

ration to the regression models. This had a substantial negative effect on the reported duration difference. However, it is difficult to determine whether this is genuinely the result of the longer-duration unemployed responding with smaller differences. An alternative explanation is that the finding is purely a statistical artifact. Conditional on a high reported May duration, the difference between the June and May durations is likely to be less than if the value of DUR_{May} is low. This means that in a regression model for $DIFF$, DUR_{May} will have a negative coefficient. This hypothesis also predicts that, by similar reasoning, DUR_{June} should have a positive coefficient. Some support for this view was provided when we substituted DUR_{June} for DUR_{May} and observed a significant positive coefficient. Therefore, because the results appear spurious, we have not reported equations which include duration variables.

⁹Our equations also include control variables for the respondents' rotation groups in the cps. Rotation Group I indicates individuals who participated in the survey in May, June, July, and August; Rotation Group II denotes those who participated only in May, June, and July. The omitted dummy variable is for those who participated only in the May and June surveys. These variables, not reported in the tables, never proved statistically significant.

¹⁰This was calculated as:

$$\frac{Prob(\text{transition from unemployment to NILF})}{Prob(\text{transition from unemployment to employment or NILF})}$$

For further discussion of labor market dynamics in this framework, see Kim B. Clark and Lawrence H. Summers, "Labor Market Dynamics and Unemployment: A Reconsideration," *Brookings Papers on Economic Activity*, Vol. I, 1979, pp. 13-60.

¹¹Job losers and leavers were categorized on the basis of the "why did . . . start looking for work?" question. Workers who explained that they were on permanent or temporary layoff in response to the question "why was . . . absent from work last week?" were classified as on layoff. New entrants were those nonleavers and nonlosers who claimed either that (i) they had never worked at all, or (ii) they had never worked full time for more than 2 consecutive weeks. Any workers who did not fall into any of these four categories were classified as reentrants.

BLS' 1982 survey of work-related deaths

JANET MACON

The number of work-related deaths in private sector establishments with 11 employees or more was 4,090 in 1982, compared with 4,370 in 1981.¹ The corresponding fatality rate was 7.4 deaths per 100,000 full-time workers in 1982, and 7.6 in 1981. (See table 1.)

Employers participating in the Bureau of Labor Statistics' Annual Survey of Occupational Injuries and Illnesses were asked to supply specific information about deaths caused by hazards in the work environment, that is, the object or event most closely associated with the circumstances of the fatality. Estimates of the percentage of fatalities by cause represent the average for the 1981 and 1982 surveys. Percentages were calculated for the 2 years combined because large sampling errors at the industry division level preclude precise comparisons based on year-to-year changes.

The 4,090 fatalities in 1982 represent all reported deaths

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resulting from a job-related injury or illness in 1982, regardless of the time between the injury or onset of illness and death. About 340 of these fatalities were related to illness.

Among industry divisions, fatality rates ranged from 44.3 per 100,000 full-time workers in mining industries to 2.5 in finance, insurance, and real estate industries. Between 1981 and 1982, rates decreased in 5 of the 8 industry divisions, and increased by more than 15 percent in agriculture, forestry, and fishing; transportation and public utilities; and services.

Transportation and public utilities industries reported the largest number of fatalities. The percentage of total fatalities increased in three of the industry divisions, decreased in three, and remained unchanged in two. Although the number of fatalities decreased in construction and mining, the percentage of the total remained unchanged.

Analysis by cause

More than half of all fatalities were caused by over-the-road motor vehicles, falls, heart attacks, or industrial vehicles or equipment. (See table 2.) About 1 of every 4 fatalities involved over-the-road motor vehicles. Falls, heart attacks, and industrial vehicles combined contributed 32 percent of total fatalities; falls, 12 percent; heart attacks, 10 percent; and industrial vehicles or equipment, 10 percent.

Over-the-road motor vehicles were the major cause of death in 5 of the 8 industry divisions. About 1 of every 3 of these fatalities occurred in transportation and public utilities industries, which had only 7 percent of total employment. (See table 3.)

Twelve percent of all fatalities involved falls. The construction and manufacturing industries together accounted for about 2 of every 3 falls.

About 10 percent of all fatalities were due to heart attacks. Heart attacks occurred at a slightly higher frequency in construction and transportation and public utilities, based on employment percentages.

Industrial vehicles or equipment were involved in 10 percent of all fatalities. More than half of these cases occurred in construction and manufacturing industries. Another 14 percent occurred in oil and gas extraction, which accounts for only 1 percent of total employment.

The "all other" category accounted for 3 percent of total fatalities. This category includes, for example, contact with radiation or toxic substances, drowning, train accidents, and death from various occupational illnesses.

Analysis by industry

Agriculture, forestry, and fishing. Industrial vehicles or equipment were involved in 27 percent of the fatalities, while over-the-road motor vehicles contributed 18 percent of the cases. Electrocution accounted for 16 percent and falls, 12 percent.

Table 1. Employment, occupational injury and illness fatalities, and fatality incidence rates for employers with 11 employees or more, by industry division, 1981-82

Industry division	Employment ¹				Fatalities				Fatality incidence rate ²	
	1981		1982		1981		1982		1981	1982
	Number (thousands)	Percent	Number (thousands)	Percent	Number	Percent	Number	Percent		
Private sector	62,895	100	62,629	100	4,370	100	4,090	100	7.6	7.4
Agriculture, forestry, and fishing	698	1	729	1	130	3	180	4	21.2	28.4
Mining	1,054	2	1,070	2	500	11	440	11	46.6	44.3
Construction	2,990	5	2,898	5	800	18	720	18	29.2	28.7
Manufacturing	19,504	31	18,267	29	990	23	770	19	5.3	4.5
Transportation and public utilities	4,685	7	4,629	7	750	17	970	24	16.5	21.9
Wholesale and retail trade	15,472	25	15,603	25	730	17	490	12	5.6	3.8
Finance, insurance, and real estate	4,180	7	4,252	7	120	3	100	2	3.1	2.5
Services	14,312	23	15,181	24	350	8	420	10	3.0	3.5

¹Employment is expressed as an annual average and is derived primarily from the BLS-State Employment and Earnings Survey. Annual average employment for the agriculture, forestry, and fishing division is a composite of employment data for agricultural production (sic 01 and 02) from the Annual Survey of Occupational Injuries and Illnesses and employment data for agricultural services (sic 07); forestry (sic 08); and fishing, hunting, and trapping (sic 09) from State unemployment insurance programs. Employment estimates for nonagricultural industries have been adjusted based on County Business Patterns to exclude establishments with fewer than 11 employees. Adjustments were made to agricultural industries based on data provided by the Annual Survey of Occupational Injuries and Illnesses.

²The 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 is the number of fatalities; EH is the total hours worked by all employees during calendar year; and 200,000,000 is the 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.

Mining, oil and gas extraction only. Accidents involving over-the-road motor vehicles and industrial vehicles or equipment were the cause of death in nearly half of the cases. Falls and employees being struck by objects other than vehicles or equipment each accounted for 9 percent of all cases.

Construction. Falls from elevation or the same level continued to be the major cause of death, accounting for nearly 1 of every 3 cases. Over-the-road motor vehicles and industrial vehicles or equipment combined contributed an ad-

ditional one-third of the cases. Electrocutions caused 11 percent of the fatalities.

Manufacturing. Fatalities resulting from over-the-road motor vehicles, falls, heart attacks, and plant machinery operations combined were the cause of death in 50 percent of the cases; 20 percent were due to over-the-road motor vehicles. Falls, heart attacks, and plant machinery operations each contributed 10 percent of the total for the industry.

Transportation and public utilities. As in previous years,

Table 2. Distribution of occupational fatalities in establishments in the private sector with 11 employees or more, by cause, 1981-82 average

[In percent]

Cause ¹	Total, all industries ²	Agriculture, forestry, and fishing	Mining, oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities ³	Wholesale and retail trade	Finance, insurance, and real estate	Services
Total, all causes	100	100	100	100	100	100	100	100	100
Over-the-road motor vehicles	27	18	26	15	20	52	20	35	29
Falls	12	12	9	31	10	6	5	9	10
Heart attacks	10	6	8	8	10	6	12	23	16
Industrial vehicles or equipment	10	27	21	17	9	3	4	0	9
Nonaccidental injuries	7	3	(⁴)	(⁴)	2	2	30	8	15
Struck by objects other than vehicles or equipment	6	1	9	5	8	3	12	0	2
Electrocutions	6	16	4	11	5	6	1	0	5
Caught in, under, or between objects other than vehicles or equipment	6	1	3	4	5	9	8	17	2
Aircraft crashes	4	2	5	1	3	6	1	7	7
Fires	3	8	7	1	6	2	(⁴)	1	(⁴)
Plant machinery operations	3	1	1	2	10	(⁴)	1	0	(⁴)
Explosions	2	0	2	2	4	2	1	0	1
Gas inhalations	2	1	3	1	4	1	1	0	1
All other	3	4	3	3	4	2	3	(⁴)	3

¹Cause is defined as the object or event associated with the fatality.

⁴Less than 1 percent.

²Excludes coal, metal and nonmetal mining, and railroads for which data are not available.

³Excludes railroads.

NOTE: It is impossible to estimate year-to-year changes precisely because at the industry division level sampling errors are large. Therefore, the results are for both years rather than a comparison between them. Because of rounding, percentages may not add to 100.

Table 3. Distribution of occupational fatalities in establishments in the private sector with 11 employees or more, by industry, 1981-82 average
[In percent]

Cause ¹	Total ²	Agriculture, forestry, and fishing	Mining, oil and gas extraction only	Construction	Manufacturing	Transportation and public utilities ³	Wholesale and retail trade	Finance, insurance, and real estate	Services
Over-the-road motor vehicles	100	3	6	10	18	37	11	4	11
Falls	100	4	4	47	20	8	6	2	8
Heart attacks	100	3	5	16	24	11	18	7	16
Industrial vehicles or equipment	100	12	14	32	23	5	6	0	9
Struck by objects other than vehicles or equipment	100	(⁴)	10	16	33	8	31	0	3
Electrocutions	100	12	4	34	21	18	3	0	8
Nonaccidental injuries	100	2	(⁴)	(⁴)	6	5	63	3	20
Aircraft crashes	100	2	9	6	22	32	6	5	19
Caught in, under, or between objects other than vehicles or equipment	100	1	4	12	21	30	20	9	3
Fires	100	12	15	8	46	14	1	2	2
Plant machinery operations	100	1	2	11	78	2	7	0	(⁴)
Explosions	100	0	5	14	47	20	8	0	6
Gas inhalation	100	2	9	10	48	14	12	0	5
All other	100	6	5	18	33	13	16	1	8

¹Cause is defined as the object or event associated with the fatality.

²Excludes coal, metal and nonmetal mining, and railroads for which data are not available.

³Excludes railroads.

⁴Less than 1 percent.

NOTE: It is impossible to estimate year-to-year changes precisely because at the industry division level sampling errors are large. Therefore, the results are for both years rather than a comparison between them. Because of rounding, percentages may not add to 100.

more than half of the cases were attributable to accidents involving over-the-road motor vehicles. Employees caught in, under, or between objects other than vehicles or equipment were the cause of 9 percent of the cases.

Wholesale and retail trade. Nearly 1 of every 3 fatalities were nonaccidental cases where an employee was intentionally killed on the job. The majority of these cases involved gunshot injuries. Twenty percent of the fatalities were caused by to over-the-road motor vehicle accidents.

Finance, insurance, and real estate. Three of every four cases were attributable to over-the-road motor vehicles, heart attacks, or employees caught in, under, or between objects other than vehicles or equipment.

Services. The major cause of death was over-the-road motor vehicles, 29 percent of the cases. Heart attacks and nonaccidental injuries accounted for another 31 percent of the cases.

Background of survey

The Annual Survey of Occupational Injuries and Illnesses is a Federal-State Program in which reports are received and processed by State agencies participating with BLS. The fatality data are based on the records which employers maintain under the Occupational Safety and Health Act of 1970. The survey covers units in private industries. Excluded from coverage under the act are working conditions which are

covered by other Federal safety and health laws, the self-employed, farmers with fewer than 11 employees, private households, and employees in Federal, State, and local government agencies. In a separate reporting system, agencies of the Federal Government file reports comparable with those of private industry with the Secretary of Labor.

The 1982 survey, to which response was mandatory, involved a sample of 280,000 units with 11 or more employees. Estimates based on a sample may differ from figures that would have been obtained if a complete census of establishments had been possible using the same schedules and procedures. Relative standard errors are calculated for estimates generated from the Annual Survey of Occupational Injuries and Illnesses and are available. □

FOOTNOTE

¹Since 1977, the fatality data have been published only for units with 11 employees or more because the reductions of the survey samples affected primarily employers with fewer than 11 employees. The reductions were in response to presidential directives on reducing the paperwork burden of employers selected to participate in statistical surveys. Data for occupational fatalities in coal, metal, and nonmetal mining and railroads were provided by the Mine Safety and Health Administration of the U.S. Department of Labor and by the Federal Railroad Administration of the U.S. Department of Transportation; however, data were not provided on the objects or events which resulted in on-the-job deaths for these industrial activities.

For an account of the 1981 survey, see Janet Macon, "Number of occupational deaths remained essentially unchanged in 1981," *Monthly Labor Review*, May 1983, pp 42-44.