CDC Workplace Safety and Health

Construction

Number, rate, and costs of fatal occupational injuries in the U.S. construction industry by selected characteristics, 1992–2002

Characteristic	Number of fatalities	Fatality rate (per 100,000 workers)	Costs (2003 dollars)		
			Total (millions)	Mean (thousands)	Median (thousands)
All incidents	12,075	13.1	$10,421	$864	$867
Sex:					
Male	11,900	14.3	10,267	864	867
Female	175	2.0	154	879	873
Race of decedent:					
White	10,422	12.5	9,073	872	876
Black	938	15.8	745	797	821
Other*	715	30.7	603	843	846
Age of decedent:					
16–19	373	12.9	267	717	687
20–24	1,151	12.8	1,002	871	830
25–34	3,000	11.7	3,033	1,011	980
35–44	3,360	12.0	3,463	1,031	995
45–54	2,352	14.0	1,985	844	808
55–64	1,335	17.0	630	472	461
65+	504	29.4	40	83	62
Occupation group:†					
Managerial and professional specialty	771	5.1	900	1,175	1,347
Technical, sales, and administrative support	140	2.3	139	1,002	1,026
Service	26	7.2	16	631	676
Farming, forestry, and fishing	38	15.8	24	628	693
Precision production, craft, and repair	6,140	11.6	5,583	910	954
Operators, fabricators, and laborers	4,931	28.8	3,733	758	801
Event or Exposure:†					
Contact with objects and equipment	2,279	2.5	1,929	847	847
Falls	3,726	4.1	3,085	830	851
Bodily reaction and exertion	20	0.0	16	809	857
Exposure to harmful substances or environments	2,033	2.2	1,929	950	953
Transportation accidents	3,338	3.6	2,841	853	856
Fires and explosions	315	0.3	284	903	935
Assaults and violent acts	347	0.4	321	926	923

*This category includes all other races, such as American Indian and Asian, as well as unknown or missing races.
†Numbers are not reported for "unknown" or "not classified" categories.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

NIOSH

Fatal Occupational Injury Cost Model

Theoretical Basis of Cost Estimation

The cost to society of a workplace fatality was estimated using the cost-of-illness approach, which combines direct and indirect costs to yield an overall cost of an occupational fatal injury. For these calculations, only medical expenses were used to estimate the direct cost associated with the fatality. The indirect cost was derived by calculating the present value of future earnings summed from the year of death until the decedent would have reached age 67, accounting for the probability of survival were it not for the premature death. (For more information, see Biddle, E [2004]. *Economic Cost of Fatal Occupational Injuries in the United States, 1980–1997*. Contemporary Economic Policy *22*(3):370–381.)

Mathematical Representation of Indirect Costs

$$PVF = \sum P_{y,s}\,(y+1)[Y_{s,j(n)} + Y_{hs(n)}]\,(1+g)^{n-y}/(1+r)^{n-y}$$

where:

PVF	= present discounted value of loss due to occupational fatal injury per person
$P_{y,s}\,(y+1)$	= probability that a person of race r, sex s, and age y will survive to age y+1
y	= age of the person at death
s	= sex of the person
n	= age if the person had survived
$Y_{s,j(n)}$	= median annual earnings of an employed person of sex s, occupation j, and age n (includes benefits and life-cycle wage growth adjustment)
$Y_{hs(n)}$	= mean annual imputed value of home production of a person of sex s and age n
g	= wage growth rate attributable to overall productivity
r	= real discount rate (3%)

Data Sources

Fatality data: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). These data exclude military personnel, decedents with unknown age or sex, fatalities occurring in New York City, and fatalities from the September 11, 2001, terrorist attacks.
Probability of survival: National Center for Health Statistics, Division of Vital Statistics.
Median annual earnings: BLS Current Population Survey. Wage data are based on the occupation of the decedent and the year of death adjusted by Gross Domestic Product (GDP) Deflator to base year of dollar. Life-cycle wage growth was calculated based on the rate of change in wages between age groups.
Benefits: U.S. Chamber of Commerce. Benefits data are based on the industry where the decedent was employed and the year of death adjusted by the GDP Deflator.
Mean annual home production: Expectancy Data that were derived by a time diary study sponsored by the U.S. Environmental Protection Agency and conducted by the University of Maryland.
Wage growth rate: Based on BLS Employment Cost Index (ECI)
Medical costs: National Council on Compensation Insurance. Costs are a 3-year average cost.
Employment estimates for rate calculations: BLS Current Population Survey.

Fatality Rate Calculations

Fatality rates were calculated by NIOSH and may differ from previously published BLS CFOI rates. Fatality rates were calculated as deaths per 100,000 workers. Fatality rates for sex, race, age group, and occupation were calculated using employment estimates by the individual characteristic within the specific industry sector. Employment estimates for the specific industry sector were used to generate rates for event.

Classification Systems

Industry:	1987 Standard Industrial Classification System (SIC)
Occupation:	1990 Bureau of Census Occupational Classification System (BOC)
Event:	1992 BLS Occupational Injury and Illness Classification System (OIICS)