Mining

Number, rate, and costs of fatal occupational injuries in the U.S. mining 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	1,721	26.0	$1,788	$1,039	$1,064
Sex:					
Male	1,700	29.9	1,768	1,040	1,066
Female	21	2.2	20	942	962
Race of decedent:					
White	1,594	25.7	1,657	1,039	1,065
Black	62	22.1	66	1,070	1,063
Other*	65	45.8	65	999	1,003
Age of decedent:					
16–19	33	37.8	30	905	959
20–24	156	40.3	165	1,055	1,075
25–34	422	29.7	500	1,185	1,192
35–44	509	20.5	623	1,223	1,250
45–54	386	24.6	379	983	978
55–64	155	27.6	86	556	563
65+	60	54.6	5	89	70
Occupation group:†					
Managerial and professional specialty	85	5.0	109	1,280	1,489
Technical, sales, and administrative support	36	3.9	41	1,136	1,144
Service	—	—	—	—	—
Farming, forestry, and fishing	—	—	—	—	—
Precision production, craft, and repair	952	41.2	1,088	1,143	1,218
Operators, fabricators, and laborers	629	38.9	537	854	919
Event or exposure:†					
Contact with objects and equipment	653	9.9	705	1,079	1,129
Falls	135	2.0	132	981	1,011
Bodily reaction and exertion	—	—	—	—	—
Exposure to harmful substances or environments	179	2.7	189	1,053	1,057
Transportation accidents	521	7.9	518	993	1,012
Fires and explosions	192	2.9	202	1,050	1,069
Assaults and violent acts	—	—	—	—	—

NOTE: Dashes indicate data that do not meet publication criteria.

*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.

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)