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

Firefighter Fatalities in the United States in 2024

FEMA

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Prepared by

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

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

In memory of all firefighters who answered their last call in 2024.

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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2024 Executive Summary

This USFA report provides a comprehensive overview of the on-duty deaths among firefighters in the United States in 2024. It identifies leading causes and natures of fatal injury and other key findings of firefighter fatalities that occurred in 2024, as well as 10-year trends from 2015 to 2024. With this information, our nation's fire service can best direct efforts toward finding solutions to further reduce firefighter fatalities in the future.

Key findings of 2024 on-duty firefighter fatalities:

1. Total fatalities:
    a. 72 firefighters died in 2024.
        - This is the second lowest annual count of firefighter fatalities since USFA began tracking these deaths.
        - The 10-year trend shows a 4% increase since 2015, with the fewest fatalities occurring in 2019. However, when COVID-19 deaths are removed from 2020 through 2023 annual totals, the 10-year trend shows a decrease of 12%.
        - The three-year trend shows a 26% decrease since 2022.
    b. 18 firefighters died under circumstances meeting the requirements of the Hometown Heroes Survivors Benefits Act. Since 2015, the 10-year trend shows a 1% decrease in these fatalities.
2. Leading causes of fatal injury: Cause of fatal injury refers to the action, lack of action or circumstances that directly resulted in a fatal injury.
    a. The leading cause of fatal injury was stress/overexertion (58%). Stress/overexertion was the leading cause each year since 2015 except for 2020 and 2021 when it tied with COVID-19.
    b. The second leading cause of fatal injury was being struck by objects (13%).
    c. Vehicle collision was the third leading cause of death at 11%. Vehicle collision was the second or third leading cause each year from 2015 to 2024.
3. Leading natures of fatal injury: Nature of fatal injury refers to the medical diagnosis that resulted in a fatal injury.
    a. Cardiovascular events accounted for 58% of firefighter fatalities. Except for 2020 and 2021 when COVID-19 was a factor, cardiovascular event was the leading type of nature of fatal injury of firefighters every year from 2015 to 2024.
    b. The second leading nature of fatal injury was trauma at 21%.
4. Type of duty:
    a. 68% of firefighter fatalities occurred while operating at an incident and 32% occurred during routine operations.
    b. The most common type of duty leading to a firefighter fatality was operating at a fireground (36%). During these fireground operations, the most common type of on-scene fire activity was advancing hoselines or fire attack at 39%. The second and third most common types of activity during fireground operations were incident command (15%) and other miscellaneous activities (12%).

c. The next most common type of duty leading to a firefighter fatality was operating at non-fire scene (22%).

d. Of eight firefighters that died while responding to or returning from an incident, six (75%) were volunteer.

5. Demographics:

a. 46% of fatalities were career firefighters, 44% were volunteer firefighters, 7% were wildland firefighters, and 3% were part-time firefighters.

b. Six (8%) firefighters were killed during activities involving brush, grass or wildfire firefighting, which is the lowest number in the past 10 years.

c. Firefighters aged 51 to 55 accounted for the most deaths at 15% followed by those ages 41 to 45 (14%) and 56 to 60 (13%).

d. 71 (99%) of firefighter fatalities were male and one (1%) was female.

As seen from the data above, firefighters operate in inherently dangerous environments. Firefighter fatalities may occur because of external hazards or because of medical emergencies that are triggered by performing emergency operations. As mandated by the Federal Fire Prevention and Control Act of 1974, the USFA strives to identify and increase awareness of the causes of deaths related to firefighting activities so that deaths of firefighters in the future can be reduced. The following recommendations are aimed at reducing the number of on-duty firefighter fatalities:

1. Recommendation #1: Continue efforts to reduce cardiovascular-related firefighter fatalities:

a. Increase cardiac-related screenings among firefighters, improving the quality of the screening and ensuring corrective actions are taken if risk factors are identified. All firefighters over the age of 40 should be screened for atherosclerotic cardiovascular disease and structural abnormalities.

b. Increase awareness and training related to the importance of physical fitness, nutrition, adequate sleep, stress reduction, mental health support and substance abuse management for cardiac health and cancer risk reduction.

c. Adopt and consistently practice heat stress protocols that manage heat exposure and reduce heat stress during and after firefighting, emergency operations or training events; procedures for minimizing exposure to smoke and other toxic agents at the scene of a fire or live fire trainings; and emergency response practices that can be lifesaving in the event of a cardiac emergency.[1]

2. Recommendation #2: Further enhancement of situational awareness training at all levels of personnel within fire departments, especially on escalating and dynamic events in an all-hazard environment.

3. Recommendation #3: Continue efforts to reduce firefighter fatalities related to vehicle collisions:

a. Ensure emergency vehicle drivers are knowledgeable of and adhere to established fire department policies, procedures and guidelines related to the safe operation of vehicles including both fire department and privately owned vehicles.[2]

b. Emphasize the critical need for non-emergency vehicle drivers to properly maneuver through crash sites, providing education during license renewal tests, road warning signs and printed publications.

[1] NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments;* NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program;* NFPA 1584, Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises

[2] NFPA 1071, *Standard for Emergency Vehicle Technician Professional Qualifications*; NFPA 1451, *Standard for a Fire and Emergency Service Vehicle Operations Training Program*

The 2024 firefighter fatality report is intended to serve as a critical resource for the fire service, policymakers and safety organizations to provide data analysis and resulting insights to enhance firefighter safety and prevent future on-duty deaths. This annual report also examines historical trends as a means of understanding change over time and identifying new strategies to help prevent these fatalities from occurring in the future.

Introduction

Firefighting is an inherently dangerous job. Firefighters not only respond to fires, but other emergency incidents such as medical events, motor vehicle collisions and water rescues. When firefighters respond to calls, they are putting themselves at significant personal risk. When that risk turns deadly and a firefighter fatality happens, it has devastating effects on the firefighter's family, the fire department "family" and the community. This report is intended to honor those fallen firefighters, analyze the circumstances of their deaths, and learn from these losses to decrease future risks.

Since 1976, the 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 identify specific problems on which the fire service should focus and help direct efforts toward finding solutions to reduce firefighter fatalities in the future. This information can also be used to measure the effectiveness of current programs directed toward firefighter health and safety. For example, in response to previous annual firefighter fatality reports, the USFA has sponsored research to create safer operational environments for firefighters by increasing awareness about emergency vehicle operations safety, improve the health and safety of emergency responders, develop fire service risk management protocols, and increase fire station 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 in Emmitsburg, Maryland, each year. Additional information can be found at https://www.firehero.org/events/memorial-weekend/.

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

Firefighter Fatalities in the United States in 2024

There were 72 on-duty firefighter fatalities in 2024. Figure 1 shows that from 1977 to 2024, on-duty firefighter fatalities have decreased by 32%. There are a couple of notable landmarks within the data presented in Figure 1. The significant spike in 2001, shown in red, was due to the terrorist attacks on Sept. 11, 2001, which resulted in the deaths of 343 firefighters when the World Trade Center North and South Towers in New York City collapsed. In addition, after 2003, the USFA began tracking firefighter fatalities that qualified under the Hometown Heroes Survivor Benefits Act (shown in gray). Finally, in 2020, due to the global COVID-19 pandemic, the USFA began tracking on-duty deaths that occurred from exposure to COVID-19 (shown in green). COVID-19-related deaths are determined by the firefighter's agency and refer to fatalities caused by on-duty exposure to the virus or its complications.

Figure 1. On-duty firefighter fatalities (1977-2024)

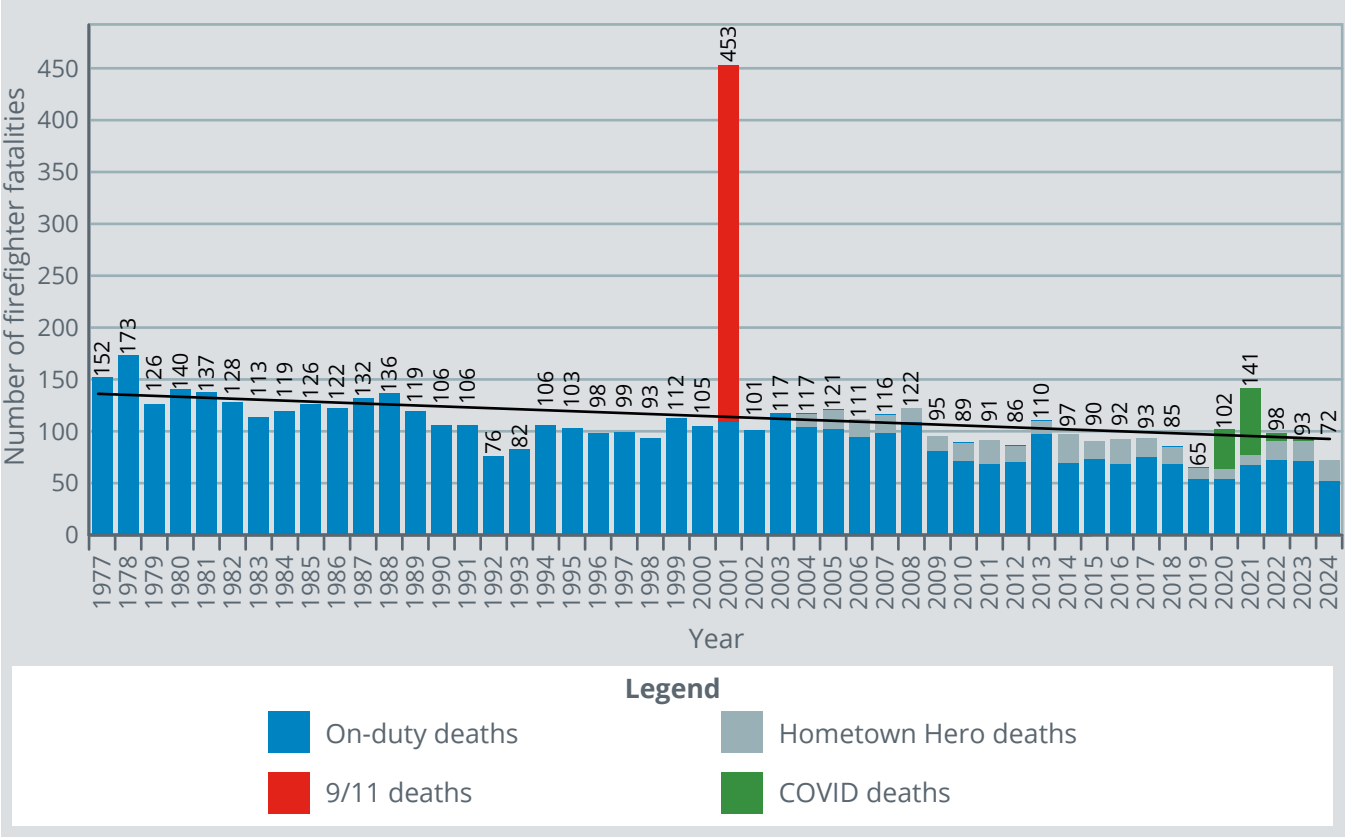
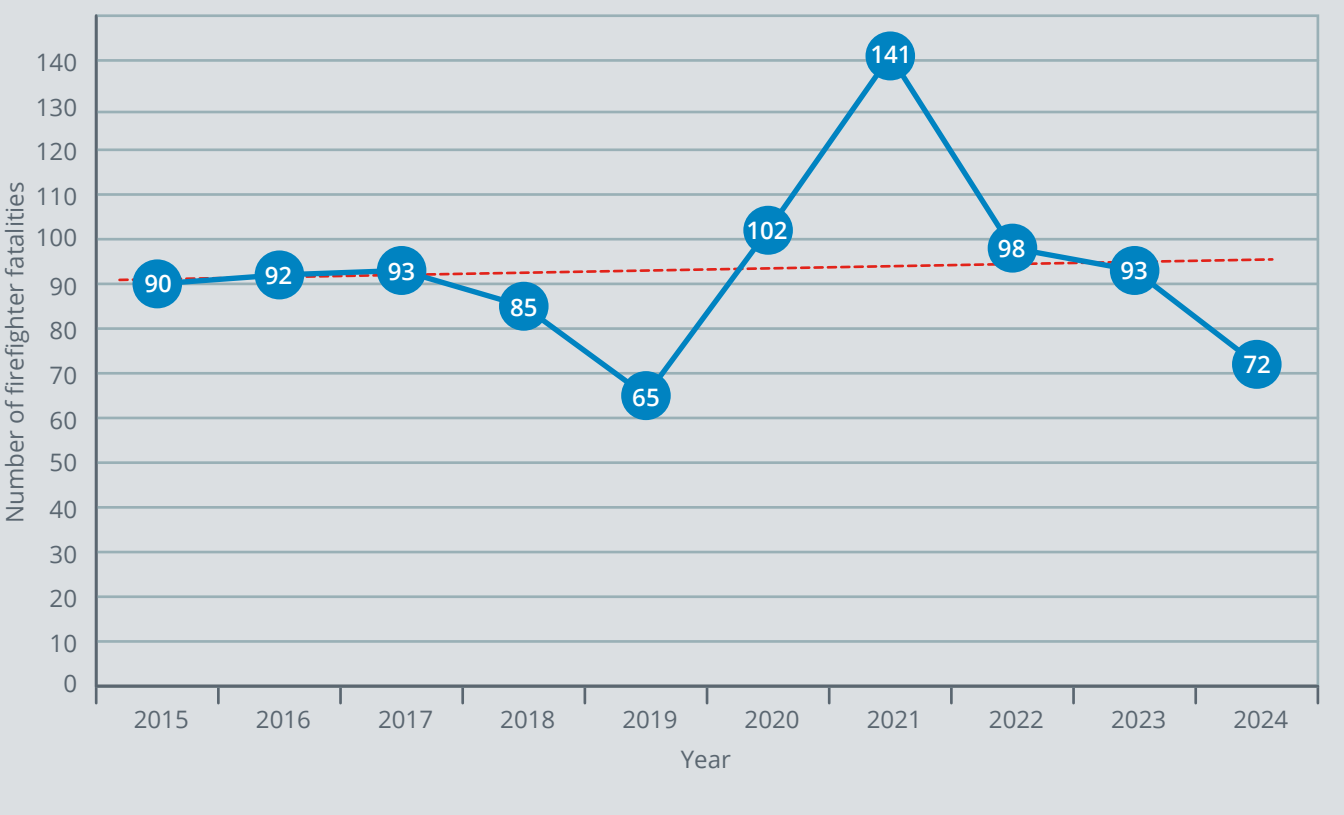


Figure 2 presents the counts and a historical trend of annual on-duty firefighter fatalities for the 10-year period from 2015 to 2024. With the inclusion of COVID-19 deaths beginning in 2020 (36 deaths in 2020, 63 deaths in 2021, six deaths in 2022 and one death in 2023), the 10-year trend shows a 4% increase of firefighter fatalities since 2015. When these COVID-19 deaths are removed from the 2020 through 2023 totals for analyses purposes, the 10-year trend shows a decrease of 12%.

Figure 2. On-duty firefighter fatalities (2015-2024)

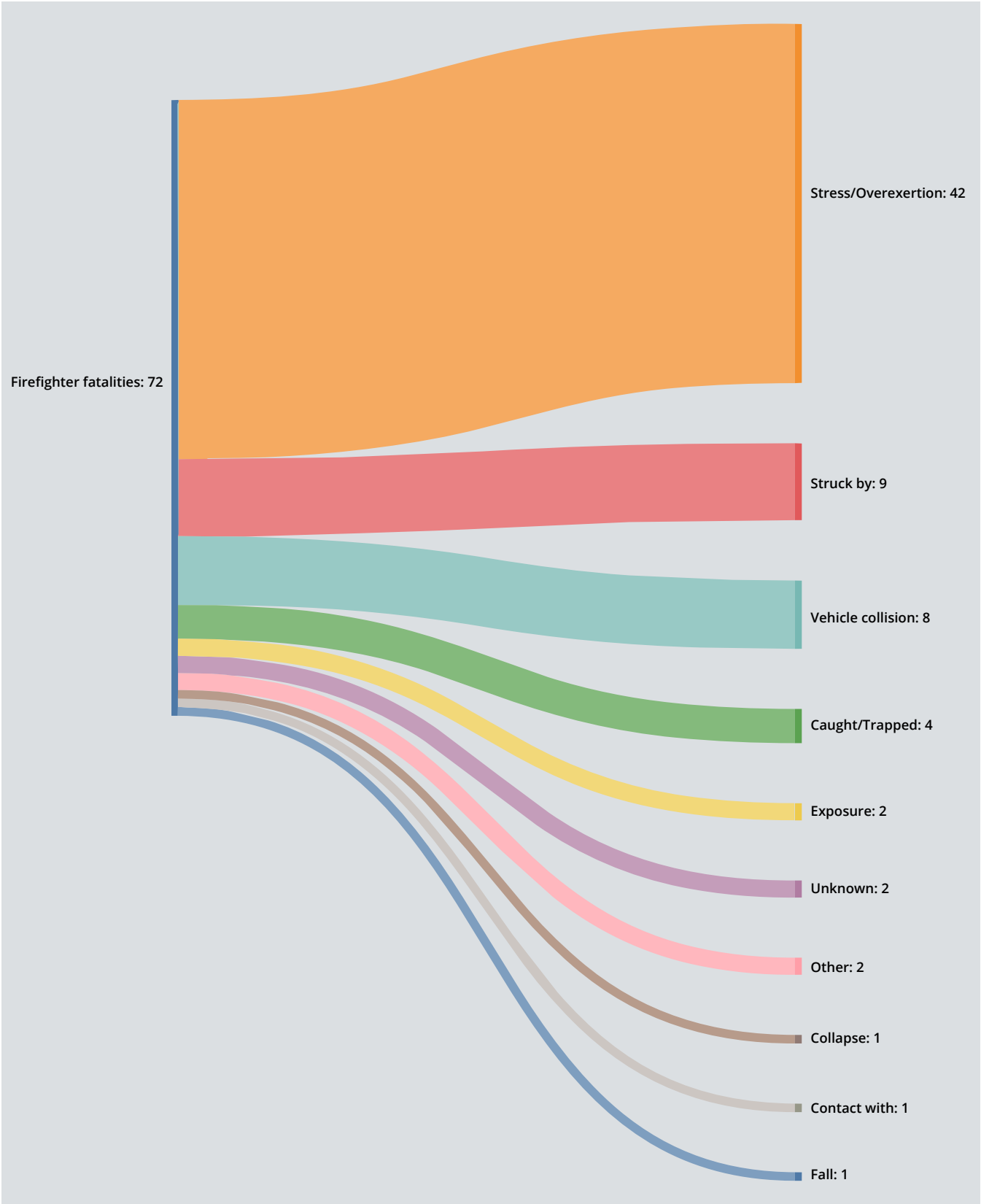


Cause of Fatal Injury

Firefighters face multiple hazards. Though the public often associates the greatest risk of firefighting with the fire itself, data reveals fatalities may have many causes. The term “cause of fatal injury” refers to the action, lack of action or circumstances that directly resulted in the fatal injury. A fatal injury is usually the result of a chain of events, the first of which is recorded as the cause. Figure 3 shows the distribution of deaths by cause of fatal injury or illness in 2024.[3] In 2024, the leading cause of fatal injury is, by far, stress/overexertion (58%). Stress/overexertion indicates that the work that was being done, and the physiological or pathological changes that resulted, were part of a cascading medical issue that resulted in a death. For example, most cardiovascular events are presumed to be “caused” by the work of firefighting (termed stress/overexertion). The next leading causes were struck by (13%) and vehicle collisions (11%).

[3] See Appendix A for descriptions of the 2024 fatal incidents by cause of fatal injury.

Figure 3. Firefighter fatalities by cause of fatal injury (2024)



The following discusses the three leading causes of fatal injury (stress or overexertion, struck by and vehicle collisions) in 2024:

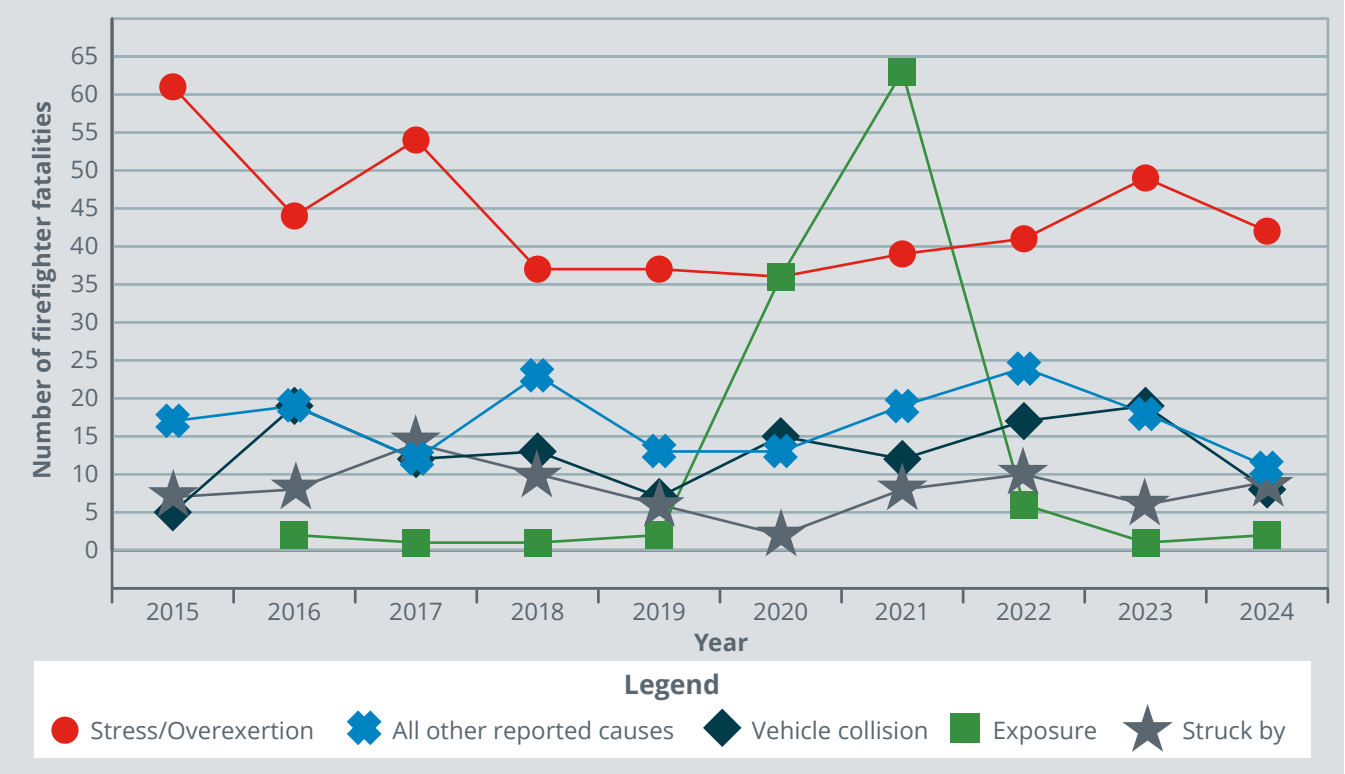
Stress or overexertion

Firefighting can be extremely strenuous work; in fact, it can be one of the more physically demanding of human activities because it involves strenuous physical work while wearing heavy and encapsulating personal protective equipment and is performed in dangerous environments. Stress or overexertion is a general category of "cause" that is used to explain all firefighter deaths that are cardiac or cerebrovascular in nature, including sudden cardiac arrest and strokes. Classification of a firefighter fatality in this "cause of fatal injury" category does not necessarily indicate that a firefighter was in poor physical condition or that the work performed was extreme. Even fit individuals can suffer from a cardiovascular or cerebrovascular event if they have underlying cardiovascular disease. And, as reported earlier, even the stress of responding to a call can provoke a cardiovascular event (which would be labeled as "caused" by stress/overexertion) in an individual with underlying cardiovascular disease.

In 2024, 42 (58%) firefighters died due to stress or overexertion. Of these firefighters, 41 firefighters died due to specific cardiovascular events and one firefighter died due to a cerebrovascular accident (CVA). Also, of these 42 firefighters, 21 (50%) were volunteer firefighters, 19 (45%) were career firefighters and two (5%) were wildland firefighters. 18 (43%) of the firefighter deaths attributed to stress or overexertion occurred after emergency operations were finished but were included as on-duty events because they met the inclusion criteria stipulated in the Hometown Heroes Survivors Benefits Act of 2003.

The leading cause of fatal injuries for firefighters has historically been stress/overexertion. In fact, as shown in Figure 4, from 2015 to 2024, stress/overexertion was the leading cause of death every year except in 2020 when it tied with exposure as the leading cause and 2021 when exposure was the leading cause (exposure deaths during these two years were primarily due to COVID-19).

Figure 4. Firefighter fatalities by cause of fatal injury (2015-2024)



The data above serves as a call to increase awareness and training on the identification of signs of stress or overexertion cardiovascular incidents, getting adequate rest and recovery, and the criticality of nutrition, physical fitness, managing stress and optimal mental health for better cardiac health. In addition, the fire service should increase and improve cardiac-related screenings of firefighters and ensure corrective actions are taken if risk factors are identified.

Struck by

Another potential hazard firefighters face is being struck by objects during incident operations, while on roadways and while performing routine duties. In 2024, being struck by an object was the second leading cause of fatal injury for nine (13%) firefighters. This is evidence that situational awareness training should be enhanced, especially on escalating and dynamic events in an all-hazards environment.

Vehicle collisions

As previously stated, firefighters face danger and assume significant responsibility not only during incident operations but also while responding and returning from these incidents, whether in a fire department vehicle, privately owned vehicle or other type of vehicle such as aircraft. While responding, returning or on-scene, firefighters must always be aware of their surroundings, the speed at which they are traveling, weather conditions, and the safety of others to reduce the risk of potential danger to themselves and others.

In 2024, vehicle collisions were the third leading cause of fatal injury resulting in eight (11%) firefighter deaths. Of these firefighters who lost their lives due to vehicle collisions, five (63%) were volunteers, two (25%) were wildland contract and one (13%) was part-time (paid).[4] In addition, of these firefighters, four deaths involved fire department engines or other apparatus, two deaths involved single engine air tankers (SEATs) (fixed-wing aircraft), one death involved a pumper/tanker and one involved a utility terrain vehicle.

From 2015 through 2024, vehicle collisions were the second or third leading cause of fatal injury each year. Of those firefighters that died from 2015 through 2024 because of a vehicle collision, almost one quarter (24%) were operating or riding in a privately owned vehicle.

This data supports that emergency vehicle drivers, whether in a fire department vehicle or a privately owned vehicle, must become knowledgeable of and adhere to established fire department policies, procedures and guidelines related to the safe operation of vehicles while responding to, returning from or on-scene.

The following discusses the causes of fatal injury in 2024 that were less frequent but support the need for enhanced situational awareness training:

Caught or trapped

Being caught or trapped includes firefighters operating at wildfires and structural fires who were unable to escape due to rapid fire progression and the byproducts of smoke, heat, toxic gas and flames or other types of hazard. This classification also includes firefighters who may have drowned and those who were crushed because of being trapped. Four (6%) firefighters died from being caught or trapped during incident operations resulting in it being the third leading cause of fatalities for the year.

[4] Total percentage of classification of firefighters who lost their lives due to vehicle collisions does not add up to 100% due to rounding.

Exposure

Exposure includes firefighters who encounter something that impacts the physiological function of the body and leads to death, such as infectious diseases. Two (3%) firefighter fatalities were related to heat.

Fall

Due to the force of gravity and unstable conditions, firefighters can accidentally fall to the ground during incident or routine operations. One (1%) firefighter was killed from injuries sustained in a fall.

Structural collapse

When internal load-bearing structural elements fail due to a fire, a building will collapse into itself, and exterior walls are pulled into the falling structure.[5] One (1%) firefighter was killed because of a structural collapse during an incident operation.

Contact with

Firefighters may also encounter a multitude of dangerous and deadly items and materials at a variety of emergency scenes. One (1%) firefighter was killed after coming into contact with electrical wires.

Other

Two (3%) firefighters died from a cause of fatal injury not listed in a specialized cause of fatal injury category listed above (such as stress/overexertion, struck by and vehicle collisions). One of these firefighters died because of a blood abnormality, and the other died because of injuries sustained in a landslide.

Unknown

There are several factors that contribute to the cause of fatal injury being classified as unknown, such as a lack of an autopsy at the time of death, or the cause of fatal injury was still being investigated at the time this report was published. Two (3%) firefighters were killed by an unknown cause of fatal injury.

[5] "Structural Collapse Guide," Occupational Safety and Health Administration (OSHA), https://www.osha.gov/emergency-preparedness/guides/structural-collapse.

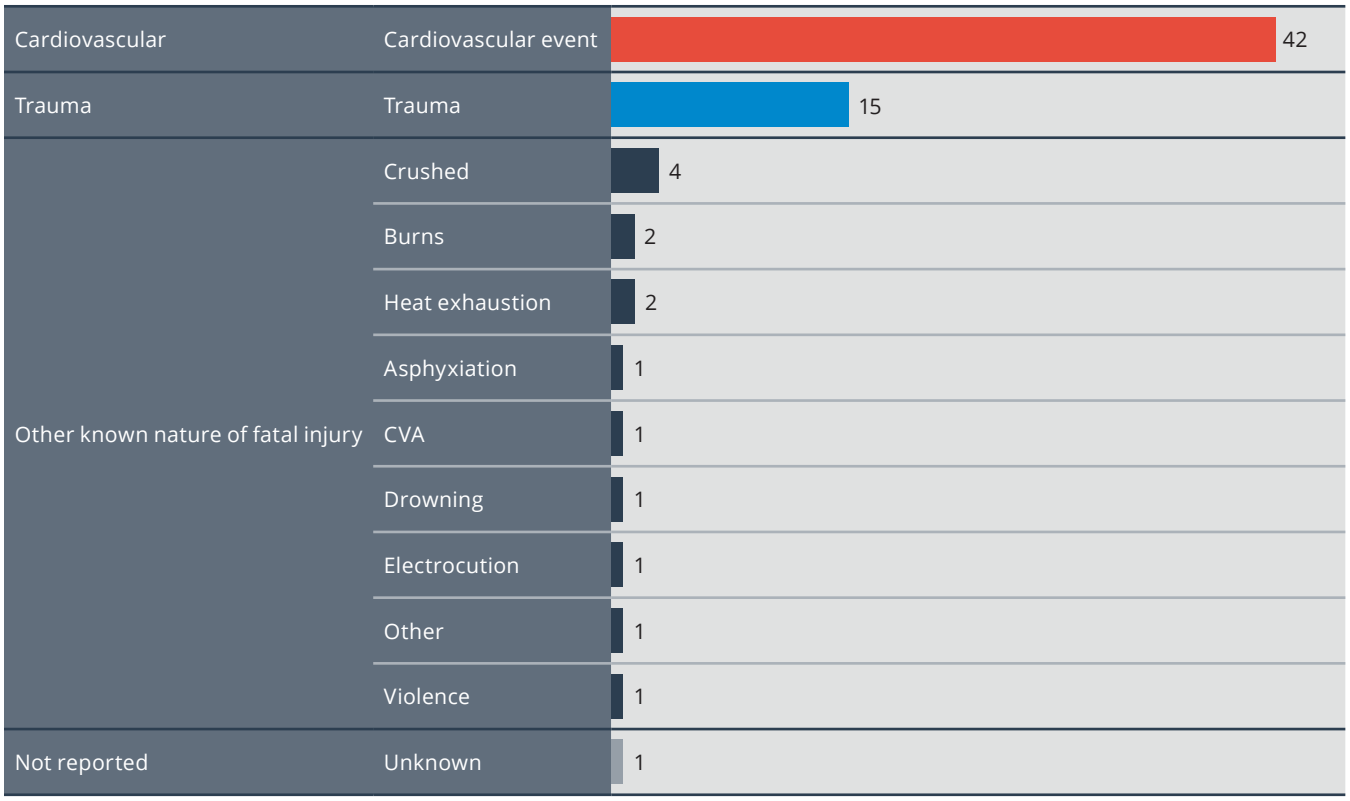
Nature of Fatal Injury

The term "nature of fatal injury" refers to the medical diagnosis of the fatal injury or illness, which is often referred to as the physiological cause of death. Learning about the nature of fatal injury will help the fire service identify how firefighters are dying, enable them to better develop educational and awareness programs, and support the need for specific prevention and screening programs.

Figure 5 shows the distribution of the 72 firefighter deaths that occurred in 2024 by the medical nature of the fatal injury or illness. In 2024, a cardiovascular event led to the deaths of 42 (58%) firefighters and was, by far, the leading type of nature of fatal injury. The second leading type of nature of fatal injury was trauma at 21% followed by crushed at 6%.

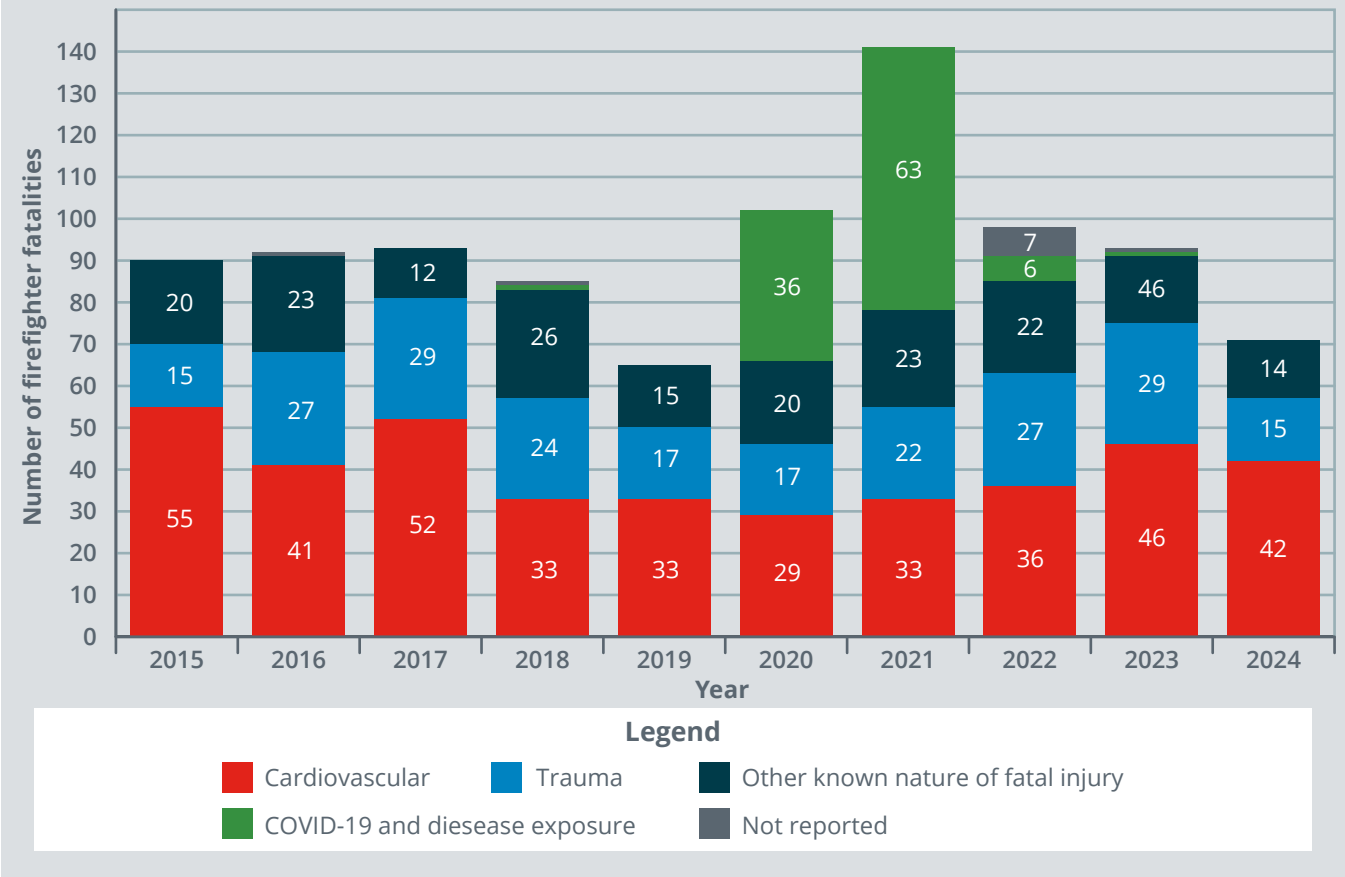
In 2024, a cardiovascular event led to the deaths of 42 (58%) firefighters and was, by far, the leading type of nature of fatal injury.

Figure 5. Firefighter fatalities by nature of fatal injury (2024)



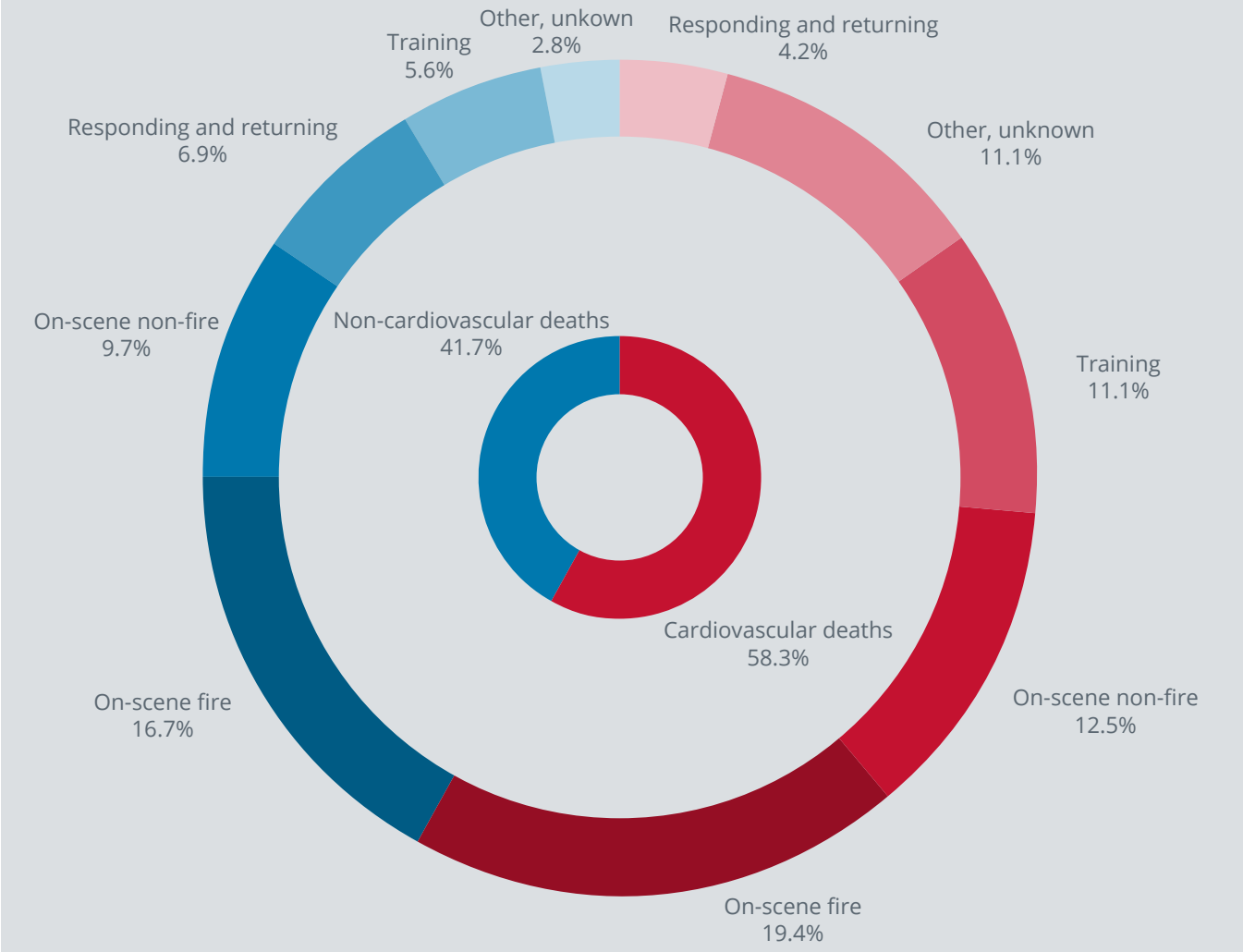
Cardiovascular events, such as sudden cardiac arrest, are historically the leading nature of fatal injury with firefighters. Except for 2020 and 2021 when COVID-19 was a factor, cardiovascular event was the leading type of nature of fatal injury of firefighters every year from 2015 to 2024 (Figure 6).

Figure 6. Firefighter fatalities by nature of fatal injury (2015-2024)



By understanding the type of duty where firefighters experienced a cardiovascular event, the fire service will know where to most frequently look for warning signs, understand where an increase in personnel may be needed to lower prolonged exertion, and can possibly consider changes in incident or routine operations. Figure 7 shows the type of duty involved for the 42 firefighters who died due to a cardiovascular event in 2024 and compares it to the type of duty involved for the firefighters who died of all other types of nature of fatal injury. In 2024, most firefighters (19%) died from a cardiovascular event while operating at the scene of a fire followed by operating at the scene of a non-fire (13%). Similarly, most firefighters died from a non-cardiovascular event while operating at the scene of a fire (17%) also followed by operating at a non-fire (10%). Notably, during training, more firefighters died from cardiovascular events (11%) than those who died from other natures of fatal injury (6%).

Figure 7. Cardiovascular events by type of duty (2024)



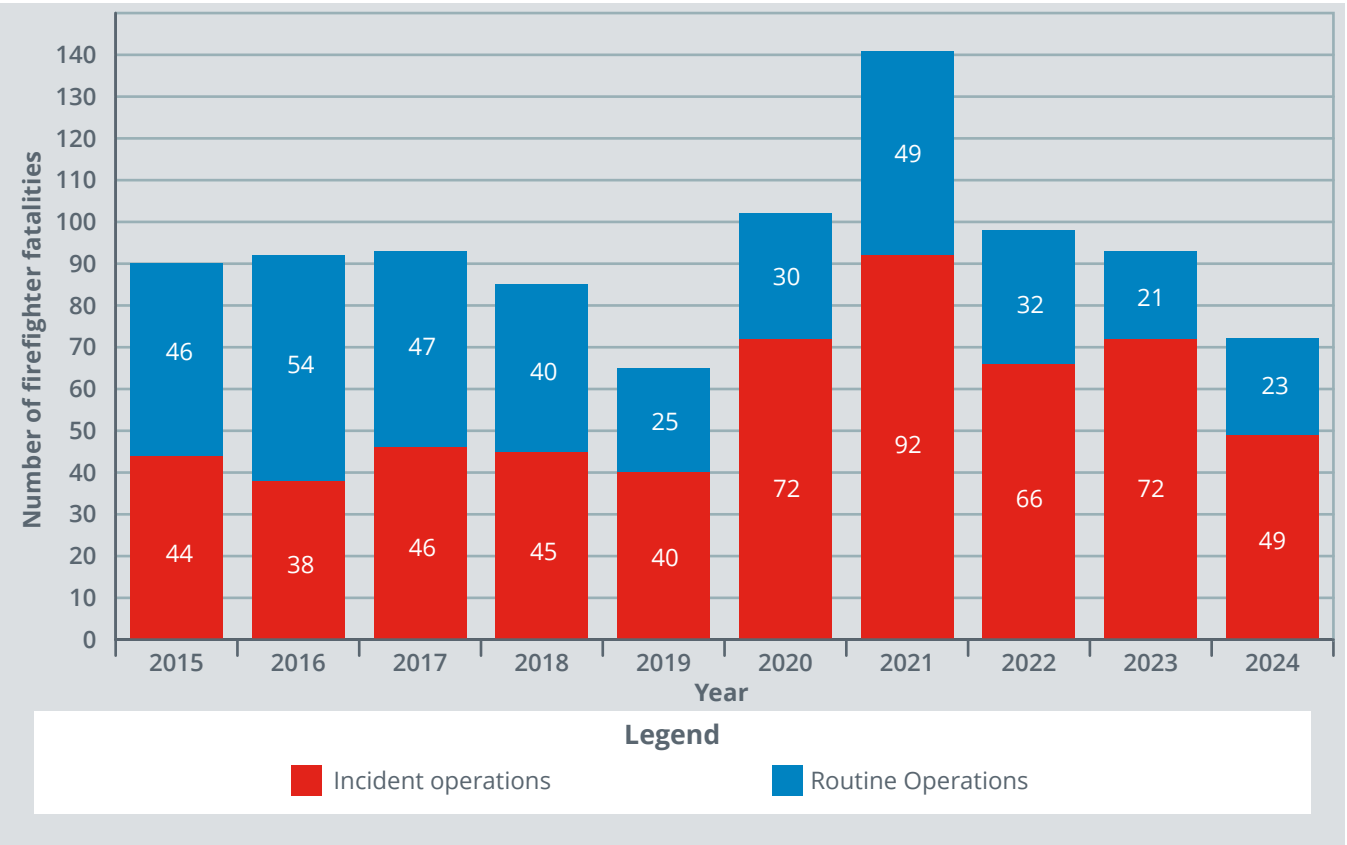
Like stress or overexertion under the cause of injury, the data in the graphics above also serve as a call to the fire service to increase awareness and training on the identification of signs of stress/overexertion, getting adequate rest and recovery, and the criticality of nutrition, physical fitness, managing stress, and optimal mental health for better cardiac health. In addition, the fire service should increase and improve cardiac-related screenings of firefighters and ensure corrective actions are taken if risk factors are identified.

Type of Duty

Firefighter fatalities are often related to the type of duty that the firefighter is performing. Type of duty refers to incident operations and routine operations. For this analysis, incident operations are defined as responding to, operating at or returning from the scene of a call for service. Routine operations are everything else to include, but not limited to, training, public events, station maintenance and administrative duties.

Figure 8 presents annual firefighter fatalities based on whether a firefighter was performing routine operations or operating at an incident. As seen in Figure 8, from 2015 to 2017, there were more fatalities during routine operations than during incident operations. This changed in 2018 and continued in subsequent years with more fatalities occurring during incident operations. In 2024, 49 (68%) firefighters died during incident operations, and 23 (32%) firefighters died during routine operations. When looking at type of duty by type of firefighter in 2024, 55% of career firefighters, 81% of volunteer firefighters, 60% of wildland firefighters and 100% of part-time firefighter deaths occurred during incident operations.

Figure 8. Firefighter fatalities by routine operations vs. operating at an incident (2015–2024)

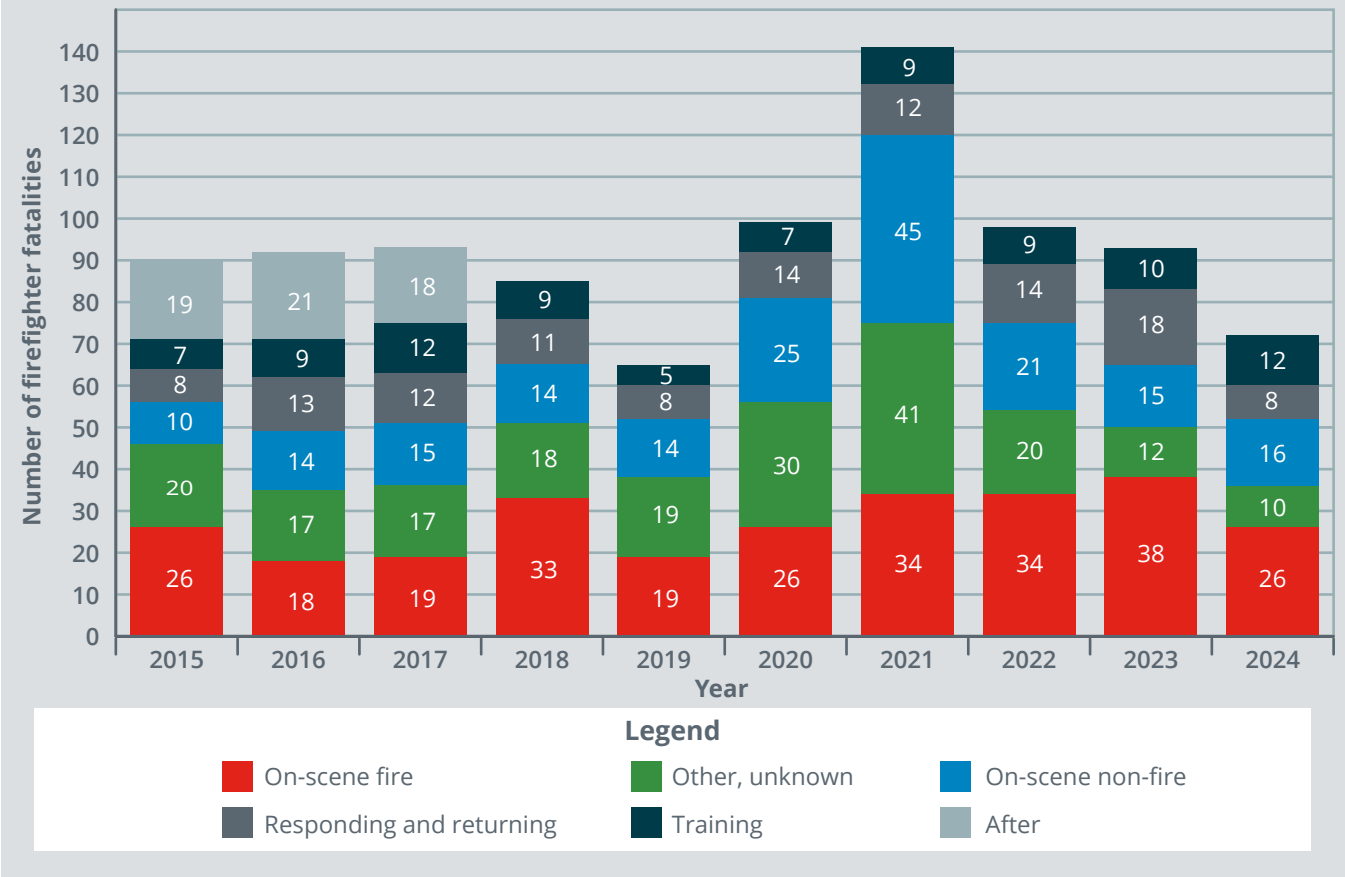


The number of deaths by specific types of duty for 2015 to 2024 is shown in Figure 9.[6] For most years from 2015 to 2024, operating at a scene of a fire was the leading or second leading type of duty being performed. As a result, the fire service should work towards enhancing situational awareness training, especially on escalating and dynamic events in an all-hazard environment. Other leading types of duty, as also shown in

[6] Prior to 2018, the type of duty for fatalities that met the criteria as stipulated in Hometown Heroes Survivors Benefits Act was mostly marked as "after." Starting in 2018, the type of duty for these fatalities was marked to best reflect the type of duty during which the firefighter performed a nonroutine, stressful or strenuous physical activity that was within 24 hours prior to the firefighter experiencing a cardiovascular event or stroke.

Figure 6, include operating at the scene at non-fire and other or unknown on-duty operations. In addition, while training is the type of duty category with the lowest percentage of firefighter fatalities for most years, it is problematic that so many firefighters die during training when safety procedures should be paramount.

Figure 9. Firefighter fatalities by type of duty (2015-2024)



In 2024, of the 26 firefighters that died while operating at the scene of a fire, 46% were career firefighters, 42% were volunteer firefighters and 12% were wildland firefighters. Of the 16 firefighters that died during operating at the scene of a non-fire, 38% were career firefighters, 56% were volunteer firefighters and 6% were part-time firefighters.

Fireground operations

Firefighters face many common but unpredictable dangers while operating at a fireground beyond coming into direct contact with fire. These include smoke inhalation and other respiratory hazards, rapid fire progression and structural instability. In 2024, 26 (36%) firefighters experienced fatal injuries during fireground operations (on-scene fire). As seen in Table 1, the leading nature of fatal injury for 14 (54%) of these 26 firefighter deaths was cardiovascular event. The natures of fatal injury for the remaining fireground operation fatalities in 2024 were trauma (27%), unknown (8%), crushed (4%), CVA (4%) and burns (4%).

Cardiovascular event was the leading nature of fatal injury for all firefighters that experienced fatal injuries during fireground operations from 2015 to 2024, accounting for 40% of deaths. Of the firefighters who experienced a fatal cardiovascular event during fireground operations from 2015 to 2024, 66% were volunteers even though volunteer firefighters comprised only 42% of the total fireground operation fatalities.

Table 1. Firefighter fatalities during fireground operations by classification and nature of fatal injury (2024)

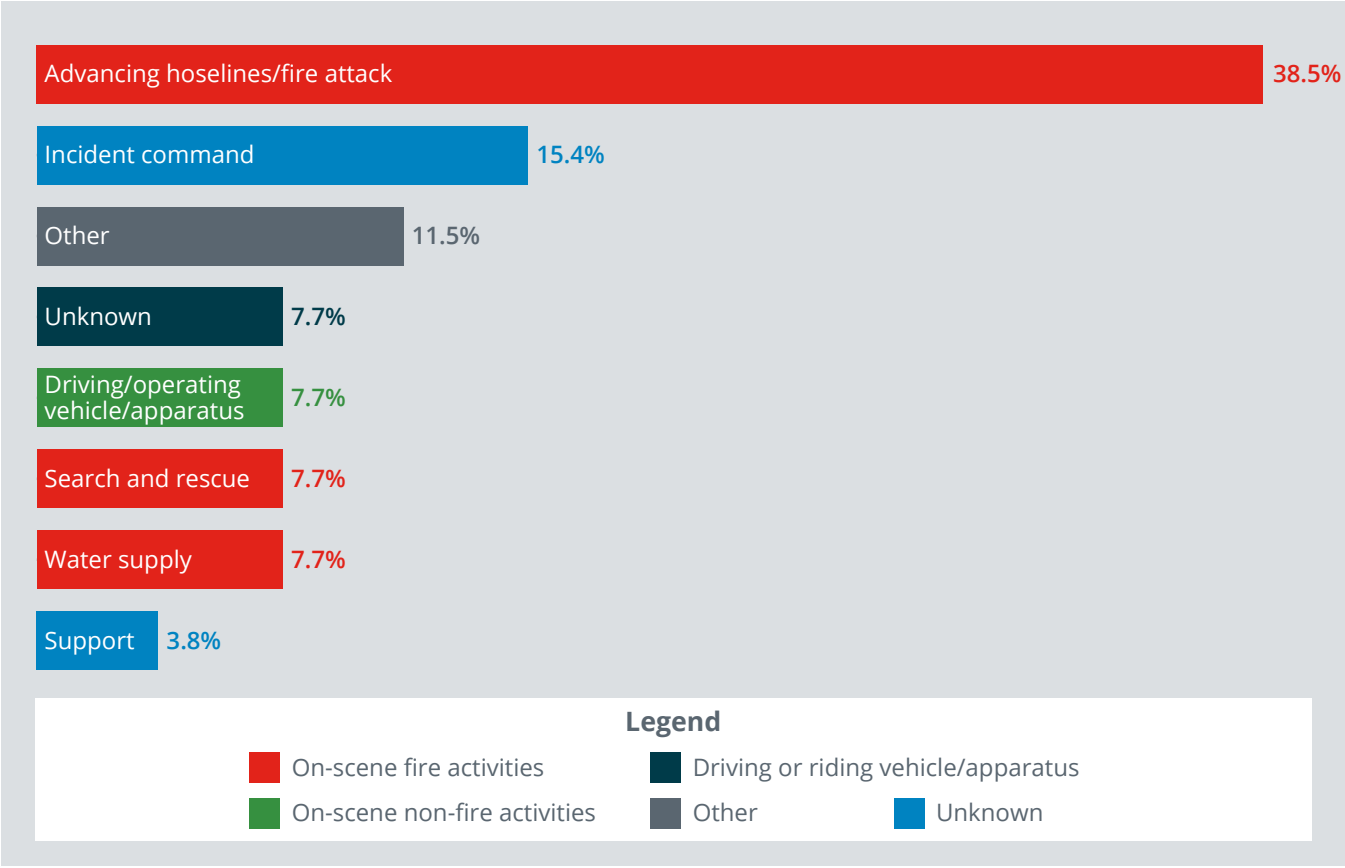
	Cardiovascular event	Trauma	Crushed	CVA	Unknown	Burns	
Career	5	3	1		1	2	12
Volunteer	8	2		1			11
Wildland	1	2					3
	14	7	1	1	1	2	26

Type of fireground activity during fireground operations

Figure 10 shows the types of fireground activities in which firefighters were engaged when they sustained their fatal injuries or illnesses during fireground operations in 2024. This total includes all firefighting duties on the fireground, including both structural firefighting and wildfire firefighting. In 2024, the most common type of on-scene fire activity was advancing hoselines/fire attack at 39%. Advancing hoselines/fire attack was the leading type of fireground activity for all years from 2015 to 2024. The second most common type of activity in 2024 was incident command at 15%. The remaining types of activity were other activities (12%), driving or operating vehicle/apparatus (8%), search and rescue (8%), water supply (8%), unknown activities (8%), and support activities (4%).[7]

[7] Total percentage of fireground activity during fireground operations in 2024 does not add up to 100% due to rounding.

Figure 10. Fireground activity leading to fatal injury (2024)



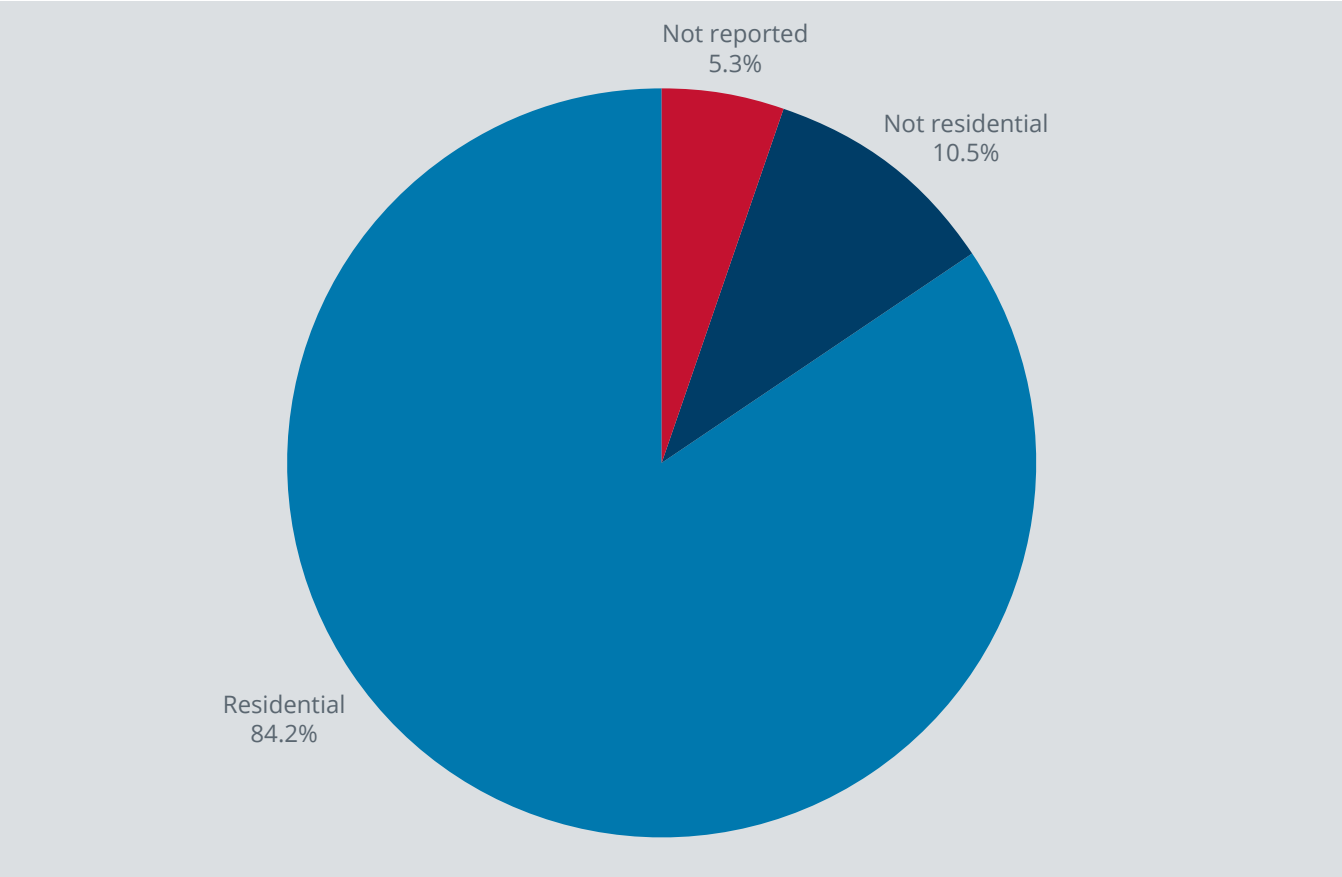
Fixed property uses for structural firefighting fatalities

Fire departments respond to a structure fire every 67 seconds.[8] In 2024, of the fatalities that occurred during fireground operations, 19 (73%) were firefighters who became ill or injured while on the scene of a structure fire. Of these fatalities, 16 (84%) occurred while on the scene of a residential structure fire, two (11%) occurred on the scene of a non-residential structure, and one (5%) occurred where the structure type was unknown (Figure 11).

From 2015 to 2024, of the structure fires where firefighters died during fireground operations, residential structures were, by far, the leading type of fixed property use for all years. This may in part be because there are more residential building fires than commercial building fires.[9] In addition, modern residential structures may potentially present more danger to firefighters as many are constructed with materials that are more combustible than those typically used for non-residential structures. Codes and standards for residential structures may also be less stringent than those for commercial structures, specifically the lack of required fire suppression systems.[10]

[8] NFPA, "Fire Loss in the United States During 2024," November 2025, https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/fire-loss-in-the-united-states.
[9] In 2023, there were an estimated 344,600 residential building fires and 110,000 nonresidential building fires. USFA, "Residential Fire Estimate Summaries (2014-2023)," https://www.usfa.fema.gov/statistics/residential-fires/ and "Nonresidential Fire Estimate Summaries (2014-2023)," https://www.usfa.fema.gov/statistics/nonresidential-fires/.
[10] Congressional Research Service, "Building Codes, Standards, and Regulations: Frequently Asked Questions," November 2023, https://www.epa.gov/system/files/documents/2024-08/crs-building-codes-standards-and-regulations-frequently-asked-questions.pdf.

Figure 11. Structural firefighting fatalities by fixed property use (2024)



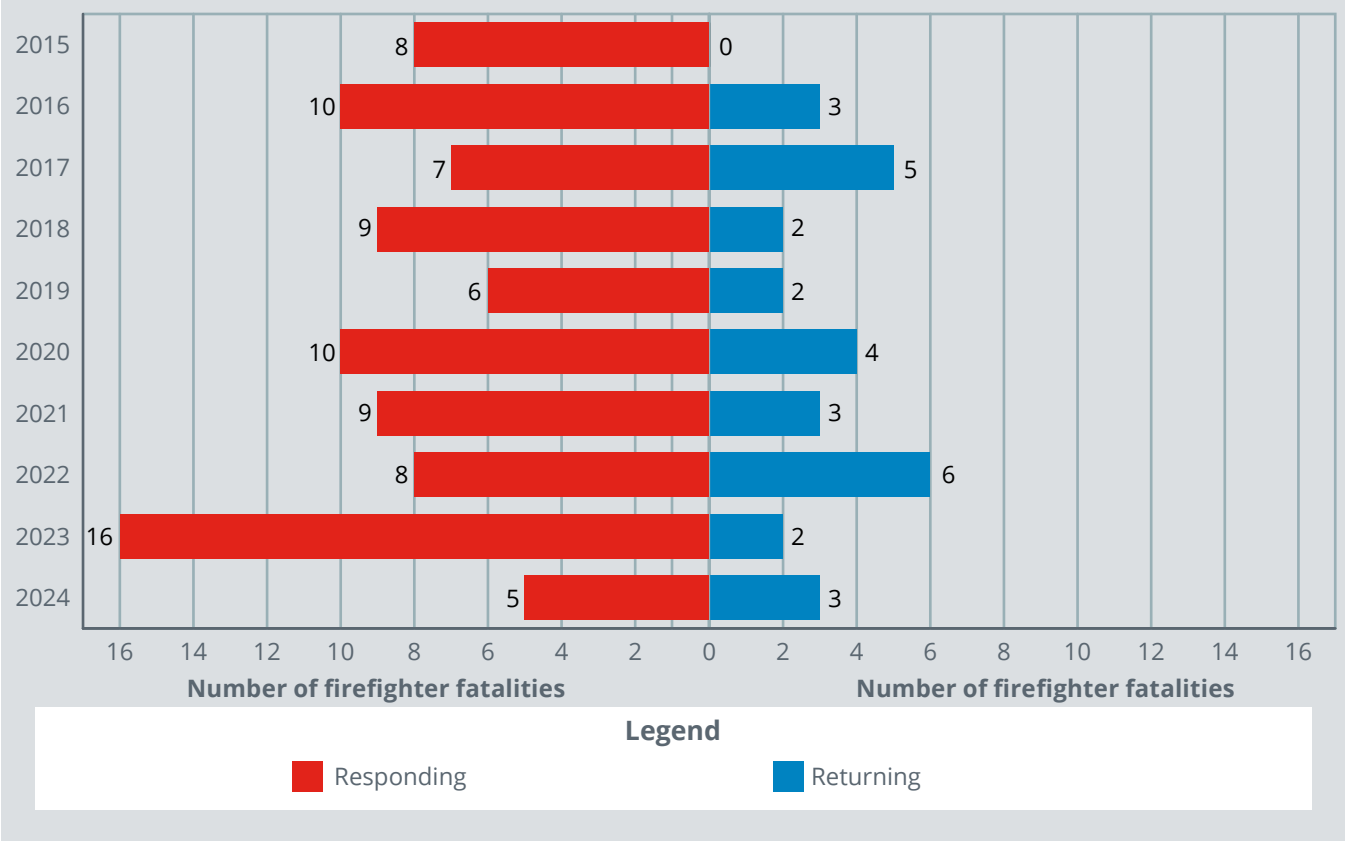
Responding/returning

Firefighters face danger and assume significant responsibility not only during incident operations but also while responding and returning from these incidents. In 2024, as shown in Figure 12, eight (11%) firefighters died or experienced an onset of symptoms while responding to or returning from incidents. Of these firefighters, five (63%) were responding to and three (38%) were returning from an incident.[11] For all years from 2015 to 2024, more firefighters died while responding to than returning from an incident.

Volunteer firefighters accounted for most fatalities during response or return. Specifically, in 2024, 75% of firefighters who died while responding to or returning from an incident were volunteer. From 2015 to 2024, 75% of firefighters who died while responding to an incident and 77% of firefighters who died while returning from an incident were volunteer. Of these volunteers that were killed while responding or returning, 24% were traveling in a privately owned vehicle. This analysis emphasizes the continued need for emergency vehicle drivers, particularly those who are volunteer, to both be knowledgeable of and adhere to established fire department policies, procedures and guidelines related to the safe emergency response, and to be medically cleared to ensure that the sympathetic nervous stimulation associated with emergency response and the physiological strain of emergency operations does not cause undue risk of cardiovascular event.

[11] Total percentage of firefighters who died while responding to and returning from incidents in 2024 does not add up to 100% due to rounding.

Figure 12. Firefighter fatalities while responding to or returning from an incident (2015-2024)



Training

Given the dynamic nature of emergency incidents, there is a certain level of inherent risk firefighters and first responders assume when they respond to a call for service. It is through training, repetition, skill assessments and after-action reviews that firefighters become more proficient in their craft, can adjust to a fluid/ever-changing environment and can reduce risks to both them and those they serve. The training ground should be a safe place for firefighters to practice and hone their skills. When incidents occur during or are associated with training, it can be especially tragic and weigh even more heavily on the department and community.

In 2024, 12 (17%) firefighters died during training activities. The primary nature of fatal injury for these 12 firefighters as seen in Figure 13 was cardiovascular events (67%), followed by heat exhaustion (17%).[12] In addition, of the 12 firefighters that died during training, 58% were career firefighters, 25% were volunteer firefighters and 17% were wildland firefighters.

From 2015 to 2024, cardiovascular events were the primary nature (65%) of training-related firefighter deaths. While the lack of traumatic deaths associated with training is encouraging, the fire service still needs to be cognizant of the level of physical exertion expended during training and how it may affect its members. With cardiovascular events continuing to be the leading nature of fatal injury for firefighters on scene, in training and in the station, cardiovascular health needs to remain a primary focus of the U.S. fire service and its membership.

[12] Heat exhaustion occurs when a body overheats and is caused by exposure to high temperatures, particularly when there is also high humidity, and/or strenuous physical activity (https://www.mayoclinic.org/diseases-conditions/heat-exhaustion/symptoms-causes/syc-20373250). Depending on the information collected at the time of analyses, the cause for firefighters that died from heat exhaustion will be listed as either exposure or stress/overexertion.

Figure 13. Firefighter fatalities while engaged in training by cause and nature of fatal injury (2015-2024)

Cause of fatal injury	Nature of fatal injury	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Grand Total
Caught/Trapped	Asphyxiation						1					1
Exposure	COVID-19						2					2
	Heat exhaustion		1			2					2	5
Fall	Trauma		1	1			1		1		1	5
Other	Other		3	1	1			2			1	8
Stress/Overexertion	Cardiovascular event	7	2	9	8	3	2	5	4	10	8	58
	Heat exhaustion							1				1
	Other						1					1
Unknown	Unknown								3			3
Vehicle Collision	Trauma		2	1				1	1			5
Grand Total		7	9	12	9	5	7	9	9	10	10	89

In addition, from 2015 to 2024, of the firefighters who died during training, 10 (11%) were probationary firefighters, recruits, cadets or trainees (one of the deaths occurred in 2024). Because they are typically younger and lack experience, the fire service has a distinct responsibility to keep these types of firefighters safe and healthy.

Non-fire emergencies

Firefighters also face dangers while operating at non-fire incidents such as being exposed to disease, getting struck by vehicles and confronting extreme weather. In 2024, 16 (22%) firefighters were killed during incident operations not related to fire. These responses included four motor vehicle crashes (MVCs), four EMS incidents, four weather/natural disaster-related incidents, two hazardous materials incidents, one technical rescue incident and one other type of incident. In addition, the nature of fatal injury for over half (nine) of the 16 firefighters who died during non-fire emergencies was a cardiovascular event. Except for 2020 and 2021 when COVID-19 was a factor, cardiovascular event was the leading nature of injury for all firefighter fatalities from 2015 to 2024 that were killed during incident operations not related to fires.

Other on duty

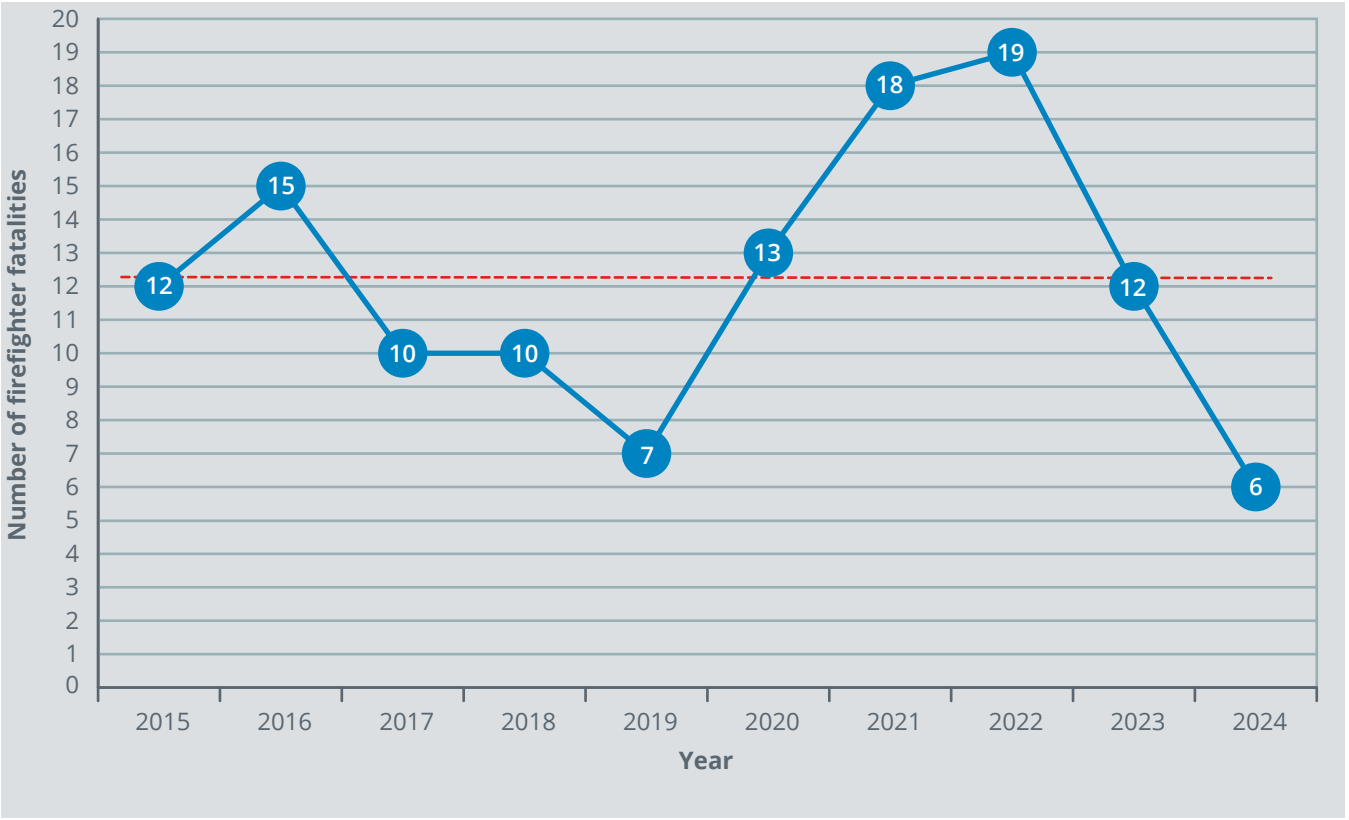
"Other on duty" refers to firefighters engaged in activities related to nonemergency situations, such as in-station duties, arson investigations and attending fire department-mandated meetings. In 2024, 10 (14%) firefighters died during other types of duties such as completing administrative functions, preparing to escort the body of another fallen firefighter to a funeral home, attending a meeting, sleeping in the fire station dorm room and conducting other in-station duties. More career firefighters (70%) died in 2024 while performing other types of duties than volunteer firefighters (30%).

Firefighter fatalities associated with wildfire firefighting activities

Wildfire firefighting is different than structural firefighting in that firefighters are not fighting a contained fire. Instead, when operating on a wildfire or even in the wildland urban interface, firefighters often face widespread fires with no boundaries in rugged terrain that can present different types of hazards. These fires can also drastically change in an instant due to the wind, landscape and different types of fuel, potentially demanding prolonged physical exertion and sometimes leaving firefighters with no way to escape. In addition, shifting environmental conditions, such as drought and more prolonged heat events, may lead to firefighters confronting more frequent and intense wildfires. Finally, even testing and training to prepare for this type of firefighting can be dangerous but crucial to ensure physical activities necessary to do the job can be performed.

As shown in Figure 14, in 2024, six (8%) firefighters were killed during brush, grass or wildfire firefighting activities, which is the lowest amount in the past 10 years.[13] This total includes part-time, full-time and contract wildland firefighters as well as a volunteer firefighter. There is no significant increase or decrease in the 10-year trend from 2015 to 2024 of on-duty firefighter fatalities that occurred during wildfire firefighting activities.

Figure 14. Firefighting fatalities associated with wildfire firefighting activities (2015-2024)



13 In this instance, wildfire firefighter activities are activities related to wildland firefighting but that can be performed during incident operations (e.g., on-scene fire) or routine operations (e.g., training). For example, a firefighter who died while completing a Work Capacity Test (WCT) would be included in the count of firefighters killed during wildfire firefighting activities.

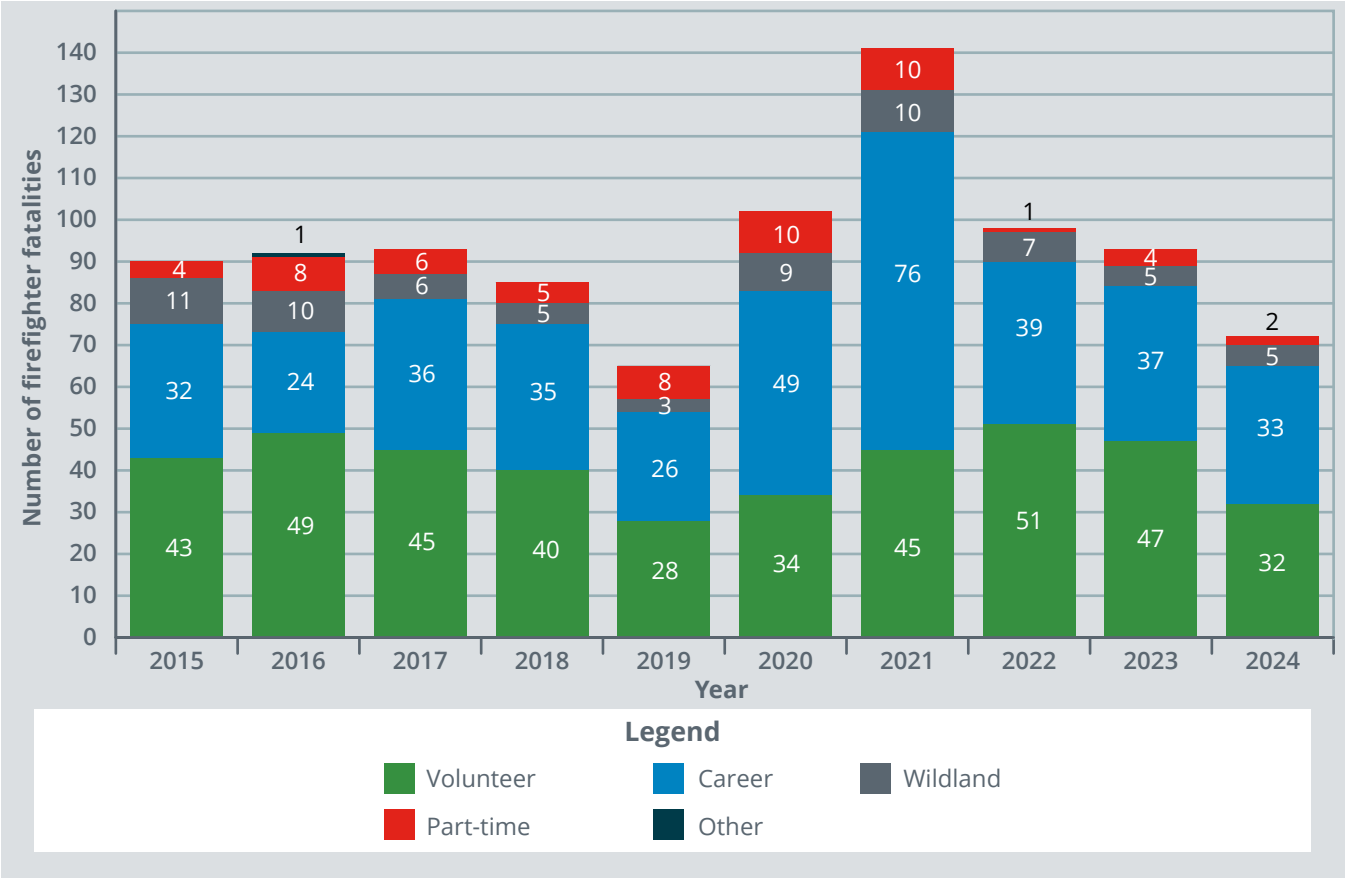
Demographics

Career, volunteer, part-time and wildland agency fatalities

Tracking the type of firefighter (career, volunteer, part-time, wildland, other) when analyzing on-duty deaths is important because it may provide insight into differences in training, resources or operational environment that could impact overall health and safety. Understanding any identified trends could help agencies strengthen and tailor their prevention, training, and/or command strategies and policies to the specific needs faced by each type of agency.

In 2024, the 72 firefighter fatalities included 33 (46%) career firefighters, 32 (44%) volunteer firefighters, five (7%) wildland firefighters and two (3%) part-time firefighters (Figure 15). Except for 2020, 2021 (peak of COVID-19) and 2024, more volunteer firefighters died in the line of duty than career firefighters. In addition, from 2015 to 2024, volunteer firefighters had a slightly higher percentage of on-duty deaths (44%) than career firefighters (42%) overall. The remaining 14% of fatalities from 2015 to 2024 occurred in departments that represent a mix of part-time, part-time on-call, wildland-specific and other firefighters (in 2016, one on-duty fatality was classified as an industrial firefighter).

Figure 15. Career, volunteer, part-time and wildland firefighter fatalities (2015-2024)



Firefighter fatalities may also vary based upon the setting in which fire service is provided. The U.S. Census Bureau defines "urban" as a place having a population of at least 5,000 or at least 2,000 housing units. "Rural" is any community that is not urban.[14] "Suburban" is not a census term, but may be 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, however, 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 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 community or location in which the fatality occurred.

As expected, in 2024, of the career firefighters who died, 76% were covering urban or suburban areas (Table 2). Of the volunteer firefighters, 56% were covering rural areas while an additional 28% were covering urban or suburban areas. When analyzing fatalities from 2015 to 2024, as expected, a large percentage (67%) of volunteer firefighters were covering rural areas. An additional 27% of volunteers were covering suburban areas, 3% were covering urban areas and 2% were covering other unreported areas.[15] Of the career firefighter fatalities from 2015 to 2024, 48% were covering urban areas, 38% were covering suburban areas, 13% were covering rural areas and 1% were covering other unreported areas.

Table 2. Career, volunteer, part-time and wildland firefighter fatalities by coverage area type (2024)

	Urban/suburban	Rural	Not reported or unknown	Total
Volunteer	9	18	5	32
Career	25	6	2	33
Wildland	-	3	2	5
Part-time	1	1	-	2
Total	**35**	**28**	**9**	**72**

Multiple firefighter fatality incidents

Incidents involving multiple firefighter fatalities are particularly devastating for fire departments, operations and communities. In 2024, 71 fatal incidents resulted in 72 firefighter deaths. Only one incident resulted in two volunteer firefighter deaths when, due to heavy winds and rain, a tree fell on their engine as they were responding to a residential structure fire. This was the lowest number of deaths due to multiple firefighter fatality incidents in the past 10 years.

Table 3 reports on the incident type and cause of fatality for firefighters who died in multiple-fatality events from 2015 to 2024. Importantly, 25 (45%) of firefighter fatalities resulting from multiple-fatality incidents were due to MVCs. This highlights the danger of emergency response and suggests that additional efforts should be made to focus on emergency vehicle operations safety. The categories of caught or trapped and collapse also accounted for 22 (39%) of multi-fire fatalities, clearly showing how such things as rapid-fire advance, structural collapse, and other dynamic and dangerous conditions can lead to catastrophic losses in the fire service.

[14] U.S. Census Bureau, Urban and Rural, https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html.
[15] Total percentage of volunteer firefighters who died from 2015 to 2024 by coverage area type does not add up to 100% due to rounding.

Table 3. Incident type and cause of fatal injury for fatalities resulting from multiple firefighter fatality incidents (2015-2024)

Incident Type	Cause of fatal injury	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Grand Total
Structure Fire	Caught/trapped			1					2	2		5
	Collapse	2	3		2			2	3			12
	Out of air						2					2
	Stuck by										2	2
	Vehicle Collision						2					2
	Total	**2**	**3**	**1**	**2**	**0**	**4**	**2**	**5**	**2**	**2**	**23**
Wildfire	Caught/trapped											3
	Vehicle Collision		2				2	2	4	3		13
	Total	**3**	**2**				**2**	**2**	**4**	**3**		**16**
MVA	Struck by			2			1			1		4
	Vehicle Collision				2				4			6
	Total			**2**	**2**		**1**		**4**	**1**		**10**
Not Incident Related	Fall									2		2
	Vehicle Collision	2	2									4
	Total	**2**	**2**							**2**		**6**
Other	Caught/trapped									2		2
	Total									**2**		**2**
Grand Total		**7**	**7**	**3**	**4**	**0**	**7**	**4**	**13**	**10**	**2**	**57**

Firefighter fatalities by age and sex

Tracking firefighter ages for on-duty fatalities can help identify patterns or risk factors associated with different age groups. This data could also guide policy decisions to enhance firefighter safety and well-being to reduce fatalities across all age demographics.

Figure 16 shows the distribution of firefighter deaths by age at the time of death. From 2015 to 2024, those ages 46 to 50, 51 to 55 and 56 to 60 accounted for a total of 39% of firefighter fatalities. The least amount of firefighter fatalities occurred in those under 21 years of age (2%). In 2024, firefighters aged 51 to 55 accounted for the most deaths at 15% followed by those ages 41 to 45 (14%) and 56 to 60 (13%).

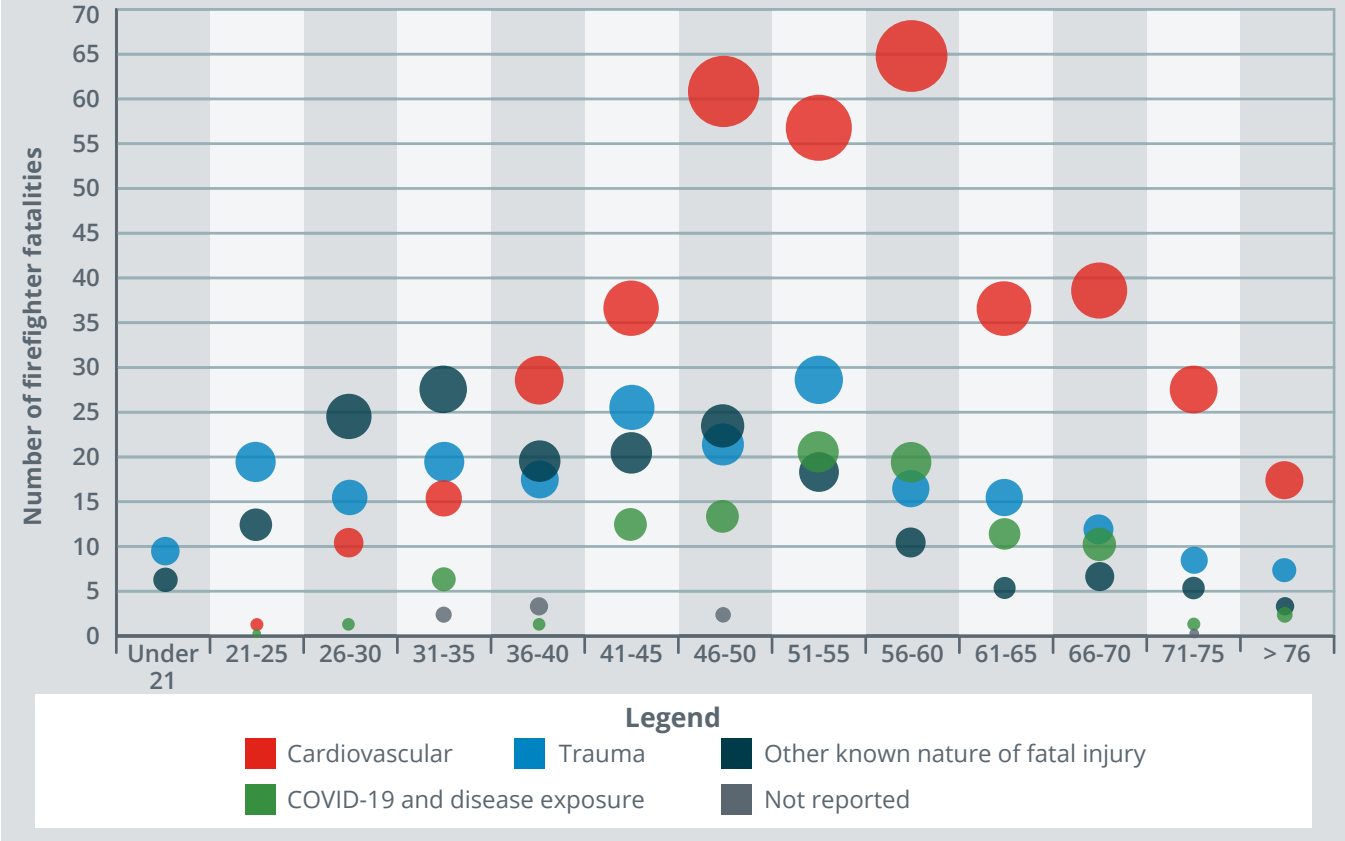
Figure 16. Firefighter fatalities by age at death (2015-2024)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Under 21	3	1	1	3		1	1	2	4	1	17
21-25	2	6	1	1	3	4	6	6	6	1	36
26-30	5	4	5	5	3	5	8	5	9	6	54
31-35	6	7	7	12	3	5	15	11	5	3	74
36-40	9	7	6	7	8	7	8	9	7	5	73
41-45	11	14	8	10	7	15	14	4	4	10	97
46-50	12	13	11	12	11	14	14	15	15	7	124
51-55	10	14	18	8	8	9	22	14	12	11	126
56-60	15	9	15	8	1	15	21	14	6	9	113
61-65	4	4	7	7	6	10	15	7	7	4	71
66-70	7	7	3	5	6	11	9	6	7	6	67
71-75	4	3	8	4	6	3	3	2	6	7	46
Over 76	2	3	3	3	3	3	5	3	5	3	33
	90	92	93	85	65	102	141	98	93	72	**931**

Figure 17 shows, from 2015 to 2024, the distribution of firefighter deaths by age at the time of death and the leading nature of fatal injuries. The leading and second leading nature of fatal injury for most firefighters under the age of 36 years of age was trauma. As firefighters aged, however, cardiovascular events became prominent. Once firefighters reached 36 years of age and above, cardiovascular events clearly became the leading nature of fatal injury. Recognizing that age alone is an important factor in cardiovascular disease progression, all firefighters over the age of 40 should be screened for atherosclerotic cardiovascular disease and structural abnormalities.[16]

[16] Atherosclerotic cardiovascular disease is caused by plaque building in arterial walls and refers to conditions that include coronary heart disease, cerebrovascular disease, peripheral artery disease and aortic atherosclerotic disease.

Figure 17. Firefighter fatalities by age and leading nature of fatal injury (2015-2024)



When looking at the sex of firefighters in 2024, 71 firefighters (99%) that died were male and one firefighter (1%) was female.

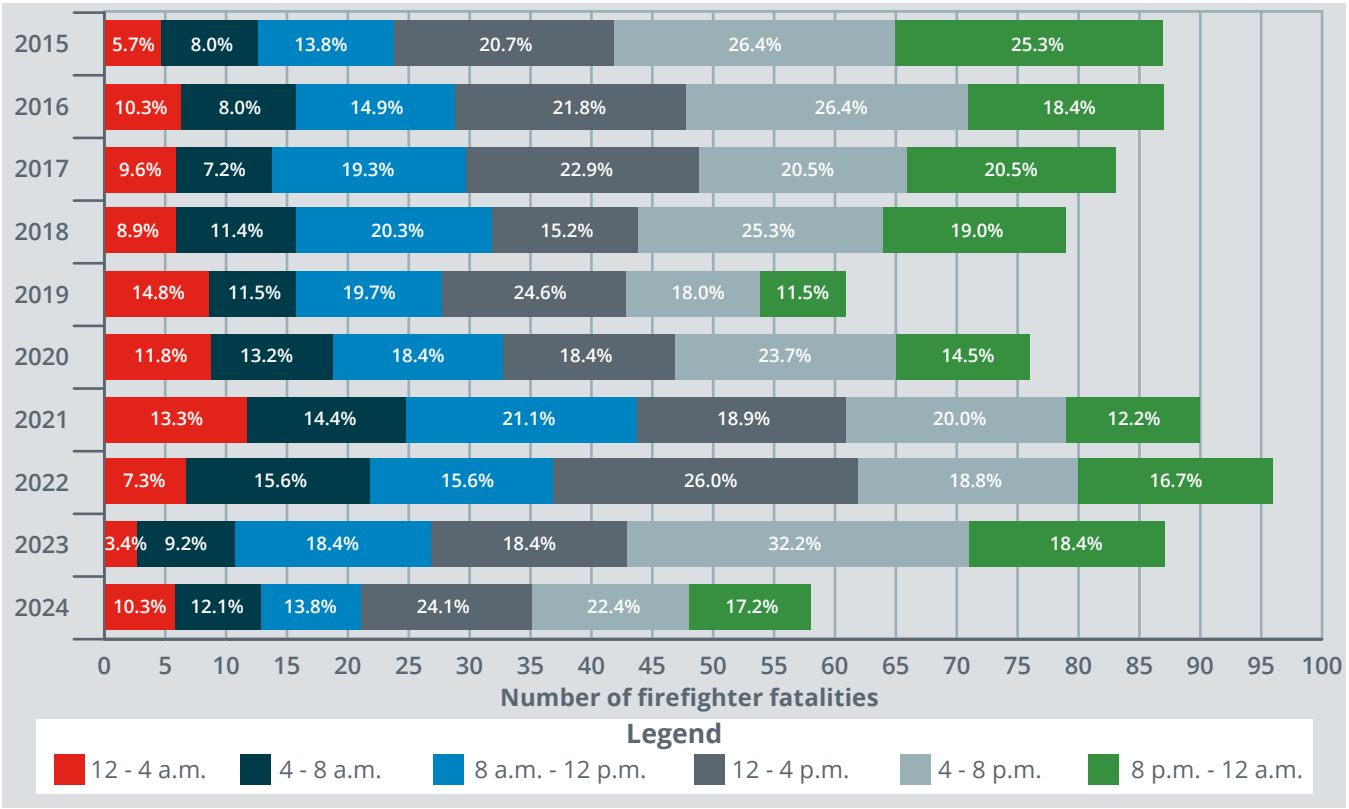
Firefighter fatalities by time of fatal injury

Analysis of time of fatal injury could potentially give insight to factors that contributed to firefighter deaths. For example, more fatalities in the late night and early morning hours may support that sleep disruption could be a factor. In addition, more firefighter fatalities in the daytime hours may support that heat stress could be a factor.

Figure 18 illustrates the distribution of firefighter deaths according to the time of day when the fatal injury occurred. From 2015 to 2024, most firefighter fatalities occurred between 4 and 8 p.m. (24%) followed closely by fatalities that occurred between noon and 4 p.m. (21%). A correlation could be made between the frequency of residential building fires and the firefighter deaths between 4 and 8 p.m. as most residential building fires occur between 5 and 8 p.m. when many people are expected to be cooking dinner.[17]

[17] USFA, "Residential Building Fires (2017-2019)," Volume 21, Issue 2, May 2021, https://www.usfa.fema.gov/downloads/pdf/statistics/v21i2.pdf

Figure 18. Firefighter fatalities by year and time of fatal injury (2015-2024)

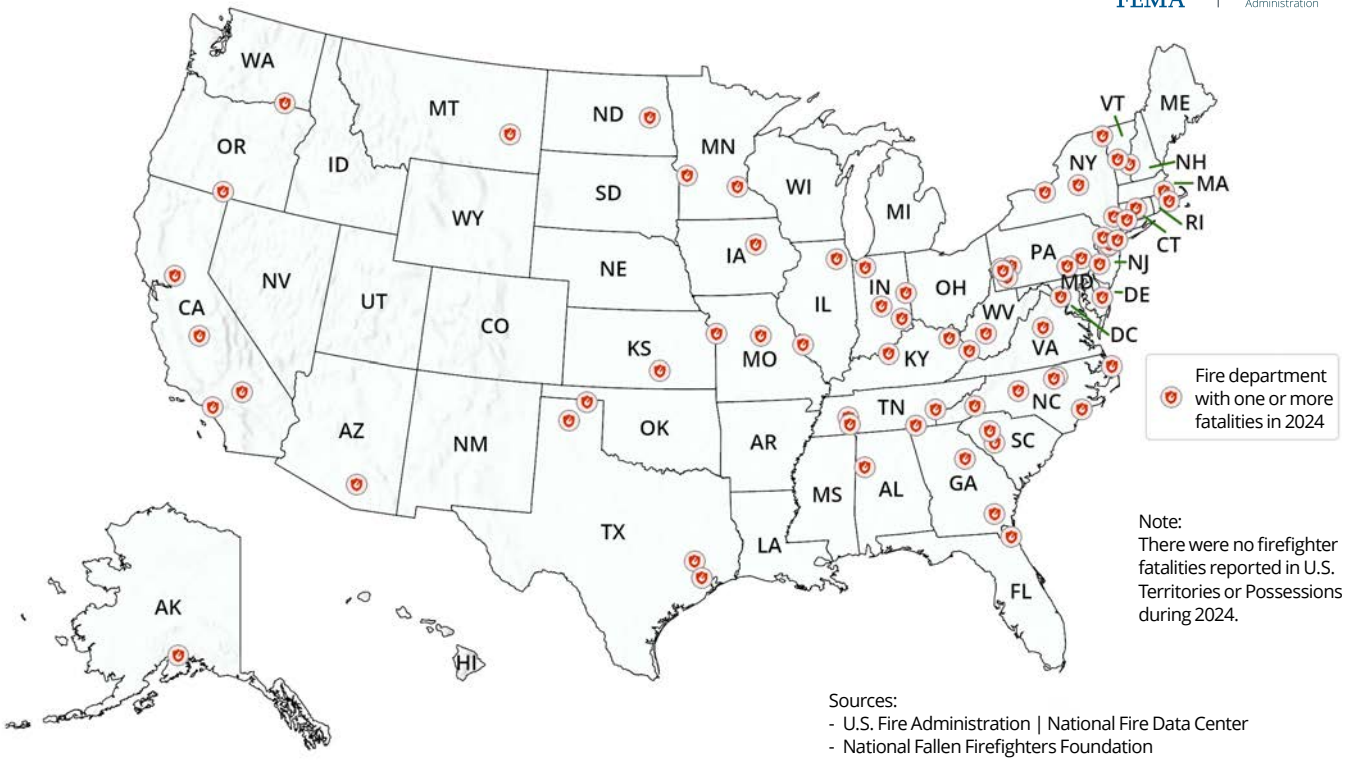


Note: Fatalities where the time of fatal injury is unknown are not included in Figure 18.

Fire department location by state

Firefighters based in 30 states died in 2024. The highest number of firefighter deaths in 2024 (based on the location of the fire service organization) occurred in Pennsylvania (seven losses), North Carolina (six losses), New York (five losses), and California, Indiana, Tennessee and Texas (four losses each).

U.S. firefighter fatalities - 2024
by fire department location



Note:
There were no firefighter fatalities reported in U.S. Territories or Possessions during 2024.

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

Conclusion

In 2024, 72 firefighters lost their lives while on duty. While this is the second lowest annual total of on-duty firefighter fatalities since USFA has been tracking these fatalities, there is still work to do to make sure all our nation's firefighters go home safely after each shift. As in many previous years, the leading cause of fatal injury in 2024 was, by far, stress/overexertion at 58%, and cardiovascular event was the leading nature of fatal injury also at 58%. The next leading causes were struck by (13%) and vehicle collisions (11%). In addition, in 2024, 68% of firefighters were killed while operating at an incident where the most common type of duty leading to a firefighter fatality was operating at a fireground (53%) during which most were advancing hoselines or attacking the fire.

The USFA and fire service must continue efforts to prevent on-duty firefighter deaths. The USFA provides the following recommendations:

- Recommendation #1: Continue efforts to reduce cardiovascular-related firefighter fatalities:
  - Increase cardiac-related screenings among firefighters, improving the quality of the screening and ensuring corrective actions are taken if risk factors are identified. All firefighters over the age of 40 should be screened for atherosclerotic cardiovascular disease and structural abnormalities.
  - Increase awareness and training related to the importance of physical fitness, nutrition, adequate sleep, stress reduction, mental health support and substance abuse management for cardiac health (and cancer risk reduction).
  - Adopt and consistently practice heat stress protocols that manage heat exposure and reduce heat stress during and after firefighting, emergency operations or training events; procedures for minimizing exposure to smoke and other toxic agents at the scene of a fire or live fire trainings; and emergency response practices that can be lifesaving in the event of a cardiac emergency.
- Recommendation #2: Further enhancement of situational awareness training at all levels of personnel within fire departments, especially on escalating and dynamic events in an all-hazard environment.
- Recommendation #3: Continue efforts to reduce firefighter fatalities related to vehicle collisions:
  - Ensure emergency vehicle drivers are knowledgeable of and adhere to established fire department policies, procedures and guidelines related to the safe operation of vehicles including both fire department and privately owned vehicles.
  - Emphasize the critical need for non-emergency vehicle drivers to properly maneuver through crash sites, providing education during license renewal tests, road warning signs and printed publications.

This report serves as a critical resource for the USFA, fire service, policymakers and other safety organizations. Together, these groups can have a powerful impact on the health and safety of the nation's firefighters and eliminate future on-duty firefighter deaths.

Appendix A: Descriptions of Fatal Incidents Resulting in Firefighter Fatalities in 2024 by Cause of Fatal Injury

Stress or overexertion (42 firefighter fatalities)

- 41 firefighters died due to cardiovascular events.
- One firefighter died due to a CVA.
- 18 of the 42 firefighters met the inclusion criteria stipulated in the Hometown Heroes Survivors Benefits Act of 2003 (see page 39 for more information).

Struck by (nine firefighter fatalities)

- Law enforcement officers were called to a home for the report of a suspect barricaded with family members inside of the house. A special weapons and tactics team was deployed to the scene and a firefighter/paramedic responded as a member of that team. According to press reports, gunfire occurred, and a police officer was struck. As the firefighter/paramedic began to treat the injured officer, he was also struck by gunfire and killed. Two police officers were also killed, and another law enforcement officer was injured in the incident.

- There was a truck fire in a sand and gravel quarry where a large front-end loader experienced an engine fire at the rear of the vehicle. Quarry personnel attempted to fight the fire, first with a portable dry chemical fire extinguisher and then with water from a quarry water tanker (tender). Approximately 20 minutes after the fire was discovered, firefighters were dispatched to the fire. Prior to the arrival of firefighters, the loader's right rear tire exploded. When the first engine arrived, a firefighter and other firefighters dismounted the apparatus in full personal protective clothing and self-contained breathing apparatus (SCBA), pulled one reel (booster) line each, and began to apply water while the unit's engineer operated the pump and the company officer managed operations. Only minutes after the engine's arrival, the left rear loader tire exploded. The firefighter suffered fatal blast injuries, and a second firefighter was transported and evaluated at the nearest trauma center as a precaution.

- A fire police officer was directing traffic away from the scene of an earlier vehicle crash where a vehicle crashed into a house. As he worked at the scene, the fire police officer was struck by a fire department vehicle. The fire police officer suffered multiple traumatic injuries and was pronounced deceased at the scene.

- A battalion chief and other firefighters were dispatched to the report of a tractor-trailer fire. When he arrived on the scene, the battalion chief found a working fire and ordered the first incoming engine to set up for fire attack with a handline with foam. The engine arrived and began suppression operations. The battalion chief walked to the rear of the trailer and began to open the rear doors to learn what was contained in the trailer and assess fire progress. A major explosion occurred and killed the battalion chief instantly.

- An assistant chief and other firefighters responded to a report of power lines down in the roadway. The assistant chief responded to the scene and assessed the hazard. He used his fire department pickup truck to block the roadway. As he was seated in the fire department pickup truck, a pine tree fell onto the cab of the pickup and fatally injured the assistant chief.

- Two firefighters were responding in an engine to the report of a residential structure fire. The area was being impacted by heavy winds and rain. As the two firefighters responded, the cab of the vehicle was crushed by a falling tree. Both firefighters died of traumatic injuries.

- An assistant chief and other firefighters were operating on the scene of a structure fire. While at the scene, a vehicle ran over an uncharged 5-inch supply line and the hose coupling became caught in the vehicle's undercarriage. The hose was dragged and swept through the scene, knocking several firefighters off their feet. The assistant chief sustained a severe head injury and was airlifted to a regional hospital where he died three days later of his injuries.

- While on-duty, an assistant chief was fatally struck by a vehicle while crossing the street to attend an annual board of fire commissioners meeting. His colleagues immediately performed CPR, and he was then rushed to the hospital where he succumbed to his injuries.

Vehicle collisions (eight firefighter fatalities)

- A captain was driving an apparatus and returning to the station from a structure fire. The department's fire chief was also driving another apparatus and returning from the same fire. On their way, both stopped at a fire hydrant and filled the water tanks of each apparatus. When his tank was full, the captain told the fire chief that he was headed for the station and drove away. While en route to the fire station, the apparatus that the captain was driving left the right-hand side of the roadway in a downhill curve, came back on the roadway and went off the left side of the road into a ravine. The apparatus then traveled backwards until coming to rest. The captain was ejected in the crash and sustained fatal injuries.

- A captain was assigned to escort the body of a local firefighter/emergency medical technician who had died earlier in the day to a funeral home (the captain's apparatus was one of two sent from his fire department). While en route to a staging area, the captain's apparatus left the roadway on the right side while negotiating a downhill curve. The apparatus returned to the roadway and swerved to the right to avoid an oncoming vehicle, struck the guardrail on the right, overturned the guardrail and came to rest at the bottom of an earthen embankment. According to the law enforcement report on the crash, the captain was not wearing a seat belt at the time of the crash. He was not ejected and was removed by other firefighters. His death was caused by trauma received in the crash.

- A firefighter was the driver of an engine apparatus responding with lights and siren to an EMS incident. The apparatus entered an intersection at an estimated speed of 65 miles per hour. The apparatus was struck at the right rear tire area by a sedan in the intersection. The impact caused the apparatus to leave the roadway and roll. The firefighter was not wearing a seat belt at the time of the crash. He was ejected in the crash and died on the scene of traumatic injuries.

- A chief and other firefighters responded to a structure fire one evening. The chief drove a fire department engine/tanker (engine/tender) that was assisting with water supply. At the end of the call and during the early morning hours of the following day, the chief was driving the apparatus to a fill site when he was involved in a crash. The apparatus left the roadway onto the right shoulder, overcorrected, left the left-hand side of the roadway, overturned and came to rest on the driver's side. The chief was wearing his seat belt, and he was not ejected from the apparatus. He was also the sole occupant of the apparatus. The chief was hospitalized and released but did not fully recover and was readmitted. He died as the result of his injuries several months later.

- Four SEATs were dispatched in support of aerial firefighting efforts for the Horse Gulch Fire. The flight of the four departed an airport about one hour and 44 minutes before the crash and flew directly to a lake where they began scooping water. One of the airplanes was in the second position. During the first scoop sequence of this airplane, witnesses on the lake and the pilots of the two SEATs flying behind it saw

the airplane make a left turn to the southwest. Subsequently, the airplane impacted a vertical rockface bordering the southern shoreline of the lake, fell into the lake, and sank. The pilot of this airplane was killed in the crash.

- While two airplanes were en route for their third drop-in support of wildfire suppression operations (about 15 miles west of their fire suppression site), the pilot who was in the trailing airplane saw the pilot of the lead airplane maneuver away from a column of smoke, near the northwestern corner of an active Temporary Flight Restriction (TFR) area. The trailing pilot reported that he did not want to maneuver through the TFR corner due to visibility concerns. The pilot in the first position agreed and told him to take over the lead position. The trailing pilot turned to the west and saw the lead pilot maneuver his airplane to a trailing position behind him. A few seconds later, the pilot who was now in the lead lost sight of the airplane that was now in the trailing position. Moments later, the trailing airplane crashed, and the pilot was killed.

- In 1995, a firefighter was paralyzed when the fire engine he was riding in overturned. The firefighter and another firefighter were in the back of the engine and were not wearing seat belts when the crash occurred. The raised roof of the engine separated from the cab when it overturned, and the two firefighters were thrown from the engine. The firefighter was in a wheelchair until 2024 when he died due to medical complications from the crash. The other firefighter in the back of the engine was killed at the time of the crash and two additional firefighters were injured in the crash. The engine was responding on a box alarm which turned out to be a false alarm.

- An engineer was battling a brush fire when the utility terrain vehicle he was operating rolled over a steep, rocky incline. He was pronounced dead at the scene. Three other firefighters were taken to local hospitals with non-life-threatening injuries. The engineer was not wearing a seat belt at the time of the crash.

Caught or trapped (four firefighter fatalities)

- At 7:36 p.m., a firefighter responded as a member of a ladder company crew to the report of a gas odor outside of a home. At 7:43 p.m., the firefighter's ladder company arrived on the scene, noted the smell of gas as they exited the apparatus and started to investigate. As they began investigating for the presence of gas, engine company firefighters were made aware of the presence of a 500-gallon underground propane tank that served a nearby home. The tank was found to be leaking and additional fire department resources, including a hazmat team, were requested at 8:18 p.m. After learning there were still occupants in the home, the firefighter entered the home and evacuated the first occupant. The firefighter then proceeded to the basement area where they were able to encourage the remaining occupant to evacuate. At approximately 8:24 p.m., a major explosion occurred. The home was destroyed, and the firefighter was killed in the explosion. In addition, 13 other firefighters were injured.

- A captain and members of his department responded to a house fire. Upon arrival, fire and smoke were observed coming from the rear of the house. Firefighters, including the captain, initiated an interior fire attack to extinguish the fire. A few minutes later, an order to evacuate the structure due to rapidly deteriorating fire conditions was issued. Crews evacuated the structure and reported one firefighter missing. A Rapid Intervention Team entered the structure to locate and extricate the captain. He was removed and then treated by EMS at the scene for burn injuries and transported by helicopter to a local hospital. The captain suffered burns over 60% of his body and died a few days later from the injuries he sustained.

- A fire department was dispatched to assist another department with a water rescue with a report of people trapped due to rising and extremely rapid moving water. Recent rain waters flooded areas and created areas of rapid moving waters. During the incident, an assistant chief with the assisting fire department and a firefighter from the primary department deployed a lightweight inflatable boat with a motor and were able to reach the two victims, moving them into the boat. While maneuvering the boat to a safe area, the motor stalled out and was unable to be restarted. A mayday was called to alert other rescue members on scene that the boat and occupants were in trouble. The boat capsized a short time later, sending the occupants of the boat into the rapid moving water. The two civilian victims and one firefighter were able to be re-rescued. The assistant chief who was wearing a life vest and helmet at the time the boat capsized, however, did not resurface from the rapidly moving waters. His body was recovered a few hours later. His death was due to drowning.

- In 2016, a firefighter was rescuing a woman from an apartment fire when his SCBA facepiece was knocked off. When his facepiece became dislodged, the firefighter inhaled a large amount of smoke while still amid the home fire and suffered lung damage. After his retirement in 2023, the firefighter received two lung transplants. In 2024, the firefighter died due to complications from another lung procedure that was directly related to the incident that occurred in 2016.

Exposure (two firefighter fatalities)

- A firefighter collapsed after successfully completing a WCT. He was immediately treated by other firefighters, including the use of an automated external defibrillator and CPR. Personnel worked to provide medical aid as an ambulance response was mobilized. Stabilization and resuscitation efforts continued as the firefighter was transported via ground ambulance to a local hospital. Despite efforts, the firefighter was pronounced deceased, and his death was caused by heat stroke.

- A firefighter recruit fell ill on the second day of his 14-week fire academy program. As part of his training, the fire recruit was walking laps in full personal protective clothing. He was treated at the scene and transported to a local hospital where he was treated for heat-related illness. The firefighter recruit subsequently developed rhabdomyolysis, which led to total organ failure. His cause of death was listed as environmental heat exposure.

Fall (one firefighter fatality)

- A firefighter-paramedic was paralyzed in an accidental fall during training. He was confined to a wheelchair but was unable to return to work. The firefighter-paramedic remained a part of his fire department until his death in 2024 that was a result of his original injury 10 years earlier.

Structural collapse (one firefighter fatality)

- A firefighter and other firefighters responded to a structure fire in a warehouse. While working in the interior of the structure, a collapse occurred onto the firefighter and another firefighter. Both were extricated and removed from the structure, but the one firefighter was fatally injured. The fire was incendiary.

Contact with (one firefighter fatality)

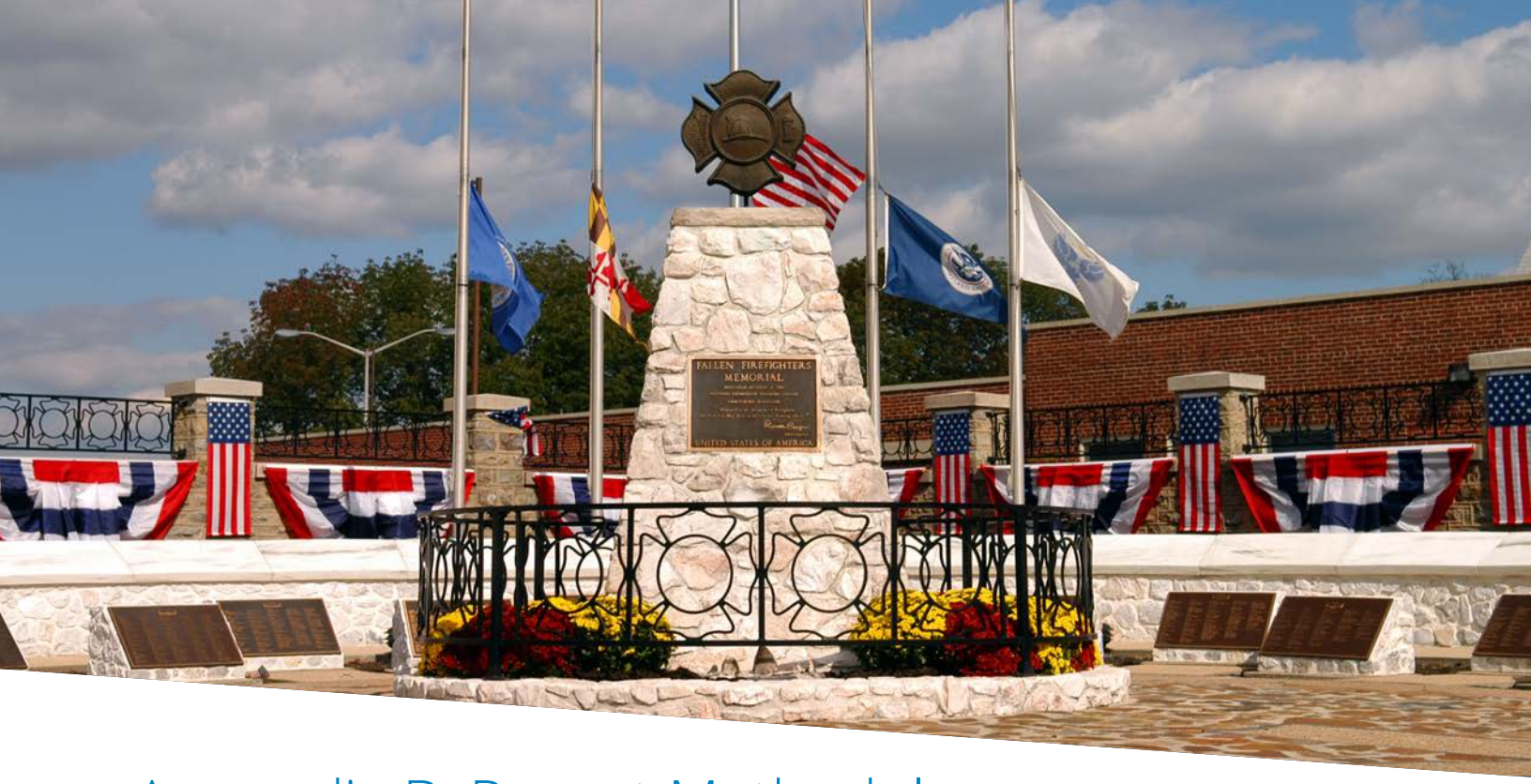
- A vehicle was sideswiped, veered off the road and struck a utility pole. A firefighter came upon the crash and stopped to help. While assisting the driver of the car, the utility pole snapped, bringing down electrical wires. The firefighter sustained life-threatening injuries from the wires and was pronounced deceased at the scene.

Other (two firefighter fatalities)

- A firefighter/paramedic was participating in a training exercise that involved swimming when he became ill. The firefighter/paramedic was transported to the hospital but did not survive. His death was caused by a blood abnormality that can lead to uncontrolled bleeding.
- A battalion chief was assisting in the rescue of victims of a landslide during the response to Hurricane Helene, when a second landslide occurred. The battalion chief died from the injuries he sustained in the second landslide.

Unknown (two firefighter fatalities)

- A firefighter and the members of his fire department were fighting a structure fire in a two-family residence. At some point, the firefighter either fell through the floor or down the stairs into the basement. A mayday was called, the firefighter was rescued, and CPR was performed. The firefighter was then transported to a local hospital where he succumbed to the injuries he sustained in the accident. Four other firefighters were also taken to the hospital with non-life-threatening injuries.
- A firefighter and the members of his engine company were dispatched to the report of a residential fire. Firefighters arriving on the scene found a working fire in a single-story manufactured home. The firefighter entered the structure to fight the fire. Then, for an unknown reason, the firefighter exited the structure, removed the facepiece for his SCBA and collapsed. His collapse was witnessed by other firefighters and advanced life support treatment began immediately. The firefighter was transported to a local hospital where he was later pronounced deceased. His death is believed to have been caused by an unspecified cardiac issue.



Appendix B: Report Methodology

This study reports on firefighter fatalities in the United States for 2024 and analyzes data on the fatalities and fatal incidents to better understand current and historical trends and leading causes and natures of the fatalities. This work requires a uniform definition of a firefighter and standard determination of deaths that occur while on-duty (or within a time frame that the injury/illness is presumed to have occurred while on duty or be associated with firefighting duties).

Who is a firefighter?

For this report, the term "firefighter" covers all members of organized fire departments with assigned fire suppression duties in all 50 states; Washington, D.C.; and the territories of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands and Guam. It includes active career and volunteer firefighters; probationary firefighters and firefighter recruits; full-time public safety officers acting as firefighters; fire police; state, tribal nations 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 USFS, NPS, BLM, BIA, 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 (DOE); 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 fatal injury or illness sustained while performing official duties. The term "on-duty" refers to being involved in operations at the scene of an incident, whether it is a fire, medical call for service or other non-fire 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 cardiovascular event (including sudden cardiac arrest) 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 cardiovascular event shortly after the conclusion of the incident may be considered on-duty since the inception of the cardiovascular event may have occurred while the firefighter was on-duty.

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 cardiovascular event. 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.[18]

Firefighters who are traveling to or from their official duty station are not included as this travel is considered part of normal commuting time. In addition, firefighters who are traveling in their personal vehicle to other assigned duties such as training are not included as this is also considered part of normal commuting time.

In addition, firefighters who have stopped to assist with an emergency incident or render care while off-duty will only be included if a local or state law or policy exists that establishes a requirement for emergency responders to take necessary actions to prevent harm to individuals or the public.

Finally, at present, there is no established mechanism for USFA to identify fatalities that result from long-term 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.

Hometown Heroes Survivors Benefits Act of 2003

On Dec. 15, 2003, the president of the United States signed the Hometown Heroes Survivors Benefits Act of 2003[19] into law (P.L. 108-182). This law presumes that a cardiovascular event (heart attack) or stroke is on-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 inclusion criteria for defining an on-duty fatality have been affected by this change in the law. Before Dec. 15, 2003, firefighters who became ill as the result of a cardiovascular event 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 cardiovascular event 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, were not included.

Cause of Fatal Injury vs. Nature of Fatal Injury

The terms cause and nature of fatal injury are important to differentiate as they have precise medical meaning. Cause of fatal injury is a more specific categorization of the type of complication leading to the firefighter's

[18] 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 2024" report, however, have been recalculated to reflect this change in methodology.
[19] Link to Hometown Heroes Survivors Benefits Act of 2003: https://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ182.108.pdf

death (i.e., stress/overexertion, vehicle collision, caught/trapped, exposure, struck by, building collapse, etc.). (Stress/overexertion is a general category that implies that physical work and/or psychological stress may be involved in triggering a medical or pathological event.) Nature of fatal injury is a medical diagnosis classification of the type of injury leading to the firefighter's death (i.e., trauma, cardiovascular event, burns, asphyxiation, etc.). For example, there may be several on-duty fatalities whose causes are all classified as stress/overexertion, however, their nature of fatal injury falls under different categories such as cardiovascular, heat exhaustion or CVA (a.k.a. stroke).

Appendix C: Firefighter Fatality Inclusion Criteria — National Fire Service Organizations

The 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 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.

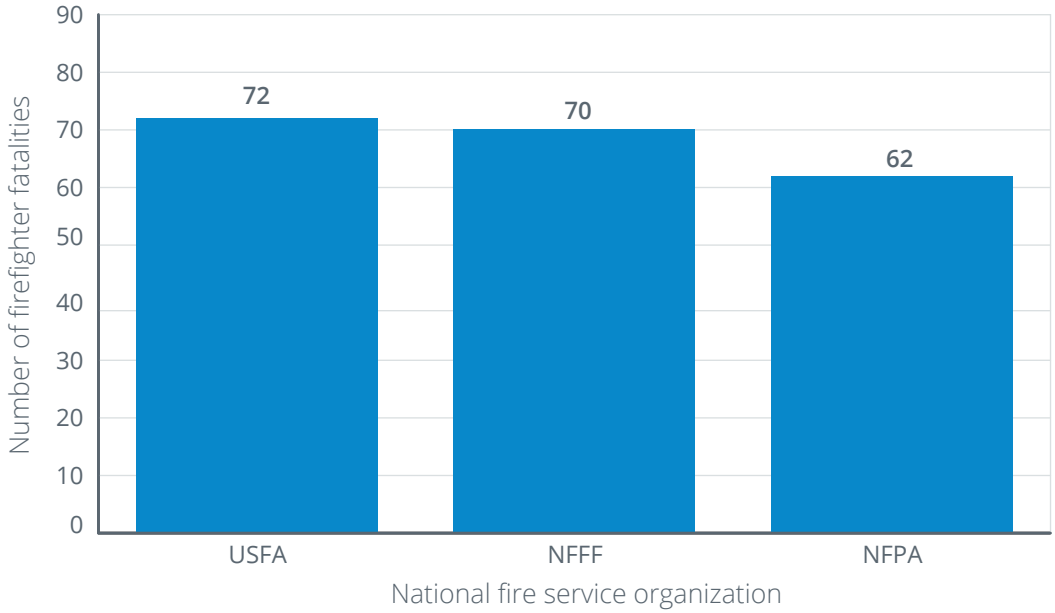
Inclusion criteria for the USFA's annual report

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, Washington, D.C, and United States protectorates such as Puerto Rico and Guam. Details on the USFA inclusion criteria appear in the report methodology as described in Appendix B.

For the USFA report from 2020 and the years that follow, firefighter deaths are counted in the year the death occurs rather than the year the fatal incident occurred as had been done in previous years.

For 2024, the USFA reported 72 on-duty firefighter fatalities.

Firefighter fatalities in 2024*



*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 and inclusion criteria

The NFPA has collected information on on-duty firefighter fatalities since 1977 and published annual reports on key findings. Historically, the on-duty criterion meant that deaths were included when they were due to 1) traumatic injury or 2) sudden cardiac incidents, strokes, aneurysms or medical conditions while the victim was on duty. Fatalities due to heart attack, stroke, aneurysm or other medical conditions when firefighters were off duty were not included in NFPA's study except in cases where the victims made a specific medical complaint while on duty.

Since 2022, fatal heart attacks, strokes, aneurysms or other medical conditions while firefighters are off duty have been included in NFPA's study if they occur within 24 hours of duty, irrespective of any documented physical complaint by the victim. The expansion of the inclusion criteria to include fatalities within 24 hours of duty are consistent with those that establish eligibility for federal death benefits under the Hometown Heroes Act of 2003 (deaths within 24 hours of nonroutine strenuous or stressful physical activity while on duty).

Several types of firefighting populations are eligible for inclusion in NFPA's study:

- Career and volunteer firefighters serving in local fire departments.
- Seasonal, full-time and contract employees of state and federal agencies who have fire suppression responsibilities.
- 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.

At times, there might be a considerable delay between an injury and the resulting death. Fatalities are assigned to the year of the initial injury occurrence in cases where death occurred in a subsequent year. Accordingly, the number of deaths in a particular year might change as additions are made to annual totals following the receipt of new information.

The on-duty designation refers to a variety of injury scenarios that are eligible for inclusion in NFPA's research. These include injuries sustained while:

- At the scene of an alarm (fire or emergency medical or other responses).
- During transport to or from an alarm.
- Participating in other department duties (such as training, maintenance, public education, investigations, etc.).
- On call or standby for assignment NFPA research.

NFPA's annual study includes only on-duty fatal firefighter injuries that occurred in the 50 states and the District of Columbia.[20]

2024 NFPA experience

In 2024, a total of 62 on-duty firefighter deaths occurred in the United States, according to the NFPA inclusion criteria.

[20] NFPA, "Fatal Firefighter Injuries in the United States," https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/fatal-firefighter-injuries.

National Fallen Firefighters Foundation firefighter fatality inclusion criteria

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 2024, the National Memorial Service was held in May.

In 1997, the NFFF sponsored a meeting of the leaders of the major fire service organizations to ask for their assistance with formulating new line-of-duty death criteria to determine eligibility for inclusion on the National Fallen Firefighters Memorial.

Present at this meeting were representatives from the National Volunteer Fire Council (NVFC), USFA, International Association of Fire Chiefs (IAFC), International Association of Fire Fighters (IAFF), National Association of State Fire Marshals, NFPA, and the Federal Emergency Management Agency.

Meeting participants unanimously agreed that inclusion on the National Fallen Firefighters Memorial as a line-of-duty death shall be determined by the following standards:

- 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, including as a chaplain or candidate officer, 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 the U.S. Department of Agriculture, USFS, BLM, FWS, NPS, DOE, 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 United States 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 two 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.
- "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, they agreed that 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 cardiovascular event 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 non-emergency fire department duty, e.g., 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 due to suicide.
- Deaths due to COVID-19.
- Deaths due to infectious diseases (including viral, bacterial, parasitic or fungal).
- Deaths due to presumptive causes other than cancer.
- 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 one year of the firefighter's death, the foundation will close out the file as "Not Eligible" for inclusion on the national memorial.

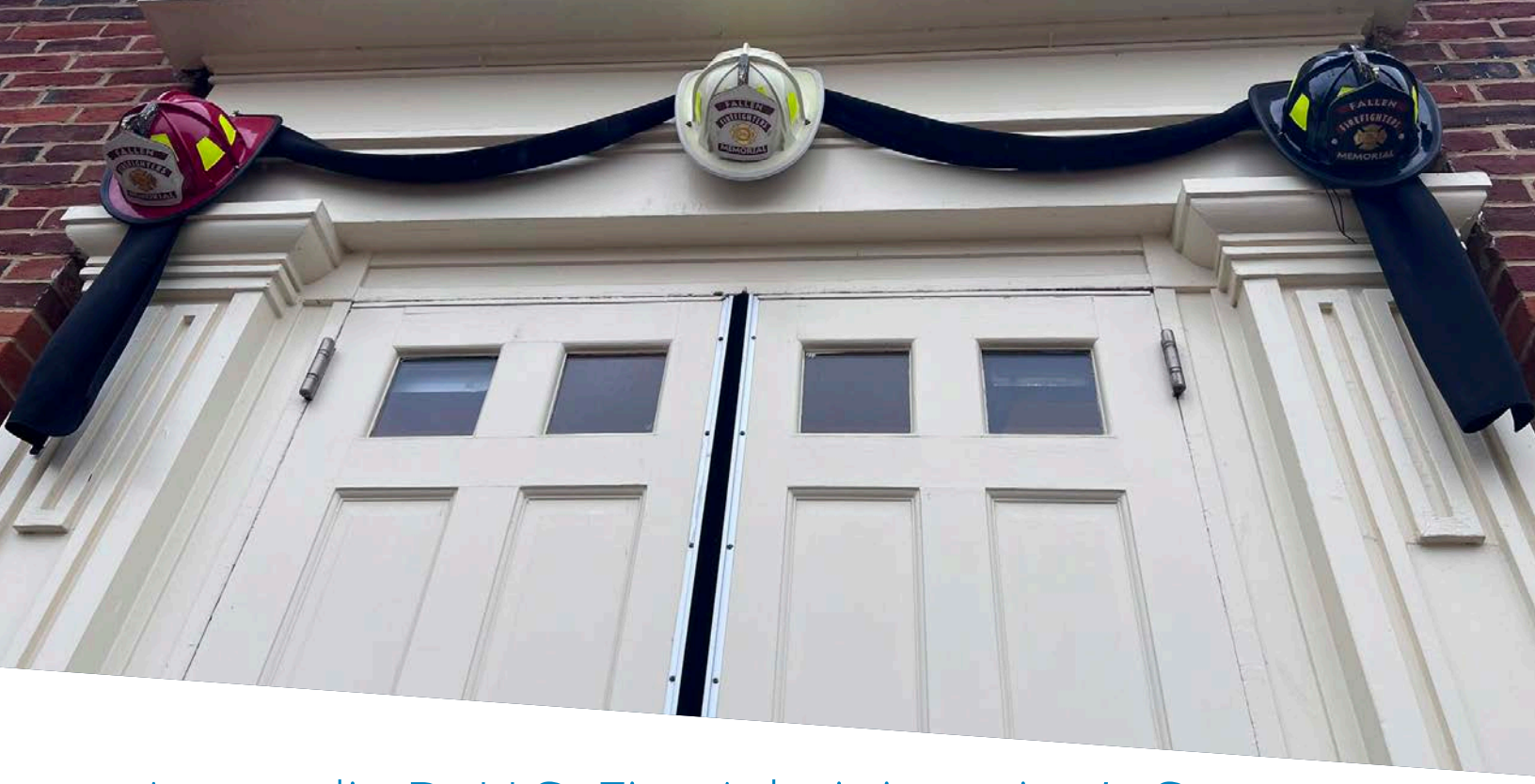
Specific cases will be excluded from consideration for inclusion on the national memorial, such as:

- 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.[21]

The NFFF honored 140 firefighters who died in the line of duty at the planned May 2025 Memorial Weekend. Of those, 70 firefighters that were honored are associated with incidents and deaths that occurred in 2024, and 70 deaths as the result of incidents that occurred prior to 2024. Of the 70 deaths that occurred in 2024, 15 were the result of cancer. Of the 70 deaths that occurred prior to 2024, 16 were the result of COVID-19 and its complications, and 40 were the result of cancer.

21 NFFF, "Criteria for Inclusion on the National Memorial," https://www.firehero.org/resources/handling-a-lodd/criteria/.



Appendix D: U.S. Fire Administration's Sources of Firefighter Fatality Data

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 may include the PSOB Program administered by the DOJ, the National Institute for Occupational Safety and Health, OSHA, the U.S. Department of Defense, the National Interagency Fire Center, and other federal agencies.

The USFA may also receive notification of some deaths directly from fire departments and fire service organizations, including: the IAFC, IAFF, NVFC, state fire marshals, state fire training organizations, NFPA, other state and local organizations, fire service internet sites, news services, and fire service publications.

Acronyms

BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CVA	cerebrovascular accident
DOE	U.S. Department of Energy
DOJ	U.S. Department of Justice
EMS	emergency medical services
FWS	U.S. Fish and Wildlife Service
IAFC	International Association of Fire Chiefs
IAFF	International Association of Fire Fighters
MVC	motor vehicle crash
NFFF	National Fallen Firefighters Foundation
NFPA	National Fire Protection Association
NPS	National Park Service
NVFC	National Volunteer Fire Council
OSHA	Occupational Safety and Health Administration
PSOB	Public Safety Officers' Benefits
SCBA	self-contained breathing apparatus
SEAT	single engine air tanker
TFR	Temporary Flight Restriction
USFA	U.S. Fire Administration
USFS	U.S. Forest Service
WCT	Work Capacity Test

U.S. Fire Administration

Working for a fire-safe America

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June 2025