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

# Firefighter Fatalities in the United States in 2018

September 2019

FEMA

# Firefighter Fatalities in the United States in 2018

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
https://www.firehero.org

In memory of all firefighters
who answered their last call in 2018.

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**

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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, such as the U.S. Forest Service, the National Park Service, the Bureau of Land Management, the Bureau of Indian Affairs and the U.S. Fish and Wildlife Service; the U.S. Department of Justice; the National Fire Protection Association; and many others contributed important information to this report.

The National Fallen Firefighters 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, and unfortunate tragedies do occur. These are the risks that all firefighters accept every time they respond to an emergency incident. However, the risks can be greatly reduced through efforts to improve training, emergency scene operations, and 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. Through the collection of information on the causes of 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 significant work in the areas of general emergency vehicle operations safety, health and safety of the female emergency responder, fire service risk management, fire station safety, and roadway incident safety. The data developed for this report are also widely used in other firefighter fatality prevention efforts.

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 to the annual National Fallen Firefighters Memorial Service. The service is held at the National Emergency Training Center (NETC) in Emmitsburg, Maryland, during National Fire Prevention Week in October of each year. The 38th Annual National Fallen Firefighters Memorial Weekend will be held October 5 and 6. Additional information regarding the memorial service can be found at https://www.firehero.org, 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 began 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 2018 and to analyze the circumstances surrounding each occurrence. The study is intended to help identify approaches that could 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, whether 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 U.S. Forest Service, the National Park Service, the Bureau of Land Management, the Bureau of Indian Affairs, the U.S. Fish and Wildlife Service, 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 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 Benefit Act of 2003 into law. After being signed by the president, the act became Public Law 108-182. The 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 in order to be included in this study. For firefighter fatalities after Dec. 15, 2003, firefighters will be 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, will not be 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 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 incident took place.

There is no established mechanism for identifying 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. It has proved to be very difficult to provide a complete evaluation of an occupational illness as a causal factor in firefighter deaths due to the following limitations: the exposure of firefighters to toxic hazards is not sufficiently tracked; the often-delayed, long-term effects of such toxic hazard exposures; and the exposures firefighters may receive while off duty.

## 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 U.S. Department of Justice, 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, as well as from such fire service organizations as the International Association of Fire Chiefs, the International Association of Fire Fighters, the National Fire Protection Association (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 including a fatality in the study

In most cases, after notification of a fatal incident, initial telephone contact is made with local authorities by the USFA to verify the incident, its location, the jurisdiction, and the

fire department or agency involved. Further information about the deceased firefighter and the incident may be obtained from the chief of the fire department, designee 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.

Information that is routinely requested from fire departments that have experienced a fatality include National Fire Incident Reporting System (NFIRS)-1 (incident) and NFIRS-3 (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 information, a 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, the same criteria were used for this study as in previous annual studies. Additional 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 this statistical analysis is made by the USFA. The NFFF criteria as a line-of-duty death for inclusion in the annual National Fallen Firefighters Memorial Service is made by the NFFF.

# 2018 Findings

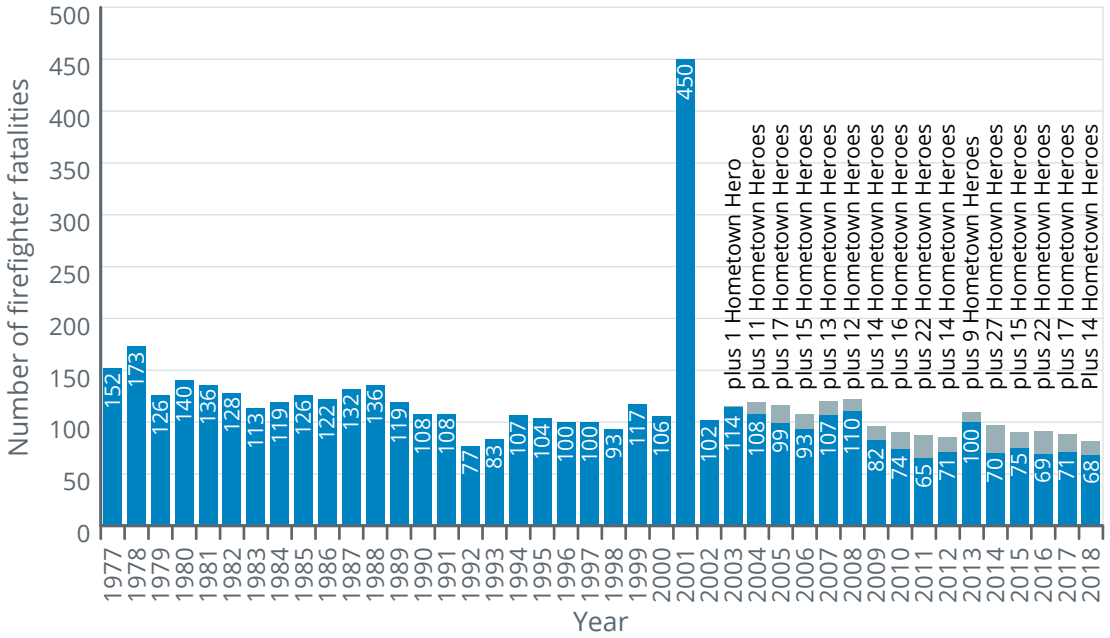
Eighty-two firefighters died while on duty in 2018, five less than the 2017 total of 87. The 2018 total includes 14 firefighters who died under circumstances that were part of inclusion criteria changes resulting from the Hometown Heroes Survivors Benefit Act. When not including these fatalities for the purposes of a trend analysis, there were 68 non-Hometown Hero firefighter fatalities in 2018, for the second lowest annual total since the USFA began this study (Figure 1).

An analysis of multiyear firefighter fatality trends needs to acknowledge the changes from the December 2003 Hometown Heroes Survivors Benefit Act. Some graphs and charts in this report may not indicate the Hometown Heroes portion of the total. However, this does not diminish the sacrifices made by any firefighter who dies while on duty, or the sacrifices made by his or her family and peers.

In the same light, when conducting multiyear comparisons of firefighter fatalities in this report, the losses resulting from the attacks on the World Trade Center in New York City on Sept. 11, 2001, are sometimes also set apart for illustrative purposes. This action is by no means a minimization of the supreme sacrifice made by these firefighters.

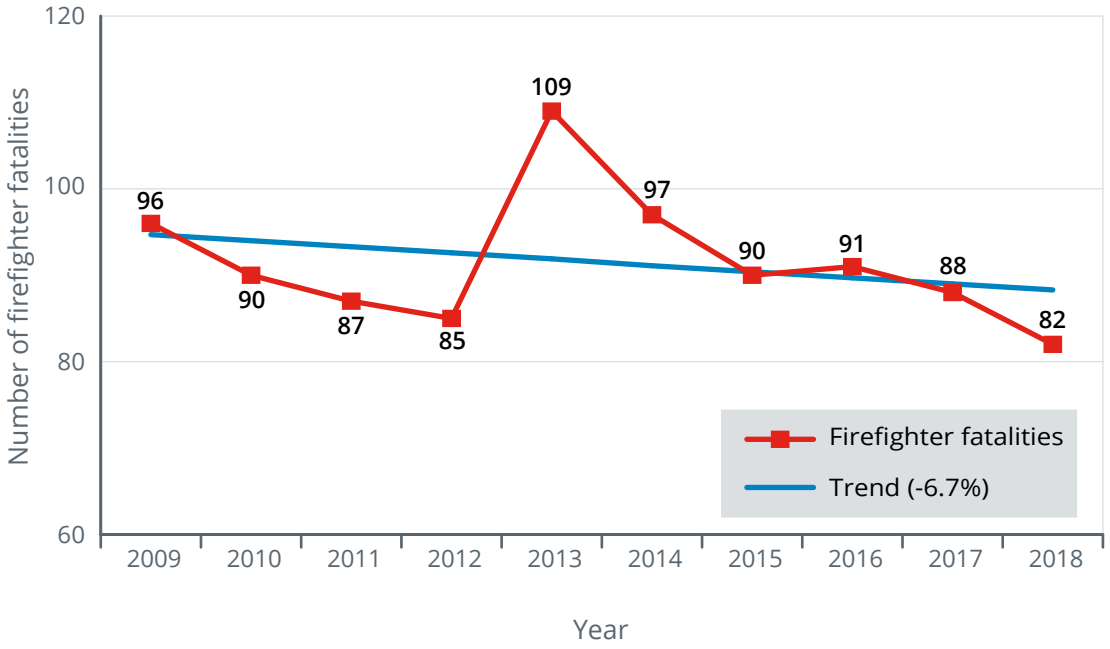
Figure 1 below shows the number of on-duty firefighter fatalities from 1977 through 2018.

**Figure 1. On-duty firefighter fatalities (1977-2018)**




From 2009 to 2018, there was a 7% decrease in on-duty firefighter fatalities (Figure 2).

**Figure 2. On-duty firefighter fatalities (2009-2018)**

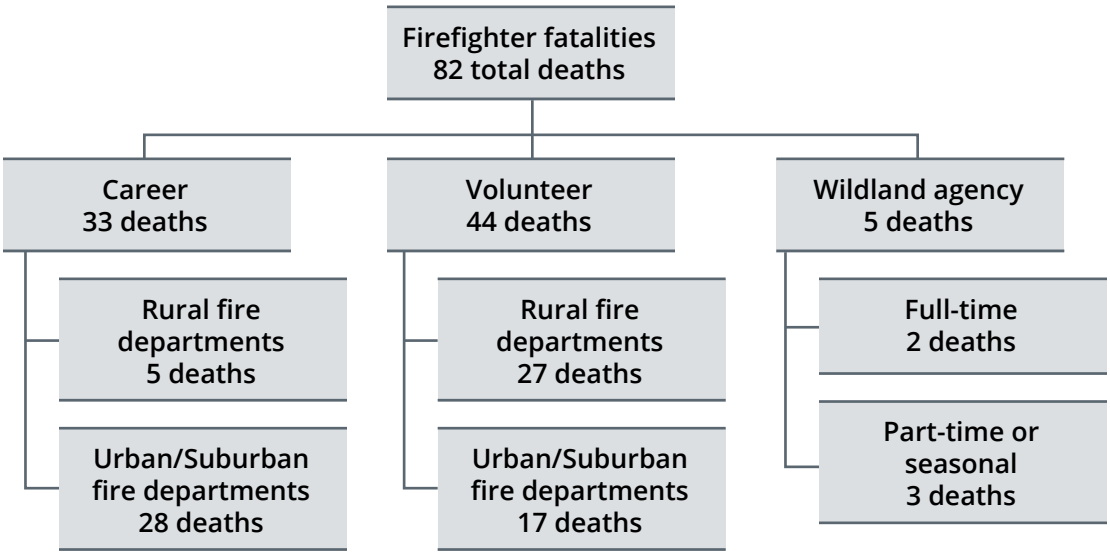



Note: Firefighter fatality counts include firefighters who died under circumstances that were part of inclusion criteria changes resulting from the Hometown Heroes Survivors Benefit Act.

## Career, volunteer and wildland agency fatalities

In 2018, firefighter fatalities included 33 career firefighters, 44 volunteer firefighters, and five part-time or full-time members of wildland or wildland contract fire agencies (Figure 3).

**Figure 3. Career, volunteer and wildland agency firefighter fatalities (2018)**




## Gender

Two firefighters who died while on duty in 2018 were female and 80 were male.

## Multiple firefighter fatality incidents

The 82 deaths in 2018 resulted from a total of 80 fatal incidents, including two multiple firefighter fatality incidents taking the lives of four firefighters (Table 1).

**Table 1. Multiple firefighter fatality incidents (2009-2018)**

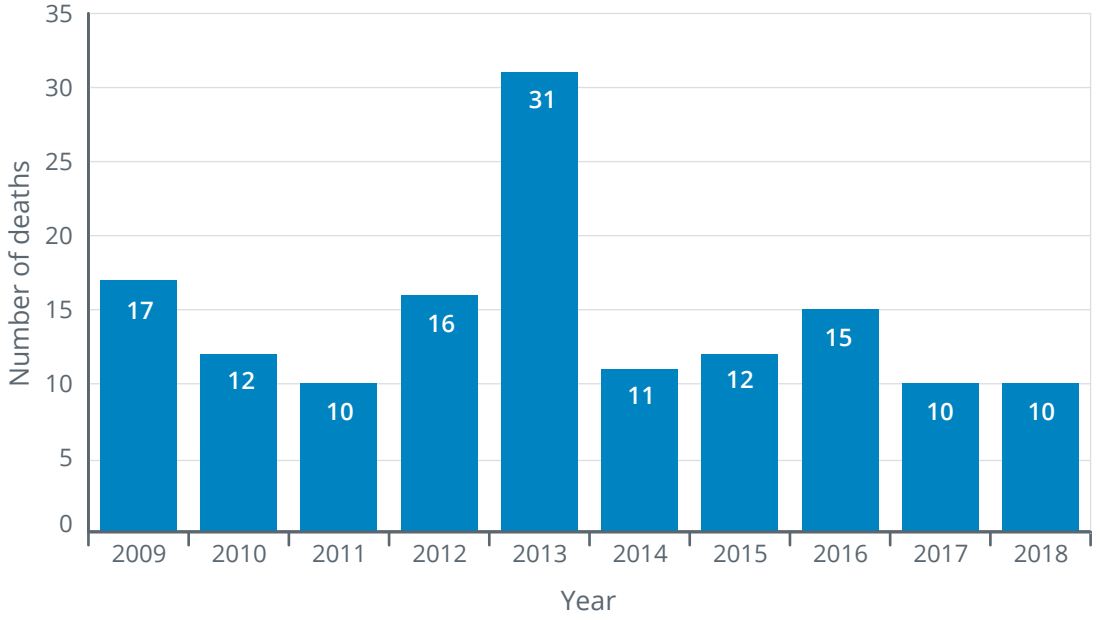
| Year | Number of incidents | Total number of firefighter fatalities |
|---|---|---|
| 2018 | 2 | 4 |
| 2017 | 1 | 2 |
| 2016 | 3 | 7 |
| 2015 | 3 | 7 |
| 2014 | 2 | 4 |
| 2013 | 4 | 35 |
| 2012 | 4 | 10 |
| 2011 | 3 | 6 |
| 2010 | 4 | 8 |
| 2009 | 6 | 13 |
| 10-year average | 3 | 10 |

From 1990 to 2018, there have been 495 firefighters killed during activities involving brush, grass or wildland firefighting — an average of 17 deaths per year. There were an average of 14 such deaths per year over the past decade.

## Wildland firefighting fatalities

In 2018, 10 firefighters 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 (2009-2018)**




In 2018, there were no incidents related to wildland firefighting that resulted in multiple firefighter fatalities or occurred because of an aircraft crash (Tables 2 and 3).

**Table 2. Firefighter fatalities associated with wildland firefighting (2009-2018)**

| Year | Total number of firefighter fatalities | Number of fatal incidents | Number of firefighters killed in multiple-fatality incidents |
|---|---|---|---|
| 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 |
| 2011 | 10 | 9 | 2 |
| 2010 | 12 | 12 | 0 |
| 2009 | 17 | 14 | 5 |
| 10-year average | 14 | 11 | 4 |

**Table 3. Wildland firefighting aircraft deaths (2009-2018)**

| Year | Total number of firefighter fatalities | Number of fatal incidents |
|---|---|---|
| 2018 | 0 | 0 |
| 2017 | 0 | 0 |
| 2016 | 0 | 0 |
| 2015 | 2 | 1 |
| 2014 | 2 | 2 |
| 2013 | 0 | 0 |
| 2012 | 6 | 2 |
| 2011 | 0 | 0 |
| 2010 | 0 | 0 |
| 2009 | 5 | 3 |
| 10-year average | 2 | 1 |

# Type of Duty

Activities related to emergency incidents resulted in the deaths of 42 firefighters in 2018 (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 40 fatalities. Nonemergency duties include training, administrative activities, performing other functions that are not related to an emergency incident, and post-incident fatalities where the illness or injury does not become evident until after the emergency.

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 (2018)**

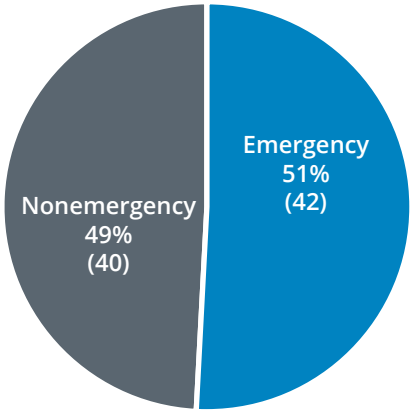
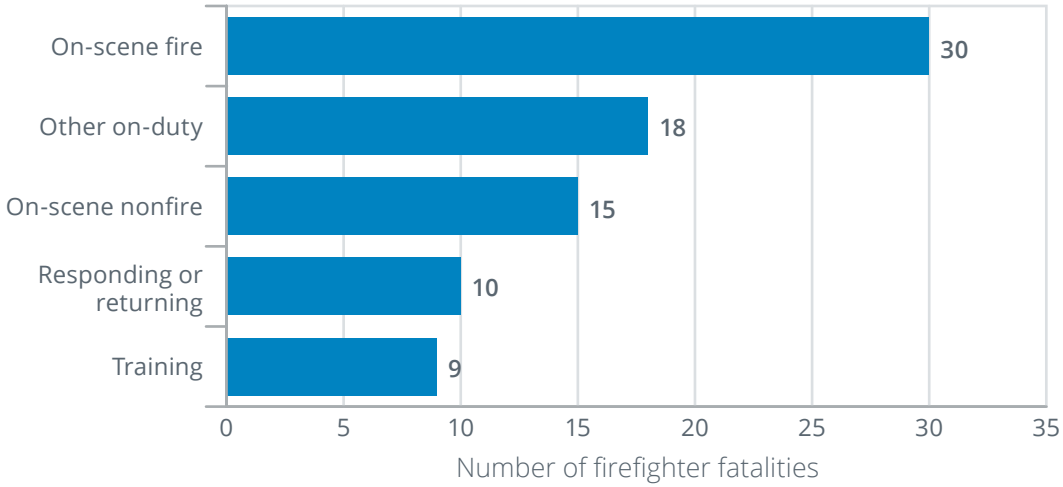



**Table 4. Emergency duty firefighter fatalities (2009-2018)**

| Year | Percentage of total firefighter fatalities | Percentage of total fatalities excluding hometown heroes |
|---|---|---|
| 2018 | 51.2 | 59.0 |
| 2017 | 45.4 | 56.3 |
| 2016 | 40.7 | 53.6 |
| 2015 | 48.9 | 58.7 |
| 2014 | 45.3 | 61.4 |
| 2013 | 70.6 | 77.0 |
| 2012 | 52.9 | 63.4 |
| 2011 | 51.7 | 69.2 |
| 2010 | 55.6 | 67.6 |
| 2009 | 63.5 | 74.4 |
| 10-year average | 52.6 | 64.1 |

The number of deaths by type of duty being performed for 2018 is shown in Figure 6.

**Figure 6. Firefighter fatalities by type of duty (2018)**




## Fireground operations

Thirty firefighters experienced fatal injuries during fireground operations in 2018. Of these fatalities, 15 were at the scene of a structure fire, and 11 were at the scene of a wildland or outside fire. The average age of the firefighters killed during fireground operations was 51 years old, with the youngest being 20 years old and the oldest being 82 years old. Fourteen of those killed were volunteer, 12 were career, and four were wildland firefighters. The nature of fatal injury while engaged in fireground operations for nine of the firefighter deaths was heart attack (30%). The nature of fatal injury for the other 21 deaths include: trauma (six), asphyxiation (four), other (four), crushed (three), burns (two), violence (one) and cerebrovascular accident (CVA/stroke) (one).

## Type of fireground activity

Table 5 shows the types of fireground activities in which firefighters were engaged when they sustained their fatal injuries or illnesses. This total includes all firefighting duties on the fireground, such as wildland firefighting and structural firefighting. In 2018, the most common type of on-scene fire activity was advancing hoselines.

**Table 5. Type of fireground activity (2018)**

| Type of fireground activity | Number of firefighter fatalities |
|---|---|
| Advance hoselines | 12 |
| Other | 6 |
| Unknown | 4 |
| Support | 3 |
| Water supply | 2 |
| Incident command | 2 |
| Ventilation | 1 |

## Fixed property use for structural firefighting fatalities

There were 15 fatalities in 2018 where firefighters became ill or injured while on the scene of a structure fire. Of these fatalities, most 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 (2018)**

| Type of structure | Number of firefighter fatalities |
|---|---|
| Residential | 14 |
| Commercial | 1 |

## Responding/Returning

In 2018, as shown in Table 7, 10 firefighters died or experienced an onset of symptoms while responding to or returning from nine emergency incidents: eight while responding to, and two while returning from, an incident.

**Table 7. Firefighter fatalities while responding to or returning from an incident (2009-2018)**

| Year | Number of firefighter fatalities |
|---|---|
| 2018 | 10 |
| 2017 | 11 |
| 2016 | 13 |
| 2015 | 8 |
| 2014 | 13 |
| 2013 | 14 |
| 2012 | 17 |
| 2011 | 11 |
| 2010 | 17 |
| 2009 | 16 |
| 10-year average | 13 |

## Training

In 2018, nine firefighters died while engaged in training activities (Table 8). Eight of the nine firefighters died from heart attacks, and one died from a pulmonary embolism.

Of the nine firefighters who died while engaged in training activities, four firefighters died while performing fire department-mandated physical fitness training, three died while involved in equipment drills, and two died during self-contained breathing apparatus (SCBA) training.

The average age of the nine firefighters was 46 years old. The youngest was 31 years old, and the oldest was 62 years old.

**Table 8. Firefighter fatalities while engaged in training (2009-2018)**

| Year | Number of firefighter fatalities |
|---|---|
| 2018 | 9 |
| 2017 | 12 |
| 2016 | 9 |
| 2015 | 7 |
| 2014 | 10 |
| 2013 | 7 |
| 2012 | 8 |
| 2011 | 8 |
| 2010 | 12 |
| 2009 | 10 |
| 10-year average | 9 |

## Nonfire emergencies

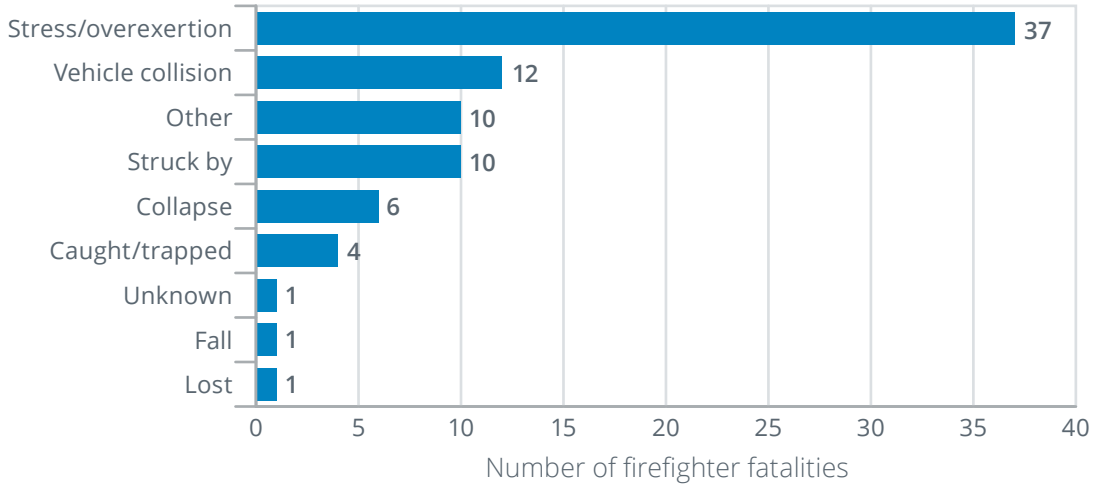
In 2018, 15 firefighters were killed during emergency duties not related to fire. These response calls included 10 motor vehicle accidents, three Emergency Medical Services (EMS) calls, one hazmat incident and one technical rescue in which a firefighter was attempting to rescue a boater who had fallen into the water, became separated from his partner and was found deceased at the bottom of the river. Eight of the 15 firefighters died from heart attacks, four from traumatic injuries, one from asphyxiation, one from a CVA and one from natural causes. All four of the traumatic injury deaths were from being struck by a vehicle. The average age was 49 years old. The youngest was 29 years old and the oldest was 69 years old.

# 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 2018. In 2018, the leading cause of fatal injury was stress/overexertion.

**Figure 7. Firefighter fatalities by cause of fatal injury (2018)**




## 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 2018, 37 firefighters died as a result of stress or overexertion:

- Thirty-three firefighters died due to heart attacks.
- Three firefighters died due to CVAs.
- One firefighter died from heart failure and is listed as "Other."
- Twelve were Hometown Heroes.

**Table 9. Firefighter fatalities caused by stress/overexertion (2009-2018)**

| Year | Number of firefighter fatalities | Percent of firefighter fatalities | Number of hometown hero fatalities |
|---|---|---|---|
| 2018 | 37 | 45.1 | 12 |
| 2017 | 53 | 60.2 | 16 |
| 2016 | 44 | 48.4 | 22 |
| 2015 | 60 | 66.7 | 15 |
| 2014 | 65 | 67.0 | 26 |
| 2013 | 39 | 35.8 | 9 |
| 2012 | 49 | 57.6 | 14 |
| 2011 | 54 | 62.1 | 21 |
| 2010 | 56 | 62.2 | 16 |
| 2009 | 52 | 54.2 | 12 |
| 10-year average | 51 | 55.9 | 16 |

## Vehicle crashes

In 2018, a total of 12 firefighters (11 volunteer and one wildland) lost their lives due to vehicle crashes. Vehicle crashes were the second leading cause of fatal firefighter injuries for the year. Six deaths involved privately owned vehicles, three deaths involved fire department engines, one death involved a tanker (water tender), one death involved a command vehicle, and one death involved a bulldozer. None of the vehicle crashes in 2018 involved an aircraft.

- A firefighter/equipment operator was operating a 2012 John Deere 750J bulldozer at a wildland fire. He used his bulldozer to improve a road. He had been experiencing radio communication difficulties and relayed his progress to the Incident Commander (IC) through his swamper (a certified heavy-equipment supervisor acting as a helper and lookout). He directed his swamper to return to their transport vehicle for a hydraulic hose to replace one that had been leaking. After retrieving the part, the swamper left the site to pick up a relief bulldozer operator for the upcoming change of shift. Several unsuccessful attempts to contact him were made through the night. The replacement operator asked the IC to assign an aircraft to look for their dozer because they could not locate it. The dozer was spotted by the aircraft. The dozer operator and the swamper were directed to the site and discovered that the dozer had rolled to a position 220 feet below the road. They accessed the site by foot and found that the firefighter/equipment operator had suffered fatal injuries from the incident.

- A chief was driving a 2010 GMC command vehicle to a safety conference. He was traveling eastbound on an interstate when his vehicle left the roadway to the right, came back onto the road and went off to the left, traveled across the median, across the westbound lanes, and down an embankment. The vehicle crashed through a fence, crossed a road and hit a tree. After coming to rest, the vehicle caught fire. The vehicle's speed prior to the crash was estimated at 90 miles per hour (mph) in the law enforcement report. He was killed in the crash.

- A firefighter was driving his motorcycle to an EMS training class. He entered a ramp from an eastbound loop parkway to a northbound parkway at a high rate of speed. He lost control, impacted the wooden guide rail, was ejected from the motorcycle and struck a sign with his helmet. He died as the result of traumatic injuries.

- A firefighter was driving an engine apparatus along a local highway on the way to a pump test. Witnesses indicated that they observed the right front tire go off the roadway. The firefighter overcorrected as he brought the apparatus back onto the roadway, thereby causing it to travel to the opposite ditch and overturn. He was ejected from the vehicle. He was treated on the scene by local EMS personnel and then flown by medical helicopter to a regional hospital. The firefighter was admitted to the hospital but died from his injuries the following day.

- A firefighter was in the right front seat of a fire tanker (tender) responding to a wildland fire. As the tanker entered a slight left curve, the right wheels of the apparatus left the roadway to the right. The driver steered to the left to attempt to gain control. The vehicle crossed the roadway to the left and overturned in a ditch. The water tank separated from the chassis and the vehicle came to rest on its left side. The driver, passenger and the firefighter were injured and had to be extricated. All three were transported to the hospital, but the firefighter died as the result of his injuries approximately ten days later. The two other firefighters received non-life-threatening injuries. All three firefighters were wearing their seat belts and the vehicle was not equipped with airbags.

- An assistant chief and a lieutenant were passengers in an engine apparatus responding to a multifatality vehicle crash on a nearby turnpike. The assistant chief was seated in the right front seat and the lieutenant was seated in the right rear seat. There were a total of five firefighters aboard the apparatus. As the apparatus responded, it left the roadway and entered the ditch on the right side of the road. The apparatus continued in the ditch until it struck a rock wall. The apparatus cab was significantly damaged by the collision, and both the assistant chief and the lieutenant were ejected and received mortal injuries. The driver and left-rear seat passenger received significant injuries in the crash. The middle-rear passenger sustained a broken arm. Of the five firefighters on the apparatus, only the middle-rear firefighter was wearing his seat belt at the time of the crash.

- A firefighter and the members of his fire department were dispatched to a water rescue incident. The firefighter responded in his personal vehicle, a 2003 Ford Explorer sport utility vehicle. As he responded, a tractor-trailer approaching from the opposite direction in a curve crossed the center line of the roadway. When the driver corrected, the load on the vehicle's trailer began to fall off of the trailer and the tractor-trailed rolled over. The firefighter received fatal traumatic injuries in the crash. He was wearing his seat belt, and the airbags in his vehicle did deploy.

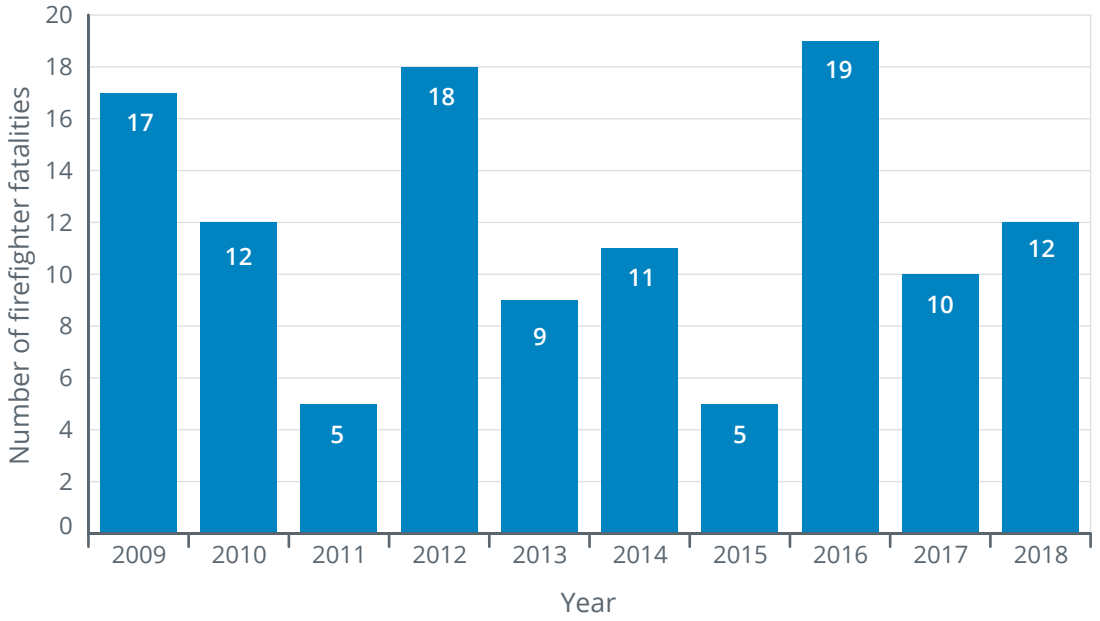
- A firefighter was responding to a motor vehicle crash incident in his personal vehicle, a 2002 Chevrolet pickup truck. He was responding on a road in a no passing zone. As he responded, the firefighter went into the opposing lane to pass another vehicle. The other vehicle attempted to turn left into a private driveway and was struck by the firefighter's vehicle. The firefighter's vehicle overturned and came to rest on its wheels. He was not wearing his seat belt, was partially ejected in the crash and pronounced dead at the scene due to traumatic injuries.

- A firefighter was responding to his fire station on the report of a structure fire. He was the only occupant of his personal vehicle, a 2008 Ford F150 pickup truck. As he responded, he overtook and passed two vehicles. The left wheels of his vehicle left the roadway to the left, and he steered to the right to come back on the roadway. The vehicle left the roadway to the right then struck a shallow ditch. The vehicle became airborne and the driver's side struck a utility pole. The pole snapped into two pieces, and his vehicle came to rest on its top. Firefighters responding to the structure fire received the report of a crash and diverted a rescue truck to the location. Responding firefighters extricated him from the vehicle and he was pronounced dead at the scene. The firefighter was wearing his seat belt at the time of the crash.

- A firefighter responded to her fire station for a structure fire dispatch. She was the driver and the sole occupant of her personal vehicle, a 2001 Honda Accord. As she responded, her vehicle left the roadway, swiped a guardrail with the passenger side door area, returned back to the roadway, crossed both lanes of traffic, and struck a guardrail on the driver's side of the vehicle. The guardrail went through the windshield, passenger compartment and rear window of her vehicle. She died due to physical trauma. She was not wearing a seat belt at the time of the crash.

- A firefighter was responding to an emergency medical incident in his personal vehicle, a 2004 Ford Ranger pickup truck. As he responded, he failed to negotiate a right-hand curve. The vehicle left the left side of the roadway, drove through a ditch and into a pond. He was able to call 911 and report his emergency but was unable to get out of the vehicle. The first law enforcement officer on the scene found the vehicle fully submerged and went into the water to attempt a rescue. The officer was forced to leave the water due to the cold and was unable to access him. Responding firefighters removed him from the vehicle and the water, and emergency medical treatment was provided. The cause of death was drowning.

**Figure 8. Firefighter fatalities in vehicle collisions (including aircraft) (2009-2018)**



## Struck by object

Being struck by an object was the third leading cause of fatal injuries, equal in severity with the category "Other" — both resulting in 10 firefighter fatalities in 2018.

- A fire captain was killed by a gunshot wound. The captain and the members of his engine company were dispatched to a report of an explosion at a multiple residential building. When they arrived at the scene, he and his crew were assigned to enter the building, climb to the fire floor and attack the fire. As the captain worked on the second floor, he was struck by gunfire. He was removed from the building by other firefighters and transported to a local hospital. Despite treatment at the scene, in the ambulance and in the hospital, he did not survive.

- A natural gas line was struck during an underground boring operation. Natural gas began to vent from the ground in various locations around the boring operation. Fire and law enforcement officers began an evacuation of the area. An explosion occurred, resulting in the death of a captain, injuries to a number of people and extensive damage. He was buried in debris and removed by firefighters and transported to the hospital by ambulance, although he did not survive. His cause of death was multiple blunt trauma.

- Firefighters were assigned to a wildland fire on the edge of a spot fire. They were in the process of felling a high-hazard tree, a 105-foot tall ponderosa pine that was burning about 10 feet from its top and producing a steady stream of embers. The tree fell in an unexpected manner, and a captain was fatally struck. He was treated by firefighters and emergency medical responders, but he was pronounced dead as he was flown to the helibase.

- A battalion chief was assigned to a wildland fire. He and his crew were assigned to reinforce a dozer line and place a hose lay to hold a firing operation. Air tankers were to make fire retardant drops along the dozer line to supplement the work of the crew. A Very Large Air Tanker made a drop near the work position of the battalion chief and his crew. A rise in elevation concealed by vegetation that was unknown to the pilot resulted in the drop only being approximately 100 feet above the treetops. The force of the drop uprooted an 87-foot tall tree and the tree fell on the battalion chief, fatally injuring him. Three other firefighters also received injuries in the incident.

- An assistant fire chief and the members of his fire department were dispatched to a residential structure fire. Firefighters arrived to find a well-involved structure made up of two attached manufactured dwellings with a metal roof overhead. The fire had spread to vehicles and outbuildings near the home by the time firefighters arrived. Firefighters could hear the sound of a propane tank venting. Firefighters could not determine the location of the propane tank due to smoke conditions. At this point, firefighters only had tank water to fight the fire and cool the tank. The IC ordered an evacuation of area residents and directed firefighters to take defensive positions. Approximately 24 minutes into the incident, the 500-gallon propane cylinder experienced a Boiling Liquids Expanding Vapor Explosion. Parts of the tank became airborne and one part dropped on the assistant chief, instantly killing him. The explosion and associated burning debris spread the fire to other buildings. In addition to the assistant chief, one other person was killed in the incident: the resident of the home originally on fire.

- A deputy chief and members of his fire department, as well as local law enforcement officers, responded to the scene of a motor vehicle incident. A tractor-trailer had lost control in icy conditions and was off of the roadway. Law enforcement and fire department vehicles on the scene parked in a defensive manner to shield the scene, and their emergency lights were in operation. A 2017 Dodge Ram 5500 towing a gooseneck trailer approached the scene through a curve and was unable to stop when a vehicle in front of it slowed. The trailer jackknifed and the vehicle struck an unoccupied law enforcement vehicle at the scene. The law enforcement vehicle was propelled forward by the impact and struck the deputy chief, pinning him under the law enforcement vehicle. He was extricated and transported to a local medical facility, where he died as the result of traumatic injuries received in the crash.

- A lieutenant and his engine company were arriving on the scene of a motor vehicle crash on an interstate. As the crew was disembarking the apparatus, they were struck in the rear by a tractor-trailer. The force of the impact drove the engine over top of the lieutenant, pinning him under the front right tire of the engine. He was instantly killed. Two other firefighters received life-threatening injuries and were transported to the hospital. The incident was witnessed by the arriving blocking units. The lieutenant was wearing his full personal protective equipment and reflective vest at the time of the incident.

- An assistant chief was directing traffic at a vehicle crash scene on the on-ramp to a highway from the northbound lane of another highway when he was struck by a vehicle. Life-saving efforts were administered on scene and the assistant chief was then transported to a local hospital where he was pronounced deceased as the result of traumatic injuries.

- A captain was off duty when he witnessed a motor vehicle crash. Roads were snow covered and slippery due to falling snow. He pulled over and was speaking to the driver of the car when he was struck by another vehicle operated by an impaired driver. He was transported to the hospital but died as a result of his injuries. His death is being considered a mutual aid response by his fire department and the fire department that serves the area where the crash occurred.

- A firefighter/emergency medical technician (EMT) and two other firefighters were in the process of draining compressed air from a number of used Self-Contained Underwater Breathing Apparatus air cylinders in preparation for valve removal and hydrostatic testing. In some cases, the cylinder valve was inoperable, so a firefighter was partially loosening the pressure-relief burst disc plugs on these cylinder valves. In the process of draining a cylinder with a loosened plug, the plug separated from the cylinder, and the air in the cylinder began to rapidly vent through the opening. The cylinder became airborne and struck a wall, shearing off the cylinder valve. The cylinder continued to be airborne, glancing off of an apparatus and striking the firefighter/EMT in the head. Firefighters immediately came to his aid and he was flown by medical helicopter to a regional hospital. He was pronounced dead at the hospital. The cause of death was reported to be blunt force trauma.

## Other

Ten firefighters died in 2018 from causes of fatal injuries not previously categorized.

- While conducting evacuations at a wildland fire, a fire engineer became trapped by a rapidly progressing fire front. The fire engineer was overrun by a rarely documented "fire vortex." This vortex was later determined to have wind speeds in excess of 165 mph, equivalent to an F-3 tornado. The fire engineer was found a short distance from his burned vehicle. The cause of death was listed as blunt trauma.
- One firefighter worked a wildland fire in Washington state. He was released from the fire and a day later was found unresponsive in his home. Reports indicate that the firefighter developed pneumonia which became septic. He was treated at a hospital but was taken off life support after suffering irreversible brain damage.
- A firefighter was on duty and serving as the acting sergeant. Toward the end of the shift, on-duty firefighters noticed water pouring down from the second floor of the fire station. Firefighters went upstairs into the officer's quarters and discovered him submerged in the bathtub with the water running. He was removed from the tub, emergency medical care was initiated and a paramedic ambulance was called. The acting sergeant was transported to the hospital. He died four days later as a result of complications from drowning. According to the medical examiner's report, the acting sergeant may have suffered a cardiac arrhythmia that rendered him unconscious. When he fell, his body blocked the drain in the tub, water filled the tub, and he drowned.
- A chief and the members of his fire department responded to a vehicle fire. The chief drove an engine apparatus to the scene and operated the vehicle's pump from a raised pump panel. As firefighters advanced a hoseline and fought the fire, the chief was found collapsed at the pump panel. He was removed, treated and transported to a local hospital where he was later pronounced dead. His death was cardiac or pulmonary related.
- A driver engineer was on duty, and during his shift, he responded to five incidents. During the shift, he complained to other firefighters about not feeling well. The next morning, the ambulance assigned to the same station as the driver engineer was dispatched to an emergency. As firefighters prepared to respond, they discovered him unresponsive in the back of the rescue unit. Firefighters assessed him and pronounced him deceased. The cause of death was a respiratory issue.
- A firefighter-operator was on duty in his assigned fire station. Early in the evening, he was found unresponsive in the fire station day room. He was treated by fellow responders and transported to the hospital but could not be revived.
- A firefighter worked a 24-hour shift. He responded to multiple emergencies during the shift; the last emergency being at 0000 hours. During shift change eight hours later, the firefighter was found deceased in bed at the fire station.
- A chief was discovered deceased at his desk. He was at his computer and had been reviewing reports. His death was attributed to Chronic Obstructive Pulmonary Disease.

- A captain was in his fire station preparing for an upcoming training drill. As he prepared, he conversed with a friend through his telephone. As he practiced or demonstrated the donning and operation of an SCBA, he became ill. The friend contacted emergency services, and he was treated at the fire station and transported to the hospital. He died as the result of a pulmonary embolism.

- A lieutenant responded to a motor vehicle crash. Later in the day, he participated in fire department training that ended in the late evening. At 0600 hours the next day, the lieutenant was found deceased at home. His death was attributed to natural causes.

## Collapse

Six firefighters were killed in 2018 during structure collapses.

- A lieutenant and the members of his engine company responded to a residential structure fire with reports of people trapped inside. After finding a deceased occupant at the entrance to the dwelling, the lieutenant and other firefighters made an interior coordinated fire attack. Due to freezing temperatures and water supply issues, the IC on scene ordered all companies to evacuate the building. Due to continued reports of trapped persons, the IC ordered firefighters to resume the interior attack. Shortly thereafter, a "mayday" was broadcast. A structural collapse had occurred inside the house. An emergency evacuation was called, and the IC ordered a Personnel Accountability Report (PAR). The lieutenant did not respond to the PAR. Fire companies entered the building as a Rapid Intervention Team (RIT) and found him trapped under debris. After the RIT extricated him, he was transported to the hospital where he was pronounced dead. The cause of death was positional asphyxia with superheated gas and smoke inhalation.

- An engineer and the members of his fire department responded to a structure fire in a large single-family residence. Arriving firefighters found a working attic fire and requested assistance. The residence was approximately one-half of a mile from the street and firefighters were presented with water supply issues throughout the incident. The roadway that led to the house was narrow and muddy, making access by fire apparatus difficult. A defensive strategy was used to attempt to control the fire, which had grown to engulf most of the attic. A reliable water supply was established, and a ladder pipe was used to control the fire. After approximately an hour, the ladder pipe was shut down and handlines were used from the exterior to suppress remaining areas of fire. Firefighters, including the engineer, entered the structure with a handline to suppress fire that was not accessible from the exterior. In the evening, a roof and structural collapse occurred, trapping six firefighters in the structure. A mayday was transmitted and an RIT was deployed. The engineer was found pinned under roof debris. An air supply was established to his SCBA and hydraulic tools were used to free him. All of the firefighters were removed from the building. The engineer had sustained severe traumatic injuries in the collapse. He was transported to the hospital but did not survive his injuries. At least four other firefighters were injured. The engineer's death was caused by traumatic asphyxia.

- A major fire had occurred in a large mill-construction building that was being converted to apartments. The fire was eventually fought defensively, and the building sustained a number of partial collapses. Although the main body of fire was extinguished over a period of hours, hot spots remained. The next morning, fire officials, the building owner

and a contracted engineer made visual inspections of the building. The decision was made to access upper floors of the building by aerial ladder to allow three firefighters and an assistant chief to enter with a hoseline to extinguish hot spots. As the crew worked, a collapse occurred and dropped them four floors. After 29 minutes, the firefighters and fire officer trapped by the collapse were free from the debris. Two firefighters received fatal injuries in the collapse.

- A firefighter and members of his fire department responded to a lightning-caused structure fire in a large single-family residence. The fire was reported in the early morning hours. Approximately 15 minutes later, he and other firefighters were advancing a hoseline into the structure when the floor collapsed. A mayday was initiated, and the firefighter was rescued after about 20 minutes. The firefighter was transported to the hospital but did not survive his injuries. The cause of death was multiple injuries.

- An assistant chief was operating as a member of an interior attack crew on a well-involved residential structure fire. He was in the process of exiting the structure when a collapse occurred. He was trapped by the collapse and was pronounced dead at the scene.

## 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 2018, four firefighters died from being caught or trapped.

- One firefighter was killed while conducting suppression activities on the rear of a fire truck. A hoseline came off the rear reel of the truck and the firefighter went to retrieve it. He draped a portion of the hoseline over his shoulder and returned to his position on the driver's side rear of the truck. He pulled the door closed but it was not latched. The wind shifted and the fire began to rapidly approach the vehicle. The operator accelerated away from the fire and the loose hoseline pulled the firefighter out of the truck. The second firefighter on the rear of the truck alerted the driver. The firefighter was located by the crew and found to have suffered major burns. He was transported to the hospital and later succumbed to his injuries.

- A firefighter/bulldozer operator was assigned to improve a dozer line. A short time later, the fire activity rapidly increased. Other firefighters contacted the firefighter/bulldozer operator to tell him to retreat from his position. He told firefighters by radio that he was cut off by the fire, that he was attempting to construct a safe zone, and he requested a water drop. After a number of attempts, firefighters were able to reach the firefighter/bulldozer operator and found him deceased. His death was caused by burns.

- A firefighter and members of his ladder company responded to a basement fire in a multifamily residence. There was a working fire in the basement and hoselines were deployed to attack the fire. The fire, however, spread through the exterior walls of the building. Firefighters were on the second floor of the building when fire conditions rapidly worsened. Firefighters, thinking their primary means of egress was blocked by fire, sought alternate ways out of the building. Two firefighters worked their way to the back of the building and reached a window. A ground ladder was raised to the

window and one of the firefighters descended, thinking that the other firefighter was right behind him. When he failed to descend, firefighters ascended the ladder to search for him. He was found unconscious on the floor with his Personal Alert Safety System alarm sounding. Due to the firefighter's stature, they were unable to get him to the window, so another SCBA was attached to his facepiece. He was removed from the building, treated and transported to the hospital where he was pronounced dead. The cause of death was smoke inhalation.

- A firefighter was searching for a boater who had fallen into the water and was not accounted for. While conducting the search, he became separated from his partner, suddenly disappeared and lost communication with his team. Other divers were immediately sent to search for him, and he was found near the bottom of the river. The firefighter was removed from the water and transported to the hospital. He did not recover. His death was caused by a rare heart condition called lymphocytic myocarditis.

## Unknown

In 2018, one firefighter died from a nature and cause that is unknown.

While riding as a passenger in a brush truck at a parade in a nearby town, a lieutenant became ill. His wife, who is also a member of the department and was the driver of the brush truck, immediately drove home. He was helped inside of his house by his wife and collapsed soon after. The nature and cause of the medical emergency has yet to be determined.

## Fall

One firefighter was killed in 2018 from injuries sustained in a fall.

A firefighter and the members of his fire department responded to an early morning mutual aid structure fire. When firefighters returned to the station, they worked to place their apparatus back in service. While helping to repack hose, the firefighter slipped and fell, striking his head. He was treated at the station and flown by medical helicopter to a regional hospital. He died as a result of his injuries a day later.

## Lost or disoriented

One firefighter was killed in 2018 by becoming lost or disoriented inside of a burning structure fire.

A firefighter and the members of his engine company were dispatched to the report of a structure fire. A fire caused by heat from a boiler ventilation pipe spread in concealed spaces and materials installed in the structure for use in a movie production. The firefighter and his crew advanced a hoseline into the basement of the building for fire attack. His air supply ran low, and he told other firefighters that he was going to exit. The firefighter became disoriented in the structure, ran out of air and collapsed. When commanders realized that he was not accounted for, a Rapid Intervention Crew was sent in to locate him. He was located after approximately 12 minutes and removed from the building. The firefighter was transported to the hospital but did not survive. His death was caused by asphyxiation due to smoke inhalation.

# Nature of Fatal Injury

Figure 9 shows the distribution of the 82 firefighter deaths that occurred in 2018 by the medical nature of the fatal injury or illness. In 2018, heart attack was the most common type of fatal injury. Figure 10 shows the percentage distribution of nature of fatal injury.

**Figure 9. Firefighter fatalities by nature of fatal injury (2018)**

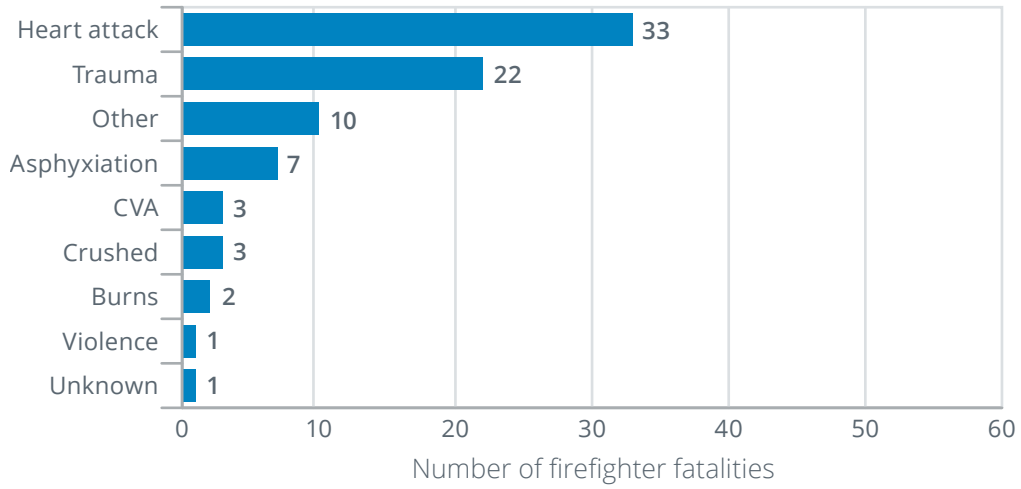



**Figure 10. Percentage distribution of firefighter fatalities by nature of fatal injury (2018)**

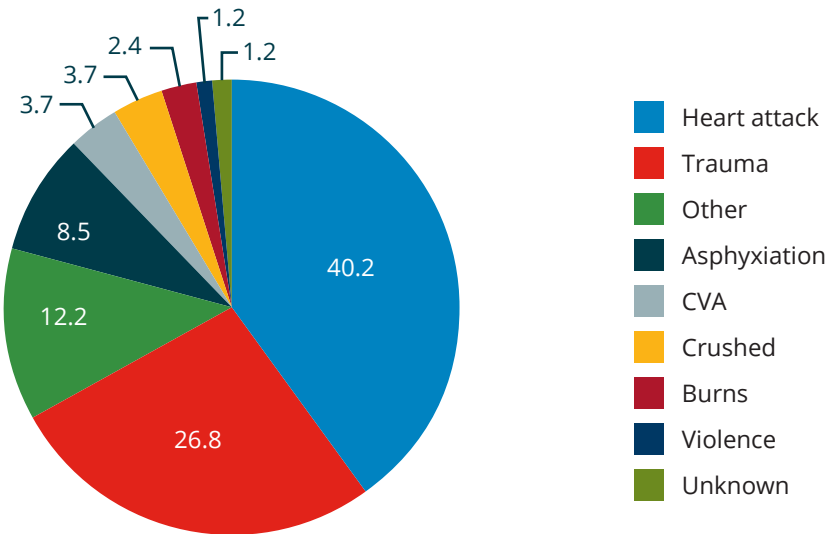
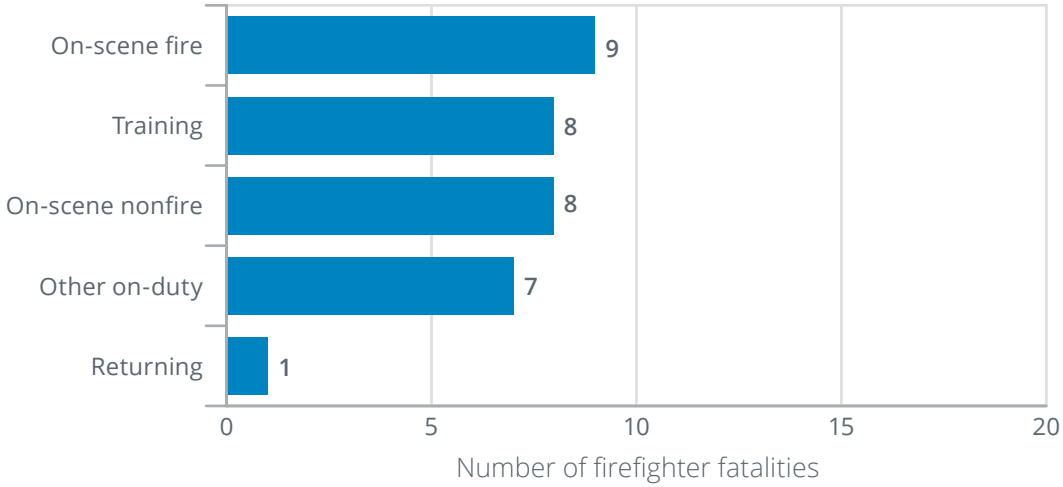


Figure 11 shows the type of duty involved for the 33 firefighters who died because of a heart attack.

**Figure 11. Heart attacks by type of duty (2018)**



# Firefighter Ages

Figure 12 shows the percentage distribution of firefighter deaths by age (at the time of injury) and nature of the fatal injury. Table 10 provides a count of firefighter fatalities by age and the nature of the fatal injury.

**Figure 12. Firefighter fatalities by age and nature of fatal injury (2018)**

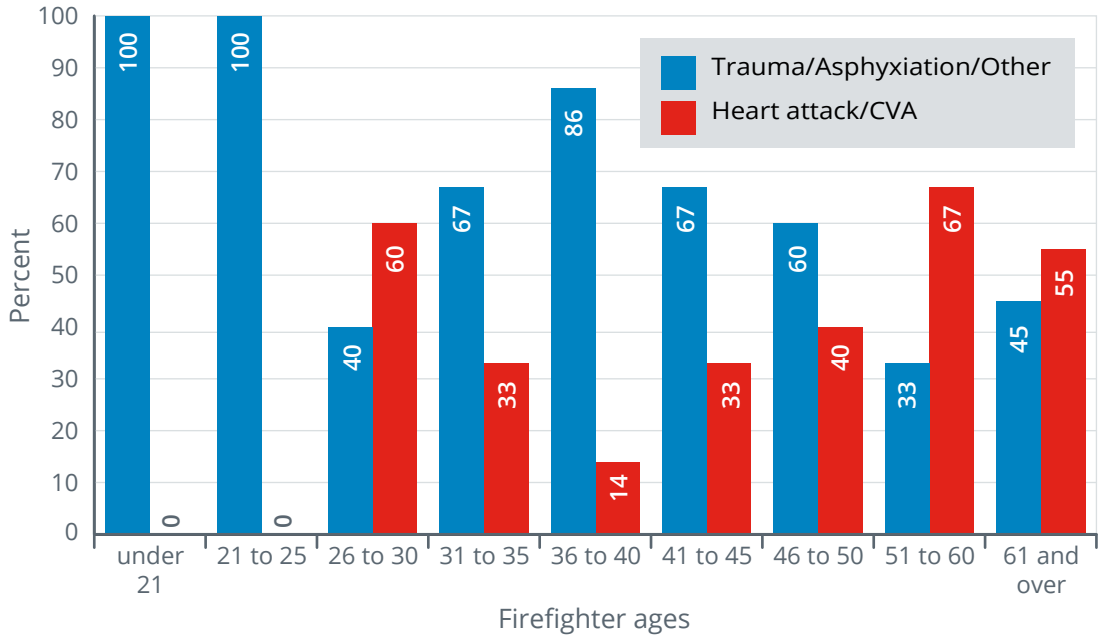


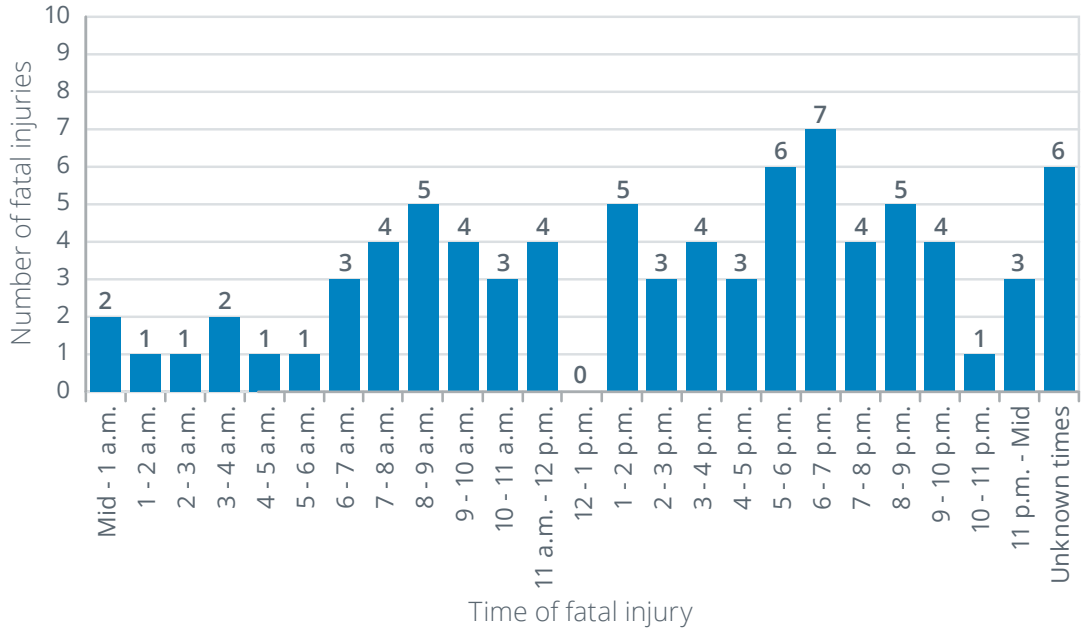

**Table 10. Firefighter fatalities by age and nature of fatal injury (2018)**

| Age | Number of firefighter fatalities who died of trauma/asphyxiation/ other | Number of firefighter fatalities who died of heart attack/CVA |
|---|---|---|
| Under 21 | 3 | 0 |
| 21 to 25 | 1 | 0 |
| 26 to 30 | 2 | 3 |
| 31 to 35 | 8 | 4 |
| 36 to 40 | 6 | 1 |
| 41 to 45 | 6 | 3 |
| 46 to 50 | 6 | 4 |
| 51 to 60 | 5 | 10 |
| 61 and over | 9 | 11 |

# Deaths by Time of Injury

For 2018, 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 six firefighters was either unknown or not reported.

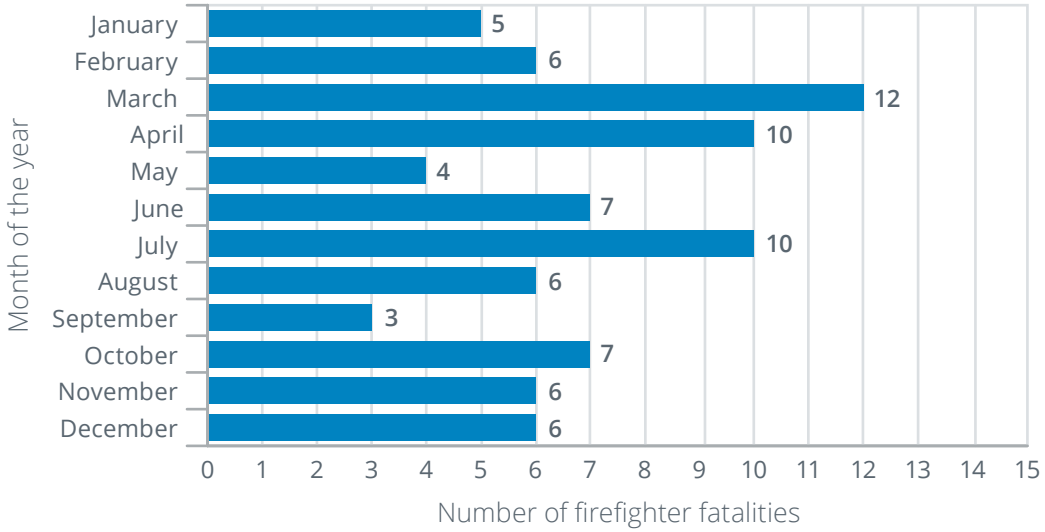
**Figure 13. Firefighter fatalities by time of fatal injury (2018)**




# Firefighter Fatality Incidents by Month of Year

Figure 14 illustrates the 2018 firefighter fatalities by month of year.

**Figure 14. Firefighter fatalities by month of year (2018)**



# State and Region

The distribution of firefighter deaths in 2018 by state is shown in Table 11. Firefighters based in 34 states and the U.S. Virgin Islands died in 2018.

The highest number of firefighter deaths in 2018 (based on the location of the fire service organization) occurred in California and Pennsylvania, with seven losses each. Texas had six firefighter deaths, followed by Georgia and North Carolina with five firefighter deaths each. There were no other states with five or more firefighter fatalities for the year.

**Table 11. Firefighter fatalities by state based on location of fire service (2018)***

| State | Number of firefighter fatalities | Percentage of firefighter fatalities |
|---|---|---|
| CA | 7 | 8.5 |
| PA | 7 | 8.5 |
| TX | 6 | 7.3 |
| GA | 5 | 6.1 |
| NC | 5 | 6.1 |
| WI | 4 | 4.9 |
| MS | 3 | 3.7 |
| NJ | 3 | 3.7 |
| NY | 3 | 3.7 |
| OH | 3 | 3.7 |
| MD | 3 | 3.7 |
| VA | 3 | 3.7 |
| LA | 2 | 2.4 |
| MA | 2 | 2.4 |
| MI | 2 | 2.4 |
| OK | 2 | 2.4 |
| OR | 2 | 2.4 |
| TN | 2 | 2.4 |
| WV | 2 | 2.4 |
| AZ | 1 | 1.2 |
| FL | 1 | 1.2 |
| IA | 1 | 1.2 |
| IL | 1 | 1.2 |
| IN | 1 | 1.2 |
| KS | 1 | 1.2 |
| KY | 1 | 1.2 |
| MN | 1 | 1.2 |
| MO | 1 | 1.2 |

*This list attributes the deaths according to the state in which the fire department or unit is 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.

**Table 11. Firefighter fatalities by state based on location of fire service (2018) — continued**

| State | Number of firefighter fatalities | Percentage of firefighter fatalities |
|---|---|---|
| RI | 1 | 1.2 |
| SC | 1 | 1.2 |
| SD | 1 | 1.2 |
| UT | 1 | 1.2 |
| VT | 1 | 1.2 |
| VI | 1 | 1.2 |
| WA | 1 | 1.2 |
| Total | 82 | 100 |

# On-Duty Firefighter Fatalities Where Incidents Occurred in Previous Years

There were two firefighters who died in 2018 but whose fatal injury occurred while on duty in previous years.

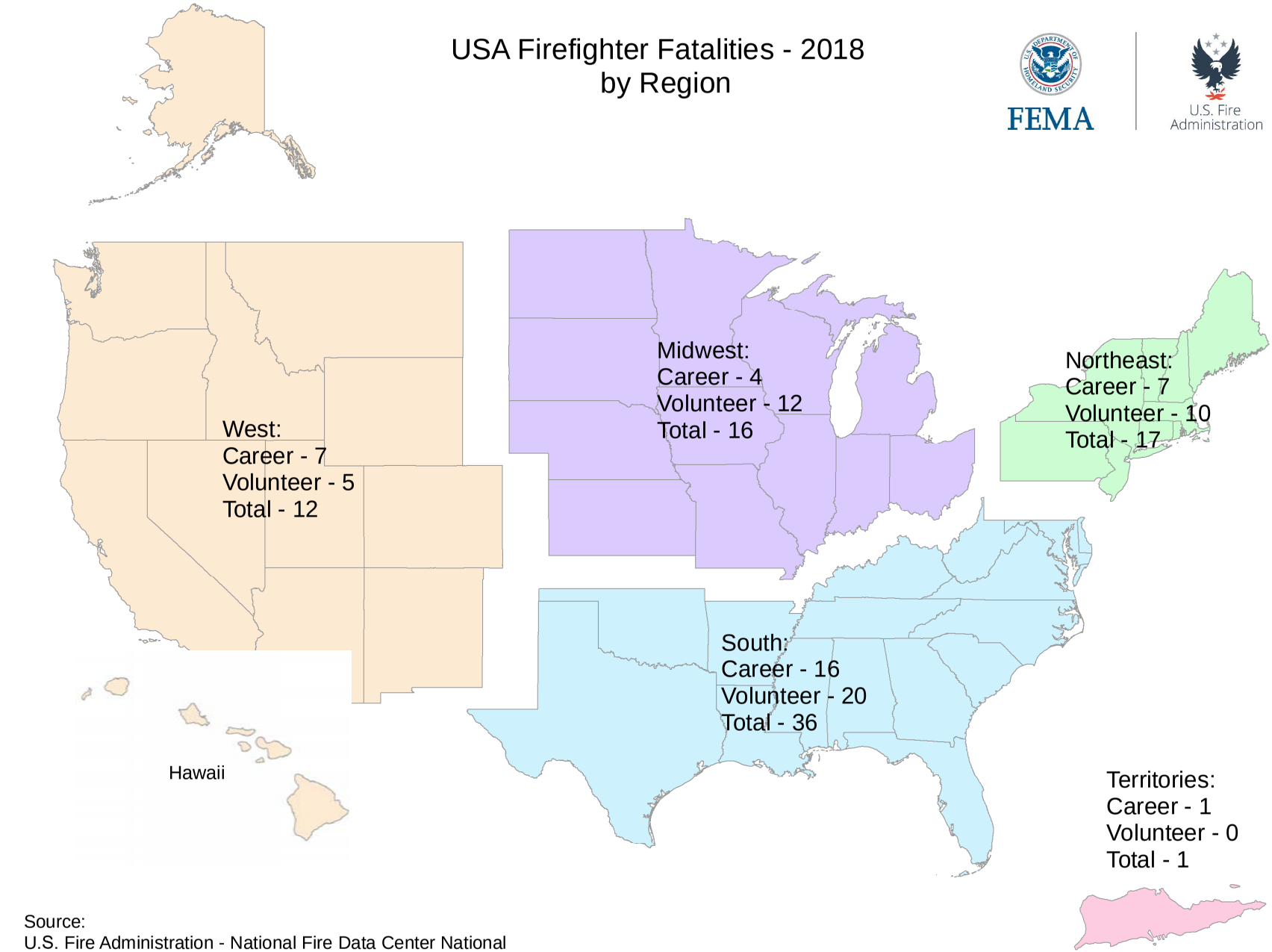
- Four firefighters were operating a hoseline inside of a bakery in the area of a basement stairway. The fire progressed rapidly, and the firefighters were forced to abandon their position. Three firefighters made it to the exterior, but one firefighter was trapped inside. Two firefighters entered the bakery from the rear, located the firefighter and dragged him to the exterior. He was treated at the scene and transported to a local hospital. He suffered second- and third-degree burns on the lower half of his body as well as burns to his hands and face. He spent six weeks in the burn unit. His extensive medical care included numerous blood transfusions. Due to the required blood transfusions for the injuries sustained, he contracted Hepatitis C, which appeared many years later. This disease caused many debilitating health conditions, including liver failure, which ultimately caused his death in June of 2018.
- A captain was paralyzed from the neck down as the result of a fire apparatus crash while responding to an incident in October of 2003. He died from complications from those injuries in May of 2018.

# On-Duty Firefighter Fatalities Where Incidents and Deaths Occurred in Previous Years

USFA was informed in 2018 of four additional firefighters whose death and on-duty fatal injury both occurred in previous years.

- A firefighter jumped down from a fire truck and stepped onto a lane marking bump that caused injury to his left knee resulting in surgery. He reinjured his left knee two more times. These re-injuries led to additional surgeries and ultimately a total knee replacement. The firefighter underwent surgery for a total knee replacement in April 15, 2014. Due to complications from the knee replacement surgery, he was transferred to the intensive care unit, where he passed away approximately two weeks later. The death certificate lists the cause of death as respiratory failure, septic shock and acute renal failure.
- In March of 2014, the president of a fire department was driving his personal vehicle to a meeting regarding fundraising equipment for his department. A sudden snow squall caused a major chain reaction crash. A total of 41 vehicles were involved in the crash, and two people, including the president, were killed.
- In August of 2017, an assistant engineer suffered a heart attack and died within 24 hours of responding to multiple emergency calls.
- A firefighter responded to three fire incidents in two days in November of 2014. The last incident, a fire alarm, concluded late morning. Approximately one and a half hours later, firefighters and emergency medical responders were dispatched to a person not breathing. The firefighter was discovered unconscious in the front yard. An automated external defibrillator was connected and delivered two shocks. Paramedics arrived to continue treatment and the firefighter was transported to a local hospital where he was later pronounced dead. His death was caused by a heart attack.

**Figure 15**




Source:
U.S. Fire Administration - National Fire Data Center National Fallen Firefighters Foundation

**Figure 16**

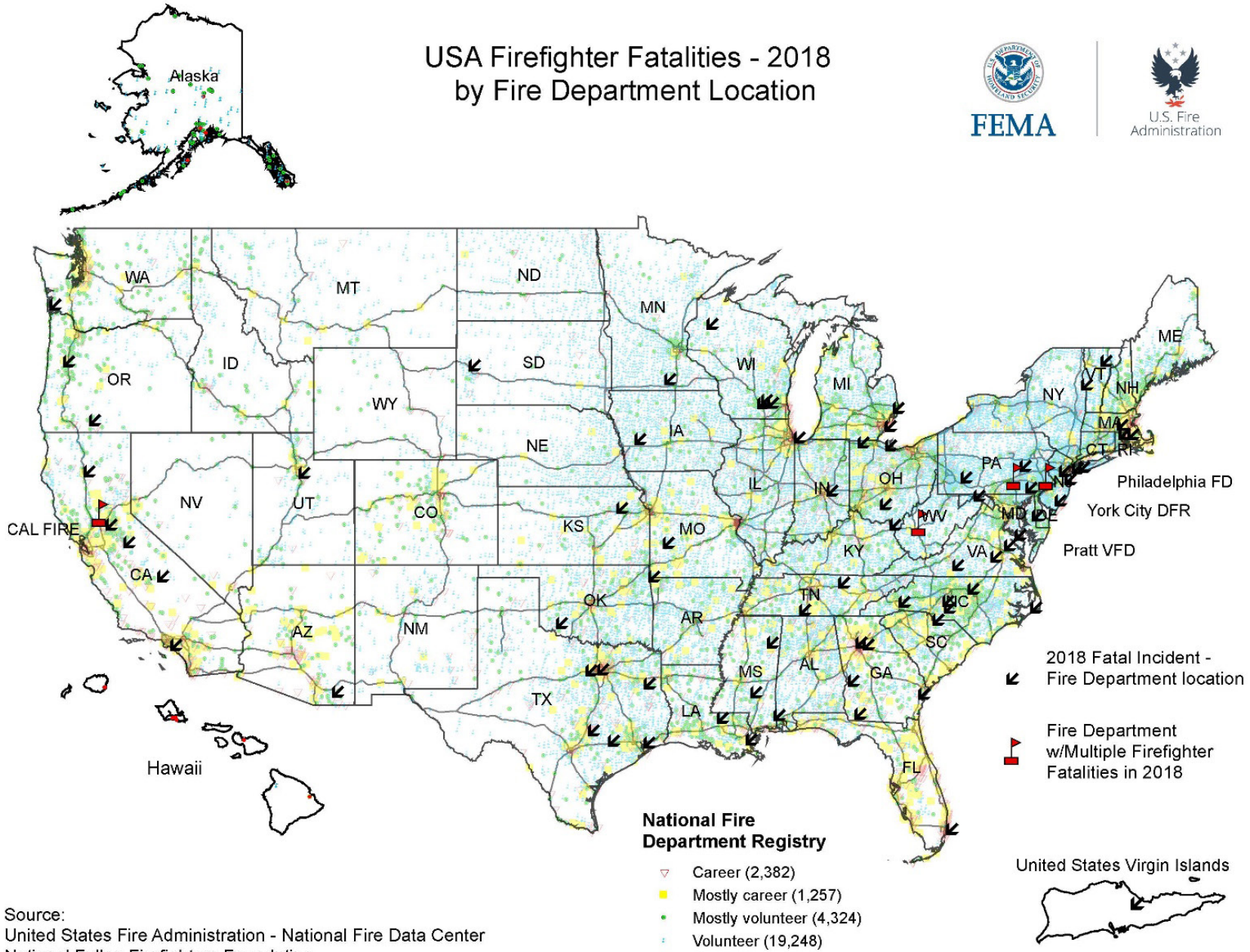
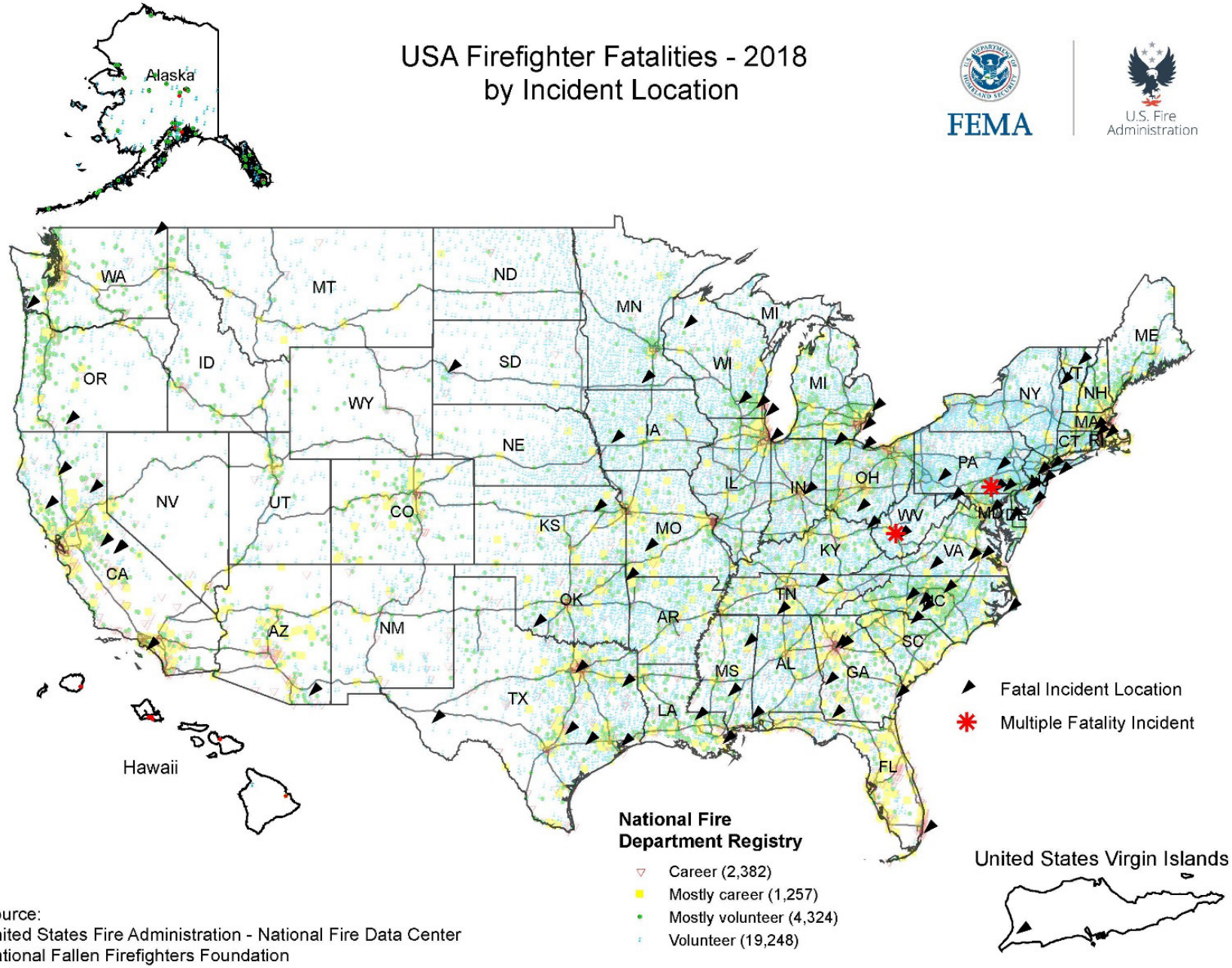

USA Firefighter Fatalities - 2018
by Fire Department Location
FEMA
U.S. Fire Administration
Alaska
Hawaii
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
MD
DE
NJ
CT
RI
MA
VT
NH
ME
CAL FIRE
Philadelphia FD
York City DFR
Pratt VFD
2018 Fatal Incident - Fire Department location
Fire Department w/Multiple Firefighter Fatalities in 2018
National Fire Department Registry
Career (2,382)
Mostly career (1,257)
Mostly volunteer (4,324)
Volunteer (19,248)
United States Virgin Islands
Source:
United States Fire Administration - National Fire Data Center
National Fallen Firefighters Foundation

**Figure 17**




Source:
United States Fire Administration - National Fire Data Center
National Fallen Firefighters Foundation

# 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 one 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 2018 firefighter fatalities. These statistics are based on answers from the fire departments, 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 12. Firefighter fatalities by coverage area type (2018)**

| Urban/Suburban | Rural | Total |
|---|---|---|
| 45 | 37 | 82 |


# Appendix

## Firefighter Fatality Inclusion Criteria — National Fire Service Organizations

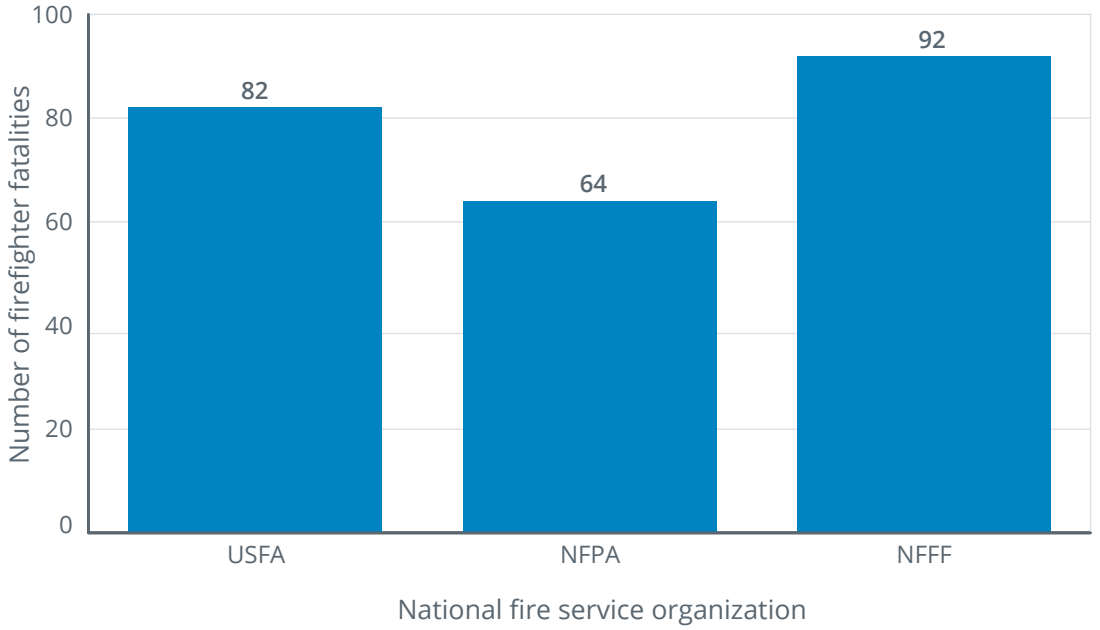
NFPA, NFFF, USFA and other organizations individually collect information on firefighter fatalities in the United States. Each organization uses a slightly different set of inclusion criteria that are based at least in part on the purposes of the information collection for each organization and data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

For 2018, the USFA reported 82 on-duty firefighter fatalities.

**Firefighter fatalities in 2018 for incidents occurring in 2018**




## Inclusion criteria for the National Fire Protection Association's annual firefighter fatality study

### Introduction

Each year, the NFPA collects data on all firefighter fatalities in the United States that resulted from injuries or illnesses that occurred while the victims were on duty. The purpose of the study is to analyze trends in the types of illnesses and injuries resulting in deaths that occur while firefighters are on the job. This annual census of firefighter fatalities in its current format dates back to 1977. (Between 1974 and 1976, the NFPA published a study of on-duty firefighter fatalities that was not as comprehensive.)

### What is a firefighter?

For the purpose of the NFPA study, the term "firefighter" covers all uniformed members of organized fire departments, whether career, volunteer or combination, or contract; full-time public service officers acting as firefighters; state and federal government fire service personnel; temporary fire suppression personnel operating under official auspices of one of the above; and privately employed firefighters including trained members of industrial or institutional fire brigades, whether full or part time.

Under this definition, the study includes, besides uniformed members of local career and volunteer fire departments, those seasonal and full-time 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, and members of industrial fire brigades. Impressed civilians would also be included if called on by the officer in charge of the incident to carry out specific duties. The NFPA study includes fatalities that occur in the 50 states and the District of Columbia.

**What does "on duty" mean?**

The term "on duty" refers to being at the scene of an alarm, whether a fire or nonfire incident; being en route while responding to or returning from an alarm; performing other assigned duties such as training, maintenance, public education, inspection, investigations, court testimony and fundraising; and being on call, under orders or on standby duty other than at home or at the individual's place of business. Fatalities that occur at a firefighter's home may be counted if the actions of the firefighter at the time of injury involved firefighting or rescue.

On-duty fatalities include any injury sustained in the line of duty that proves fatal, any illness that was incurred as a result of actions while on duty that proves fatal, and fatal mishaps involving nonemergency occupational hazards that occur while on duty. The types of injuries included in the first category are mainly those that occur at an incident scene, in training, or in accidents while responding to or returning from alarms. Illnesses (including heart attacks) are included when the exposure or onset of symptoms are tied to a specific incident of on-duty activity. Those symptoms must have been in evidence while the victim was on duty for the fatality to be included in the study.

Fatal injuries and illnesses are included even in cases where death is considerably delayed. When the onset of the condition and the death occur in different years, the incident is counted in the year of the condition's onset. Medical documentation specifically tying the death to the specific injury is required for inclusion of these cases in the study.

**Categories not included in the study**

The NFPA study does not include members of fire department auxiliaries, nonuniformed employees of fire departments, emergency medical technicians 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.

**2018 experience**

In 2018, a total of 64 on-duty firefighter deaths occurred in the United States, according to the NFPA inclusion criteria.

## National Fallen Firefighters Foundation

In 1997, fire service leaders formulated new criteria to determine eligibility for inclusion on the National Fallen Firefighter Memorial. Line-of-duty deaths shall be determined by the following standards:

1. Deaths meeting the Department of Justice's Public Safety Officer Benefits program guidelines for a favorable determination.

2. Deaths directly resulting from traumatic injuries sustained during response to, at the scene of or during return from an emergency incident, including, but not limited to, fires, emergency medical calls, hazardous materials incidents, natural disasters, technical rescue incidents, and search and rescue missions.

3. Deaths directly resulting from traumatic injuries sustained while engaged in department-authorized training drill or activity that requires participants to be engaged in physical activity.

4. Deaths directly resulting from traumatic injuries sustained while engaged in a department-mandated physical exercise program administered by the agency, including, but not limited to, running or other types of physical exercise and annual recertification fitness or agility tests.

5. Deaths directly resulting from a cardiovascular event that occurs immediately after, or within 24 hours of, returning from an emergency response or being engaged in a department-mandated physical exercise or training activity as defined above.

6. 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 January 1, 2018.)

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 United States 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 coworkers 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.

As of this writing, the foundation will be honoring 119 firefighters who died in the line of duty at the October 2019 Memorial Weekend. Ninety-two firefighters being honored are associated with incidents and deaths that occurred in 2018 and 27 deaths as the result of incidents and deaths that occurred prior to 2018.

# Acronyms

| | |
|---|---|
| **CVA** | cerebrovascular accident |
| **EMS** | Emergency Medical Services |
| **EMT** | emergency medical technician |
| **IC** | Incident Commander |
| **mph** | miles per hour |
| **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 |
| **PAR** | Personal Accountability Report |
| **PSOB** | Public Safety Officer Benefits |
| **RIT** | Rapid Intervention Team |
| **SCBA** | self-contained breathing apparatus |
| **USFA** | U.S. Fire Administration |

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

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September 2019