Fatalities to Law Enforcement Officers and Firefighters, 1992-97

Police and firefighters face unique job hazards. They are more likely than other workers to die violently–from gunshots, vehicle accidents, and fire related incidents. Their risk of suffering a fatal incident is three times greater than for all workers.

CINDY CLARKE
MARK J. ZAK

In every community in the United States, law enforcement personnel and firefighters regularly put their lives in harm's way to protect the public. The risk of a fatal incident for law enforcement personnel and firefighters is three times greater than for all workers.[1] During 1992-97, over 1,100 law enforcement personnel and firefighters were killed in the line of duty, according to the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI). Most of the 887 police fatalities occurred during the pursuit of criminals—some were shot and others were fatally injured in highway crashes. Likewise, the 259 firefighters killed on the job often died fighting fires and conducting rescue operations.

Law Enforcement Personnel

Law enforcement personnel, such as police officers, detectives, and special agents are responsible for enforcing laws and regulations designed to protect life and property. They are an integral part of the criminal justice system, and daily life would be chaotic without their services. In 1997, over one million violent crimes were reported in the United States, and about 700,000 arrests were made by police officers. [2]

Police officers spend much of their time patrolling designated areas to preserve the peace and prevent crime. When the law is violated, they perform a range of duties from apprehending criminals to issuing traffic citations. Detectives and special agents who work as plainclothes investigators gather facts, collect evidence for criminal cases, and participate in raids or arrests. Other special agents employed by Federal Government agencies conduct complex criminal investigations, carry out surveillance of criminals, infiltrate illicit drug organizations using undercover techniques, and apprehend violators of Federal laws. Correctional officers, who are employed in local jails and Federal and State prisons, maintain internal security and observe inmate conduct to prevent disturbances and escapes. They are often locked in a cell-block with as many as 100 inmates.

Good training, teamwork, and special equipment such as bullet-resistant vests and helmets minimize the number of injuries and fatalities to law en-

Cindy Clarke and Mark J. Zak are economists in the Office of Safety, Health and Working Conditions, Bureau of Labor Statistics.
Telephone: (202) 606-6175
E-mail: cfoistaff@bls.gov

forcement personnel. Nevertheless, the risks associated with pursuing speeding or fleeing motorists, apprehending criminals, and dealing with public disorders often are life threatening for the officer. As a result, fatalities among law enforcement personnel are high, with homicide being the leading cause followed by highway crashes.[3]

Fatal and nonfatal injuries by event or exposure

As the following text table shows, over the period 1992-97, homicides and highway crashes were the two major events contributing to 75 percent of the fatalities for law enforcement personnel.[4] Nationally, homicides accounted for one-half of the fatalities to law enforcement personnel, while highway crashes accounted for about one-third.

Text table 1. **Fatalities incurred by law enforcement personnel by event or exposure, 1992-97**

Event or exposure	Number	Percent
Total	887	100
Assaults and violent acts	449	51
Homicides	403	45
Transportation incidents	384	43
Highway	272	31
Falls	19	2
Exposure to harmful substances or environments	15	2
Contact with objects and equipment	12	1
Other	8	1

Law enforcement personnel must always be on guard against the risk of assault while conducting drug raids, responding to calls reporting robberies or other felonies, serving arrest warrants, issuing traffic summonses, and answering domestic disputes. Nine out of 10 homicides to law enforcement personnel resulted from a shooting. Stabbings, beatings, and other violent acts, accounted for about 10 percent of the homicides.

In addition to being on guard against assaults, police officers must respond to calls as quickly as possible. Quick response often requires traveling at high rates of speed in police cruisers to get to the scene of the crime or emergency. Over half of the highway incidents involved collisions between two vehicles, mostly moving in opposite directions or through intersections. One-third of the highway incidents involved vehicles that ran off the road or overturned without colliding with another vehicle.

Directing traffic and issuing traffic summonses exposes police officers to the dangers of working near speeding motor vehicles. About 18 percent of the fatal transportation incidents were due to officers being struck by vehicles either in the road or on the side of the roadway.

During search and rescue operations and prisoner transport, law enforcement personnel may use aircraft, including helicopters. Thirty law enforcement personnel lost their lives in aircraft crashes in the period 1992-97. Half of these crashes involved helicopters.

Text table 2 lists the six States with the highest number of fatalities for law enforcement personnel during the period 1992-97. For comparison, nonfatal injuries resulting from acts of violence and involving days away from work to recuperate are shown for California, New York, and North Carolina for the years 1992-96.[5]

The leading event for nonfatal injuries involving days away from work to law enforcement personnel in California, New York, and North Carolina were injuries from assaults. In these States, the fatal assaults were disproportionately higher than the nonfatal assaults to law enforcement personnel. Whereas homicides accounted for almost half of the fatalities in each State, nonfatal assaults accounted for about one-fifth of the nonfatal injuries in California and North Carolina, and one-fourth in New York. In all States, fatalities to law enforcement personnel were divided mainly between homicides and transportation incidents. In California, New York, and North Carolina, nonfatal injuries with days away from work were divided among several types of injury events or exposures, including contact with objects or equipment, transportation incidents, falls on the same level, and overexertion.

The urban setting

In the United States, the majority of fatalities to law enforcement personnel occurred in urban areas.[6] Of the cases that were reported, three-fourths occurred in urban areas and one-fourth in rural areas. In urban areas, half of the fatalities to law enforcement officers were due to homicides whereas about one-third were due to highway crashes. Two-thirds of the 66 fatalities due to being struck by vehicles occurred in urban areas. In rural areas, fatalities to law enforcement personnel were divided evenly between highway crashes and homicides, with each accounting for about 40 percent of the fatalities.

Text table 2. **Fatal and nonfatal occupational injuries to law enforcement personnel by selected State and leading event or exposure, 1992-97**

State	1992-97		1992-96	
	Total fatalities (Number)	Leading fatal event (Percent)	Total nonfatal injuries involving days away from work (Number)	Leading event (Percent)
Total	887			
California	100	Homicides (49)	44,255	Assaults (17)
Texas	75	Highway crashes (38)	—	—
Florida	50	Highway crashes (36)	—	—
New York	42	Homicides (48)	75,670	Assaults (26)
Georgia	42	Highway crashes (40)	—	—
North Carolina	33	Homicides (48)	5,258	Assaults (19)

Fatality rates and index of relative risk

Of the 1 million police officers employed, about 150 die from injuries on the job each year, on average, accounting for about 3 percent of all fatal work injuries. Because the number of workers in the group and the time spent on the job affect fatality counts, fatality rates are used to evaluate workers' risk of incurring a fatal work injury. Fatality rates are standardized. They usually are expressed as the number of fatalities per 100,000 workers so they can be used to compare fatality risk among various worker groups.[7] Another statistic used to assess the risk of workplace fatalities that a particular occupation faces is the index of relative risk.[8] This index is calculated as the ratio of the workplace fatality rate for a particular group compared to the national workplace fatality rate for all workers.

The average rate of fatal workplace injuries to law enforcement personnel was about 14 fatalities per 100,000 employed workers for the period 1992-97, compared to the national rate of 5 fatalities per 100,000 employed workers in all industries. The rate remained steady over the 6-year period, except for 1995 and 1996. In 1995, 14 police officers were killed in the Oklahoma City bombing, which helped to increase the rate to almost 17 fatalities per 100,000 employed. In 1996, the rate dipped to a low of about 11 fatalities per 100,000.

Text table 3 shows that the index of relative risk for law enforcement personnel is, on average, about three times higher than for the average worker.

Text table 3. **Number, rate, and index of relative risk of fatal occupational injuries to law enforcement personnel, 1992-97**

Year	Number	Rate	Index of relative risk
1992-97	887	14.2	2.8
1992	141	15.0	2.9
1993	151	14.8	2.8
1994	149	13.8	2.6
1995	176	16.8	3.4
1996	114	10.8	2.2
1997	156	14.0	2.9

NOTE: The rate is expressed as the number of fatalities per 100,000 employed workers.

Firefighters

Firefighters frequently are the first emergency response team at the scene of a vehicle crash, fire, flood, earthquake, or act of terrorism.[9] Every year, fires and other emergencies take thousands of lives and destroy billions of dollars worth of property. About 2 million fires are reported each year in the United States, and fire departments in the United States respond to a fire every 18 seconds.[10]

Firefighters perform many duties to protect lives and minimize property destruction, and each situation they respond to is unique. While battling blazing building fires, their duties may include connecting hose lines to hydrants, operating pumps, or positioning ladders; but they must also rescue victims, administer medical aid, and salvage the contents of buildings. All the while, they are subject to many of the same dangers as the victims, which can include being burned, asphyxiated from noxious gasses, or struck by collapsing material. However, most wear protective clothing and many carry oxygen to mitigate some of these hazards.

In addition to fighting building fires, firefighters are called on to control and extinguish forest fires. These firefighters pilot aircraft to locate forest fires or use chain saws and axes to create fire trails, among other duties. Forest fires are especially dangerous because they may grow to enormous size and can surround firefighters who are trying to put them out.

Fires are not the only calls firefighters are responsible for answering; often they are summoned to administer emergency medical aid to victims of minor accidents in the household or in their vehicles. Firefighters may also be called on for rescue operations during natural disasters such as floods, hurricanes, and tornadoes. In 1997, there were over 10 million emergency medical calls made to fire departments in the United States.[11] Because lives may be at stake, firefighters often travel at high rates of speed in their vehicles, exposing them to the chance of collision.

Fatal and nonfatal injuries by event or exposure

During 1992-97, the two most frequent events leading to firefighter fatalities were fires and explosions, and highway crashes.[12] Text table 4 shows that fires and explosions accounted for over 40 percent of all fatalities to firefighters, and highway crashes accounted for about 20 percent. About two-thirds of the fatalities due to fires and explosions occurred while firefighters fought building or structure fires. Forest or brush fires accounted for about one-quarter of the fatalities due to fires.

Despite sirens, flashing lights, and brightly colored vehicles, many firefighters lost their lives in fatal motor vehicle crashes. About half of the fatal vehicle crashes were due to collisions between vehicles; most of the

Text table 4. **Fatal occupational injuries by event or exposure, 1992-97**

Event or exposure	Number	Percent
Total	259	100
Fires and explosions	108	42
Transportation incidents	90	35
Highway	57	22
Exposure to harmful substances or environments	24	9
Contact with objects and equipment	13	5
Falls	9	4
Homicides	9	4
Other	6	2

Text table 5. **Fatal and nonfatal occupational injuries to firefighters by selected State and leading event or exposure, 1992-97**

State	1992-97		1992-96	
	Total fatalities (Number)	Leading fatal event (Percent)	Total nonfatal injuries (Number)	Leading nonfatal event (Percent)
Total	259			
New York	29	Fires and explosions (59)	36,467	Contact with object or equipment (19)
Pennsylvania	19	Fires and explosions (58)	—	—
Colorado	16	Fires and explosions (94)	—	—
Texas	14	Highway crashes (35)	—	—
California	13	Fires and explosions (46)	22,282	Overexertion (23)
Georgia	11	Fires and explosions (45)	—	—

other fatalities occurred because the vehicles either overturned or ran off the roadway striking an object. Sixteen firefighters were killed after being struck by vehicles while either directing traffic or performing roadside emergency rescues.

For comparison to fatalities, text table 5 shows nonfatal injuries to firefighters in California and New York for 1992-96.[13] In these two States, contact with objects (or equipment) and overexertion, respectively, were the leading events causing nonfatal injuries involving days away from work for 1992-96. Although highway crashes were either the leading or second leading cause of fatalities, nonfatal transportation incidents accounted for 2 percent or less of the injuries in New York and California. In New York, other events that led to nonfatal injuries included fires or explosions (19 percent), falls on the same level (14 percent), exposure to harmful substances (12 percent), and overexertion (11 percent). In California, 11 percent of the nonfatal injuries were due to contact with objects or equipment, and only 6 percent were due to fires and explosions.

Fatality rates, and index of relative risk

Each year, on average, about 50 firefighters die from injuries on the job, accounting for about 1 percent of all fatal work injuries. Although the total number of fatalities to firefighters is relatively small, the average workplace fatality rate for 1992-97 was about 17 firefighters per 100,000 employed. This compares to 5 fatalities per 100,000 employed for all workers.[14] The index of relative risk shows that firefighters were about three times as likely to be fatally injured on the job as the average worker.[15] (See text table 6.) In 1994, the fatality rate was significantly higher than in other years, mainly because of a single forest fire in Colorado that claimed the lives of 14 firefighters. Firefighters usually work in teams and, consequently, there is a high propensity for multiple fatalities from a single fire event. For the period 1992-97, there were over 20 fire events that involved multiple fatalities.

Fatality risk by occupation

Although occupations such as timber cutter, fisher, seaman, and aircraft pilot have the highest fatality rates, they are found in relatively few parts of the United States. (See table 1.) Firefighters and law enforcement personnel, on the other hand, are found in every community in the United States. Although the dangers are quite different, both groups experience high fatality rates and risks.

Fatality counts are important in evaluating hazardous jobs because the number of workers killed indicates the magnitude of a safety problem for a group of workers. The 15 occupations with the highest number of fatalities for 1997 are listed in table 1. Combined, these 15 occupations accounted for almost half of the job-related fatalities in 1997. But fatality counts by themselves do not indicate the relative risks of any particular job. Fatality *rates* depict a worker's risk of incurring a fatal work injury within the employment group, and rates can be used for comparing risk among varying groups of workers.

Conclusion

Law enforcement and fire fighting are inherently dangerous occupations. Workers in both occupations must be available 24 hours a day, 7 days a week to protect the public from criminals, fires, and natural disasters. While the two occupations include very different duties, they both must respond to their respective emergency situations as quickly as possible. For this reason, highway crashes are prominent in the workplace fatality record of both occupations. ■

Text table 6. **Number, rate, and index of relative risk of fatal occupational injuries to firefighters by year, 1992-97**

Year	Number	Rate	Index of relative risk
1992-1997	259	16.5	3.3
1992	36	14.9	2.9
1993	40	16.4	3.2
1994	56	21.5	4.1
1995	41	14.3	2.9
1996	37	13.7	2.9
1997	49	18.3	3.9

Table 1. **Number, rate, and index of relative risk for fatal occupational injuries in 15 high-risk occupations, 1997**

Occupation[1]	Number of fatalities	Employment[2] (in thousands)	Rate per 100,000 employed[3]	Index of Relative risk[4]
All occupations	6,218	130,810	4.7	1.0
Timber cutting and logging occupations	121	94	128.7	27.4
Fishers	58	47	123.4	26.3
Water transportation	49	52	94.2	20.0
Aircraft pilots	100	120	83.3	17.7
Extractive occupations	75	145	51.7	11.0
Construction laborers	333	811	41.1	8.7
Taxicab drivers	100	248	40.3	8.6
Truckdrivers	857	3,075	27.9	5.9
Roofers	55	200	27.5	5.9
Farming occupations	615	2,177	27.5	5.9
Firefighters	49	268	18.3	3.9
Laborers, except construction	208	1,323	15.6	3.3
Material moving equipment operators	169	1,125	15.0	3.2
Police and detectives	156	1,113	14.0	3.0
Electricians	94	774	12.1	2.6

[1] Based on the 1990 Occupational Classification System developed by the Bureau of the Census.

[2] The employment figures, except for military, are annual average estimates of employed civilians 16 years of age and older, from the Current Population Survey (CPS), 1997. The resident military figure, derived from resident and civilian population data from the Bureau of the Census, was added to the CPS employment total.

[3] The rate represents the number of fatal occupational injuries per 100,000 employed workers and was calculated as follows: (N/W) x 100,000, where N = the number of fatally injured workers, age 16 and older, and W = the number of employed workers, as described in the previous footnote. There were 21 fatally injured workers under the age of 16 years who were not included in the rate calculations to maintain consistency with the CPS employment figures.

[4] Index of relative risk = Fatality rate for a given occupation/Fatality rate for all workers.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries

---

[1] Data on fatal work injuries are from the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI). CFOI data cover all fatal work injuries. This program, which has collected occupational fatality data nationwide since 1992, uses diverse data sources to identify, verify, and profile fatal work injuries. Information about each workplace fatality (industry and other worker characteristics, equipment involved, and circumstances of the event) is obtained by cross-referencing source documents such as death certificates, workers' compensation records, and reports to Federal and State agencies. This method assures counts are as complete and accurate as possible.

[2] *Criminal Victimization 1997: Changes 1996-97 with Trends 1993-97 NCJ 173385* (U.S. Department of Justice, Bureau of Justice Statistics, December 1998).

[3] *Occupational Outlook Handbook*, 1998-99 edition, Bulletin 2500 (Bureau of Labor Statistics, February 1996), pp. 339-347.

[4] The event or exposure describes the manner in which the injury was produced or inflicted by the source of the injury.

[5] Data on nonfatal injuries are from the Bureau of Labor Statistics' Survey of Occupational Injuries and Illnesses (SOII). This program collects information from a random sample of about 200,000 establishments representing most private industry wage and salary workers, excluding workers on small farms. Worker and case characteristics are collected only for those workers sustaining injuries and illnesses that require days away from work to recuperate. Data are available for employees in the public sector only for those States that have OSHA-approved safety programs. For this reason, data are available only for California, New York, and North Carolina and are included in the discussion to offer insight into nonfatal injuries to law enforcement personnel and firefighters. Because the scope and methodology of CFOI and SOII are slightly different, comparisons of fatal and nonfatal data are problematic. Additional information can be obtained from the Bureau of Labor Statistics' Internet site at **http://stats.bls.gov/oshhome.htm** or via E-mail at **cfoistaff@bls.gov** or **oshstaff@bls.gov**.

[6] Urban areas are defined as counties which are included in metropolitan areas as defined by the Office of Management and Budget. Rural areas include all counties not included in the metropolitan area definition.

[7] Fatality rates are used to compare the risk of incurring a fatal work injury among worker groups with varying employment or exposure levels. There is more than one method to calculate a fatality rate. An hours-based rate measures the risk of fatality per standardized length of exposure; an employment-based rate measures the risk for those employed during a given period of time, regardless of exposure hours. Hours-based measurements are especially useful for comparing worker groups with varying exposure hours, such as when a large proportion of workers in an industry work part-time.

Fatal work injury rates included in this article were calculated using annual average employment data that were collected in the Current Population Survey (CPS). These rates are considered experimental measures. They provide the number of fatal work injuries per 100,000 workers for 1992-97 and were calculated as follows:

[(N 92 + N 93 + N 94 + N 95 + N 96 + N 97)/(W 92 + W 93 + W 94 + W 95 + W 96 + W 97)] x 100,000; where:

N=number of civilian worker fatalities, age 15 and older, 1992-97, and

W=annual average number of employed civilians, age 15 and older, 1992-97

Because the CFOI program does not collect employment data, annual average estimates from the CPS for 1992-97 are used in the denominator. The CPS employment data used to calculate rates are estimates based upon a sample of persons employed rather than a complete count. Therefore, the CPS estimates and fatality rates have sampling errors; that is, they may differ from figures that would have been obtained if it had been possible to take a complete census of employed persons. See "Explanatory Notes and Estimates of Error" in the January 1997 *Employment and Earnings* for an explanation of CPS sampling and estimation methodology and standard error computations. The relative standard errors of the CPS employment estimates can be used to approximate confidence ranges for the fatality rates.

[8] Index of relative risk = Fatality rate for a given occupation/Fatality rate for all workers. For additional information on relative risk of both fatal and nonfatal injuries, see *Report on the American Workforce* (U.S. Department of Labor, 1994), pp. 95-138; and Guy A. Toscano, "Dangerous Jobs," *Compensation and Working Conditions*, Summer 1997, pp. 57-60.

[9] *Occupational Outlook Handbook*, 1998-99 edition, pp. 341-343.

[10] National Fire Data Center, *Fire Departments*, on the Internet at **http://www.usfa.fema.gov/nfdc.firedept.htm** (visited May 19, 1999).

[11] *Ibid.*

[12] See footnote 4.

[13] See footnote 5.

[14] See footnote 7.

[15] See footnote 8.