



FIREFIGHTER FATALITY INVESTIGATIONS

Annual Report FY 2019

October 2019

State Fire Marshal's Office

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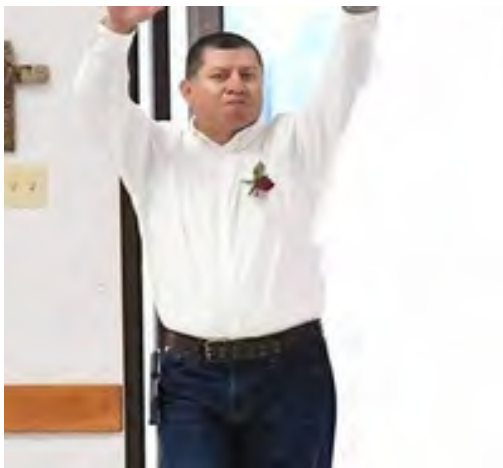
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Executive Summary

During Fiscal Year 2019 (September 1, 2018, to August 31, 2019), the State Fire Marshal's Office (SFMO) investigated three firefighter fatalities. We offer our condolences to the families of these firefighters.



Firefighter Frankie Partida, Jr.
Glen Flora Volunteer Fire Department
September 17, 2018
Traffic incident



Firefighter Juan Carlos Ruiz
Ballinger Volunteer Fire Department
April 4, 2019
Cardiac event



Captain Daniel Laird
United States Forest Service
March 27, 2019
Aircraft crash

Texas Firefighter Fatality Investigation Authority

In 2011, the 82nd Texas Legislature enacted Senate Bill 396, which required SFMO to investigate firefighter fatalities that occurred in the line of duty or in connection with an on-duty incident. The law expanded the investigative jurisdiction of SFMO, which had previously investigated only fatalities connected with a firefighting incident. The law took effect May 12, 2011.

SFMO must investigate circumstances surrounding the death of a firefighter, including any contributing factors. The term “firefighter” includes people who perform fire suppression duties for a governmental entity or volunteer fire department.

SFMO must coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to help with an investigation. SFMO appointed a Firefighter Fatality Review Panel to provide policy guidance. The following groups serve on the panel:

- State Firefighters’ and Fire Marshals’ Association of Texas
- Texas A&M Engineering Extension Service
- Texas A&M Forest Service
- Texas Chapter of the International Association of Arson Investigators
- Texas Commission on Fire Protection
- Texas Fire Chiefs Association
- Texas Fire Marshals Association
- Texas State Association of Fire Fighters
- Texas metropolitan fire departments (including Austin, Dallas, El Paso, Fort Worth, Houston, and San Antonio)

The 81st Texas Legislature charged the Texas Commission on Fire Protection (TCFP) with establishing criteria for gathering and analyzing injury information about Texas firefighters. It also requires TCFP to send its report to SFMO for this annual report. Annual reports from TCFP’s firefighter injury reporting program are attached and also available at the [TCFP website](#).

Fiscal Year 2019 Investigation Summary

September 17, 2018

Firefighter Frankie Partida Jr., 24 years old

Glen Flora Volunteer Fire Department

Traffic incident while returning from training

On September 17, 2018, Glen Flora volunteer firefighter Frankie Partida Jr. was returning from joint training with the El Campo Volunteer Fire Department. Partida was in the front passenger seat of a personal vehicle traveling north on FM 960 in El Campo. The vehicle struck a cow in the road. Partida died in the crash.

On September 19, 2018, Dr. J. Keith Pinckard with the Travis County Medical Examiner's Office conducted an autopsy that concluded that Partida had died of blunt head trauma and the death was an accident.

This death is classified as a Line of Duty Death (LODD).

April 4, 2019

Firefighter Juan Carlos Ruiz, 37 years old

Ballinger Volunteer Fire Department

Cardiac event while off-duty

On April 4, 2019, at about 10:30 p.m., firefighter Juan Carlos Ruiz was at home in bed when his wife discovered he had no pulse and was not breathing. She called Runnels County 911. Emergency medical technicians began advanced life support when they arrived but were unable to revive Ruiz. He was pronounced dead at 11:15 p.m. by Runnels County Justice of the Peace Lane Pinckney. Pinckney ordered American Forensics in Mesquite to conduct an autopsy.

Dr. Amy Gruszecki conducted the autopsy on April 6, 2019. The autopsy showed Ruiz had an enlarged heart and diverticulitis. It found no evidence of trauma or smoke inhalation. Dr. Gruszecki ruled that Ruiz had died of natural causes as the

result of "hypertensive cardiovascular disease and contributory factor of ruptured diverticula with vomiting."

Ruiz's death was the result of ongoing medical conditions, and he did not complain of illness or injury while on-duty. Ruiz's death does not meet SFMO's criteria for an on-duty or duty-related death. The investigation was documented in standard report form and no firefighter fatality report was published.

March 27, 2019

Captain Daniel Laird, 41 years old

U.S. Forest Service

Aircraft crash

On March 27, 2019, at about 2:10 pm, Captain Daniel Laird with the U.S. Forest Service died as a result of a helicopter crash. The crash occurred near FM 149 and Bethel Road in Montgomery County. The pilot and another firefighter were injured and transported to a local hospital. Montgomery County Justice of the Peace Matt Beasley pronounced Captain Laird dead at the scene.

Captain Laird's death does not meet SFMO's criteria for firefighter fatality report. The investigation was documented in standard report form and no firefighter fatality report was published.

This incident is still under investigation by the Federal Aviation Administration and National Transportation Safety Bureau.

Prosecution for FY2017 Firefighter Fatality

On May 18, 2017, at 9:12 p.m., the San Antonio Fire Department (SAFD) responded to a structure fire in the 6700 block of Ingram Road in San Antonio. The fire was reported by a passerby. SAFD Ladder 35 (L35) and Engine 35 (E35) arrived on the scene and saw smoke inside the Spartan Box Gym. Firefighters forcibly entered the business through the front doors. E35 crew was assigned suppression, and L35 firefighters Scott Deem and Brad Phipps were assigned to search the building.

During their search, Deem and Phipps found the fire and called for a hose line. Conditions rapidly worsened and Deem and Phipps made a mayday call. Efforts were then focused on their rescue. Several rapid intervention teams attempted to find the firefighters. Firefighter Robert Vasquez became separated from his team while looking for Phipps and Deem.

Phipps and Vasquez were found and taken out of the building. Phipps sustained life-threatening injuries and was transported to Brooke Army Medical Center. Vasquez suffered minor injuries and was taken to an area hospital and later released.

Rescuers were unable to contact Deem or hear a PASS device. Conditions continued to get worse, and rescue operations were eventually stopped. Firefighters used defensive tactics to suppress the fire. Deem was found dead inside the gym during a second search.

Phipps was released from the hospital on August 1, 2017.

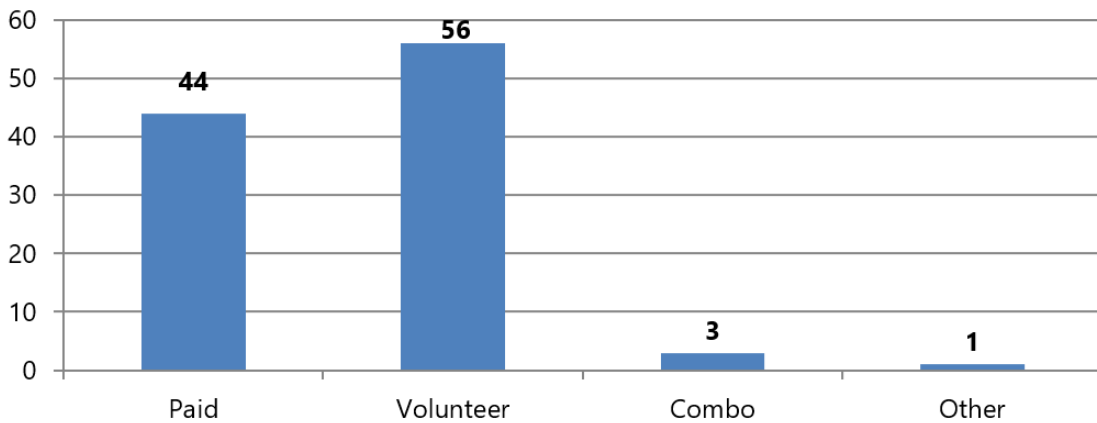
The fire resulted in Deem's death and injuries to other firefighters. SFMO's firefighter fatality coordinator and State Response Team traveled to the scene. An investigation by SFMO, the San Antonio Arson Bureau, and SAPD resulted in the arrest of the owner of the Spartan Box Gym. A grand jury indicted the owner for arson. SFMO investigators met with the Bexar County District Attorney's Office on several occasions and provided documents about the origin and cause investigation, as well as the firefighter fatality investigation. The criminal case is pending prosecution.

Line of Duty Death (LODD) Conference

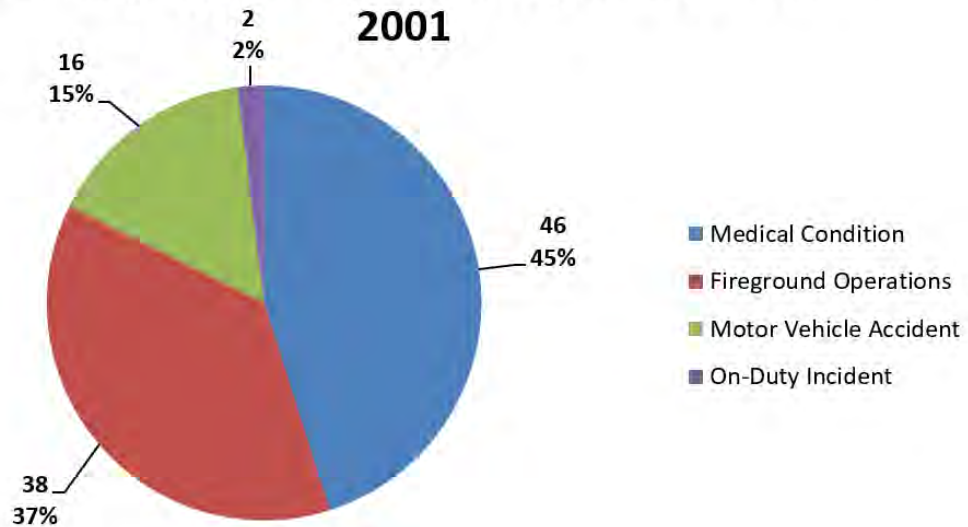
In October 2018, Lieutenant Brian Fine, SFMO Firefighter Fatality Investigation Program coordinator, attended the Fifth Annual Texas Line of Duty Death Conference in Hurst. This conference focuses on challenges regarding line of duty deaths. Conference presenters highlighted various case studies showing that, time and again, most firefighter deaths happen for similar reasons.

Statistics and Comparisons of Firefighter Fatalities

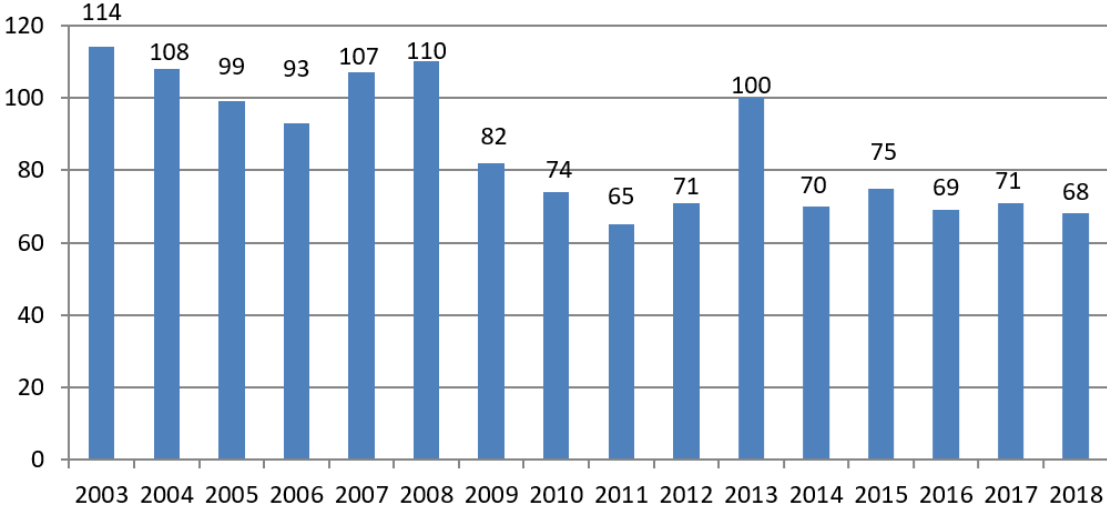
Fatalities investigated by SFMO by department type FY2001-FY2019



Fatality types investigated by SFMO since 2001



National on-duty firefighter deaths, 2001-2018



Strategies for Preventing Firefighter Fatalities

To reduce firefighter fatalities, SFMO encourages the use of strategies it developed and those developed by nationally recognized organizations.

- SFMO communicates the “lessons learned” from firefighter fatality investigations through the investigation reports, the Firefighter Fatality Investigation Panel, and presentations at conferences.
- SFMO sends firefighter fatality investigation reports to the affected fire departments and posted on SFMO’s [web page](#). SFMO visits fire departments that have experienced a line of duty death to check improvements made since the incident.
- United States Fire Administration (www.usfa.fema.gov) statistics show that heart attacks are the main cause of firefighter deaths. The National Volunteer Fire Council provides information on how to be heart healthy (www.healthy-firefighter.org).
- Fire departments should participate in the “Firefighter Safety Stand Down” program, sponsored by the International Association of Fire Chiefs (www.iafc.org) and the International Association of Fire Fighters (www.iaff.org).
- Fire departments should participate in the “Courage to be Safe” (CTBS) program, which emphasizes the message “Everyone Goes Home.” Information on the CTBS program is available online at www.everyonegoeshome.com. (See *The 16 Firefighter Life Safety Initiatives* on Page 14.)
- Fire departments should create or expand fire prevention programs that help reduce the number of fires .
- Participate in the National Fallen Firefighters Foundation’s National Fire Service Seat Belt Pledge (<http://www.firehero.org>), which encourages firefighters to wear seat belts when riding in a fire department vehicle.

- Explore safer strategies and tactics for fighting fires in enclosed structures by publishing findings and recommendations revealed during firefighter fatality investigations.
- Provide information to the fire service and the public on the effectiveness of residential sprinklers in reducing civilian and firefighter fatalities as well as property loss caused by fire.
- Perform pre-fire incident planning by suppression personnel for high risk occupancies in their response area. The pre-fire planning should include consideration of life safety for firefighters and occupants, water supply, and structural hazards.
- Include fire prevention and firefighter fatality prevention in all firefighter training and education, including initial training in firefighter academies across the state, as a top priority.
- Emphasize the need for firefighter training on how modern construction technologies, such as lightweight structural materials and green building practices, can change building performance and fire behavior. Also, show how these new technologies impact firefighter safety and fire-ground operations (www.greenbuildingfiresafety.org.)

Everyone Goes Home: The 16 Firefighter Life Safety Initiatives

The initiatives were developed by representatives of the major fire service departments in 2004 at the Firefighter Safety Summit in Tampa, Florida.

The National Fallen Firefighters Foundation promoted the initiatives throughout the fire service and developed material to support implementation.

Since then, the initiatives have influenced safety culture in the U.S. fire service and have become the bedrock foundation for thousands of fire departments and EMS organizations that want to ensure that firefighters and medics return home safely after every shift.

1. Cultural change

Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability and personal responsibility. (See Appendix 1: Changing the Culture of Safety in the Fire Service, by Ronald J. Siarnicki and Richard Gist.) U.S. Fire Administration, National Safety Culture Change Initiative FA-342/April 2015.

2. Accountability

Enhance the personal and organizational accountability for health and safety throughout the fire service.

3. Risk management

Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical, and planning responsibilities.

4. Empowerment

All firefighters must be empowered to stop unsafe practices.

5. Training and certification

Develop and implement national standards for training, qualifications, and

certification (including regular recertification) that are equally applicable to all firefighters based on the duties they are expected to perform.

6. Medical and physical fitness

Develop and implement national medical and physical fitness standards that are equally applicable to all firefighters, based on the duties they are expected to perform.

7. Research agenda

Create a national research agenda and data collection system that relates to *The 16 Firefighter Life Safety Initiatives*.

8. Technology

Utilize available technology wherever it can produce higher levels of health and safety.

9. Fatality, near-miss investigation

Thoroughly investigate all firefighter fatalities, injuries, and near-misses.

10. Grant support

Grant programs should support the implementation of safe practices and procedures and/or mandate safe practices as an eligibility requirement.

11. Response policies

National standards for emergency response policies and procedures should be developed and championed.

12. Violent incident response

National protocols for response to violent incidents should be developed and championed.

13. Psychological support

Firefighters and their families must have access to counseling and psychological support.

14. Public education

Public education must receive more resources and be championed as a critical fire and life safety program.

15. Code enforcement and sprinklers

Advocacy must be strengthened for the enforcement of codes and the installation of home fire sprinklers.

16. Apparatus design and safety

Safety must be a primary consideration in the design of apparatus and equipment.

Firefighter Safety Recommendations

Recommendations from past SFMO investigation reports:

- 1.** Define and advocate the need for a cultural change within the fire service relating to safety; incorporate leadership, management, supervision, accountability and personal responsibility. U.S. Fire Administration National Safety Culture Change Initiative FA-342/April 2015.
- 2.** Establish standard operating procedures (SOPs) for minimum requirements of a fire service-related occupational safety and health program in accordance with the National Fire Protection Association (NFPA) Standard 1500, Standard on Fire Department Occupational Safety and Health Program, 2018 Edition.
- 3.** Provide mandatory pre-placement and annual medical evaluations to all firefighters, consistent with NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments, 2018 Edition, to determine their medical ability to perform duties without presenting a significant risk to the safety and health of themselves or others.
- 4.** Perform an annual physical performance (physical ability) evaluation to ensure firefighters are physically capable of performing the essential job tasks of firefighting. NFPA 1583, Standard on Health Related Fitness Programs for Firefighters, 2015 Edition.
- 5.** Ensure that firefighters are cleared for duty by a physician knowledgeable about the physical demands of firefighting, the personal protective equipment used by firefighters, and the various components of NFPA 1582, Standard on Comprehensive Occupational Medicine Program for Fire Departments, 2018 Edition.
- 6.** No risk to the safety of personnel shall be acceptable where there is no possibility to save lives or property. NFPA 1561, Chapter 5, Section 5.3.16 2014 Edition; TCFP Standards Manual, Chapter 435, Section 435.15, Part b, Paragraphs 1 and 2.

7. Always attack a wildland fire from the burned area. If this is done and a sudden change in conditions or wind occurs, the unit can retreat farther into the black where fuel has previously been consumed. "Attack from the Black," a Texas Forest Service training DVD, "The black is the best safety zone." <http://tfsweb.tamu.edu/AttackFromTheBlack>.

The Fireline Handbook has been retired and replaced with an electronic file called the Wildland Fire Incident Management Field Guide (PMS 210). April 2013.

8. Egress routes and safety zones should be well identified and communicated to everyone on the scene before fire operations begin. Staging areas should not interfere with ingress or egress to afford safety to the firefighters. NFPA 1143, Annex Section 5.4.2 Section (2) (b) 2014 Edition; TCFP Standards Manual, Chapter 435, Section 435.15, Part a; IFSTA (2013) Essentials of Fire Fighting, (6th Edition), Chapter 6, page 315, Fire Protection Publications, Oklahoma State University; National Wildfire Coordinating Group, Wildland Fire Incident Management Field Guide (PMS 210), April 2013, Chapter 1, Firefighter Safety.

9. All firefighters on the scene of a fire and actively engaged in firefighting operations should be in approved, full personal protective equipment (PPE) suitable for the incident. National Wildfire Coordinating Group, Wildland Fire Incident Management Field Guide (PMS 210), April 2013, Chapter 1, Firefighter Safety; IFSTA (2013) Essentials of Fire Fighting, (6th Edition), Chapter 6, Fire Protection Publications, Oklahoma State University.

10. Fire departments must use a system of accountability whereby the incident commander can easily and immediately be able to determine not only that a firefighter is on the fire ground but also his or her location and task assignment at any given time. TCFP Standards Manual, Chapter 435, Section 435.13, Part b, Paragraphs 3 and 4; and Part d.

11. Instruct firefighters and command staff that hydration alone will not prevent heat-related illness (HRI). NIOSH Report F2011-17, April 2012.

12. Establish a stationary command. A stationary command offers many advantages; one of the most important is a quiet vantage point from which to receive, process, and relay information. A stationary command post remote from task level operations is also beneficial in building and maintaining an effective fire ground organization.

NFPA 1561, 5.3.7.1 2014 Edition, Following the initial stages of the incident, the

incident commander shall establish a stationary command post.
Fire Command, (2nd Edition, 2002), Chapter 1, "The Command Post," Allan V. Brunacini, Von Hoffman Corp.
IFSTA (2013) Essentials of Fire Fighting, (6th Edition), Chapter 1, page 39, Fire Protection Publications, Oklahoma State University.

13. The use of all Personal Protective Equipment (PPE), including Self-contained Breathing Apparatus is mandatory when operating in areas where members are exposed or potentially exposed to the hazards for which PPE is provided.

NFPA 1500, Chapter 7, 2013 Edition; Protective Clothing
IFSTA (2013), Essentials of Fire Fighting, (6th Edition), Chapter 5
TCFP Standards Manual, Chapter 435, Fire Fighter Safety

14. Use tools and tactics that help reduce the dangers of roof operations. Become familiar with those indicators that are a precursor to collapse.

IFSTA (2013) Essentials of Fire Fighting, (6th Edition), Chapter 11, pp. 476 and 556-560, Fire Protection Publications, Oklahoma State University
IFSTA (1994) Fire Service Ventilation, (7th Edition), pp. 86-89, Fire Protection Publications, Oklahoma State University

15. Consider monitoring and recording fire ground activity. NFPA 1221, Chapter 7, Sec. 7.6, 2016 Edition; Recording.

TEXAS COMMISSION ON FIRE PROTECTION INJURY REPORT

January 1, 2018 to December 31, 2018



TEXAS COMMISSION ON FIRE PROTECTION

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Executive Summary

This report includes the abstract, mission, reports, information and data collected by the Texas Commission on Fire Protection's injury reporting program. The report includes fire fighter injuries reported to the Texas Commission on Fire Protection in 2018, with charts and graphs depicting the collected information. The report also compares Texas fire fighter injury statistics with statistics gathered by the National Fire Protection Association (NFPA) in 2017.

Under Texas Government Code §419.048, the Texas Commission on Fire Protection is charged with developing and establishing criteria to receive and analyze injury information pertaining to Texas fire fighters. The commission reviews this information to develop recommendations to help reduce fire protection personnel injuries. The commission provides this information to the State Fire Marshal's Office (SFMO) by September 1 of each year for inclusion in the SFMO's annual Firefighter Fatality Investigations Report. The commission has enacted rules about reporting injuries in the Texas Administrative Code (TAC) Title 37, Chapter 435, and has established the criteria and policies for reporting and analyzing the information.

The commission originally built the data systems necessary to gather this information in 2010. In 2017 the data systems were then migrated from a Microsoft Access database structure to a new system which was developed in-house and designed specifically to meet the information resource needs of the Texas Commission on Fire Protection. Fine-tuning of this new system is ongoing as we receive feedback from stakeholders. The reporting process is accomplished online. Fire departments regulated by the commission have been notified of the requirement to report. Several volunteer departments, which are not regulated by the commission, are also participating voluntarily.

This report concludes with recommendations from the commission to help reduce the number of fire fighter injuries in Texas and to improve the injury reporting program.

Abstract

This report contains data submitted by regulated and non-regulated entities. The data collected in 2018 was the eighth full year of reporting.

Grand Totals - 2018

Total number of incidents (injury reports) submitted: 3,519

Total number of individuals who sustained an injury or exposure: 3,881*

Total number of injuries reported: 3,078

Total number of exposures reported: 884

**Note that an individual could have more than one injury or could have an injury and an exposure. This explains why the total number of individuals who sustained an injury is less than the total number of injuries + total number of exposures. ($3,881 < 3,078 + 884$)*

Because the injury reporting system was reconfigured in 2018, the information collected by the TCFP has evolved. It's important to note that one incident report can have multiple individuals involved, and **each** of those individuals can have **one or more** injuries. For example:

- Joe and Bob were burned in a fire while on duty. This resulted in:
 - One incident (one injury report), with
 - Two individuals who...
 - Sustained three injuries
 - Joe was burned on the hand and arm (two injuries)
 - Bob was burned on the leg (one injury)

Texas fire departments reported 3,078 injuries to the Texas Commission on Fire Protection in calendar year 2018. Of these, 799 occurred during fire suppression activities, representing 26 percent of the total reported injuries (see Table 1).

Injuries from emergency medical services (EMS) activities surpassed injuries from fire suppression activities in 2018. EMS activities accounted for 1027 of the 3,078 total reported injuries, or 33 percent of the total injuries.

After EMS and fire suppression, the next highest number of injuries reported in 2018 occurred in the performance of station duties, with 639, or 21 percent, of the total reported injuries.

Wellness/fitness and skills training again rounded out the top five activities: 417 wellness/fitness injuries (14 percent of the total) and 400 skills training injuries (13 percent of the total).

The total number of injuries reported in station duties, wellness/fitness activities, and skills training (which are all non-emergency activities) represented nearly half (47 percent) of the total injuries reported in 2018.

NOTE: Exposures

In addition to the 3,078 injuries reported by Texas fire departments, TCFP also received reports of 884 exposures. Exposures, in the new injury reporting application, are not counted as injuries; rather, they are now their own (separate) category.

Mission

The commission shall gather and evaluate data on fire protection personnel injuries and develop recommendations for reducing injuries.

Why we are collecting injury data

Under Texas Government Code §419.048, the Texas Legislature charged the commission with gathering and evaluating data on injuries. The rules requiring regulated entities to report injuries to the commission are in Texas Administrative Code §435.23. The commission encourages volunteer entities to report injuries so that it can gain as accurate a picture as possible concerning injury trends in the Texas fire service. The injury reporting program began in March 2010.

Information the commission collects

- Minor, serious, and fatal injuries
- Activities where fire personnel are injured
- Types of injuries (burns, strain-sprains, wounds, etc.)
- Body parts being injured
- Tasks performed at the time of injury
- Missed time
- Work assignment after injury
- Malfunctions/failures of personal protective equipment (PPE), self-contained breathing apparatus (SCBA), personal alert safety systems (PASS devices) and standard operating procedures (SOPs)

How this will help the fire service

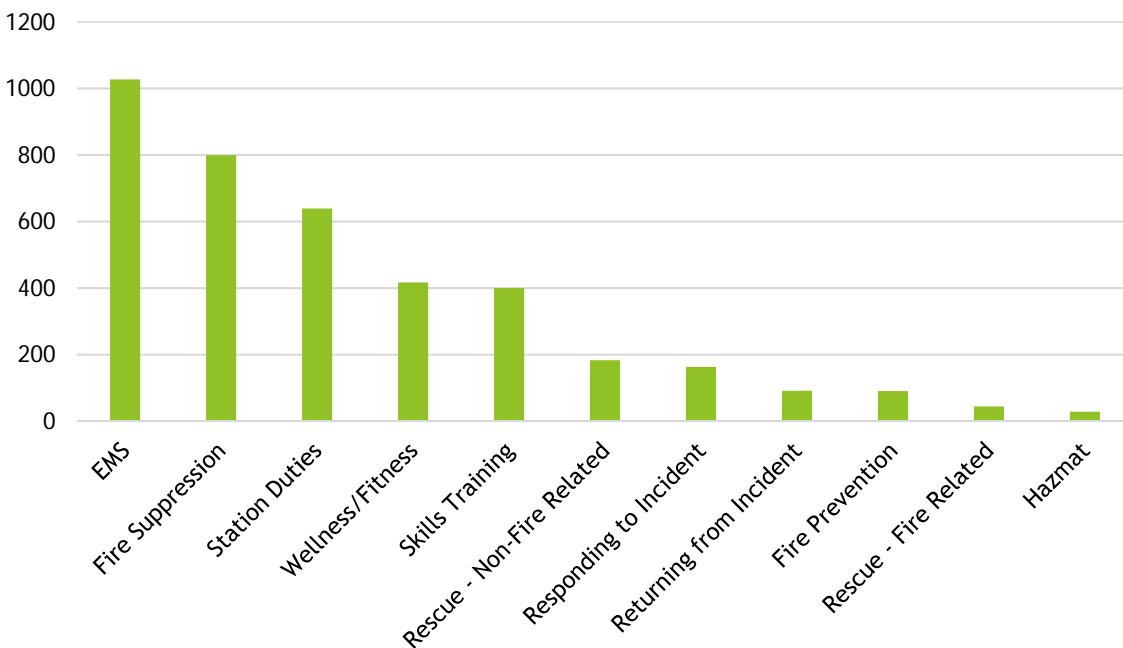
- Identify common injuries
- Identify trends in injuries
- Identify needed training
- Evaluate and find improvements in procedures
- Track lost time injuries (requested by user community)

Fire Protection Personnel Injuries

Table 1: Total Injured or Exposed Individuals by Activity and Severity, 2018

Activity	Minor	Serious	Fatal	Total
EMS	843	184	0	1027
Fire Suppression	607	191	1	799
Station Duties	437	201	1	639
Wellness/Fitness	286	131	0	417
Skills Training	277	123	0	400
Rescue - Non-Fire Related	157	26	0	183
Responding to Incident	99	64	0	163
Returning from Incident	57	34	0	91
Fire Prevention	69	21	0	90
Rescue - Fire Related	39	5	0	44
Hazmat	27	1	0	28
Total	2898	981	2	3881

Figure 1: Total Injured or Exposed Individuals by Activity, 2018



Injuries by Activity

EMS activities resulted in the highest number of minor injuries for 2018 (see Table 2). The total number of serious fire suppression injuries is down significantly, compared with previous years. (See Table 3. The commission defines a serious injury as one which results in the employee missing one or more full duty shifts.)

Definitions	
Minor = Injury that does <u>not</u> result in the employee missing a full duty period.	
Serious = Injury that results in the employee missing one or more full duty periods.	
Fatal = The injured individual did not survive.	

Table 2: Minor Injury Activities, 2014 - 2018

Activity	2014		2015		2016		2017		2018	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
EMS	900	28.03%	792	28.24%	882	27.89%	929	28.99%	843	29.09%
Fire Suppression	808	25.16%	618	22.03%	866	27.39%	662	20.66%	607	20.95%
Station Duties	465	14.48%	396	14.12%	434	13.73%	481	15.01%	437	15.08%
Skills Training	365	11.37%	288	10.27%	311	9.84%	291	9.08%	277	9.56%
Wellness/Fitness	254	7.91%	278	9.91%	252	7.97%	254	7.93%	286	9.87%
Rescue - Non-Fire	206	6.42%	204	7.27%	161	5.09%	206	6.43%	157	5.42%
Responding to Incident	105	3.27%	122	4.35%	117	3.70%	156	4.87%	99	3.42%
Rescue - Fire Related	11	0.34%	22	0.78%	20	0.63%	113	3.53%	39	1.35%
Fire Prevention	43	1.34%	41	1.46%	47	1.49%	50	1.56%	69	2.38%
Returning from Incident	42	1.31%	33	1.18%	37	1.17%	42	1.31%	57	1.97%
Hazmat	12	0.37%	11	0.39%	35	1.11%	21	0.66%	27	0.93%
Total	3211	100.00%	2805	100.00%	3162	100.00%	3205	100.00%	2898	100.00%

Table 3: Serious Injury Activities, 2014 - 2018

Activity	2014		2015		2016		2017		2018	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Station Duties	160	19.42%	174	19.31%	172	18.76%	185	21.29%	201	20.49%
Fire Suppression	177	21.48%	160	17.76%	179	19.52%	157	18.07%	191	19.47%
EMS	164	19.90%	185	20.53%	158	17.23%	147	16.92%	184	18.76%
Wellness/Fitness	127	15.41%	125	13.87%	146	15.92%	129	14.84%	131	13.35%
Skills Training	104	12.62%	126	13.98%	141	15.38%	120	13.81%	123	12.54%
Responding to Incident	16	1.94%	44	4.88%	36	3.93%	53	6.10%	64	6.52%
Returning from Incident	19	2.31%	13	1.44%	18	1.96%	28	3.22%	34	3.47%
Rescue - Non-Fire	38	4.61%	46	5.11%	52	5.67%	27	3.11%	26	2.65%
Fire Prevention	11	1.33%	12	1.33%	11	1.20%	15	1.73%	21	2.14%
Rescue - Fire Related	3	0.36%	12	1.33%	3	0.33%	7	0.81%	5	0.51%
Hazmat	5	0.61%	4	0.44%	1	0.11%	1	0.12%	1	0.10%
Total	824	100.00%	901	100.00%	917	100.00%	869	100.00%	981	100.00%

Table 4: Number of Individuals Who Sustained Fatal Injuries, 2018

Activity	Count	Percent
Fire Suppression	1	50.00%
Station Duties	1	50.00%
Total	2	100.00%

Emergency vs. Non-Emergency Injuries

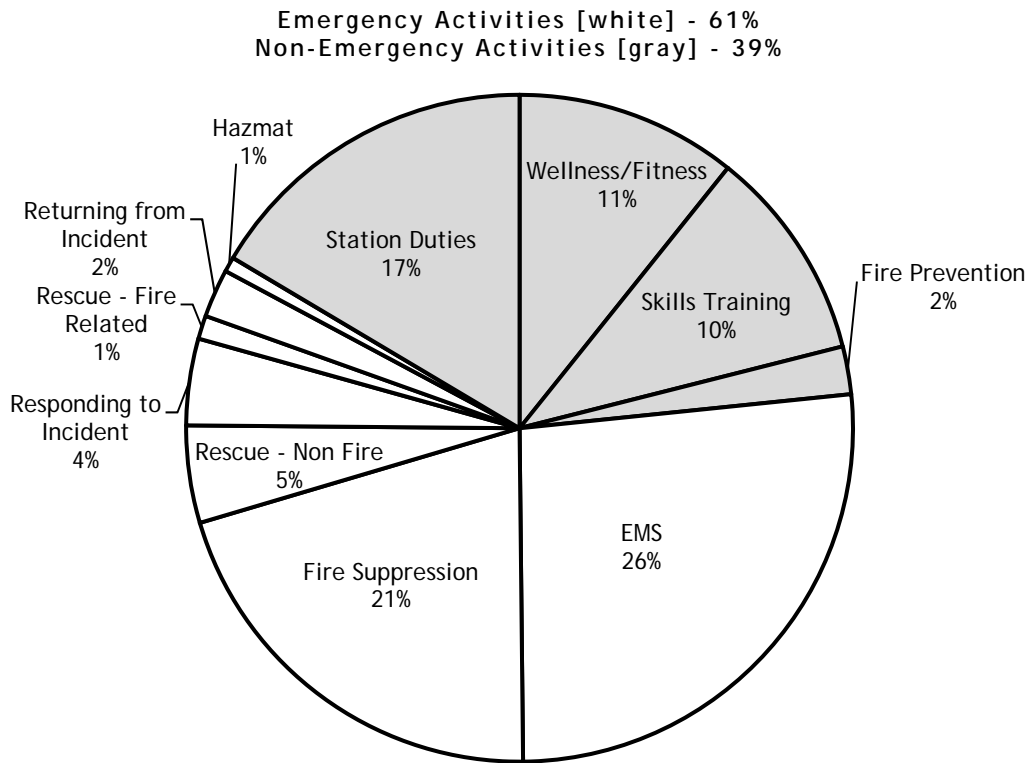
Table 5: Number of Injured Individuals by Emergency Activity and Severity, 2018

Activity	Minor	Serious	Fatal	Total
EMS	843	184	0	1027
Fire Suppression	607	191	1	799
Rescue - Non-Fire	157	26	0	183
Responding to Incident	99	64	0	163
Rescue - Fire Related	39	5	0	44
Returning from Incident	57	34	0	91
Hazmat	27	1	0	28
Total	1829	505	1	2335

Table 6: Number of Injured Individuals by Non-Emergency Activity and Severity, 2018

Activity	Minor	Serious	Fatal	Total
Station Duties	437	201	1	639
Skills Training	277	123	0	400
Wellness/Fitness	286	131	0	417
Fire Prevention	69	21	0	90
Total	1069	476	1	1546

Figure 2: Percent of Injured Individuals in Emergency and Non-Emergency Activities, 2018

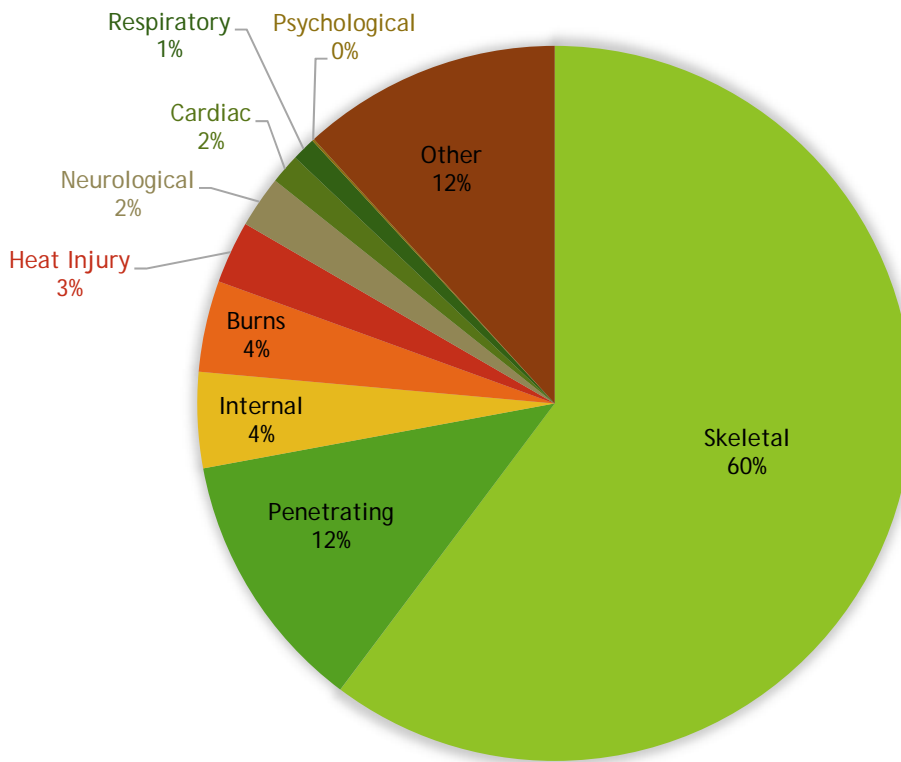


Types of Injuries

Table 7: Types of Injury, 2018

Type of Injury	2018	
	Count	Percent
Skeletal	1854	60.23%
Penetrating	365	11.86%
Internal	133	4.32%
Burns	127	4.13%
Heat Injury	87	2.83%
Neurological	72	2.34%
Cardiac	42	1.36%
Respiratory	33	1.07%
Psychological	3	0.10%
Other	362	11.76%
Total	3078	100.00%

Figure 3: Types of Injuries, 2018

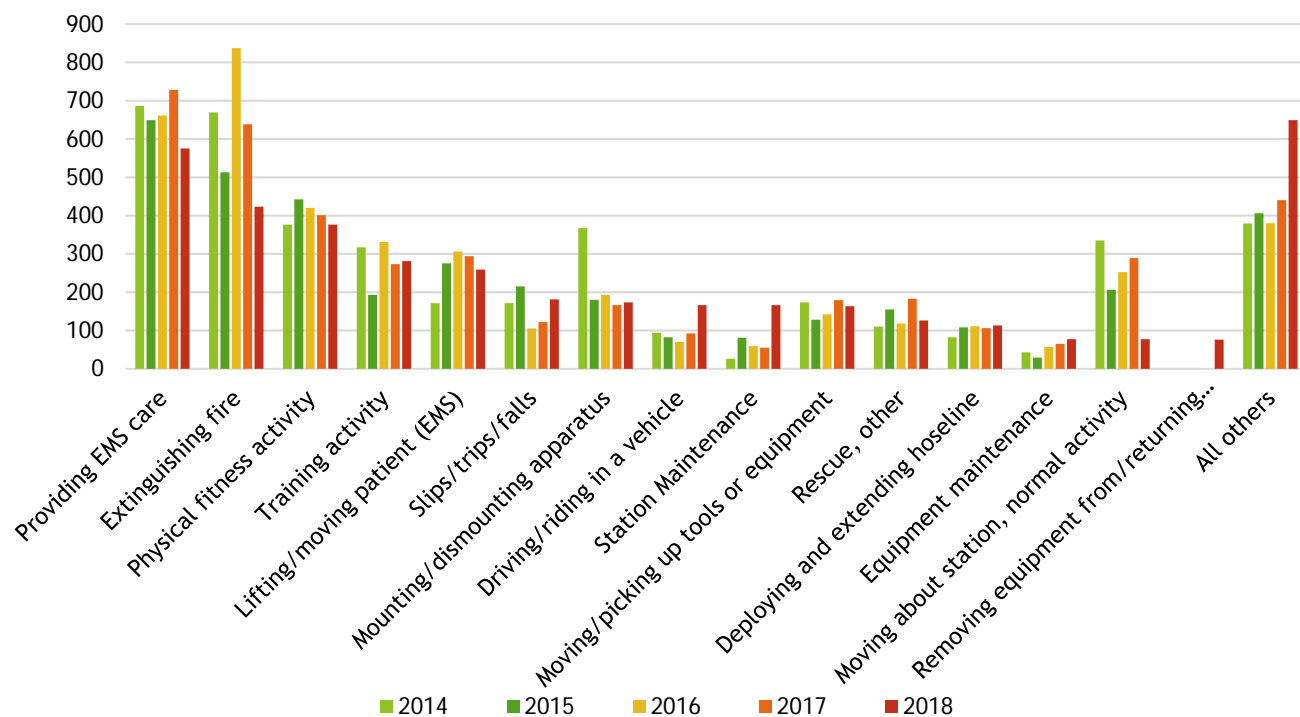


Task at Time of Injury

Table 8: Top 15 Tasks at Time of Injury, 2014 - 2018 (ordered by 2018, descending)

Task	2014	2015	2016	2017	2018
Providing EMS care	686	649	661	728	575
Extinguishing fire	669	513	837	638	423
Physical fitness activity	376	442	420	401	376
Training activity	317	193	331	273	281
Lifting/moving patient (EMS)	171	275	306	294	259
Slips/trips/falls	171	215	105	122	181
Mounting/dismounting apparatus	367	180	193	166	173
Driving/riding in a vehicle	94	82	70	92	166
Station Maintenance	26	81	59	55	166
Moving/picking up tools or equipment	173	128	142	179	163
Rescue, other	110	155	118	183	126
Deploying and extending hose line	82	108	111	106	113
Equipment maintenance	43	29	57	65	77
Moving about station, normal activity	335	206	252	289	77
Removing equipment from/returning equipment to storage	n/a	n/a	n/a	n/a	76
All others	379	406	380	440	649
Total	4055	3721	4097	4090	3881

Figure 4: Top 15 Tasks at Time of Injury, 2014 - 2018



Injuries by Body Part

Table 9: Injuries by Body Part, 2014 - 2017 (ordered by 2017, descending)

Body Part	2014	2015	2016	2017
Multiple body parts, whole body	901	659	1007	1064
Hand and fingers	345	328	359	365
Knee	367	369	376	315
Hip, lower back, or buttocks	244	316	283	292
Back, except spine	372	207	244	248
Shoulder	230	241	238	221
Ankle	177	202	192	179
Multiple Parts	160	180	124	151
Face	118	140	116	127
Arm, lower, not including elbow or wrist	94	84	109	121
Leg, lower	86	117	132	113
Foot and toes	79	71	85	87
Head	73	69	82	78
Ear	52	60	74	76
Chest	64	40	82	76
Eye	98	75	70	73
Multiple body parts, upper body	27	52	61	73
Elbow	66	51	47	72
Wrist	68	48	74	56
Other body parts injured	265	500	342	303
Total	3886	3809	4097	4090

Because TCFP migrated to a new data management system in 2017, the data collected in 2018 was categorized differently than it had been in the past. This is why Table 9 only goes through 2017, and we now have new tables (10 & 11) for 2018 data.

Table 10: Injuries by Body Part Type, 2018

Body Part by Type	2018
Upper Extremities	864
Lower Extremities	810
Back	490
Multiple Parts	318
Head	300
Internal	105
Chest	104
Neck	64
Hip	23
Total	3078

Table 11: Injuries by Body Part Sub-Type, 2018

Body Part by Sub-Type	2018
Back: Back	198
Back: Buttocks	1
Back: Lower Back	282
Back: Neck	4
Back: Spine	5
Chest: Abdomen	5
Chest: Abdominal Area	10
Chest: Chest	89
Head: Cheek	5
Head: Chin	7
Head: Ear	77
Head: Eye	64
Head: Face	111
Head: Jaw	1
Head: Mouth	15
Head: Nose	20
Hip: Groin	9
Hip: Hip	13
Hip: Pelvis	1
Internal: Genito-urinary	4
Internal: Heart	5
Internal: Internal	66
Internal: Intestinal tract	5
Internal: Lungs	9
Internal: Stomach	15
Internal: Trachea	1
Lower Extremities: Ankle	206
Lower Extremities: Foot	93
Lower Extremities: Knee	347
Lower Extremities: Lower leg	111
Lower Extremities: Toes	15
Lower Extremities: Upper Leg	38
Multiple Parts: Lower Body	26
Multiple Parts: Unknown	26
Multiple Parts: Upper Body	74
Multiple Parts: Whole Body	192
Neck: Neck	59
Neck: Throat	5
Upper Extremities: Elbow	68
Upper Extremities: Hands	361
Upper Extremities: Lower Arm	10
Upper Extremities: Shoulder	234
Upper Extremities: Upper Arm	112
Upper Extremities: Wrist	79
Total	3078

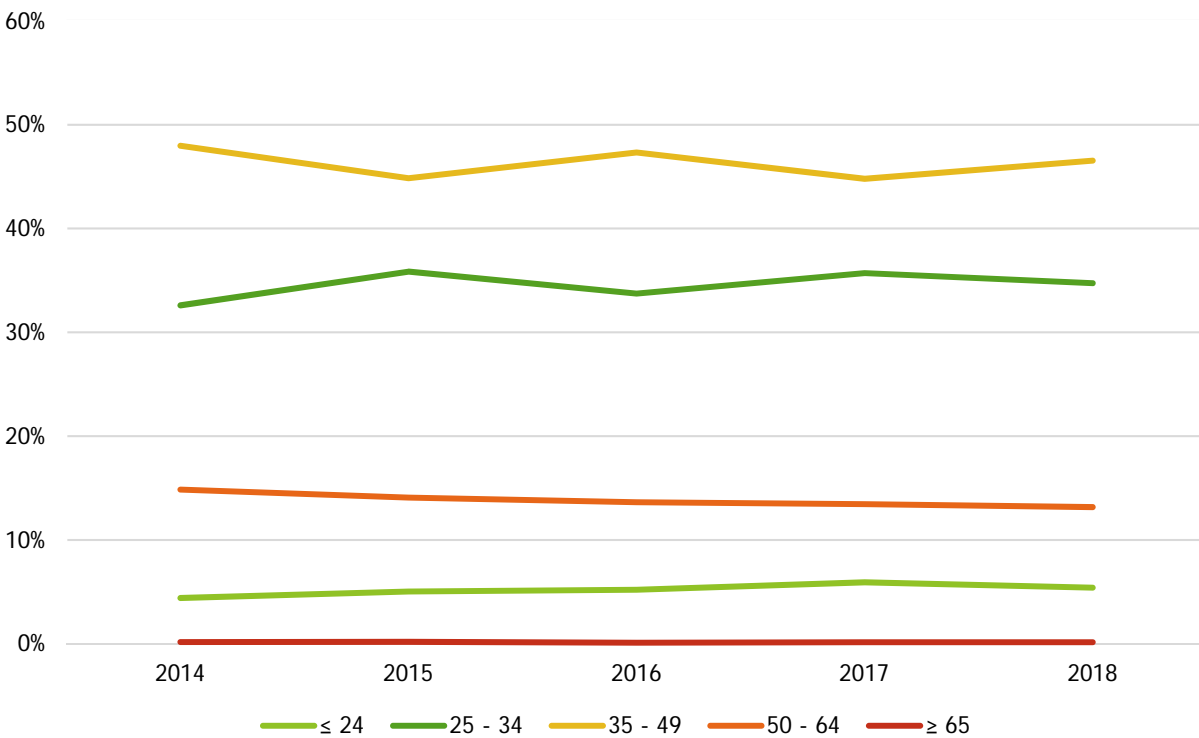
Individuals by Age Group

Table 12: Individuals by Age Group, 2014 - 2018*

Age Group	2014		2015		2016		2017		2018	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
≤ 24	179	4.41%	187	5.03%	213	5.20%	242	5.92%	210	5.41%
25 - 34	1322	32.60%	1334	35.85%	1382	33.73%	1460	35.70%	1348	34.73%
35 - 49	1945	47.97%	1669	44.85%	1939	47.33%	1832	44.79%	1806	46.53%
50 - 64	602	14.85%	524	14.08%	559	13.64%	550	13.45%	511	13.17%
≥ 65	7	0.17%	7	0.19%	4	0.10%	6	0.15%	6	0.15%
Totals	4055	100.00%	3721	100.00%	4097	100.00%	4090	100.00%	3881	100.00%

*Includes injured individuals and individuals with exposures.

Figure 5: Individuals by Age Group, percentages, 2014 - 2018



Injury Activities Resulting in Lost Time

Table 13: Activities Individuals Were Doing that Resulted in Lost Time, Totals, 2018

Activity	Count	Days Missed	
		Average	Sum
EMS	118	39	4687
Fire Suppression	116	33	3878
Station Duties	118	28	3345
Wellness/Fitness	80	32	2621
Skills Training	73	34	2545
Returning from Incident	24	53	1284
Responding to Incident	37	33	1242
Rescue - Non-Fire	16	32	525
Fire Prevention	15	30	455
Rescue - Fire Related	3	8	24
Hazmat	1	13	13
Total	601	30	20619

Table 14: Activities Individuals Were Doing that Resulted in Lost Time, 2018, between 1 and 30 days

Activity	Count	Days Missed	
		Average	Sum
Fire Suppression	87	11	1042
Station Duties	88	10	949
EMS	70	11	771
Wellness/Fitness	56	12	685
Skills Training	49	10	519
Responding to Incident	23	7	183
Returning from Incident	13	14	182
Fire Prevention	10	12	125
Rescue - Non-Fire	11	8	96
Rescue - Fire Related	3	8	24
Hazmat	1	13	13
Total	411	11	4589

Table 15: Activities Individuals Were Doing that Resulted in Lost Time, 2018, between 31 and 90 days

Activity	Count	Days Missed	
		Average	Sum
EMS	34	52	1779
Skills Training	17	61	1046
Station Duties	20	51	1024
Fire Suppression	16	57	920
Responding to Incident	12	70	841
Wellness/Fitness	17	47	812
Returning from Incident	6	61	368
Fire Prevention	4	56	225
Rescue - Non-Fire	3	60	180
Total	129	57	7195

Table 16: Activities Individuals Were Doing that Resulted in Lost Time, 2018, 91+ days

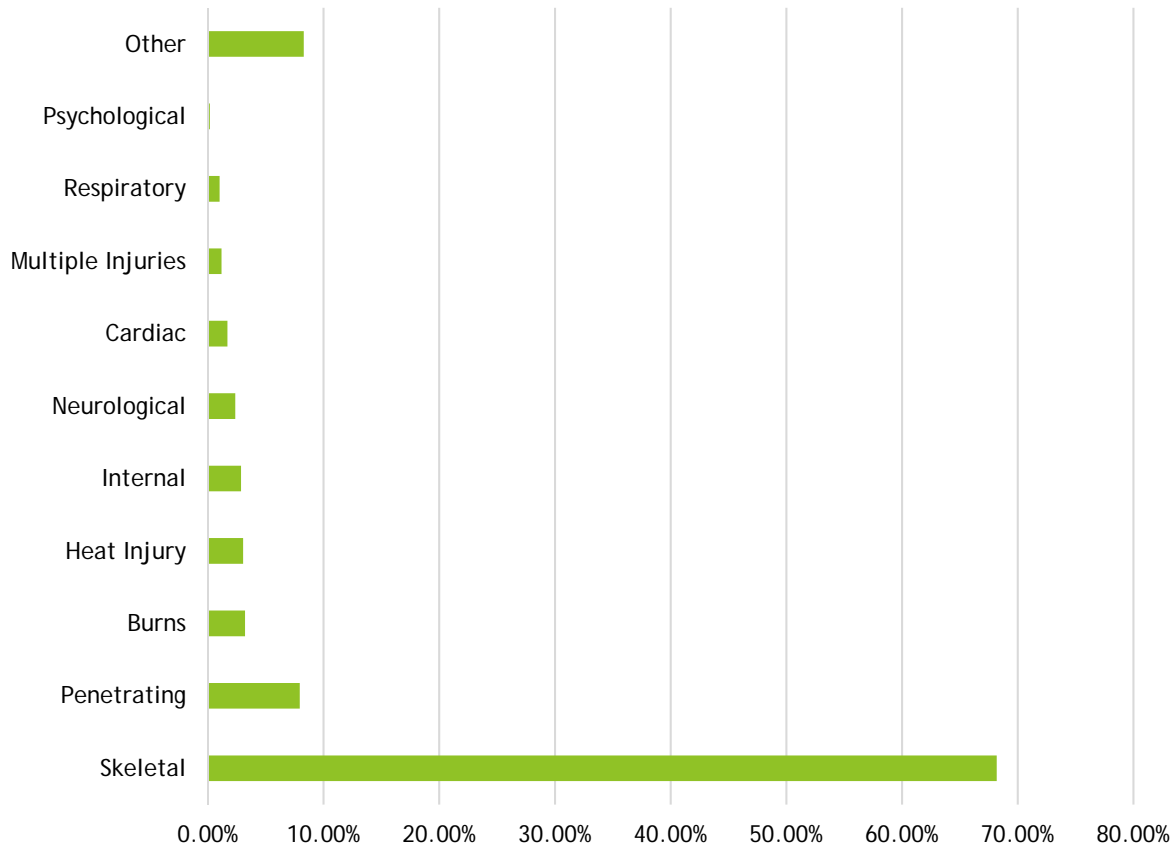
Activity	Count	Days Missed	
		Average	Sum
EMS	14	152	2137
Fire Suppression	13	147	1916
Station Duties	10	137	1372
Wellness/Fitness	7	160	1124
Skills Training	7	140	980
Returning from Incident	5	146	734
Rescue - Non-Fire	2	124	249
Responding to Incident	2	109	218
Fire Prevention	1	105	105
Total	47	136	8835

Types of Injuries with Lost Time

Table 17: Types of Injuries Resulting in Lost Time, 2018

Type of Injury	Count
Skeletal	403
Penetrating	47
Burns	19
Heat Injury	18
Internal	17
Neurological	14
Cardiac	10
Multiple Injuries	7
Respiratory	6
Psychological	1
Other	49
Totals	591

Figure 6: Types of Injuries Resulting in Lost Time, 2018



Burn Injuries

Table 18: All Burns, 2014 - 2018

All Burns - Types	2014	2015	2016	2017	2018
Thermal (Heat/Fire)	76	85	92	96	108
Scald or Steam	33	10	9	13	12
Chemical	2	0	3	4	6
Electrical	2	0	2	0	1
Totals	113	95	106	113	127

Table 19: Burns by Body Part Sub-Type, 2018

Body Part Sub-Type	Count
Back: Back	1
Back: Buttocks	0
Back: Lower Back	0
Back: Neck	0
Back: Spine	0
Chest: Abdomen	0
Chest: Abdominal Area	0
Chest: Chest	2
Head: Cheek	2
Head: Chin	2
Head: Ear	17
Head: Eye	4
Head: Face	9
Head: Jaw	0
Head: Mouth	0
Head: Nose	1
Hip: Groin	0
Hip: Hip	0
Hip: Pelvis	0
Internal: Genito-urinary	0
Internal: Heart	0
Internal: Internal	0
Internal: Intestinal tract	0
Internal: Lungs	0
Internal: Stomach	0
Internal: Trachea	0
Lower Extremities: Ankle	0
Lower Extremities: Foot	6
Lower Extremities: Knee	0
Lower Extremities: Lower leg	8
Lower Extremities: Toes	0
Lower Extremities: Upper Leg	0
Multiple Parts: Lower Body	0
Multiple Parts: Unknown	0

Multiple Parts: Upper Body	10
Multiple Parts: Whole Body	5
Neck: Neck	2
Neck: Throat	0
Upper Extremities: Elbow	0
Upper Extremities: Hands	30
Upper Extremities: Lower Back	0
Upper Extremities: Shoulder	9
Upper Extremities: Upper Arm	11
Upper Extremities: Wrist	8
Total	127

Table 20: Burns by Body Part, 2014 - 2017, Historical data

Body Part	2014	2015	2016	2017	2018
Hand and fingers	18	14	27	22	30
Ear	13	22	14	16	17
Face	13	12	16	9	14
Arm, upper, not including elbow or shoulder	2	2	1	2	11
Multiple body parts, upper body	4	5	8	4	10
Shoulder	5	5	3	6	9
Lower extremities	2	1	2	0	8
Wrist	5	4	9	7	8
Foot and toes	2	1	3	1	6
Multiple parts	16	8	4	12	5
Eye	1	0	0	0	4
Chest	0	0	1	1	2
Neck	9	6	4	7	2
Back, except spine	2	0	0	2	1
Elbow	0	0	0	1	0
Hip, lower back, or buttocks	1	0	1	0	0
Knee	0	0	1	2	0
Pelvis or groin	0	0	0	2	0
Throat	0	0	0	0	0
Arm, lower, not including elbow or wrist	9	3	2	12	n/a
Leg, lower	1	6	3	3	n/a
Head	3	4	2	1	n/a
Upper extremities	6	2	2	0	n/a
Neck and shoulders	1	0	0	1	n/a
Undetermined	0	0	3	2	n/a
Total	113	95	106	113	127

For Table 20 above, the 2018 column (shaded in gray) was pieced together from the data in Table 19 in order to view trends and patterns.

Exposures

Due to the change in our information management system, the exposure data collected in 2018 is less specific than the exposure data collected in previous years. This is why we currently have “historical data” in separate charts and figures than that for 2018.

Table 21: Exposure by Sub-Type, 2018

Exposure + Sub-Type	Count
Chemical: Ammonia	1
Chemical: Benzene	2
Chemical: Bleach	1
Chemical: Not listed	151
Chemical: Unidentified	73
Physical: Animal venom	6
Physical: Meningitis	38
Physical: Not listed	138
Physical: Plant toxin	27
Physical: Unidentified	87
Respiratory: Blood	69
Respiratory: Influenza	4
Respiratory: Not listed	108
Respiratory: Saliva	24
Respiratory: Tuberculosis	98
Respiratory: Unidentified	50
Respiratory: Vomit	7
Total	884

Table 22: Exposure by Route, 2018

Route	Count
Absorption	299
Ingestion	59
Inhalation	484
Injection/Puncture	42
Total	884

Figure 7: Exposure by Route, 2018, percentages

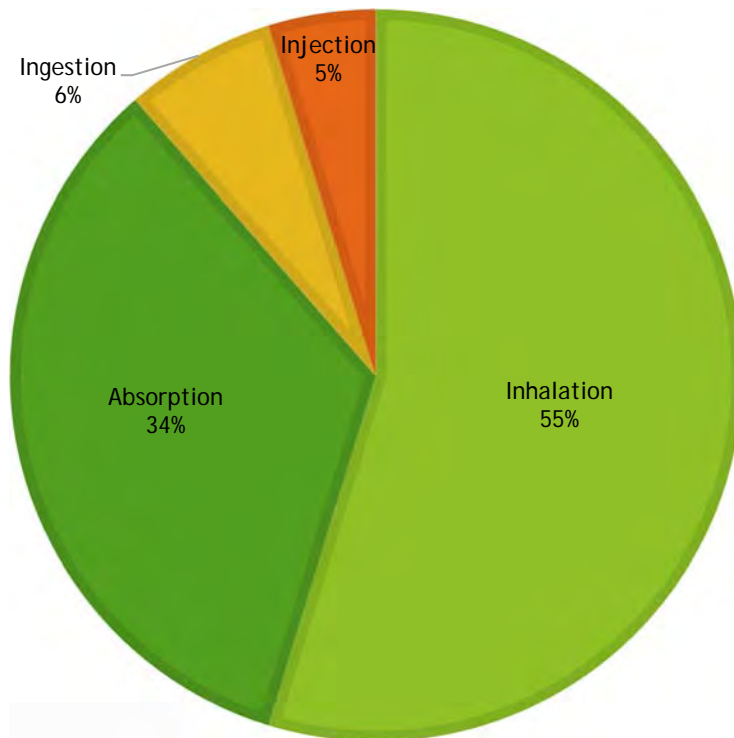


Table 23: Exposure by Substance, 2018

Substance	Count
Gas/vapor	332
Liquid	318
Solid	234
Total	884

Figure 8: Exposure by Substance, 2018, percentages

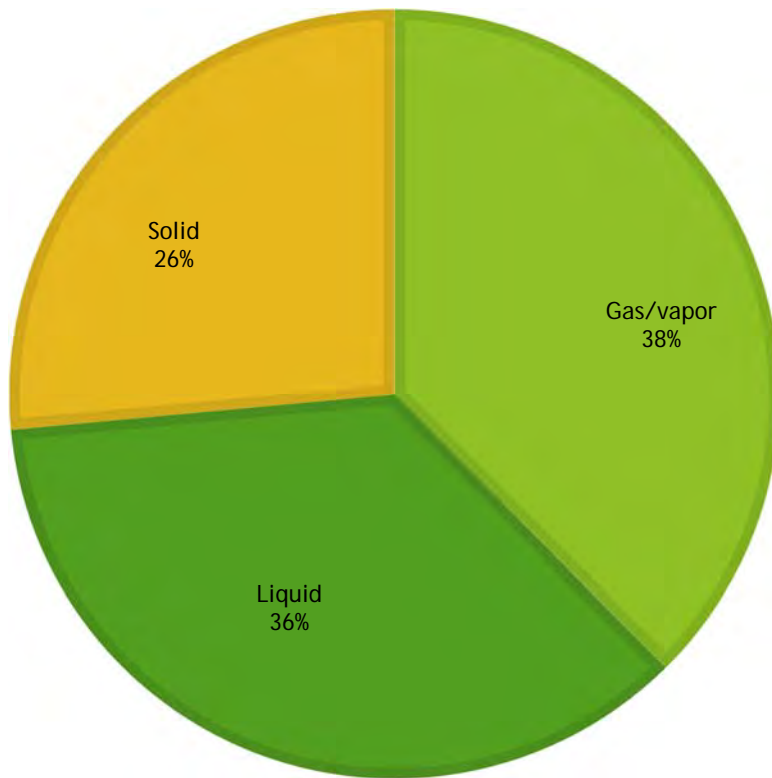


Table 24: Routes of Exposure, 2014 - 2017, Historical data (ordered by 2017, descending)

Exposure Routes	2014	2015	2016	2017
Airborne pathogens	369	141	290	354
Undetermined	120	287	273	325
Blood pathogens	183	181	194	174
Body Fluids	109	167	121	173
Chemical (household/industrial)	313	53	310	147
Plant Toxins	24	54	37	36
Chemical (carbon monoxide)	3	3	27	1
Total	1121	886	1252	1210

Figure 9: Routes of Exposure, 2014 - 2017, Historical data

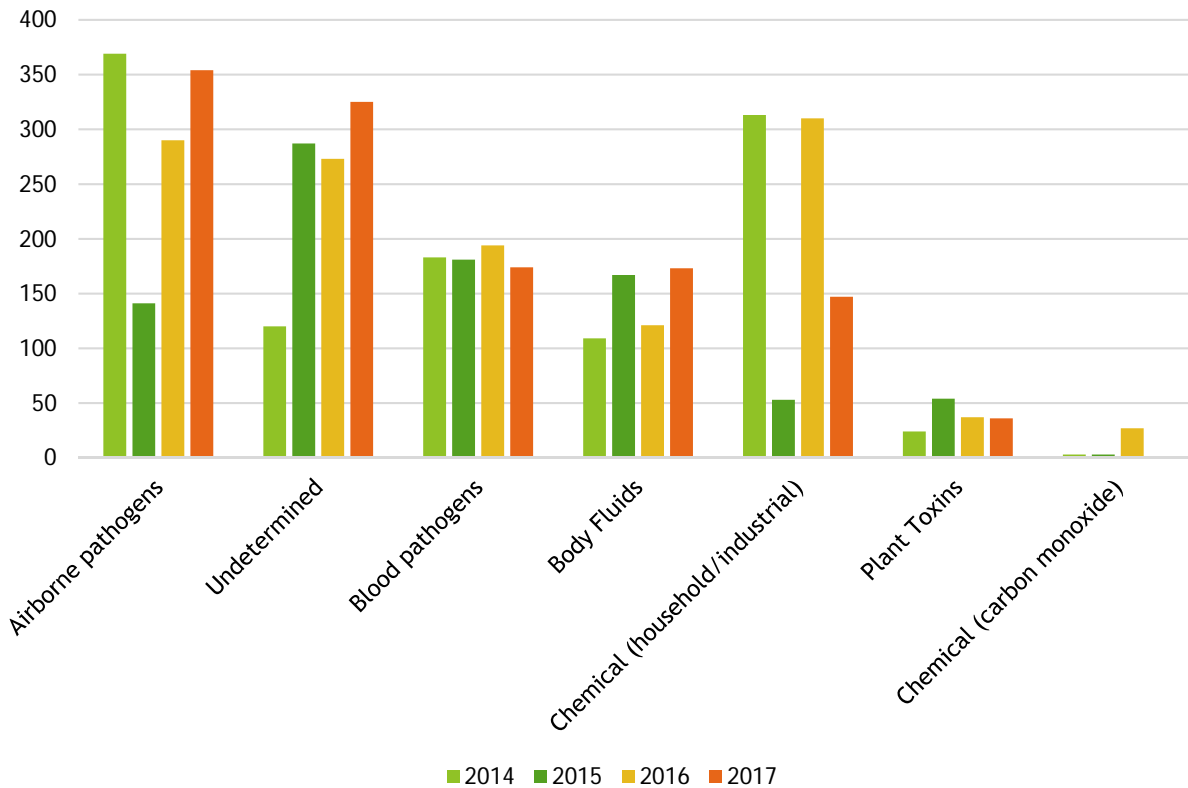


Table 25: Exposure description, 2014 - 2017, Historical data (ordered by 2017, descending)

Exposure description	2014	2015	2016	2017
Unknown	103	256	148	290
Blood	177	167	161	153
Chemicals/household/industrial	89	36	310	122
Asbestos	384	51	51	112
Tuberculosis	93	73	128	109
Body fluids	109	92	91	101
Meningitis	65	91	62	104
Animals or wildlife	63	75	90	58
Sickness, other	60	21	24	49
Poison plants	24	61	37	37
Vomit	16	19	14	17
Chlorine	0	4	1	14
Mold	0	4	26	10
Airborne, other	15	7	40	7
Staph	0	3	0	7
Carbon monoxide	6	8	26	5
HIV	0	11	4	4
Scabies	9	4	21	4
Hepatitis C	6	10	14	3
MRSA	4	0	14	3
Bacterial pneumonia	0	1	0	1
Explosive residue	0	0	0	0
Influenza	8	0	0	0
Lice	0	0	0	0
Strep	0	0	1	0
Total	1231	994	1263	1210

Cancer

The commission received only nine reports of cancer diagnoses from fire departments in 2018:

Thyroid - 3

(Males, 36, 45, 53)

Skin - 2

(Males, 43, 45)

Testicular - 2

(Males, 37, 47)

Lymphoma - 1

(Male, 65)

Unidentified - 1

(Male, 45)

A Reminder for Fire Departments

ALL injuries to fire protection personnel, including cancer diagnoses, that are reported to the Texas Worker's Compensation Commission must be reported to the Texas Commission on Fire Protection.

The commission strongly encourages fire departments to report cancer diagnoses; the commission recognizes that the number of job-related cancers reported during this time-period represents only a small fraction of the cases that Texas fire departments are currently managing. There is a growing awareness of the impact that cancer is having on fire protection personnel nationwide, and the commission urges departments to use this reporting tool to help contribute to the education and awareness of the issue in Texas.

In June of 2019, the Governor of Texas signed Senate Bill 2551 (SB 2551) which expanded the scope of the law in which firefighters and EMTs who suffer from cancer are presumed to have developed the condition during the course and scope of their employment. The types of cancer this law addresses include:

- cancers that originate at the stomach, colon, rectum, skin, prostate, testis or brain
- non-Hodgkin's lymphoma
- multiple myeloma
- malignant melanoma
- renal cell carcinoma

SOP Issues

In 2018 there were 30 injuries attributed to failures of fire protection personnel to follow their departments' standard operating procedures (SOPs). All but a few were instances where the individuals were not wearing their provided PPE/SCBA gear in an environment or situation in which they should have been.

In its compliance inspections, the Texas Commission on Fire Protection verifies that fire departments have written SOPs that cover the appropriate subject matter.

Table 26: Injuries Attributed to SOP Issues, 2018

Activity	Minor	Serious	Total
Fire Suppression	10	9	19
EMS	7	2	9
Skills Training	2	0	2
Responding to Incident	0	1	1
Station Duties	0	1	1
Totals	19	13	32

Table 27: Injuries Attributed to PPE & PASS Failures

Activity	Minor	Serious	Total
Fire Suppression	7	1	8
Rescue - Non-Fire	2	0	2
Skills Training	2	0	2
EMS	1	0	1
Rescue - Fire Related	1	0	1
Totals	13	1	14

Fatalities

The commission's 2018 injury report includes **two fatalities**. Fatalities listed in this report include only those reported to the Texas Commission on Fire Protection (TCFP) by the entities it regulates.

The State Fire Marshal's Office conducted nine Texas fire fighter fatality incident investigations between September 1, 2017 and August 31, 2018. Comprehensive information about the investigations may be found on their website at the following web address: <https://www.tdi.texas.gov/fire/fmloddannuals.html>

State of Texas vs. NFPA

Comparison between the State of Texas (2018) and National Fire Protection Association (NFPA), U.S. Firefighter Injuries - 2017

For the purposes of comparison, the commission has mapped its categories to the NFPA categories as follows:

- “Fireground” includes the commission’s Fire Suppression and Rescue - Fire Related categories.
- “Non-Fire” includes Rescue Non-Fire, EMS and Hazmat.
- “Other On-Duty” includes Fire Prevention, Station Duties and Wellness/Fitness.

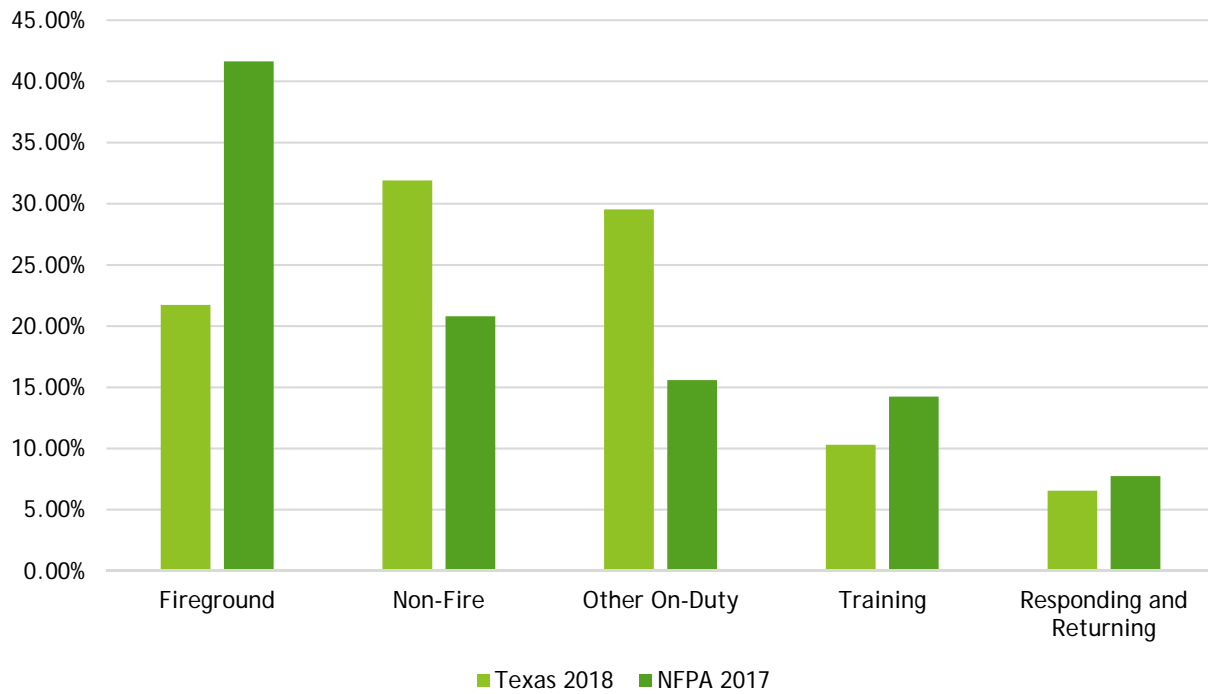
The NFPA’s “Responding and Returning” and “Training” categories appear to correspond closely to the commission’s categories. (The NFPA numbers include Texas statistics, although the reporting populations may not be the same.)

Table 28: Comparison of Texas 2018 and NFPA 2017

Category	Texas 2018		NFPA 2017	
	Count	Percent	Count	Percent
Fireground	843	21.72%	24495	41.63%
Non-Fire	1238	31.90%	12240	20.80%
Other On-Duty	1146	29.53%	9165	15.58%
Training	400	10.31%	8380	14.24%
Responding and Returning	254	6.54%	4555	7.74%
Total	3881	100.00%	58835	100.00%

*NFPA data is from [U.S. Firefighter Injuries in 2017](#), copyright ©2018 National Fire Protection Association, Quincy, MA.

Figure 10: Injuries by Activity Percentages - Comparing Texas 2018 and NFPA 2017



Recommendations

The commission would like to thank Texas fire departments for their ongoing participation in reporting fire protection personnel injuries. This report would not be possible without their efforts.

Based on their review of the data contained within this report, the commission offers the following recommendations:

Recommendations for Program Improvement

1. Create more categories for the types of exposures that can be reported.
2. Notify all fire departments that reporting cancer diagnoses is now mandatory.

Recommendations for the Texas Fire Service

1. Focus on reducing strains and sprains:
 - Stretching
 - EMS equipment review/patient moving
 - Equipment deployment/apparatus design
2. Focus on reducing weight lifting injuries:
 - Clarify the purpose of weightlifting (functional fitness vs. body sculpting)
 - Review types of exercise routines
3. Increase cancer reporting and prevention activities:
 - Consider early detection testing
 - Review the Health and Wellness Committee's March 2019 [presentation](#)
 - Read *The Lavender Ribbon Report* (download a copy [here](#))
 - Clean everything often
4. Reduce fire ground injuries through prevention:
 - Fire risk analysis
 - Familiarity walk through
 - Pre-planning with focus on firefighter safety and injury prevention

Commission-adopted standards

The commission has adopted several NFPA and other nationally recognized standards to help keep Texas fire protection personnel safe. This list summarizes the relationships between some of the Texas laws and national standards and is not intended to be all-inclusive:

Texas Government Code

[§419.040, Protective Clothing](#)

[§419.041, Self-Contained Breathing Apparatus](#)

[§419.042, Personal Alert Safety Systems](#)

[§419.043, Applicable National Fire Protection Association Standard](#)

[§419.044, Incident Management System](#)

[§419.045, Personnel Accountability System](#)

[§419.046, Fire Protection Personnel Operating at Emergency Incidents](#)

[§419.047, Commission Enforcement](#)

Texas Administrative Code

[CHAPTER 425 FIRE SERVICE INSTRUCTORS](#)

[§443.9 National Fire Protection Association Standard](#)

[CHAPTER 435 FIRE FIGHTER SAFETY](#)

[§435.21 Fire Service Joint Labor Management Wellness-Fitness Initiative](#)

[§435.23 Fire Fighter Injuries](#)

[§435.25 Courage to be Safe So Everyone Goes Home Program](#)

[§435.27 Live Fire Training Structure Evolutions](#)

[CHAPTER 451 FIRE OFFICER](#)

CHAPTER 457 INCIDENT SAFETY OFFICER CERTIFICATION

See also the commission's web page: [NFPA Standards adopted by the commission.](#)



FIREFIGHTER FATALITY INVESTIGATIONS

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