

Census of Fatal Occupational Injuries Illinois, 1996

Editors

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EXECUTIVE SUMMARY

The Census of Fatal Occupational Injuries (CFOI) was implemented in 1991 by the U.S. Department of Labor's Bureau of Labor Statistics (BLS) as a cooperative venture between 32 states, New York City and the federal government. In 1992, the census covered all 50 states and the District of Columbia. The Illinois Department of Public Health, Division of Epidemiologic Studies, initiated the CFOI program in Illinois on July 1, 1993. The census monitors, with verification, all fatal work injuries, collecting information on the circumstances of the injury and characteristics of the decedent.

Highlights for Illinois

In 1996 in Illinois, 262 occupational fatalities occurred, a 5 percent increase over 1995 fatalities. The increase was primarily the result of deaths associated with aircraft accidents, which accounted for 20 deaths, up from five recorded in 1995. Seventeen fatalities resulted from two aircraft crashes where many of the victims were in work-related travel status. Other major findings from the 1996 Census of Fatal Occupational Injuries in Illinois were—

- ! Men accounted for 92 percent of all occupational fatalities; workers 35 to 44 years of age, 27 percent. Industries with the greatest proportion of fatalities were construction, 21 percent; transportation and public utilities, 20 percent; and manufacturing, 12 percent. The construction and transportation and public utilities industries had a higher risk of workplace fatalities relative to their share of the workforce (see Figure 1).
- ! The self-employed and those working in family businesses accounted for 24 percent of occupational fatalities, a higher proportion than their 7 percent share of the workforce.
- ! Foreign-born workers accounted for 13 percent of all occupational fatalities, a higher proportion than their 8 percent share of the Illinois population.

- ! In Illinois, transportation incidents were the leading fatal event for men (36 percent). The leading fatal events for women were assaults and violent acts and transportation incidents (38 percent each) (see Figure 2).
- ! Assaults and violent acts in the workplace increased 16 percent from 1995 to 1996.
- ! Workers in construction industries experienced a 11 percent decrease in occupational fatalities from 1995 to 1996.
- ! With the exception of Adams County, occupational fatalities were evenly distributed throughout the state with the counties having the highest number of fatalities being the most heavily populated (see Figure 3). Adams County was the site of a plane crash involving multiple fatalities. This negatively skewed the fatalities in this county relative to its population size.
- ! Illinois has met the *Healthy People 2000* objectives for fatalities involving work-related homicides. It has not met the objectives for all workers and workers in mining, construction, agriculture, and transportation industries.

Chicago Metropolitan Area Highlights

The Census of Fatal Occupational Injuries recorded 123 fatal workplace injuries in the Chicago metropolitan area counties of Cook, DuPage, Kane, Lake, McHenry, and Will. Of these, 23, or about 19 percent, were the result of homicides. Other major findings included—

- ! In the Chicago area, industries with the greatest proportion of fatalities included construction, 25 percent; transportation, 17 percent; retail trade, 16 percent; and services, 15 percent.
- ! The self-employed and those working in family businesses accounted for 20 percent of all Chicago-area occupational fatalities.

! The leading fatal event for men in the Chicago area was assaults and violent acts with 30 percent of all fatalities. Assaults and violent acts and transportation incidents were the leading fatal event for women in the Chicago area with 31 percent each.

BACKGROUND

In the past, fatality estimates have varied widely, from 3,000 to 11,000 deaths per year nationally.¹ Differences in coverage, in definitions of a work fatality, and in estimation methodologies have contributed to the variations in these estimates.

The National Academy of Sciences and the Keystone Dialogue Group^a evaluated work injury and illness statistics in the United States in 1987. The National Academy of Sciences panel recommended that BLS work with state agencies to compile complete rosters of occupational fatalities from administrative sources such as death certificates and workers' compensation reports.² This census would include work-related deaths of the self-employed, workers younger than 16 years of age, workers on small farms, and other worker groups not commonly reported in current statistical systems. In response to this and other recommendations, BLS designed the Census of Fatal Occupational Injuries as part of a broad redesign of its safety and health statistics program.³

METHODS

CFOI uses multiple data sources, such as death certificates, workers' compensation reports and claims, medical examiner reports, and other available federal and state administrative records, to compile a complete and verified count of fatal workplace injuries. It reports all traumatic occupational fatalities, including those injuries to the self-employed, laborers on small farms, government workers, and other workers difficult to identify from a single data source on workplace fatalities. Table 2

^a Keystone Dialogue Group is a non-profit organization that facilitates consensus-building dialogues among business, labor, and government on public policy issues.

shows the number and percentage of documents used as sources in Illinois. A total of 884 documents were used to identify and verify 262 occupational fatalities in 1996.

To ensure an accurate count of fatal occupational injuries, CFOI requires that the work relationship be substantiated by two or more independent source documents or a source document and a follow-up questionnaire. Source documents are matched using the decedent's name and other information to avoid duplicate counts. Non-response to the questionnaire and inconsistent data require further follow-up by telephone. At the end of the collection period, fatalities with only one source document are reviewed by BLS. The fatality is included in the database only if the state and BLS agree there is sufficient information on the source document to determine that the fatality was indeed work-related.

Not all fatal injuries in the workplace meet the BLS case definition, or are *in scope*. To be considered *in scope*, a fatality must occur to an employee who works for pay, compensation, profit, or as a volunteer at the time of the event. The employee also must be engaged in a work activity or present at the site of the incident as a requirement of the job. A work relationship exists if an event or exposure results in fatal injury or illness to a person 1) on the employer's premises and the person was there to work; or 2) off the employer's premises and the person was there to work, or the event or exposure was related to the person's work or status as an employee. Work is defined as duties, activities, or tasks that produce a product or result; are done in exchange for money, goods, services, profit, or benefit; and are legal activities in the United States.

Occupational Illnesses

The census also conducts surveillance of deaths related to occupational illnesses. Data can be used to investigate known workplace hazards as well as to generate new hypotheses that can be evaluated in subsequent epidemiologic studies. Surveillance of deaths related to occupational

illnesses is conducted using death certificates, federal Occupational Safety and Health Administration (OSHA) reports, and workers' compensation reports. No follow-up questionnaires or secondary source documents are solicited. Because the work relationship is not verified for occupational illnesses, the data are considered experimental.

Deaths resulting from mesothelioma, silicosis, asbestosis, angiosarcoma of the liver, skin cancer of the scrotum, and coal worker's pneumoconiosis are included. Heart attacks that occur either on the employer's premises or while at work also are included. Additionally, several other illnesses are included when the occupation or industry is a known risk for a certain disease. For example, coal miners or glass factory workers with chronic obstructive pulmonary disease, chronic obstructive lung disease, or lung cancer are included in the census. CFOI staff continue to research scientific literature for associations between occupational exposures and disease. The appendix shows the complete list of occupational risks and their respective diseases used in the death certificate review process.

Fatality Rates

Fatal work injury rates measure the frequency of fatalities within various worker groups. The Bureau of Labor Statistics has developed fatality rates using annual average employment estimates from the 1995 Current Population Survey (CPS). The CPS employment data used to calculate rates are estimates based on a sample of employed persons. Therefore, the employment estimates and the fatality rates have sampling errors; that is, they may differ from figures that would have been obtained if it had been possible to take a complete census of employed persons.⁴

CFOI rates were calculated for major industry divisions, selected occupations, and demographic characteristics of the employees. Rates are useful in identifying potential *high-risk* groups, such as older workers and the self-employed, for further study. However, it should be noted

that these rates do not measure the independent effect of a single characteristic, such as age, sex, industry, or occupation. Many safety experts consider aggregate totals of fatalities equally important in developing intervention strategies. For example, a single fatality in a rare occupation would result in a high fatality rate for the occupation, yet would pose a minimal hazard because there are few workers employed in this occupation.

Numbers are omitted from the tables and noted as not meeting publication criteria when a category had less than three occupational fatalities.

RESULTS

Fatality Counts and Proportions

Besides comprehensive counts of fatal work injuries and the circumstances surrounding them, CFOI data provide information on the demographic characteristics of the workers. Table 3 presents a profile of occupational fatalities by socio-demographic characteristics for the U.S., Illinois, and the Chicago area. In Illinois, wage and salary workers represented 76 percent (n=199) of all occupational fatalities. The self-employed experienced 24 percent (n=63) of all fatalities, a higher proportion than their 7 percent share of the Illinois workforce. Workers 25 to 54 years of age composed 67 percent (n=176) of all occupational fatalities, with workers 35 to 44 years of age experiencing 28 percent (n=72) of all fatalities in this age classification. White workers accounted for 89 percent (n=233) of all occupational fatalities, a number similar to their 85 percent share of the Illinois workforce.

Table 4 shows the number and percentage of fatal occupational injuries by occupation for the U.S., Illinois, and the Chicago area. Operators, fabricators, and laborers experienced 40 percent (n=104) of all fatalities. This occupational category includes two subcategories that experienced 93 percent (n=97) of the fatalities: transportation and material-moving operations (n=55), and handlers,

equipment cleaners, helpers, and laborers (n=42). Precision production, craft and repair occupations experienced 19 percent (n=49) of all occupational fatalities.

Table 5 presents the number and percentage of fatal occupational injuries by industry, again for the U.S., Illinois, and the Chicago area. Industries with the greatest number of occupational fatalities included construction, with 21 percent (n=56) of the fatalities, and transportation and public utilities (n=52), with 20 percent. Within construction, the number was highest among special trades contractors (n=35).

Table 6 shows the number and percentage of fatal occupational injuries by event or exposure for the three geographic areas. Transportation incidents, both highway and non-highway, composed 36 percent (n=95) of all fatal occupational injuries in Illinois. Highway incidents made up 31 percent of the transportation fatalities, while workers struck by vehicle composed 24 percent and aircraft accidents composed 21 percent. Assaults and violent acts composed 19 percent (n=50) of all occupational fatalities, with homicides accounting for 58 percent (n=29) of all assaults and violent acts.

Table 7 shows the number and percentage of Illinois fatalities by industry and event. Workers in the retail industry experienced 42 percent of all the assaults and violent acts committed. Transportation incidents accounted for 38 percent of all agriculture workers killed. Falls accounted for 27 percent of all construction industry fatalities.

Table 8 presents the number of occupational fatalities by county. Thirty-three counties in Illinois had no occupational fatalities; 47 counties had less than three fatalities; 21 counties had three to 18 fatalities; and Cook County had 98 occupational fatalities.

Occupational Illness Fatalities

A total of 1,066 Illinois workers died as a result of occupational illnesses in 1996. The increase in occupational illnesses is a result of two factors: 1) ongoing research of scientific literature to identify additional associations between occupational exposures and diseases; and 2) telephone followback with coroners for persons dying of cardiac-related causes. Coroner followback was implemented to determine if the decedent had become ill at work. Table 9 presents the number and percentage of fatal occupational illnesses by socio-demographic characteristics of the decedents. Wage and salary workers had the greatest number of fatal occupational illnesses, as did men, workers 75 years of age or older, white workers, and non-Hispanic workers.

Table 10 shows the number and percentage of fatal occupational illnesses by major occupation and industry. The occupation with the greatest number of fatalities was precision production, craft, and repair (n=379), while the industry with the greatest number of occupational illnesses was manufacturing (n=409).

Table 11 presents the number and percentage of fatal occupational illnesses by event or exposure. Exposure to harmful substances or environments accounted for 90 percent (n=961) of all fatal occupational illnesses.

Table 12 shows the number and percentage of fatal occupational illnesses by nature of illness and source of illness. The most prevalent illness was neoplastic tumors (n=888), while the most common source of illness was minerals (n=308).

For comparison, Table 13 shows the number and proportion of the workforce in Illinois by socio-demographic characteristics and Table 14 presents the number and proportion of the workforce according to the major occupations and industry groups.

Fatality Rates

The *Healthy People 2000* objectives call for a national reduction in deaths from work-related injuries to no more than four per 100,000 full-time workers.⁵ Illinois has not achieved this national objective with a rate of 4.5 injuries per 100,000 full-time workers. Objectives also have been established for some specific industries and are summarized below. Illinois has met the *Healthy People 2000* objectives for fatalities involving work-related homicides. Illinois has not met the objectives for workers in mining, construction, agriculture, and transportation industries.

Table 1. *Healthy People 2000* Objectives for Occupational Deaths, U.S. and Illinois Rates (per 100,000)

	Year 2000 Objective	Illinois Rate^a 1996
All	4	4.5
Mine workers	21	25
Construction workers	17	22
Transportation workers	10	16
Farm workers	9.5	27
Work-related homicides	0.5	0.5

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a The rate represents the number of fatal occupational injuries per 100,000 employed and was calculated as follows: $(N/W) \times 100,000$, where N = number of fatal work injuries and W = employment, based on the Bureau of Labor Statistics, Current Population Survey, 1995.

DISCUSSION

Many safety experts regard fatal work injuries as sentinel events, an occurrence suggesting a failure in the use and application of preventive practices.⁶ Unfortunately, the safety and health community has lacked the basic information needed to assess the full scope of these tragic events.

The information compiled by the Census of Fatal Occupational Injuries will yield vital insights that may aid in preventing fatal on-the-job injuries. The Illinois database can assist users in generating fatality profiles for specific industries and populations (for example, self-employed or female workers) or in studying fatalities involving certain types of machinery (such as farm equipment) or events (for example, work activities at the time of contact with electric current). These studies can be used to identify existing workplace standards that require revision and highlight areas where intervention strategies need to be developed to decrease the hazards in Illinois workplaces and thus increase the occupational safety of Illinois workers.

References

1. The BLS Survey of Occupational Injuries and Illnesses estimated that there were 2,900 work-related fatalities during 1990. For the same year, the National Safety Council estimated 10,500 work-related fatalities. The National Institute for Occupational Safety and Health's (NIOSH) National Traumatic Occupational Fatality program estimated 5,700 work-related deaths for 1989, the latest year for which data from that program are available.
2. *Counting Injuries and Illnesses in the Workplace: Proposals for a Better System*, Washington, DC: National Research Council; National Academy Press, 1987.
3. Toscano G. "The BLS Census of Fatal Occupational Injuries," *Compensation and Working Conditions*, June 1991, pp. 1-2.
4. *Geographic Profile of Employment and Unemployment, 1992*. Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics; July 1993:141; Bulletin 2428.
5. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. U.S. Department of Health and Human Services. Publication No. (PHS) 91-50212, September 1990.
6. McNabb S. Centers for Disease Control and Prevention, presentation at the CFOI national conference, Washington, DC, September 9, 1992.

**Table 2. Distribution of Injury Source Documents by Type
Illinois, 1996**

Source Document	Number	Percent
Autopsy report	21	2
Coroner report	49	6
Death certificate	279	32
Employer followback	23	3
Informant followback	30	3
Federal employees report	1	<1
Mine safety report	4	<1
Motor vehicle accident report	25	3
Medical examiner's report and followback	12	1
Newspaper	157	18
OSHA 01 ¹	85	10
OSHA 36 ²	99	11
OSHA 170 ³	20	2
Other	14	2
Workers' compensation reports	65	7
Total	884	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

¹ OSHA 01 is used to record data related to the inspection of a workplace. It is also used to record whether an anticipatory warrant/subpoena was served, denial of entry information, and information on cases that are terminated before becoming inspections.

² OSHA 36 is a preinspection form used to record data pertaining to a fatality/catastrophe that occurs in an establishment under OSHA's or a state OSHA's jurisdiction. It is completed at the time the event is initially reported to OSHA. Its purpose is to provide OSHA with enough information on the event to determine whether to investigate.

³ OSHA 170 is used to record a summary of the results of investigations of all events involving fatalities, catastrophes, amputations, hospitalizations of two or more days, and significant publicity or property damage.

NOTE: Percents may not add to 100 due to rounding.

Table 3. Distribution of Fatal Occupational Injuries by Selected Socio-Demographic Characteristics U.S., Illinois, and Chicago Area, 1996

	U.S.		Illinois		Chicago Area ^a	
	n	%	n	%	n	%
Employee Status						
Wage and salary workers	4906	80	199	76	99	80
Self-employed ^b	1207	20	63	24	24	20
Gender						
Male	5605	92	241	92	110	89
Female	507	8	21	8	13	11
Age						
Less than 25 years	634	10	19	7	10	8
16-19	167		3		--	--
20-24	440		16		9	
25 to 54 years	4125	67	176	67	91	74
25-34	1336		49		25	
35-44	1563		72		39	
45-54	1226		55		27	
55 years and older	1339	22	67	26	22	18
55-64	847		42		18	
65 years and older	492		25		4	
Race						
White	5047	83	233	89	97	79
Black	617	10	25	10	22	18
Asian or Pacific Islander	163	3	4	2	4	3
Hispanic Origin						
Hispanic ^c	626	10	22	8	19	15
Non-Hispanic	5486	90	240	92	104	85
TOTAL	6112	100	262	100	123	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Includes the Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will

^b Includes paid and unpaid family workers, and may include owners of incorporated businesses, or members of partnerships

^c Persons identified as Hispanic may be of any race.

NOTE: Totals for major categories may include subcategories not shown separately. Percents may not add to 100 because of rounding. Dashes indicate categories that do not meet publication criteria.

**Table 4. Distribution of Fatal Occupational Injuries by Occupation^a
U.S., Illinois, and Chicago Area, 1996**

	U.S.		Illinois		Chicago Area ^b	
	n	%	n	%	n	%
Managerial and professional specialty	711	12	40	15	15	12
Executive, administrative, and managerial	437		27		10	
Professional specialty	274		13		5	
Technical, sales and administrative support	761	12	19	7	11	9
Technicians and related support	163		6		--	
Sales occupations	503		11		7	
Administrative support occupations, including clerical	95		--		--	
Service occupations	492	8	18	7	14	11
Protective service	248		8		6	
Personal service occupations			11		7	
Farming, forestry, and fishing	883	14	31	12	4	3
Farming occupations	376		21		0	
Other agriculture and related occupations	301		10		4	
Precision production, craft, and repair	1072	18	49	19	24	20
Mechanics and repairers	282		10		4	
Construction trades	592		34		18	
Operators, fabricators, and laborers	2006	33	104	40	54	44
Machine operators and tenders	218		7		4	
Transportation and material moving operations	1154		55		22	
Motor vehicle operators	913		42		18	
Truck drivers	785		35		14	
Handlers, equipment cleaners, helpers, and laborers	634		42		28	
Construction laborers	291		23		14	
Military	123	2	0	0	0	0
Unknown			1	<1	1	1
Total	6112	100	262	100	123	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Based on the 1990 Occupational Classification System developed by the Bureau of the Census

^b Includes the Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will

NOTE: Totals for major categories may include subcategories not shown separately. Percents and employment numbers may not add to totals due to rounding. Dashes indicate categories that do not meet publication criteria.

**Table 5. Distribution of Fatal Occupational Injuries by Industry^a
U.S., Illinois, and Chicago Area, 1996**

	U.S.		Illinois		Chicago Area ^b	
	n	%	n	%	n	%
Agriculture	798	13	28	11	3	2
Agricultural production - crops	335		5		0	
Agricultural production - livestock	154		--		0	
Agricultural services	171		4		3	
Agriculture unspecified			17		0	
Mining	152	2	3	1	0	
Construction	1039	17	56	21	31	25
Heavy construction except building	247		13		6	
Special trades contractors	599		35		21	
Electrical work	71		3		3	
Plumbing, heating, and air-conditioning	62		3		0	
Roofing, siding, and sheet metal work	99		13		7	
Miscellaneous special trade contractors	196		9		5	
Manufacturing	715	12	32	12	11	9
Industrial machinery and equipment	44		5		0	
Electronic and other electric equipment	15		5		--	
Transportation and public utilities	947	15	52	20	21	17
Trucking and warehousing	511		27		11	
Wholesale	267	4	17	6	7	6
Retail	672	11	25	10	20	16
Finance, insurance, and real estate	114	2	5	2	5	4
Services	767	13	30	11	18	15
Business services	168		7		5	
Auto repair, services and parking	103		8		5	
Government^c	591	10	14	5	7	6
Private Industry	5521	90	248	95	116	94
Total	6112	100	262	100	123	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Standard Industrial Classification Manual, 1987 edition

^b Includes the Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will

^c Includes fatalities to workers employed by governmental organizations regardless of industry

NOTE: Totals for major categories may include subcategories not shown separately. Percents and employment numbers may not add to totals due to rounding. Dashes indicate categories that do not meet publication criteria.

**Table 6. Distribution of Fatal Occupational Injuries by Event or Exposure^a
U.S., Illinois, and Chicago Area, 1996**

	U.S.		Illinois		Chicago Area ^b	
	n	%	n	%	n	%
Transportation incidents	2556	42	95	36	30	24
Highway	1324		29		8	
Collision between vehicles, mobile equipment	656		16		4	
Non-highway (farm, industrial premises)	369		15		--	
Worker struck by vehicle	349		23		14	
Water vehicle	107		5		0	
Aircraft	320		20		4	
Assaults and violent acts	1144	19	50	19	37	30
Homicides	912		29		23	
Shooting	751		26		21	
Self-inflicted injury	199		20		14	
Contact with objects and equipment	1005	16	46	18	12	10
Struck by object	579		22		7	
Struck by falling object	402		13		3	
Caught in or compressed by equipment or objects	283		20		4	
Caught in or crushed in collapsing materials	130		4		--	
Falls	684	11	34	13	23	19
Fall to lower level	607		28		18	
Exposure to harmful substances or environments	523	9	30	11	18	15
Contact with electric current	279		14		11	
Exposure to caustic, noxious, or allergenic substances	119		11		5	
Oxygen deficiency	92		4		--	
Fires and explosions	184	3	7	3	3	2
Total	6112	100	262	100	123	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Based on the 1992 BLS Occupational Injury and Illness Classification Structures

^b Includes the Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will

^c Includes the category "Bodily reaction and exertion"

NOTE: Totals for major categories may include subcategories not shown separately. Percents may not add to 100 due to rounding.

Table 7. Number and Percentage of Occupational Fatalities by Industry and Event, Illinois, 1996

Industry	Event													
	Total		Assault		Contact		Exposure		Falls		Fires		Transportation	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Agriculture	29	11	3	1	11	4	--	--	3	1	0	0	11	4
Construction	59	23	--	--	12	5	14	5	16	6	--	--	13	5
Finance, insurance, real estate	6	2	3	1	0	0	--	--	0	0	0	0	--	--
Manufacturing	32	12	--	--	7	3	5	2	3	1	--	--	14	5
Mining	3	1	0	0	3	1	0	0	0	0	0	0	0	0
Public administration	7	3	3	1	0	0	--	--	0	0	--	--	--	--
Retail	25	10	21	8	0	0	0	0	--	--	0	0	--	--
Transportation	53	20	6	2	6	2	4	2	3	1	--	--	33	13
Services	31	12	9	3	4	2	4	2	--	--	0	0	12	5
Wholesale	17	6	--	--	3	1	0	0	5	2	0	0	7	3
Total	262	100	50	19	46	18	30	11	34	13	7	3	95	36

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a *Standard Industrial Classification Manual, 1987 edition*

NOTE: Percents and numbers may not add to totals due to rounding. Dashes indicate categories that do not meet publication criteria.

**Table 8. Number of Fatal Occupational Injuries by County
Illinois, 1996**

County	n	County	n	County	n
Adams	18	Hardin	--	Morgan	--
Alexander	0	Henderson	--	Moultrie	0
Bond	3	Henry	4	Ogle	--
Boone	--	Iroquois	--	Peoria	--
Brown	0	Jackson	--	Perry	3
Bureau	--	Jasper	0	Piatt	0
Calhoun	--	Jefferson	0	Pike	0
Carroll	0	Jersey	0	Pope	--
Cass	0	Jo Daviess	--	Pulaski	0
Champaign	5	Johnson	--	Putnam	0
Christian	--	Kane	4	Randolph	--
Clark	--	Kankakee	--	Richland	0
Clay	0	Kendall	--	Rock Island	5
Clinton	3	Knox	0	St. Clair	6
Coles	0	Lake	4	Saline	--
Cook	98	LaSalle	4	Sangamon	3
Crawford	0	Lawrence	0	Schuyler	--
Cumberland	--	Lee	3	Scott	--
DeKalb	4	Livingston	--	Shelby	3
DeWitt	--	Logan	--	Stark	0
Douglas	0	McDonough	--	Stephenson	--
DuPage	10	McHenry	4	Tazewell	0
Edgar	--	McLean	--	Union	0
Edwards	0	Macon	3	Vermilion	--
Effingham	--	Macoupin	--	Wabash	--
Fayette	0	Madison	3	Warren	--
Ford	0	Marion	0	Washington	--
Franklin	0	Marshall	0	Wayne	--
Fulton	0	Mason	0	White	--
Gallatin	0	Massac	--	Whiteside	--
Greene	--	Menard	--	Will	3
Grundy	--	Mercer	0	Williamson	--
Hamilton	0	Monroe	--	Winnebago	5
Hancock	--	Montgomery	--	Woodford	--

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

NOTE: Dashes indicate that data do not meet publication criteria.

**Table 9. Distribution of Fatal Occupational
Illnesses by Selected Characteristics, Illinois 1996**

	Number	Percent
Employee Status		
Wage and salary workers	858	80
Self-employed ^a	206	19
Armed Forces	--	--
Sex		
Men	1029	97
Women	37	3
Age		
<25 years	0	0
25 to 54 years	126	12
55 to 74 years	457	43
75+ years	483	45
Race		
White	940	88
Black	124	12
Other or unknown	--	--
Hispanic Origin		
Hispanic ^b	14	1
Non-Hispanic	1052	99
Total	1066	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Includes paid and unpaid family workers, and may include owners of incorporated businesses, or members of partnerships.

^b Persons identified as Hispanic may be of any race.

NOTE: Percents may not add to totals due to rounding. Dashes indicate major categories that do not meet publication criteria.

**Table 10. Distribution of Fatal Occupational Illnesses
Major Occupations and Industries
Illinois, 1996**

	Number	Percent
Occupation^a		
Managerial and professional specialty	86	8
Technical, sales and administrative support	33	3
Service occupations	48	5
Farming, forestry and fishing	173	16
Precision production, craft and repair	379	36
Operators, fabricators, and laborers	342	32
Military	2	<1
Unknown	3	<1
Total	1066	100
Industry^b		
Agriculture	170	16
Mining	88	8
Construction	139	13
Manufacturing	409	38
Transportation and public utilities	83	8
Wholesale and retail trade	36	3
Finance, insurance and real estate	7	<1
Services	68	6
Government	40	4
Unknown	26	2
Total	1066	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Based on the 1990 Occupational Classification System developed by the Bureau of the Census

^b Includes the Illinois counties of Cook, DuPage, Kane, Lake, McHenry, and Will

NOTE: Totals for major categories may include subcategories not shown separately. Percents and employment numbers maynot add to totals due to rounding. Dashes indicate categories that do not meet publication criteria.

Table 11. Distribution of Fatal Occupational Illnesses by Event or Exposure^a

	Number	Percent
Exposure to harmful substances of environments	961	90
Exposure to caustic, noxious, or allergenic substance	937	
Exposure to unspecified caustic, noxious, or allergenic substance	436	
Inhalation of substance	501	
Exposure to radiation	23	
Exposure to sun	22	
Other events or exposures	105	10
Total	1066	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Based on the 1992 BLS Occupational Injury and Illinois Classification Structures
NOTE: Totals for major categories may include subcategories not shown separately.

**Table 12. Distribution of Fatal Occupational Illnesses
Nature of Illness and Source
Illinois, 1996**

	Number	Percent
Nature^a		
Systemic disease and disorders	176	17
Circulatory system diseases	102	
Hypertensive disease	3	
Ischemic heart disease, including heart attack	82	
Other forms of heart disease	13	
Respiratory system diseases	73	
Chronic obstructive pulmonary disease and allied conditions	14	
Pneumoconioses	59	
Neoplasms, Tumors, and Cancer	888	83
Other	2	<1
Total	1066	100
Source of Illness		
Chemicals and chemical products	313	29
Metallic particulates, trace elements, dusts, powders, fumes	31	
Chemical products--general	33	
Coal, natural gas, petroleum fuels and products, nec	213	
Coal and coal products	135	
Parts and materials	4	<1
Persons, plants, animals, and minerals	418	39
Minerals	308	
Asbestos	235	
Silica	73	
Other sources	34	3
Unknown	297	28
Total	1066	100

SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

^a Based on the 1992 BLS Occupational Injury and Illness Classification Structures

NOTE: Totals for major categories may include subcategories not shown separately. Percents may not add to totals due to rounding.

Table 13. Number (in thousands) and Proportion of Workforce Illinois, 1995

	Illinois	
	n	%
Employee Status		
Wage and salary workers	5381	94
Self-employed	389	7
Sex		
Men	3095	54
Women	2674	46
Age		
<25 years	888	15
25 to 54 years	4129	72
55 years and older	752	13
Race		
White	4913	85
Black	626	11
Asian or Pacific Islander	--	--
Other	--	--
Hispanic Origin		
Hispanic	466	9
Non-Hispanic	5304	92
Total	5770	100

SOURCE: Bureau of Labor Statistics Current Population Survey, 1995

^a The employment is an annual average of employed civilians 16 years of age and older, plus resident armed forces.

^b Includes paid and unpaid family workers, and may include owners of incorporated businesses, or members of partnerships.

^c Persons identified as Hispanic may be of any race.

NOTE: Percents and employment numbers may not add to totals due to rounding. Dashes indicate less than 0.5 percent or data that are not available or data that do not meet publication criteria.

**Table 14. Number (in thousands) and Proportion of Workforce
Major Occupations and Industries
Illinois, 1995**

	Illinois	
	n	%
Occupation^a		
Managerial and professional specialty	1665	29
Technical, sales and administrative support	1778	31
Service occupations	751	13
Farming, forestry, and fishing	103	2
Precision production, craft and repair	622	11
Operators, fabricators and laborers	861	15
Total	5770	100
Industry^b		
Agriculture ^c	105	2
Mining	12	<1
Construction	257	5
Manufacturing	1071	19
Transportation and public utilities	329	6
Wholesale and retail trade	1095	21
Finance, insurance and real estate	433	8
Services	1376	26
Government	723	13
Total^d	5770	100

SOURCE: Bureau of Labor Statistics Current Population Survey, 1995

^a Based on the 1990 Occupational Classification System developed by the Bureau of the Census

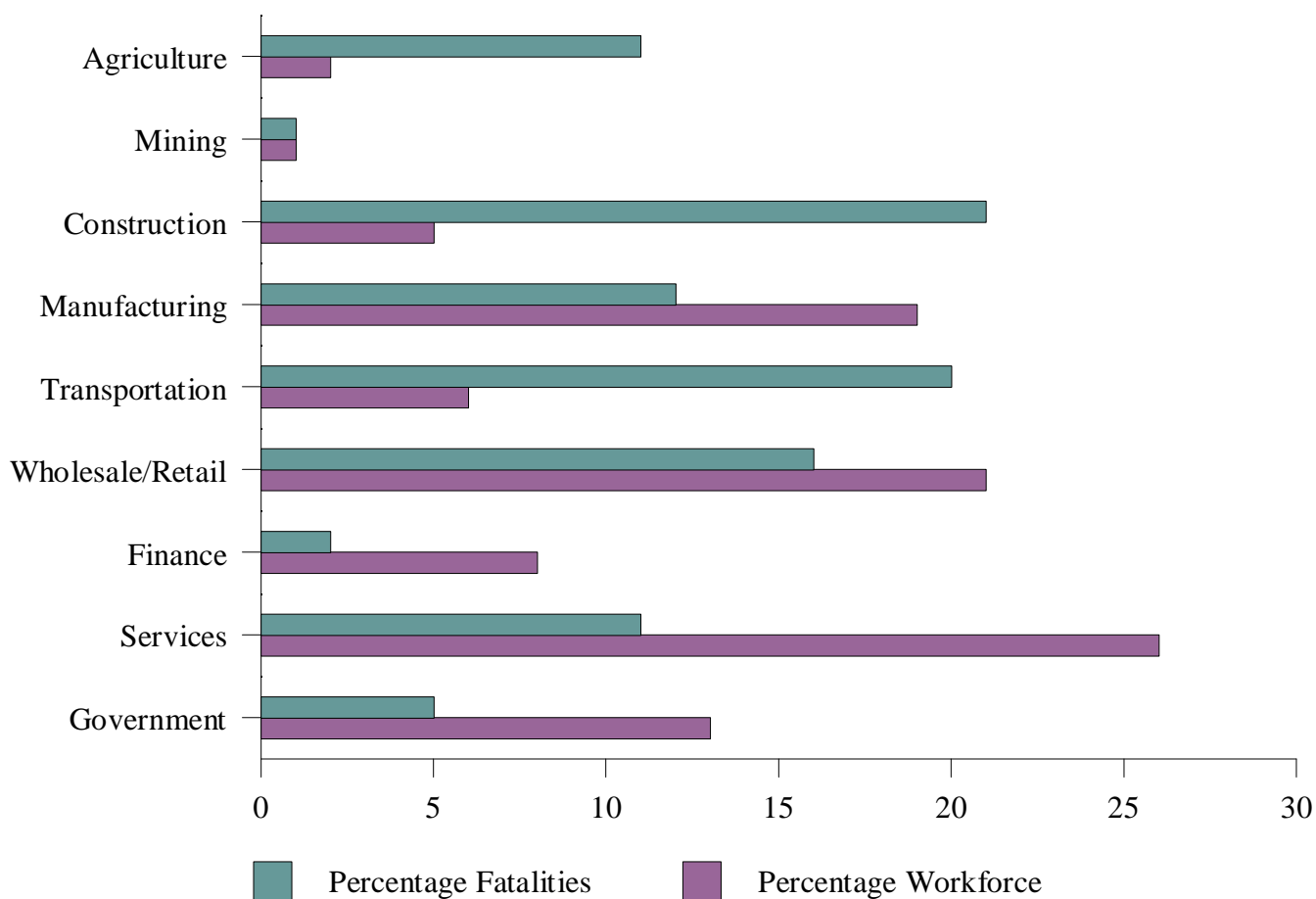
^b *Standard Industrial Classification Manual*, 1987 edition

^c Agriculture industry includes self-employed workers

^d Self-employed, unpaid family members, and private household workers are included in total but are not included in individual industries.

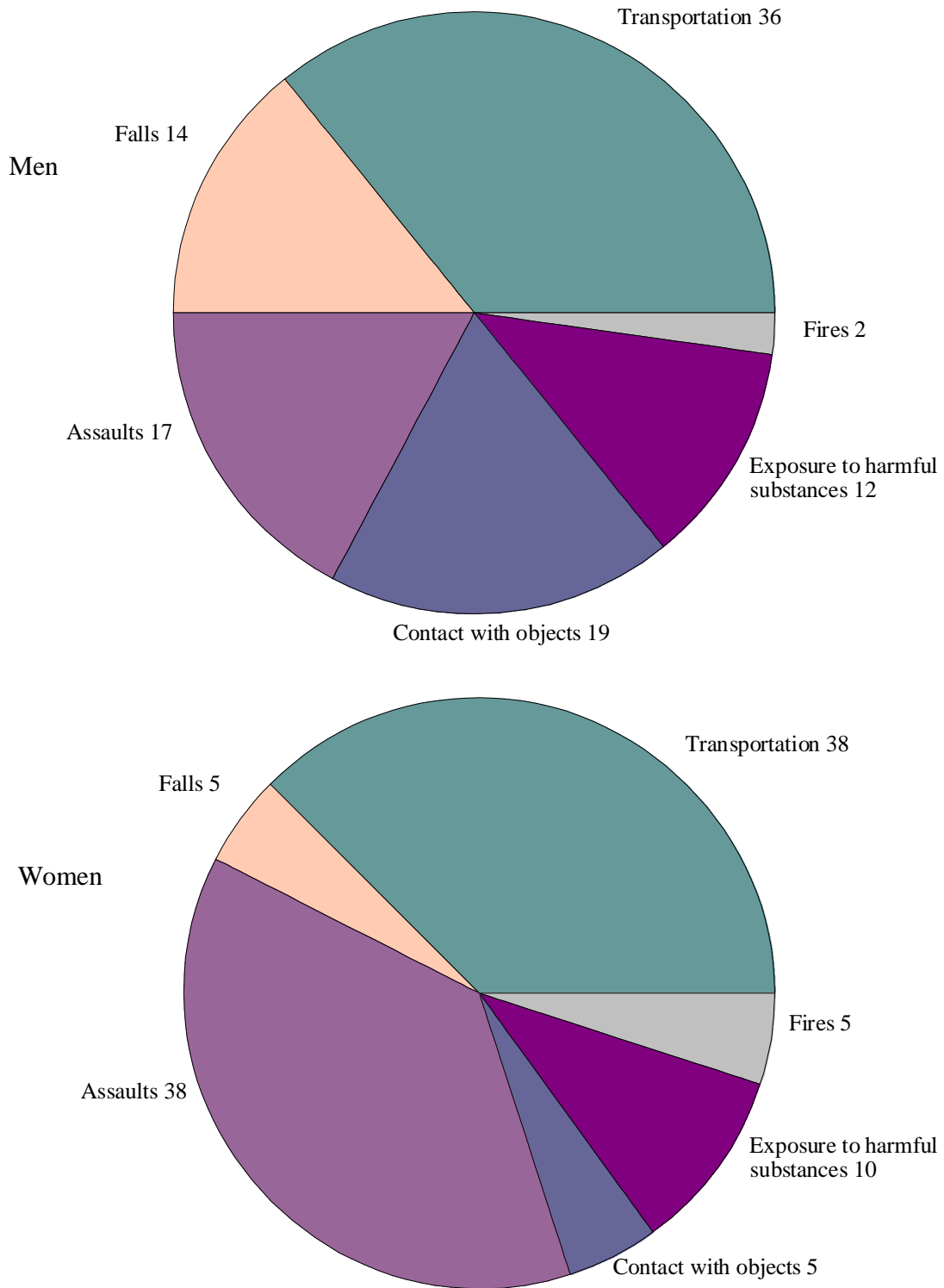
NOTE: Totals for major categories may include subcategories not shown separately. Percents and employment numbers may not add to totals due to rounding.

Figure 1: Percentage of Fatal Occupational Injuries by Industry, Illinois 1996 and Proportion of Workforce, Illinois 1995



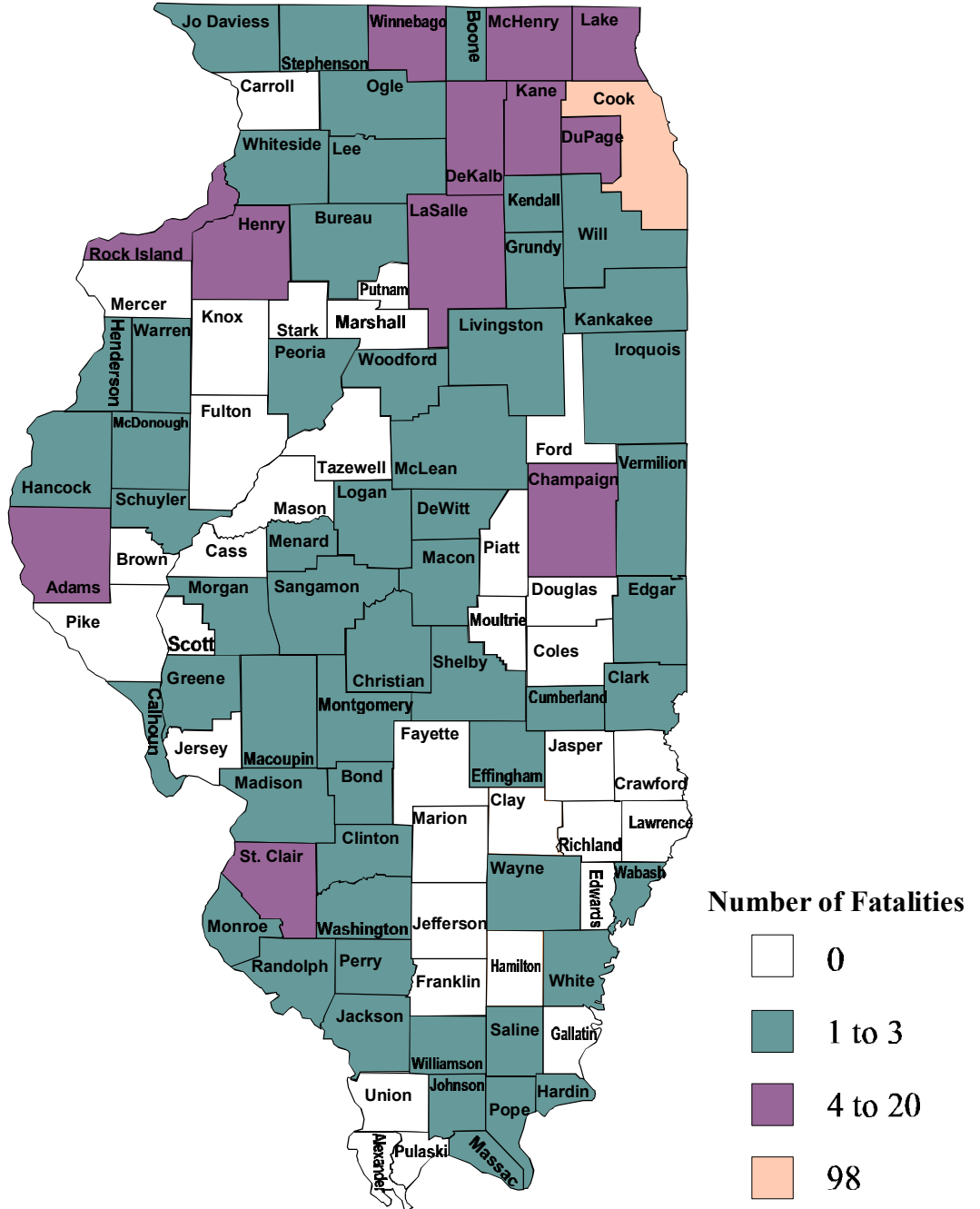
Source of Fatality Data: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997
 Source of Workforce Data: Bureau of Labor Statistics Current Population Survey, 1995

**Figure 2: Percentage of Fatal Occupational Injuries by Gender and Event
Illinois, 1996**



SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July, 1997

**Figure 3: Fatal Occupational Injuries by County
Illinois, 1996**



SOURCE: Illinois Department of Public Health, Division of Epidemiologic Studies, on behalf of the Bureau of Labor Statistics, in cooperation with state and federal agencies, Census of Fatal Occupational Injuries, July 1997

Technical Note

Fatality counts from the Census of Fatal Occupational Injuries can be combined with information on employment or hours at work to produce a fatal work injury rate. Because neither hours at work nor number of persons employed are collected in the census, the fatality rates in the table were calculated using the employment estimates from the Current Population Survey (CPS), a household survey conducted for the Bureau of Labor Statistics by the Bureau of the Census. The CPS annual average employment estimates are based on the number of workers employed during the week of the 12th of each month.

The fatality rates relate the total number of workplace deaths in 1995 to the annual average number of workers facing that risk for various groups. These measurements are developmental and do not reflect the movement of persons into and out of the labor force, the length of their work week or work year, or the effect of multiple jobholders.

The rates shown in the table were calculated as follows:

$$(N/W) \times 100,000$$

N = the number of fatally injured workers in a particular group (for example, the construction industry)

W = the annual average number of workers employed in that group (The employment is an annual average of employed civilian workers 16 years of age and older, plus resident armed forces, from the Current Population Survey, 1995.)

The ratio N/W is multiplied by 100,000 so that the rate can be expressed as a whole number and represents the number of fatal work injuries per 100,000 workers.

Adjustments were made to "N" to maintain consistency with the CPS employment "W" because it excludes workers younger than 16 years of age.

Any adjustments of "N" are not reflected in the "Number" and "Percent" columns, which include all fatalities regardless of age.

Appendix Occupational Risk Factors

Cancer	Substance	Occupation or Industry
Biliary Tract	Chemicals used in processing rubber ¹	Rubber processing ¹
Bladder Tobacco 2-3X	4-aminobiphenyl ² Aromatic amines- benzidine ¹ and 2- naphthylamine ^{1,2} Auramine ² Soots, tars, mineral oils ²	Chemical workers ^{1,2} Chimney sweeps ² Coal gas manufacturing ² Construction workers ² Copper smelters ² Dyestuffs industries ^{1,2} Electrolysis workers ² Hairdressers ¹ Leather industries ¹ Machinists ^{1,2} Metal workers ¹ Nickel refiners Paint manufacturing ² Painters ¹ Printers ¹ Typographers Lineotype Pressmen Roofers ² Rubber industries ^{1,2} Compounding Milling Tire building/manufacturing Warehousing Shipping Textile workers ^{1,2} Truck drivers ¹
Brain	Radiation, ionizing ² Vinyl chloride ^{1,2}	Cattle ranchers ¹ Chemists ¹ Dairy farmers ¹ Embalmers ¹ Grain millers ¹ Luminous dial painters ² Oil refineries ¹ Pharmaceutical workers ¹ Plastics factory workers ² Radiographers ² Radiologists ² Rubber manufacturing ¹ Sheep ranchers ¹ Uranium miners ² Vinyl chloride polymerization plant workers ²

Colorectal	Asbestos? Dyes Metallic compounds Oils Solvents	Auto repair Boilermakers Firemen (large cities) Heating/AC servicemen Insulation workers Leather workers Metal workers Machinists Jobsetters Tool and die makers Setters Pipefitters Plumbers Printers Pressmen Utility company workers Operating engineers Yarn or textile workers
Kidney	Asbestos ¹ Coke oven emissions ² Thorium dioxide ²	Aluminum potroom workers ² Ceramic makers ² Chemical workers ² Coke plant workers ² Foundry workers ² Gas mantle makers ² Incandescent lamp makers ² Insulation workers ¹ Metal refiners ² Nuclear reactor workers ² Petroleum industry workers ¹ Steel industry workers ² Vacuum tube makers ²
Laryngeal Tobacco 10X Alcohol	Asbestos ¹ Mustard gas ^{1,2} Nickel ^{1,2} Thorium dioxide ²	Asbestos factory workers ² Ceramic makers ² Chemical workers ² Gas mantle makers ² Incandescent lamp makers ² Metal refiners ² Miners ² Nickel refiners ² Nuclear reactor workers ² Rubber tire manufacturing workers ² Shipyards workers ² Steelworkers ² Textile workers ² Vacuum tube makers ²

Leukemia	Benzene and other related solvents ^{1,2} Epichlorohydrin ² Ethylene oxide ² Radiation, ionizing ² Thorium dioxide ²	Beekeepers ² Ceramic makers ² Chemical workers ² Distillers ² Fumigators ² Gas mantle makers ² Glue and varnish workers ² Hospital workers ² Incandescent lamp makers ² Luminous dial painters ² Metal refiners ² Nuclear reactor workers ² Painters ² Plastics workers ² Radiographers ² Radiologists ¹ Research lab workers ² Rubber cement workers ² Rubber tire manufacturing ² Shoe manufacturing ² Shoemakers ² Steelworkers ² Uranium miners ² Vacuum tube makers ²
Acute myeloid leukemia		Artistic painting Auto mechanics or repair Auto or heavy equipment manufacturing Chemical manufacturing Dry cleaning Dye manufacturing Electrician Electronic industry or manufacturing Furniture manufacturing, repair or refinishing Gasoline station attendant Leather/shoe industry Munitions/explosives manufacturing Nuclear power industry Paint manufacturing or application Paper, pulp, saw mill or lumbering Pest extermination Petroleum industry or manufacturing Plastics manufacturing Printing Rubber industry Shoe repair Textile manufacturing X-ray technician
Angiosarcoma of the liver	Arsenic ² Vinyl chloride ^{1,2}	Copper smelter workers ² Gold miners ² Insecticide makers and sprayers ² Metallurgical industries ² Pesticide production workers ² Plastic production ^{1,2} Sheep-dip workers ² Tanners ² Vineyard workers ² Vinyl chloride polymerization plant workers ²

<p>Liver</p> <p>Alcohol</p>	<p>Aflatoxins¹ (fungus found in animal feed and poorly stored grain)</p> <p>Carbon tetrachloride²</p> <p>Thorium dioxide²</p>	<p>Ceramic makers²</p> <p>Chemical workers²</p> <p>Farmers¹</p> <p>Gas mantle makers²</p> <p>Grain elevator operators¹</p> <p>Grain millers¹</p> <p>Incandescent lamp makers²</p> <p>Metal refiners²</p> <p>Nuclear reactor workers²</p> <p>Plastic workers²</p> <p>Steelworkers²</p> <p>Vacuum tube makers²</p>
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<p>Lung</p> <p>Tobacco</p> <p>50X</p>	<p>Acrylonitrile²</p> <p>Arsenic¹</p> <p>Asbestos¹</p> <p>Bis-chloromethyl ether (BCMEs)²</p> <p>Cadmium²</p> <p>Chloromethyl ethers(CMMEs)¹</p> <p>Chromium¹</p> <p>Coal tar pitch volatiles²</p> <p>Coke oven emissions²</p> <p>Cutting oils</p> <p>Dimethyl sulphate²</p> <p>Epichlorohydrin²</p> <p>Hematite²</p> <p>Nickel¹</p> <p>Radon¹</p> <p>Soots, tars, mineral oils²</p> <p>Vinyl chloride²</p>	<p>Acetylene and aniline workers²</p> <p>Aluminum potroom workers²</p> <p>Anion- and ion-exchange resin plant worker²</p> <p>Apparel, carpeting, blankets, draperies, synthetic furs and wigs manufacturers²</p> <p>Asbestos miners and millers¹</p> <p>Bargeloader for grain company</p> <p>Battery workers²</p> <p>Beryllium workers²</p> <p>Bleachers²</p> <p>Boilermakers</p> <p>Brass mill workers</p> <p>Buffer/polishers for metal industries</p> <p>Cadmium production workers²</p> <p>Cement workers</p> <p>Chemical workers²</p> <p>Chimney sweeps²</p> <p>Chromate producing industry workers²</p> <p>Coal industry workers</p> <p>Coal miner</p> <p>Mine reclamation</p> <p>Coke plant workers²</p> <p>Construction workers²</p> <p>Excavator</p> <p>Heavy equipment operator</p> <p>Hod carrier</p> <p>Insulator</p> <p>Operating engineer</p> <p>Pipe coverer</p> <p>Tuckpointer</p> <p>Copper smelter workers²</p> <p>Dental technicians/Dental lab workers</p> <p>Drug makers²</p> <p>Dyemakers²</p> <p>Electronics workers²</p> <p>Electroplating industry workers²</p> <p>Firemen (large cities)</p> <p>Foundry workers(steel)</p> <p>Glass workers²</p> <p>Gold miners²</p> <p>Grain miller</p> <p>Hardrock miners^{1,2}</p> <p>Heating/AC servicemen</p> <p>Hematite miners²</p> <p>Insecticide makers and sprayers²</p> <p>Insulation workers¹</p> <p>Jewelry workers²</p> <p>Linoleum workers²</p> <p>Machinists²</p> <p>Metal painters</p> <p>Metallurgical workers²</p> <p>Millwrights (metal)</p> <p>Miners²</p> <p>Missile parts producers²</p> <p>Mustard gas production workers²</p> <p>Nickel refiners²</p> <p>Nuclear workers²</p> <p>Oil refinery/petrochemical workers</p> <p>Paint manufacturer workers</p>
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Lung continued		Pottery workers Printers Quarry workers Heavy machinery operators Loader operators Roofers Rubber workers Sandblasters Seamstress/Factory, Upholstery Sheep-dip workers Shipyard workers Spar miners Steamfitters Steel industry workers Bricklayer Chipper/Grinder Crane operator Foundry worker Furnace operator Machine operator Molder Tanners Textile workers Thrall car workers Tile setters/layers Utility company workers Vineyard workers Vinyl chloride polymerization plant workers
Multiple Myeloma	Arsenic ¹ Asbestos ¹ Lead ¹ Radiation, ionizing ²	Farmers ¹ Leather workers ¹ Luminous dial painters ² Radiographers ² Radiologists ² Rubber and petrochemical products manufacturing ¹ Uranium miners ² Wood workers ¹
Nasal sinuses	Chromium	Acetylene and aniline workers ² Bleachers ² Chromate-producing industry workers ² Glass workers ² Linoleum workers ² Pigment workers ² Pottery workers ² Electronics workers ¹ Farmers ¹
Nasal cavity	Nickel	Nickel refiners
Tobacco/Alcohol 15X	Wood Dust	Furniture manufacturers

Oral cavity and pharynx		Printers ¹ Leather workers ¹ Paper manufacturing ¹ Sailors ¹
Paranasal sinuses	Isopropyl oils	Isopropyl oil workers

Pancreas	2-naphthylamine ² Aluminum ⁴ Aromatic amines ⁴ Ashes and soot ⁴ Asbestos Brass dust Benzidine ² Chromates Cotton dust Cleaning agents Combustion of coal, natural gas, and wood Copper fumes Grain dust Hydrogen fluoride Inorganic insulation Nickel compounds Paints Paint thinners Pesticides Phenol-formaldehyde Plastic dust PAHs from coal and wood Radiation, ionizing ² Rayon fibers Stainless steel dust Sulfuric acid Synthetic adhesives Tin compounds and fumes Waxes and polishes Zinc fumes	Aluminum worker Artists Autobody shop workers Auto mechanics Cement workers Chemical workers Chemists Construction workers Cabinetmakers Carpenters Earth moving machinery operators Heavy equipment operators Highway maintenance workers Copper smelters Crossing guards Dye workers Electrolysis workers Farmers Flour millers Foundry workers (steel) Coremaker Ladler Gardeners/Horticulturists Grain millers Insulation workers Lead battery manufacturing Luminous dial painters Maintenance workers Cleaning persons Custodians Housekeeping Janitors Nickel refiners Oilers/Greasers/Railroad Painters Paint manufacturer workers Pipefitters/steamfitters Plastic factory workers Plating/Plater Plumbers Radiographers Radiologists Rubber tire manufacturing workers Sawyers Solderer Steel mill workers Bricklayers Molders Stone mining Stonecutters and carvers Tanners Textile workers Transportation inspectors/supervisors Transportation industry workers Airline ramp service Bus drivers Firemen, Boiler Firemen/Railroad Trainman Truck drivers
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