

Fatal Occupational Injuries Involving Helicopters, 1995-2002

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Over the 8-year period from 1995 to 2002, 459 workers were killed on the job in helicopter-related incidents. Nearly half (47 percent) of those killed in such incidents worked in government, including 150 in the resident armed forces.

From 1995 to 2002, 459 workers were killed in incidents involving helicopters,¹ according to data from the Bureau of Labor Statistics (BLS) [Census of Fatal Occupational Injuries \(CFOI\)](#). These fatalities accounted for about 1 percent of all (48,193) fatal work injuries that occurred during that period. The number of work-related fatalities involving helicopters reached a high of 76 in 1998 and declined steadily thereafter to a low of 37 in 2002.² (See Table.) While the majority of those killed in helicopter-related incidents worked in the private sector, government workers also incurred a large number of these fatalities, particularly members of the military.³

Helicopter Use

Workers who use helicopters face risks beyond the ordinary dangers inherent in flying. The BLS [Occupational Outlook Handbook](#) notes, "helicopters are used for short trips at relatively low altitude, so pilots must be constantly on the lookout for trees, bridges, power lines, transmission towers, and other dangerous obstacles."⁴ Helicopters are also often used for rescue operations. In his book *Heart of the Storm: My Adventures as a Helicopter Rescue Pilot and Commander*, Colonel Edward Fleming describes helicopter use this way:

The irony of the helicopter is that its greatest blessing--its versatility--is also its greatest curse. Because they can do so much, flying in and out of the tightest spots under the worst conditions, helicopters often are flown into situations where the safety options diminish exponentially, leading to peril and, frequently, death.⁵

Undoubtedly, workers who use helicopters face considerable risks, sometimes fatal ones.

Demographic Analysis Of The Decedents

Approximately 85 percent of the decedents in helicopter-related fatal work injuries were non-Hispanic whites. Non-Hispanic whites accounted for 73 percent of workplace fatalities in general from 1995 to 2002. Hispanic workers made up 6 percent of all fatally injured workers in a helicopter-related incident; Asian, Native Hawaiian or Pacific Islander workers made up 4 percent; and black workers made up 2 percent. Men accounted for 93 percent of the workplace fatalities involving helicopters, while accounting for 92 percent of workplace fatalities in general.

Those fatally injured in helicopter-related incidents were more likely to be aged 25 to 54 than fatally injured workers in general; 84 percent of the decedents killed in helicopter-related incidents were aged 25 to 54, compared with 67 percent for all fatally injured workers. Wage and salary workers made up 94 percent of the decedents; the remainder were self-employed.

Industry And Occupation⁶

Workers in the private sector constituted 53 percent of the fatal work injuries involving helicopters. About half (51 percent) of these private industry fatalities came from the transportation and public utilities industry--most of which were in nonscheduled air transportation. Other major industry groups within the private sector that had a large number of fatal work injuries involving helicopters include services (11 percent of all fatal work injuries involving helicopters) and agriculture, forestry, and fishing (5 percent). The majority of the decedents in agriculture, forestry, and fishing were employed in SIC 072, crop services, and these decedents were often engaged in crop dusting at the time of the fatal incident.

Government workers accounted for 47 percent of helicopter-related workplace fatalities, while they made up just 10 percent of the decedents for workplace fatalities as a whole. Federal government workers accounted for 77 percent of the government workplace fatalities involving helicopters--the vast majority coming from the national security field.⁷ Local government workers accounted for 12 percent of the government fatalities, and State government workers accounted for 10 percent. The majority of State and local government workers fatally injured in helicopter-related incidents were employed in police protection.

One-third of the workers fatally injured in incidents involving helicopters were employed in military occupations,⁸ and another third were employed as nonmilitary pilots. In contrast, military occupations accounted for less than 2 percent of all fatal work injuries, as did nonmilitary pilots. Decedents who worked in military occupations were often on training flights or engaged in combat exercises when killed. Other occupations with a large number of helicopter-related workplace fatalities include police and detectives, including supervisors (5 percent of all work-related fatalities involving helicopters); registered nurses (4 percent); and mechanics and repairers (4 percent). These registered nurses usually were fatally injured while transporting injured patients.

Circumstances Of The Fatality

Not surprisingly, the most frequent fatal event (98 percent) involving a helicopter was an aircraft incident--typically, the helicopter crashed into the ground or another object, or it collided with another aircraft.⁹ In 10 percent of these aircraft incidents, the decedent's helicopter collided with another helicopter. Most of the decedents in these cases were in the military. Helicopters also often hit bodies of water, mountains, trees, or electrical power lines. The remainder of the fatal incidents involved the decedent making contact with objects or equipment. In most of these incidents, the decedents were struck by the rotors of the helicopter.

Approximately 92 percent of the decedents were flying in a helicopter at the time of the fatal incident--44 percent as pilots and 48 percent as passengers. Fatal occupational injuries involving helicopters were more likely to occur at night than fatal occupational injuries in general. For the cases where time of incident was available,¹⁰ 24 percent of the helicopter-related fatalities occurred between the hours of 9:00 P.M. and 5:59 A.M. For all fatalities, that figure was 16 percent. The State with the most fatal work injuries involving helicopters was California, with 75, which represented about 16 percent of all the fatal work injuries involving helicopters. Other States with a large number of this type of fatality were Texas (10 percent) and North Carolina (10 percent). Notably, each of these States contains a large number of military personnel.¹¹

One striking feature about fatal work injuries involving helicopters is the likelihood that more than one work-related fatality was associated with each fatal incident. Of the 459 fatalities, 328 (71 percent) had at least one other occupational fatality associated with them. These 328 workers were killed in 107 separate multiple-fatality incidents.

Conclusion

Nearly half of the 459 workers who were fatally injured in helicopter-related incidents during the 1995-2002 period were government employees. More than four-fifths of those killed in such incidents were non-Hispanic whites, and more than nine-tenths were men. Workers killed in helicopter-related incidents also were more likely than other fatally injured workers to be aged 25 to 54 (84 percent versus 67 percent). Aircraft incidents were the most common event associated with helicopter-related workplace fatalities. More than two-thirds of the fatal workplace injuries involving helicopters had another occupational fatality associated with the incident. Although the number of this type of fatal work injury has declined in recent years, such incidents continue to present an occupational health challenge, particularly among military occupations and nonmilitary pilots.

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Notes

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1 Specifically, any fatal work injury in which a helicopter was classified as one of the sources of the fatal injury was included in this analysis. Primary and secondary sources were coded according to the BLS [Occupational Injury and Illness Classification System \(OIICS\)](#). Helicopters can be coded as the primary source of the injury when the victim was an occupant of the helicopter or if the helicopter directly inflicted the injury, such as when a helicopter blade strikes a worker on the ground. A helicopter would be coded as the secondary source if the aircraft in which the victim was riding collided with a helicopter, or if a helicopter were otherwise involved in the incident. For example, if the victim were struck by a log that had slipped from a helicopter's cable, the log would be considered the primary source and the helicopter the secondary source. For more information on OIICS, see *Occupational Injury and Illness Classification Manual* (Bureau of Labor Statistics, December 1992); available on the Internet at <http://www.bls.gov/iif/oshwc/oiicm.pdf>.

2 The 2002 data used in this analysis are updated and final.

3 In this study, the term "military" refers to the resident armed forces. Incidents occurring in another country are excluded from CFI data.

4 See "Aircraft Pilots and Flight Engineers," in *Occupational Outlook Handbook*, 2002-03 Edition, Bulletin 2540 (Bureau of Labor Statistics, January 2002). The 2004-05 version of the *Occupational Outlook Handbook* is available on the Internet at <http://www.bls.gov/oco/>.

5 Edward Fleming, *Heart of the Storm: My Adventures as a Helicopter Rescue Pilot and Commander* (Hoboken, NJ, John Wiley and Sons, 2004), p. 4.

6 The CFI data used in this analysis are classified by industry according to the 1987 Standard Industrial Classification (SIC) system. For more information on the SIC system, see *Standard Industrial Classification Manual: 1987* (Office of Management and Budget, 1987). The CFI data are classified by occupation according to the 1990 Census Bureau occupation codes. For more information on the 1990 Census Bureau codes, see "The Relationship Between the 1990 Census and Census 2000 Industry and Occupation Classification Systems, Technical Paper #65," (U.S. Census Bureau, October 30, 2003); available on the Internet at http://www.census.gov/hhes/www/ioindex/tp65_report.html.

7 Under the Standard Industrial Classification (SIC) system, the national security industry--which includes the four branches of the military, the National Guard, and military training schools--is coded 9711. For more information, see *Standard Industrial Classification Manual: 1987* (Office of Management and Budget, 1987). For an online description of SIC 9711, see the following page of the U.S. Department of Labor's Occupational Safety and Health Administration website: http://www.osha.gov/pls/imis/sic_manual.display?id=345&tab=description.

8 Regardless of the specific occupation, any military personnel killed at work are tabulated as working in military occupations. Thus, a pilot in the military would be tabulated under "military occupations" and not under "pilots."

9 Events are defined and coded according to the BLS [Occupational Injury and Illness Classification System \(OIICS\)](#). For more information on OIICS, see *Occupational Injury and Illness Classification Manual* (Bureau of Labor Statistics, December 1992); available on the Internet at <http://www.bls.gov/iif/oshwc/oiicm.pdf>.

10 Of the 459 fatal occupational injuries involving helicopters that occurred from 1995 to 2002, time of incident was available for 446 incidents. Of the 48,193 fatal occupational injuries that occurred from 1995 to 2002, time of incident was available for 45,788 incidents (95 percent).

11 For more data on military personnel by State in 2002, see "Atlas/Data Abstract for the US and Selected Areas (L03): Fiscal Year 2002: All States and US Total" (U.S. Department of Defense, Directorate for Information Operations and Reports, Statistical Information Analysis Division), on the Internet at http://web1.whs.osd.mil/MMID/L03/fy02/ATLAS_2002.pdf.

Table. Fatal Occupational Injuries Involving Helicopters, 1995–2002

Characteristics	Number of Fatalities
Total	459
Year	
1995	50
1996	70
1997	64
1998	76
1999	60
2000	59
2001	43
2002	37
Employee status	
Wage and salary workers(1)	430
Self-employed(2)	29
Sex	
Men	427
Women	32
Age	
20 to 24 years	38
25 to 34 years	154
35 to 44 years	120
45 to 54 years	110
55 to 64 years	24
65 and over	10
Race or ethnic origin (3)	
White	389
Black or African American	11
Hispanic or Latino	28
Asian, Native Hawaiian or Pacific Islander	17
Occupation	
Managerial and professional specialty	56
Professional specialty	42
Health assessment and treating occupations	20
Footnotes:	
(1) This category may include volunteers and other workers receiving compensation.	
(2) Includes paid and unpaid family workers, and may include owners of incorporated businesses or members of partnerships.	
(3) In this study, the racial categories "White" and "Black or African American" do not include persons from the ethnic category "Hispanic or Latino." Hispanic or Latino persons may identify themselves racially as white, black, or another race category.	
(4) CFOI data cover military occupations in the resident armed forces only; incidents occurring in other countries are excluded.	
(5) Includes members of the resident armed forces as well as workers employed in other governmental organizations, regardless of industry.	
NOTE: Totals for 2001 exclude fatalities resulting from the September 11 terrorist attacks. Totals for major categories may include subcategories not shown separately.	
SOURCE: Bureau of Labor Statistics, Census of Fatal Occupational Injuries (CFOI).	

Characteristics	Number of Fatalities
Registered nurses	19
Technical, sales, and administrative support	170
Technicians and related support occupations	166
Technicians, except health, engineering, and science	146
Airplane pilots and navigators	145
Service occupations	32
Protective service occupations	32
Police and detectives, including supervisors	23
Precision production, craft, and repair	29
Mechanics and repairers	18
Mechanics and repairers, except supervisors	18
Vehicle and mobile equipment mechanics, repairers	14
Aircraft engine mechanics	10
Military occupations(4)	150
Industry	
Private industry	242
Agriculture, forestry, and fishing	24
Transportation and public utilities	124
Transportation by air	112
Transportation by air, nonscheduled	98
Services	50
Health services	20
Hospitals	17
Government(5)	217
Federal government	167
Public administration	161
National security and international affairs	150
National security	150
State government	21
Local government	27

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