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Work-related deaths dropped sharply during 1983, BLS survey finds

DIANE M. COTTER

A total of 3,100 job-related deaths occurred in private sector establishments employing 11 workers or more in 1983, compared with 4,090 fatalities in 1982, the Bureau of Labor Statistics estimates.[1] Correspondingly, the fatality incidence rate dropped from 7.4 per 100,000 full-time workers in 1982 down to 5.6 in 1983, continuing a 5-year trend. (See table 1.) This decline occurred despite a 4-percent increase in employment among those firms.

Both the reported number of job-related deaths and the fatality rates decreased in all eight industry divisions between 1982 and 1983. (See tables 2 and 3.) A high of 730 lives were lost in manufacturing industries in 1983, and a low of 70 in finance, insurance, and real estate industries. Mining industries had the highest fatality rate of 27.6 and finance, insurance, and real estate industries had the lowest rate of 1.7 per 100,000 full-time workers. Roughly 400 of the 3,100 reported deaths involved a job-related illness.

The fatality data are based on reports received from a sample of employers selected randomly for the Annual Survey of Occupational Injuries and Illnesses. Participating employers provided a brief description of the object or event most directly responsible for the death.

Although the sample for this survey is fairly large, the fatality results present a wide range of analytical problems which make it difficult to compare year-to-year changes precisely. Because the sampling errors are relatively large even at the industry division level, the fatalities are classified into broad causal categories and represent the average for the 1982 and 1983 surveys.

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Table 1. Number and rate of fatalities for employers with 11 employees or more, private sector, 1979–1983

Year	Employment (thousands)	Fatalities	Incidence rate[1]
1979	61,660	4,950	8.6
1980	61,677	4,400	7.7
1981	62,895	4,370	7.6
1982	61,646	4,090	7.4
1983	63,981	3,100	5.6

[1]The incidence rates represent the number of fatalities per 100,000 full-time workers and were calculated as: (N/EH) × 200,000,000, where

N = number of fatalities

EH = total hours worked by all employees during calendar year

200,000,000 = base for 100,000 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

Table 2. Employment and occupational fatalities for employers with 11 employees or more by Industry division, 1982 and 1983

Industry division	Employment[1]				Fatalities			
	1982		1983		1982		1983	
	Number (thousands)	Percent	Number (thousands)	Percent	Number	Percent	Number	Percent
Private sector...................	61,646	100	63,981	100	4,090	100	3,100	100
Agriculture, forestry, and fishing	729	1	755	1	180	4	80	3
Mining	1,056	2	864	1	440	11	240	8
Construction	2,894	5	2,916	5	720	18	670	22
Manufacturing ....\..........	18,197	30	17,887	28	770	19	730	24
Transportation and public utilities...............	4,630	8	4,566	7	970	24	570	18
Wholesale and retail trade..............	15,646	25	16,790	26	490	12	440	14
Finance, insurance, and real estate..............	4,253	7	4,510	7	100	2	70	2
Services	14,242	23	15,694	25	420	10	310	10

[1]Employment is expressed as an annual average and is derived primarily from the BLS–State Current Employment Statistics program. Employment estimates have been adjusted based on data provided by the Annual Survey of Occupational Injuries and Illnesses to exclude establishments with fewer than 11 employees.

NOTE: Because of rounding, components may not add to totals.

Analysis by cause

During 1982 and 1983, four causal categories accounted for the majority of deaths in the private sector: highway vehicles, falls, heart attacks, and industrial vehicles or equipment. (See table 4.) Nearly three-tenths of all deaths were attributed to car and truck accidents; about one-tenth each involved falls, heart attacks, and industrial vehicles or equipment. The remaining deaths were caused by assaults, electrocutions, entrapments or strikes by objects other than vehicles or equipment, aircraft crashes, explosions, fires, plant machinery operations, and gas inhalations.

Highway vehicles were the leading cause of work-related deaths in 6 of the 8 industry divisions and caused nearly 30 percent of the total fatalities. As in previous years, highway vehicles were responsible for the most fatalities in the industries of mining—oil and gas extraction only; manufacturing; transportation and public utilities; finance, insurance, and real estate; and services.[2] Along with lethal assaults, they were a major cause of death in the wholesale and retail trade industry. The largest percentage—about one-third—

Table 3. Incidence rates of occupational fatalities for employers with 11 employees or more, by industry division, 1982–83

Industry division	Fatality incidence rate[1]	
	1982	1983
Private sector	7.4	5.6
Agriculture, forestry, and fishing...............	28.4	12.7
Mining........................	44.3	27.6
Construction	28.7	26.3
Manufacturing......................	4.5	4.3
Transportation and public utilities	21.9	13.3
Wholesale and retail trade	3.8	3.3
Finance, insurance, and real estate	2.5	1.7
Services........................	3.5	2.5

[1]The incidence rates represent the number of fatalities per 100,000 full-time workers and were calculated as: (N/EH) × 200,000,000, where

N	=	number of fatalities
EH	=	total hours worked by all employees during calendar year
200,000,000	=	base for 100,000 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

of highway fatalities occurred in the transportation and public utilities industry. (See table 5.) Some of these deaths involved collisions or single vehicle accidents, such as overturning or running off the roadway, while others occurred at the worksite when employees were run over.

Falls were responsible for nearly 12 percent of all fatalities. About 2 of 5 of these fatalities involved construction workers and another 1 of 5 occurred in the manufacturing industry. Some of the workers lost their lives from falling off scaffolds and others by falling into plant machinery.

Heart attacks caused approximately 11 percent of all job-related deaths. One-half of these fatalities were in the construction and manufacturing industries and a fifth occurred in the services industry.

Industrial vehicles or equipment such as tractors and high-lift trucks were involved in nearly 10 percent of all fatalities. The construction and manufacturing industries combined accounted for more than half of these deaths. A tenth of the deaths were experienced in the agriculture, forestry, and fishing industry.

Fatalities involving contact with carcinogenic or toxic substances, drowning, train accidents, and various occupational illnesses were included in the "all other" category, which accounted for 3 percent of the total.

Analysis by industry

Agriculture, forestry, and fishing. Industrial vehicles or equipment were involved in 25 percent of the fatalities in this industry while highway vehicles accounted for 24 percent of the job-related deaths. Thirteen percent of the deaths involved falls and 12 percent, electrocutions.

Mining—oil and gas extraction only. Highway vehicles accounted for 18 percent of the fatalities and industrial vehicles or equipment were responsible for 14 percent. Employees struck by falling or flying objects—other than vehicles or equipment—accounted for 13 percent of the fatalities, and falls were associated with 11 percent.

Table 4. Distribution of fatalities by cause for employers with 11 employees or more, private sector, 1982 and 1983[1]

(In percent)

Cause[2]	Private sector[3]	Agriculture, forestry, and fishing	Mining—oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities[4]	Wholesale and retail trade	Finance, insurance, and real estate	Services
All causes	100	100	100	100	100	100	100	100	100
Highway vehicles	28	24	18	16	20	47	28	51	32
Falls	12	13	11	26	9	5	7	13	11
Heart attacks	11	3	10	13	11	7	9	13	20
Industrial vehicles or equipment	10	25	14	15	12	4	11	3	4
Assaults	7	1	1	1	2	3	28	10	15
Electrocutions	7	12	2	13	6	5	6	2	4
Caught in, under, or between objects other than vehicles or equipment	5	(5)	5	3	5	11	4	0	1
Struck by objects other than vehicles or equipment	4	3	13	3	7	3	2	0	1
Aircraft crashes	4	2	3	(5)	4	7	1	10	5
Explosions	3	1	5	2	5	2	1	0	1
Fires	2	11	6	2	4	1	(5)	0	(5)
Plant machinery operations	2	0	1	1	7	(5)	2	0	0
Gas inhalation	2	1	8	1	3	2	0	0	(5)
All other	3	3	3	4	5	2	(5)	0	4

[1] It is impossible to estimate year-to-year changes precisely because sampling errors are large at the industry division level. Therefore, the results are for both years rather than a comparison between them.

[2] Cause is defined as the object or event associated with the fatality.

[3] Excludes coal, metal and nonmetal mining, and railroads, for which data are not available.

[4] Excludes railroads.

[5] Less than 1 percent.

NOTE: Because of rounding, percentages may not add to 100.

Table 5. Distribution of fatalities by industry division for employers with 11 employees or more, private sector, 1982 and 1983[1]

(In percent)

Cause[2]	Private sector[3]	Agriculture, forestry, and fishing	Mining—oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities[4]	Wholesale and retail trade	Finance, insurance, and real estate	Services
Highway vehicles	100	3	4	12	17	33	14	5	13
Falls	100	4	5	43	18	9	8	3	10
Heart attacks	100	1	5	23	24	12	11	3	20
Industrial vehicles or equipment	100	10	7	29	26	8	15	1	5
Assaults	100	1	1	2	6	7	56	4	24
Electrocutions	100	7	2	37	22	14	12	1	6
Caught in, under, or between objects other than vehicles or equipment	100	(5)	6	13	26	42	12	0	2
Struck by objects other than vehicles or equipment	100	3	19	15	39	13	7	0	4
Aircraft crashes	100	2	5	2	25	38	4	7	16
Explosions	100	1	10	12	48	17	7	0	5
Fires	100	19	14	14	37	11	2	0	2
Plant machinery operations	100	1	2	13	70	1	14	0	0
Gas inhalation	100	3	25	10	44	11	0	0	2
All other	100	5	6	25	35	14	2	0	13

[1] It is impossible to estimate year-to-year changes precisely because sampling errors are large at the industry division level. Therefore, the results are for both years rather than a comparison between them.

[2] Cause is defined as the object or event associated with the fatality.

[3] Excludes coal, metal and nonmetal mining, and railroads, for which data are not available.

[4] Excludes railroads.

[5] Less than 1 percent.

NOTE: Because of rounding, percentages may not add to 100.

Construction. Employees who died after falling accounted for 26 percent of the recorded cases. Highway vehicles accounted for 16 percent and industrial vehicles or equipment were involved in 15 percent of the deaths. Heart attacks and electrocutions were each responsible for 13 percent of the cases.

Manufacturing. Twenty percent of the fatalities involved highway vehicles and 12 percent were attributable to industrial vehicles or equipment. Heart attacks and falls accounted for 11 and 9 percent of the deaths.

Transportation and public utilities. As in previous years, almost one-half of all fatalities involved highway vehicles. Employees who were entrapped by objects other than vehicles or equipment accounted for 11 percent of the deaths.

Wholesale and retail trade. Highway vehicles and assaults, where robbery was generally the motive, each accounted for 28 percent of the reported deaths.

Finance, insurance, and real estate. Highway vehicles caused virtually one-half of the fatalities. Falls and heart

attacks were each associated with 13 percent of the fatal cases.

Services. Almost one-third of the deaths involved highway vehicles and one-fifth resulted from heart attacks.

Background of survey

The Annual Survey of Occupational Injuries and Illnesses is a Federal–State program in which employers in private industry maintain records under the Occupational Safety and Health Act of 1970. Excluded from this survey are the self-employed, farmers with fewer than 11 employees, private households, employees in the Federal, State, and local government agencies, and those establishments in which working conditions are covered by other Federal safety and health laws.

Since 1977, the data on occupational fatalities reflect only those deaths in establishments with 11 employees or more. The 1982 survey entitled "BLS' 1982 survey of work-related deaths" was published in the *Monthly Labor Review*, March 1984, pp. 43–45.

The 1983 survey comprised a sample of 280,000 units. The relative standard errors, which are a measure of the sampling error in the estimates, are given in the following tabulation and are to be used only in conjunction with the numbers of fatalities or the incidence rate for 1982 and 1983 shown in tables 1 through 3.

Industry	Relative standard error
Private sector................................	7
Agriculture, forestry, and fishing	35
Mining......................................	24
Construction................................	13
Manufacturing	6
Transportation and public utilities	15
Wholesale and retail trade	23
Finance, insurance, and real estate...........	48
Services....................................	35

————FOOTNOTES————

[1] The difference in the fatality estimates between 1982 and 1983 was statistically significant.

[2] The Mine Safety and Health Administration of the U.S. Department of Labor and the Federal Railroad Administration of the U.S. Department of Transportation provided data for the number of deaths in coal, metal, and nonmetal mining and railroads but not for the objects or events involved in the cases.