance to Community General Hospital in Sterling and was pronounced dead a short time later. His death was caused by asphyxiation.

- A lieutenant was operating the pump panel during a car fire on a highway when he suffered a medical emergency. He collapsed and struck his head on the top-mount pump panel. On-scene firefighters immediately got the lieutenant down from the truck and began first aid. He was not breathing and had no pulse. Firefighters used an automated external defibrillator and were able to revive him on-scene. He was flown by medical helicopter to a regional hospital where treatment for his head injury continued. The lieutenant succumbed to his head injuries 2 days later.

- A lieutenant/paramedic was on duty at his fire station. At approximately 9:43 p.m., he responded to a report of a brush fire near a state route. The apparatus arrived on scene at approximately 9:49 p.m. and parked on the state route overpass. The lieutenant/paramedic exited the apparatus to begin searching for signs of the reported brush fire. Shortly thereafter, he fell from the overpass. He was located a short time later beneath the overpass. The lieutenant/paramedic was confirmed deceased having fallen 210 feet from the overpass.

- A smokejumper/firefighter suffered critical injuries in a hard landing while parachuting into a wildland fire. He was transported by air ambulance to a hospital for treatment. He died approximately a week and a half later as a result of his injuries.

## Other

In 2021, 4 firefighters died from causes of fatal injuries not listed in a specialized cause of fatal injury category such as COVID-19, stress/overexertion, struck by, etc.

- A firefighter/emergency medical technician (EMT) was working with other firefighters at the scene of a large mutual aid residential structure fire when he suffered a medical emergency. He was transported to the hospital where it was discovered that he suffered from an undiagnosed medical condition that caused his illness. The firefighter/EMT was diagnosed with acute promyelocytic leukemia. He passed away 2 days later.

- An engine boss was dispatched from her base to a wildland fire. She and her crew worked in the area, and she developed shortness of breath and congestion. Approximately a week and a half later, she visited an urgent care clinic and was prescribed medications for her illness. A few days later, she and her crew were working in the field and were directed to a local fire station around noon to shelter from inclement weather. At approximately 3:00 p.m. that day, the engine boss was discovered unresponsive in the fire station. She was treated and transported but did not recover. An autopsy and toxicology tests were performed and found that she had died due to polydrug intoxication. In addition to the prescribed drugs, other drugs were discovered in her system.

- A firefighter was attending a Recruit Firefighter Training Program. During a crawl through of an SCBA prop, the firefighter became incapacitated. He was removed from the prop by other students and instructors. He was transported to a local hospital and then to a regional hospital. He died as the result of an anoxic brain injury approximately a week later.

- A probationary firefighter was in his sixth week of firefighter training. He became ill during morning physical training and was immediately transported to a hospital where he passed away the next day. In May 2022, the medical examiner stated that the probationary firefighter died of complications of exertional rhabdomyolysis — the result of muscles breaking down and releasing proteins into the bloodstream. It is associated with strenuous exercise or normal exercise under extreme circumstances.

## Collapse

In 2021, 3 firefighters were killed during structure collapses.

- A captain and the members of his engine company were dispatched to a structure fire in a large residence. Upon their arrival on-scene, firefighters found a working fire. The captain and his crew advanced an attack line to the rear of the structure and entered the home. A floor collapse occurred, and the captain fell into the basement. A mayday was called, and firefighters worked to reach him. When the captain was removed, he was unconscious. Firefighters and EMS responders provided treatment, but he could not be revived. The captain's death was caused by asphyxiation due to smoke inhalation.

- A chief and the members of his fire department were dispatched to a residential structure fire. They entered the home and located 2 trapped people. As the chief and a firefighter attempted to make rescues, the home's roof collapsed and trapped the chief, the firefighter, and the 2 occupants of the residence. All 4 were killed by the collapse.

## Lost or disoriented

In 2021, 3 firefighters were killed by becoming lost or disoriented inside of a burning structure fire.

- A firefighter was a member of an engine company crew dispatched with other firefighters to a report of a residential building fire with people trapped. Firefighters arrived on the scene and found a 2½ story wood-frame home with heavy smoke showing. Firefighters located and removed a resident trapped in the home. A second alarm was struck. The firefighter and members of his crew advanced a hoseline to the second floor to search and fight fire. With their air supplies running low, firefighters began to exit the building. The firefighter became disoriented in the structure, realized that he was lost and placed a mayday call. A Rapid Intervention Crew (RIC) was activated and sent to the home's second floor. The firefighter was located in the structure by his company officer, but he was out of air, likely suffering from carbon monoxide inhalation, and was uncooperative with his rescuers. The company officer that had attempted to help the firefighter also became incapacitated. A second mayday was initiated and both the firefighter and his company officer were removed from the building due to the efforts of other firefighters. The company officer was transported to the hospital and recovered. The firefighter did not recover. His death was caused by asphyxiation.

- A firefighter/EMT and other firefighters were dispatched to a report of a fire in a 2-story apartment building. The firefighter/EMT and other firefighters entered the structure to fight the fire. He became separated from his crew. The firefighter/EMT died 5 days later as a result of asphyxiation due to smoke inhalation.

- A firefighter and the members of his fire department were dispatched to a report of a roof fire in a residence. First-arriving firefighters found a working fire and extended a hoseline to the third floor of the residence to locate and fight the fire. The firefighter arrived on an engine company and assisted with establishing a water supply to the first-due apparatus. Once the initial water supply was secured, he was assigned with other firefighters to relieve the initial attack crew that was running low on air. The firefighter entered the structure wearing full personal protective equipment and SCBA. At the 20-minute mark, the Incident Commander reported a working attic fire with 2 hoselines in service. At 11:02 p.m., 28 minutes into operations, a mayday was declared. The RIC was activated, the Incident Commander requested additional resources, the building was evacuated and a PAR was conducted. At approximately 11:12 p.m., the firefighter was removed from the structure and transported to a local hospital. He passed away early the next morning. The cause of death was burns.

## Caught or trapped

Being caught or trapped covers firefighters in wildland and structural fires who were unable to escape due to rapid fire progression and the byproducts of smoke, heat, toxic gas and flames. This classification may also include firefighters who drowned and those who were trapped and/or crushed.

In 2021, 3 firefighters died from being caught or trapped, equal in severity to the causes of fatal injury of "Collapse" and "Lost or Disoriented."

- A firefighter, the members of his fire department and numerous other fire departments responded to a fire in a multistory assisted living facility. The firefighter rushed into the burning building to save residents, but the fire's intensity grew and he also became trapped. He sent out a mayday call and fellow firefighters tried to pull him out, but heavy flames and smoke prevented them from reaching him. For hours after the fire was under control, firefighters scoured the rubble for the firefighter. His body was found nearly 24 hours after he became trapped.

- A lieutenant was injured while fighting a residential fire. He received severe burns and was transported to a local hospital. He was transferred to a regional burn treatment center where he died approximately 1 month later.

- A firefighter and the members of his fire department responded to a large mutual aid wildland fire. The firefighter drove a fire department tanker (tender) to the scene. A wind shift caused the fire to overtake his location and he was unable to escape. He died as the result of thermal burns and asphyxiation.

## Contact with

In 2021, 1 firefighter was killed when he came in contact with electrical lines.

- A firefighter responded to a vehicle rollover crash. While searching for victims, he came in contact with downed power lines and was electrocuted. Emergency responders at the scene immediately performed CPR. The firefighter was rushed to the hospital where he succumbed to his injuries a short time later.

## Suicide

In 2021, 1 firefighter died as the result of suicide.

- A firefighter took his own life while on duty at the fire station.

# Nature of Fatal Injury

Figure 9 shows the distribution of the 141 firefighter deaths that occurred in 2021 by the medical nature of the fatal injury or illness. In 2021, COVID-19 was the most leading type of nature of fatal injury, followed by heart attack. Trauma was the third leading type of nature of fatal injury.

**Figure 9. Firefighter fatalities by nature of fatal injury (2021)**

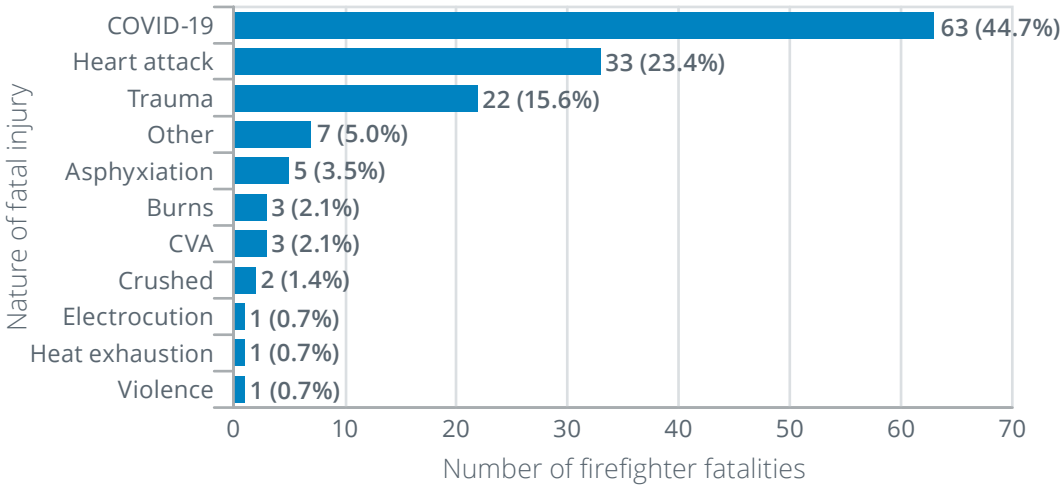



Figure 10 shows the type of duty involved for the 63 firefighters who died due to COVID-19. Figure 11 shows the type of duty involved for the 33 firefighters who died of a heart attack.

**Figure 10. COVID-19 by type of duty (2021)**

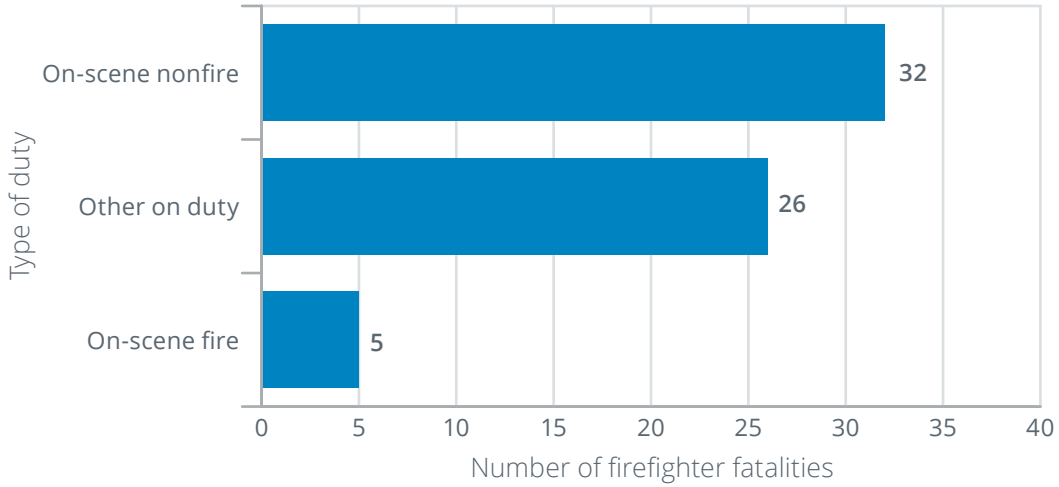
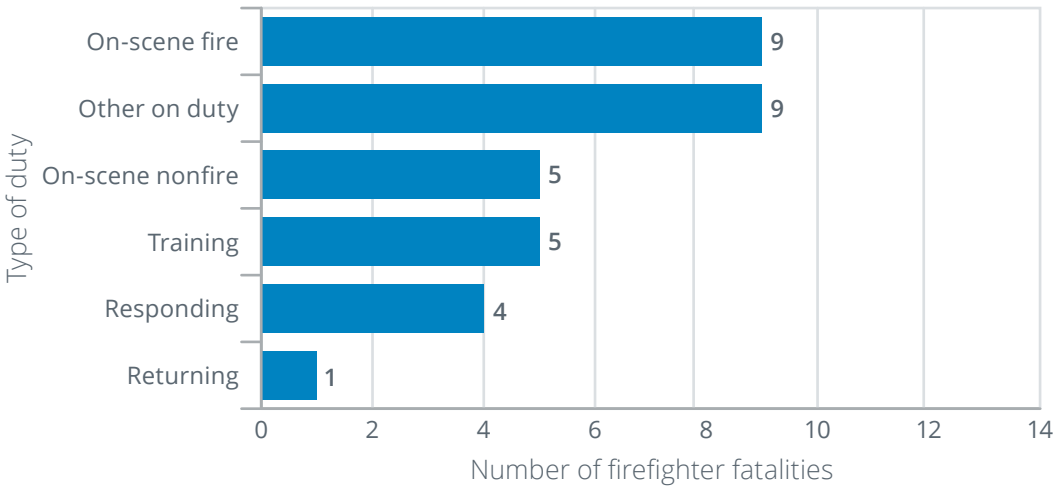


**Figure 11. Heart attacks by type of duty (2021)**



# Firefighter Ages

Figure 12 shows the distribution of firefighter deaths by age at the time of death. Table 11 provides a count of firefighter fatalities by age at death and the nature of the fatal injury.

**Figure 12. Firefighter fatalities by age at death (2021)**

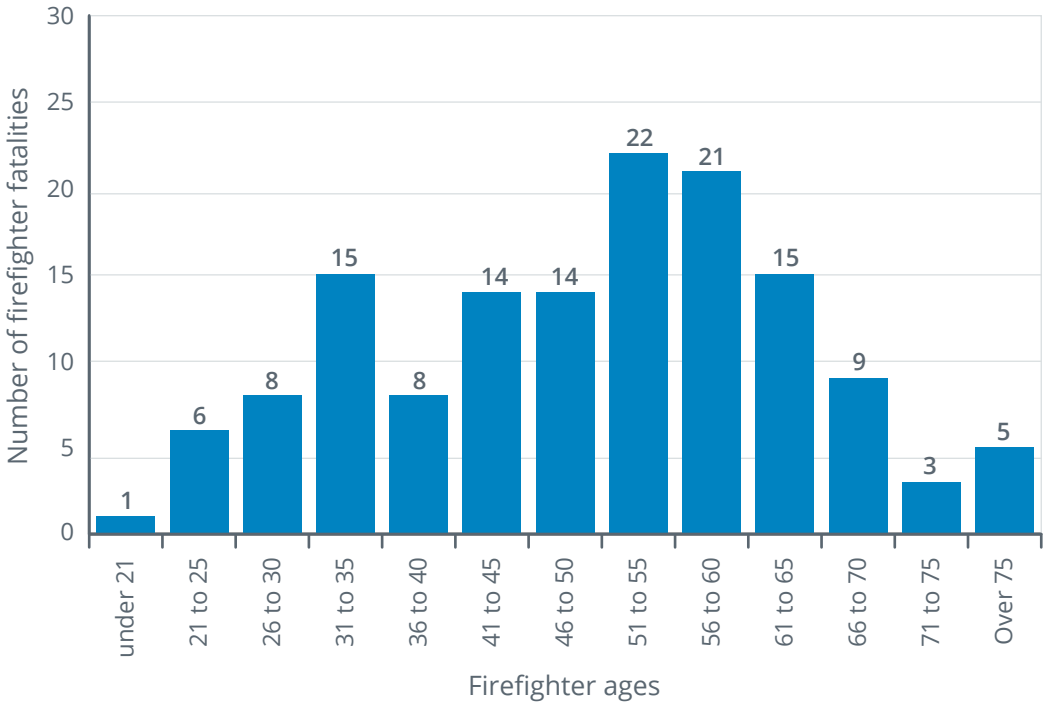



**Table 11. Firefighter fatalities by age at death and nature of fatal injury (2021)**

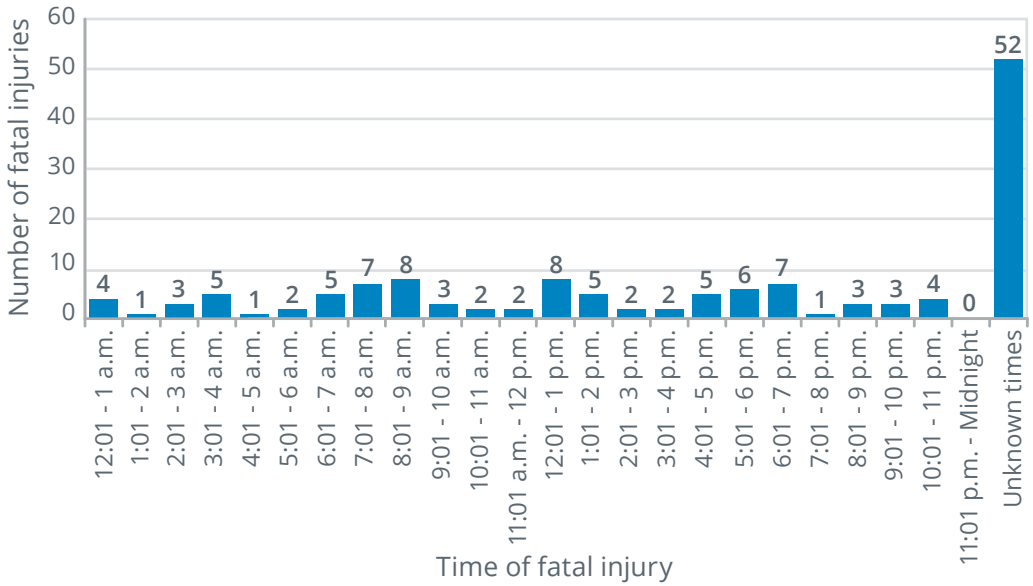
| Age | Number of firefighter fatalities caused by trauma/ asphyxiation/other | Number of firefighter fatalities caused by COVID-19 | Number of firefighter fatalities caused by heart attack/CVA |
|---|---|---|---|
| Under 21 | 1 | 0 | 0 |
| 21 to 25 | 3 | 1 | 2 |
| 26 to 30 | 7 | 1 | 0 |
| 31 to 35 | 7 | 6 | 2 |
| 36 to 40 | 2 | 1 | 5 |
| 41 to 45 | 6 | 7 | 1 |
| 46 to 50 | 3 | 8 | 3 |
| 51 to 55 | 0 | 16 | 6 |
| 56 to 60 | 5 | 9 | 7 |
| 61 to 65 | 7 | 7 | 1 |
| 66 to 70 | 1 | 6 | 2 |
| 71 to 75 | 0 | 1 | 2 |
| Over 75 | 0 | 0 | 5 |


1

# Deaths by Time of Injury

For 2021, the distribution of firefighter deaths, according to the time of day when the fatal injury occurred, is illustrated in Figure 13. The time of fatal injury for 52 firefighters was unknown, primarily because the exact time that firefighters contracted COVID-19 while on duty was often unknown.

**Figure 13. Firefighter fatalities by time of fatal injury (2021)**

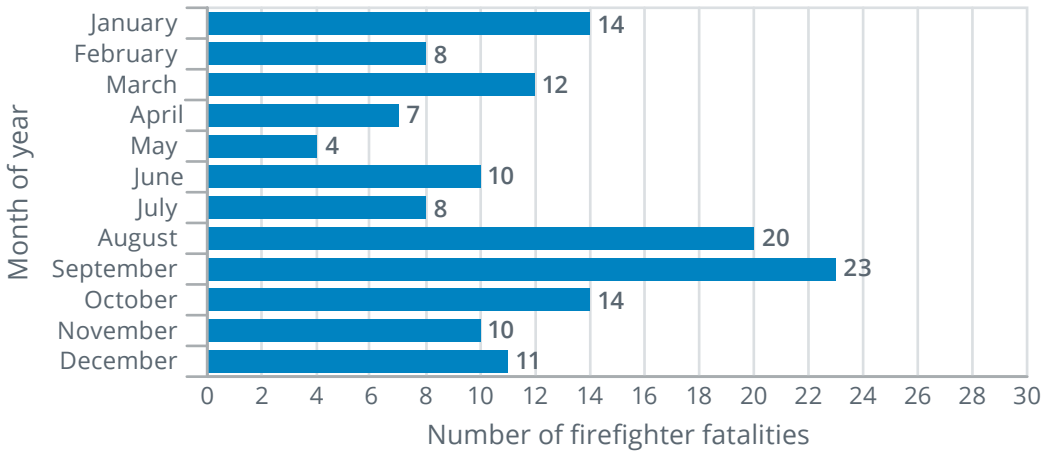



Note: The time of fatal injury for 52 firefighters was unknown. Times are shown using the following formula: 12:01-1 a.m.; 1:01-2 a.m.; 2:01-3 a.m., etc.

# Firefighter Fatality Incidents by Month of Year

Figure 14 illustrates when the 2021 firefighter fatalities occurred by month of year. Most fatalities occurred in the month of September, followed by the month of August.

**Figure 14. Firefighter fatalities by month of year (2021)**



# State and Region

The distribution of firefighter deaths in 2021 by state is shown in Table 12. Firefighters based in 41 states died in 2021.

The highest number of firefighter deaths in 2021 (based on the location of the fire service organization) occurred in Texas, with 10 losses. Florida, North Carolina, New Jersey, Ohio and Pennsylvania had 8 deaths each, followed by California, which experienced 7 losses.

**Table 12. Firefighter fatalities by state based on location of fire service (2021)***

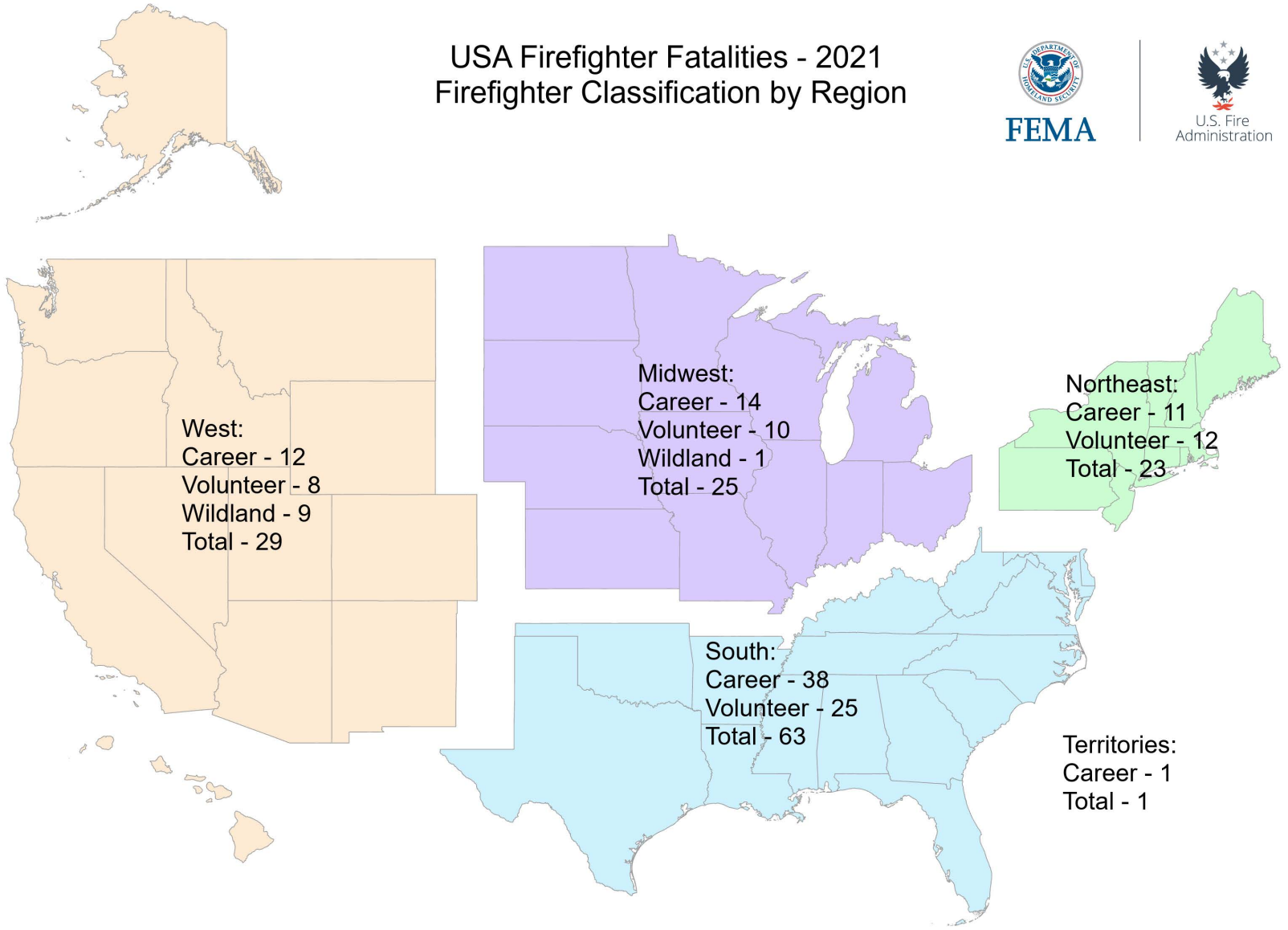
| State | Number of firefighter fatalities | Percentage of firefighter fatalities |
|---|---|---|
| Texas | 10 | 7.1 |
| Florida | 8 | 5.7 |
| New Jersey | 8 | 5.7 |
| North Carolina | 8 | 5.7 |
| Ohio | 8 | 5.7 |
| Pennsylvania | 8 | 5.7 |
| California | 7 | 5.0 |
| Colorado | 6 | 4.3 |
| Arkansas | 5 | 3.5 |
| Arizona | 5 | 3.5 |
| Georgia | 5 | 3.5 |
| Illinois | 5 | 3.5 |
| New York | 5 | 3.5 |
| Tennessee | 5 | 3.5 |
| Indiana | 3 | 2.1 |
| Kentucky | 3 | 2.1 |
| Maryland | 3 | 2.1 |
| Mississippi | 3 | 2.1 |
| South Carolina | 3 | 2.1 |
| Connecticut | 2 | 1.4 |
| Kansas | 2 | 1.4 |
| Louisiana | 2 | 1.4 |
| Michigan | 2 | 1.4 |
| Missouri | 2 | 1.4 |
| Montana | 2 | 1.4 |
| New Mexico | 2 | 1.4 |
| Oklahoma | 2 | 1.4 |
| Washington | 2 | 1.4 |
| West Virginia | 2 | 1.4 |

**Table 12. Firefighter fatalities by state based on location of fire service (2021)* (continued)**

| State | Number of firefighter fatalities | Percentage of firefighter fatalities |
|---|---|---|
| Wyoming | 2 | 1.4 |
| Alaska | 1 | 0.7 |
| Alabama | 1 | 0.7 |
| Delaware | 1 | 0.7 |
| Idaho | 1 | 0.7 |
| Minnesota | 1 | 0.7 |
| Nebraska | 1 | 0.7 |
| Oregon | 1 | 0.7 |
| Utah | 1 | 0.7 |
| Virginia | 1 | 0.7 |
| Virgin Islands | 1 | 0.7 |
| Wisconsin | 1 | 0.7 |
| Total | 141 | 100.0 |

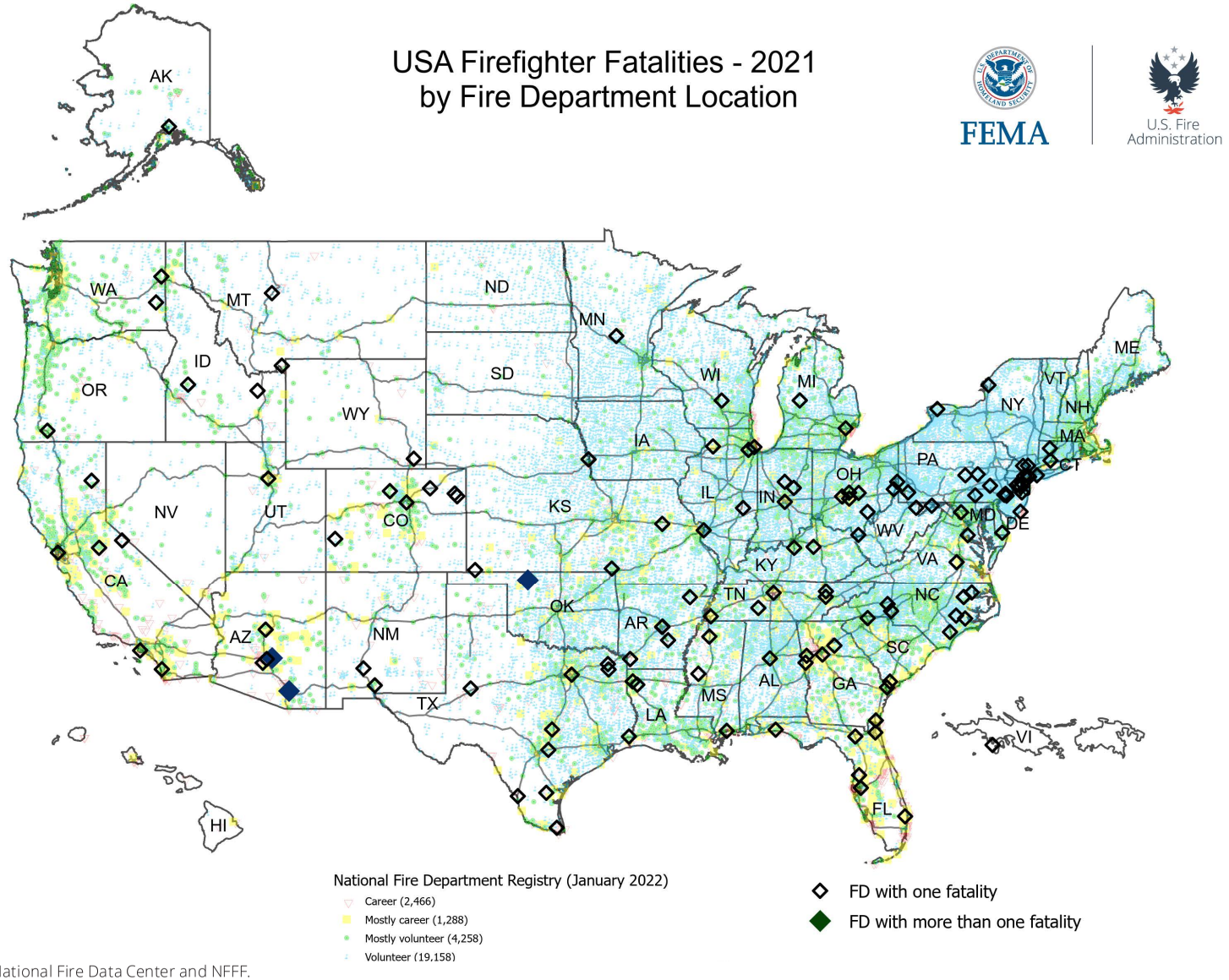
*This list attributes the deaths according to the state in which the fire department or unit was based, as opposed to the state in which the death occurred. They are listed by those states for statistical purposes and for the National Fallen Firefighters Memorial at the NETC.

**Figure 15**



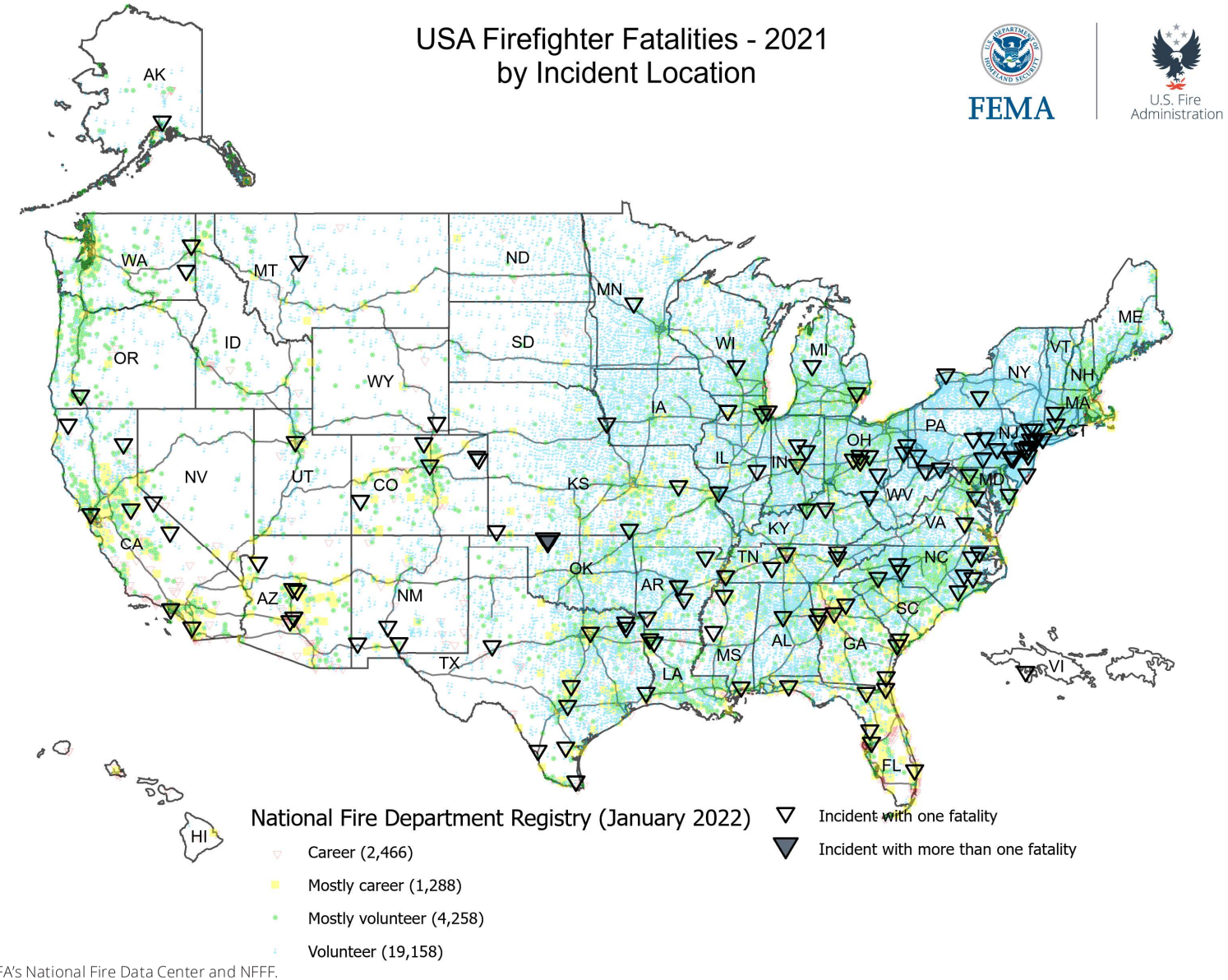

Sources: USFA's National Fire Data Center and NFFF.

## Figure 16




Sources: USFA's National Fire Data Center and NFFF.

**Figure 17**




Sources: USFA's National Fire Data Center and NFFF.


FIRE
DISTRICT NO. 2
PARKWAY

# Analysis of Urban/Suburban/Rural Patterns in Firefighter Fatalities

The U.S. Census Bureau defines "urban" as a place having a population of at least 2,500 or lying within a designated urban area. "Rural" is defined as any community that is not urban. "Suburban" is not a census term, but may be taken to refer to any place, urban or rural, that lies within a metropolitan area defined by the Census Bureau, but not within 1 of the central cities of that metropolitan area.

Fire department areas of responsibility do not always conform to the boundaries used by the Census Bureau. For example, fire departments organized by counties or special fire protection districts may have both urban and rural coverage areas. In such cases, where it may not be possible to characterize the entire coverage area of the fire department as rural or urban, firefighter deaths were listed as urban or rural based on the particular community or location in which the fatality occurred.

The following patterns were found for 2021 firefighter fatalities. These statistics are based on responses from fire department personnel, and when no data from the departments were available, the data were based upon population and area served, as reported by the fire departments.

**Table 13. Firefighter fatalities by coverage area type (2021)**

| Urban/suburban | Rural | Total |
|---|---|---|
| 87 | 54 | 141 |

# Appendix

## Firefighter Fatality Inclusion Criteria — National Fire Service Organizations

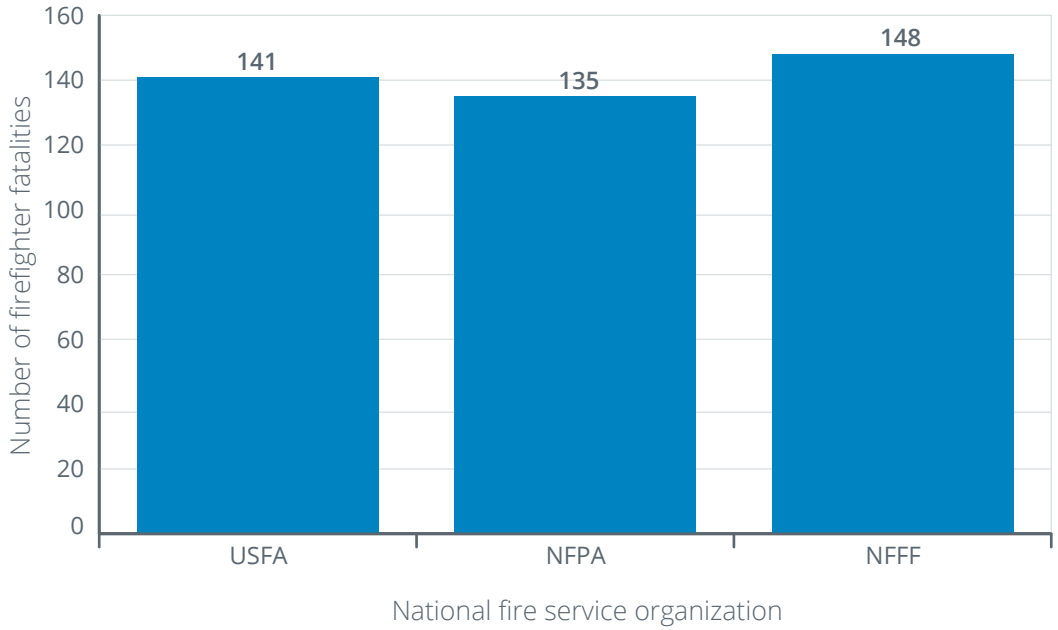
The NFPA, the NFFF, the USFA and other organizations individually collect information on firefighter fatalities in the United States. Each organization uses a slightly different set of inclusion criteria based at least in part on the purposes of the information collection for each organization and data consistency.

As a result of these differing inclusion criteria, statistics about firefighter fatalities may be provided by each organization that do not coincide with one another. This section will explain the inclusion criteria for each organization and provide information about these differences.

The USFA includes firefighters in this report who died while on duty, became ill while on duty and later died, and firefighters who died within 24 hours of an emergency response or training regardless of whether the firefighter complained of illness while on duty. The USFA counts firefighter deaths that occurred in the 50 states, the District of Columbia, and United States protectorates such as Puerto Rico and Guam. Detailed inclusion criteria appear starting on page 7 of this report.

For 2021, the USFA reported 141 on-duty firefighter fatalities. This number includes 63 firefighters that died in 2021 as a result of COVID-19 and its complications.

**Firefighter fatalities in 2021***




*USFA methodology for the analyses of firefighter fatalities was changed in 2020. Starting with the 2020 report, firefighter deaths are counted in the year that the death occurred rather than the year that the fatal incident occurred.

## Inclusion criteria for the National Fire Protection Association's Annual Firefighter Fatality Study

### Introduction

Each year, the NFPA collects data on all the firefighter fatalities in the U.S. that resulted from injuries or illnesses that occurred while the victims were on duty. The term "on duty" refers to the following:

- Being at the scene of an alarm, whether it is a fire or nonfire incident (including EMS calls).
- Responding to or returning from an alarm.
- Participating in other fire department duties, such as training, maintenance, public education, inspection, investigation, court testimony or fundraising.
- Being on call or standby for assignment at a location other than the firefighter's home or place of business.

On-duty fatalities include any injury sustained in the line of duty that proves fatal, any illness incurred as a result of actions while on duty that proves fatal, and any fatal mishaps involving nonemergency occupational hazards that occur while on duty. The types of injuries included in the first category are mainly those that occurred at a fire or other emergency incident scene, in training, or in crashes while responding to or returning from alarms. Illnesses (including heart attacks) are included when the exposure or onset of symptoms occurred during a specific incident or on-duty activity.

### What is a firefighter?

The types of firefighters included in this study are the following:

- Members of local career and volunteer fire departments.
- Seasonal, full-time and contract employees of state and federal agencies who have fire suppression responsibilities as part of their job description.
- Prison inmates serving on firefighting crews.
- Military personnel performing assigned fire suppression activities.
- Civilian firefighters working at military installations.
- Members of facility or industrial fire brigades.

Fatal injuries and illnesses are included even in cases where death was considerably delayed. When the injury and death occurred in different years, the incident is counted for the year of the injury. In the case of COVID-19 deaths, the NFPA is following inclusion criteria similar to that used by the PSOB program and the IAFF in counting active on-duty firefighters who were working at the time their illness was diagnosed.

The Safeguarding America's First Responders Act allows PSOB to recognize the eligibility of COVID-19 diagnoses for firefighters within 45 days of their last day on duty. NFPA recognizes that other organizations report the number of duty-related

firefighter fatalities using different, more expansive definitions, and some include deaths that occurred when the victims were off-duty (See, for example, the USFA and NFFF websites). Readers comparing reported losses should carefully consider the definitions and inclusion criteria used in any study.

## Categories not included in the study

The NFPA study does not include members of fire department auxiliaries, nonuniformed employees of fire departments, or EMTs who are not also firefighters, chaplains or civilian dispatchers. The study also does not include suicides as on-duty fatalities even when the suicide occurs on fire department property.

The NFPA recognizes that a comprehensive study of firefighter on-duty fatalities would include chronic illnesses (such as cardiovascular disease and certain cancers) that prove fatal and that arose from occupational factors. In practice, there is as yet no mechanism for identifying on-duty fatalities that are due to illnesses that develop over long periods of time. This creates an incomplete picture when comparing occupational illnesses to other factors as causes of firefighter deaths. This is recognized as a gap the size of which cannot be identified at this time because of the limitations in tracking the exposure of firefighters to toxic environments and substances and the potential long-term effects of such exposures.

## 2021 experience

In 2021, a total of 135 on-duty firefighter deaths occurred in the United States, according to the NFPA inclusion criteria. This total includes 65 firefighters who died in 2021 as a result of COVID-19 and its complications.**

**For firefighter deaths due to COVID-19, the NFPA is following inclusion criteria similar to what is used by the DOJ PSOB program and the IAFF. The Safeguarding America's First Responders Act allows PSOB to create a general presumption that a public safety officer who dies from COVID-19-related complications sustained a personal injury in the line of duty if the COVID-19 diagnosis occurred within 45 days of their last day on duty.

## National Fallen Firefighters Foundation

The National Fallen Firefighters Memorial was built in 1981 in Emmitsburg, Maryland. The names listed there begin with those firefighters who died in the line of duty that year. The U.S. Congress created the NFFF to lead a nationwide effort to remember America's fallen firefighters. Since 1992, the tax-exempt, nonprofit foundation has developed and expanded programs to honor our fallen fire heroes and assist their families and co-workers by providing them with resources to rebuild their lives. Since 1997, the foundation has managed the National Memorial Service held each October to honor the firefighters who died in the line of duty the previous year. In 2023, the National Memorial Service was held in May.

***The National Fallen Firefighters Memorial line-of-duty deaths shall be determined by the following standards:**

1. For the purpose of this memorial the term "firefighter" means an individual whose official duties include fire suppression, fire investigation or fire police activities and who is actively employed on a full-time, part-time, volunteer or contract basis by a local county, state or federal agency, with or without compensation, to provide primary fire protection for an organized jurisdiction having authority.

   This definition also includes seasonal and full-time employees of USFS, BLM, FWS, NPS, and the U.S. Department of Energy and state wildland agencies; contract fire suppression personnel and pilots working under the official auspices of one of the above; prison inmates serving on fire crews; civilian firefighters working at military installations; and privately employed firefighters including trained members of industrial or institutional fire brigades.

   In 2010, the foundation expanded the definition of firefighter to include active-duty, enlisted and officer U.S. Air Force, Army, Coast Guard, Navy and Marine Corps military personnel assigned to fire stations who die performing emergency services in accordance with their position description. The 2 exclusions from this policy are: (1) personnel who die fighting fire on board Navy ships where all sailors are considered firefighters, and (2) personnel who die from direct enemy action or attack.

2. "Line of duty" means any activity or action that a firefighter is obligated or authorized by statute, rule, regulation, condition of employment or service, official mutual-aid agreement, or other law, or for which they are compensated to perform under the auspices of the fire service protection agency they serve, and that such agency legally recognizes that the activity or action to have been obligated or authorized at the time performed.

**Additionally, the following criteria will be applied when evaluating circumstances of each death for inclusion on the national memorial:**

- Deaths meeting the DOJ's PSOB program guidelines for a favorable determination. (See PSOB site for current information.)
- Deaths directly resulting from cancer, disease or infection that are defined as meeting the criteria of the decedent's home state occupational exposure presumption laws. **(Note: Applies only to such deaths occurring on or after Jan. 1, 2018.)**

In all cases, documentation must be provided showing a direct link from a single emergency incident or training activity to the firefighter's injury and subsequent death. Examples of documentation that can be submitted are: department incident or run reports, newspaper articles, notarized witness statements, hospital records, physician reports, and disability records. For deaths resulting from a heart attack or stroke, documentation must be provided showing the firefighter's participation in emergency response or training activities within the designated time frame (24 hours) before the onset of the cardiovascular event. If the injury or cardiovascular event results in long-term disability or hospitalization, documentation will also be required indicating that the individual did not return to full-duty status as a firefighter prior to their death.

In certain cases, the foundation will abstain from rendering a decision regarding eligibility for inclusion on the national memorial until the PSOB program makes its determination.

**Such cases are:**

- Deaths where the decedent is under the age of 18.
- Deaths that occur while the firefighter was engaged in a nonemergency fire department duty (i.e., station or apparatus maintenance, special-event standby assignments, parades, community service details, fundraising events, etc.).
- Deaths that occur during the firefighter's commute to/from their assignment.
- Deaths where there is a report of alcohol or controlled substance involvement.

If a claim for death benefits has been filed with the PSOB office, the foundation will hold the case in a "Pending" status until the PSOB renders its decision. If the DOJ determines the firefighter's death was line of duty based on their guidelines, the foundation will rule the death eligible for inclusion on the national memorial. If the DOJ determines the firefighter's death does not meet their criteria for payment of death benefits, the foundation will rule the death ineligible for inclusion on the national memorial. If no claim for PSOB benefits is filed within 1 year of the firefighter's death, the foundation will close out the file as "Not Eligible" for inclusion on the national memorial.

**Specific cases will be excluded from consideration for inclusion on the national memorial, such as:**

- Deaths attributed to alcohol or controlled substance abuse.
- Deaths resulting from the firefighter acting in a grossly negligent manner at the time of their death.

Acceptance for inclusion on the National Fallen Firefighters Memorial in no way impacts decisions made by the federal government regarding the awarding of PSOB benefits.

The NFFF honored 148 firefighters who died in the line of duty at the planned October 2022 Memorial Weekend. Of those, 108 firefighters that were honored are associated with incidents and deaths that occurred in 2021 and 40 deaths as the

result of incidents that occurred prior to 2021. Of the 148 deaths, 20 were the result of COVID-19 and its complications that occurred in 2021 and 16 from previous years.**

* Criteria for Inclusion on the National Memorial - National Fallen Firefighters Foundation (firehero.org)

**For firefighter deaths due to complications of COVID-19 in 2020 and 2021, the Safeguarding America's First Responders Act creates a general presumption that a public safety officer who dies from COVID-19-related complications sustained a personal injury in the line of duty if the COVID-19 diagnosis occurred within 45 days of their last day on duty. Based on the NFFF criteria for deaths due to infectious disease, the circumstances of the fatality can be determined to meet the criteria for inclusion on the National Fallen Firefighters Memorial when the death is approved for death benefits at the federal level or meets the criteria outlined by the DOJ PSOB program.

# Acronyms

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| **BIA** | Bureau of Indian Affairs |
| **BLM** | Bureau of Land Management |
| **CAROL** | Case Analysis and Reporting Online |
| **CVA** | cerebrovascular accident |
| **DOJ** | U.S. Department of Justice |
| **EMS** | emergency medical services |
| **EMT** | emergency medical technician |
| **FWS** | U.S. Fish and Wildlife Service |
| **IAFF** | International Association of Fire Fighters |
| **NETC** | National Emergency Training Center |
| **NFFF** | National Fallen Firefighters Foundation |
| **NFIRS** | National Fire Incident Reporting System |
| **NFPA** | National Fire Protection Association |
| **NIOSH** | National Institute for Occupational Safety and Health |
| **NPS** | National Park Service |
| **NTSB** | National Transportation Safety Board |
| **PAR** | Personnel Accountability Report |
| **POV** | privately owned vehicle |
| **PSOB** | Public Safety Officer Benefits |
| **RIC** | Rapid Intervention Crew |
| **SCBA** | self-contained breathing apparatus |
| **USFA** | U.S. Fire Administration |
| **USFS** | U.S. Forest Service |
| **UTV** | utility terrain vehicle |

U.S. Fire Administration

**Working for a fire-safe America**

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