

How the United States is reducing its firefighter fatalities

Gareth Burton outlines some of the initiatives the US is taking to reduce its firefighter deaths

Abstract

On average one hundred firefighters lose their lives in the line of duty each year in the United States. Review of the data indicates that the number of firefighter deaths in recent years is less than the number of firefighter fatalities in the late 1980s. However when the data is considered with regard to the number of emergency calls, it is found that the number of firefighter deaths per call has increased. In 2004, a goal was established at the Life Safety Summit to reduce firefighter deaths within the United States by twenty-five percent within five years and by fifty percent within ten years. This article discusses initiatives that have been implemented in an attempt to bring about the desired reduction.

Introduction

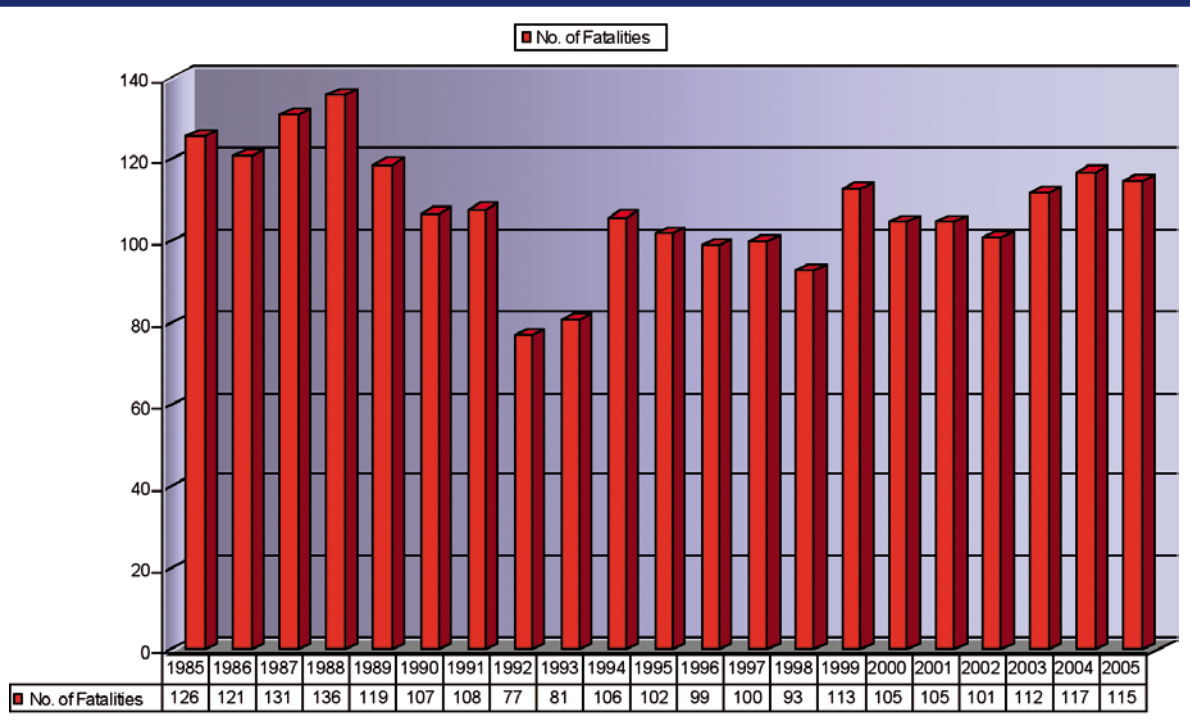
Within the United States, there are an estimated 1.1 million firefighters involved in the response to fire and associated emergencies. Of these firefighters, approximately 313,300 are classified as career personnel with the remaining 823,650 firefighters performing their duties on a volunteer basis (Karter, 2006). Out of the total number of firefighters, approximately one hundred individuals are killed and tens of thousands are injured while on duty each year. After reviewing the causes of incidents that resulted in firefighter fatalities in recent years, and examining the demographics of the data, this article outlines some of the initiatives being implemented in the United States to reduce firefighter fatalities.

Firefighter Fatality Statistics

As illustrated in Figure 1, the number of annual firefighter fatalities in recent years has been reduced slightly from that which was occurring in the late 1980s (Firefighter Fatalities, USFA, 2006).

Figure 1: Firefighter Fatalities in the United States 1985–2005 (Firefighter Fatalities, USFA, 2006).

Note: Data does not include 344 fatalities as a result of the events of 11 September 2001.





US Firefighters using an open fog hose pattern to offer personnel protection

As shown in Figure 2 (Firefighter Fatalities, USFA, 2006), when the data is analysed with respect to the call volume being completed by fire departments, the results indicate that the number of firefighter fatalities per 100,000 incidents has risen over recent years.

The factors contributing to fatal incidents involving firefighters and the associated demographics of those that died in the 1990s are discussed below (USFA, 2002).

Nature of Fatal Injury

Heart attacks, which were the leading cause of fatal injuries to firefighters, were responsible for forty-four percent of the incidents. Trauma resulted in twenty-seven percent of firefighter fatalities with asphyxia and burns resulting in a further twenty percent of the incidents.

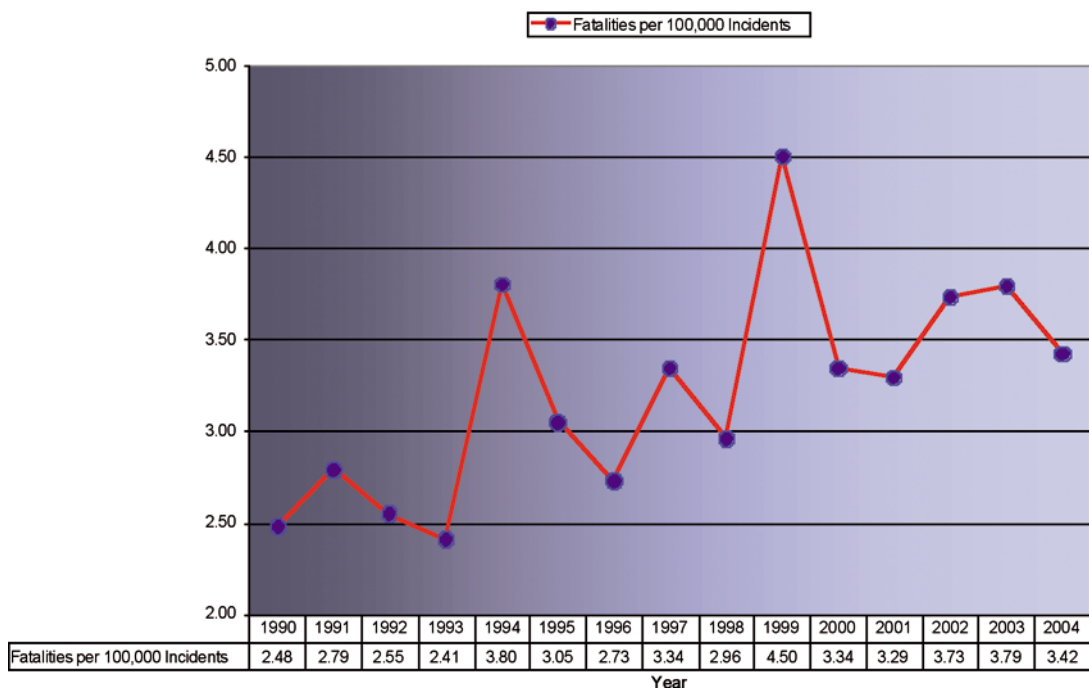
As could be expected, the age of a firefighter directly affects the likelihood of a fatality as a result of a heart attack. The data indicates that firefighters under the age of thirty-five years are more likely to be killed by traumatic injuries than they are to die of medical causes such as a heart attack.

Age

The firefighter's age at the time of death is represented in Figure 3. As noted, approximately sixty percent of firefighter fatalities were over the age of forty years when they were killed, with one-third of fatalities over the age of fifty years. Nationally, firefighters over the age of forty comprise forty-six percent of the fire service, with those over fifty years accounting for only sixteen percent of firefighters. Although older firefighters possess a wealth of invaluable knowledge and experience, they are killed while on duty at a rate disproportionate to their representation in the fire service.

Figure 2: Firefighter Fatalities per 100,000 Incidents in the United States 1990-2004 (Firefighter Fatalities, USFA, 2006).

Note: Data does not include 344 fatalities as a result of the events of 11 September 2001.



Affiliation

Full-time career personnel accounted for thirty-three percent of firefighter fatalities, volunteers accounted for fifty-seven percent with the remaining being composed of contract workers, military and prison personnel. The fatal incidents involving career personnel are at a disproportionately higher rate than their twenty-eight percent representation within the fire service.

Type of Duty

Figure 4 illustrates the type of duty being completed at the time of the fatal incident. Direct fire extinguishing activities, responding to an incident and supporting suppression activities accounted for sixty percent of all fatalities.

Motor Vehicle Collisions

Since 1984, motor vehicle collisions have accounted for over twenty percent of firefighter fatalities each year. Approximately one quarter of these incidents have occurred as volunteer firefighters responded to emergency calls in their personally owned vehicles.

Training

In the last decade, approximately six percent of firefighter fatalities occurred during training activities. Over time, the leading type of training activity resulting in fatalities has remained physical fitness, followed by equipment/apparatus drills and live fire exercises.

Figure 3: Firefighter Age at time of Fatal Incident 1990–2000 (USFA, 2002).

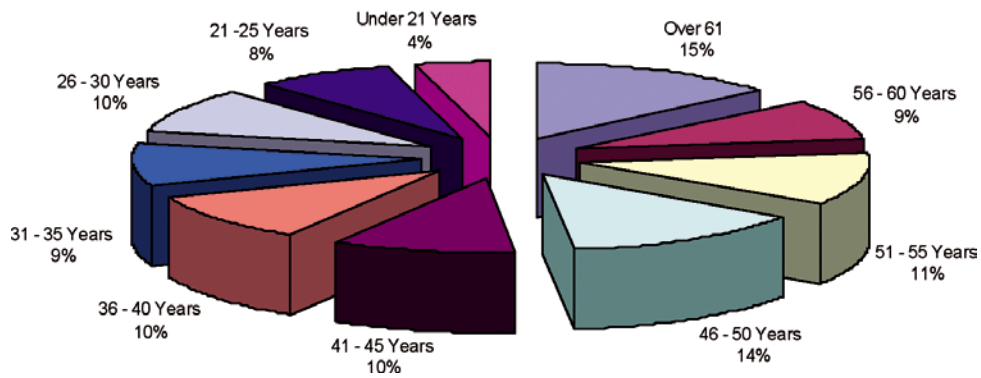
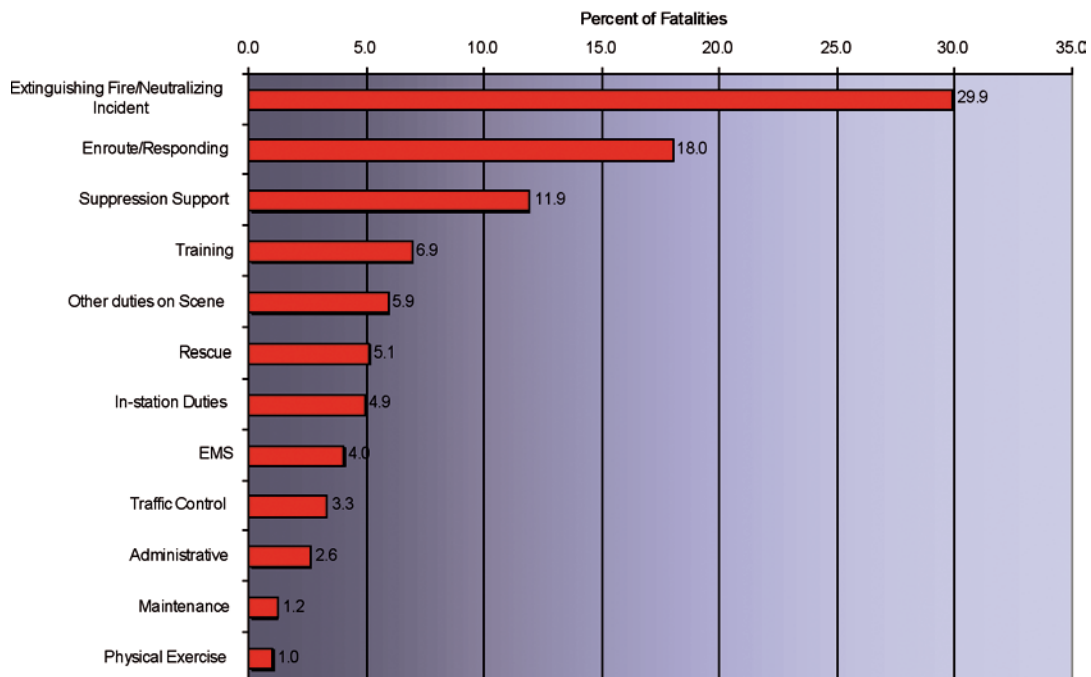


Figure 4: Duty being performed at time of fatal incident 1990–2000 (USFA, 2002).





US Firefighters aggressively attacking a natural gas fuelled fire

Firefighter Fatality Reduction Initiatives

Recent initiatives that have been developed within the United States to reduce the number of fatal firefighter incidents include:

1. The Sixteen Life Safety Initiatives

The National Fallen Firefighters Foundation (NFFF) organised the Firefighter Life Safety Summit held in 2004 (Everyone Goes Home, 2006). The Summit was convened to bring together representatives from fire service organisations to determine how to reduce firefighter deaths in the United States.

The Summit produced an agenda of sixteen initiatives as a means to reach the established milestones of reducing firefighter fatalities by twenty-five percent in five years and by fifty percent in ten years. The initiatives established as a result of the Summit, which have been widely promoted and distributed within the United States fire service are:

1. Define and advocate the need for a cultural change within the fire service relating to safety, incorporating leadership, management, supervision, accountability and personal responsibility.
2. Enhance the personal and organisational accountability for health and safety throughout the fire service.
3. Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical and planning responsibilities.
4. Empower all firefighters to stop unsafe practices.
5. Develop and implement national standards for training, qualifications, and certification (including regular recertification).
6. Develop and implement national medical and physical fitness standards.
7. Create a national research agenda and data collection system that relates to the initiatives.
8. Utilise available technology wherever it can produce higher levels of health and safety.
9. Thoroughly investigate all firefighter fatalities, injuries, and near misses.
10. Ensure grant programs support the implementation of safe practices and/or mandate safe practices as an eligibility requirement.
11. Develop and champion national standards for emergency response policies and procedures.
12. Develop and champion national protocols for response to violent incidents.
13. Provide firefighters and their family's access to counseling and psychological support.
14. Provide public education more resources and champion it as a critical fire and life safety program.
15. Strengthen advocacy for the enforcement of codes and the installation of home fire sprinklers.
16. Make safety a primary consideration in the design of apparatus and equipment.

2. Health Initiatives

As noted above, heart attacks were the leading cause of fatal injuries to firefighters in the period 1990 to 2000, responsible for forty-four percent of the incidents. In response to this trend, the following health related programs have been implemented:

- *Healthy Heart Program*. This program, funded by the Federal Emergency Management Agency (FEMA) was developed by the National Volunteer Fire Council (NVFC) to lower the incidence of cardiac-related problems in the fire service by educating firefighters and their families about fitness, nutrition and heart disease. Details are available online at: <http://www.healthy-firefighter.org>.
- *Fired Up for Fitness*. This online system, which is a component of the Healthy Heart Program, permits firefighters to log their daily fitness activities and chart their progress over time. Rewards are offered to firefighters that achieve milestones in the program.
- *Health and Wellness Guide for the Volunteer Fire Service* (USFA, 2004). The guide provides information on how volunteer fire departments can enhance compliance with appropriate National Fire Protection Association (NFPA) firefighter health and safety standards such as NFPA Standard 1583 – *Health Related Fitness Programs for Fire Fighters*.
- *Emergency Incident Rehabilitation*. The United States Fire Academy and the International Association of Fire Fighters (IAFF) are currently engaged in a study related to emergency incident rehabilitation. It is anticipated that a document providing up-to-date firefighter health and safety standards from the Occupational Safety and Health Administration (OSHA), the National Fire Protection Association (NFPA), and others will be published.

3. Emergency Vehicle Safety Initiatives

Vehicle crashes are the second leading cause of on-duty firefighter deaths. As is often noted, these crashes undermine the mission of all firefighters to arrive first, and then assist individuals needing emergency help. Initiatives to address crashes of emergency vehicles include:

- The Emergency Vehicle Safety Initiative, a jointly sponsored project of the United States Fire Administration (USFA) and Department of Transportation (DOT) (Emergency Vehicle Safety Initiative, USFA). The project addresses issues including seatbelt use, intersection safety, emergency vehicle safety design, driver selection and training. Components of this initiative include:
 - *Guide to Model Policies and Procedures for Emergency Vehicle Safety* (Guide to Model Policies, IAFC). This web-based educational program developed by the United States Fire

Administration (USFA) and the International Association of Fire Chiefs (IAFC) is aimed at reducing the impact of vehicle related incidents on the fire service and the communities they protect. The guide provides in-depth information for developing policies and procedures required to support the safe and effective operation of emergency vehicles, as well as privately-owned vehicles.

- *Improving Apparatus Response and Roadway Operations Safety in the Career Fire Service* (Emergency Vehicle Safety Program, IAFF). This comprehensive program developed by the International Association of Fire Fighters (IAFF) discusses critical emergency vehicle safety issues such as intersection safety, roadway operations on crowded interstates and local roads and driver training.
- *Emergency Vehicle Safe Operations for Volunteer and Small Combination Emergency Service Organizations* (Emergency Vehicle Safe Operations, NVFC). This in-depth web-based program developed by the National Volunteer Fire Council (NVFC) includes an emergency vehicle safety best practices self-assessment, example standard operating guidelines, and behavioral motivation techniques to enhance emergency vehicle safety.
- *Research on Non-Blinding Emergency Vehicle Warning Lighting Systems*. The United States Fire Administration (USFA) is working with the Society of Automotive Engineers (SAE) on an effort to study the effect and effective mitigation of the disorientation of motorists caused by emergency warning lights, including the effects on normal, impaired and drowsy drivers (Study of Emergency Vehicle Warning Lighting, USFA). Various lighting systems are being studied including incandescent, halogen, strobe and light-emitting diode (LED) systems.
- *Safe Operation of Fire Tankers Report* (Safe Operation of Fire Tankers, FEMA). This report published as a result of the examination of crashes involving fire tankers provides strategies, techniques, and technologies to mitigate fire tanker crashes.

4. Accident Reporting/Lessons Learned

It is estimated by the National Fire Protection Association (NFPA) that for every 100 incidents of injury, one million “close call” incidents go unreported. In an attempt to learn from the “close calls” and to prevent injuries and fatalities, a near-miss accident report system, similar to that utilised within the aviation industry, has been implemented in the United States fire service.

Accident reporting and distribution of information is available at:

- *Firefighternearmiss.com*. This website is promoted as a voluntary, confidential, non-punitive and secure reporting system. The program has a goal of improving firefighter safety through sharing lessons learned and combining data than can be used for the further analysis of fire firefighter injury-producing behaviors.
- *Firefighterclosecalls.com*. Information on the program is available on the internet at: <http://www.firefighterclosecalls.com>.
- *Lessons Learned Information Sharing*. This website contains a network of lessons learned and best practices for emergency response providers and homeland security officials. The information is designed to facilitate efforts to prevent, prepare for and respond to acts of terrorism and other incidents across all disciplines and communities throughout the United States. Information on the program is available on the internet at: www.llis.gov.



Fire suppression activities at a multi-million dollar residence

5. Code Development

Codes and standards which influence firefighter safety continue to be developed and refined. Examples of standards produced by the National Fire Protection Association (NFPA) which have a direct influence on firefighter safety are:

- NFPA 1002, *Standard on Fire Apparatus Driver/Operator Professional Qualifications* which identifies the minimum job performance requirements for firefighters who drive and operate fire apparatus.
- NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments* which outlines procedures for fire departments to follow in screening candidate firefighters and handling health problems that arise during a firefighter's service career.
- NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program* which outlines the safety procedures for firefighters involved in rescue, fire suppression, and related activities.
- NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Fighters* which includes information relating to firefighter fitness assessments.

6. Fire Department Training

Due to the increased national attention, the safety culture has become more ingrained in fire department training operations in recent years. Training classes to assist firefighters in recognising hazardous, potentially life threatening situations and the appropriate actions to take have become common in both recruit and on-going training classes. Examples are training events providing firefighters with knowledge and skills to initiate a "mayday" situation and use Rapid Intervention Team concepts.

7. Technological Developments

Advancements in the equipment and technology that firefighters are utilising continue to be made. Examples in this area include:

- Self contained Breathing Apparatus including integrated Personal Alert Safety Systems (PASS) system
- Firefighter clothing.
- Developments in fire apparatus including:
 - Independent suspension systems
 - Occupant protection including airbags and seatbelt pre-tensioners

Summary

Despite the technological advancements in the past decades, over one hundred firefighters are still losing their lives in the line of duty each year in the United States. Recent initiatives within the United States focus on the root causes of these incidents including firefighter health, the safe operation of emergency vehicles and an increased awareness to perform operations in a safe manner.

It is anticipated that the increased awareness on firefighter fatality incidents, brought about by the promotion of the sixteen life safety initiatives and the new methods of tracking near-miss events will have a significant effect on reducing firefighter fatalities. The goals established at the 2004 Life Safety Summit, to reduce firefighter fatalities by twenty five percent within five years and by fifty percent within ten years remain targets for the United States fire service to achieve.

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Photographs by Todd Holder

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