

## 2 FATAL INJURY

### The Burden of Fatal Occupational Injuries

The National Institute for Occupational Safety and Health (NIOSH), the Bureau of Labor Statistics (BLS), and the States share responsibility for the surveillance of fatal occupational injuries. NIOSH conducts surveillance of these injuries through the National Traumatic Occupational Fatalities Surveillance System (NTOF), which contains information from death certificates managed by the 52 U.S. vital statistics reporting units and has fatality data from 1980 onward. In response to a National Academy of Sciences recommendation, BLS began compiling fatal occupational injury data in 1992 through its Census of Fatal Occupational Injuries (CFOI). Data for CFOI are obtained from various Federal, State, and local administrative sources, including death certificates, workers' compensation reports and claims, reports to regulatory agencies, medical examiner reports, police reports, and news items. Differences in NTOF and CFOI definitions and data collection and recording procedures may result in different fatality counts. The two programs are complementary, each having unique features that contribute to the surveillance of fatal occupational injuries. Appendix A details the methodological differences between the surveillance systems.

Data from NTOF indicate that 93,929 civilians in the United States were killed on the job from 1980 through 1995. The average annual fatality rate for this period was 5.3 per 100,000 workers. From 1980 through 1995, the number of deaths recorded by NTOF decreased by 28% (from 7,405 to 5,314), and the rate of death decreased by 43% (from 7.46 to 4.25 cases per 100,000 workers) (Figure 2–1). CFOI fatality counts exceeded those of NTOF by about 1,000 in the years reported in both surveillance systems (1992–1995) (Figure 2–2). Based on CFOI data, the rate of fatal occupational injuries declined by 7% between 1992 and 1997.

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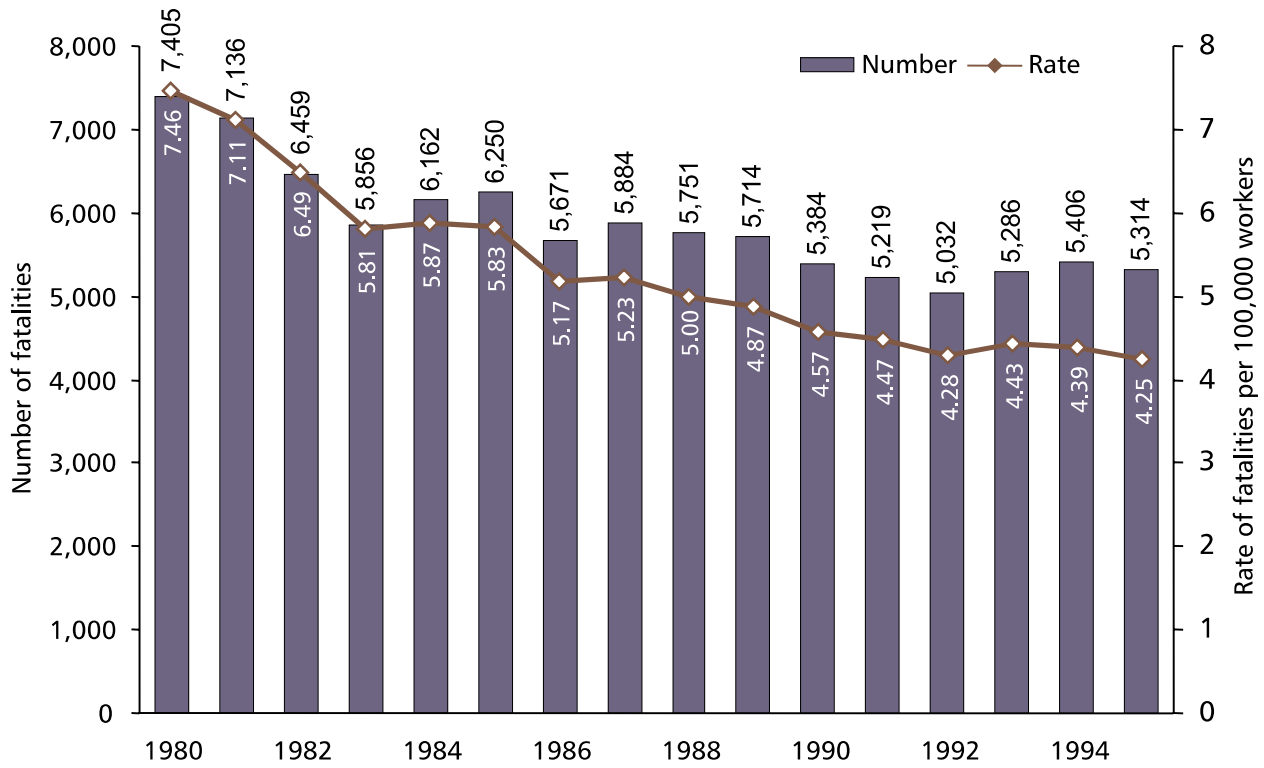


Figure 2-1. Number and annual rate of fatal occupational injuries, 1980-1995. (Source: NTOF [1999].)

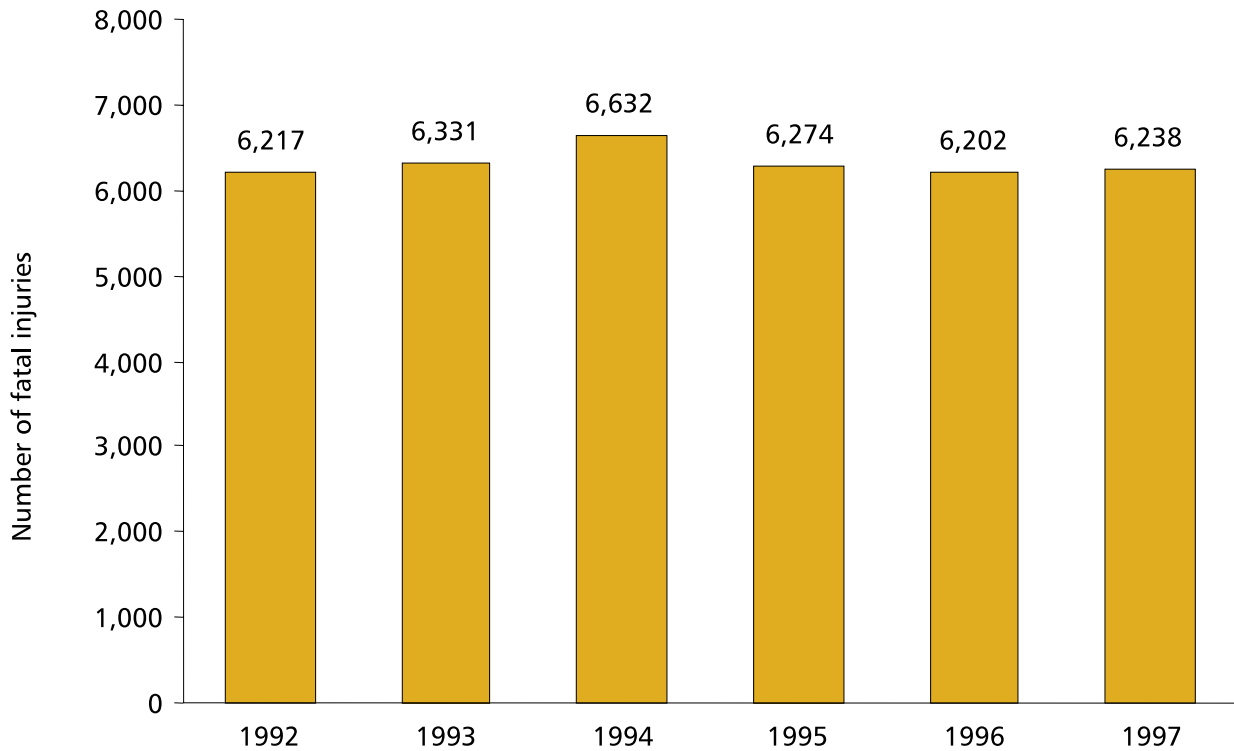


Figure 2-2. Number of fatal occupational injuries, 1992-1997. (Source: CFOI [1999].)

## Fatal Injuries by Age and Race

The highest number of deaths recorded in NTOF from 1980 to 1995 occurred among workers aged 25 to 34 (Figure 2–3). CFOI data from 1992 to 1997 indicate that workers aged 35 to 44 had the highest number of fatal occupational injuries, similar to the share of employment for that age group. Rates of death recorded in NTOF were similar for the younger age groups, increased slightly in workers aged 55 to 64, and increased dramatically among workers aged 65 years and older (Figure 2–3). Death rates recorded in NTOF fell gradually from 1980 through 1995 for workers of all races (Figure 2–4).

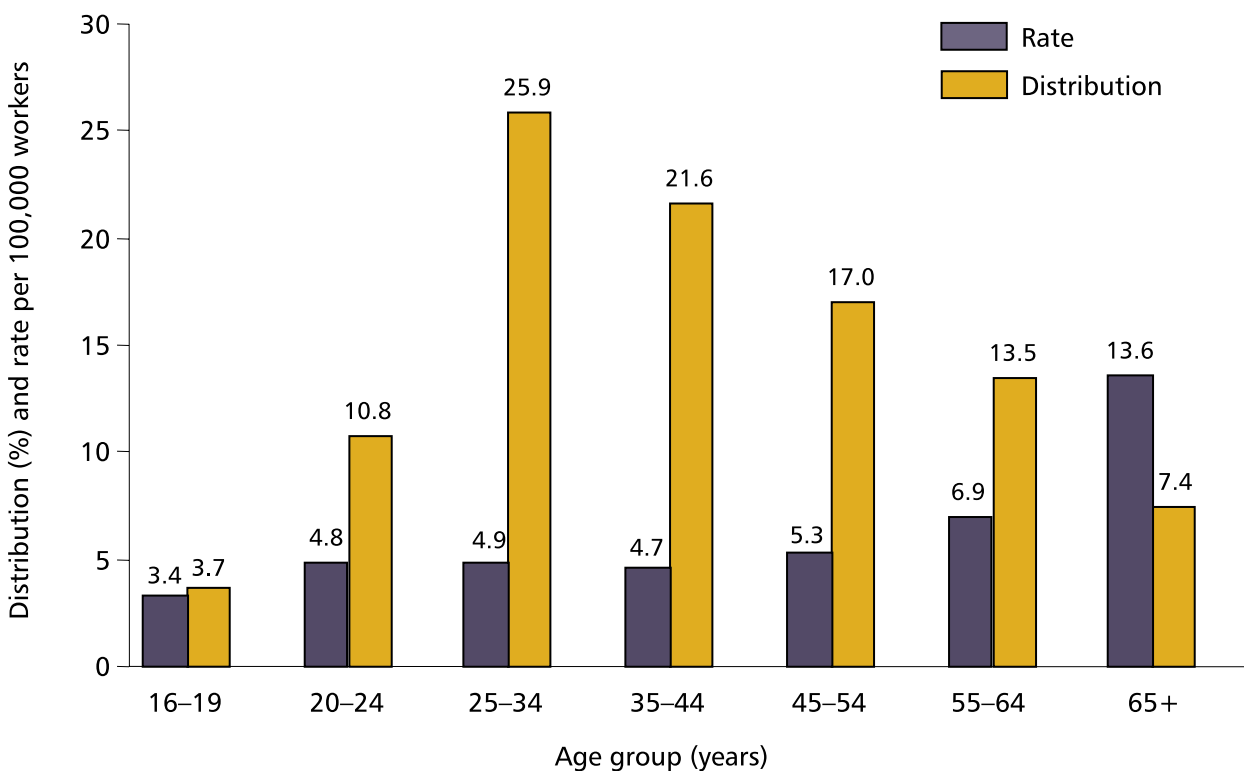


Figure 2–3. Distribution and average annual rate of fatal occupational injuries by age group, 1980–1995. (Source: NTOF [1999].)

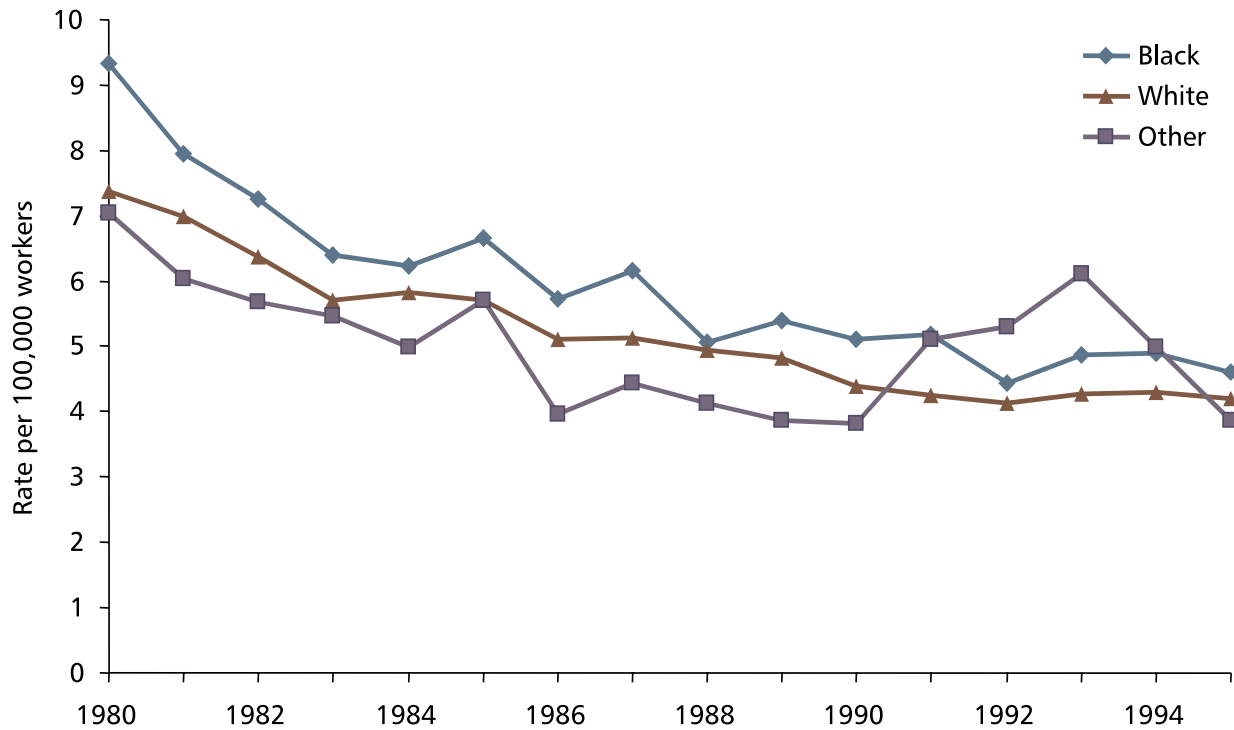


Figure 2-4. Rate of fatal occupational injuries by race, 1980-1995. (Source: NTOF [1999].)

### Fatal Injuries by Leading Cause

The leading causes of fatal occupational injuries recorded in NTOF from 1980 to 1995 were motor vehicle incidents, machine-related injuries, homicides, falls, and electrocutions (Figure 2-5). During that period, rates for deaths from all causes declined, although not always consistently. Male workers died most frequently from motor vehicle incidents, machine-related injuries, homicides, and falls; female workers died most frequently from homicides and motor vehicle incidents, followed by falls and machine-related injuries (Figure 2-6). CFOI data, which are classified differently from NTOF data, indicate that transportation incidents accounted for 42% of all fatal occupational injuries in 1997 (Figure 1-9). Highway-related motor vehicle crashes and homicides accounted for about one-third of the fatalities recorded in CFOI.

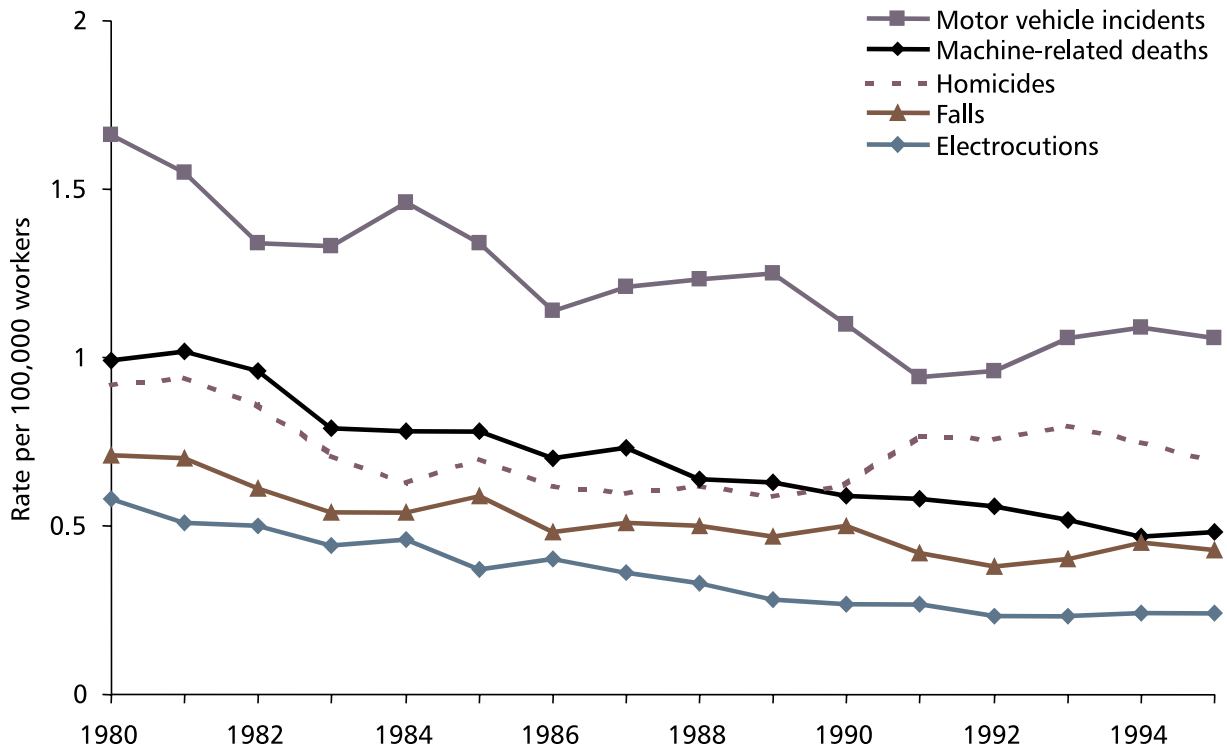


Figure 2-5. Rates of fatal occupational injuries by leading causes, 1980-1995. (Source: NTOF [1999].)

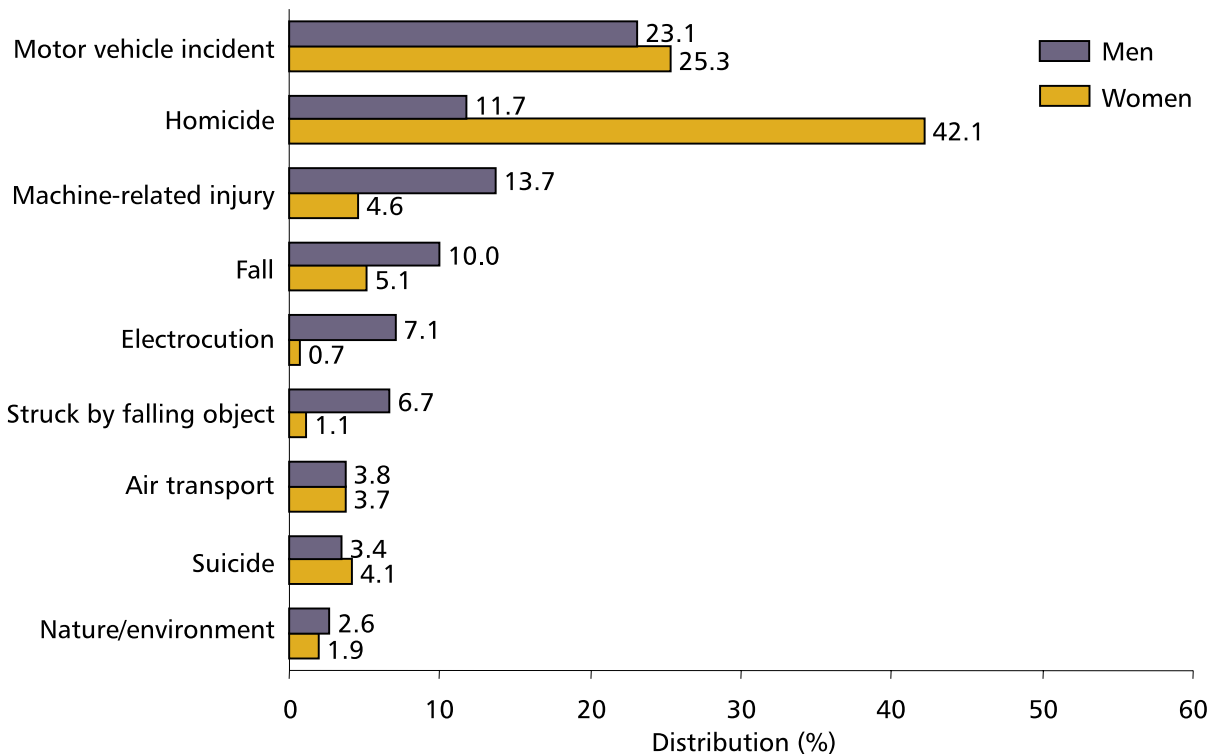


Figure 2-6. Distribution of fatal occupational injuries for male and female workers by selected causes of death, 1980-1995. Total deaths were 87,835 for male workers and 6,088 for female workers. (Source: NTOF [1999].)

### Fatal Injuries by Industry and Occupation

NTOF classifies a fatality by the industry and occupation in which the worker was “usually” employed. By industry division, mining and agriculture, forestry, and fishing (followed by construction and transportation and public utilities), had the highest fatal occupational injury rates recorded in NTOF from 1980 to 1995. The most deaths occurred in construction, transportation and public utilities, and manufacturing (Figure 2–7). By occupational group, the highest rates of fatal injury occurred among transportation and agriculture, forestry, and fishing workers. Precision production, craft, and repair occupations (11% of the workforce) along with transportation workers (4% of the workforce) accounted for nearly 40% of the fatal occupational injuries from 1980 to 1995 (Figure 2–8).

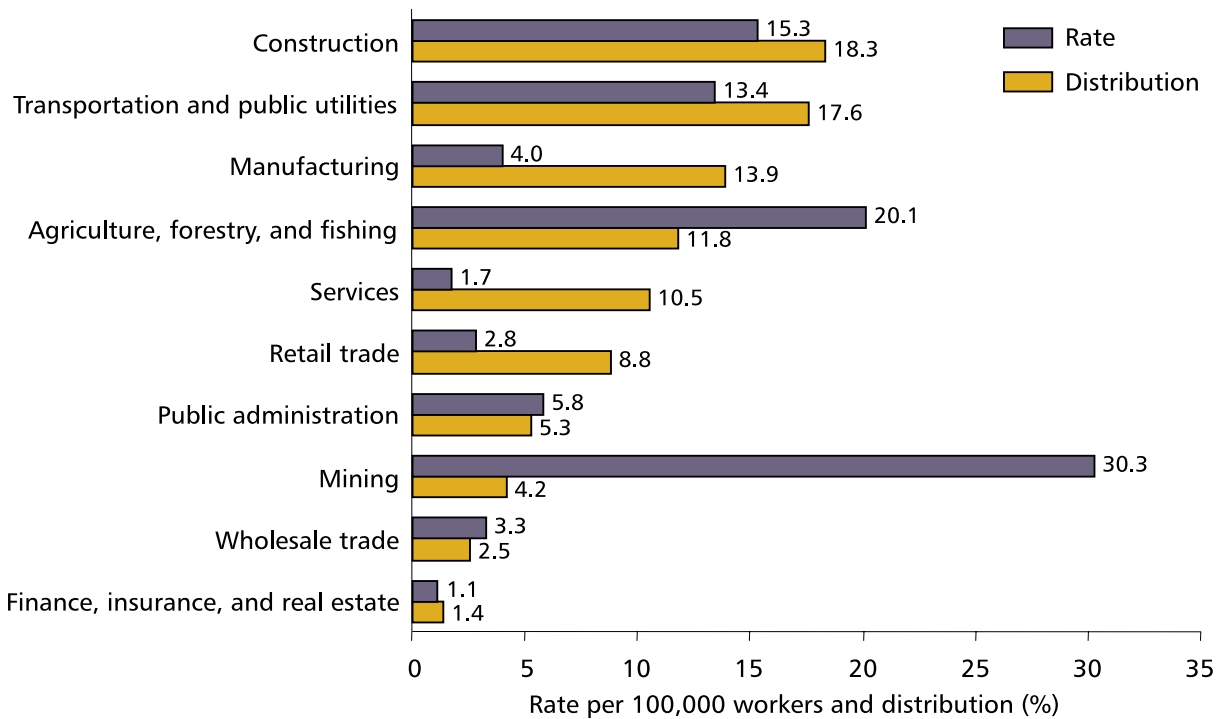
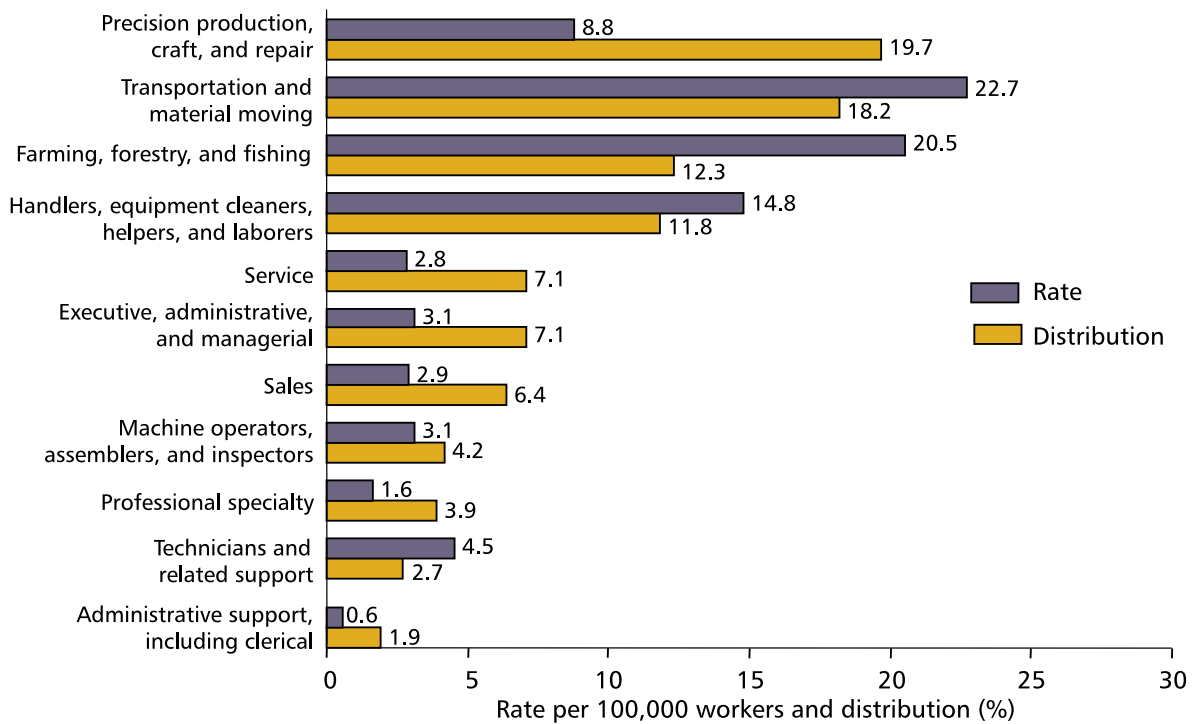


Figure 2–7. Average annual rate and distribution (%) of fatal occupational injuries by industry division, 1980–1995. Total deaths were 93,929; 5.7% were not classified by industry. (Source: NTOF [1999].)



**Figure 2-8.** Average annual rate and distribution (%) of fatal occupational injuries by occupational group, 1980–1995. Total deaths were 93,929; 4.8% were not classified by occupation. (Source: NTOF [1999].)

CFOI classifies a fatality by the industry and occupation in which the worker was employed at the time of death. By industry division, construction accounted for the largest number of deaths recorded in CFOI in 1997, and mining had the highest fatality rate per 100,000 workers. Agriculture, forestry, and fishing ranked second in rate and third in number of fatal occupational injuries (Figure 2-9). By occupation, the largest number of fatalities occurred among truck drivers, farm occupations, sales occupations, and construction laborers (Figure 2-10). The leading causes of death for these groups were highway crashes and jackknifing for truck drivers, tractor-related injuries for farmers, homicides for sales occupations, and falls for construction laborers. The occupations with fatal occupational injury rates at least 10 times the national average of 4.8 per 100,000 workers include timber cutters, fishers, water transportation occupations, aircraft pilots, and extractive occupations (Figure 2-11).

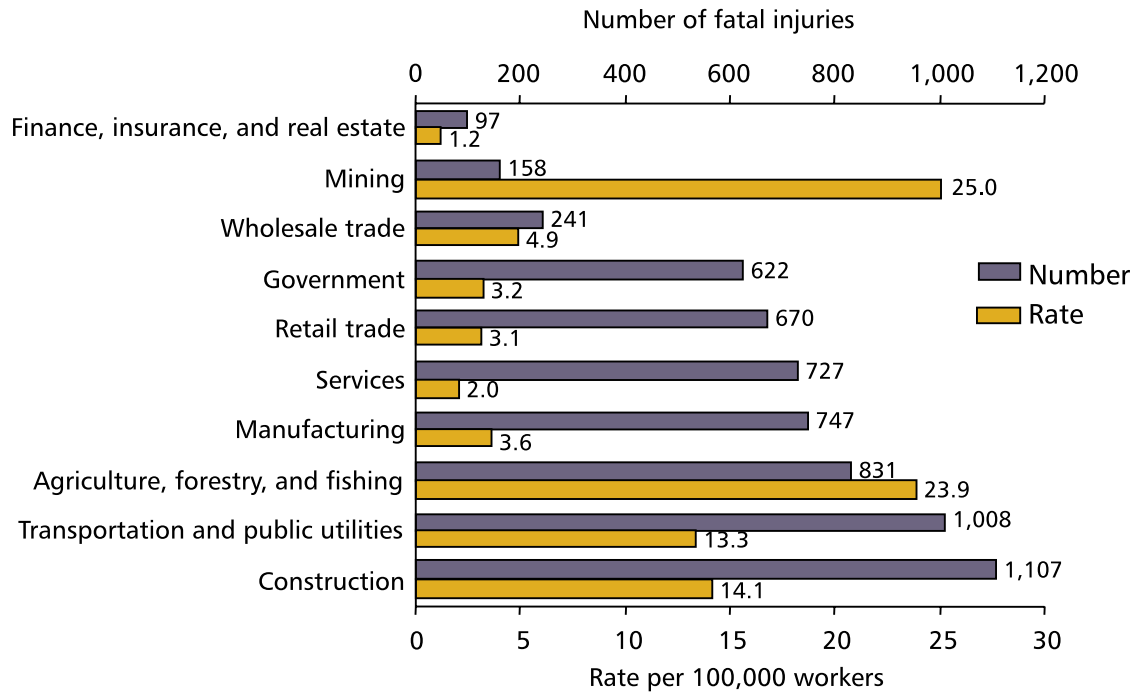


Figure 2-9. Number and rate of fatal occupational injuries by industry division, 1997. The total number of fatal occupational injuries was 6,238; the national rate was 4.8 per 100,000 workers. (Source: CFOI [1999].)

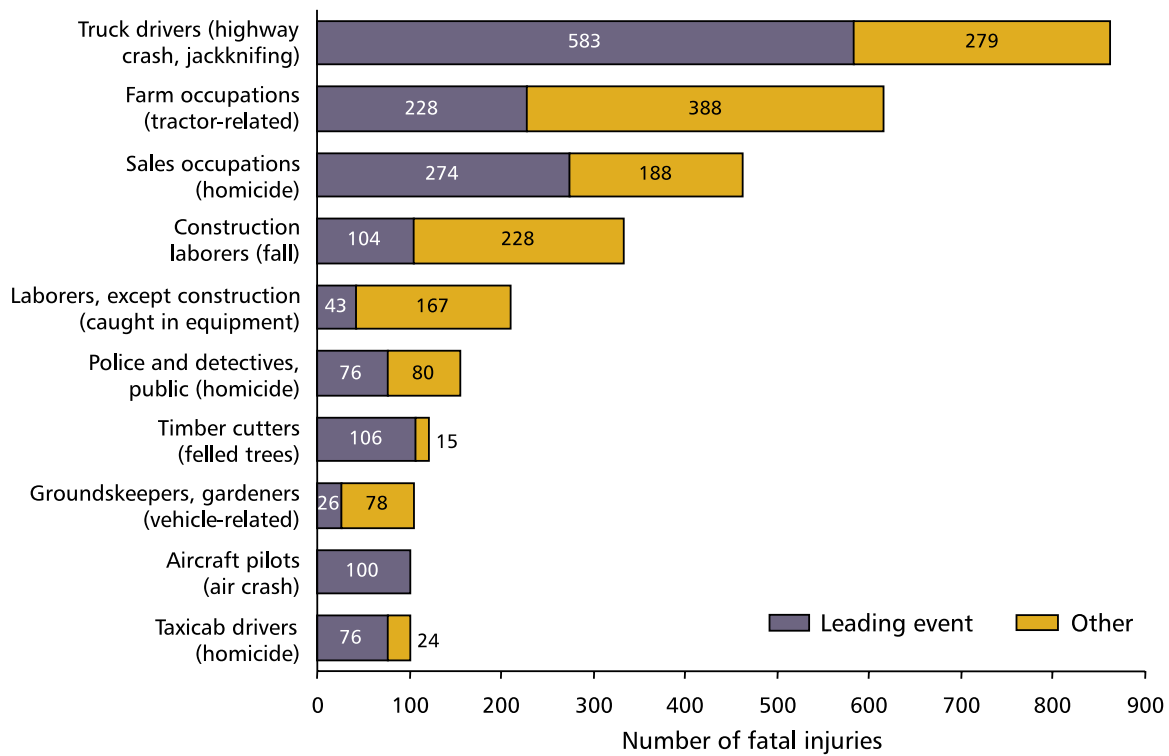


Figure 2-10. Number of fatal occupational injuries by selected high-risk occupations and leading event, 1997. The total number of fatal occupational injuries in 1997 for all occupations was 6,238. (Source: CFOI [1999].)



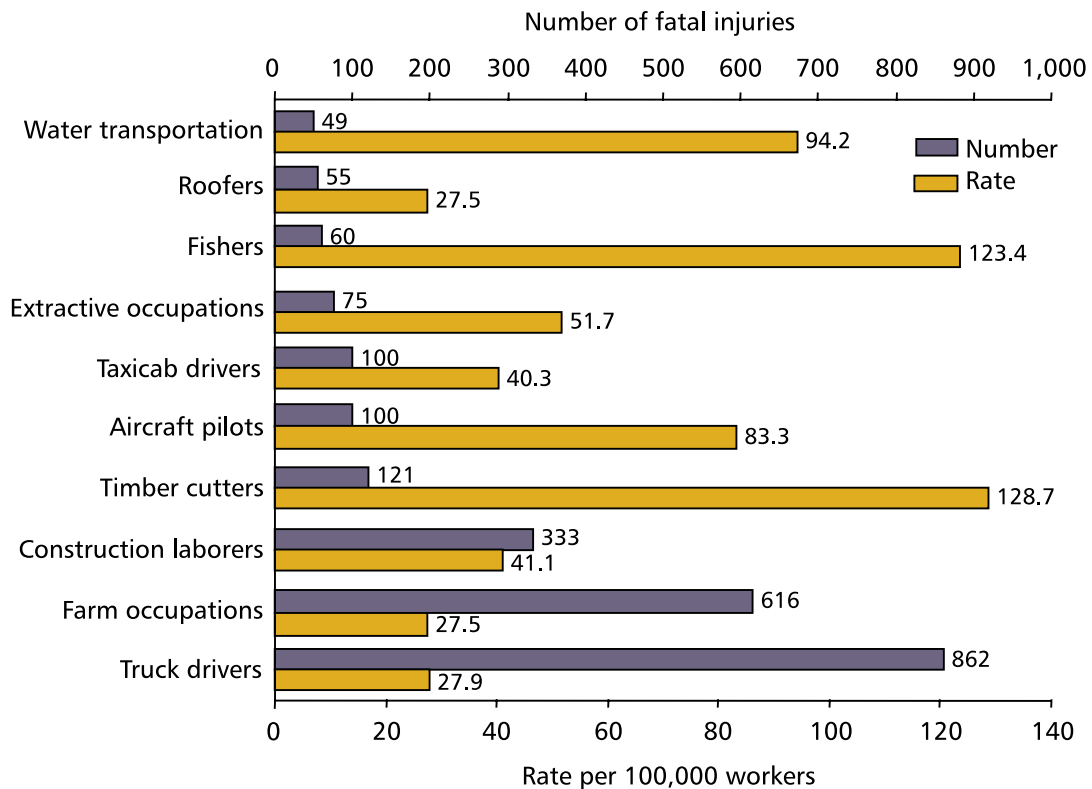


Figure 2–11. Number and rate of fatal occupational injuries per 100,000 workers in high-risk occupations, 1997. The national rate was 4.8 per 100,000 workers. (Source: CFOI [1999].)

Annual rates of fatal occupational injury by industry division for selected causes of death are shown in Figure 2–12 using NTOF data. Workers in mining and agriculture, forestry, and fishing had the highest rates of machine-related deaths, and workers in transportation and public utilities, mining, and agriculture, forestry, and fishing had the highest rates of work-related motor vehicle deaths. Workers in retail trade and public administration had the highest rates of workplace homicide.

### Fatal Injuries by State

NTOF data for 1980–1995 (based on the State listed on the death certificate) indicate that Alaska, Wyoming, and Montana had the highest fatal occupational injury rates (Table 2–1). California, Texas, Florida, and Illinois had the greatest number of fatal occupational injuries. CFOI data (based on the State in which the fatal incident occurred) indicate that California, Texas, Florida, and New York had the greatest number of fatal occupational injuries in 1997.

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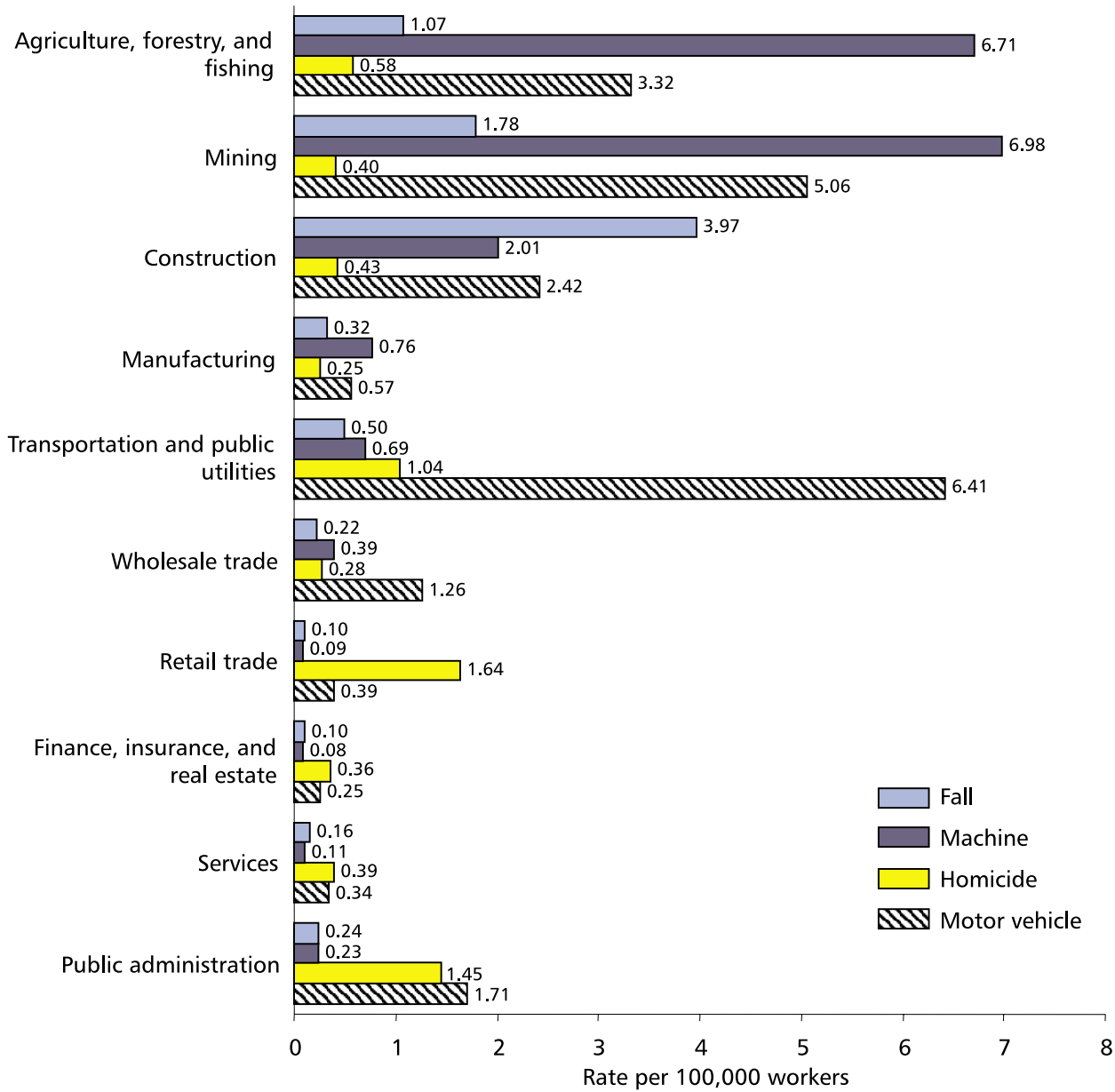


Figure 2-12. Average annual rate of fatal occupational injuries by industry division and selected causes of death, 1980-1995. (Source: NTOF [1999].)

Table 2–1. Distribution and average annual rate of fatal occupational injuries by State listed on death certificate, 1980–1995

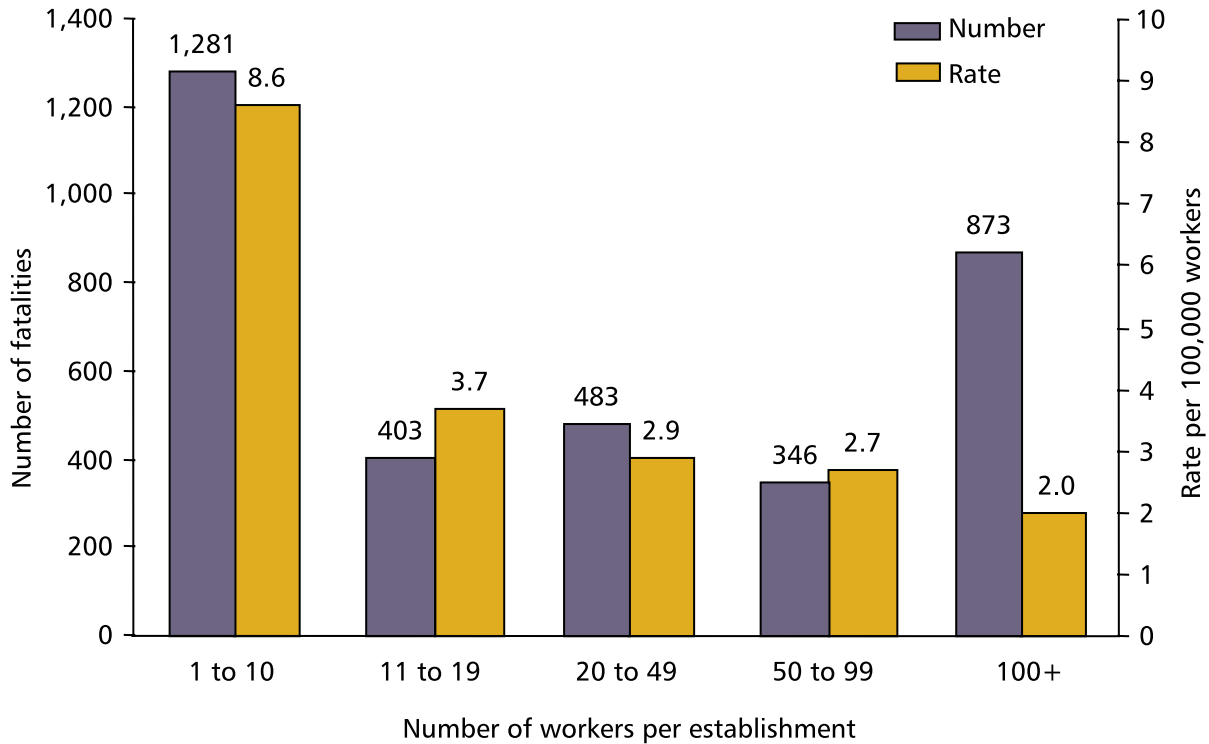
State	Deaths	Rate*	Rank	State	Deaths	Rate	Rank
Alabama	1,875	6.9	19	Montana	750	12.4	3
Alaska	916	25.2	1	Nebraska	1,005	8.0	13
Arizona	596	2.5	49	Nevada	732	8.4	9
Arkansas	1,340	8.3	10	New Hampshire	257	3.0	45
California	9,821	4.8	33.5	New Jersey	1,523	2.6	47
Colorado	1,642	6.3	22	New Mexico	769	7.7	15.5
Connecticut	445	1.7	51	New York	3,567	2.9	46
Delaware	205	4.0	40	North Carolina	2,691	5.5	29.5
District of Columbia	298	6.5	21	North Dakota	442	9.0	8
Florida	5,643	6.6	20	Ohio	2,659	3.4	42.5
Georgia	3,284	7.2	18	Oklahoma	1,329	5.8	25.5
Hawaii	353	4.5	37	Oregon	1,552	7.3	17
Idaho	787	10.8	4	Pennsylvania	3,927	4.7	35
Illinois	4,171	4.9	32	Rhode Island	193	2.6	48
Indiana	2,284	5.5	29.5	South Carolina	1,416	5.8	25.5
Iowa	1,374	6.2	23	South Dakota	496	9.2	7
Kansas	1,178	6.1	24	Tennessee	1,980	5.7	27
Kentucky	2,040	8.0	13	Texas	9,449	7.7	15.5
Louisiana	2,282	8.2	11	Utah	938	8.0	13
Maine	403	4.6	36	Vermont	195	4.4	39
Maryland	1,227	3.4	42.5	Virginia	2,541	5.5	29.5
Massachusetts	987	2.1	50	Washington	1,833	5.4	31
Michigan	2,437	3.7	41	West Virginia	1,145	10.5	5
Minnesota	1,092	3.1	44	Wisconsin	1,730	4.5	38
Mississippi	1,692	10.1	6	Wyoming	615	16.7	2
Missouri	1,823	4.8	33.5				

Source: NTOF [1999].

\*Per 100,000 workers.

### Fatal Injuries by Establishment Size

CFOI collects information about the number of workers in establishments where fatally injured workers were employed. In 1997, this information was available for 79% of all records for private sector wage and salary workers. Based on the available data, the highest rate of fatal occupational injury (8.6 per 100,000 workers) occurred in establishments with 1 to 10 workers, whereas the lowest rate (2 per 100,000 workers) occurred in establishments with 100 or more workers (Figure 2–13). Self-employed workers accounted for 20% of the fatal occupational injuries in 1997. The fatality rate of 11.7 cases per 100,000 workers for the self-employed was nearly two and a half times the rate of 4.8 per 100,000 for all wage and salary workers (public and private sector combined).



**Figure 2–13.** Number and rate of fatal occupational injuries in private sector wage and salary workers by employment size of establishment, 1997. The total number of fatal occupational injuries was 4,305. Employment size was not reported for 919 fatalities; these data could significantly change the above rates. (Source: CFOI [1999]. Employment data are from the *Employment and Wages Annual Averages, 1997* [BLS 1998].)