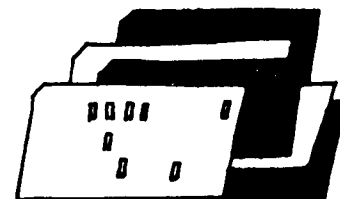


# Research Summaries



## Work-related deaths in 1984: BLS survey findings

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The number of occupational fatalities in private sector establishments with 11 employees or more was 3,740 in 1984, according to the Bureau of Labor Statistics' Annual Survey of Occupational Injuries and Illnesses. (See table 1.) The corresponding fatality rate was 6.4 per 100,000 full-time workers. About 3,300 of all deaths were related to injuries.

Among industry divisions, fatality rates ranged from 41.4 per 100,000 full-time workers in mining to 1.9 in finance, insurance, and real estate. (See table 2.) A high of 800 lives were lost in manufacturing and a low of 80, in finance, insurance, and real estate.

The fatality data are based on reports received from a sample of employers selected randomly. Participating employers provided a brief description of the object or event most directly responsible for the death. Although the sample for this survey is large (280,000 units), reported fatalities (3,740) are relatively rare events which make it tenuous to compare year-to-year changes precisely. The fatalities are classified into broad causal categories, and estimates of the percentages of fatalities are based on the total number of reported cases for the 1983 and 1984 surveys.

### Analysis by cause and industry

The majority of deaths from occupational accidents in the private sector were grouped into four causal categories: highway vehicles, industrial vehicles or equipment, falls, and electrocutions. (See table 3.) Cars and trucks were involved in more than one-fourth of the work-related deaths; heart attacks caused about one-eighth; and industrial vehicles or equipment, falls, and electrocutions each contributed roughly one-tenth. The remaining deaths were related to assaults, entrapments, explosions, aircraft crashes, gas inhalation, plant machinery operations, fires, objects other than vehicles or equipment, and other causes.

Highway vehicles were the leading cause of death in 6 of

the 8 industry divisions. Cars and trucks were responsible for the largest percentage of fatalities in the industries of agriculture, forestry, and fishing; manufacturing; transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. About 30 percent of these over-the-road fatalities occurred in the transportation and public utilities industry, which had only 7 percent of total employment. (See table 4.) Some of these deaths were the result of employees being run over at the worksite, overturning vehicles, and collisions.

Industrial vehicles or equipment, such as tractors and high-lift trucks, were involved in nearly 11 percent of all fatalities. The construction and manufacturing industries each accounted for about one-fourth of these fatalities. These industries accounted for about 5 and 28 percent of total employment.

Approximately 11 percent of all fatalities involved falls, particularly from higher levels. More than 2 of every 5 of these deaths occurred in construction industries.

Electrocutions were the cause of roughly 10 percent of all fatalities. Almost three-tenths occurred in construction industries, and nearly one-fourth were in manufacturing industries. Some electrocutions resulted from workers receiv-

**Table 1. Number and rate of fatalities for employers with 11 employees or more, private sector, 1974 through 1984**

Year	Annual average employment <sup>1</sup> (thousands)	Number of fatalities	Incidence rate per 100,000 workers <sup>2</sup>
1974	54,272	4,970	9.8
1975	52,693	4,570	9.4
1976	53,693	3,940	7.9
1977	56,333	4,760	9.1
1978	59,297	4,590	8.2
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
1984	68,008	3,740	6.4

<sup>1</sup> 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.

<sup>2</sup> The incidence rates represent the number of fatalities per 100,000 full-time workers and were calculated as:  $(N/EH) \times 200,000,000$ , 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).

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ing a severe shock after coming in contact with electrical wires.

*Agriculture, forestry, and fishing.* Highway vehicles accounted for the plurality of the fatalities, followed by industrial vehicles or equipment, and then heart attacks.

*Mining—oil and gas extraction only.*<sup>1</sup> Accidents involving industrial vehicles or equipment, highway vehicles, and falling objects—other than vehicles or equipment—were the primary causes of death.

*Construction.* Deaths which occurred as the result of an employee falling were the most common, followed by accidents involving highway vehicles, and industrial vehicles or equipment.

*Manufacturing.* Highway vehicles were the primary cause of death; industrial vehicles or equipment, heart attacks, and electrocutions were also leading causes.

*Transportation and public utilities.* Highway vehicles were the main cause of death; heart attacks and industrial vehicles or equipment were also important causes.

*Wholesale and retail trade.* Primary causes of death involved highway vehicles, industrial vehicles or equipment, and assaults.

*Finance, insurance, and real estate.* Highway vehicles caused the majority of the fatalities, and heart attacks accounted for another large portion.

*Services.* Highway vehicles were the major cause of death; heart attacks and electrocutions were other chief causes.

**Table 2. Number and rate of occupational fatalities for employers with 11 employees or more, by industry division, 1983–1984**

Industry division	1983		1984	
	Fatalities	Incidence rate <sup>1</sup>	Fatalities	Incidence rate <sup>1</sup>
Private sector .....	3,100	5.6	3,740	6.4
Agriculture, forestry, and fishing .....	80	12.7	110	16.3
Mining .....	240	27.6	370	41.4
Construction .....	670	26.3	660	22.8
Manufacturing .....	730	4.3	800	4.4
Transportation and public utilities .....	570	13.3	770	16.9
Wholesale and retail trade .....	440	3.3	440	3.1
Finance, insurance, and real estate .....	70	1.7	80	1.9
Services .....	310	2.2	510	3.9

<sup>1</sup> 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  
 2,000,000,000 = base for 100,000 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

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

### Background of the survey

The 1984 Annual Survey of Occupational Injuries and Illnesses, authorized by the Occupational Safety and Health Act, surveyed all employers except the self-employed, farmers with fewer than 11 employees, private households, Federal, State, and local government agencies, employers with fewer than 11 employees in low-risk industries, and those establishments in which working conditions are covered by other Federal safety and health laws.

Since 1977, the published data on occupational fatalities reflect only those deaths in establishments with 11 employees or more. The 1983 report on the survey of occupational fatalities entitled, "Work-related deaths dropped sharply during 1983, BLS survey finds," was published in the

**Table 3. Distribution of fatalities by cause for employers with 11 employees or more, private sector, 1983 and 1984<sup>1</sup>**

[In percent]

Cause <sup>2</sup>	Total private sector <sup>3</sup>	Agriculture, forestry, and fishing	Mining—oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities <sup>4</sup>	Wholesale and retail trade	Finance, insurance, and real estate	Services
Total—all causes .....	100	100	100	100	100	100	100	100	100
Highway vehicles .....	27	30	18	20	19	42	38	51	23
Heart attacks .....	12	13	9	12	11	10	8	25	20
Industrial vehicles or equipment .....	11	19	19	15	12	8	13	5	2
Falls .....	11	8	8	23	8	5	9	7	9
Electrocutions .....	10	7	3	14	9	7	7	4	16
Assaults .....	4	1	0	1	2	3	10	4	12
Struck by objects other than vehicles or equipment .....	4	6	15	3	7	2	2	0	1
Caught in, under, or between objects other than vehicles or equipment .....	4	3	2	3	7	3	3	0	2
Explosions .....	4	2	9	2	8	2	4	0	1
Aircraft crashes .....	3	2	2	1	4	4	3	3	5
Gas inhalation .....	3	1	8	1	3	8	0	0	1
Plant machinery operations .....	2	1	0	( <sup>5</sup> )	6	1	2	0	( <sup>5</sup> )
Fires .....	1	1	3	2	2	( <sup>5</sup> )	1	0	( <sup>5</sup> )
All other <sup>6</sup> .....	4	5	5	4	3	5	1	1	9

<sup>1</sup> It is difficult to estimate year-to-year changes for the causal categories precisely because sampling errors are large at the industry division level. Therefore, the results are for both years rather than a comparison between them.

<sup>2</sup> Cause is defined as the object or event associated with the fatality.

<sup>3</sup> Excludes coal, metal and nonmetal mining, and railroads, for which data are not available.

<sup>4</sup> Excludes railroads.

<sup>5</sup> Less than 1 percent.

<sup>6</sup> The "All other" category includes, for example, contact with carcinogenic or toxic substances, drowning, train accidents, and various occupational illnesses.

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

**Table 4. Distribution of fatalities by industry division for employers with 11 employees or more, private sector, 1983 and 1984<sup>1</sup>**

[In percent]

Cause <sup>2</sup>	Total private sector <sup>3</sup>	Agriculture, forestry, and fishing	Mining—oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities <sup>4</sup>	Wholesale and retail trade	Finance, insurance, and real estate	Services
Total—all causes	100	3	5	20	25	19	14	1	13
Highway vehicles	100	3	4	15	17	29	19	3	11
Heart attacks	100	3	4	20	24	16	9	3	21
Industrial vehicles or equipment	100	5	9	28	27	13	16	1	2
Falls	100	2	3	44	17	10	12	1	11
Electrocutions	100	2	2	29	23	14	9	1	21
Assaults	100	1	0	4	12	14	33	1	35
Struck by objects other than vehicles or equipment	100	5	20	14	41	11	6	0	3
Caught in, under, or between objects other than vehicles or equipment	100	3	3	18	45	16	10	0	5
Explosions	100	2	13	10	51	9	13	0	3
Aircraft crashes	100	2	4	5	27	27	15	1	19
Gas inhalation	100	1	15	6	23	53	0	0	3
Plant machinery operations	100	1	0	3	74	7	12	0	3
Fires	100	3	12	25	48	3	8	0	2
All other <sup>6</sup>	100	4	6	18	19	25	3	(5)	25

<sup>1</sup> It is difficult to estimate year-to-year changes for the causal categories precisely because sampling errors are large at the industry division level. Therefore, the results are for both years rather than a comparison between them.

<sup>2</sup> Cause is defined as the object or event associated with the fatality.

<sup>3</sup> Excludes coal, metal and nonmetal mining, and railroads, for which data are not available.

<sup>4</sup> Excludes railroads.

<sup>5</sup> Less than 1 percent.

<sup>6</sup> The "All other" category includes, for example, contact with carcinogenic or toxic substances, drowning, train accidents, and various occupational illnesses.

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

Monthly Labor Review, September 1985, pp. 41–44.

The 1984 survey was comprised of 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 in percent and are to be used only in conjunction with the numbers of fatalities or the incidence rate for 1984 shown in tables 1 and 2:

Industry	Relative standard error
Private sector	8
Agriculture, forestry, and fishing	26
Mining	13
Construction	12
Manufacturing	6
Transportation and public utilities	13
Wholesale and retail trade	58
Finance, insurance, and real estate	39
Services	21

—FOOTNOTE—

<sup>1</sup> 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.

### Union membership of employed wage and salary workers, 1985

The number of employed wage and salary workers who were members of unions or employee associations declined from 20.1 to 17.0 million between 1980 and 1985. During the same period, the number of employed wage and salary workers rose from 87.5 to 94.5 million. Thus, the propor-

tion of workers who were union members fell from 23.0 to 18.0 percent over the 5-year period. The number and proportion of workers represented by unions—that is, union members as well as nonmembers covered by collective bargaining agreements—also declined, from 22.5 to 19.4 million or from 25.7 to 20.5 percent of employed wage and salary workers.

Data on union employment were obtained from the Current Population Survey (CPS), conducted by the Bureau of the Census for the Bureau of Labor Statistics. The CPS collected data on workers identified by their membership in unions or by their representation at work by a union, whether or not they were members. It should be noted that the CPS union membership data covered only employed wage and salary workers, not union members who were self-employed, unemployed, retired, laid off, or who, for other reasons, were not wage and salary employees.

*Industry.* Among the major industry groups, the transportation, communications, and public utilities industry had the highest union membership proportion—37 percent, or 2.1 million members out of 5.7 million workers. Three other major industry groups had union membership proportions greater than the national average of 18.0 percent: the public sector—Federal, State, and local government (35.8 percent); manufacturing (24.8 percent); and construction (22.3 percent). In mining, 17.3 percent of the workers were union members, just below the national average. Among the other industry groups (wholesale and retail trade; services; and finance, insurance, and real estate), union membership rates were no higher than 7.2 percent. (See table 1.)

Union membership was disproportionately concentrated in three major industry groups. The public sector accounted for 33.8 percent of all employed union members; manufac-

**Table 1. Employed wage and salary workers affiliated with a union, by selected characteristics, 1985 annual average**

[Numbers in thousands]

Characteristic	Total employed	Members of unions <sup>1</sup>		Represented by unions <sup>2</sup>	
		Total	Percent of employed	Total	Percent of employed
Total, 16 years and over . . .	94,521	16,996	18.0	19,358	20.5
Men . . . . .	51,015	11,264	22.1	12,448	24.4
Women . . . . .	43,506	5,732	13.2	6,910	15.9
White <sup>3</sup> . . . . .	81,862	14,124	17.3	16,083	19.6
Men . . . . .	44,680	9,623	21.5	10,625	23.8
Women . . . . .	37,182	4,501	12.1	5,458	14.7
Black <sup>3</sup> . . . . .	10,073	2,445	24.3	2,775	27.6
Men . . . . .	4,967	1,387	27.9	1,530	30.8
Women . . . . .	5,106	1,058	20.7	1,245	24.4
Full-time workers <sup>4</sup> . . . . .	77,002	15,717	20.4	17,816	23.1
Part-time workers <sup>4</sup> . . . . .	17,518	1,280	7.3	1,542	8.8
Occupation:					
Managerial and professional specialty . . .	21,688	3,307	15.2	4,166	19.2
Technical, sales, and administrative support . . .	30,082	3,243	10.8	3,928	13.1
Service occupations . . . . .	13,325	1,922	14.4	2,162	16.2
Precision production, craft, and repair . . . . .	11,482	3,272	28.5	3,543	30.9
Operators, fabricators, and laborers . . . . .	16,207	5,157	31.8	5,453	33.6
Farming, forestry, and fishing . . . . .	1,736	95	5.5	107	6.1
Industry:					
Agricultural wage and salary workers . . . . .	1,427	30	2.1	32	2.3
Private nonagricultural wage and salary workers . . . . .	77,044	11,227	14.6	12,409	16.1
Mining . . . . .	881	153	17.3	167	19.0
Construction . . . . .	4,716	1,051	22.3	1,114	23.6
Manufacturing . . . . .	20,120	4,996	24.8	5,422	26.9
Transportation and public utilities . . . . .	5,725	2,118	37.0	2,275	39.7
Wholesale and retail trade . . . . .	19,402	1,400	7.2	1,552	8.0
Finance, insurance, and real estate . . . . .	6,032	177	2.9	244	4.0
Services . . . . .	20,167	1,331	6.6	1,636	8.1
Government workers . . . . .	16,050	5,740	35.8	6,917	43.1

<sup>1</sup> Members of a labor union or an employee association similar to a union.

<sup>2</sup> Members of a labor union or an employee association similar to a union, as well as workers who report no union affiliation but whose jobs are covered by a union or employee association contract.

<sup>3</sup> Detail for the race groups will not add to total because separate data are not presented for "other races" and Hispanic groups.

<sup>4</sup> The distinction between full- and part-time workers is based on hours usually worked.

NOTE: Data refer to the sole or principal job of full- and part-time workers. Excluded are self-employed workers whose businesses are incorporated, although they technically qualify as wage and salary workers.

turing for 29.4 percent; and transportation, communications, and public utilities for 12.5 percent. Although these three groups accounted for three-fourths of union membership, they employed only 44 percent of the Nation's wage and salary workers.

**Occupation.** The two most heavily unionized major occupational groups were operators, fabricators, and laborers, with 31.8 percent membership, and precision production, craft, and repair workers, with 28.5 percent membership. Although membership rates were less than 16 percent among the other occupational groups, two subgroups had

comparatively high rates of unionization.

About three-tenths of all union members were in the operators, fabricators, and laborers occupational group. Almost 60 percent were about equally distributed among three other major occupational groups: managerial and professional specialty; precision production, craft, and repair; and technical, sales, and administrative. The service occupations accounted for about one-tenth of the workers who were union members.

**Demographic characteristics.** While a larger proportion of male workers than of female workers belonged to unions (22.1 versus 13.2 percent), the pattern of change in union membership proportions across age brackets was similar for both sexes. The proportion of workers belonging to unions was smallest for workers age 16 to 24 for both men and women. (See table 1.) As workers' age rose, so did the percentage of those who belonged to unions. The highest unionization rate reported was for workers in the 45- to 64-year old bracket. This relationship held for both men and women.

A higher proportion of black than of white employees

**Table 2. Median weekly earnings of full-time wage and salary workers affiliated with a union, by selected characteristics, 1985 annual average**

Characteristic	Total	Represented by a union <sup>1</sup>	Not represented by a union
Total, 16 years and over . . . . .	\$343	\$419	\$315
Men . . . . .	406	463	383
Women . . . . .	277	347	262
White <sup>2</sup> . . . . .	355	433	323
Men . . . . .	417	475	395
Women . . . . .	281	356	267
Black <sup>2</sup> . . . . .	277	352	246
Men . . . . .	304	381	266
Women . . . . .	252	316	228
Occupation:			
Managerial and professional specialty . . . . .	488	481	490
Technical sales and administrative support . . . . .	307	380	297
Service . . . . .	216	322	195
Precision production, craft, and repair . . . . .	397	495	349
Operators, fabricators, and laborers . . . . .	295	395	249
Farming, forestry, and fishing . . . . .	212	334	206
Industry:			
Agricultural wage and salary workers . . . . .	211	(3)	210
Private nonagricultural wage and salary workers . . . . .	332	418	312
Mining . . . . .	501	507	499
Construction . . . . .	369	556	315
Manufacturing . . . . .	368	401	347
Transportation and public utilities . . . . .	458	492	414
Wholesale and retail trade . . . . .	270	373	262
Finance, insurance, and real estate . . . . .	334	340	333
Services . . . . .	298	327	294
Government workers . . . . .	394	420	360

<sup>1</sup> Members of a labor union or an employee association similar to a union, as well as workers who report no union affiliation but whose jobs are covered by a union or an employee association contract.

<sup>2</sup> Detail for the race groups will not add to total because data for "other races" and Hispanic groups are not presented.

<sup>3</sup> Data not shown where base is less than 50,000.

NOTE: Data refer to the sole or principal job of full- and part-time workers. Excluded are self-employed workers whose businesses are incorporated although they technically qualify as wage and salary workers. Data on median weekly earnings are derived using \$50 centered intervals, rather than the \$10 intervals previously used.

belonged to unions, 24.3 and 17.3 percent. This relationship held for both men and women.

*Earnings.* Full-time unionized workers had substantially higher median usual weekly earnings than those who were not represented by a union. (See table 2.) This relationship held for six of the eight major industry groups (exceptions were mining and finance, insurance, and real estate) and

among the occupational groups, except for managerial and professional specialty workers. Similarly, among black and white workers of both sexes, those covered by a collective bargaining agreement had weekly earnings substantially higher than their nonrepresented counterparts.

More detailed data appear in Larry T. Adams, "Union Membership of Employed Wage and Salary Workers," *Current Wage Developments*, March 1985, pp. 45-50. □

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### **Making work more human**

Where work is badly organized, the morale of the workers is almost certainly going to be low, and the working atmosphere depressed. Monotonous jobs, requiring little skill, can be extremely tiring and even degrading. An authoritarian style of management can add to the burden. If a worker has only one duty and that is to be obedient; if he is given only simple tasks, to be repeated from morning till night; if the pace of work allows him no time to relax for a moment; in all these conditions, he is gradually forced into the position of a draught animal who only works, eats, and sleeps. Fortunately, it is now increasingly acknowledged that—whatever purely economic considerations might dictate—this is not good enough. Everyone is now familiar with the demand for "the humanization of work."

—INTERNATIONAL LABOR ORGANIZATION  
Working Conditions and Environment:  
A Worker's Education Manual  
(Washington, International Labor  
Organization, 1983), pp. 27-28.

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