Using the BLS Occupational Injury and Illness Classification System as a Safety and Health Management Tool

BY GUY TOSCANO, JANICE WINDAU, AND DINO DRUDI

Years in the making, the Bureau of Labor Statistics' (BLS) Occupational Injury and Illness Classification System enables safety and health professionals and other data users to better monitor work injuries, illnesses, and fatalities; promote safer work practices; develop new safety equipment; assess and improve workplace standards; and better use scarce resources.

The Occupational Injury and Illness Classification System (OIICS) developed by BLS provides a set of procedures for selecting and recording facts relating to an occupational injury, illness, or fatality.[1] Uniformly coded data provide safety and health professionals and policy analysts with information to develop programs designed to reduce hazards in the workplace.

Description of OIICS

OIICS classifies selected characteristics of individual injury and illness incidents. This information generally comes from administrative records such as employer logs and workers' compensation reports. While viewing these reports separately may give researchers a general idea of the types of hazards faced by workers, they will not produce the data on such key factors as hazardous equipment and exposures needed to systematically develop and set priorities for injury prevention efforts. Recognizing the shortcoming of reviewing cases individually, standardized coding is used to uniformly classify similar events and circumstances resulting in serious injury and disease.

OIICS includes the following five classification structures that describe the injury or illness and how it occurred: Nature of injury or illness, part of body affected, source of injury or illness, event or exposure, and secondary source of injury or illness. With the exception of secondary source, these categories are ultimately based on the American National Standards Institute (ANSI) Z16.2.[2] OIICS is also designed to be as compatible as possible with the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9 CM)*, which is widely used in the medical community.[3]

Nature of injury or illness describes the physical characteristics of the injury or illness; part of body identifies the part of the body directly affected by the nature; source identifies the object or substance that directly inflicted the injury or illness; event or exposure describes the manner in which the injury or illness was inflicted by the source; and secondary source identi-

Guy Toscano and Dino Drudi are economists in the Office of Safety, Health, and Working Conditions, Bureau of Labor Statistics. Janice Windau is an epidemiologist in the same office. Telephone (202) 606-6175.

fies other objects or substances, if any, that contributed to the event or exposure. The same code list is used for both source and secondary source.

Each classification structure has four levels of detail for recording the characteristics of the injury or illness—a very general grouping called the division level, the 2-digit major group level, and the more detailed 3- and 4-digit levels. This hierarchical arrangement accommodates variations in the level of detail available on reporting forms. For example, a delivery truck involved in a crash injuring the driver could variously be identified on the reporting form and subsequently coded as to source as a delivery truck (code 8251), a truck (code 8250), a highway motor vehicle (code 8200), or just a vehicle (code 8000).

Such a hierarchical arrangement enables classification system users to code some or all data element categories at either full detail, or some less detailed level of aggregation, consistent with their needs. Moreover, researchers can readily tabulate data at a less detailed level of aggregation than the level at which the data are coded, if this would enhance data presentation or otherwise better fulfill their research needs.

Because of the varied occupational injury and illness data needs BLS is called upon to fulfill, BLS and its participating State agencies code occupational injury and illness data at full detail. A nonparticipating State workers' compensation agency wishing to adopt OIICS, but due to administrative or research requirements not wishing to code at full detail, would, however, be able to use the system to code at a more general level. For example, a workers' compensation agency only interested in knowing the general class of vehicles involved in motor vehicle incidents could code vehicles to the 3-digit level. Thus, all trucks would be coded using a single source code (8250). Were the agency interested in detailed information for tractor-trailer trucks, and wished to lump all other trucks together, it could retain the 4-digit code for tractor-trailer trucks (code 8254), and place all other types of trucks into the not elsewhere classified category (code 8259), and use truck, unspecified (code 8250) when source documents are unclear as to the type of truck involved in the incident.

Alternatively, the agency could code to the level of detail provided on the source document and then tabulate to a general or summary level. This flexibility allows subsequent users of the data to perform more detailed studies than originally planned.

Rules of selection, code descriptions, alphabetical indices, and edit criteria help ensure that data available for analysis are uniformly coded as well as useful for developing prevention strategies. The concept of the rules of selection originated with the ANSI Z16.2-1962 system. These rules along with the code descriptions instruct coders how to select the correct category when the incident appears to fit into more than one code category. To illustrate: a trucker dies of burns after his semitrailer truck crashes into a bridge abutment and bursts into flames. Would this case be coded as a fire or as a highway crash? According to the rules of selection and code descriptions for event, the incident is classified as a highway crash because the rules of selection state that transportation incidents take precedence over fires.

Edit criteria were developed to ensure the accuracy of the coded data. These criteria not only screen for valid numeric codes, but also check for inconsistencies between characteristics. For example, data records are screened to ensure that the part of body is not coded toe when the nature of injury and illness is classified as an intracranial injury.

Industry of worker

The industry describes the kind of business in which the injured worker's employer is engaged. The establishment is classified according to the Office of Management and Budget's *Standard Industrial Classification (SIC) Manual*, 1987 Edition.[4] That system is the standard for classifying industries among Federal and State governmental agencies, trade associations, and private research organizations. Codes are assigned based on the primary activity performed by the establishment.

The *SIC Manual's* hierarchical arrangement of categories with detailed code descriptions served as the model for the *OIICS Manual*.

Occupation of worker

The occupation describes the type of job held by the worker at the time of the injury. The occupation coding structure is adapted from the Bureau of the Census 1990 Occupational Classification System, which is used in the BLS occupational safety and health program, and includes approximately 500 individual occupations grouped under major categories.[5] For example, under construction trades a coder would find categories for carpenters (code 567), roofers (code 595), and 28 other construction trade occupations.

Case scenarios using OIICS

The coding of the following three cases exemplifies the use of BLS's new system for classifying occupational injuries and illnesses.

Case 1. A carpenter who worked for a general contractor building single family homes, received a concussion when struck by a brick that fell from a scaffold above him.

Characteristics	*Category*	*Code*
Nature of injury	Concussion	0620
Part of body	Brain	0110
Source of injury	Brick	4111
Event or exposure	Struck by falling object	0210
Secondary source	Scaffold	6460
Industry	General contractor—single houses	1521
Occupation	Carpenter	567

Case 2. A crane operator whoworked for a structural steel erection company was electrocuted when he raised the crane boom hitting a high voltage line.

Characteristic	*Category*	*Code*
Nature of injury	Electrocution	0930
Part of body	Body system	5000
Source of injury	Crane, unspecified	3430
Event or exposure	Contact with overhead power lines	3130
Secondary source	Power lines, transformers	4415
Industry	Structural steel erection	1791
Occupation	Crane operator	849

Case 3. A bricklayer working for a masonry contractor developedcarpal tunnel syndrome from repeatedly using a trowel to scoop mortar while laying bricks.

Characteristic	*Category*	*Code*
Nature of injury	Carpal tunnel syndrome	1241
Part of body	Wrist	3200
Source of injury	Bodily motion or position	5620
Event or exposure	Repetitive use of tools	2320
Secondary source	Trowel	7134
Industry	Masonry, stone setting	1741
Occupation	Bricklayer	563

A management information system

Coding information on occupational injuries and illnesses permits creation of a database that policy analysts and safety and health professionals can use to develop employee safety awareness and training programs to prevent recurrence of serious injuries.

The two BLS programs using OIICS are the Census of Fatal Occupational Injuries and the Survey of (Nonfatal) Occupational Injuries and Illnesses. Both of these programs are Federal-State cooperative systems whereby participating State agencies assist in collecting and classifying the data. While State agencies participating in the fatality census code the OIICS characteristics for all in-scope fatalities, States participating in the survey of nonfatal injuries and illnesses code only those cases that result in 1 or more lost workdays.

Tables 1-4 show the types of data that can be generated for analysis using the coded information from the 1994 Census of Fatal Occupational Injuries and the 1993 Survey of Occupational Injuries and Illnesses. Construction industries and occupations are highlighted in these tables to illustrate the system's use as a management tool for studying occupational injuries and illnesses to develop prevention strategies.

Table 1 presents fatality data by industry division and major event or division level event categories. Detailed industries are shown for construction illustrating the hierarchical format of the SIC structure. The table shows the general types of incidents involved in fatalities to workers in the various construction industries. For example, data under heavy construction (SIC 162) include data for the subcategory water, sewer, and utility lines (SIC 1623). Almost 40 percent of the fatalities in this four-digit SIC resulted from exposure to harmful substances or environments, the division-level event category which includes contacts with electricity, temperature extremes, exposures to toxic substances, and exposure to oxygen-deficient environments.

Table 2 lists these and other detailed event and exposure categories for fatalities in the 2-digit SICs in construction, illustrating the specific ways in which construction workers were killed. Such information can be used to set priorities for prescriptive measures in the 2-digit construction industries. For example, falls to lower levels resulted in 316 fatalities in the construction industry in 1994 and almost 40 percent of the fatalities for workers in the general building and special trades industries.

Similar analysis of fatal work injuries can be performed for occupation. Table 3 shows major fatal events for workers in various occupations in the construction industry.

Table 4 presents data for nonfatal occupational injuries and illnesses involving days away from work for construction laborers. Besides the case characteristics coded in accordance with OIICS, the table shows the demographic characteristics of injured workers (sex, age, race), the length of time the worker had been with the employer, and the length of time it took the worker to recuperate from the injury. The table shows, for example, that about 10 percent of lost workday injuries sustained by construction laborers are fractures and that the median number of days it took for recuperation from these fractures was 20 days away from work. Hence, measures taken that prevent fractures could result in significant cost and time savings to employers. Further analysis of the injury data for fractures to construction laborers by specific event and exposure category may lead to measures that will assist in this effort.

Data sources

The two data series used in the above analysis are drawn from two Bureau of Labor Statistics programs—the Census of Fatal Occupational Injuries and the Survey of Occupational Injuries and Illnesses. Data from both programs are used by employers, workers, and safety and health specialists in efforts to prevent job-related injuries and illnesses.

The Census of Fatal Occupational Injuries compiles a systematic, verifiable count of fatal work injuries as well as detailed information on how these events occurred. Because studies have shown that no single data source captures all worker deaths, multiple data sources are

used to identify, verify, and profile fatal work injuries. The fatality census uses multiple data sources such as death certificates, workers' compensation reports and claims, Occupational Safety and Health Administration files, and news articles to compile the most complete count of fatal work injuries possible. Information such as the type of incident and machinery or equipment involved; nature of injury and part of body affected; occupation, age, race, and sex of the worker; the location of the incident; and industry of the employer is coded for each fatal injury. Summary data tables are released approximately 8 months after the end of the reference year. Data are available for all 50 States and the District of Columbia starting with 1992.

The Survey of Occupational Injuries and Illnesses is based on a scientifically selected sample of business establishments in the private sector. The survey profiles workers and case characteristics of serious nonfatal workplace injuries and illnesses resulting in lost worktime as well as frequency counts and incidence rates by industry. Incidence rates are released about 11 months after the end of the calendar year. Worker and case characteristics are published approximately 14 months after the end of the calendar year. Unlike the fatality census, the self-employed, government workers, and workers on small farms are excluded from the scope of the survey of nonfatal injuries. These differences may affect comparisons of data for fatal and nonfatal workplace events.

Background

At the outset of the redesign of the occupational safety and health statistics program in 1989, BLS chartered a classification structures team to review and revise the coding system it had been using to classify workers' compensation data collected under the Supplementary Data System. The team consisted of BLS staff, as well as safety and health experts from other Federal and participating State agencies. In anticipation of the new data requirements for occupational injuries and illnesses and because of increased demand by users for more detailed information, the team recognized that a new, comprehensive, detailed coding scheme would be needed.

After research and testing, the team recommended definitions, rules of selection, numerical codes, and code descriptions for nature of injury or illness; part of body affected; source of injury or illness; event or exposure (previously known as "type of accident or exposure"); and a classification termed secondary source of injury or illness. The Standard Industrial Classification (SIC), 1987 version, would continue to be used for industry, and a modified version of the Bureau of Census 1990 Occupational Classification System would be used to code workers' occupations. Starting with 1992 occupational injury and illness data collection, the new classification structures were implemented by BLS and participating State agencies.

After BLS had implemented OIICS, the ANSI Z16.2 subcommittee, independently of BLS, initiated steps to consider the new system as the national standard. In February 1995, the ANSI Z16.2 subcommittee submitted the Occupational Injury and Illness Classification System (nature, part, source, event, secondary source, SIC industry, and occupation) to its membership for consideration. The membership voted to adopt the BLS system for recording information on occupational injuries and illnesses. Then, on September 11, 1995, the ANSI Board of Standards Review approved the OIICS as the American National Standard for Information Management for Occupational Safety and Health (ANSI Z16.2-1995).[7]

A number of other organizations have either adopted the BLS system or are considering adopting it. The Environmental Protection Agency has adopted the OIICS and has already developed an automated system using it to categorize on-the-job injuries and illnesses affecting its employees. The system is expected to be available on CD-Rom and via the Internet later this year. In addition, many State workers' compensation agencies as well as the Canadian Association of Workers' Compensation Boards have adopted the OIICS. The International Labour Organization is also considering it.

Summary

The BLS Occupational Injury and Illness Classification System will enable safety and health professionals and other data users to better monitor work injuries and illnesses, educate workers about hazards associated with various jobs, promote safer work practices through enhanced job safety training, develop new safety equipment, assess and improve workplace safety standards, target research, and better use scarce resources. To evaluate their own programs, employers, unions, and industry groups will be able to more readily compare their own safety and health experiences with national trends.

As with any major statistical system revision, experience will point to areas where fine-tuning will be needed. Such enhancements are essential to maintain a high quality classification system. The agencies involved in developing the Occupational Injury and Illness Classification System will continue to devote resources to improving the system to assure it continues to serve the purposes for which it was created.

—ENDNOTES—

[1] *Occupational Injury and Illness Classification Manual,* Bureau of Labor Statistics, December 1992. Unpublished document. The text of the Manual is in the Internet World Wide Web (http://www.bls.gov/oshhome.htm).

[2] *Method of Recording Basic Facts Relating to the Nature and Occurrence of Work Injuries,* American National Standards Institute, ANSI Z16.2-1962, revised 1969.*(Out of print.)*

[3] See *The International Classification of Diseases, 9th Revision, Clinical Modification,* Public Health Service, Department of Health and Human Services, 1989.

[4] Office of Management and Budget, *Standard Industrial Classification Manual,* 1987.

[5] *Alphabetical Index of Industries and Occupations,* Bureau of the Census, Department of Commerce, 1990. According to this coding scheme some occupations are coded differently depending on the industry of the employer. Industry codes listed in the alphabetical index used to code occupations are based on the Census industry classification, not the SIC system used in BLS occupational safety and health programs. BLS modified the alphabetic index to reflect SIC rather than Census industry code links. The occupation codes and their associated titles have not been modified.

[6] See the Census of Fatal Occupational Injuries and the Survey of Occupational Injuries and Illnesses news releases: USDL-95-288; USDL-95-142; USDL-95-508.

[7] "Notification of Approval of Standard," Board of Standards Review, American National Standards Institute, New York, September 20, 1995.

The American National Standards Institute (ANSI) is a federation of manufacturers, trade associations, technical societies, professional groups, and consumer organizations that coordinates efforts to create universal nationally-accepted business and technical standards. Since 1918, ANSI has adopted over 4,000 standards covering various items from thread pitches for screws, nuts, and bolts to computer specifications.

ANSI functions through committees that specialize in a particular field. Job safety and health matters, for example, are handled by the Z16 Committee, sponsored by the National Safety Council. The Z16.2 Subcommittee handles matters relating to the recording of information on occupational injuries and illnesses and was responsible for reviewing the BLS-developed system and recommending its adoption.

Table 1. Fatal occupational injuries by industry and major event or exposure, 1994

Industry[1]	SIC code[1]	Number	Event or exposure[2] (percent)						
			Percent	Transportation incidents	Assaults and violent acts	Contact with objects and equipment	Falls	Exposure to harmful substances or environments	Fires and explosions
Total		6,588	100.0	41.6	19.9	15.4	10.0	9.7	3.1
Private industry		5,923	100.0	40.5	19.7	16.4	10.4	10.1	2.7
Agriculture, forestry and fishing		847	100.0	53.7	6.6	19.8	7.2	11.3	.9
Mining		180	100.0	31.1	–	33.9	6.1	15.0	11.7
Construction		1,027	100.0	25.8	2.7	17.8	32.1	17.9	3.3
General building contractors	15	189	100.0	22.2	5.3	15.9	41.8	12.2	2.6
Residential building construction	152	82	100.0	22.0	9.8	18.3	32.9	15.9	–
Single-family housing construction	1521	50	100.0	18.0	12.0	20.0	32.0	18.0	–
Residential construction, n.e.c.	1522	19	100.0	–	–	26.3	26.3	–	–
Nonresidential building construction	154	96	100.0	20.8	–	14.6	47.9	10.4	4.2
Industrial buildings and warehouses	1541	37	100.0	10.8	–	16.2	45.9	13.5	10.8
Nonresidential building construction, n.e.c.	1542	48	100.0	29.2	–	16.7	45.8	8.3	–
Heavy construction, except building	16	247	100.0	41.3	–	21.1	8.1	24.3	3.6
Highway and street construction	161	76	100.0	65.8	–	6.6	–	13.2	7.9
Heavy construction, except highway	162	166	100.0	29.5	–	27.1	10.2	30.1	–
Bridge, tunnel, and elevated highway	1622	20	100.0	55.0	–	–	25.0	–	–
Water, sewer, and utility lines	1623	90	100.0	18.9	–	28.9	11.1	38.9	–
Heavy construction, n.e.c.	1629	56	100.0	37.5	–	28.6	–	25.0	–
Special trades contractors	17	591	100.0	20.5	2.5	17.1	39.1	17.1	3.4
Plumbing, heating and air-conditioning	171	71	100.0	29.6	5.6	22.5	23.9	14.1	–
Painting and paper hanging	172	40	100.0	12.5	–	–	62.5	15.0	–
Electrical work	173	78	100.0	15.4	5.1	7.7	23.1	46.2	–
Masonry, stonework, tile setting, and plastering	174	53	100.0	34.0	–	–	52.8	7.5	–
Masonry and other stonework	1741	15	100.0	–	–	–	73.3	–	–
Plastering, drywall, and insulation	1742	26	100.0	34.6	–	–	53.8	–	–
Terrazzo, tile, marble, mosaic work	1743	10	100.0	80.0	–	–	–	–	–
Carpentry and floor work	175	31	100.0	22.6	–	–	54.8	16.1	–
Carpentry work	1751	28	100.0	21.4	–	–	57.1	17.9	–
Roofing, siding, and sheet metal work	176	89	100.0	9.0	–	5.6	67.4	14.6	–
Concrete work	177	34	100.0	26.5	–	35.3	11.8	14.7	–
Water well drilling	178	8	100.0	–	–	–	–	62.5	–
Miscellaneous special trade contractors	179	182	100.0	19.8	–	30.8	32.4	9.3	5.5
Structural steel erection	1791	52	100.0	11.5	–	11.5	69.2	–	–
Excavation work	1794	47	100.0	36.2	–	53.2	–	–	–
Wrecking and demolition work	1795	22	100.0	–	–	50.0	36.4	–	–
Installing building equipment, n.e.c.	1796	12	100.0	–	–	–	33.3	–	–
Special trade contractors, n.e.c.	1799	46	100.0	19.6	–	23.9	15.2	23.9	13.0
Manufacturing		787	100.0	31.3	7.0	38.6	6.6	10.3	5.6
Transportation and public utilities		944	100.0	67.4	13.8	8.7	3.0	6.2	.7
Wholesale trade		269	100.0	50.6	9.7	20.4	8.2	7.4	3.7
Retail trade		797	100.0	18.8	69.9	4.4	2.9	2.6	1.4
Finance, insurance, and real estate		112	100.0	39.3	36.6	5.4	8.0	8.9	–
Services		844	100.0	41.9	29.5	7.1	9.0	10.0	2.4
Other or nonclassifiable		116	100.0	49.1	20.7	12.9	–	12.1	–
Government		665	100.0	51.3	20.9	6.9	7.1	6.3	6.5
Federal		209	100.0	59.3	11.5	7.2	5.7	5.7	10.5
State		112	100.0	66.1	18.8	–	8.0	4.5	–
Local		333	100.0	41.4	27.9	8.1	7.2	7.2	6.0
Police protection	9221	121	100.0	42.1	54.5	–	–	–	–

[1] *Standard Industrial Classification Manual*, 1987 Edition.
[2] Based on the 1992 BLS Occupational Injury and Illness Classification Structures. Includes other events and exposures, such as bodily reaction, in addition to those shown separately.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.
Dashes indicate no data reported or data that do not meet publication criteria.
n.e.c. = not elsewhere classified.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries, 1994.

Table 2. Fatal occupational injuries in the construction industry by event or exposure, 1994

Event or exposure[1]	Total fatalities (number)	Construction industry (percent)		
		General building contractors	Heavy constructi-on	Special trade contractors
Total	1,027	100.0	100.0	100.0
Transportation incidents	265	22.2	41.3	20.5
Highway	129	13.8	13.8	11.7
Collision between vehicles, mobile equipment	63	7.9	4.5	6.3
Moving in same direction	10	–	1.6	.8
Moving in opposite directions, oncoming	19	2.6	–	2.0
Moving in intersection	11	1.6	1.6	.7
Vehicle struck stationary object or equipment on side of road	22	1.6	1.6	2.5
Noncollision	43	3.7	7.7	2.9
Jack-knifed or overturned--no collision	34	2.6	6.9	2.0
Nonhighway (farm, industrial premises)	44	–	8.1	3.7
Collision between vehicles or mobile equipment	5	–	–	.5
Noncollision accident	38	–	7.3	3.0
Fall from moving vehicle, mobile equipment	5	–	–	.7
Fell from and struck by vehicle, mobile equipment	9	–	2.4	–
Overturned	21	–	4.5	1.5
Aircraft	10	2.6	–	.7
Worker struck by vehicle, mobile equipment	69	4.2	17.0	3.2
Worker struck by vehicle, mobile equipment in roadway	32	–	10.1	.8
Worker struck by vehicle, mobile equipment on side of road	9	–	2.0	.5
Worker struck by vehicle, mobile equipment in parking lot or non-road area	20	2.1	2.8	1.5
Water vehicle	6	–	1.6	–
Assaults and violent acts	28	5.3	1.2	2.5
Homicides	15	4.2	–	.8
Shooting	13	3.7	–	.7
Self-inflicted injury	12	–	–	1.5
Contact with objects and equipment	183	15.9	21.1	17.1
Struck by object	86	7.4	11.3	7.4
Struck by falling object	54	4.8	7.3	4.6
Struck by flying object	7	–	1.6	–
Struck by swinging or slipping object	11	–	–	1.5
Struck by rolling, sliding objects on floor or ground level	6	–	–	.7
Caught in or compressed by equipment or objects	33	3.2	2.8	3.4
Caught in running equipment or machinery	11	1.6	–	1.2
Compressed or pinched by rolling, sliding, or shifting objects	8	–	1.2	.7
Caught in or crushed in collapsing materials	63	4.8	6.9	6.3
Excavation or trenching cave-in	39	1.6	6.1	3.6
Caught in or crushed in collapsing structure	21	2.6	–	2.4
Falls	330	41.8	8.1	39.1
Fall to lower level	316	38.1	7.3	38.2
Fall from floor, dock, or ground level	11	1.6	–	1.4
Fall from ladder	47	7.9	1.2	4.9
Fall from roof	106	11.6	–	13.9
Fall from scaffold, staging	68	9.0	–	8.5
Fall from building girders or other structural steel	25	2.1	1.6	2.9
Fall from nonmoving vehicle	9	–	–	1.2
Fall on same level	10	3.2	–	–
Exposure to harmful substances or environments	184	12.2	24.3	17.1
Contact with electric current	140	9.5	15.4	14.2
Contact with electric current of machine, tool, appliance, light fixture	13	–	–	1.7
Contact with wiring, transformers, or other electrical component	45	2.6	3.6	5.2
Contact with overhead power lines	61	4.2	8.9	5.2
Contact with temperature extremes	13	–	2.8	1.0
Exposure to environmental heat	10	–	2.0	.8
Exposure to caustic, noxious, or allergenic substances	15	1.6	2.4	1.0
Inhalation of substance	9	–	1.6	.7
Oxygen deficiency	15	–	3.6	.7
Drowning, submersion	9	–	2.4	.5
Fires and explosions	34	2.6	3.6	3.4
Fires--unintended or uncontrolled	16	–	2.8	1.5
Fire in residence, building, or other structure	5	–	1.2	–
Explosion	18	2.6	–	1.9
Explosion of pressure vessel or piping	8	–	–	1.0

[1] Based on the 1992 BLS Occupational Injury and Illness Classification Structures.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

Dashes indicate no data reported or data that do not meet publication criteria.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries, 1994.

Table 3. Fatal occupational injuries in the construction industry by occupation and major event or exposure, 1994

Occupation[1]	Number	Event or exposure[2] (percent)						
		Percent	Transportation incidents	Assaults and violent acts	Contact with objects and equipment	Falls	Exposure to harmful substances or environments	Fires and explosions
Total	1,027	100.0	25.8	2.7	17.8	32.1	17.9	3.3
Managerial and professional specialty	54	100.0	37.0	–	11.1	33.3	9.3	–
Executive, administrative, and managerial	51	100.0	37.3	–	11.8	33.3	9.8	–
Managers and administrators, n.e.c.	45	100.0	35.6	–	13.3	35.6	–	–
Technical, sales, and administrative support	10	100.0	60.0	–	–	–	–	–
Technicians and related support occupations	6	100.0	66.7	–	–	–	–	–
Precision production, craft, and repair	557	100.0	16.7	3.1	13.8	41.1	22.4	2.3
Mechanics and repairers	46	100.0	26.1	–	23.9	28.3	15.2	–
Vehicle and mobile equipment mechanics, repairers, and supervisors	14	100.0	35.7	–	28.6	28.6	–	–
Electrical and electronic equipment repairers	12	100.0	–	–	–	–	33.3	–
Miscellaneous mechanics and repairers	16	100.0	–	–	25.0	37.5	–	–
Elevator installers and repairers	7	100.0	–	–	–	71.4	–	–
Construction trades	499	100.0	16.0	3.2	13.2	41.9	22.8	2.4
Supervisors, construction occupations	100	100.0	29.0	6.0	22.0	24.0	17.0	–
Supervisors, carpenters and related workers	5	100.0	–	–	–	80.0	–	–
Supervisors, n.e.c.	78	100.0	30.8	6.4	24.4	16.7	19.2	–
Construction trades, except supervisors	399	100.0	12.8	2.5	11.0	46.4	24.3	2.5
Brickmasons, stonemasons, and apprentices	11	100.0	–	–	–	54.5	–	–
Carpenters and apprentices	77	100.0	9.1	–	18.2	51.9	18.2	–
Drywall installers	9	100.0	–	–	–	55.6	–	–
Electricians and apprentices	67	100.0	11.9	–	–	20.9	59.7	–
Electrical power installers and repairers	16	100.0	–	–	–	50.0	50.0	–
Painters, construction and maintenance	32	100.0	–	–	–	59.4	25.0	–
Plumbers, pipefitters, steamfitters, and apprentices	33	100.0	24.2	–	27.3	18.2	–	12.1
Insulation workers	6	100.0	–	–	–	66.7	–	–
Roofers	53	100.0	9.4	–	–	71.7	9.4	–
Structural metal workers	45	100.0	8.9	–	15.6	64.4	–	–
Drillers, earth	7	100.0	–	–	–	–	71.4	–
Precision production occupations	11	100.0	–	–	–	63.6	–	–
Precision metal working occupations	11	100.0	–	–	–	63.6	–	–
Sheet metal workers	5	100.0	–	–	–	80.0	–	–
Operators, fabricators, and laborers	400	100.0	36.2	1.5	24.2	20.0	13.2	4.8
Machine operators, assemblers, and inspectors	26	100.0	–	–	23.1	26.9	19.2	19.2
Fabricators, assemblers, and hand working occupations	22	100.0	–	–	27.3	27.3	18.2	22.7
Welders and cutters	21	100.0	–	–	28.6	23.8	19.0	23.8
Transportation and material moving occupations	124	100.0	58.1	–	26.6	–	5.6	5.6
Motor vehicle operators	50	100.0	76.0	–	14.0	–	–	–
Truck drivers	49	100.0	75.5	–	14.3	–	–	–
Material moving equipment operators	70	100.0	45.7	–	35.7	–	–	10.0
Operating engineers	29	100.0	44.8	–	34.5	–	–	–
Excavating and loading machine operators	17	100.0	41.2	–	52.9	–	–	–
Grader, dozer, and scraper operators	15	100.0	46.7	–	–	–	–	–
Industrial truck and tractor equipment operators	4	100.0	100.0	–	–	–	–	–
Handlers, equipment cleaners, helpers, and laborers	250	100.0	28.0	1.6	23.2	28.0	16.4	2.8
Helpers, construction and extractive occupations	16	100.0	37.5	–	–	37.5	–	–
Helpers, construction trades	16	100.0	37.5	–	–	37.5	–	–
Construction laborers	231	100.0	27.3	1.7	23.4	27.7	16.9	3.0

[1] Based on the 1990 Occupational Classification System developed by the Bureau of the Census.

[2] Based on the 1992 BLS Occupational Injury and Illness Classification Structures. Includes other events and exposures, such as bodily reaction, in addition to those shown separately.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.
Dashes indicate no data reported or data that do not meet publication criteria.
n.e.c. = not elsewhere classified.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries, 1994.

Table 4. Number of nonfatal occupational injuries and illnesses involving days away from work[1] by selected worker and case characteristic and occupation, 1993

Characteristic	All occupations	Construction laborers	
		Number	Percent
Total	2,252,591	54,579	100.0
Sex:			
Men	1,490,418	52,864	96.9
Women	735,570	1,325	2.4
Age:			
Under 14 years	23	—	—
14 to 15 years	889	22	0.0
16 to 19 years	95,791	3,068	5.6
20 to 24 years	319,708	10,922	20.0
25 to 34 years	724,355	20,994	38.5
35 to 44 years	566,429	11,695	21.4
45 to 54 years	323,503	4,372	8.0
55 to 64 years	148,249	1,524	2.8
65 years and over	21,604	167	0.3
Length of service with employer:			
Less than 3 months	278,692	16,859	30.9
3 months to 11 months	410,126	13,508	24.7
1 year to 4 years	754,874	14,800	27.1
5 years or more	598,044	5,916	10.8
Not reported	210,855	3,496	6.4
Race or ethnic origin:			
White, non-Hispanic	1,250,071	32,872	60.2
Black, non-Hispanic	195,780	5,170	9.5
Hispanic	192,304	7,117	13.0
Asian or Pacific Islander	33,230	384	0.7
Amer. Indian or Alaskan Native	9,156	517	0.9
Not reported	572,051	8,520	15.6
Major industry division:			
Agriculture, forestry, and fishing[2]	44,826	19	0.0
Mining[3]	21,090	—	
Construction	204,769	53,060	97.2
Manufacturing	583,841	103	0.2
Transportation and public utilities[3]	232,999	369	0.7
Wholesale trade	160,934	63	0.1
Retail trade	408,590	53	0.0
Finance, insurance, and real estate	60,159	71	0.1
Services	535,386	841	1.5
Number of days away from work:			
Cases involving 1 day	366,054	8,045	14.7
Cases involving 2 days	291,760	6,772	12.4
Cases involving 3-5 days	467,001	10,545	19.3
Cases involving 6-10 days	301,941	6,811	12.5
Cases involving 11-20 days	256,319	5,785	10.6
Cases involving 21-30 days	142,301	4,102	7.5
Cases involving 31 or more days	427,215	12,520	22.9
Median days away from work	6	7	
Nature of injury, illness:			
Sprains, strains	959,163	20,322	37.2
Fractures	136,478	5,466	10.0
Cuts, lacerations, punctures	202,464	6,570	12.0
Bruises, contusions	211,179	4,930	9.0
Heat burns	37,718	654	1.2
Chemical burns	15,667	641	1.2
Amputations	11,342	285	0.5
Carpal tunnel syndrome	41,019	229	0.4
Tendonitis	25,026	243	0.4
Multiple injuries	73,181	1,965	3.6
With fractures	13,379	469	0.9
With sprains	26,969	666	1.2
Soreness, Pain	127,555	2,419	4.4
Back pain	58,385	1,163	2.1
All other	411,799	10,856	19.9

See footnotes at end of table

Table 4. Number of nonfatal occupational injuries and illnesses involving days away from work[1] by selected worker and case characteristic and occupation, 1993—Continued

Characteristic	All occupations	Construction laborers	
		Number	Percent
Part of body affected:			
Head	155,504	5,003	9.2
Eye	88,329	3,179	5.8
Neck	40,704	809	1.5
Trunk	869,447	19,425	35.6
Back	615,010	13,718	25.1
Shoulder	105,881	1,931	3.5
Upper extremities	518,703	10,938	20.0
Finger	192,634	4,309	7.9
Hand, except finger	92,405	2,074	3.8
Wrist	114,540	1,756	3.2
Lower extremities	440,016	13,691	25.1
Knee	144,693	3,518	6.4
Foot, toe	114,814	4,379	8.0
Body systems	32,005	600	1.1
Multiple	177,205	3,640	6.7
All other	19,007	473	0.9
Source of injury, illness:			
Chemicals, chemical products	43,411	1,086	2.0
Containers	330,285	3,196	5.9
Furniture, fixtures	88,813	624	1.1
Machinery	154,083	3,504	6.4
Parts and materials	249,077	14,508	26.6
Worker motion or position	331,994	5,385	9.9
Floor, ground surfaces	340,159	8,262	15.1
Handtools	105,478	5,538	10.1
Vehicles	157,360	2,822	5.2
Health care patient	99,390	—	
All other	352,542	9,654	17.7
Event or exposure:			
Contact with object, equipment	614,630	20,781	38.1
Struck by object	294,177	11,437	21.0
Struck against object	161,753	4,375	8.0
Caught in object, equipment, material	98,846	2,513	4.6
Fall to lower level	111,266	4,771	8.7
Fall on same level	244,115	4,116	7.5
Slips, trips	83,078	1,750	3.2
Overexertion	635,802	12,569	23.0
Overexertion in lifting	380,418	7,273	13.3
Repetitive motion	94,309	688	1.3
Exposed to harmful substance	111,524	2,654	4.9
Transportation accidents	71,336	1,523	2.8
Fires, explosions	4,794	189	0.3
Assault, violent act	26,906	123	0.2
by person	21,254	48	0.0
by other	5,653	75	0.1
All other	254,833	5,416	9.9

[1] Days away from work include those which result in days away from work with or without restricted work activity.

[2] Excludes farms with fewer than 11 employees.

[3] Data conforming to OSHA definitions for mining operators in coal, metal, and nonmetal mining and for employees in railroad transportation are provided to BLS by the Mine Safety and Health Administration, U.S. Department of Labor; and the Federal Railroad Administration, U.S. Department of Transportation. Independent mining contractors are excluded from the coal, metal, and nonmetal mining industries.

NOTE: Because of rounding and data exclusion of nonclassifiable responses, data may not sum to the totals. Dashes indicate data that do not meet publication guidelines.

SOURCE: Bureau of Labor Statistics, U.S. Department of Labor April 1996.