Appendix B. 1994 Census of Fatal Occupational Injuries Fatality Rates

Both absolute numbers (or frequencies) and rates are useful when examining fatal work injuries for research or prevention efforts. A frequency shows "how many" fatal work injuries occurred. A rate indicates the relative danger.

The relative danger of an occupation or industry group can be indicated by combining frequency data with either employment or hours data to calculate a rate. An hours-based rate indicates the relative danger using time of exposure. An employment-based rate indicates the relative danger using the number of employed workers.

Each type of rate has a different purpose. An employment-based fatality rate measures the incidence of fatal injury for all workers in the group regardless of exposure time. It does not account for the fact that part-time workers may have fewer fatal work injuries because they spend less time in the work environment. An hours-based fatality rate accounts for different time of exposure levels among workers. Hours-based measurements are especially useful for industry and occupation comparisons, when the number of workers can vary greatly among industry or occupation groups for a given period.

Work fatality counts from the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries can be combined with employment or hours at work data to produce a fatal work injury rate. Since hours at work and employment data are not collected by CFOI, experimental fatality rates were calculated using estimates of employed[1] civilian workers (age 16 and older) from the Current Population Survey (CPS).[2] In addition, resident military figures, derived from resident and civilian population data from the Bureau of the Census, were added to the CPS employment figures to maintain consistency with the CFOI fatality data.

The fatality rates were calculated as follows: (N / W) x 100,000

N = the number of fatally injured workers
W = the number of employed workers

The ratio N/W is multiplied by 100,000 so that worker groups with widely varying employment levels can be expressed in common terms (i.e., per 100,000 workers) for comparisons.

Example. There were 6,588 total work fatalities in 1994 and 124,469,000 employed workers (123,060,000 employed civilian workers age 16 and older, and 1,409,000 resident military personnel).

"N" must be adjusted to maintain consistency with "W," so the 25 fatally injured workers under age 16 in 1994 are not included in the rate calculation. (Adjustments of "N" are not reflected in the "Number" and "Percent" columns of the tables, which include all fatalities regardless of age.)

N = 6,588 - 25 = 6,563
W = 124,469,000
(6,563 / 124,469,000) x 100,000 = 5
5 fatalities per 100,000 workers

[1]The rates do not reflect the movement of persons in and out of the labor force, the length of their work week or year, or the effect of multiple jobholders. The Bureau of Labor Statistics will continue its research on fatality rates using employment and exposure hours.

[2] See the "Explanatory Notes and Estimates of Error" section (p. 227) in *Employment and Earnings* for January 1995 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.

Table B-1. Number, percent, and rate of fatal occupational injuries by selected worker characteristics, 1994. The rates are experimental measures using CPS employment.

Characteristic	Fatalities		Employed[1] (in thousands)	Fatalities per 100,000 employed[2]
	Number	Percent		
Total	6,588	100.0	124,469	5
Employee status				
Wage and salary	5,336	81.0	113,641	5
Self-employed [3]	1,252	19.0	10,828	11
Gender				
Men	6,067	92.1	67,690	9
Women	521	7.9	56,779	1
Age				
Under 16 years	25	.4	—	—
16 to 17 years	42	.6	2,511	2
18 to 19 years	112	1.7	3,749	3
20 to 24 years	545	8.3	13,204	4
25 to 34 years	1,558	23.6	32,829	5
35 to 44 years	1,608	24.4	33,882	5
45 to 54 years	1,304	19.8	23,383	6
55 to 64 years	858	13.0	11,229	8
65 years and over	517	7.8	3,681	14
Race				
White	5,420	82.3	106,285	5
Black	702	10.7	13,102	5
Asian or Pacific Islander	181	2.7	—	—
American Indian, Aleut, Eskimo	40	.6	—	—
Other	245	3.7	—	—
Hispanic origin				
Hispanic[4]	611	9.3	10,867	6

[1] The employment figures are annual average estimates of employed civilians 16 years of age and older, from the Bureau of Labor Statistics Current Population Survey (CPS), 1994. Resident military figures, derived from resident and civilian population data from the Bureau of the Census, were added to most of the CPS employment figures. CPS data for 1994 are not directly comparable with data for 1993 and earlier years because of the introduction of a major redesign of the survey questionnaire and collection methodology, and the introduction of 1990 census-based population controls adjusted for the estimated undercount. For additional information, see "Revisions in the Current Population Survey Effective January 1994," in the February 1994 issue of *Employment and Earnings*.

[2] 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 fatal work injuries, and W = the number of employed workers, as described in the previous footnote. There were 25 fatally injured workers under the age of 16 years that were not included in the rate calculations to maintain consistency with the CPS employment.

[3] Includes paid and unpaid family workers, and may include owners of incorporated businesses, or members of partnerships.

[4] Persons identified as Hispanic may be of any race.

NOTE: Totals for major categories may include subcategories not shown separately. Figures may not add to totals because of rounding. Dashes indicate data that are not available.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 1994.

Table B-2. Number, percent, and rate of fatal occupational injuries by selected[1] occupation, 1994. The rates are experimental measures using CPS employment.

Occupation[2]	Fatalities		Employed[1] (in thousands)	Fatalities per 100,000 employed[2]
	Number	Percent		
Total	6,588	100.0	124,469	5
Managerial and professional specialty	768	11.7	33,847	2
Executive, administrative, and managerial	486	7.4	16,312	3
Managers, food serving and lodging places	74	1.1	1,255	6
Professional specialty	282	4.3	17,536	2
Technical, sales, and administrative support	943	14.3	37,306	3
Technicians and related support occupations	209	3.2	3,869	5
Airplane pilots and navigators	131	2.0	104	126
Sales occupations	588	8.9	14,817	4
Supervisors and proprietors	249	3.8	4,443	6
Sales counter clerks	27	.4	209	13
Cashiers	110	1.7	2,745	4
News vendors	23	.3	130	15
Administrative support jobs, including clerical	146	2.2	18,620	1
Messengers	25	.4	147	17
Service occupations	601	9.1	16,912	4
Protective service occupations	332	5.0	2,249	15
Fire fighting and prevention jobs, including supervisors	56	.9	260	22
Police and detectives, including supervisors	149	2.3	1,077	14
Guards, including supervisors	127	1.9	911	14
Farming, forestry, and fishing	944	14.3	3,629	26
Farm operators and managers	382	5.8	1,453	26
Other agricultural and related occupations	360	5.5	2,176	16
Farm workers, including supervisors	261	4.0	795	31
Groundskeepers and gardeners, except farm	78	1.2	864	9
Forestry and logging occupations	137	2.1	132	104
Timber cutting and logging occupations	112	1.7	86	130
Fishers, hunters, and trappers	65	1.0	52	125
Fishers	55	.8	42	131
Precision production, craft, and repair	1,090	16.5	13,489	8
Mechanics and repairers	294	4.5	4,419	7
Automobile mechanics	49	.7	864	6
Heavy equipment mechanics	24	.4	151	16
Construction trades	614	9.3	5,008	12
Carpenters	87	1.3	1,265	7
Electricians	99	1.5	659	15
Electrical power installers and repairers	35	.5	116	30
Painters, construction and maintenance	40	.6	543	7
Plumbers, pipefitters, and steamfitters	39	.6	508	8
Roofers	53	.8	180	29
Structural metal workers	48	.7	49	98
Extractive occupations	76	1.2	142	54
Drillers, oil wells	22	.3	26	85
Mining machine operators	29	.4	39	74
Operators, fabricators, and laborers	2,055	31.2	17,876	11
Machine operators, assemblers, and inspectors	256	3.9	7,754	3
Welders and cutters	67	1.0	577	12
Transportation and material moving occupations	1,169	17.7	5,136	23
Motor vehicle operators	925	14.0	3,882	24
Truck drivers	762	11.6	2,815	27
Drivers—sales workers	29	.4	164	18
Taxicab drivers and chauffeurs	113	1.7	241	47
Water transportation occupations	42	.6	68	62
Sailors and deckhands	25	.4	27	89
Material moving equipment operators	172	2.6	1,078	16
Operating engineers	41	.6	237	17
Excavating and loading machine operators	22	.3	95	23
Grader, dozer, and scraper operators	23	.3	88	26
Industrial truck and tractor equipment operators	39	.6	483	8

See footnotes at end of table.

Table B-2. Number, percent, and rate of fatal occupational injuries by selected[1] occupation, 1994. The rates are experimental measures using CPS employment.—Continued

Occupation[2]	Fatalities		Employed[1] (in thousands)	Fatalities per 100,000 employed[2]
	Number	Percent		
Handlers, equipment cleaners, helpers, and laborers	630	9.6	4,986	13
Construction laborers	247	3.7	740	33
Garbage collectors	22	.3	50	44
Garage and service station related occupations	23	.3	184	13
Laborers, except construction	229	3.5	1,240	18
Military	109	1.7	1,409	8

[1] Selected occupations had more than 20 reported work injury fatalities in 1994.

[2] Based on the 1990 population census occupation classification system developed by the Bureau of the Census.

[3] The employment figures, except for military, are annual average estimates of employed civilians 16 years of age and older, from the Bureau of Labor Statistics Current Population Survey (CPS), 1994. The resident military figure, derived from resident and civilian population data from the Bureau of the Census, was added to the CPS employment total. CPS data for 1994 are not directly comparable with data for 1993 and earlier years because of the introduction of a major redesign of the survey questionnaire and collection methodology, and the introduction of 1990 census-based population controls adjusted for the estimated undercount. For additional information, see "Revisions in the Current Population Survey Effective January 1994," in the February 1994 issue of *Employment and Earnings*.

[4] 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 fatal work injuries, and W = the number of employed workers, as described in the previous footnote. There were 25 fatally injured workers under the age of 16 years that were not included in the rate calculations to maintain consistency with the CPS employment.

NOTE: Totals for major categories may include subcategories not shown separately. Figures may not add to totals because of rounding. There were 79 fatalities for which there was insufficient information to determine an occupation classification.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 1994.

Table B-3. Number, percent, and rate of fatal occupational injuries by industry, 1994. The rates are experimental measures using CPS employment.

Industry[1]	Fatalities		Employed[1] (in thousands)	Fatalities per 100,000 employed[2]
	Number	Percent		
Total	6,588	100.0	124,469	5
Private industry	5,923	89.9	104,754	6
Agriculture, forestry, and fishing	847	12.9	3,496	24
Agricultural production, crops	441	6.7	1,008	43
Agricultural production, livestock	172	2.6	1,316	12
Agricultural services	162	2.5	1,070	15
Mining	180	2.7	668	27
Coal mining	41	.6	115	36
Oil and gas extraction	99	1.5	387	26
Construction	1,027	15.6	6,948	15
Manufacturing	787	11.9	20,050	4
Food and kindred products	78	1.2	1,749	4
Lumber and wood products	199	3.0	731	27
Transportation and public utilities	944	14.3	7,069	13
Local and interurban passenger transportation	114	1.7	520	22
Trucking and warehousing	502	7.6	2,326	22
Air transportation	98	1.5	755	13
Electric, gas, and sanitary services	88	1.3	1,096	8
Wholesale trade	269	4.1	4,702	6
Retail trade	797	12.1	20,909	4
Food stores	235	3.6	3,474	7
Automotive dealers and service stations	120	1.8	2,019	6
Eating and drinking places	181	2.7	6,316	3
Finance, insurance, and real estate	112	1.7	7,900	1
Services	844	12.8	33,012	3
Business services	253	3.8	4,999	5
Automotive repair, services, and parking	89	1.4	1,537	6
Government	665	10.1	19,715	3
Federal	209	3.2	4,901	4
State	112	1.7	5,163	2
Local	333	5.1	9,650	3

[1]Based on the *Standard Industrial Classification Manual*, 1987 Edition.

[2]The employment figures are annual average estimates of employed civilians 16 years of age and older, from the Bureau of Labor Statistics Current Population Survey (CPS), 1994. A resident military figure, derived from resident and civilian population data from the Bureau of the Census, was added to the CPS employment total and figures for government and federal government. CPS data for 1994 are not directly comparable with data for 1993 and earlier years because of the introduction of a major redesign of the survey questionnaire and collection methodology, and the introduction of 1990 census-based population controls adjusted for the estimated undercount. For additional information, see "Revisions in the Current Population Survey Effective January 1994," in the February 1994 issue of *Employment and Earnings*.

[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 fatal work injuries, and W = the number of employed workers, as described in the previous footnote. There were 25 fatally injured workers under the age of 16 years that were not included in the rate calculations to maintain consistency with the CPS employment.

NOTE: Totals for major categories may include subcategories not shown separately. Figures may not add to totals because of rounding. There were 124 fatalities for which there was insufficient information to determine an industry classification.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 1994.