Fire-Related Firefighter Injuries Reported to the National Fire Incident Reporting System (2012-2014)

These topical reports are designed to explore facets of the U.S. fire problem as depicted through data collected in the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS). Each topical report briefly addresses the nature of the specific fire or fire-related topic, highlights important findings from the data, and may suggest other resources to consider for further information. Also included are recent examples of fire incidents that demonstrate some of the issues addressed in the report or that put the report topic in context.

Findings

- From 2012 to 2014, an estimated 29,425 firefighter injuries occurred annually on the fireground, and another 4,125 injuries occurred while responding to or returning from an incident.
- The majority of fire-related firefighter injuries (87 percent) occurred in structure fires. In addition, on average, structure fires had more injuries per fire than nonstructure fires.
- Injuries resulted in lost work time for 44 percent of firefighters with reported fire-related injuries.
- Fires resulting in firefighter injuries occurred more often in July, at 11 percent, and peaked between the hours of 1 and 4 p.m.
- Overexertion/Strain was the cause of 27 percent of reported fire-related firefighter injuries.

Every occupation brings degrees of safety risk. At the fire scene, on the way to or from a fire, or while training, firefighters face the chance of suffering an injury and possibly death. Each year, tens of thousands of firefighters are injured while fighting fires, rescuing people, responding to emergency medical and hazardous material incidents, or training for their job.

Annually, from 2012 to 2014, there were an estimated 66,200 firefighter injuries resulting from all types of fire department duties.[1] Of these injuries, 29,425 occurred on the fireground or were considered to be fire-related (includes structure fires, vehicle fires, outside fires, etc.). An additional 4,125 injuries occurred while responding to or returning from an incident, which includes, but is not limited to, fires.[2, 3, 4] While the majority of injuries are minor, a significant number are debilitating and career-ending. Such injuries exact a great toll on the fabric of the fire service.

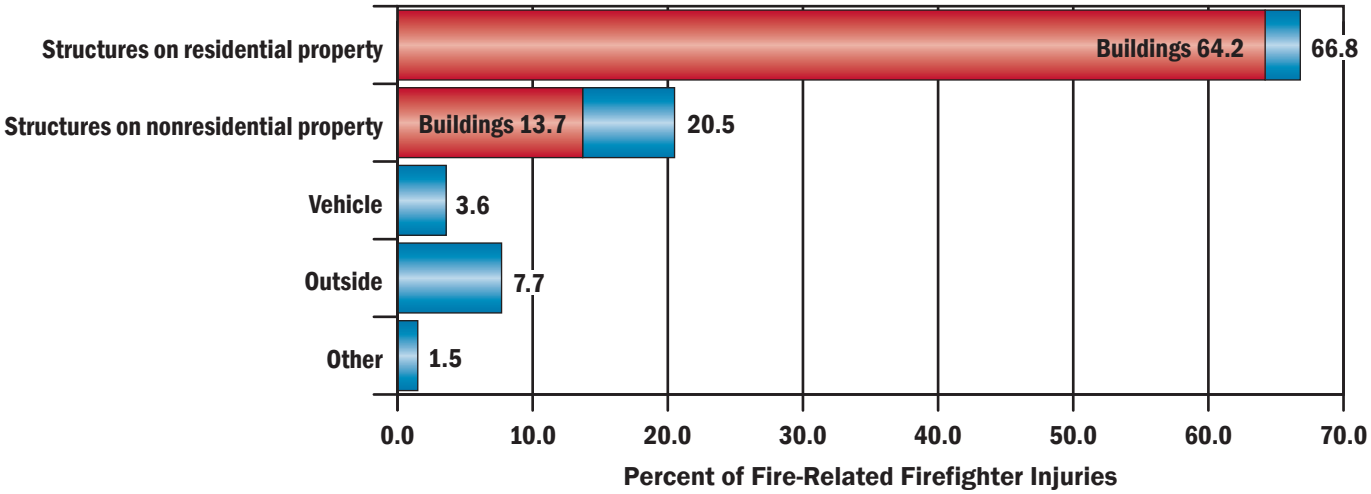
From the need to adjust staffing levels and rotations to accommodate injuries, to the focus of the fire service on injury prevention, injuries and their prevention are a primary concern. In addition, the fire service has done much to improve firefighter safety. Firefighter health and safety initiatives, incident command structure, training, and protective gear are but a few areas where time, energy and resources have been well-spent. Nonetheless, firefighting by its very nature is a hazardous profession. Injuries can and do occur.

This topical report addresses the details of firefighter injuries sustained at, responding to or returning from a fire incident, focusing on data as reported to the National Fire Incident Reporting System (NFIRS) from 2012 to 2014, the most recent data available at the time of the analysis.[5] This current topical report is an update to the "Fire-Related Firefighter Injuries Reported to NFIRS" (Volume 15, Issue 6) topical report, which was released in November 2014. The statistics presented are from the analysis of 2012 to 2014 NFIRS data.[6]

Fire-Related Firefighter Injuries by General Property Type

From 2012 to 2014, 87 percent of the fire-related firefighter injuries reported to NFIRS were associated with structure fires (Figure 1). Three times as many firefighter injuries occurred in residential structures as in nonresidential structures, tracking with overall residential/nonresidential fire incidence. Firefighter injuries in residential structures accounted for 67 percent of firefighter injuries, a majority of which occurred in residential building fires.[7] Building fires also accounted for two-thirds of the firefighter injuries that occurred in structure fires on nonresidential properties. Outside, vehicle and other fires combined accounted for 13 percent of firefighter injuries from 2012 to 2014.[8]

Figure 1. Fire-Related Firefighter Injuries by General Property Type (2012–2014)



Source: NFIRS 5.0.
Note: Total does not add up to 100 percent due to rounding.

Fire-Related Firefighter Injuries per Fire

Firefighters were almost 11 times more likely to be injured in structure fires than in nonstructure fires (e.g., vehicle fires, outdoor fires) as shown in Table 1. Building fire injury rates are shown separately in Table 2.

Table 1. Fire-Related Firefighter Injury Rates per 1,000 Fires by General Property Type (2012–2014)

General Property Type	Fire-Related Firefighter Injuries per 1,000 Fires
Structure	12.7
Residential	12.3
Nonresidential	13.8
Nonstructure	1.2
Vehicle	1.4
Outside and other	1.1
Total/Overall	5.6

Source: NFIRS 5.0.

Table 2. Fire-Related Firefighter Injury Rates per 1,000 Building Fires by Type (2012–2014)

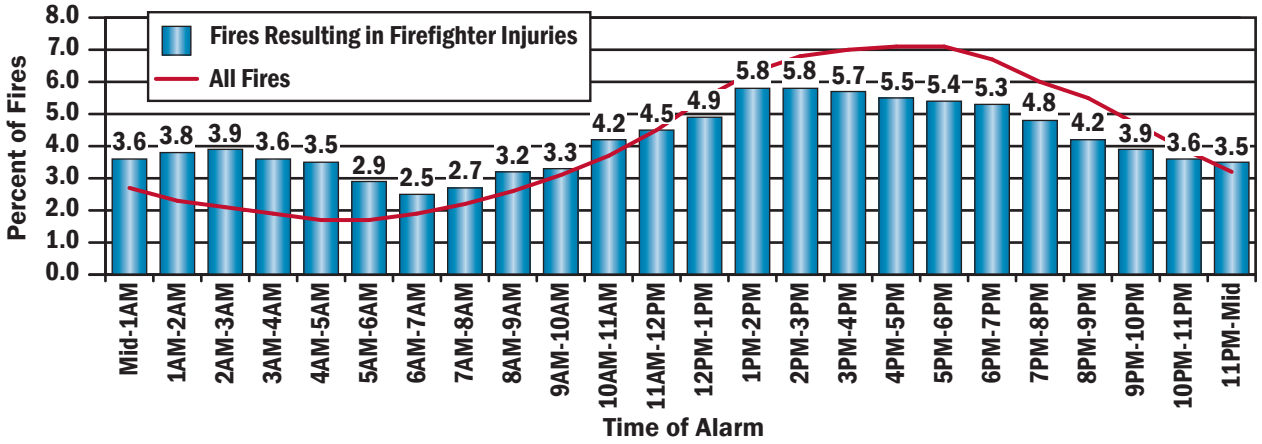
Type	Fire-Related Firefighter Injuries per 1,000 Building Fires
Buildings	11.6
Residential	12.1
Nonresidential	10.0

Source: NFIRS 5.0.

When Fire-Related Firefighter Injuries Occur

As shown in Figure 2, fires resulting in firefighter injuries occurred most frequently in the midday, peaking from 1 to 4 p.m. After 7 p.m., fires resulting in injuries decreased until midnight. A small peak is then seen from midnight to 5 a.m. After 5 a.m., the numbers of fires resulting in firefighter injuries decreased, reaching the lowest point between 6 and 7 a.m. After 7 a.m., the number of fires resulting in injuries gradually increased to the start of the peak period. The peak period (1 to 4 p.m.) accounted for 17 percent of fires resulting in firefighter injuries.[9] The time of alarm profile for fires resulting in firefighter injuries tracked somewhat similarly with that for fires overall; however, the peak for all fires was more pronounced during the afternoon and early evening.

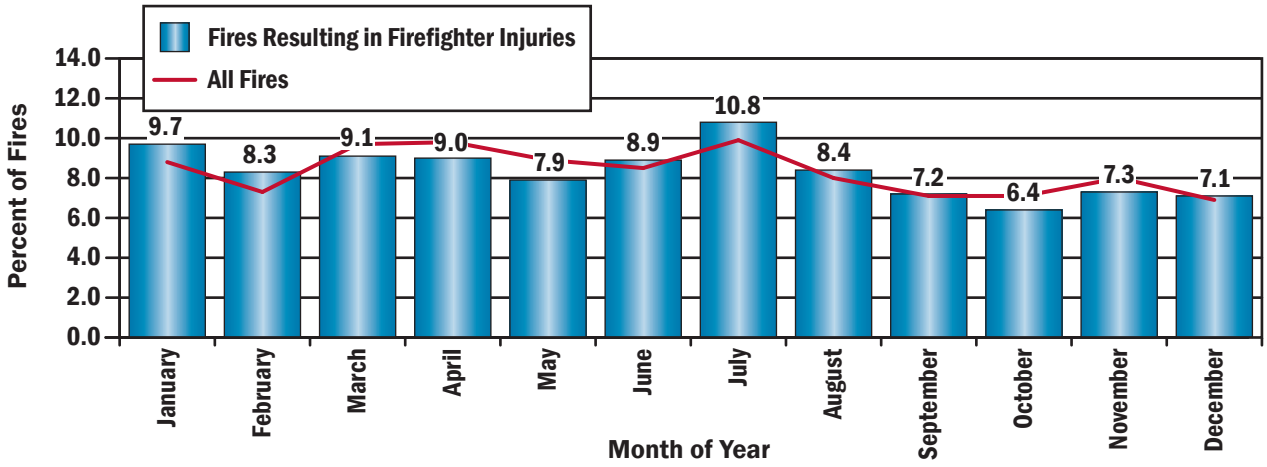
Figure 2. Fires Resulting in Firefighter Injuries by Time of Alarm (2012–2014)



Source: NFIRS 5.0.
Note: Total does not add up to 100 percent due to rounding.

Figure 3 illustrates that fires resulting in firefighter injuries were highest in July (11 percent) and lowest in October (6 percent). Fires resulting in firefighter injuries by month tracked similarly with the month of occurrence for all fires.

Figure 3. Fires Resulting in Firefighter Injuries by Month (2012–2014)



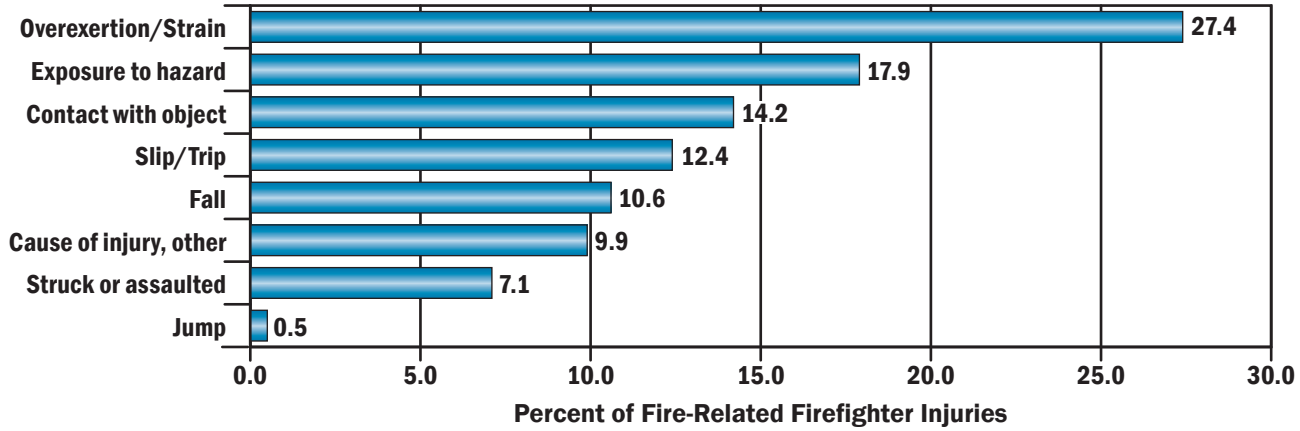
Source: NFIRS 5.0.
Note: Total does not add up to 100 percent due to rounding.

Cause and Nature of Fire-Related Firefighter Injuries

Figure 4 shows that 27 percent of all fire-related firefighter injuries were caused by overexertion/strain. The next three leading reported causes combined accounted for 45 percent of fire-related firefighter injuries: exposure to hazard (18 percent), contact with object (14 percent), and slip/trip (12 percent).[10]

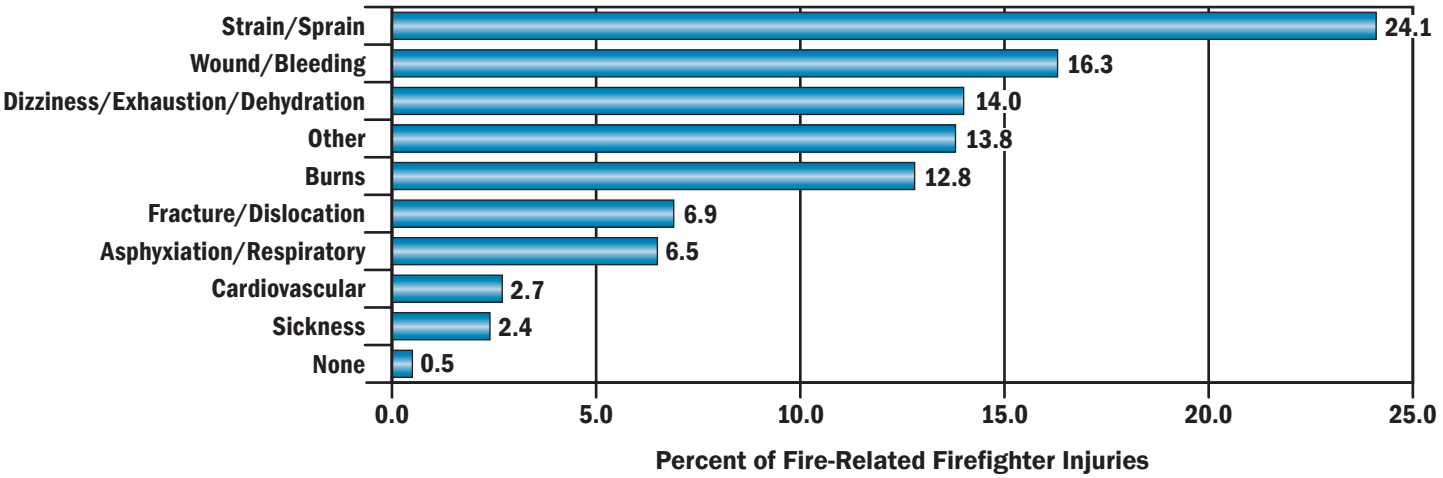
Not surprisingly, the leading nature of injury was strain at 24 percent, closely associated with overexertion/strain as the cause of the injury (Figure 5). Wound/Bleeding and dizziness/exhaustion/dehydration accounted for an additional 16 percent and 14 percent of fire-related firefighter injuries, respectively.

Figure 4. Fire-Related Firefighter Injuries by Cause of Injury (2012–2014)



Source: NFIRS 5.0.
Note: Includes only injuries where cause of injury was specified. The cause of injury was specified in 72 percent of reported injuries.

Figure 5. Fire-Related Firefighter Injuries by Nature of Injury (2012–2014)



Source: NFIRS 5.0.
Note: Includes only injuries where the nature of injury was specified. The nature of injury was specified in 81 percent of reported injuries.

Severity of Fire-Related Firefighter Injuries

More than half of fire-related firefighter injuries (56 percent) resulted in no lost work time, as shown in Table 3. These injuries were treated on-scene with first aid or after the incident by a physician, either at a medical facility or in a doctor's office. Forty-four percent of fire-related firefighter injuries resulted in lost work time. The majority of the lost work time injuries (94 percent of lost work time injuries or 41 percent of all fire-related firefighter injuries) were moderate in severity. Severe or life-threatening injuries accounted for 3 percent of firefighter injuries.

Table 3. Severity of Fire-Related Firefighter Injuries (2012–2014)

Severity	Percent of Fire-Related Firefighter Injuries
First aid only, no lost time	22.9
Treated by physician, no lost time	33.3
Moderate severity, lost-time injury	41.0
Severe, lost-time injury	2.3
Life-threatening, lost-time injury	0.5
Total	100.0

Source: NFIRS 5.0.
Note: The severity of the injury was specified in 100 percent of reported injuries.

Fire-Related Firefighter Injuries by Age and Gender

Table 4 shows the percent of firefighter injuries based on gender. The majority of all fire-related firefighter injuries, 95 percent, were sustained by males. This statistic is comparable with the composition of the fire service during this period — on average, males constituted 96 percent of employed firefighters from 2012 to 2014.[11]

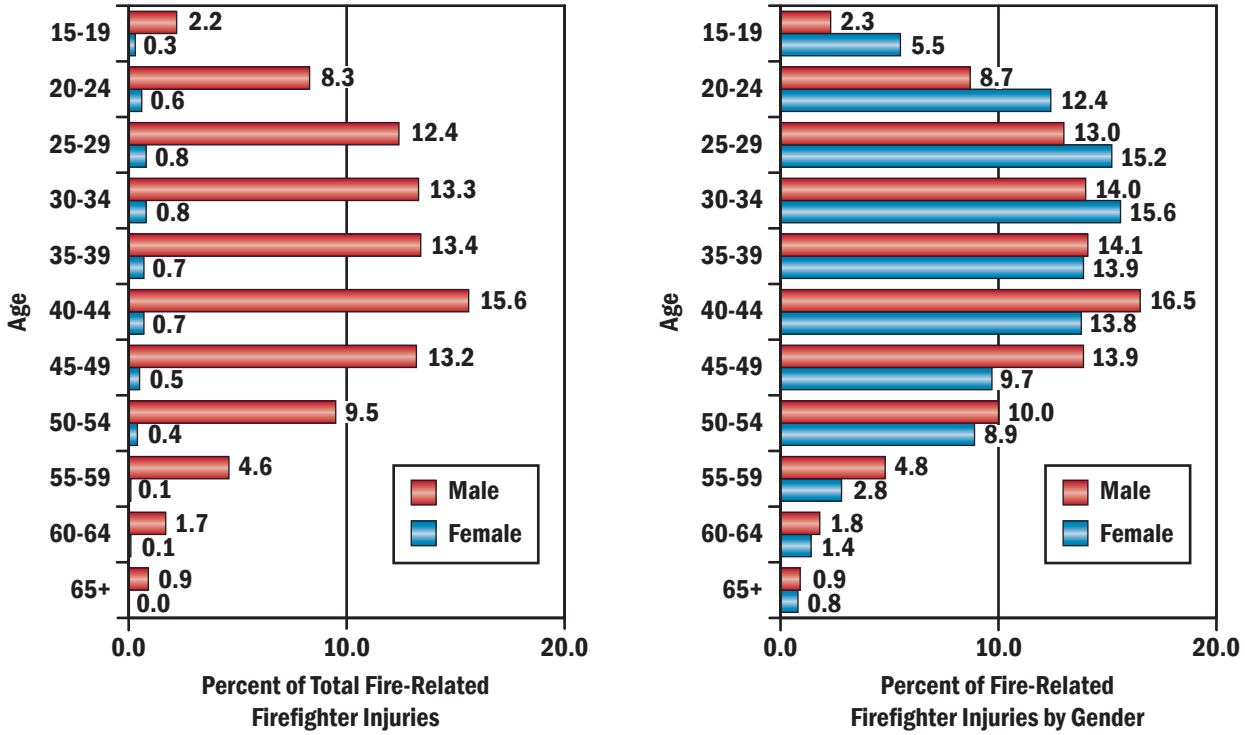
Table 4. Percent of Fire-Related Firefighter Injuries by Gender (2012–2014)

Gender	Percent of Fire-Related Firefighter Injuries
Male	95.0
Female	5.0
Total	100.0

Source: NFIRS 5.0.
Note: Gender was specified in 100 percent of reported injuries.

Figure 6 shows two different profiles of fire-related firefighter injuries by age and gender. The left graphic shows male and female injuries as a percent of the total injuries (all bars add to 100 percent). The right graphic shows the age distribution of injuries by gender (each distribution adds to 100 percent). Both graphs show that male firefighter injuries peaked between ages 40 and 44 and female firefighter injuries peaked between ages 25 and 34. Overall, nearly one-third of all fire-related injuries (30 percent) occurred to firefighters aged 35 to 44.

Figure 6. Fire-Related Firefighter Injuries by Age and Gender (2012–2014)



Source: NFIRS 5.0.
Note: Includes only injuries where the age of the firefighter was between 15 and 100, and gender was specified. Age was specified in 98 percent of the reported male injuries and 97 percent of the reported female injuries. The total fire-related firefighter injuries distribution does not add up to 100 percent due to rounding.

The leading reported causes of injury among younger firefighters (ages 15 to 24) were related to overexertion/strains and exposure to hazards, while among older firefighters (age 65 and older) overexertion/strains and slips/trips were the most common injuries. These results, among other factors, relate to physical fitness variations with age and the effect of age on type of assignments.

Fire-Related Firefighter Injuries by Affiliation and Age

Injuries to career firefighters were the largest share (70 percent) of the reported fire-related injuries (Table 5). Nationally, only 31 percent of the fire service is made up of career firefighters.[12]

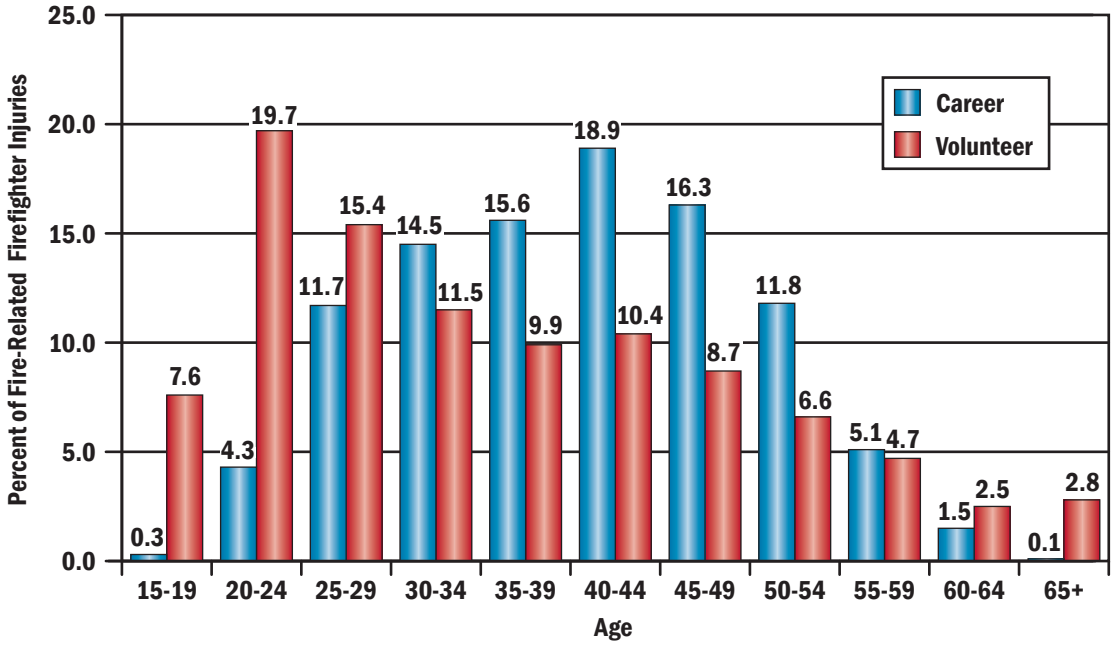
Table 5. Fire-Related Firefighter Injuries by Affiliation (2012–2014)

Affiliation	Percent of Fire-Related Firefighter Injuries	Percent of All Firefighters
Career	69.8	30.7
Volunteer	30.2	69.3
Total	100.0	100.0

Source: NFIRS 5.0 and National Fire Protection Association (NFPA).
Note: Percent of fire-related firefighter injuries includes only injuries where affiliation was specified. Affiliation was specified in 72 percent of reported fire-related firefighter injuries.

As shown in Figure 7, injuries to career firefighters occurred most often in midcareer (ages 35 to 49) with the peak between ages 40 and 44 at 19 percent. Injuries to volunteers, on the other hand, were sustained predominately by the younger members of the organization. Firefighters under the age of 25 accounted for 27 percent of injuries in the volunteer service.

Figure 7. Career and Volunteer Fire-Related Firefighter Injuries by Age (2012–2014)



Source: NFIRS 5.0.
Note: Includes only injuries where the age of the firefighter was between 15 and 100, and affiliation was specified. Age was specified in 97 percent of the reported injuries to career firefighters and 98 percent of the reported injuries to volunteer firefighters. Overall, both age and affiliation were specified in 70 percent of all reported firefighter injuries. Totals do not add up to 100 percent due to rounding.

Career firefighters also experienced proportionally more fire-related injuries that resulted in lost time than their volunteer counterparts, as shown in Table 6. Volunteer firefighters, on the other hand, received far more injuries that resulted in no lost time.

Table 6. Overall Comparison of Fire-Related Firefighter Injury Severity by Affiliation (2012–2014)

Affiliation	Severity		Total Percent
	No Lost Time (Percent)	Lost Time (Percent)	
Overall	56.2	43.8	100.00
Career	47.6	52.4	100.00
Volunteer	75.3	24.7	100.00

Source: NFIRS 5.0.
Note: Includes only injuries where affiliation and severity were specified. Severity was specified in 100 percent of reported injuries, and affiliation was specified in 72 percent of reported injuries.

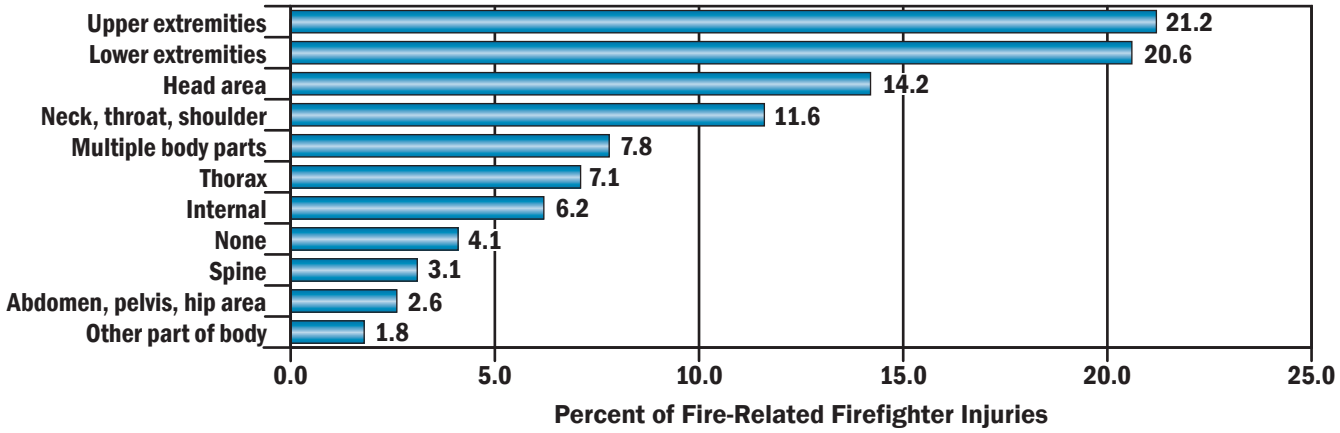
Part of Body Injured in Fire-Related Firefighter Injuries

Injuries to the upper and lower extremities (arms/hands and legs/feet) accounted for 42 percent of fire-related firefighter injuries (Figure 8). The head and shoulder regions accounted for an additional 26 percent of injuries.

Of the fire-related firefighter injuries that occurred to the upper extremities (where the nature of the injury was specified), 43 percent involved wounds/bleeding, 21 percent were burns, and 14 percent were strains/sprains.

The majority of the injuries that occurred to the lower extremities were strains/sprains at 57 percent. Injuries to the lower extremities also involved fractures (14 percent) and wounds/bleeding (12 percent). Burns (33 percent) and wounds/bleeding (27 percent) accounted for 60 percent of fire-related firefighter injuries to the head area.

Figure 8. Fire-Related Firefighter Injuries by Part of Body Injured (2012–2014)



Source: NFIRS 5.0.
Note: Includes only injuries where part of body injured was specified. The part of body injured was specified in 76 percent of reported injuries. Total does not add up to 100 percent due to rounding.

Location of Fire-Related Firefighter Injuries and Type of Activity When Injured

Of all fire-related firefighter injuries, 96 percent occurred at the scene (Table 7). Of these, 53 percent of the injuries occurred outside the structure, and 42 percent occurred inside the structure.[13] All other locations produced far fewer injuries.

Table 7. Location of Fire-Related Firefighter Injuries (2012–2014)

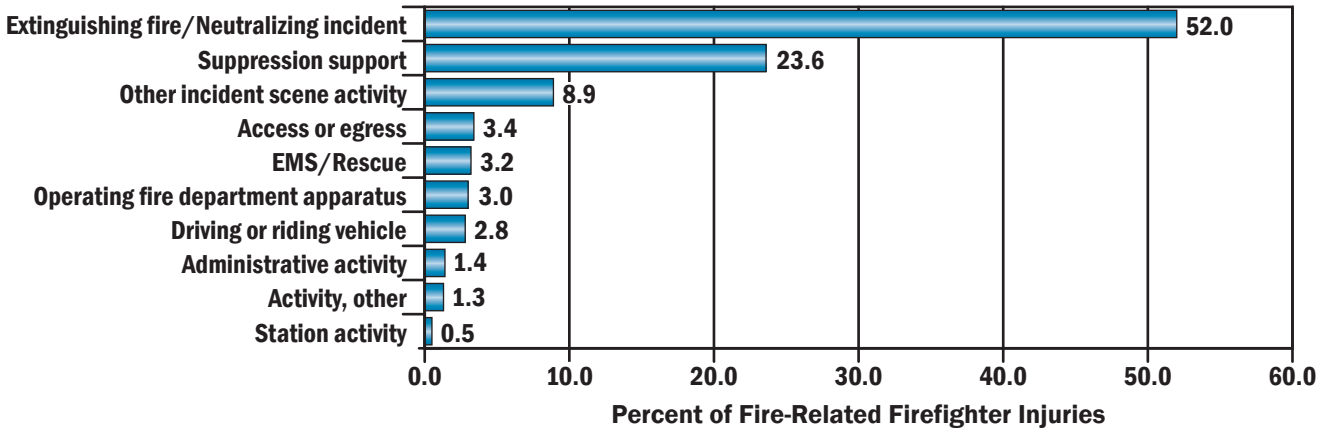
Location Where Injured	Percent
At scene, outside structure	53.3
At scene, inside structure	42.3
At fire department location	2.0
Location, other	1.2
En route/Returning	1.2
Total	100.0

Source: NFIRS 5.0.
Note: Includes only injuries where the location of injury occurred was specified. The location where the injury occurred was specified in 76 percent of reported injuries.

As shown in Figure 9, the largest percent of fire-related firefighter injuries occurred while extinguishing the fire/neutralizing the incident (52 percent). This is followed by suppression support and other incident scene activity, which made up 24 percent and 9 percent of the injuries, respectively.

Of those fire-related firefighter injuries that occurred while extinguishing the fire/neutralizing the incident, 42 percent were strains/sprains (22 percent) and burns (20 percent). Wounds/Bleeding (24 percent) and strains/sprains (23 percent) accounted for 47 percent of the injuries that resulted from suppression support activities.

Figure 9. Fire-Related Firefighter Injuries by Type of Activity (2012-2014)



Source: NFIRS 5.0.
Note: Includes only injuries where type of activity was specified. The type of activity was specified in 79 percent of reported injuries. Total does not add up to 100 percent due to rounding.

Factor Contributing to Injury in Fire-Related Firefighter Injuries

When a factor was specified as contributing to the firefighter's injury, fire development — fire progress, smoky conditions and the like — and slippery or uneven surfaces accounted for 56 percent of fire-related firefighter injuries, with fire development as the leading factor contributing to injury (Table 8). The third and fourth general factors contributing to injury included other factors and collapse or falling objects, which made up 19 percent and 16 percent, respectively.

Table 8. General Factor Contributing to Fire-Related Firefighter Injuries (2012-2014)

General Factor Contributing to Injury	Percent
Fire development	30.3
Slippery or uneven surfaces	25.4
Other factor	18.8
Collapse or falling object	16.0
Holes	3.8
Vehicle or apparatus issue	2.9
Lost, caught, trapped or confined	2.4
Civil unrest/Hostile acts	0.5
Total	100.0

Source: NFIRS 5.0.
Note: Includes only injuries where a factor contributing to injury was specified. The factor contributing to injury was specified in 47 percent of reported injuries. Total does not add up to 100 percent due to rounding.

Protective Equipment Failure in Fire-Related Firefighter Injuries

Very few of the fire-related firefighter injuries reported to NFIRS indicated problems with firefighter protective gear; only 9 percent indicated protective gear failures as a factor in the injury.[14] Modern equipment and equipment standards, combined with current equipment replacement cycles, may preclude protective equipment failures. Firefighter protective coats, gloves with wristlets, hoods, and positive-pressure self-contained breathing apparatus accounted for 42 percent of equipment problems.

Responses and Physical Condition Prior to Injury in Fire-Related Firefighter Injuries

Most firefighters (82 percent) were reported as being well-rested before their injury occurred; this applies to both minor and severe injuries, as shown in Table 9.

Table 9. Firefighter Physical Condition Prior to Fire-Related Injury (2012–2014)

Physical Condition Prior to Injury	Severity		Overall (Percent)
	No Lost Time (Percent)	Lost Time (Percent)	
Rested	81.4	82.9	82.1
Fatigued	12.4	10.5	11.6
Injured or ill	2.7	3.7	3.2
Physical condition, other	3.4	2.8	3.2
Total	100.0	100.0	100.0

Source: NFIRS 5.0.
Note: Includes only injuries where the physical condition and severity of injury were specified. Severity was specified in 100 percent of reported injuries, and physical condition was specified in 67 percent of reported injuries. Totals do not add to 100 percent due to rounding.

The number of fire department responses attended prior to the injury, however, does appear to result in more severe injuries. Table 10 shows that firefighters with one or more responses in the immediate 24-hour period prior to the time of injury had higher percentages of injuries that resulted in lost time than firefighters who reported no prior responses. It is important to note, however, that 67 percent of all fire-related firefighter injuries occurred when a firefighter had no prior responses.

Table 10. Fire-Related Firefighter Injuries by Severity and Number of Responses Prior to Injury (2012–2014)

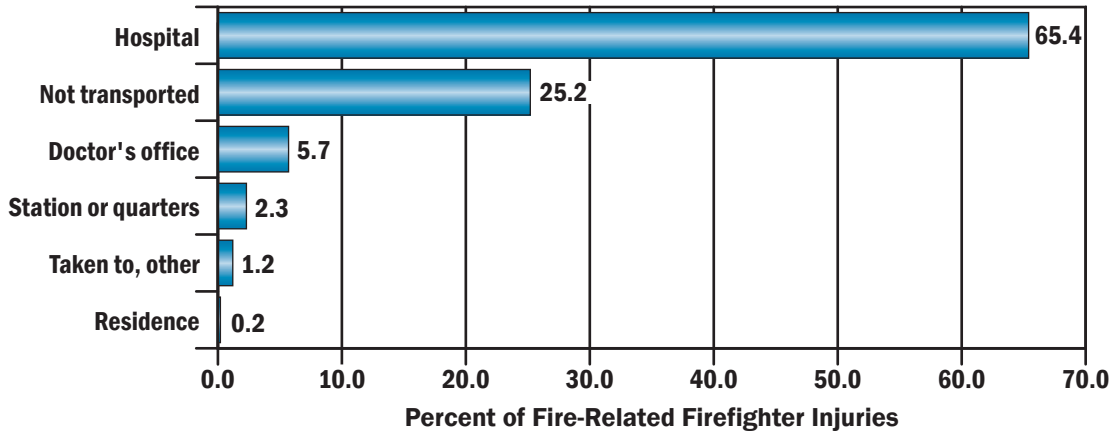
Number of Responses Prior to Injury	Severity		Total (Percent)	Overall (Percent)
	No Lost Time (Percent)	Lost Time (Percent)		
No prior responses	61.3	38.7	100.0	66.8
One prior response	56.1	43.9	100.0	11.7
Two prior responses	51.3	48.7	100.0	7.2
Three prior responses	49.2	50.8	100.0	5.1
Four or more prior responses	49.8	50.2	100.0	9.2
Overall total				100.0

Source: NFIRS 5.0.
Note: Includes only injuries where number of responses prior to injury and severity of injury were specified. The number of responses prior to injury was specified in 75 percent of reported injuries.

Type of Medical Care for Fire-Related Firefighter Injuries

Regardless of the apparent severity of an injury, it is a common safety precaution to transport an injured firefighter to a hospital. Of the reported fire-related injuries, 65 percent of the firefighters were transported to hospitals to be treated for their injuries (Figure 10). Another 25 percent were treated but not transported to a medical facility or other location. Very few firefighters sought medical care for fire-related injuries at a doctor's office.

Figure 10. Fire-Related Firefighter Injuries by Where Treated (2012–2014)



Source: NFIRS 5.0.
Note: Includes only injuries where treatment information was specified. Treatment information was specified in 74 percent of reported injuries.

Examples

The following are recent examples of fire-related firefighter injuries reported by the media:

- May 2016: Police and fire crews responded to a fire at a Myrtle Beach, South Carolina, T-shirt shop after 1 a.m. The shop was located in a building that also contained several other businesses. One firefighter suffered from smoke inhalation and was transported to a local hospital for treatment. The firefighter was released a short time later. According to fire department personnel, a T-shirt press was left on; however, the cause of the fire remains under investigation.[15]
- May 2016: Two firefighters were injured while battling a restaurant fire in Charlotte, North Carolina. The fire started in a vent duct of the restaurant around 4:30 p.m. and spread upward to the apartment units above the restaurant. One firefighter suffered a knee injury, and the other sustained a cut to the hand. No other injuries were reported, and the cause of the fire was under investigation.[16]
- April 2016: One firefighter was injured while battling a fire when he fell through the roof of a Greenville, Texas, apartment building around 3 p.m. The firefighter was treated at the fire scene and was transported to a regional hospital. The extent of his injuries were not reported. One apartment unit sustained extensive damage, while a few others received only minor damage. No other injuries were reported, but several families were displaced as a result of the blaze.[17]
- March 2016: Four Littlestown, Pennsylvania, volunteer firefighters were injured inside a single-family home when it exploded around 11 a.m. Fire crews were called to the scene to investigate an odor of gas in the area. The four firefighters were checking the furnace area in the basement when the house exploded and fire ensued. Two of the firefighters were flown to a burn center and were treated for burns to their hands and ears, but they were expected to make a full recovery. The other firefighters were treated at a local hospital for minor injuries and were released the same day. No residents were home at the time of the explosion.[18]

Firefighter Health and Safety

A key mission of the U.S. Fire Administration (USFA) is to reduce firefighter injuries and on-duty fatalities through leadership, advocacy, coordination and support. USFA facilitates this through the research and special studies conducted by its National Fire Data Center. These initiatives cover topics to support firefighter health and safety, including:

- Firefighter health, wellness and fitness: https://www.usfa.fema.gov/operations/ops_wellness_fitness.html.
- Emergency vehicle and roadway operations safety: https://www.usfa.fema.gov/operations/ops_vehicle.html.
- Firefighter protective equipment and clothing research: https://www.usfa.fema.gov/operations/ops_ppe.html.
- Fire service operational safety: https://www.usfa.fema.gov/operations/ops_safety.html.
- Health and safety resources for the volunteer fire service: https://www.usfa.fema.gov/operations/ops_volunteer_fire_service.html.

Additionally, USFA's National Fire Academy (NFA) has numerous training courses in firefighter health and safety topics. Further information on NFA training opportunities may be found on the USFA website: http://www.usfa.fema.gov/training/nfa/.

NFIRS Data Specifications for Fire-Related Firefighter Injuries

Data for this report were extracted from the NFIRS annual Public Data Release files for 2012, 2013 and 2014. Only Version 5.0 data were extracted.

- All fires were included, as defined by the following incident type categories:

Incident Type	Description
100, 163	Other fires
111-123	Structure fires
130-138	Vehicle fires
140-162, 164-173	Outside

Note: Incident Type 110 was not included in the analysis.

- Aid Types 3 (mutual aid given) and 4 (automatic aid given) were included to allow for proper counting of firefighter injuries.
- Building fires were defined by the following criteria:
  - Structure type:
    - For Incident Types 113 to 118:
      - 1—Enclosed building, or
      - 2—Fixed portable or mobile structure, or
      - Structure type not specified (null entry).
    - For Incident Types 111 and 120 to 123:
      - 1—Enclosed building, or
      - 2—Fixed portable or mobile structure.
- Residential and nonresidential were defined by:
  - Residential — Property Use 400 to 499.
  - Nonresidential — Property Use except 400 to 499.
- Firefighter injuries were defined by the following criteria:
  - The number of injured firefighters (i.e., FF_INJ > 0).
  - Severity:
    - 2—First aid only.
    - 3—Treated by physician (no lost time).
    - 4—Moderate (lost time).
    - 5—Severe (lost time).
    - 6—Life threatening (lost time).
    - U—Undetermined.

The analyses contained in this report reflect the current methodologies used by USFA. USFA is committed to providing the best and most currently available information on the U.S. fire problem and continually examines its data and methodology to fulfill this goal. Because of this commitment, data collection strategies and methodological changes are possible and do occur. As a result, analyses and estimates of the fire problem may change slightly over time. Previous analyses and estimates on specific issues (or similar issues) may have used different methodologies or data definitions and may not be directly comparable to the current ones.

To request additional information or to comment on this report, visit http://www.usfa.fema.gov/contact.html.

Notes:

[1] The estimate of overall firefighter injuries includes both fire-related and nonfire-related injuries. This entails firefighters injured while performing fire suppression activities (at the fireground); responding to or returning from an incident (includes fire and nonfire emergencies); working at on-scene nonfire emergencies (includes rescues, hazardous calls and natural disaster calls); training; and participating in other on-duty activities (e.g. inspection or maintenance duties).

[2] Injury estimates are from the National Fire Protection Association's (NFPA's) U.S. Firefighter Injuries — 2014, Hylton J. G. Haynes and Joseph L. Molis, November 2015, and previous reports in the series. Annual averages of the NFPA estimates of overall firefighter injuries, firefighter fireground injuries, and firefighter injuries that occurred while responding to or returning from an incident were taken for the three-year period from 2012 to 2014.

[3] In this topical report, all firefighter injury estimates are rounded to the nearest 25.

[4] In order to get the best estimate of firefighter injuries that are fire-related, an unknown portion of the NFPA estimate of injuries categorized as responding to or returning from an incident (which includes but is not limited to fires) should be added to the estimate of firefighter fireground injuries.

[5] Fire department participation in NFIRS is voluntary; however, some states do require their departments to participate in the state system. Additionally, if a fire department is a recipient of a Fire Act Grant, participation is required. From 2012 to 2014, 67 percent of NFPA's annual average estimated 1,304,300 fires to which fire departments responded were captured in NFIRS. Thus, NFIRS is not representative of all fire incidents in the U.S. and is not a "complete" census of fire incidents. Although NFIRS does not represent 100 percent of the incidents reported to fire departments each year, the enormous dataset exhibits stability from one year to the next, without radical changes. Results based on the full dataset are generally similar to those based on part of the data.

[6] Firefighter injuries reported to NFIRS may be the result of operations at the fire scene or responding to or returning from an incident.

[7] In NFIRS Version 5.0, a structure is a constructed item of which a building is one type. In previous versions of NFIRS, the term "residential structure" commonly referred to buildings where people live. To coincide with this concept, the definition of a residential structure fire for NFIRS 5.0 has, therefore, changed to include only those fires where the NFIRS 5.0 structure type is 1 or 2 (enclosed building and fixed portable or mobile structure) with a residential property use. Such structures are referred to as "residential buildings" to distinguish these buildings from other structures on residential properties that may include fences, sheds and other uninhabitable structures. In addition, confined fire incidents that have a residential property use but do not have a structure type specified are presumed to occur in buildings. Nonconfined fire incidents that have a residential property use without a structure type specified are considered to be invalid incidents (structure type is a required field) and are not included.

[8] For the analyses in Figure 1 and Table 1, vehicle fire incidents include those with mobile property not involved in ignition but burned, as well as mobile property involved in ignition that burned. Vehicle fires exclude mobile property involved in ignition but did not itself burn; these incidents are included in the outside and other General Property Type category.

[9] For the purposes of this report, the time of the fire alarm is used as an approximation for the general time at which the fire started. However, in NFIRS, it is the time at which the fire was reported to the fire department.

[10] Total does not add up to 45 percent due to rounding.

[11] U.S. Department of Labor, Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, 2012 to 2014 Annual Averages - Household Data - Tables from Employment and Earnings. Table 11. Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity. Numbers of firefighters are based on a sample of U. S. households (http://www.bls.gov/cps/cps_aa2014.htm). This statistic may reflect only a portion of the volunteer firefighters (i.e., those firefighters who are paid per call).

[12] Michael J. Karter, Jr. and Gary P. Stein, NFPA, U.S. Fire Department Profile 2012, October 2013; Hylton J. G. Haynes and Gary P. Stein, NFPA, U.S. Fire Department Profile 2013, November 2014; Hylton J. G. Haynes and Gary P. Stein, NFPA, U.S. Fire Department Profile 2014, January 2016.

[13] Total does not add up to 96 percent due to rounding.

[14] Protective equipment failure was specified in 85 percent of reported injuries.

[15] Manny Berdayes, "T-shirt press may have sparked fire at Myrtle Beach shop," www.myrtlebeachonline.com, May 18, 2016, http://www.myrtlebeachonline.com/news/local/article78269017.html (accessed May 19, 2016).

[16] WBTV Web Staff, "Two firefighters injured responding to Charlotte restaurant, apartment fire," www.wbtv.com, May 1, 2016, http://www.wbtv.com/story/31623505/two-firefighter-injured-responding-to-charlotte-restaurant-apartment-fire (accessed May 19, 2016).

[17] Jessica Benavides, "Greenville Firefighter Injured Fighting Apartment Fire," www.nbcdfw.com, April 3, 2016, http://www.nbcdfw.com/news/local/Greenville-Firefighter-Injured--374426041.html (accessed May 19, 2016).

[18] Leah Kirstein, "Update: Four injured, two firefighters hands and ears burned after home explodes," fox43.com, March 4, 2016, http://fox43.com/2016/03/04/two-firefighters-hands-and-ears-burned-after-home-explodes/ (accessed May 19, 2016).