



RESEARCH



Firefighter Injuries on the Fireground

Supporting Tables

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Firefighter Injuries on the Fireground: Supporting Tables

The tables in this document are a companion to the report of the same name. The table topics are listed below.

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The national estimates of fires and losses in this analysis are 2016–2020 annual averages. Estimates were derived from the U.S. Fire Administration’s National Fire Incident Reporting System (NFIRS) and NFPA’s annual fire department experience survey and include proportional shares of unknown or missing data. Fires are rounded to the nearest 10, deaths and injuries are rounded to the nearest one, and property loss is rounded to the nearest million dollars. Property loss was not adjusted for inflation. Percentages were calculated on unrounded estimates. Sums might not equal totals due to rounding errors. The estimates include proportional shares of fires with unknown data. For more information on how these estimates were calculated, please see the [full report](#) and *How NFPA’s National Estimates Are Calculated for Fires*.

Table 1. Firefighter Fireground Injuries by Year, 2005–2020

Year	Number of Injuries
2005	41,950
2006	44,210
2007	38,340
2008	36,590
2009	32,200
2010	32,680
2011	30,500
2012	31,490
2013	29,760
2014	27,020
2015	29,130
2016	24,330
2017	24,500
2018	22,970
2019	23,820
2020	22,450

Note: These are national estimates of firefighter injuries reported to U.S. municipal fire departments and so exclude firefighter injuries reported only to federal or state agencies or industrial fire brigades. National estimates of total fireground injuries are made based on data reported by fire departments to the NFPA in its annual fire experience survey. Detailed firefighter casualty information is based on data reported by fire departments participating in NFIRS 5.0. Fireground injuries are rounded to the nearest ten. Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 2. Firefighter Fireground Injuries by Affiliation, 2016–2020

Gender	Firefighter Injuries
Career	19,690 (83%)
Volunteer	3,920 (17%)
Total	23,610 (100%)

Note: These are national estimates of firefighter injuries reported to U.S. municipal fire departments and so exclude firefighter injuries reported only to federal or state agencies or industrial fire brigades. National estimates of total fireground injuries are made based on data reported by fire departments to the NFPA in its annual fire experience survey. Detailed firefighter casualty information is based on data reported by fire departments participating in NFIRS 5.0. Fireground injuries are rounded to the nearest ten. Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 3. Firefighter Fireground Injuries by Gender, 2016–2020

Gender	Firefighter Injuries	
Male	22,670	(96%)
Female	940	(4%)
Total	23,610	(100%)

Note: These are national estimates of firefighter injuries reported to U.S. municipal fire departments and so exclude firefighter injuries reported only to federal or state agencies or industrial fire brigades. National estimates of total fireground injuries are made based on data reported by fire departments to the NFPA in its annual fire experience survey. Detailed firefighter casualty information is based on data reported by fire departments participating in NFIRS 5.0. Fireground injuries are rounded to the nearest ten. Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 4. Firefighter Fireground Injuries by Victim's Age, 2016–2020

Age	Firefighter Injuries	
Less than 20 years	410	(2%)
20 to 29 years	4,300	(18%)
30 to 39 years	7,330	(31%)
40 to 49 years	7,020	(30%)
50 to 59 years	3,970	(17%)
60 to 69 years	520	(2%)
70 years and older	60	(0%)
Total	23,610	(100%)

Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 5. Fireground Injuries by Cause of Injury, 2016–2020

Cause	Firefighter Injuries	
Exposure to hazard	7,540	(32%)
Overexertion or strain	5,580	(24%)
Slip or trip	2,560	(11%)
Fall	2,320	(10%)
Contact with object	2,280	(10%)
Unclassified cause	1,860	(8%)
Struck or assaulted by person/animal/object	1,390	(6%)
Jump	90	(0%)
Total	23,610	(100%)

Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 6. Fireground Injuries by Type of Incident, 2016–2020

Type of Incident	Firefighter Injuries	
Structure fire	19,230	(81%)
Vehicle fire	1,390	(6%)
Natural vegetation fire	1,330	(6%)
Outside rubbish fire	750	(3%)
Outside or unclassified fire	560	(2%)
Fire in mobile property used as fixed structure	360	(2%)
Total	23,610	(100%)

Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 7. Fireground Injuries by Severity of Injury, 2016–2020

Injury Severity	Firefighter Injuries	
Report only, including exposure	10,120	(43%)
Lost time injury	6,410	(27%)
Lost time injury, moderate severity	6,010	(25%)
Lost time injury, severe	340	(1%)
Lost time injury, life-threatening	60	(0%)
Treated by physician, no lost time	4,030	(17%)
First-aid only	3,060	(13%)
Total	23,610	(100%)

Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 8. Fireground Injuries by Location When Injured, 2016–2020

Injury Location	Firefighter Injuries	
Outside at grade	9,540	(40%)
In structure (other than an attic), roof, or wall	8,730	(37%)
On roof	700	(3%)
In attic or other confined structural space	600	(3%)
On ground ladder	410	(2%)
On steep grade	380	(2%)
On aerial ladder or in basket	260	(1%)
On fire escape or outside stairway	250	(1%)
In motor vehicle	180	(1%)
On vertical surface or ledge	150	(1%)
In ditch or trench	130	(1%)
In ravine	40	(0%)
In open pit	30	(0%)
In boat, ship, or barge	20	(0%)
In water	10	(0%)
In sewer	10	(0%)
Other specific location	2,190	(9%)
Total	23,610	(100%)

Totals might not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 9. Fireground Injuries by Activity When Injured, 2016–2020

Activity	Firefighter Injuries	
Extinguishing fire or neutralizing incident	13,590	(58%)
Unclassified extinguishing fire, neutralizing incident	7,280	(31%)
Handling charged hose lines	4,760	(20%)
Using hand tools in extinguishment activity	1,310	(6%)
Using hand extinguishers	90	(0%)
Operating master steam device	80	(0%)
Shutting off utilities, gas lines, etc.	50	(0%)
Removing flammable liquids/chemicals	10	(0%)
Suppression support	4,790	(20%)
Overhaul	1,970	(8%)
Unclassified suppression support	1,510	(6%)
Forcible entry	420	(2%)
Ventilation with hand tools	400	(2%)
Ventilation with power tools	330	(1%)
Salvage	160	(1%)
Other incident scene activity	1,810	(8%)
Unclassified incident scene activity	480	(2%)
Moving tools or equipment	420	(2%)
Picking up tools, equipment, or hose	390	(2%)
Laying hose	310	(1%)
Catching hydrant	170	(1%)
Directing traffic	10	(0%)
Setting up lighting	10	(0%)
EMS or rescue	910	(4%)
Searching for victim	480	(2%)
Rescuing fire victim	300	(1%)
Providing EMS care	60	(0%)
Rescuing non-fire victim	40	(0%)
Unclassified EMS/rescue	30	(0%)
Extraction with power tools	10	(0%)
Access or egress	760	(3%)
Unclassified access/egress	290	(1%)
Climbing ladder	160	(1%)
Raising ground ladder	100	(0%)
Carrying ground ladder	70	(0%)
Escaping fire/hazard	60	(0%)
Scaling	40	(0%)
Lowering ground ladder	10	(0%)
Moving, lifting patient with carrying device	10	(0%)
Lifting, carrying patient without carrying device	10	(0%)

Table 9. Fireground Injuries by Activity When Injured, 2016–2020 (Continued)

Activity	Firefighter Injuries	
Operating fire department apparatus	660	(3%)
Operating engine or pumper	490	(2%)
Operating aerial ladder or platform	90	(0%)
Unclassified operating fire department apparatus	70	(0%)
Operating EMS vehicle	10	(0%)
Other activity	690	(3%)
Incident investigation, during incident	310	(1%)
Unclassified other activity	240	(1%)
Incident investigation, after incident	80	(0%)
Administrative work	20	(0%)
Communications work	20	(0%)
Inspection activity	10	(0%)
Driving or riding vehicle	400	(2%)
Getting off fire department vehicle	280	(1%)
Boarding fire department vehicle	40	(0%)
Driving fire department vehicle	40	(0%)
Riding fire department vehicle	20	(0%)
Unclassified driving or riding vehicle	10	(0%)
Getting off non-fire department vehicle	10	(0%)
Station activity	10	(0%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 10. Fireground Injuries by Primary Symptom, 2016–2020

Primary Symptom	Firefighter Injuries	
Strain or sprain	5,740	(24%)
Smoke inhalation	4,200	(18%)
Pain only	2,720	(12%)
Thermal burns	1,870	(8%)
Cut or laceration	1,330	(6%)
Exhaustion or fatigue, including heat exhaustion	1,270	(5%)
Contusion or bruise, minor trauma	950	(4%)
Dizziness, fainting or weakness	560	(2%)
Swelling	520	(2%)
Breathing difficulty or shortness of breath	420	(2%)
Cardiac symptoms	410	(2%)
Fracture	360	(2%)
Stab or puncture wound: penetrating	320	(1%)
Dehydration	300	(1%)
Hazardous fumes inhalation	260	(1%)
Abrasion	200	(1%)
Eye trauma, avulsion	200	(1%)
Scald burn	180	(1%)
Nausea	170	(1%)
Dislocation	170	(1%)
Crushing	140	(1%)
Electric shock	100	(0%)
Vomiting	90	(0%)
Unclassified sickness	90	(0%)
Internal trauma	80	(0%)
Burns and smoke inhalation	80	(0%)
Numbness or tingling, paresthesia	70	(0%)
Disorientation	60	(0%)
Allergic reaction, including anaphylactic shock	50	(0%)
Chemical burn	40	(0%)
Foreign body obstruction	30	(0%)
Unconscious	30	(0%)
Heat stroke	30	(0%)
Electrical burn	20	(0%)
Frostbite	10	(0%)
Hemorrhaging, bleeding internally	10	(0%)

Table 10. Fireground Injuries by Primary Symptom, 2016–2020 (Continued)

Primary Symptom	Firefighter Injuries	
Emotional or psychological stress	10	(0%)
Shock	10	(0%)
Cardiac arrest	10	(0%)
Other known primary symptom	500	(2%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 11. Fireground Injuries by Primary Body Part, 2016–2020

Primary Body Part	Firefighter Injuries	
Internal	4,800	(20%)
Trachea and lungs	4,190	(18%)
Unclassified Internal	310	(1%)
Heart	210	(1%)
Stomach	60	(0%)
Intestinal tract	20	(0%)
Genito-urinary	10	(0%)
Lower extremities	4,530	(19%)
Knee	1,880	(8%)
Lower leg	610	(3%)
Ankle	1,280	(5%)
Foot and toes	480	(2%)
Upper leg	270	(1%)
Unclassified lower extremities	10	(0%)
Upper extremities	3,980	(17%)
Hand and fingers	2,390	(10%)
Wrist	510	(2%)
Elbow	400	(2%)
Lower arm, not including elbow or wrist	360	(2%)
Upper arm, not including elbow or shoulder	300	(1%)
Unclassified upper extremities	20	(0%)
Neck and shoulders	2,760	(12%)
Shoulder	1,790	(8%)
Neck	890	(4%)
Throat	80	(0%)
Head	2,490	(11%)
Unclassified head area	1,120	(5%)
Ear	580	(2%)
Eye	490	(2%)
Mouth	180	(1%)
Nose	120	(1%)
Multiple parts	1,770	(7%)
Multiple body parts — whole body	1,290	(5%)
Multiple body parts — upper part of body	400	(2%)
Multiple body parts — lower part of body	80	(0%)
Thorax	1,670	(7%)
Back, except spine	1,120	(5%)
Chest	550	(2%)

Table 11. Fireground Injuries by Primary Body Part, 2015–2019 (Continued)

Primary Body Part	Firefighter Injuries	
Spine	690	(3%)
Abdominal area	610	(3%)
Hip, lower back, or buttocks	360	(2%)
Abdomen	150	(1%)
Pelvis or groin	100	(0%)
Other body part	330	(1%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 12. Fireground Injuries by Factors Contributing to Injury, 2016–2020

Injury Factor	Firefighter Injuries	
Fire development	8,250	(28%)
Fire progress, including smoky conditions	7,070	(24%)
Unclassified fire development	860	(3%)
Explosion	180	(1%)
Flashover	140	(0%)
Slippery or uneven surfaces	4,120	(14%)
Uneven surface, including holes in the ground	1,340	(5%)
Unclassified slippery or uneven surfaces	980	(3%)
Icy surface	820	(3%)
Wet surface	520	(2%)
Loose material on surface	450	(2%)
Collapse or falling object	2,140	(7%)
Falling objects	680	(2%)
Ceiling collapse	540	(2%)
Floor collapse	260	(1%)
Roof collapse	170	(1%)
Wall collapse	90	(0%)
Stair collapse	70	(0%)
Cave-in (earth)	10	(0%)
Unclassified collapse or falling object	320	(1%)
Holes	580	(2%)
Unclassified holes	270	(1%)
Hole burned through floor	210	(1%)
Unguarded hole in structure	100	(0%)
Hole burned through roof	10	(0%)
Lost, caught, trapped, confined	350	(1%)
Operating in confined structural areas	230	(1%)
Person physically caught or trapped	60	(0%)
Unclassified lost, caught, trapped, or confined	30	(0%)
Lost in building	20	(0%)
Operating under water or ice	10	(0%)
Vehicle or apparatus	260	(1%)
Unclassified vehicle or apparatus	160	(1%)
Firefighter standing on apparatus	80	(0%)
Vehicle collided with non-vehicular object	20	(0%)
Vehicle collided with another vehicle	10	(0%)

**Table 12. Fireground Injuries by Factors Contributing to Injury, 2016–2020
(Continued)**

Injury Factor	Firefighter Injuries	
Other contributing factors	80	(0%)
Hostile acts	70	(0%)
Civil unrest	10	(0%)
Other factor contributed to injury	2,690	(9%)
None	5,130	(17%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 13. Fireground Injuries by Month, 2016–2020

Month	Firefighter Injuries	
January	2,350	(10%)
February	1,990	(8%)
March	2,030	(9%)
April	1,950	(8%)
May	1,990	(8%)
June	2,000	(8%)
July	2,410	(10%)
August	2,020	(9%)
September	1,630	(7%)
October	1,690	(7%)
November	1,720	(7%)
December	1,820	(8%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

**Table 14. Fireground Injuries
by Day of the Week, 2016–2020**

Day of the Week	Firefighter Injuries	
Sunday	3,490	(15%)
Monday	3,410	(14%)
Tuesday	3,490	(15%)
Wednesday	3,250	(14%)
Thursday	3,380	(14%)
Friday	3,240	(14%)
Saturday	3,360	(14%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

Table 15. Fireground Injuries by Time of Day, 2016–2020

Time of Day	Firefighter Injuries	
Midnight–12:59 a.m.	870	(4%)
1:00–1:59 a.m.	850	(4%)
2:00–2:59 a.m.	860	(4%)
3:00–3:59 a.m.	900	(4%)
4:00–4:59 a.m.	680	(3%)
5:00–5:59 a.m.	840	(4%)
6:00–6:59 a.m.	650	(3%)
7:00–7:59 a.m.	700	(3%)
8:00–8:59 a.m.	750	(3%)
9:00–9:59 a.m.	880	(4%)
10:00–10:59 a.m.	990	(4%)
11:00–11:59 a.m.	900	(4%)
12:00–12:59 p.m.	1,120	(5%)
1:00–1:59 p.m.	1,180	(5%)
2:00–2:59 p.m.	1,390	(6%)
3:00–3:59 p.m.	1,410	(6%)
4:00–4:59 p.m.	1,230	(5%)
5:00–5:59 p.m.	1,340	(6%)
6:00–6:59 p.m.	1,230	(5%)
7:00–7:59 p.m.	1,050	(4%)
8:00–8:59 p.m.	1,040	(4%)
9:00–9:59 p.m.	1,000	(4%)
10:00–10:59 p.m.	860	(4%)
11:00–11:59 p.m.	870	(4%)
Total	23,610	(100%)

Totals may not equal sums due to rounding errors.

Source: NFIRS and NFPA fire experience survey.

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The National Fire Protection Association thanks all the fire departments and state fire authorities who participate in the National Fire Incident Reporting System (NFIRS) and the annual NFPA fire experience survey. These firefighters are the original sources of the detailed data that make this analysis possible. Their contributions allow us to estimate the size of the fire problem.

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