

- 12. Discussion and possible action on direction from commissioners regarding development of recommendations for reducing fire protection personnel injuries and reporting that data annually to the State Fire Marshal.**

TEXAS COMMISSION ON FIRE PROTECTION



On-Duty Injury Reports

2010

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Executive Summary

The Executive Summary details three areas of the data collection process and explains the rationale behind the information found in this first annual report. The areas are: Fire Fighter Injuries and Casualties; Firefighter: Individual and Department Online (FIDO) System; and Reports, Information, and Data Collection.

Fire Fighter Injuries and Casualties

One of the Texas Commission on Fire Protection's main priorities is to ensure the safety of the state's fire fighters. The commission accomplishes this goal by establishing education and training standards for fire fighter certification, and by enforcing standards regarding protective clothing, breathing apparatus, and standard operating procedures.

On September 1, 2001, the State Fire Marshal's Office (SFMO) became responsible for investigating all line-of-duty deaths involving fire-service personnel in Texas. The commission assists the SFMO with these investigations upon request by inspecting protective clothing and self-contained breathing apparatus for compliance with applicable National Fire Protection Association (NFPA) standards and state statutes. The agency also inspects training records and standard operating procedures for compliance with state statutes.

On September 1, 2009, new provisions in Chapter 419 of the Government Code gave the commission the authority and responsibility to gather and evaluate data on fire protection personnel injuries, and to recommend ways to reduce the number of fire protection personnel injuries. The statute requires the commission to forward its report and recommendations to the SFMO by September 1 of each year.

Firefighters: Individuals and Departments Online (FIDO)

To facilitate the gathering of data on fire protection personnel injuries, the commission has internally developed a web-based software application called FIDO. (Chapter 419 requires the commission to provide interactivity with its customers via the internet; the FIDO system is restricted to registered users, including:

1. Fire departments with a commission-assigned fire department identification (FDID) number.
2. Other fire protection-related entities with a commission-assigned FDID, such as fire marshals, training schools, law enforcement agencies, etc.
3. Individuals with a commission-assigned personal identification number (PIN). These individuals include certified fire fighters, department administrators, etc.

The purpose of the FIDO system is two-fold. For fire departments and registered entities, the FIDO system will allow departmental account users to:

- File reports with the commission
- Manage department data
- Manage department employee data
- Generate reports in real time

For individual fire fighters, the FIDO system will allow users to:

- Manage personal data
- Generate reports in real time, such as certification cards

The FIDO system has strong identity management controls. Regulated departments must assign their own users, beginning with “Level 1” users, who are the owners of department data. (Typically the “Level 1” user is the fire chief or head of the department.) The commission creates accounts for Level 1 users only upon receipt of a written request, on the department’s letterhead, with the head of department’s signature.

When the Level 1 account for a department has been created, the department can then assign additional users with specific access rights to the system, depending upon the department’s specific needs. Departments can also create individual accounts for their employees, to enable individuals to manage their personal information.

The agency began creating accounts for departments early in 2010 and will continue the process throughout the next biennium.

Reports, Information, and Data Collection

This report contains data submitted by commission-regulated departments. The departments have expended both time and resources to submit the data and have been willing participants in the legislations’ attempt to improve the safety of fire fighters. This report illustrates the statistical information that the commission can derive from the data in a variety of ways.

The report will detail the type of injuries incurred by fire fighters in the performance of their duties as well as the following:

- Injury by body location
- Severity of the injury
- Age or age groups of the injured
- Activities at the time of injury

The report will compare Texas trends with those of the National Fire Protection Association’s annual report, “U.S. Firefighter Injuries.” The intent of this report is to identify trends and recommend methods and practices to reduce future injuries. Fire departments, individual fire fighters and other interested parties should be able to review the data and identify cause-and-effect relationships surrounding injuries, both within individual departments and across the state.

Commission staff will compile the data collected via the FIDO system and will make it available for the commissioners’ review on an annual basis.

The commission staff will base future editions of this report on a calendar year cycle. During the first quarter of each new calendar year, the commissioners will review the data from the previous year. This review will allow for discussion and adoption of the final report in a timely manner for submittal to the SFMO.

2010 Injury Reports

Statutory and Administrative Authority

During the 81st Legislative session, the Texas Legislature passed into law Texas Government Code, §419.048, requiring the Texas Commission on Fire Protection to begin gathering and analyzing fire service injury data. At its January 2010 meeting, the commission adopted new rules requiring regulated entities to report injuries to the commission. The administrative rules that enable the commission to complete this task are codified in the 37 TAC Chapter 435, Fire Fighter Safety:

§435.23. Fire Fighter Injuries

- (a) A fire department shall report all Texas Worker Compensation reportable injuries that occur to on-duty regulated fire protection personnel on the Commission form.*
- (b) Minor injuries are those injuries that do not result in the fire fighter missing more than one duty period or does not involve the failure of personal protective equipment. Minor injuries shall be reported within 30 business days of the injury event.*
- (c) Major injuries are those that require the fire fighter to miss more than one duty period. Major injuries shall be reported within five business days of the injury event.*
- (d) Investigable injuries are those resulting from the malfunction of personal protective equipment, failure of personal protective equipment to protect the fire fighter from injury, or injuries sustained from failure to comply with any provision of Commission mandated department SOPs. Investigable injuries shall be reported within five business days of the injury event.*
- (e) The regulated entity shall secure any personal protective equipment involved in a fire fighter injury and shall be made available to the Commission for inspection.*

Affected Populations

The commission regulates approximately 640 entities. There are approximately 1,900 volunteer fire departments in Texas. Volunteer fire departments are not regulated by the commission.

The commission estimates that the Texas fire service consists of approximately 68,000 fire fighters, of whom roughly 26,000 are subject to commission certification requirements. The commission estimates that there are approximately 42,000 unregulated volunteer fire fighters in the state.

Of the 640 entities regulated by the Texas Commission on Fire Protection that were sent letters to establish an on-line account for reporting injuries, as of June 15, 2010, 476 entities have created their FIDO accounts. These accounts are the gateway to the online injury reporting program. Of the 476 entities registered, 56 entities have participated by submitting injury reports via the on-line program. Thus, this initial report is based on the reporting of 9 percent of the potential reporting entities.

The commission thanks those entities who have begun reporting injuries and encourages their continued reporting. The commission strongly encourages those entities that are not reporting injuries to begin doing so. Full participation will make the state's data more valid, particularly when comparing Texas data to national data. Reporting departments can also benefit by comparing data between state regions and among similar departments.

Background

The commission's injury reporting system is designed to comply with its establishing legislation, while recognizing the inherent risks associated with the services provided by today's fire departments. The commission's enabling legislation helps address these risks by providing the commission with the authority to set statewide standards. The commission correlates the injury data to existing regulations that cover the following areas:

- Proper utilization, care, selection, and maintenance of all personal protective equipment (PPE).
- Proper utilization, care, selection, and maintenance of self-contained breathing apparatus (SCBA).
- Proper utilization, care, selection, and maintenance of personal alert safety system (PASS) devices.
- Proper adherence to policies and procedures pertaining to the:
 - National Incident Management System (NIMS).
 - Personnel Accountability System.
 - Operating at Emergency Incidents.
 - Interior Structural Fire Fighting with emphasis on the "two-in/two-out" rule.
 - Wellness and Fitness initiatives.

In the process of reviewing the submitted injury reports, the commission staff will determine whether to seek additional information or conduct investigations of each reported injuries, based on:

- the information provided by the submitting department.
- the explanation of the injury as narrated by the submitting department.
- the involvement of any of the above-listed equipment or SOPs.
- the seriousness of the injury.

If the commission staff determines that an investigation is warranted, the assigned investigator (typically the regional compliance officer and any additional support staff) will first review all of the above-listed items. Additionally, the investigator may review the following items:

- Individual continuing education records for the past two certification periods.
- Protective clothing inspection records [NFPA 1851 and 37 TAC 435.1(3)].
- Breathing air test records for the past two years [37 TAC 435.3(4)].
- SCBA cylinder hydrostatic test records [37 TAC 435.3(5)].
- SCBA annual full-function test records [37 TAC 435.3(8)].
- SCBA duty period inspection records for in-service units [37 TAC 435.3(3)].
- Reserve SCBA weekly inspection records [37 TAC 435.3(3)].
- PASS in-service duty period inspection records [37 TAC 435.9(3)].
- SCBA maintenance authorization certificates [37 TAC 435.9(8)].
- Annual SCBA full-function test machine calibration certificate [37 TAC 435.3(8)].
- SCBA bottle hydrostatic testing vendor DOT certificate [37 TAC 435.3(5)].

The investigator may also review other documents pertaining to the incident, as well as documents pertaining to testing, care, and maintenance of listed items since the occurrence of the injury event. Potentially, a review of past commission-required records (previous inspections, certifications, course approvals and records, and investigations) may be included in the document reviews.

In the event the injury occurred at a certified training facility, the investigator may require the following additional information:

- Name of chief training officer/training coordinator.
- List of instructor staff.
- Records from certification courses delivered in the past two certification periods.
- Records for protective clothing used by students participating in live fire training.
- Records of SCBA used by students in live fire training (inspection, annual testing, air quality).
- Standard operating procedures (PPE, SCBA, PASS, accountability and incident command).
- Reference materials required for each discipline in which the facility holds certification.

Based on the findings of the investigation, the commission may conduct hearings to determine the need for administrative action concerning the injury incident.

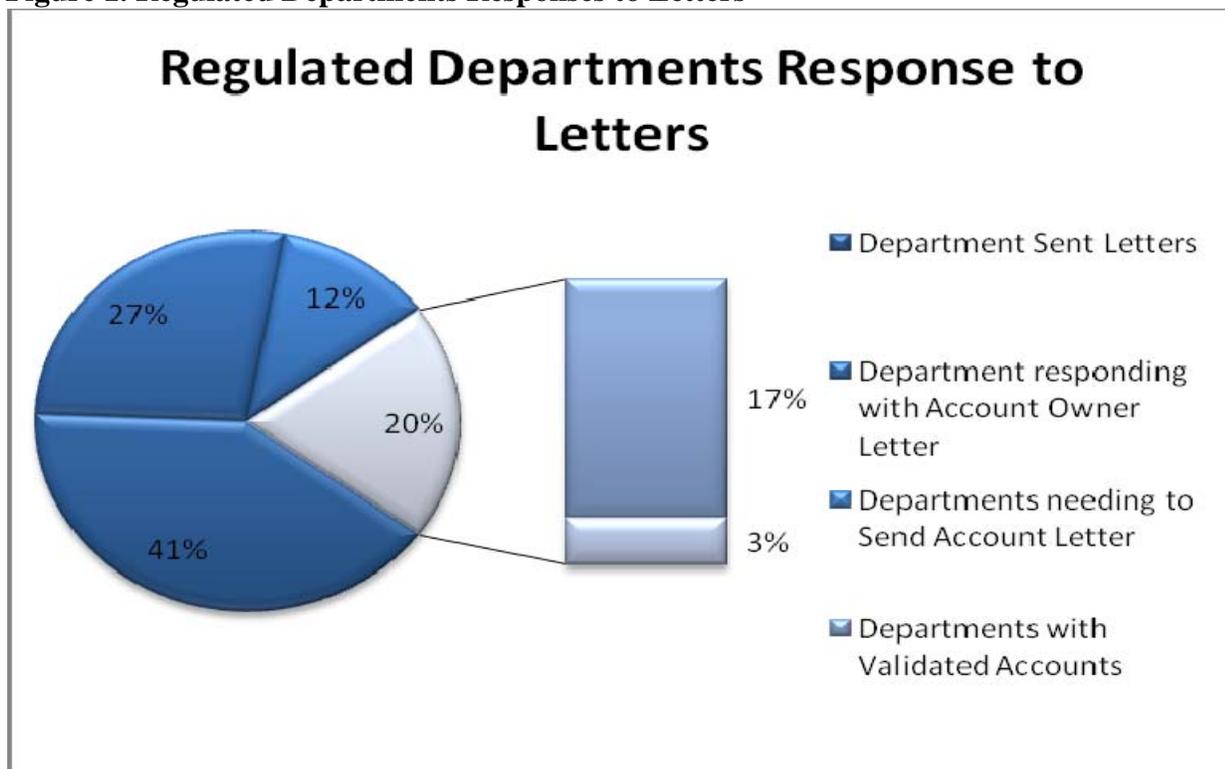
Overall Results

The information contained in this report is based on 56 entities reporting of the 640 regulated entities in the State of Texas. Of the regulated entities that are required to report, the following information pertains to these entities are:

Table 1. Departments and Percentages

	Number of Departments	Percentages
Departments Sent letters	640	100%
Departments responding with Account Owner Letter	476	74%
Department needing to send Account Letter	176	28%
Departments with Validated Accounts	279	44%
Departments with Reported Injuries	56	9%

Figure 1. Regulated Departments Responses to Letters



Departments with Validated Accounts	279
Departments with Reported Injuries	56

The overall results of this first reporting period – March 1 to June 15, 2010, reveals that only 9% of the regulated departments reporting. The reporting departments reported a total of 427 injuries for this time period.

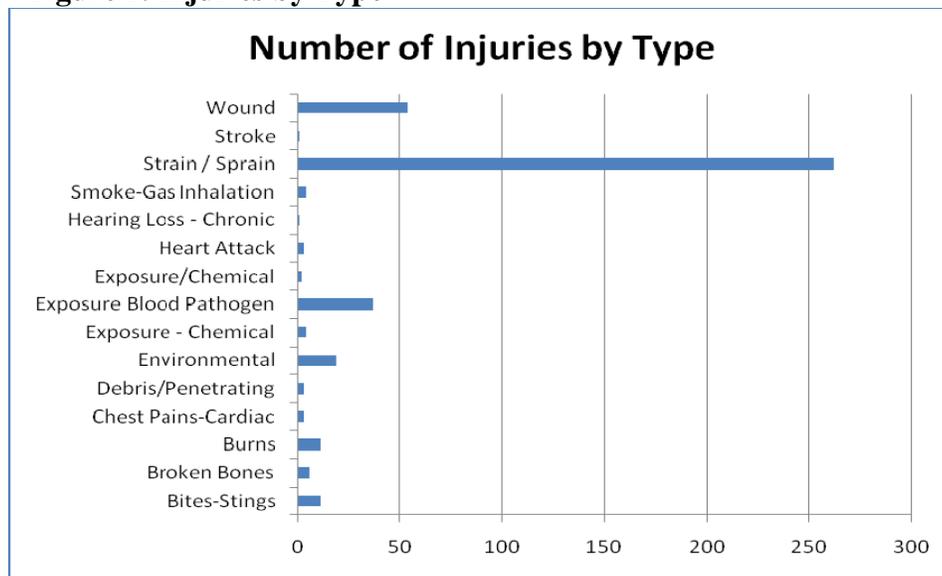
Injuries by Type

The reported injuries fall into the following categories:

Table 2. Injuries by Type

Type of Injury	Count
Bites-Stings	11
Broken Bones	6
Burns	11
Chest Pains – Cardiac	3
Debris/Penetrating	3
Environmental	19
Exposure - Chemical	4
Exposure Blood Pathogen	37
Exposure/Chemical	2
Heart Attack	3
Hearing Loss – Chronic	2
Smoke-Gas Inhalation	4
Strain / Sprain	262
Stroke	1
Wound	54

Figure 2. Injuries by Type



During this first reporting period, 67 percent of the reported injuries were strains and sprains. The second-highest injury type was wounds, which accounted for 11.6 percent of reported injuries. Exposure to blood pathogens was the next highest, at 8.7 percent.

Injuries by Severity

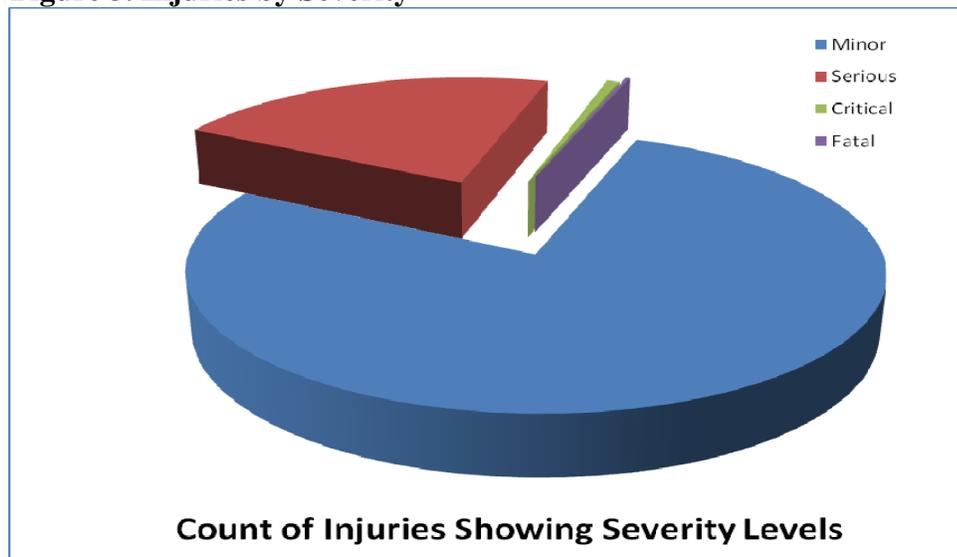
In addition to categorizing injury types, the commission classifies injuries by their level of severity. The levels of severity are minor, serious, critical, and fatal.

As for the level of severity, minor injuries accounted for 77.3 percent of the reported injuries, while 21.8 percent were serious; and 0.007 percent was critical injuries. One fatal injury was reported; the fatal injury occurred in a non-fire/non-rescue scenario.

Table 3. Injuries by Severity

Severity	Count
Minor	330
Serious	93
Critical	3
Fatal	1
	427

Figure 3. Injuries by Severity



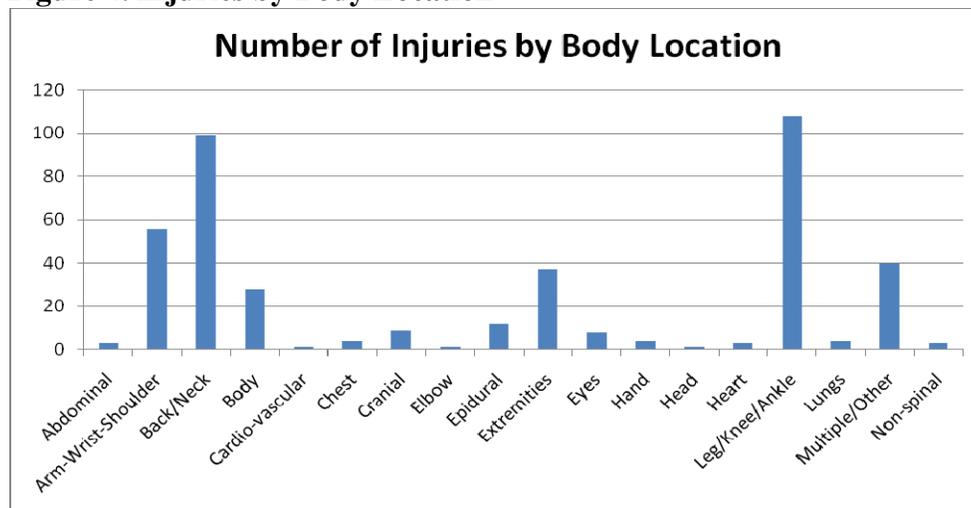
Injuries by Body Location

The body part affected by the injury is often associated with the type of injury and its severity. Of the reported injuries, the leading body parts affected were leg, knee, and ankle joints, with 25.7 percent, followed closely by back and neck injuries with 23.5 percent. These two body part injury locations accounted for 51 percent of all injuries.

Table 1. Injuries by Body Location

Body Location of Injury	Number of Injury
Abdominal	3
Arm-Wrist-Shoulder	56
Back/Neck	99
Body	28
Cardio-vascular	1
Chest	4
Cranial	9
Elbow	1
Epidural	12
Extremities	37
Eyes	8
Hand	4
Head	1
Heart	3
Leg/Knee/Ankle	108
Lungs	4
Multiple/Other	40
Non-spinal	3

Figure 4. Injuries by Body Location



Injuries by Type of Duty

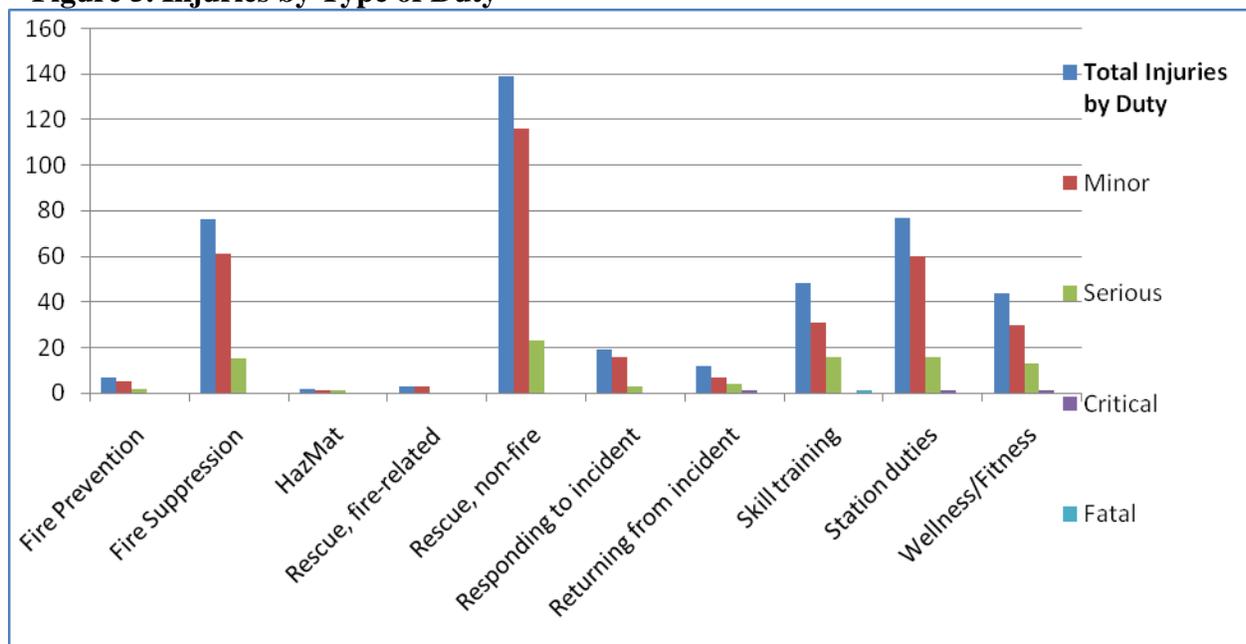
The type of duty performed by fire service personnel varies, but the results show that non-fire suppression-related duties accounted for slightly over half (50.65 percent) of the reported injuries. Rescue (non-fire-related) accounted for 32.6 percent of reported injuries and station duties accounted for 18.05 percent. Rescue (non-fire-related) is associated most closely with emergency medical services (EMS) functions of the fire service.

Fire suppression duties accounted for the third-highest number of injuries with 17.8 percent.

Table 5. Injuries by Type of Duty

Type of Duty	Total Injuries	Minor	Serious	Critical	Fatal
Fire Prevention	7	5	2		
Fire Suppression	76	61	15		
HazMat	2	1	1		
Rescue, fire-related	3	3			
Rescue, non-fire	139	116	23		
Responding to incident	19	16	3		
Returning from incident	12	7	4	1	
Skill training	48	31	16		1
Station duties	77	60	16	1	
Wellness/fitness	44	30	13	1	

Figure 5. Injuries by Type of Duty



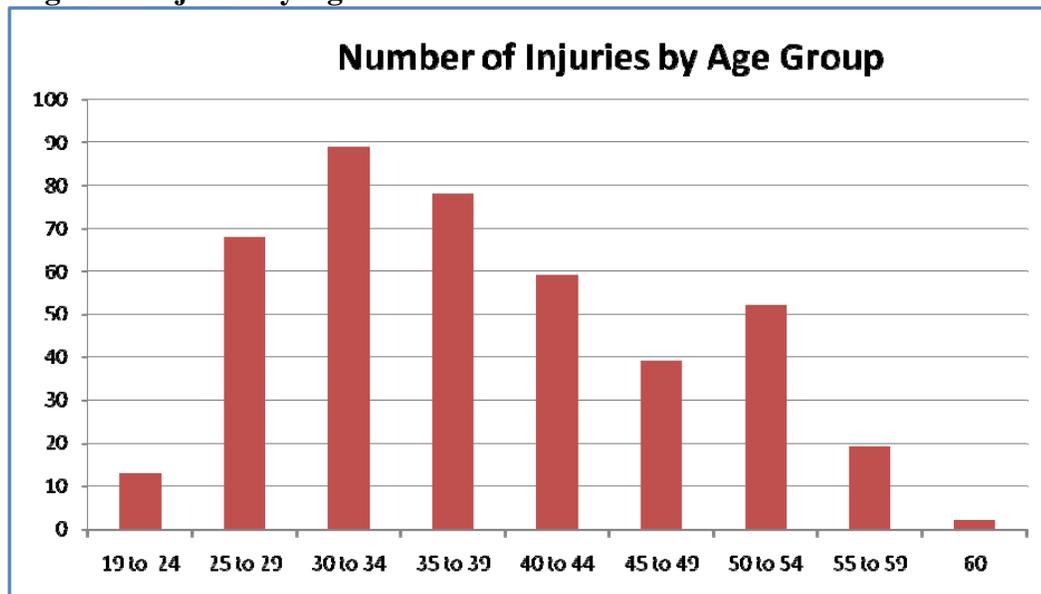
Injuries by Age

Injuries by age or age groups as shown in this report are provided for informational purposes only at this time. There is not enough statistical data for regulated departments to draw any significant conclusions regarding age or age groups.

Table 6. Injuries by Age

Injuries by Age	Count
19 to 24	9
25 to 29	38
30 to 34	56
35 to 39	50
40 to 44	36
45 to 49	25
50 to 54	26
55 to 59	26
60	1

Figure 6. Injuries by Age



Comparison to National Trends

Comparing the State of Texas regulated departments injuries with those reported to the National Fire Protection Association’s (NFPA) *U.S. Firefighter Injuries – 2008* (the latest version available for comparison at this time), will be of limited value due to the following:

- This report is the first year of injury reports from regulated departments in Texas, and the data from NFPA to which we would compare it is two years old.
- The enabling legislation mandates the collection of different information or data, so not all categories will be available for comparison. (For example, the NFPA report provides a comparison based on department size, but the commission does not collect data on department size.)
- The NFPA defines categories of duties differently than the commission does, so in order to compare categories, the commission has had to make some assumption. For example, NFPA has a category of “Other Duties,” but there is no definition of what “other duties” this category includes. The commission has combined fire prevention, station duties, and wellness/fitness into this “other duties” category for comparison with the NFPA’s “Other Duties” category.
- For comparison purposes and to achieve continuity among the data from each source, not all types of injuries categories are compared to each other in this report. Only those that are identified as being in common are listed in the comparison.

The comparison does, however, reveal some interesting facts. The injuries reported by commission-regulated departments do appear to track statistically close to the NFPA-reporting departments in the areas of “Responding to or Returning from an Incident,” “Training/Skills Training,” and “Other Duties.” However, in the areas where there is a difference, the difference is statistically a 2:1 ratio variance. In the category of “Fireground Operations,” the NFPA-reporting departments are twice as likely to have an injury when performing this duty, but the reverse is true for “Non-Fire Emergency Operations.”

Table 7. Commission vs. NFPA Injuries by Type of Duty

	Responding to or Returning from Incident		Fireground Operations		Non-Fire Emergency Operations		Training / Skills Training		Other Duties		Total
Commission regulated	18	7.69%	51	21.79%	83	35.47%	31	13.25%	51	21.79%	234
NFPA reporting	4,965	6.23%	36,595	46.93%	15,745	19.76%	8,145	10.22%	14,250	17.88%	79,700

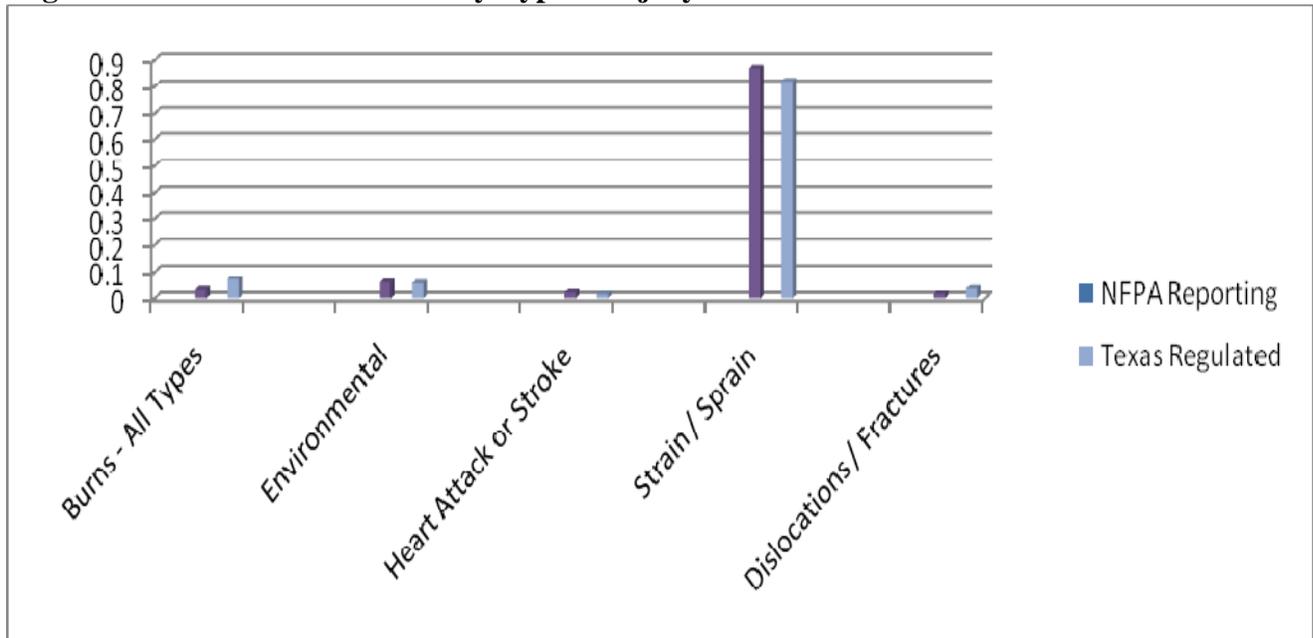
- “Commission-regulated departments – fireground operations” include fire suppression and rescue (fire-related) incidents.
- “Commission-regulated departments - non-fire emergency operations” include rescue (non-fire-related) incidents and hazardous materials incidents.
- “Commission-regulated departments - other duties” include fire prevention, station duties, and wellness/fitness.

The information utilized in developing a comparison between the Texas regulated departments and the National Fire Protection Association also allows a comparison based on type of injury. This information reveals:

Table 8. Commission vs. NFPA by Type of Injury

Type of Injury	Texas Regulated		NFPA Reporting	
	Count	Percentage	Count	Percentage
Burns - All Types	11	3.61%	3,725	7.23%
Environmental	19	6.23%	2,890	5.62%
Heart Attack or Stroke	7	2.3%	770	1.50%
Strain / Sprain	262	72.13%	42,200	82.00%
Dislocations / Fractures	6	1.97%	1,880	3.65%
Total	305		51,465	

Figure 8. Commission vs. NFPA by Type of Injury



Although the number of comparable injuries varies greatly, the data reflects the same trends and reveals only minor difference which, given the available data, would be found to be statistically insignificant. As in the Texas regulated departments, the leading type of injuries in the NFPA reporting departments is found under the category of “Strain / Sprain.” The Texas regulated departments experienced these types of injuries 72.13% of the times while the NFPA reporting departments experience these types of injuries 82.0% of the time.

Investigations

During this initial reporting period, the Commission's compliance section conducted several follow-up telephone calls for clarification, correction of information submitted (i.e. gender selection varied from narrative statement's gender), and response to inquiries from departments concerning the process and procedures for reporting injuries.

Commission compliance officers formally investigated one reported injury. The injury involved a fire fighter who received burns to the hands while performing fire suppression duties at a residential occupancy. The fire suppression activities occurred at a residential occupancy (approximately 20,000 square feet) that was protected by a fire sprinkler system in the living areas but not in the attic spaces. The fire leading to the injuries was located in one of the attic spaces. In investigating this event, the following information was discovered:

1. The individual was involved in fire suppression activities which mainly consisted of looking for fire extension into the attic spaces of a single-family residence.
2. The individual had available all the appropriate personal protective equipment (PPE) necessary for fire suppression activities in accordance with the policies and procedures of the regulated department and in compliance with commission rules and regulations.
4. The individual was utilizing a properly maintained and donned self-contained breathing apparatus. The individual was in the process of re-donning PPE based on the discovery of a fire in one of the attic spaces but had not re-donned all of the components – gloves were the last item to be donned and this had not be done prior to the individual being exposed to the elements of the fire (heat and possible fire components).
5. The individuals involved in this event did maintain team integrity.
6. The individuals in this event were able to self rescue by evacuating the structure via an interior stairway.

The individual involved in this incident received second-degree burns to the hands due to exposure to fire elements. The individual was transported to the local burn unit where treatment was provided. The individual was later released from the hospital after treatment and was not required to spend time in the hospital beyond the initial treatment period. The individual was cleared to return to work with restriction on the following day. The individual did not return to full duty for 27 days from the initial date of the injury.

In addition to this formal investigation, another event would have warranted similar action but due to the lapse time between the event and the report being received by the Commission, an informal telephone investigation was conducted. This event also pertained to fire suppression activities, this time in a commercial occupancy. The fire suppression crew responded to a reported "smoking printer" but arrived to find a small fire involving the office equipment.

Per the telephone investigation, the following information can be reported:

1. The fire suppression crew entered the occupancy as a team and maintained team integrity.
2. The fire suppression crew did not don SCBA prior to entry into a potentially hazardous environment
3. The fire suppression crew was able to self rescue from the potentially hazardous environment.

Two (2) fire fighters were transported to the hospital for the treatment of smoke inhalation. One (1) of the fire fighters has returned to work without restriction missing only one shift. The other individual has not returned to work as of this report.

The department has addressed all issues internally. Based on the telephone investigation, no further action was warranted by the Commission at this time.

Definition and Terms

Activity: The assigned duty or task at the time of injury that the individual was performing.

Body Location of Injury: The anatomical or physiological location or body part that sustained an injury or insult.

FDID: Fire department identification number, a unique number assigned by the commission through an automated process to identify each department and data associate with said department.

Firefighter: Individual and Department On-line (FIDO) system: FIDO is an official, web-based, software application provided by the Texas Commission on Fire Protection (TCFP). This application is implemented as per [§419.012 of the Texas Government Code](#), which mandates TCFP to provide interactivity via the Internet for regulated entities and individuals.

Level 1- Primary Account Owner/Account Owner: a department employee with full rights who can do anything to manage the department's records or contacts with TCFP. At least one (1) person must have Level 1 rights and be designated as the Primary Account Owner.

Level 2: A department employee with Level 2 rights can do anything to manage the department's records with TCFP **except** assigning / removing department administrators. This role will typically be for smaller departments where the same person(s) is doing the two (2) roles listed under Level 3 and Level 4 below.

Level 3: A department employee with Level 3 rights can do anything that is considered department administration. Examples are: Change of duty or removal from appointment, generating renewal statements, etc. This role will typically be for larger departments.

Level 4: A department employee with Level 4 rights can do the functions with the commission that pertain to certain reporting requirements. This role will typically be for larger departments and would not include the ability to submit change of duty or removal from appointment, generating renewal statements, etc. This role would be to submit things like the "Injury Report."

Line of Duty Deaths (LODD): An event that leads to the loss of life while the individual is performing an assigned duty or preparing to perform an assigned duty associated with the fire service or associated duties of the fire service.

National Fire Protection Association (NFPA): The mission of the international nonprofit NFPA, established in 1896, is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. It is the world's leading advocate of fire prevention and an authoritative source on public safety, NFPA develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks.

Severity: The level of damage or insult sustained by the individual as a result of an injury. The severity is divided into the following categories on the injury report:

Minor: An injury resulting in no loss of time or deviation from the individual's original duty assignment.

Serious: An injury resulting in loss of time or deviation from the individual's original duty assignment due to their ability to perform the original assignment.

Critical: An injury resulting in loss of time or deviation from the individual's original duty assignment and treatment in a medical facility other than seeking treatment and release.

Fatal: An injury resulting in loss of life.

State Fire Marshal's Office (SFMO): Since 1997 the State Fire Marshal's Office (SFMO) has been part of the Texas Department of Insurance as directed by SB 371, 75th Legislature. Mission: To reduce loss of life and property due to fire and related hazards.

Through the efforts of four divisions, Prevention and Outreach, Fire Safety Inspections, Licensing and Enforcement, and Fire Investigations, and in collaboration with private sector entities, the regulated fire service industry, the Texas fire service, local and state agencies, and the public, the SFMO seeks to create communities well prepared to protect themselves against fire.

State Firemen's and Fire Marshals' Association (SFFMA): The SFFMA is one of the largest trade associations in Texas. The 134 year old organization is the oldest and the largest fire service association in the state. Membership includes 1200 fire departments, 21,000+ individual members, and 80 industrial fire brigades. The cornerstone of the organization is the Certification Program for volunteer firefighters, which encourages training, education and certification for all volunteers. The SFFMA founded and now supports and sponsors the world's largest fire training school, at Texas A&M University, providing instructors and professional service on the TEEEX Fire School's Advisory Board. In addition, the association is extremely active in its legislative efforts that affect the fire service of Texas.

Texas Commission on Fire Protection (TCFP): The Texas Commission on Fire Protection is a Texas State regulatory agency charged with the statutory authority and role to serve Texas fire departments by:

- providing resources to Texas fire departments with critical equipment and training needs, and
- establishing and enforcing standards for fire protection personnel training, protective clothing, and self-contained breathing apparatus.

Type of Injury: The selected options detailing the nature of the injury and its source or root cause which inflicted bodily damage to the individual.

Statistics and Trends in Fire Fighter Injuries **(Future Inclusion)**

Recommendations **(Commission Input Required)**