Minnesota Workplace Safety Report:
Occupational Injuries and Illnesses, 2001

Brian Zaidman

May 2003

Research & Statistics

443 Lafayette Road N.
St. Paul, MN 55155-4307
(651) 284-5025
dli.research@state.mn.us

This report is available at: www.doli.state.mn.us/research.html

Information in this report can be obtained in alternative formats by calling the Department of Labor and Industry at 1-800-342-5354 or TTY at (651) 297-4198.

Executive summary

About 126,000 Minnesotans were hurt at work or became ill from job-related causes in 2001, 34,500 of which involved days of away from work. An average of 78 Minnesotans a year were killed at work from 1997 through 2001.

These injuries, illnesses and deaths exact a toll on workers and their families; they also affect business costs and productivity. Workers' compensation in Minnesota cost an estimated $1.16 billion in 2001. This does not count other costs, such as delayed production, hiring and training workers, pain and suffering, and those economic losses to workers and their families that are not covered by workers' compensation.

This report, part of an annual series, gives information about Minnesota's job-related injuries, illnesses and fatalities. Data sources are the *Survey of Occupational Injuries and Illnesses* and the *Census of Fatal Occupational Injuries,* both conducted by the U.S. Bureau of Labor Statistics (BLS).

Non-fatal occupational injuries and illnesses

Number of Cases

- The number of non-fatal occupational injury and illness cases decreased in 2001, compared to 2000. While wage and salary employment increased by 0.1 percent, the total number of cases decreased by 12 percent (16,700 cases), lost workday cases decreased 9 percent (9,600 cases) and cases with days away from work decreased 12 percent (4,800 cases).

- The drop in the total number of injury and illness cases was concentrated in three industries: manufacturing (53 percent of the decrease), services (25 percent), and transportation and public utilities (17 percent). Among these three industries, only manufacturing also decreased in employment.

Incidence rates

- Minnesota's total rate of workplace injuries and illnesses dropped from 6.8 cases per 100 full-time-equivalent (FTE) workers in both 1999 and 2000 to 6.2 cases in 2001. This is Minnesota's lowest rate in the history of the survey.

- The rate of cases with lost workdays (days away from work and/or restricted work activity) decreased from to 3.4 per 100 FTE workers in 2000 to 3.0 in 2001.

- The rate of cases with days away from work (the most severely-injured workers) fell to 1.7 in 2001.

- Minnesota's case rates were below their U.S. counterparts until the early 1990s, but have been above the U.S. rates since that time. For the private sector in 2001, the total case rate was 6.3 per 100 FTE workers for the state versus 5.7 for the nation. The rate of cases with lost workdays was 3.1 for the state versus 2.8 for the nation.

- Minnesota's rate of cases with days away from work was roughly equal to the national rate starting in 1996. In 2001, the private-sector rate of cases with days away from work was 1.7 for the state and for the nation.

- Data for 2001 indicate that among industry divisions (the broadest industry grouping), Minnesota's highest total injury and illness rates per 100 full-time-equivalent workers were in:

  (1) construction (10.7);
  (2) agriculture, forestry and fishing (8.3); and,
  (3) manufacturing (7.9).

- Six of the 10 major industry groups (the next more detailed industry classification) with the highest total case incidence rates were in manufacturing. These 10 industries accounted for 25 percent of the total annual number of cases.

- The major industry groups with the highest numbers of cases with days away from work were health services (4,400 cases) and special trade contractors (2,600 cases). The top 10 industry groups accounted for 46 percent of all cases.

Worker and injury characteristics

For cases with days away from work, the survey provides information about demographic characteristics of the injured workers and the characteristics of the injuries they suffered. The results refer to injuries and illnesses occurring in 2001.

- Men accounted for 62 percent of the injured workers.

- Workers age 35 to 44 were the most common age group, accounting for 31 percent of the cases.

- Equipment operators, fabricators and laborers was the largest occupation group, with 36 percent of the cases. The most common specific occupations were truck drivers and nursing aides, orderlies and attendants.

- The most common types of injury were:

  (1) sprains, strains and tears of muscles, joints and tendons (44 percent);
  (2) soreness and pain (8 percent); and
  (3) fractures (8 percent).

- The most common body parts affected were:

  (1) the back (28 percent);
  (2) lower extremities (22 percent); and
  (3) upper extremities (19 percent).

- The most frequent events or exposures leading to the injury or illness were:

  (1) overexertion (31 percent); and
  (2) falls and slips (24 percent).

- Repetitive motion accounted for 4 percent of the cases.

- The most frequent sources of injury or illness were:

  (1) the injured worker's bodily motion or position (18 percent); and
  (2) floors and ground surfaces (17 percent).

Fatal occupational injuries

The nationwide *Census of Fatal Occupational Injuries* (CFOI) covers all fatal work injuries in the private and public sectors regardless of program coverage; thus, it includes federal workers and self-employed workers along with all others. However, fatal *illnesses* (such as asbestosis) are excluded.

- In 2001, 76 Minnesotans were fatally injured on the job. For 1997 through 2001, Minnesota had an average of 78 fatal work injuries a year, consisting of approximately 57 wage-and-salary workers and 21 self-employed people.

- Among industry divisions, the highest average *numbers* of fatal injuries a year for 1997 through 2001 were in:

  (1) agriculture, forestry, and fishing (18.0);
  (2) construction (14.8);
  (3) transportation and public utilities (11.2); and
  (4) manufacturing (10.0).

- The most frequent causes of Minnesota's fatal work injuries for 1997 through 2001 were:

  (1) transportation accidents (46 percent);
  (2) contact with objects and equipment (25 percent); and
  (3) falls (14 percent).

Contents

Appendices:

1
Introduction

Workplace injuries and illnesses continue to be a major concern, both in Minnesota and nationwide. The latest occupational injury and illness figures show that about 345 Minnesotans are hurt at work or become ill from job-related causes each day. This amounts to roughly 126,000 cases a year; about 34,500 of these cases involve days away from work. An average of 78 Minnesotans a year were killed on the job from 1997 through 2001.

These injuries, illnesses and deaths exact a toll on workers and their families; they also affect business costs and productivity. Workers' compensation in Minnesota cost an estimated $1.16 billion in 2001, or $1.44 per $100 of covered payroll. This includes indemnity benefits (for lost wages, functional impairment or death), medical treatment, rehabilitation, litigation, claims administration and other system costs. In 1999 (the most current data available), the average cost of an insured claim was $4,510 (in 2001 dollars) for medical treatment plus indemnity benefits (indemnity benefits are paid in about 20 percent of all cases). For those claims with indemnity benefits, the average medical and indemnity cost was much higher — $19,800. Other workplace injury and illness costs are more difficult to measure, such as delayed production, hiring and training of new workers, pain and suffering, and those economic and non-economic losses to injured workers and their families that are not covered by workers' compensation.

This report is part of an annual series. It gives information, through 2001, about Minnesota's job-related injuries, illnesses and fatalities: their incidence, nature and causes; the industries in which they occur; and changes in their incidence over time. This information is important for improving the safety and health of Minnesota's workplaces and, thereby, reducing the burden of occupational injuries and illnesses on workers, families and employers.

Data sources

This report presents data from three sources: the U.S. Bureau of Labor Statistics (BLS) annual *Survey of Occupational Injuries and Illnesses*; the BLS annual *Census of Fatal Occupational Injuries* (CFOI); and the OSHA Integrated Management Information System (IMIS). The BLS and CFOI data are available through 2001, and the IMIS data is available through 2002.

BLS survey

The BLS survey, conducted jointly by the BLS and state agencies, is the primary source of workplace injury and illness data nationwide. Approximately 4,800 Minnesota employers participated in the 2001 survey. The survey includes all cases recorded on the Occupational Safety and Health Administration (OSHA) log, on which employers with 11 or more employees are required to record workplace injuries and illnesses.[1] Employers with 10 or fewer employees who participate in the survey also record their cases on the OSHA log for the survey year. The survey data is collected from the log and from an additional set of questions regarding cases with at least one day off the job.

The survey defines different types of cases according to whether they have days off the job and/or work restrictions:

- Cases without lost workdays are cases with no days off the job and no work restrictions.
- Lost-workday (LWD) cases are those with days when the injured worker is off the job *or* working with restrictions. LWD cases consist of:

[1] OSHA-recordable cases include all nonfatal occupational illnesses and those nonfatal occupational injuries that result in loss of consciousness; medical treatment other than first aid; any lost time from work; restricted work activity; or transfer to another job after the day of injury.

(1) days-away-from-work (DAFW) cases — those with any days off the job (with or without additional days of restricted work); and

(2) restricted-work-activity-only (RWAO) cases — those with restricted work but no days off.

These case types and other terms used in the BLS survey are more precisely defined in Appendix A.

An important issue with the BLS survey data is sampling error, the random error in survey statistics that occurs because they are estimated from a sample. This sampling error is greater for smaller categories, such as particular industries, because of smaller sample size. To reduce sampling errors in this report, industry-specific incidence rates have been averaged over three years.

Fatal injuries

The BLS, in cooperation with state and other federal agencies, conducts the nationwide *Census of Fatal Occupational Injuries* (CFOI). The CFOI is a complete count of all work-related deaths caused by injuries. Fatalities caused by illnesses are excluded.

The CFOI provides a complete count of fatal work injuries by using multiple sources to identify, verify and profile these incidents.

OSHA activity measures

The Minnesota Occupational Safety and Health Administration (MNOSHA) program includes the Occupational Safety and Health Compliance unit, which is responsible for compliance program administration, and the Workplace Safety Consultation unit, which provides free consultation services. Most MNOSHA activities are officially recorded in the IMIS system. Federal and state OSHA management produce statistics regarding their programs with the IMIS system.

More data available

The BLS survey provides a large volume of information for the United States and most individual states. This information includes the number and incidence of injuries and illnesses by industry and establishment size. For DAFW cases, the survey provides data about the characteristics of injuries and illnesses, how they occur, severity (number of days away from work), length of time on the job when injured, occupation and worker characteristics.

The Minnesota case counts and incidence rates for all publishable industries (see Appendix A) for survey years 1999, 2000 and 2001 are available on the DLI Web site at www.doli.state.mn.us/dlistats.html. Many other BLS survey data tables and charts for Minnesota are available at www.doli.state.mn.us/blsstats.htm.

The Minnesota CFOI tables for 2000 and 2001 are available at www.doli.state.mn.us/dlistats.html.

The national BLS survey and CFOI statistics are available at www.bls.gov/iif/. The national data, because of larger sample sizes, includes more detailed categories than the state data and produces smaller sampling errors. The BLS Web site also provides data for other states.

Some IMIS OSHA Compliance inspection data, accident investigation summaries and lists of frequently cited standards by industry are available at www.osha.gov/oshstats/.

The MNOSHA annual report provides more-detailed statistics about MNOSHA activities than are presented in this report and is available at www.doli.state.mn.us/pdf/oshfy2002.pdf.

Report organization

The next three chapters in this report describe the incidence and characteristics of occupational injuries and illnesses in Minnesota. Chapter 2 presents data about the number and incidence of Minnesota's workplace injuries and illnesses over time, focusing on the state as a whole. Chapter 3 provides statewide injury and illness statistics about industry, establishment size, injured worker characteristics and injury characteristics. Chapter 4 provides more detailed statistics about each of the industry divisions, including MNOSHA activity by industry.

Chapter 5 gives information about the state's fatal workplace injuries, using data from the CFOI program. Figures show the number of fatalities, the events causing the fatalities and characteristics of the fatally injured workers.

Chapter 6 provides information about MNOSHA compliance activities and consultation programs to help employers achieve safe and healthful workplaces.

Appendix A provides a glossary of concepts and terms for understanding and using the BLS survey data. Appendix B shows the Minnesota case rates and number of cases for each industry with publishable results for the 2001 BLS survey.

2

Number and incidence of workplace injuries and illnesses

Number of injury and illness cases

While incidence rates provide standardized measurements of injuries and illnesses, the number of cases shows the magnitude of the occupational injury and illness situation, and is an appropriate point for beginning this report.

On the basis of employers' responses to the *Survey of Occupational Injuries and Illnesses*, there were an estimated 125,800 recordable injury and illness cases in 2001.[2] This number is greater than the population of 79 of Minnesota's 87 counties.

Figure 2.1 shows estimates of the number of nonfatal injuries and illnesses in Minnesota for 1992 through 2001. The estimates are based on data collected for the BLS survey and are not the same as the number of workers' compensation claims.

- The number of cases has decreased or remained unchanged, while employment has generally increased. Since 1992, the total number of cases decreased 9 percent, LWD cases increased 1 percent and DAFW cases decreased 20 percent, while employment increased 24 percent.

- The number of cases in all three categories decreased in 2001, compared to 2000. While employment increased by 0.1 percent, the total number of cases decreased by 12 percent (16,700 cases), LWD cases decreased 9 percent (9,600 cases) and DAFW cases decreased 12 percent (4,800 cases).

- As a proportion of total cases, DAFW cases fell from 31 percent in 1992, to 27 percent in 2001, while RWAO cases rose from 13 percent to 21 percent over the same period. As a proportion of LWD cases, DAFW cases fell from 71 percent to 56 percent during the period, with the remainder being RWAO cases.

- The drop in the number of total injury and illness cases was concentrated in three industries: manufacturing accounted for 53 percent of the decrease; services accounted for 25 percent; and transportation and public utilities accounted for 17 percent. Among these three industries, only manufacturing also decreased in employment.

Incidence rate trends

The incidence rates are statewide estimates based on the number of recordable injury and illness cases and the total hours of work reported by the employers participating in the survey. Figure 2.2 shows estimates of the incidence of nonfatal injuries and illnesses for Minnesota for 1985 through 2001, expressed as cases per 100 full-time-equivalent (FTE) workers. Both the private sector and state and local government are included. The incidence rates for 2001 decreased significantly from 2000.

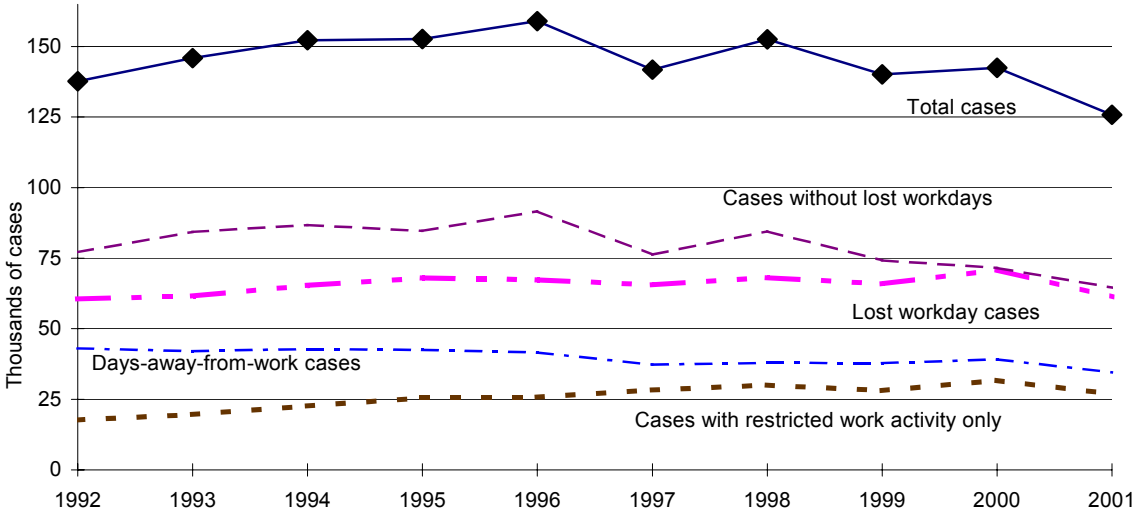
- Total case incidence rose through the late 1980s and early 1990s, and then started dropping sharply in 1997. Minnesota's 2001 total case incidence rate and LWD case rate are the lowest in the history of the state survey.

- The DAFW case rate started to fall in 1991, and reached its lowest level in 2001. In contrast, the RWAO case rate rose steadily from 1985 through 1995, and has been relatively level since then.

- These improvements in the injury and illness rate are the result of many factors. It is likely the result of a combination of changes in the mix of industries in Minnesota, decreases in the severity of LWD cases, changes in what happens after an injury or illness occurs

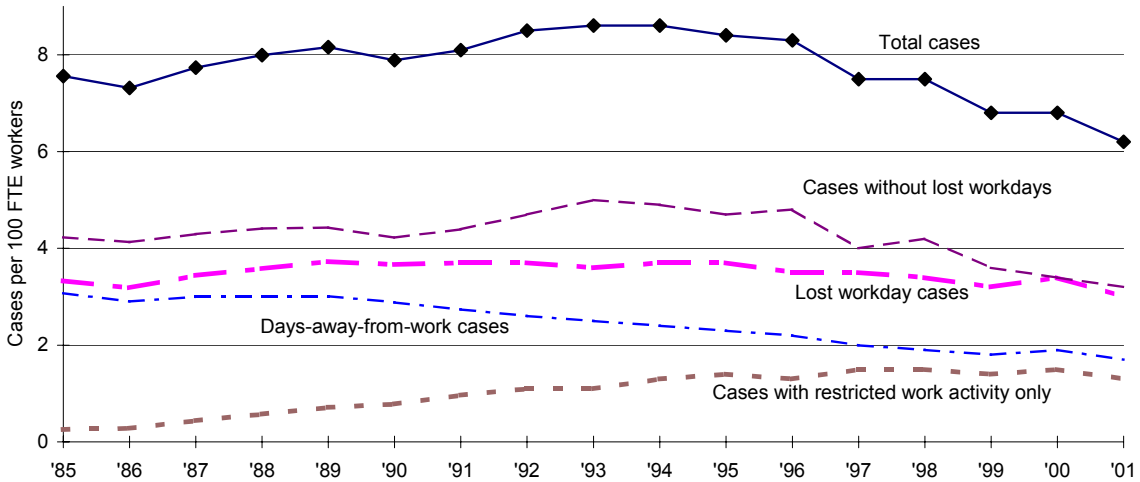
[2] An injury or illness was recordable if it met the criteria for being included on the OSHA 200 log. The OSHA recordkeeping requirements were recently revised and new criteria are being used starting with injuries and illnesses in 2002.

Figure 2.1 Number of injury and illness cases, Minnesota, 1992-2001



	Employ-ment (1,000s)	Total cases (1,000s)	Lost-workday cases		Days-away-from-work cases		Cases with restricted work activity only		Cases without lost workdays	
			Number (1,000s)	Pct. of total	Number (1,000s)	Pct. of total	Number (1,000s)	Pct. of total	Number (1,000s)	Pct. of total
1992	2,082	137.7	60.6	44%	43.0	31%	17.6	13%	77.1	56%
1995	2,262	152.7	68.0	45%	42.5	28%	25.5	17%	84.7	55%
1999	2,517	140.1	65.9	47%	37.8	27%	28.1	20%	74.2	53%
2000	2,573	142.5	70.9	50%	39.2	28%	31.7	22%	71.6	50%
2001	2,576	125.8	61.3	49%	34.5	27%	26.8	21%	64.6	51%

Figure 2.2 Injury and illness case incidence rates, Minnesota, 1985-2001



	Total cases per 100 FTE workers	Total lost-workday cases	Days-away-from-work cases	Cases with restricted work activity only	Cases without lost workdays
1985	7.6	3.3	3.1	0.3	4.2
1990	7.9	3.7	2.9	0.8	4.2
1993	8.6	3.6	2.5	1.1	5.0
1995	8.4	3.7	2.3	1.4	4.7
1999	6.8	3.2	1.8	1.4	3.6
2000	6.8	3.4	1.9	1.5	3.4
2001	6.2	3.0	1.7	1.3	3.2

(e.g., promptness of medical treatment, prevalence of return-to-work and light-duty programs or availability of work with other employers) or changes in reporting.[3]

- A major reason for the drop in the overall incidence rates in 2001 was the relative shift in employment among industries, especially the drop in manufacturing employment.

  Although overall employment did not change, manufacturing employment decreased by 4 percent from 2000 to 2001, and decreased from 17 percent of overall employment to 16 percent. This was accompanied by a drop in the injury and illness rate for manufacturing from 9.5 to 7.9 cases per 100 FTE workers.

  The drop in manufacturing employment is one indicator of the economic slowdown that occurred in 2001. The possible effects of the recession on injury and illness rates and workers' compensation claims reporting is discussed in the *Minnesota Workers' Compensation System Report, 2001*.[4]

Comparing Minnesota with the nation

Figure 2.3 shows the rates of total cases, LWD cases and DAFW cases in the private sector for Minnesota and the United States for 1985 through 2001. Rates are limited to the private sector because the national statistics are only available for the private sector.[5]

- For 2001, Minnesota's total rate was 6.3 per 100 FTE workers, while the U.S. rate was 5.7 cases. Minnesota's private-sector total case rate was below the national rate from 1985 to 1992, but has been above the U.S. rate since 1993. The total case rate has been significantly higher than the U.S. rate since 1995.

- Minnesota's LWD case rate for 2001 was 3.1, as opposed to 2.8 for the nation. Minnesota's LWD case rate was lower than the U.S. rate in the late 1980s, about the same as the U.S. rate during the early 1990s, and higher than the national rate beginning in 1995. This difference has been statistically significant since 1995.

- The DAFW case rates of Minnesota and the United States have not been statistically significantly different starting in 1996.

Some of the difference between the Minnesota and U.S. total case rates and LWD rates may be due to completeness of reporting. Employers might not strictly adhere to the OSHA recordkeeping requirements for cases that do not result in days away from work and for cases that are not covered by workers' compensation insurance.

If employers in Minnesota maintain more complete OSHA records than employers in other states, the Minnesota rate would be higher than the national rate, especially for cases without days away from work. Additionally, there would be less difference for the most serious cases.

The incident rate data supports this hypothesis. For the 1995 to 2001 period, Minnesota's rate for cases without days away from work stayed at least 0.6 cases above the national rate, while the DAFW rate was not significantly different from the U.S. rate.

There are other reasons for the difference between the Minnesota and U.S. rates.

- Differences in workers' compensation laws among the states are likely responsible for some of the differences between states' injury and illness rates in the BLS survey.

- Worker demographics may affect injury rates. For example, women comprise a larger share of the workforce in Minnesota than in many other states.

[3] See the analysis by David R. Anderson, "Why did the claim rate fall in the 1990s?" *COMPACT*, August 2002 (www.doli.state.mn.us/pdf/aug02-3.pdf); and Hugh Conway and Jens Svenson, "Occupational injury and illness rates, 1992-96: Why they fell," *Monthly Labor Review,* November 1998.

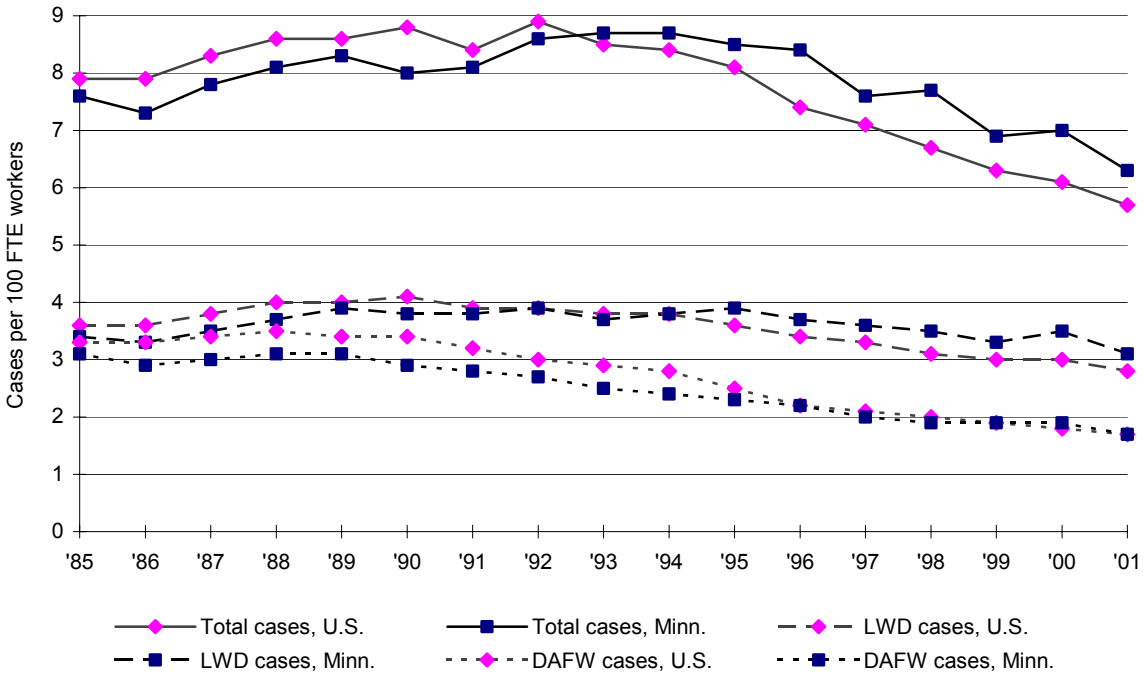
[4] The report is available at www.doli.state.mn.us/pdf/wcfact01.pdf. The recession is discussed on pages 4, 14 and 27. See also David R. Anderson, "Will the recession affect work comp costs?" *Research Reporter*, May 2002. (www.doli.state.mn.us/rr02may1.htm)

[5] In the BLS survey, participating states have the option to survey public-sector worksites. Because not all states choose this option, public-sector statistics are not available at the national level.

- Variations in the industry mix between Minnesota and other states lead to differences in the overall rates.

- Differences in the specific industries that make up the sectors make the overall rates and the industry division rates less comparable. For example, health services employment accounts for a larger percentage of Minnesota's service industry employment than in many other states.

Figure 2.3 Injury and illness case incidence rates for Minnesota and the United States, private sector, 1985-2001



	Cases per 100 full-time-equivalent workers					
	Total cases		Lost-workday cases		Days-away-from-work cases	
	Minnesota	United States	Minnesota	United States	Minnesota	United States
1985	7.6	7.9	3.4	3.6	3.1	3.3
1990	8.0	8.8	3.8	4.1	2.9	3.4
1993	8.7	8.5	3.7	3.8	2.5	2.9
1995	8.5	8.1	3.9	3.6	2.3	2.5
1999	6.9	6.3	3.2	3.0	1.9	1.9
2000	7.0	6.1	3.5	3.0	1.9	1.8
2001	6.3	5.7	3.1	2.8	1.7	1.7

3

An overview of nonfatal workplace injuries and illnesses in Minnesota

This chapter compares the injury and illness rates for the industry divisions and presents information about the incidence rates for different sizes of establishments. There is considerable variation in the injury and illness rates by industry and establishment size.

The 2001 injury and illness survey shows:

- construction had the highest total injury and illness rate, which was more than two cases per 100 FTE workers higher than the rate for the next-highest industry, agriculture, forestry and fishing.

- establishments with 50 to 249 employees had the highest incidence rates, while establishments with 10 or fewer employees had the lowest rates.

For DAFW cases, the survey also collects information about the characteristics of the injured workers and the characteristics of their injuries. This chapter presents all-industry distributions of injured worker gender, age, race, tenure and occupation and the nature, body part, event or exposure, and source of the injury or illness.

Incidence by industry division

Industries can be analyzed at different levels of detail. The *Survey of Occupational Injuries and Illnesses* uses the standard industrial classification (SIC) system to categorize industries. The SIC is established by the U.S. government and used for industry-based economic statistics.[6] The SIC uses a four-digit hierarchical code in which each successive digit indicates a finer level of detail. Industry division is the most aggregated industry grouping in the SIC. The two- and three-digit categories are referred to as "major industry groups" and "industry groups," respectively.

Figure 3.1 shows Minnesota's injury and illness rates for the case types by industry division and all industries combined. Industries are ranked by their total case rate.

- Construction had the highest incidence rates for all cases, for cases without lost workdays and for DAFW cases, while manufacturing had the highest rate for RWAO cases.

- The high RWAO rate in manufacturing is a result of the greater opportunities for restricted work in manufacturing establishments than at construction or agriculture, forestry and fishing worksites. Manufacturing was the only industry where the RWAO rate was higher than the DAFW rate.

- Transportation and public utilities had the third-highest DAFW case rate, although it had the sixth-highest total case rate.

Figure 3.2 compares each divisions' 2001 total case incidence rate with its rate in 2000. The incidence rates decreased for each industry except finance, insurance and real estate, and state government.

Figure 3.3 compares the Minnesota private-sector industries' 2001 total case incidence rates with the U.S. rate for that industry. With the exception of manufacturing and transportation and public utilities, the Minnesota industry division rates are higher than the corresponding U.S. rates. Some of these differences result from differences in employment among the constituent industries in each division. However, only the differences in construction and services are statistically significant.

[6] Beginning with the survey for the 2003 injury and illness statistics, industries will be classified according to the North American Industry Classification System (NAICS).

Figure 3.1 Incidence rates by industry division, Minnesota, 2001

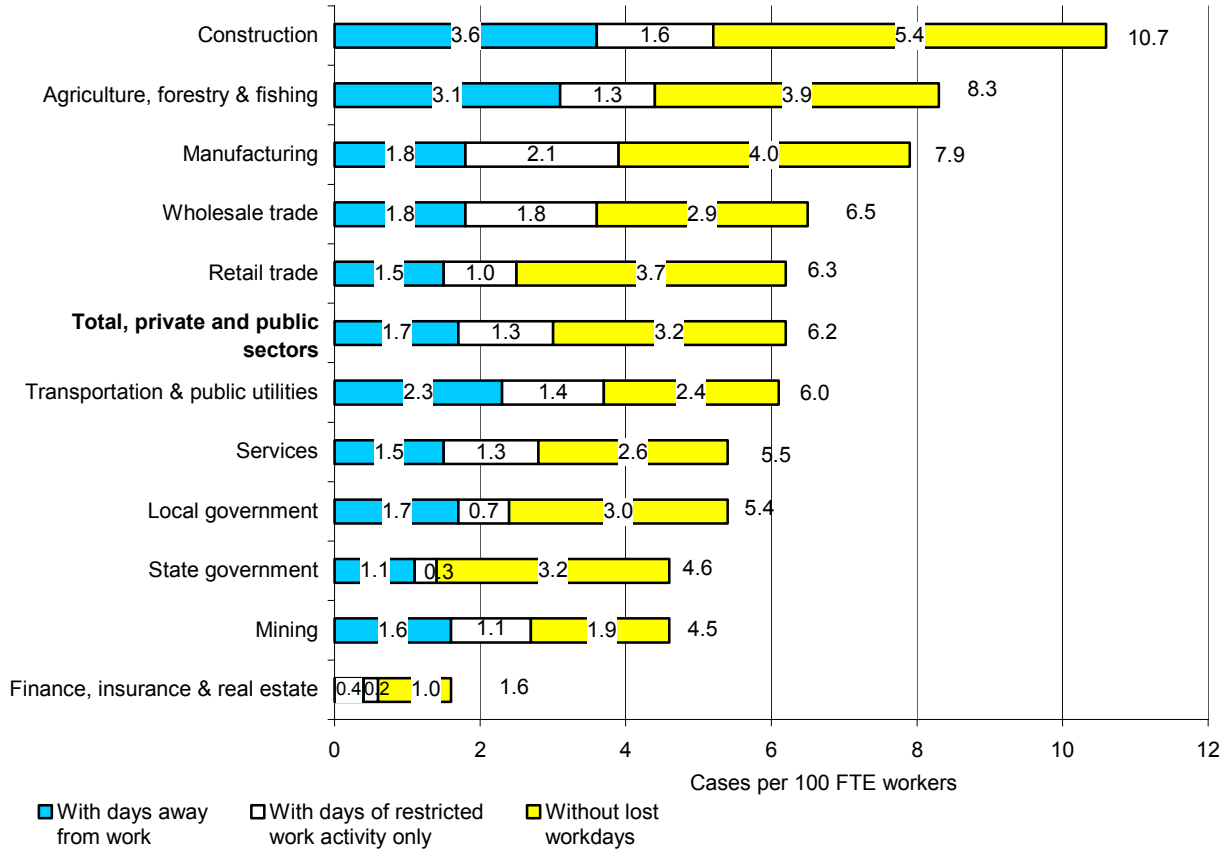


Figure 3.2 Incidence rates per 100 full-time workers for total nonfatal occupational injuries and illnesses by industry division, Minnesota, 2000 and 2001

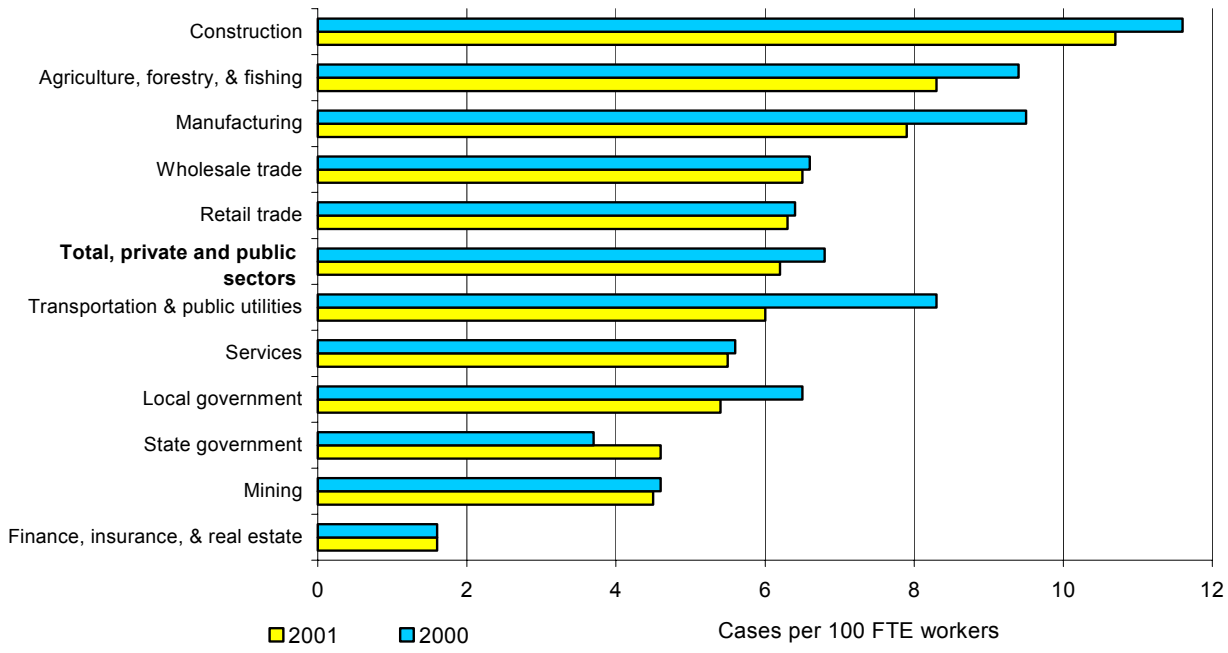
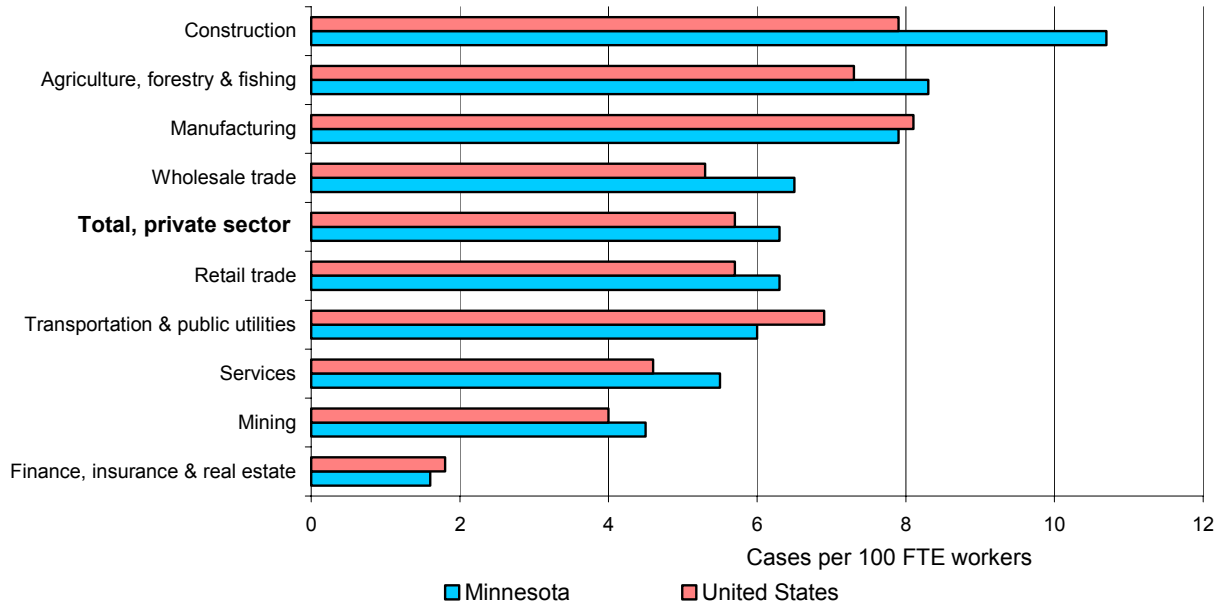


Figure 3.3 Incidence rates per 100 full-time workers for total nonfatal occupational injuries and illnesses by industry division, Minnesota and the United States, 2001



Days away from work

The BLS survey also provides statistics about the amount of time off the job for DAFW cases. Table 3.4 shows the median number of days away from work by industry division. The number of days away from work does not include the day of the event causing the injury or illness. Tables showing the percentage of cases by the number of days away from work are available on the DLI Web site at www.doli.state.mn.us/blsstats.htm.

- The median for all private-sector industries was five days; the median for state and local government was four days. The median duration varied widely among the industries.

- Mining, with a DAFW case rate below the statewide rate, had highest median duration. Finance, insurance and real estate, with the lowest DAFW incidence rate, had a higher median duration than manufacturing.

- The median duration of days away from work depends on a number of factors, including the most common types of injuries occurring in the industry, the average age of the injured workers and the ability of the workplaces to provide temporary work for injured workers.

Figure 3.4 Median days away from work, Minnesota, 2001

Industry	Median days
Mining	22
Wholesale trade	8
Construction	6
Transportation & public utilities	6
Finance, insurance & real estate	5
All private sector industries	5
Manufacturing	4
Retail trade	4
State government	4
Local government	4
Agriculture, forestry & fishing	3
Services	3

Major industry groups

The 10 industry groups (two-digit SIC classes) with the highest total case incidence rates in Minnesota are shown in Figure 3.5.

- Six of these 10 industries are in the manufacturing division.
- These industries accounted for 25 percent of the recordable cases in 2001.
- Only general building contractors and rubber and miscellaneous plastics manufacturing were not on the list in 2000.
- The average rate for the 10 highest industries fell from 15.7 in 2000 to 12.8 in 2001. Transportation equipment manufacturing decreased from a total case rate of 26.1 in 2000, to 21.1 in 2001.

The survey can also be used to identify the industries with the highest number of cases. Figure 3.6 shows the 10 industry groups with the highest number of DAFW cases, which are the most serious injury and illness cases.

- These 10 industries accounted for 15,900 DAFW cases, 46 percent of the total.
- Private sector health services, which comprised 10 percent of employment in 2001, accounted for 13 percent of the DAFW cases, the highest number of any industry. Most of the injured health care employees were working in hospitals and nursing homes. Many of the injured public-sector workers were also employed in health care.

Figure 3.5 Industry groups with the highest total case rates, Minnesota, 2001

Industry (and division [1])	Total case rate
Transportation equipment (man.)	21.1
Furniture and fixtures (man.)	17.8
Lumber and wood products (man.)	13.3
Agricultural production-livestock (AFF)	12.1
General building contractors (con.)	11.7
Food and kindred products (man.)	10.8
Special trade contractors (con.)	10.7
Local government health services	10.4
Rubber & misc. plastics (man.)	9.9
Fabricated metal products (man.)	9.9

1. Man.: manufacturing; AFF: agriculture, forestry and fishing; con.: construction.

Figure 3.6 Industry groups with the highest number of days-away-from-work cases, Minnesota, 2001

Industry (and division [1])	DAFW cases (1,000)
Health services (srv.)	4.4
Special trade contractors (con.)	2.6
Local government education	1.4
Food and kindred products (man.)	1.2
Eating & drinking establishments (ret.)	1.2
Auto dealers & service stations (ret.)	1.1
Social services (srv.)	1.1
Industrial machinery & equipment (man.)	1.0
Trucking & warehousing (TPU)	1.0
General building contractors (con.)	0.9

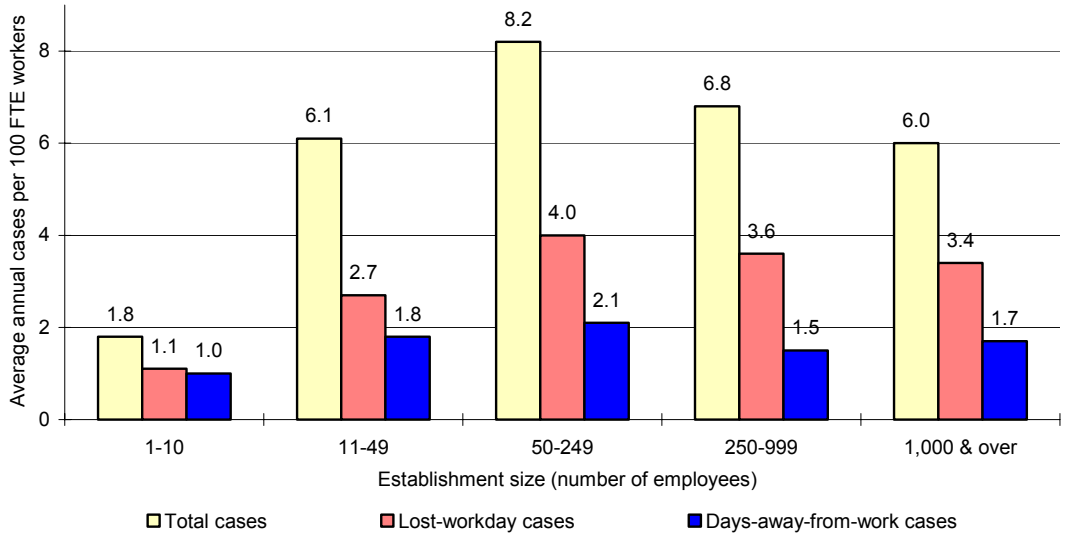
1. Man.: manufacturing; ret.: retail; srv.: services; con.: construction; TPU: transportation and public utilities.

Incidence by establishment size

The incidence of workplace injuries and illnesses also varies by establishment size. Figure 3.7 shows the case incidence by case type and establishment size for Minnesota's private-sector industries, and presents the DAFW rates by establishment size and industry division.

- For the private sector overall, the rates of all three case types were lowest for the smallest establishments (1 to 10 employees), highest for midsize establishments (50 to 249 employees) and intermediate for the largest establishments (1,000 or more employees).
- For nearly all industries, the smallest establishments have lower DAFW rates than do the midsize ones (50 to 249 employees).
- Larger establishments, which have more safety resources available, have lower DAFW rates than the mid-size establishments in all industries except services and transportation and public utilities. In services, this is partly attributable to relatively high incidence rates in hospitals, where the majority of workers are employed at hospitals in the largest establishment size class.[7]
- Analysis of workers' compensation claims data shows that the average weeks of total disability benefits is lower for larger establishments.[8]

Figure 3.7 Injury and illness case incidence rates by establishment size for private industry, Minnesota, 2001



Case type	Average annual cases per 100 full-time-equivalent workers by establishment size (number of employees) [1]					
	All Sizes	1-10	11-49	50-249	250-999	1,000+
Total cases	6.3	1.8	6.1	8.2	6.8	6.0
Lost-workday cases	3.1	1.1	2.7	4.0	3.6	3.4
Days-away-from-work cases	1.7	1.0	1.8	2.1	1.5	1.7
Days-away-from-work cases by industry divisio						
Agriculture, forestry and fishing	3.1	1.5	3.3	5.3	2.2	
Mining	1.6	1.0	1.5	1.7	1.8	
Construction	3.6	1.9	4.7	4.3	2.1	
Manufacturing	1.8	1.1	2.2	2.1	1.6	1.3
Transportation, communication and utilities	2.3		2.6	2.4	1.5	2.9
Wholesale trade	1.8		2.8	1.6	1.0	1.5
Retail trade	1.5	1.9	1.1	1.8	2.1	0.3
Finance, insurance and real estate	0.4	0.4	0.4	0.5	0.3	0.3
Services	1.5		0.9	2.2	1.3	2.7

1. Only cells with data meeting BLS publication standards are shown.

[7] Shown by unpublished data from the BLS survey.

[8] Grant Martin, "Return-to-work policies and average claim duration," *COMPACT*, May 2002.

Worker demographic characteristics

Employers participating in the survey provide data about the characteristics of the injured workers with DAFW cases. Worker characteristics include the injured worker's gender, age and race or ethnic origin. Job characteristics include the injured workers' occupation and job tenure. The figures show the percentages of DAFW cases for 2001.

Gender

- The percentage of women among the DAFW cases increased from 35 percent in 1995, to 36 percent in 2000, and to 38 percent in 2001.
- The number of injured female workers has decreased, along with the total number of DAFW cases. In 1995, there were 14,300 women with DAFW cases, compared to 13,000 cases in 2001.
- The recent increase in the percentage of women among DAFW cases may be due to a combination of the following factors:
  - shifts in employment, in which industries with high levels of female employment are growing relative to industries with high levels of male employment;
  - increased female employment in more-dangerous occupations;
  - increased reporting of injuries by female workers relative to male workers; and
  - increased levels of DAFW cases in industries with high levels of female employment.

Age

- The distribution of injured workers' ages has changed significantly since 1995, reflecting the increasing average age of the work force.
- The percentage of workers less than age 35 decreased from 44 percent in 1995, to 35 percent in 2001, while the percentage of workers age 45 and older increased from 23 percent to 34 percent.
- Even though the total number of DAFW cases decreased by 8,000 from 1995 to 2001, the number of DAFW cases among workers age 55 and older increased by 690 cases, a 21 percent increase.

Figure 3.8 Gender of workers with days-away-from-work cases, Minnesota, 2001

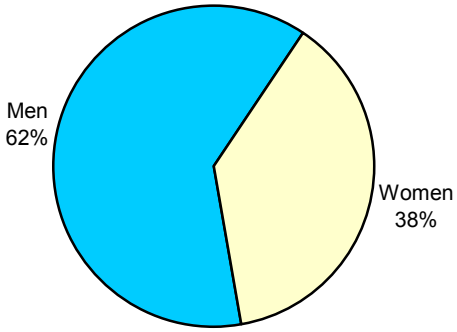
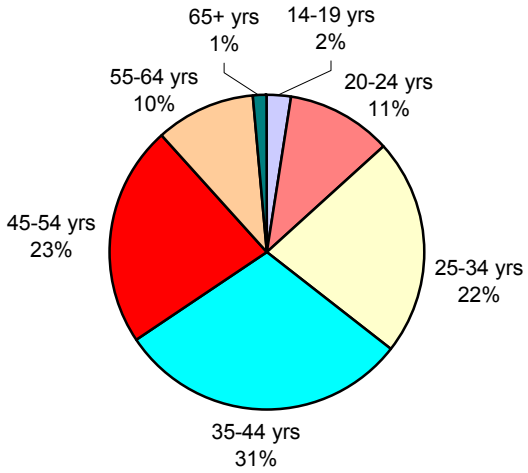


Figure 3.9 Age of workers with days-away-from-work cases, Minnesota, 2001



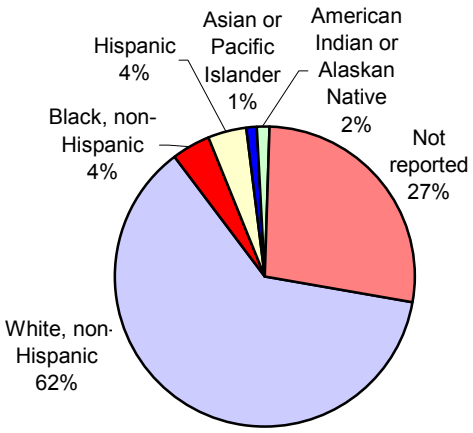
Race or ethnic origin

Some caution is needed in the analysis of race or ethnic origin, because 27 percent of the survey responses did not include the injured worker's race or ethnic origin. The survey results reflect the increasing diversity of Minnesota's workforce.

- The reported number of black, non-Hispanic injured workers increased by 32 percent since 1995, and the percentage increased from 2.6 percent to 4.2 percent of all DAFW cases.

- The reported number of Hispanic injured workers increased by 103 percent since 1995, and the percentage increased from 1.6 percent to 4.1 percent of all DAFW cases.

Figure 3.10 Race or ethnic origin of workers with days-away-from-work cases, Minnesota, 2001



Job characteristics

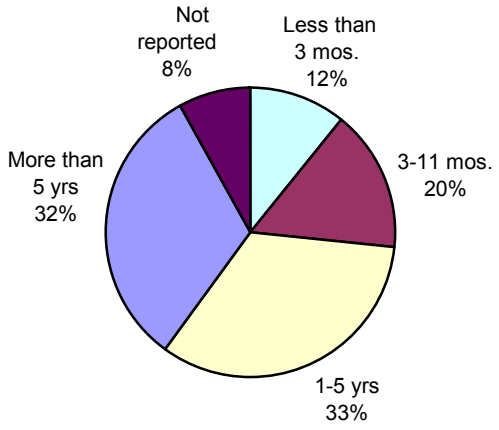
Job tenure

A worker's length of service (job tenure) with an employer is a general measure of the worker's attainment of job skills. Injuries to workers with short job tenures may be indicative of workers who were not adequately trained or who did not meet all the physical requirements the job demanded.

- Twenty-seven percent of the injured workers had been with their employers for less than one year at the time of injury. This percentage has not changed much since 1995.

- The distribution of job tenure among workers with DAFW cases varied greatly by industry: less than 10 percent of the injured workers in mining had less than one year tenure, compared to more than 50 percent of the injured workers in agriculture, forestry and fishing.

Figure 3.11 Length of service of workers with days-away-from-work cases, Minnesota, 2001

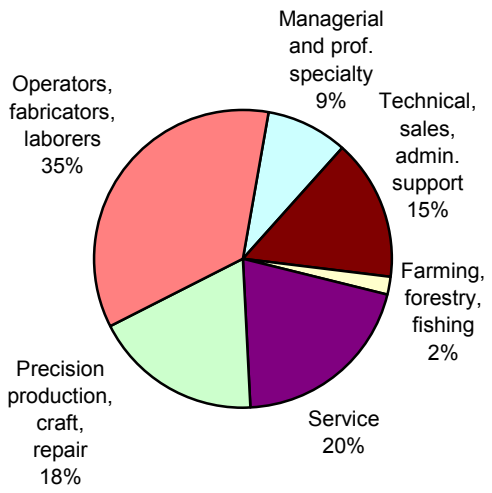


Occupation

Occupation is presented both by broad category, in Figure 3.12, and by detailed occupation, in Figure 3.13.

- The percentage of operators, fabricators and laborers among DAFW cases decreased from 40 percent in 2000, to 35 percent in 2001, an indication of the decrease in all injury and illness cases in the manufacturing industry. However, even with the decrease, operators, fabricators and laborers remained the largest occupation category of DAFW cases.
- The number of operators, fabricators and laborers among DAFW cases decreased by 23 percent from 2000, and by 31 percent from its 1995 level.
- The percentage of precision production, craft and repair workers also decreased from 2000 (20 percent) to 2001 (18 percent), but remained above its 1995 level (13 percent). Many of the workers in this occupation group are in the manufacturing industry.
- The number of cases for precision production, craft and repair workers decreased by 18 percent from 2000, compared to an overall drop of 12 percent among DAFW cases.

Figure 3.12 Occupation of workers with days-away-from-work cases, Minnesota, 2001

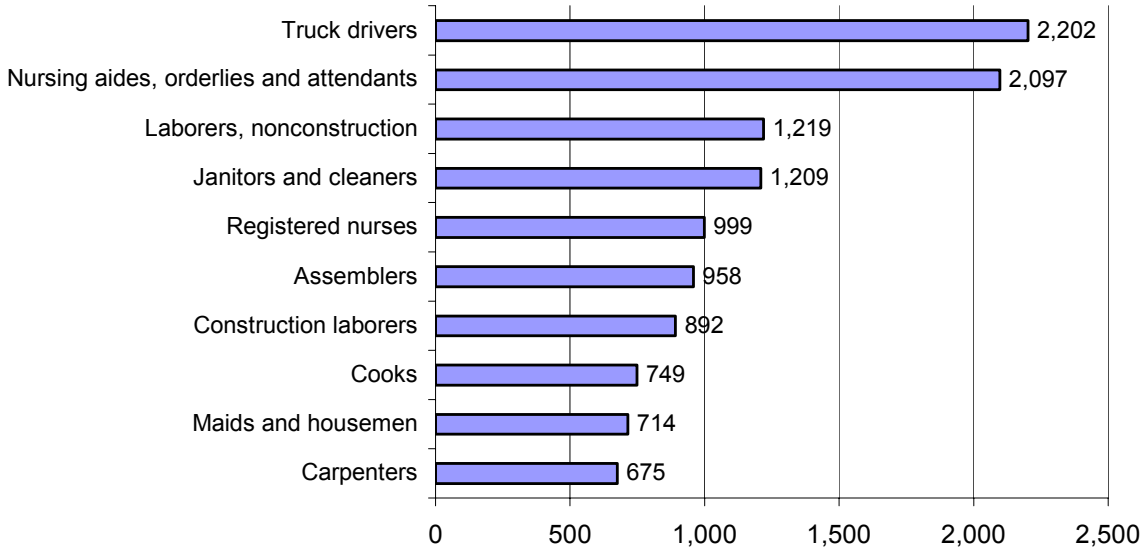


- The detailed occupations with the highest numbers of cases were truck drivers and nursing aides, orderlies and attendants. These two occupations accounted for 12 percent of all DAFW cases. However, these two occupations have very different worker and injury profiles.

- Among truck drivers:
  - 95 percent of the injured workers were men;
  - 38 percent were from 45 to 54 years old, the largest age group;
  - 10 percent had been with their employer for less then three months;
  - 43 percent were in the transportation and public utilities industry and 30 percent were in the wholesale industry;
  - the median days away from work was seven days;
  - 41 percent of the injuries were sprains and strains; and
  - the primary events causing the injuries were overexertion (25 percent) and transportation accidents (11 percent).

- Among nursing aides, orderlies and attendants:
  - 89 percent of the injured workers were women;
  - 24 percent were from 20 to 24 years old, a five-year range;
  - 22 percent had been with their employer for less than three months;
  - the median days away from work was two days;
  - 62 percent of the injuries were caused by overexertion, and 10 percent were due to assaults; and
  - health care patients were the source of 70 percent of the injuries.

Figure 3.13 Specific occupations with the highest number of cases, Minnesota, 2001



Characteristics and causes of injuries and illnesses

This section presents information from the BLS survey about the characteristics and causes of Minnesota's workplace injuries and illnesses that result in days-away-from-work (DAFW) cases. Characteristics include the nature of the injury or illness and the part of body affected. Causes consist of the event or exposure leading to the injury or illness and the source of injury or illness — the object, substance, person or environmental condition that directly produced or inflicted it.

As an example of how the four classifications combine to describe injuries and illnesses, consider an injury to a health care worker who sprains his back while helping a patient out of bed. The nature, or physical effect, is a sprain or strain; the part of body affected, his back; the event, overexertion while lifting; and the source, the patient.

The following four pie charts show the percentages of the major coding categories for DAFW claims for 2001. The percentages are very similar to the distribution for the 1998 through 2000 period. Tables showing the number, percentage and incidence rates of injury characteristics for Minnesota are available at www.doli.state.mn.us/blsstats.htm.

Nature of injury or illness

- Sprains, strains and tears of muscles, tendons and joints accounted for 44 percent of the DAFW cases, the same percentage as for 1998 through 2000.

- Fractures showed the biggest change from the 1998 through 2000 period, increasing from 5 percent to 8 percent.

Part of body

- Injuries to the back continued to account for the largest proportion of cases, although it decreased to 28 percent from an average of 30 percent during the 1998 through 2000 period.

- Lower extremity injuries showed the biggest change from the 1998 through 2000 period, increasing from 18 percent to 22 percent.

Event or exposure

- Overexertion continued to account for the largest proportion of cases, although it decreased to 31 percent from an average of 35 percent during the 1998 through 2000 period. This is consistent with the decrease in back injuries.

- Falls on the same level also showed a significant change from the 1998 through 2000 period, increasing from 8 percent to 12 percent.

Source of injury or illness

- Worker motion or position continued to be the most common injury source, accounting for 18 percent of the DAFW cases, an increase from an average of 15 percent during 1998 through 2000. This source is commonly associated with sprains and strains, and overexertion or repetitive motion injuries.

- The percentage of injures caused by floors and ground surfaces increased from an average of 13 percent during the 1998 through 2000 period, to 17 percent for 2001; injuries caused by containers decreased from 14 percent from 1998 through 2000, to 11 percent in 2001.

Figure 3.14 Nature of injury, Minnesota, 2001

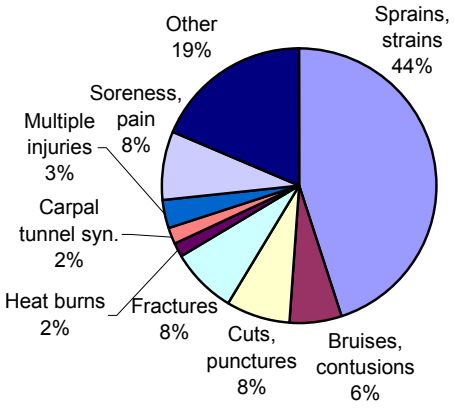


Figure 3.15 Part of body injured, Minnesota, 2001

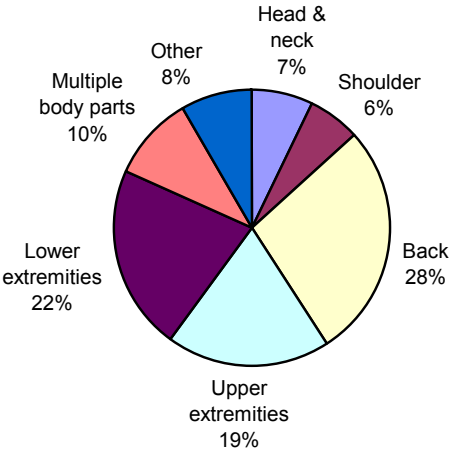


Figure 3.16 Event or exposure, Minnesota, 2001

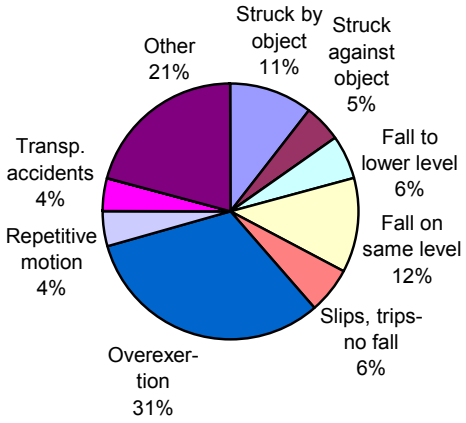
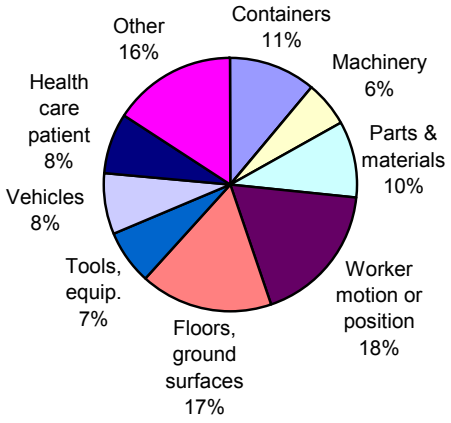


Figure 3.17 Source of injury or illness, Minnesota, 2001



4

Incidence and characteristics workplace injuries and illnesses within industry divisions

This chapter presents the injury and illness survey results separately for each industry division. OSHA activity within each industry division is also presented. Each industry is presented as a two-page section.

Each industry division has a figure with a line graph of the total, LWD and DAFW case incidence rates for the division as a whole, from 1991 through 2001. The accompanying table lists the constituent major industry groups (two-digit SIC) and industry groups (three-digit SIC) with publishable data reported in the survey, showing the 1999 through 2001 average incidence rate and the 2001 estimated number of recordable cases.

The three-year average incidence rates are presented to show more stable rates than the single-year survey results. The BLS incidence rates are computed on samples that generally include less than one-tenth of the employers in an industry. The employer sample changes each year. This creates variations in the incidence rates due to the sampling itself. For industries specified at greater detail than the division level, changes in the calculated incidence rates may not be indicative of actual changes in incidence rates. The BLS survey results showing the 2001 incidence rates and number of cases for each industry with publishable data are included in Appendix B.

For each industry division, the occupations with the highest percentage of DAFW cases in 2001 are listed and pie charts display the distribution of injury characteristics for the DAFW cases. The characteristics of the injured workers with DAFW cases are presented in the accompanying text.

The "Other" category in the pie charts include all classifications that do not account for at least 4 percent of the cases or that are not subcategories of the categories in the chart.

The final table for each industry shows the MNOSHA compliance and consultation activity for 2000, 2001 and 2002. For compliance activity, the table shows:

- the number of initial inspections conducted during the year;
- the percentage of those inspections that were conducted from the programmed inspection list, rather than as a result of imminent danger, complaints, fatalities or serious injuries;
- the percentage of all inspections resulting in at least one violation of a MNOSHA standard;
- the number of violations cited;
- the total amount of penalties assessed due to the violations; and
- the number of workers covered by the worksite inspections.

For consultation activity, the table shows:

- the number of worksites receiving visits from safety consultants;
- the percentage of consultation visits resulting in identification of safety and health hazards that would be violations of MNOSHA standards;
- the number of workers covered by the consultation visits; and
- the number of worksite visits that involved safety and health training, rather than the assessment of safety and health hazards.

It is possible for an establishment to receive services from both MNOSHA units – Compliance and Workplace Safety Consultation – during the same year. MNOSHA activity for all industries and descriptions of the MNOSHA programs are presented in Chapter 6.

Agriculture, forestry and fishing

- For the division, the total case rate decreased for the second consecutive year in 2001, the first time this has occurred in the last decade. However, the LWD and DAFW rates increased in 2001.
- The total case incidence rate for the current three-year period is lower than the rate for the 1996 to 1998 period (10.3 cases), but the LWD and DAFW rates are not different.
- Of the two major agricultural industry groups, agricultural production has higher incidence rates and accounts for slightly more cases.

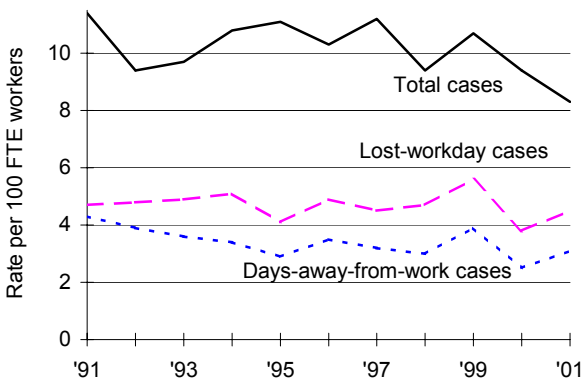
Among DAFW cases in 2001

- Men accounted for 91 percent of the cases.
- Workers from 20 to 24 years old made up 39 percent of the cases.
- Workers had been with the employer for less than three months in 14 percent of the cases, and between 3 months and 11 months in 37 percent of the cases.
- Farm workers was the largest occupational group and the most common specific occupation.
- Sprains and strains was the most frequent injuries type.
- Most of the injuries occurred to the back and upper extremities. Many of the upper extremity injuries occurred to the hands and fingers.
- Knee injuries were also common.
- Overexertion, especially while lifting, was the most common injury event.
- Vehicles, especially trucks, were identified as the most common injury source. Animals were the source of 14 percent of the injuries.

MNOSHA activity

- Compliance activity increased in 2002, with six planned-programmed inspections.
- Consultation activity in agriculture also increased in 2002.

Figure 4.1 Incidence rates per 100 FTE workers, agriculture, forestry, and fishing



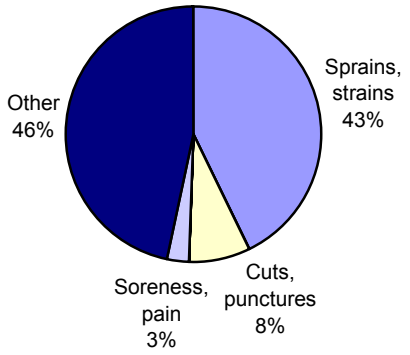
		1999-2001 avg. rates			2001
	SIC code	Total	Lost-work day	Days away from work	Total cases (1,000)
Agriculture, forestry, fishing		9.5	4.6	3.2	1.7
Agricultural production	01-02	13.0	6.5	3.7	0.9
Agricultural services	07	7.2	3.5	2.8	0.8

Figure 4.2 Most common occupations, agriculture, forestry, and fishing, 2001

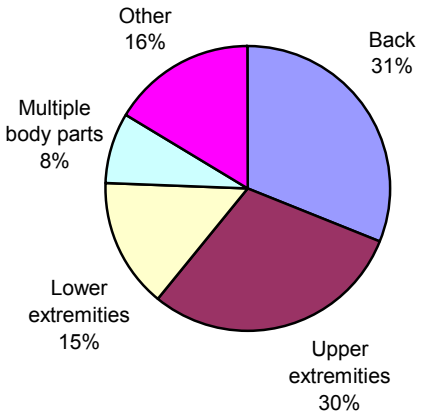
Occupation	Pct. of cases
Farm workers	42.5%
Groundskeepers and gardeners	18.2%
Truck drivers	9.8%
Veterinarians	2.7%

Figure 4.3 Injury characteristics, agriculture, forestry, and fishing, 2001

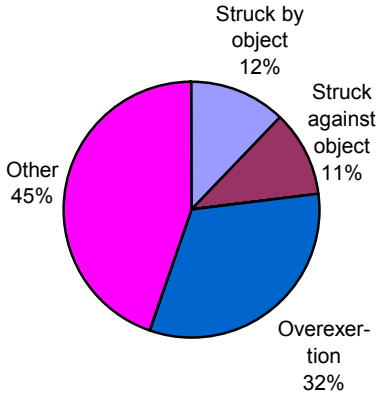
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

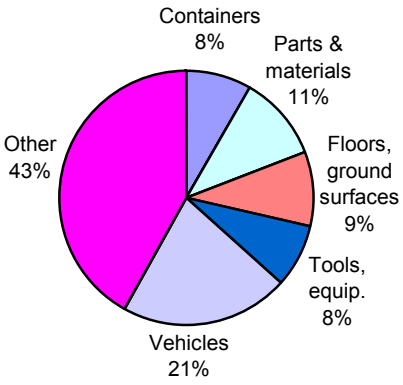


Figure 4.4 MNOSHA compliance and consultation activity, agriculture, forestry, and fishing

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	6	33%	83%	17	$ 43,690	348	0	--	--	0
2001	4	25%	25%	3	$ 2,550	48	0	--	--	2
2002	10	60%	60%	20	$ 5,410	194	3	100%	32	1

Mining

- Mining is dominated by the iron ore mining activity in northeastern Minnesota. The industry has been in a long contraction and few new workers are being hired.
- Only about 300 workers had recordable injuries in 2001.
- Total case incidence rates have generally fallen since 1993.

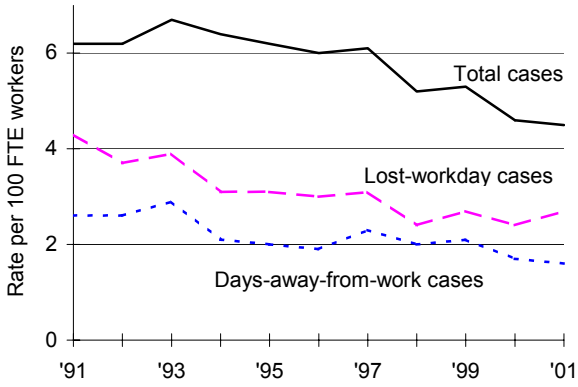
Among DAFW cases in 2001

- Men accounted for 95 percent of the cases.
- Workers who were from 45 to 54 years old made up 36 percent, and another 34 percent were from 35 to 44 years old.
- Workers who had been with their employer for more than five years accounted for 72 percent of the cases.
- Operators, fabricators and laborers was the largest occupational group; the most common specific occupation was industrial machinery repairers.
- Sprains and strains was the most frequent injury type. The percentage with fractures was the highest of any industry.
- The lower extremities was the most commonly injured body area.
- Overexertion was the most common injury event.
- The most common injury source was the ground, usually as a result of a fall.

MNOSHA activity

- MNOSHA does not have jurisdiction over the mining industry, so a MNOSHA activity table is not available.

Figure 4.5 Incidence rates per 100 FTE workers, mining



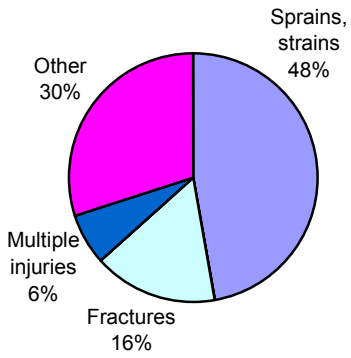
		1999-2001 avg. rates			2001
	SIC code	Total	Lost-work day	Days away from work	Total cases (1,000)
Mining		4.8	2.6	1.8	0.3
Iron ores	101	5.0	2.6	1.9	0.3

Figure 4.6 Most common occupations, mining, 2001

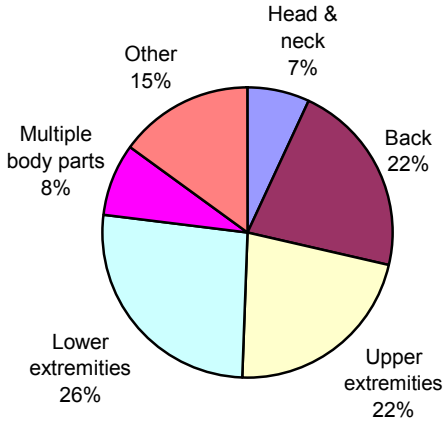
Occupation	Pct. of cases
Industrial machinery repairers	26.9%
Crushing and grinding machine operators	18.3%
Industrial truck and tractor equipment operators	10.8%
Welders and cutters	8.6%

Figure 4.7 Injury characteristics, mining, 2001

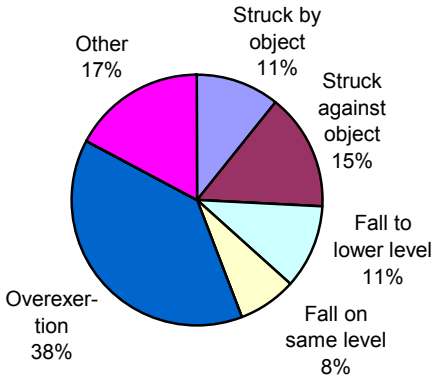
Nature of injury



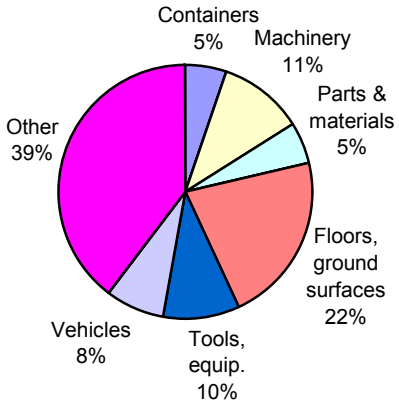
Part of body injured



Event or exposure



Source of injury or illness



Construction

- The total case rate has decreased during the past two years, to 10.7 cases per 100 FTE workers, the lowest construction rate ever reported in the survey.
- The LWD and DAFW rates have remained relatively stable since 1996.
- Although construction accounts for only 5.5 percent of private sector employment, it accounts for 10.4 percent of total cases and 13.2 percent of DAFW cases.
- Plumbing, heating and air conditioning contractors accounted for the greatest number of cases among the special trade contractors.
- The highest case rates occurred among nonresidential general building contractors.

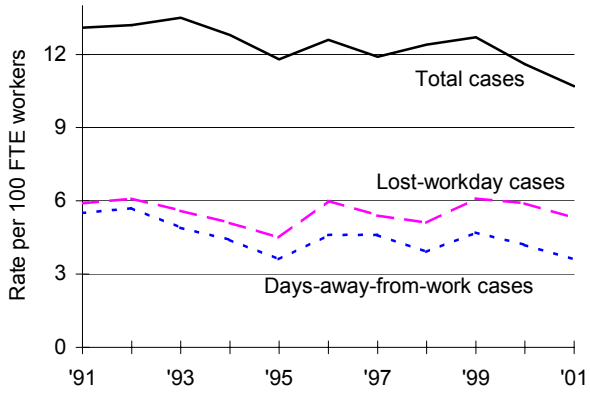
Among DAFW cases in 2001

- Men were 96 percent of the cases.
- The most common age group was from 35 to 44 years old, accounting for 32 percent of the cases.
- Workers with less than one year of job tenure made up 30 percent of the cases.
- The precision production, craft and repair category accounted for 67 percent of cases, with laborers and carpenters being the most common specific occupations.
- Sprains and strains were the most common injuries.
- The lower extremities, primarily the knees and ankles, were the most commonly injured body area.
- Overexertion, primarily from lifting objects, was the most common injury event. Many workers were struck by slipping or swinging objects.
- The most common injury sources were the ground and parts and materials, mostly building materials such as pipes, lumber and structural metal.

MNOSHA activity

- Compliance activity decreased in 2002, due to inspectors working at the World Trade Center cleanup. Most inspections are planned and the majority result in at least one violation.
- Consultation activity increased from 2000 to 2002, with 26 percent more worksite visits and 50 percent more training visits.

Figure 4.8 Incidence rates per 100 FTE workers, construction



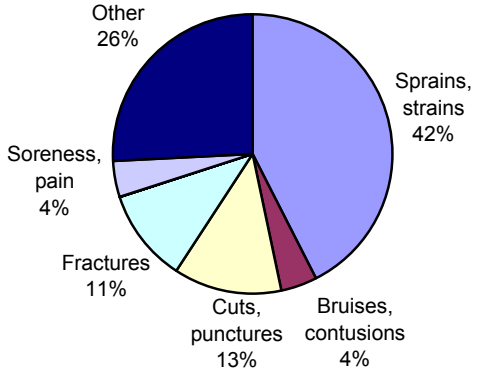
		1999-2001 avg. rates			
	SIC code	Total	Lost-work day	Days away from work	2001 Total cases (1,000)
Construction		11.7	5.8	4.2	12.1
General bldg. contractors	15	12.5	6.0	4.2	3.0
Residential bldg. const.	152	9.1	4.8	3.3	1.0
Nonresidential bldg. const.	154	15.5	6.9	4.8	1.9
Heavy const., ex. bldg.	16	9.1	4.5	3.5	1.2
Highway & street const.	161	11.8	5.0	4.0	0.7
Heavy const., ex. hwy	162	7.0	4.1	3.1	0.5
Special trade contractors	17	11.9	5.9	4.3	8.0
Plumbing, heating, air-conditioning	171	12.7	5.6	3.9	2.1
Electrical work	173	9.5	3.6	2.4	1.3
Masonry, stonework, plastering	174	11.4	6.0	4.9	1.0

Figure 4.9 Most common occupations, construction, 2001

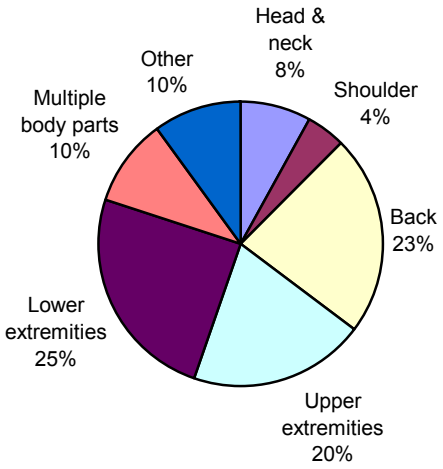
Occupation	Pct. of cases
Laborers	20.6%
Carpenters	14.1%
Supervisors	6.6%
Roofers	6.3%
Plumbers, pipefitters, and steamfitters	5.1%

Figure 4.10 Injury characteristics, construction, 2001

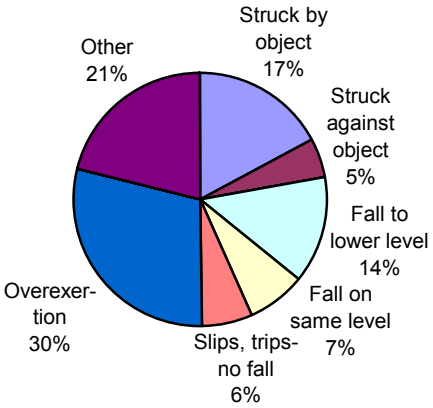
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

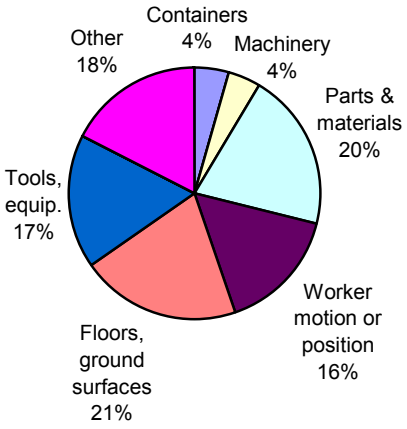


Figure 4.11 MNOSHA compliance and consultation activity, construction

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	1,034	83%	66%	1,266	$715,219	6,227	460	98%	11,273	54
2001	1,106	87%	82%	1,407	$769,471	6,405	505	92%	12,630	73
2002	899	87%	66%	1,142	$676,634	5,036	579	98%	11,819	81

Manufacturing

- The total case rate decreased from 10.4 cases per 100 FTE workers in 1998 to 7.9 cases in 2001, the lowest manufacturing rate ever reported in the survey.
- The total case rate from 1999 to 2001 was 9.1 cases, a decrease of 13 percent from the 1996 to 1998 average rate of 10.5 cases.
- Meat products manufacturing (SIC 201) showed a significant drop in total cases, from 46.4 in 1993 to 15.8 in 2001.
- Motor vehicles and equipment manufacturing (SIC 371) had the highest total case rate, although its 2001 rate of 32.0 cases was its lowest rate since 1992.

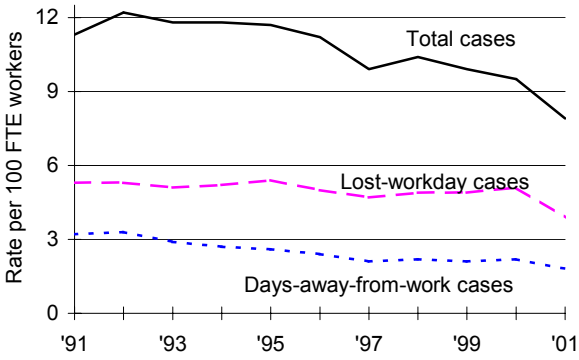
Among DAFW cases in 2001

- Men accounted for 74 percent of the cases.
- Workers from 35 to 44 years old was the most common injured worker age group, with 28 percent of the cases.
- Workers on their jobs for one to five years made up 34 percent of the cases.
- Occupations in the operators, fabricators and laborers category accounted for 71 percent of cases, with miscellaneous machine operators and assemblers being the most common specific occupations.
- The back was the most commonly injured body area, followed by the upper extremities. Other than the back, the most commonly injured specific parts were knees, wrists, fingers and eyes.
- Overexertion, primarily in lifting objects, was the most common injury event.
- The most common injury source was the workers' motion or bodily position. Many workers were injured handling boxes, crates and cartons, and by metalworking machinery.

MNOSHA activity

- Compliance activity increased in 2002, with nearly 200 more initial inspections than in 2001. Most of the inspections were programmed, due to the injury rates at the worksites. Five of the six high-hazard industries targeted by MNOSHA are in manufacturing.
- More consultation training visits were provided in manufacturing than for any other industry.

Figure 4.12 Incidence rates per 100 FTE workers, manufacturing



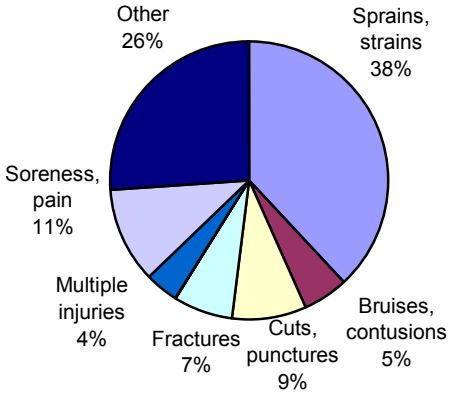
		1999-2001 avg. rates			2001
	SIC code	Total	Lost-work day	Days away from work	Total cases (1,000)
Manufacturing		9.1	4.6	2.0	38.4
Food & kindred products	20	12.1	7.5	2.4	6.6
Meat products	201	17.5	10.4	1.6	3.2
Dairy products	202	10.0	6.4	2.9	0.8
Lumber & wood products	24	14.9	7.8	4.2	3.0
Furniture & fixtures	25	17.0	8.9	3.6	1.2
Paper & allied products	26	6.1	2.9	1.3	1.8
Printing & publishing	27	6.2	3.2	1.5	3.0
Commercial printing	275	7.9	4.3	1.8	1.8
Chemicals & allied prods.	28	4.8	2.6	1.0	0.5
Rubber & plastics products	30	10.6	5.6	2.7	2.1
Stone, clay, glass products	32	8.8	5.0	2.5	0.9
Primary metal industries	33	16.7	10.1	4.3	1.4
Fabricated metal products	34	11.7	5.0	2.5	4.3
Structural metal products	344	12.7	6.3	2.8	1.6
Metal forgings & stampings	346	14.8	5.7	3.4	0.7
Industrial machinery & equip.	35	8.0	3.5	1.7	5.8
Metalworking machinery	354	9.5	4.5	2.7	0.6
General indust. machinery	356	12.1	6.0	2.0	1.1
Refrig. & service machinery	358	10.3	4.8	1.8	0.7
Electronic & other electric equipment	36	5.8	2.7	1.2	2.0
Transportation equipment	37	22.8	11.7	4.6	3.4
Motor vehicles & equip.	371	33.2	15.5	6.1	2.3
Instruments & related prod.	38	3.7	1.9	0.8	1.5
Misc. manuf. industries	39	9.8	4.6	2.2	0.7

Figure 4.13 Most common occupations, manufacturing, 2001

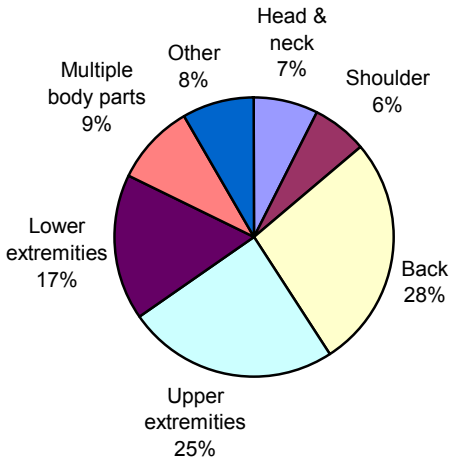
Occupation	Pct. of cases
Misc. machine operators	13.8%
Assemblers	12.4%
Welders and cutters	5.2%
Laborers	4.3%
Traffic, shipping, and receiving clerks	4.1%

Figure 4.14 Injury characteristics, manufacturing, 2001

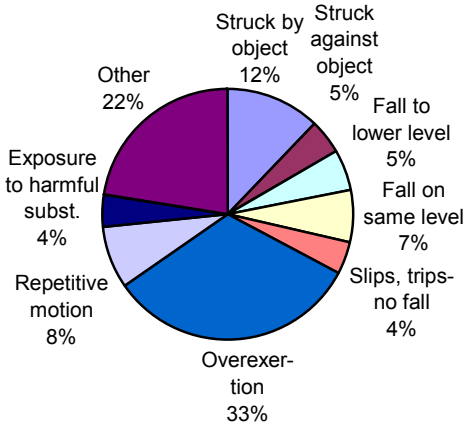
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

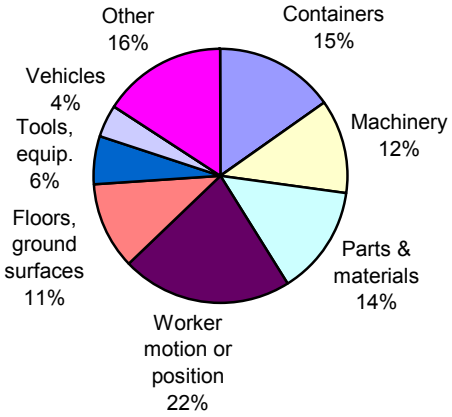


Figure 4.15 MNOSHA compliance and consultation activity, manufacturing

	Compliance inspections						Consultation visits			
Year	Initial inspec- tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	489	66%	77%	1,813	$836,380	46,137	111	95%	8,362	85
2001	454	75%	76%	1,706	$781,400	36,641	93	97%	8,500	115
2002	646	79%	75%	2,039	$862,110	46,538	123	98%	20,137	102

Transportation and public utilities

- The total case rate dropped from an average of 10.3 cases per 100 FTE workers for 1996 to 1998, to 7.3 cases during 1999 to 2001. The LWD and DAFW rates also decreased.
- The total case rate of 6.0 cases in 2001 was the lowest transportation and public utilities (TPU) rate ever reported in the survey.
- The reported number of cases decreased from 9,900 in 2000, to 7,000 in 2001, a 29 percent drop, while employment remained stable. TPU accounted for 17 percent of the decrease in the number of claims from 2000 to 2001.
- Most of the TPU cases were in trucking and warehousing and air transportation.

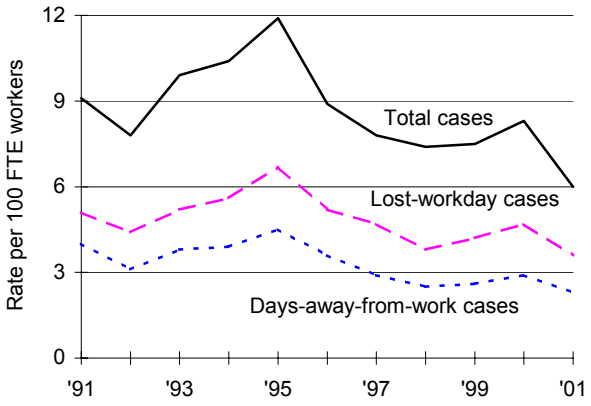
Among DAFW cases in 2001

- Men accounted for 79 percent of the cases.
- The 35 to 44 years old age group was the most common, with 34 percent of the cases.
- Only 6 percent of the injured workers were with their employer for less than three months, while 41 percent had been with their employer for more than five years.
- Workers in the operators, fabricators and laborers occupation category made up 65 percent of the cases, with truck drivers and freight, stock and material handlers being the most common specific occupations.
- The lower extremities, especially knees and ankles, and the back were the most commonly injured body parts.
- Overexertion, primarily in lifting objects such as packages and luggage, was the most common injury event.
- The most common injury source was the floor and ground surfaces, a result of the many fall injuries.
- Semitrailer trucks injured many workers.

MNOSHA activity

- Compliance activity decreased from 2001 to 2002, although the number of workers covered by the inspections increased.
- Consultation training visits increased in 2002.

Figure 4.16 Incidence rates per 100 FTE workers, transportation and public utilities



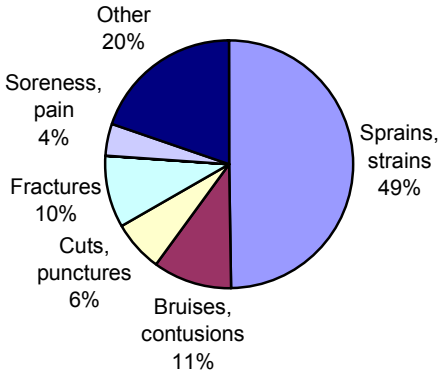
		1999-2001 avg. rates			
	SIC code	Total	Lost-work day	Days away from work	2001 Total cases (1,000)
Transportation & public utilities		7.3	4.2	2.6	8.5
Railroad transportation	40	4.5	3.3	2.6	0.2
Local & interurban pass. transit	41	8.2	4.0	3.0	0.7
Trucking & warehousing	42	9.1	5.0	3.1	2.8
Transportation by air	45	9.8	6.9	4.0	2.5
Communication	48	3.2	1.5	0.8	0.7
Telephone communication	481	2.4	1.2	0.6	0.4
Electric, gas & sanitary services	49	8.0	3.1	1.6	1.1
Electric services	491	9.3	3.5	2.0	0.7

Figure 4.17 Most common occupations, transportation and public utilities, 2001

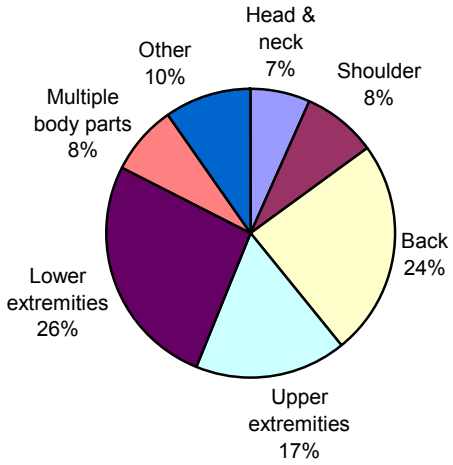
Occupation	Pct. of cases
Truck drivers	35.5%
Freight, stock, and material handlers	15.4%
Bus, truck, and stationary engine mechanics	5.8%
Aircraft engine mechanics	4.7%
Health technologists and technicians	4.3%

Figure 4.18 Injury characteristics, transportation and public utilities, 2001

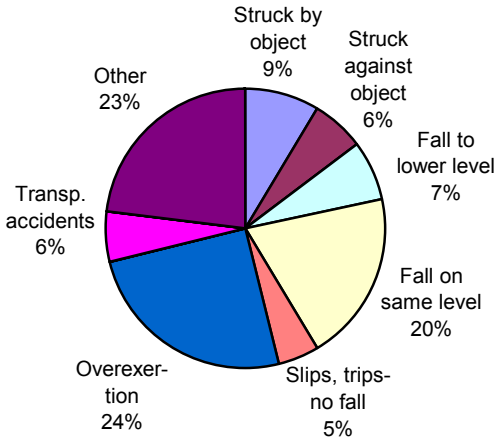
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

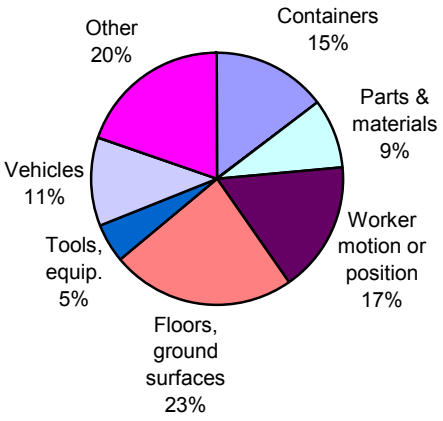


Figure 4.19 MNOSHA compliance and consultation activity, transportation and public utilities

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	59	54%	64%	122	$ 65,200	8,031	17	100%	1,326	6
2001	61	36%	53%	89	$155,217	5,271	7	86%	611	3
2002	47	55%	50%	57	$ 50,843	8,039	9	89%	489	14

Wholesale trade

- The total case rate has decreased slightly since 1999, while the LWD rate has increased.
- The average total case rate from 1999 to 2001 of 9.1 cases represents a 14 percent decrease from the 1996 to 1998 average rate of 7.7 cases.
- Among the wholesale trade industries reported in the survey, the highest total case rate was in lumber and construction materials and groceries and related products.

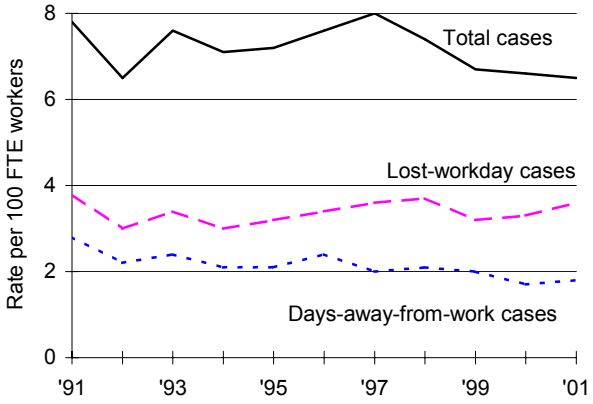
Among DAFW cases in 2001

- Men accounted for 87 percent of the cases.
- The 35 to 44 years old age group was the most common, accounting for 33 percent of the injured workers.
- Injured workers who were with their employer for less than three months accounted for 14 percent of cases, and another 15 percent had between 3 months and 11 months of tenure.
- Workers in the operators, fabricators and laborers occupation category made up 62 percent of cases, with truck drivers and laborers being the most common specific occupations.
- Sprains and strains accounted for 44 percent of the injuries.
- The back and the lower extremities, especially knees, were the most commonly injured body parts.
- Overexertion, primarily in lifting objects such as boxes and crates, was the most common injury event.
- The most common injury source was the workers' motion or position. Many workers were injured handling objects and in accidents involving semitrailer trucks.

MNOSHA activity

- About three-fourths of the compliance inspections are planned-programmed inspections due to high case incidence rates of specific employers.
- Consultation visits increased in 2002, and all visits found potential violations that were corrected.

Figure 4.20 Incidence rates per 100 FTE workers, wholesale trade



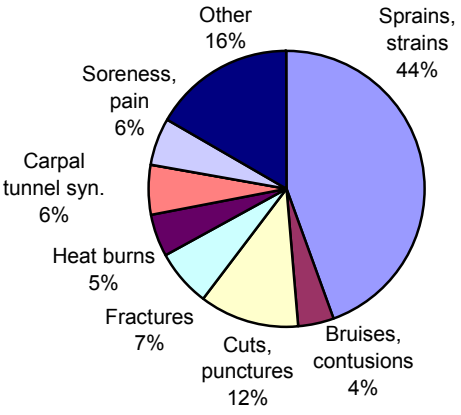
		1999-2001 avg. rates			2001
	SIC code	Total	Lost-work day	Days away from work	Total cases (1,000)
Wholesale trade		6.6	3.4	1.8	9.5
Motor vehicles, parts & supplies	501	9.4	4.7	2.7	0.9
Lumber & const. materials	503	10.6	5.1	2.8	0.6
Prof. & commercial equip.	504	2.6	1.1	0.8	0.6
Machinery, equip. & supplies	508	5.8	2.4	1.3	1.0
Groceries & related products	514	10.6	7.6	3.2	2.2

Figure 4.21 Most common occupations, wholesale trade, 2001

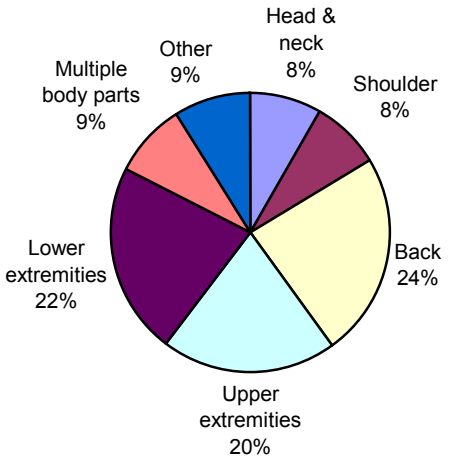
Occupation	Pct. of cases
Truck drivers	25.6%
Laborers	16.1%
Sales supervisors	5.7%
Technicians, nec	4.8%
Managers and administrators	4.8%
Sales representatives	4.3%

Figure 4.22 Injury characteristics, wholesale trade, 2001

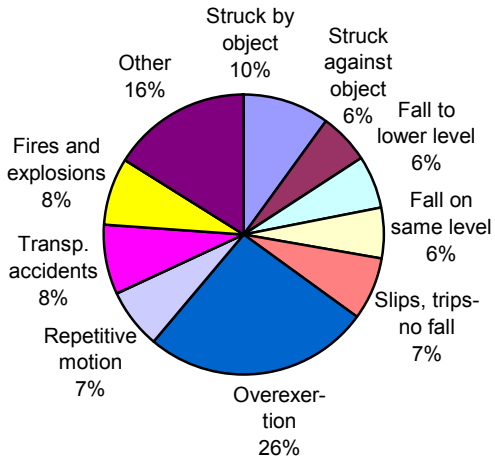
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

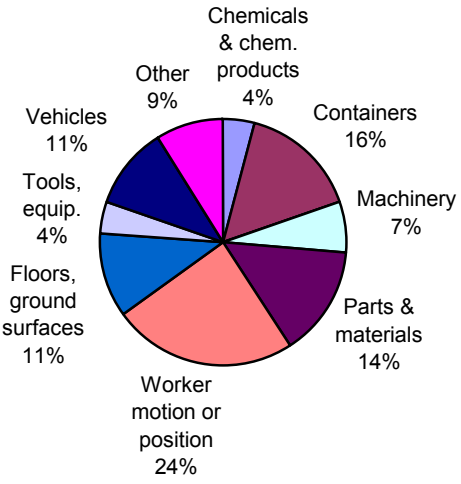


Figure 4.23 MNOSHA compliance and consultation activity, wholesale trade

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	60	77%	78%	169	$109,340	3,719	7	100%	1,334	2
2001	79	73%	68%	231	$283,493	4,077	2	100%	58	1
2002	45	73%	60%	88	$ 63,870	2,532	13	100%	373	2

Retail trade

- For the retail division, the average total case incidence rate for 1999 through 2001 was below the 1996 through 1998 average of 7.3 cases, while the LWD and DAFW rates remained relatively constant.
- Retail trade accounted for about 22 percent of employment and 18 percent of total injury and illness cases.
- Food stores had the highest injury rate for the 1999 through 2001 period among the major industry groups.
- Workers in restaurants and bars accounted for 27 percent of retail division injuries.

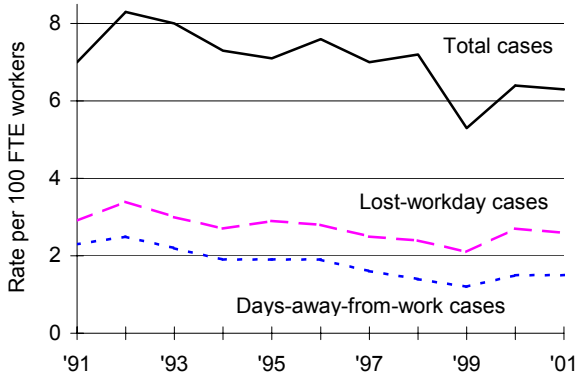
Among DAFW cases in 2001

- Men accounted for 53 percent of the cases.
- Workers from 35 to 44 years old were the most common injured worker age group, with 32 percent of the cases, and 26 percent were 25 to 34 years old.
- Five percent of the injured retail workers were 16 to 19 years old, the highest percentage of any industry division.
- Workers who were with their employer for less than one year accounted for 34 percent of the cases.
- The technical, sales and administrative support occupation category made up 33 percent of the cases, with stock handlers and baggers and automobile mechanics being the most common specific occupations.
- The lower extremities, especially knees and ankles, were the most commonly injured parts.
- Overexertion, primarily in lifting objects, was the most common injury event. Many of the injuries were caused by workers being struck by falling objects and by falling on stairs.
- The most common injury sources were worker motion or position and containers. Many workers were injured by boxes, crates and cartons, using knives and other cutting utensils, and by hitting the floor after a fall.

MNOSHA activity

- Most of the compliance inspections are the result of worker complaints and often result in issuance of violations.
- Consultation activity has been increasing, with a four-fold increase in the number of workers affected by the visits since 2000.

Figure 4.24 Incidence rates per 100 FTE workers, retail trade



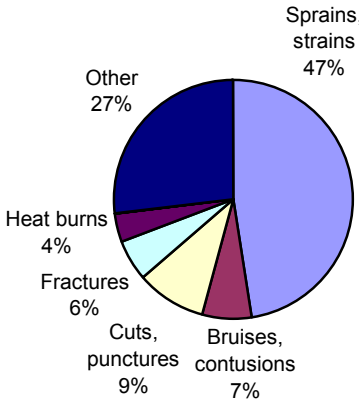
		1999-2001 avg. rates			
	SIC code	Total	Lost-work day	Days away from work	2001 Total cases (1,000)
Retail trade		6.0	2.5	1.4	18.7
Bldg. materials & garden supplies	52	6.6	3.0	1.7	1.3
Lumber & other bldg. materials	521	7.3	3.4	1.9	0.8
General merchandise stores	53	6.5	3.7	1.8	2.6
Food stores	54	9.3	3.4	1.6	3.7
Auto dealers & service stations	55	7.3	2.9	1.9	3.3
New & used car dealers	551	9.4	3.5	2.4	1.8
Apparel & accessory stores	56	2.6	1.1	0.9	0.3
Furniture & home furnishings	57	5.6	3.0	1.2	1.2
Eating & drinking places	58	5.5	1.6	1.4	5.0
Misc. retail	59	3.1	1.5	0.7	1.4

Figure 4.25 Most common occupations, retail trade, 2001

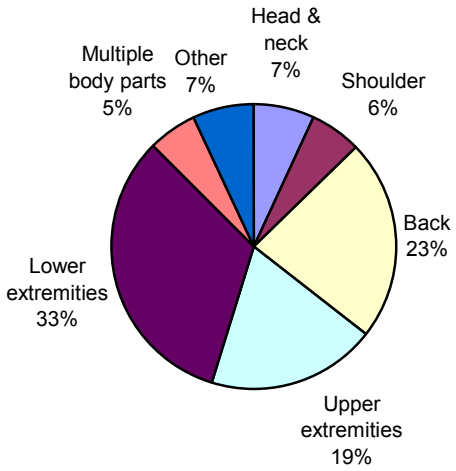
Occupation	Pct. of cases
Stock handlers and baggers	10.9%
Automobile mechanics	10.6%
Cooks	9.8%
Cashiers	9.7%
Sales supervisors	8.9%

Figure 4.26 Injury characteristics, retail trade, 2001

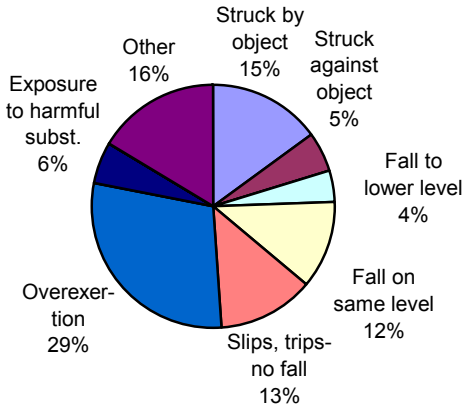
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

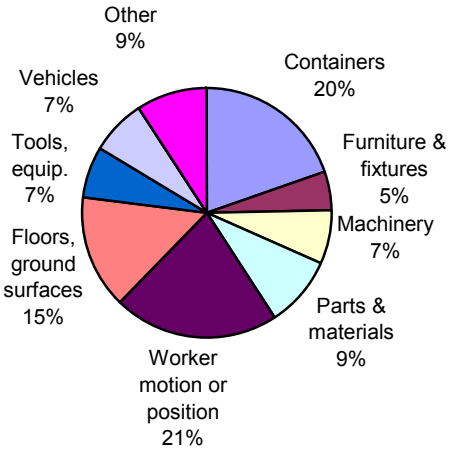


Figure 4.27 MNOSHA compliance and consultation activity, retail trade

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	35	29%	63%	83	$ 44,862	1,095	5	100%	150	1
2001	37	38%	63%	53	$ 20,785	2,286	6	100%	337	1
2002	27	22%	50%	28	$ 15,287	1,754	9	100%	661	2

Finance, insurance and real estate

- This industry had the lowest injury rates of any industry. Total case rates have remained stable since 1997, and the LWD and DAFW rates have remained below one case per 100 full-time equivalent workers since 1993.
- Injuries in the real estate major industry group occur primarily among workers of residential and nonresidential building operator firms.

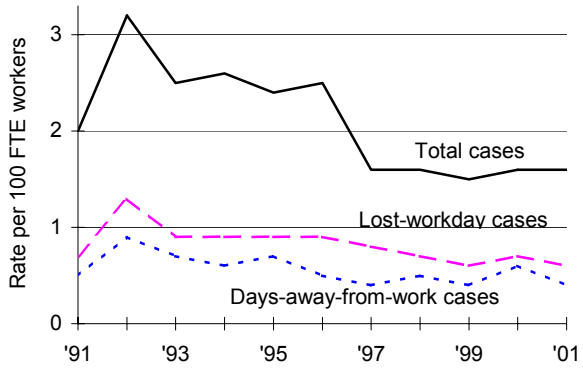
Among DAFW cases in 2001

- The cases were equally divided among men and women.
- Workers from 35 to 44 years old were the most common injured worker age group, with 36 percent of the cases, and 32 percent were 45 to 54 years old.
- Injured workers who were with their employer for less than three months made up 15 percent of the cases, and another 14 percent had between 3 months and 11 months of tenure.
- One-third of injured workers were in the technical, sales and administrative support occupation category, with janitors and cleaners being the most common specific occupation.
- Sprains and strains accounted for 45 percent of the injuries.
- The back and the lower extremities, especially knees, were the most commonly injured body parts.
- Overexertion, primarily in lifting objects, was the most common injury event.
- The most common injury sources were worker motion or position, floors and ground surfaces and containers.

MNOSHA activity

- Compliance activity remained low, with most visits the result of worker complaints. Most of the visits resulted in issuance of one or more violations.
- There were no consultation workplace visits, although a few training visits took place each year.

Figure 4.28 Incidence rates per 100 FTE workers, finance, insurance and real estate



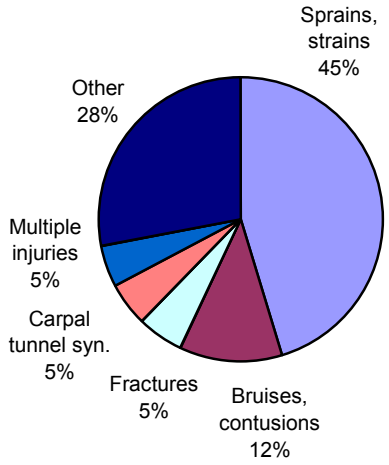
		1999-2001 avg. rates			
	SIC code	Total	Lost-work day	Days away from work	2001 Total cases (1,000)
Finance, insur. & real estate		1.6	0.6	0.5	2.3
Real estate	65	3.8	2.1	1.5	0.7

Figure 4.29 Most common occupations, finance, insurance and real estate, 2001

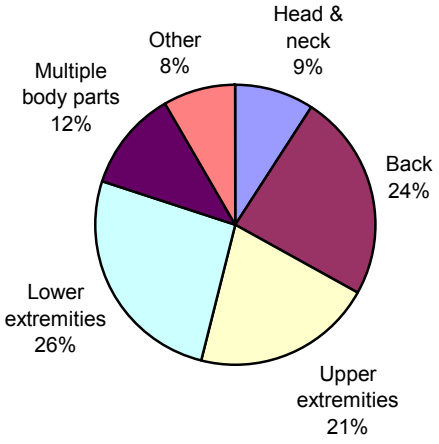
Occupation	Pct. of cases
Janitors and cleaners	18.1%
Mechanics and repairers	11.2%
Records clerks	10.2%
Property and real estate mgrs	7.7%

Figure 4.30 Injury characteristics, finance, insurance and real estate, 2001

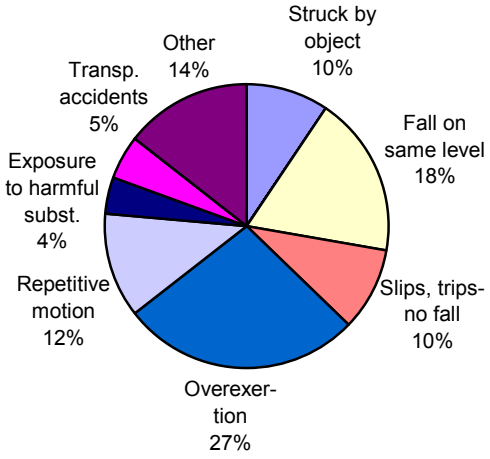
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

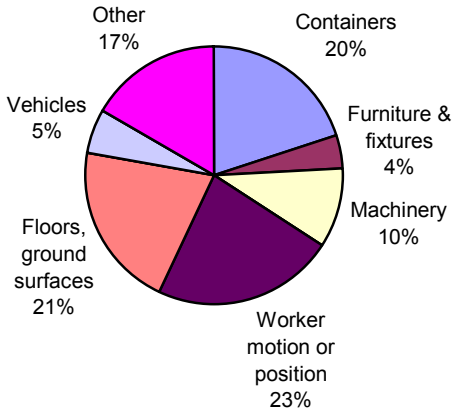


Figure 4.31 MNOSHA compliance and consultation activity, finance, insurance and real estate

	Compliance inspections						Consultation visits			
Year	Initial inspec- tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	11	9%	55%	23	$ 5,525	292	0	--	--	5
2001	4	0%	50%	7	$ 2,080	75	0	--	--	3
2002	4	0%	75%	7	$ 5,590	57	0	--	--	4

Services

- For the division, all three case incidence rates remained relatively stable since 1999 and below the levels of earlier years.
- Approximately half the service industry injuries occurred to workers in health services, primarily nursing facilities and hospitals. These industries had the highest incidence rates among service industries.

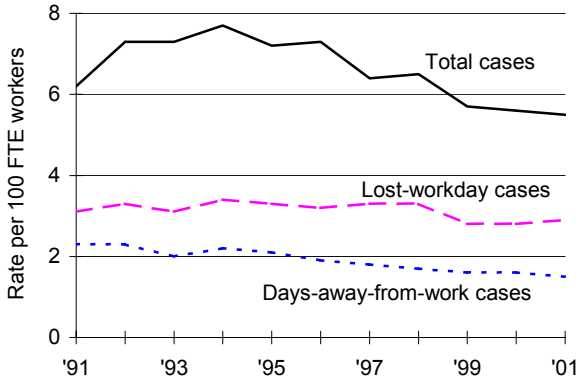
Among DAFW cases in 2001

- Women accounted for 74 percent of the cases.
- Workers were nearly evenly distributed among the 25 to 34, 35 to 44 and 45 to 54 years old age groups.
- Injured workers who were with their employer for less than three months made up 14 percent of the cases, and another 19 percent had between 3 months and 11 months of tenure.
- Service occupations accounted for 48 percent of the cases, and 24 percent were in managerial and professional specialty occupations, the highest percentage of any industry. Health care occupations, primarily nursing aides, orderlies and attendants and registered nurses were the most common specific occupations.
- Nearly half of the injuries were sprains and strains, and the back was the most commonly injured body part. The service industry had the highest back injury percentage of any industry.
- Overexertion, primarily in lifting, was the most common injury event. Among private sector industries, services had the highest rate of workers injured by accidents or violent acts.
- Health care patients were the most common source of injury, often while being lifted. Hitting the floor after a fall and the worker's own motion or position injured many others.
- Injuries caused by vehicles primarily refer to automobile accidents.

MNOSHA activity

- Compliance activity more than doubled in 2002, with 54 percent of the increase a result of increased inspections in nursing homes. Nearly half of the workers covered by the inspections worked in nursing homes.
- Consultation activity also increased in 2002, with 85 percent of the increase in worksite visits taking place in nursing homes.

Figure 4.32 Incidence rates per 100 FTE workers, services



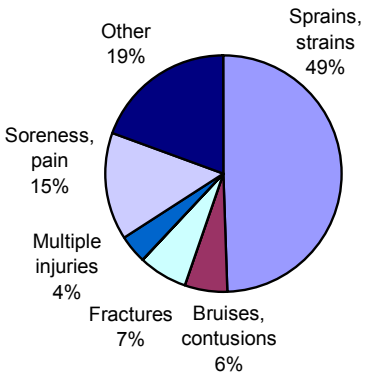
	SIC code	1999-2001 avg. rates: Total	Lost-work day	Days away from work	2001 Total cases (1,000)
Services		5.6	2.8	1.6	30.3
Hotels, other lodging places	70	7.5	4.0	2.4	1.6
Personal services	72	3.7	1.9	1.0	0.7
Business services	73	2.7	1.3	0.7	3.4
Auto repair, serv., & parking	75	5.2	2.3	1.9	1.0
Misc. repair services	76	6.2	2.6	1.8	0.3
Amusement & rec. services	79	6.2	3.2	1.9	1.5
Health services	80	9.3	4.9	2.6	15.6
Nursing & pers care facil.	805	19.7	12.0	4.9	6.3
Hospitals	806	10.6	5.8	3.7	6.2
Home health care services	808	7.9	3.9	2.5	0.5
Education services	82	2.9	1.3	0.9	0.6
Social services	83	7.0	3.7	2.0	3.8
Residential care	836	8.5	4.1	2.3	1.6

Figure 4.33 Most common occupations, services, 2001

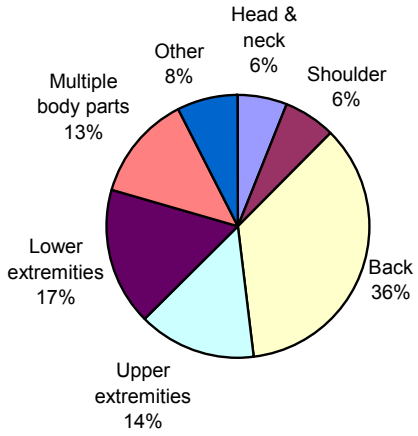
Occupation	Pct. of cases
Nursing aides, orderlies, and attendants	23.6%
Registered nurses	11.3%
Maids and housemen	8.6%
Social workers	6.1%
Janitors and cleaners	4.4%
Licensed practical nurses	4.1%

Figure 4.34 Injury characteristics, services, 2001

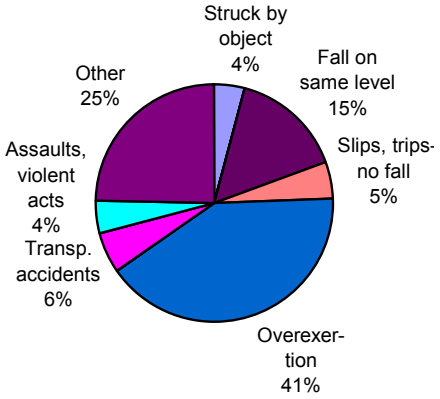
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

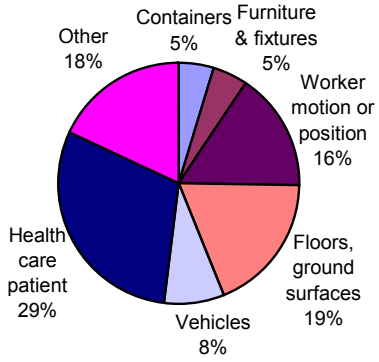


Figure 4.35 MNOSHA compliance and consultation activity, services

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	127	47%	66%	246	$134,045	5,816	40	100%	2,948	73
2001	93	28%	65%	167	$ 94,647	6,536	43	98%	4,396	95
2002	211	69%	72%	428	$227,829	22,940	76	100%	7,146	82

State government

- For the division, the 2001 total case incidence rate increased for the first time since 1992, while the LWD and DAFW rates remained relatively constant.
- Average incident rates for the 1999 to 2001 period were slightly below the average rates for the 1996 to 1998 period.
- Employees at state government education institutions, particularly state colleges and universities, constituted the largest group of injured workers.

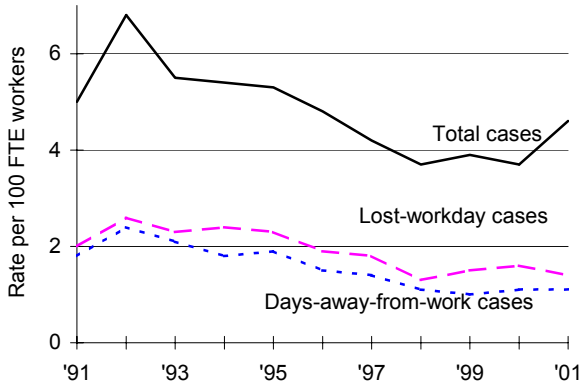
Among DAFW cases in 2001

- Men accounted for 56 percent of the cases.
- Workers from 45 to 54 years old made up 31 percent of the cases; 28 percent were from 35 to 44 years old.
- Injured workers who were with their employer for more than five years accounted for 53 percent of the cases, a result of the generally long job tenure of state government workers.
- Service occupation workers were 34 percent of the cases, with correctional institution officers being the most common specific occupation.
- Sprains and strains accounted for 48 percent of the injuries and the back was the most commonly injured body part. The knees were the part of the lower extremities with the most injuries.
- Overexertion, primarily in lifting, was the most common injury event. State government workers had the highest percentage of injuries due to assaults and other violent acts.
- Many of the lifting injuries resulted while caring for health care facility patients.

MNOSHA activity

- The compliance activity statistics include all public-sector worksites (state and local governments) involved in public administration; schools and hospitals were excluded. Most compliance inspections were planned-programmed inspections and there were fewer inspections in both 2001 and 2002 than in 2000.
- Consultation activity includes service to all state government units, regardless of activity. Most of the consultation activity involved training visits.

Figure 4.36 Incidence rates per 100 FTE workers, state government



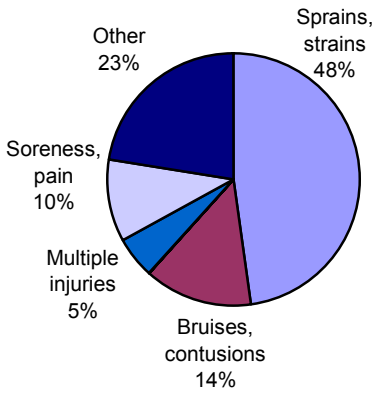
	SIC code	1999-2001 avg. rates: Total	Lost-work day	Days away from work	2001 Total cases (1,000)
State government		4.1	1.5	1.1	2.6
Construction		12.7	5.4	3.0	0.5
Services		3.8	1.3	1.0	1.5
Health services	80	12.8	8.0	6.4	0.5
Education services	82	2.5	0.7	0.4	0.9
Public administration		3.7	1.4	1.0	0.8

Figure 4.37 Most common occupations, state government, 2001

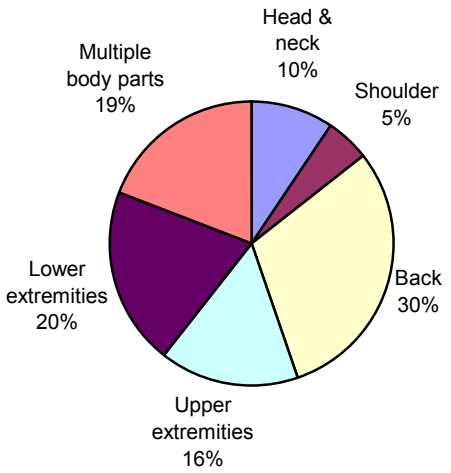
Occupation	Pct. of cases
Correctional institution officers	11.7%
Personnel, training, labor relations specialists	8.4%
Licensed practical nurses	7.3%
Health aides, exc. nursing	5.7%
Laborers, nonconstruction	5.0%

Figure 4.38 Injury characteristics, state government, 2001

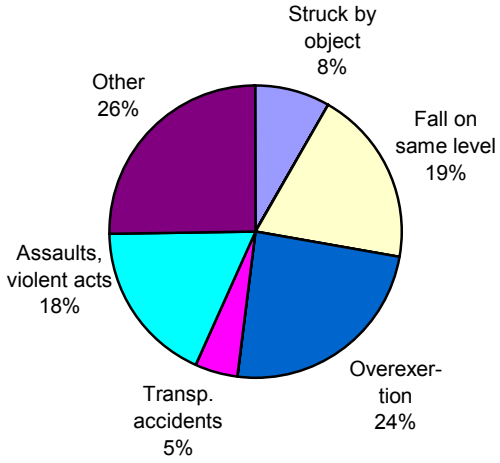
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

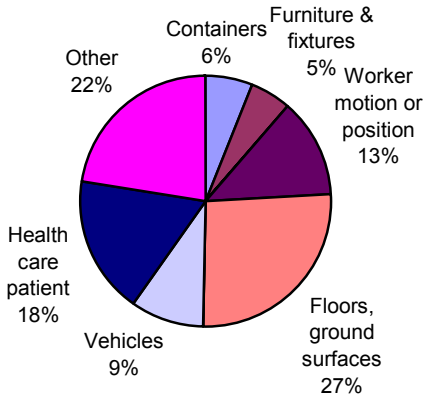


Figure 4.39 MNOSHA compliance and consultation activity, state government

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	82	65%	62%	161	$114,289	5,007	17	100%	384	46
2001	55	69%	53%	93	$102,665	4,442	5	80%	597	47
2002	45	62%	69%	67	$105,375	1,962	8	88%	485	36

Local government

- For the division, the total case incidence rate continued declining from its 1996 level. The average rate of 6.1 cases for 1999 to 2001 was 24 percent below the average rate of 8.0 cases for 1996 to 1998.
- Most of the injured workers were involved with local public schools.
- Local government nursing and personal care facilities have among the highest case rates of any industry in the state.

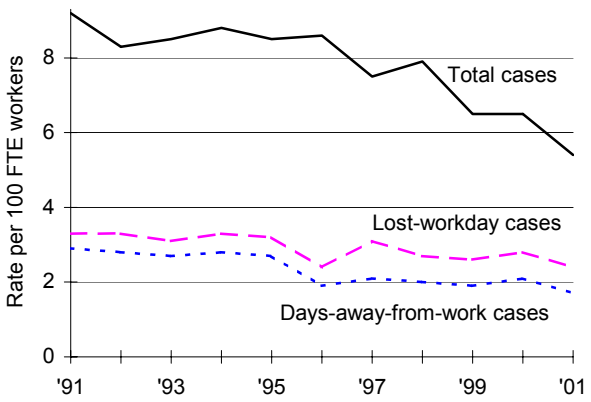
Among DAFW cases in 2001

- Men accounted for 56 percent of the cases.
- Workers from 35 to 44 years old made up 31 percent of the cases; 30 percent were 45 to 54 years old.
- Workers who were with their employer for longer than five years accounted for 48 percent of the cases.
- Service occupation workers were 44 percent of the cases. Janitors and cleaners and bus drivers were the most common specific occupations.
- Sprains and strains accounted for 45 percent of the injuries.
- The back was the most commonly injured body part, with the knees, fingers and wrists being other frequently injured parts.
- Overexertion, primarily in lifting, was the most common injury event. Local government workers had the highest percentage of injuries due to transportation accidents.
- The most common injury sources were floors and other ground surfaces, especially parking lots, vehicles, primarily buses, and worker motion or position.

MNOSHA activity

- The compliance activity statistics include all public-sector worksites (state and local governments) involved in public administration; schools and hospitals were excluded. Most compliance inspections were planned-programmed inspections, and there were fewer inspections in both 2001 and 2002 than in 2000.
- Consultation activity includes service to all local government units, regardless of activity. Local government continued to receive a high number of worksite visits.

Figure 4.40 Incidence rates per 100 FTE workers, local government



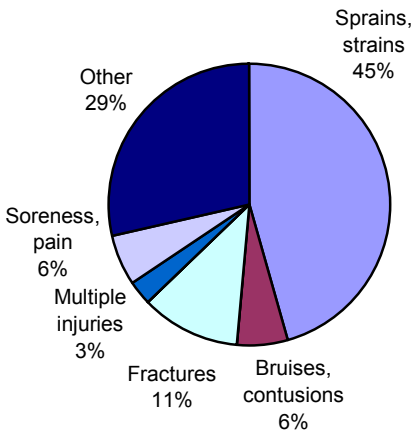
	SIC code	1999-2001 avg. rates: Total	Lost-work day	Days away from work	2001 Total cases (1,000)
Local government		6.1	2.6	1.9	11.6
Services		6.2	2.5	1.8	7.4
Health services	80	13.4	7.2	4.6	2.0
Nurs'g & pers. care facil.	805	19.9	14.3	10.2	0.5
Hospitals	806	12.6	5.9	3.6	1.4
Education services	82	5.2	1.8	1.5	5.0
Public administration		4.9	2.3	1.5	3.0

Figure 4.41 Most common occupations, local government, 2001

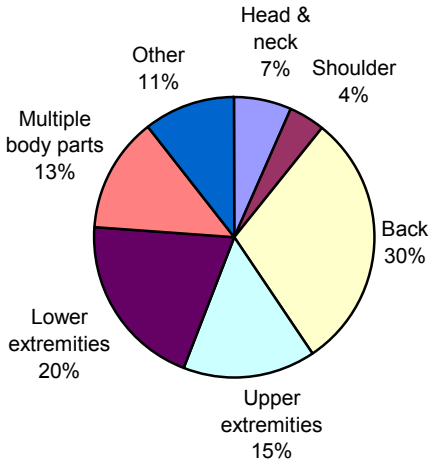
Occupation	Pct. of cases
Janitors and cleaners	14.9%
Bus drivers	10.1%
Nursing aides, orderlies, and attendants	7.7%
Police and detectives	5.1%
Groundskeepers and gardeners	4.7%

Figure 4.42 Injury characteristics, local government, 2001

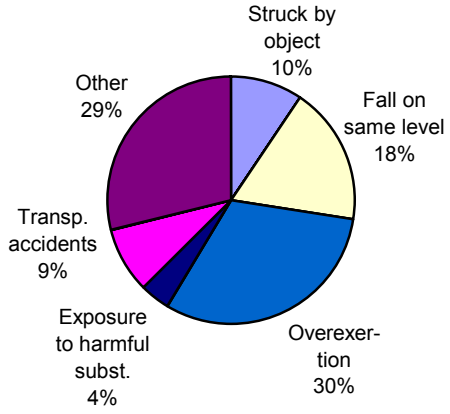
Nature of injury



Part of body injured



Event or exposure



Source of injury or illness

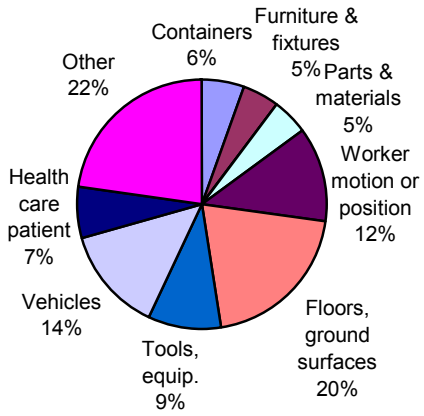


Figure 4.43 MNOSHA compliance and consultation activity, local government

	Compliance inspections						Consultation visits			
Year	Initial inspec-tions	Pct. planned programmed	Pct. with violations	No. of violations	Penalties assessed	No. of workers covered	No. of worksites visited	Pct. with identified hazards	No. of workers at sites	No. of training visits
2000	82	65%	62%	161	$114,289	5,007	84	100%	1,486	80
2001	55	69%	53%	93	$102,665	4,442	65	97%	1,457	73
2002	45	62%	69%	67	$105,375	1,962	76	98%	1,481	48

5
Fatal occupational injuries

In 2001, 76 Minnesota workers were fatally injured on the job. This is an increase from 68 fatalities in 2000, and slightly less than the 1996 through 2000 annual average of 78 fatalities.

Nationwide, 8,786 workers were fatally injured during 2001, including 2,886 workers killed during the Sept. 11 terrorist attacks. Excluding the Sept. 11 fatalities, the annual total of 5,900 work-related fatalities is nearly the same as the 2000 total of 5,920 and 3.2 percent lower than the 1996 through 2000 average of 6,094 fatalities.

These and other findings are from the nationwide *Census of Fatal Occupational Injuries* (CFOI), conducted by the BLS with state and other federal agencies. The Department of Labor and Industry collects CFOI data for the state of Minnesota.

The CFOI covers all fatal work injuries in the private and public sectors, whether the workplaces concerned are covered by the Occupational Safety and Health Act or other federal or state laws, or are outside the scope of regulatory coverage. For example, the CFOI includes federal employees and resident armed forces, even though they have different legal and regulatory coverage than other workers. It also includes self-employed and unpaid family workers, including family farm workers. Work-related fatal *illnesses* (e.g., asbestosis, silicosis and lead poisoning) are excluded from the CFOI because many occupational illnesses have long latency periods and are difficult to link to work.

The CFOI provides a complete count of fatal work injuries by using multiple sources to identify, verify and profile these incidents. The sources include death certificates, coroners' reports, workers' compensation reports, news media and others.

Counting fatalities

The CFOI count of work-related fatalities differs in important ways from other workplace fatality statistics. The CFOI is a count of all work-related deaths caused by injuries, and excludes deaths caused by illnesses. Fatalities to all workers, including self-employed workers, are tabulated in the state of occurrence. Thus, a truck driver from Minnesota, who works for a Minnesota trucking company, killed in an accident in Texas would be counted as a Texas CFOI fatality.

The workers' compensation count of fatalities only includes workers covered by a Minnesota workers' compensation insurance policy. Self-employed workers are not included. Fatalities caused by illnesses are included. A Minnesota truck driver killed in another state would be included in the Minnesota workers' compensation fatality count if Minnesota workers' compensation benefits were paid. In 2001, there were 50 workers' compensation fatalities.

MNOSHA investigated 32 fatalities in 2001. MNOSHA investigates all employee deaths that are under MNOSHA jurisdiction and result from an accident or illness caused by or related to a workplace hazard. Not included are fatalities caused by traffic accidents, airplane crashes, mining accidents, farm accidents, and accidents to the self-employed, federal workers and railroad workers.

MNOSHA investigates fatalities to determine cause, whether any MNOSHA standards were violated, and whether the promulgation of additional standards might help prevent similar incidents.

Number and rate of fatal injuries

- Figure 5.1 shows Minnesota had from 68 to 113 fatal work injuries a year from 1991 through 2001.
- For wage-and-salary workers, the annual fatality toll ranged from 53 to 64, except for 1993, when it reached 80.
- For self-employed workers, the annual fatality figure ranged from 15 to 44. The drop in fatalities of self-employed workers since 1996 has been the main source of the decrease in total annual fatalities.
- The fatality toll for 1997 through 2001 averaged 78 workers a year, consisting of 57 wage-and-salary workers and 21 self-employed workers.
- Fatal injuries for the self-employed were 27 percent of the total, far higher than the 8 percent self-employed share of total state employment.[8]
- The 2001 Minnesota fatality rate was 2.8 deaths per 100,000 employed, an increase from the 2000 rate of 2.5. The long-term trend in Minnesota's fatality rate has been downward since the early nineties, when the 1991to 1993 average rate was 4.3 fatalities per 100,000 workers.
- For the entire United States, the fatality rate for 2000 and 2001 was 4.3 deaths per 100,000 employed (excluding fatalities related to the Sept. 11, 2001 attacks).

Figure 5.1 Fatal work injuries in Minnesota, 1991-2001 [1]

Year of death	Wage & salary workers	Self-employed	Total
1991	58	31	89
1992	59	44	103
1993	80	33	113
1994	56	26	82
1995	58	26	84
1996	57	35	92
1997	54	18	72
1998	64	24	88
1999	55	17	72
2000	53	15	68
2001	58	18	76
Average '97-'01	56.8	21.2	78.0

1. Includes private sector plus local, state and federal government (including resident armed forces). Includes self-employed and unpaid family workers, including family farm workers. Excludes fatal illnesses.

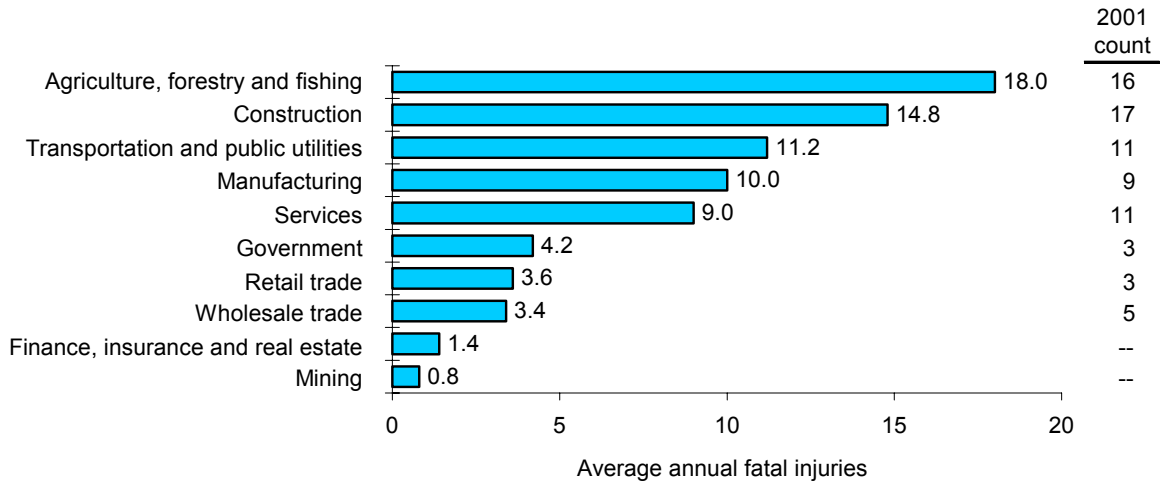
[8] Current Population Survey data from BLS for 1999 and 2000.

Fatalities by industry division

Figure 5.2 shows the number of Minnesota's fatal work injuries by industry division, averaged for 1997 through 2001. More detailed information about the fatalities in agriculture, forestry and fishing and construction is provided later in this chapter.

- The highest annual numbers of fatal injuries were in agriculture, forestry and fishing (18.0 a year) and construction (14.8). Together, they accounted for 46 percent of all fatalities for the 1997 through 2001 period.
- The number of fatalities in agriculture, forestry and fishing has varied in recent years from a high of 32 fatalities in 1996, to lows of 16 fatalities in 2000 and 2001.
- The number of fatalities in construction has varied in recent years, from a high of 23 fatalities in 1998 to a low of 10 fatalities in 1997.
- The 2001 number of fatalities in services is the highest since 1994.

Figure 5.2 Number of fatal work injuries by industry division, 1997-2001 average and 2001 count



Dashes indicate that the number of fatalities in that industry for 2001 does not meet CFOI publication criteria.

Figure 5.3 Event or exposure causing fatal work injury, 1997-2001 average [1]

Event or exposure	Average annual number of fatalities	Percentage of total
Total	**75.2**	**100.0%**
Transportation incidents	**34.4**	**45.7%**
Highway incident	20.8	27.7%
Collision between vehicles, mobile equipment	9.6	12.8%
Jack-knifed or overturned -- no collision	5.6	7.4%
Nonhighway incident, except rail, air, water	5.6	7.4%
Worker struck by vehicle, mobile equipment	4.0	5.3%
Contact with objects and equipment	**18.8**	**25.0%**
Struck by object	9.6	12.8%
Caught in or compressed by equipment or objects	6.0	8.0%
Caught in or crushed in collapsing materials	3.2	4.3%
Falls	**10.4**	**13.8%**
Fall from roof	2.6	3.5%
Exposure to harmful substances or environments	**5.4**	**7.2%**
Contact with electric current	3.2	4.3%
Assaults and violent acts	**4.6**	**6.1%**
Homicides	3.2	4.3%
Fires and explosions	**1.6**	**2.1%**

1. Includes private sector plus local, state and federal government (including resident armed forces). Includes self-employed and unpaid family workers, including family farm workers. Excludes fatal illnesses.

Characteristics of fatal injury events

Fatal occupational injuries are described by the type of event causing the fatality, the source of the fatal injury, and the workers' location and activity. Figure 5.3 shows the event or exposure causing fatal work injuries in Minnesota during 1997 through 2001.

- The most common event causing fatal injuries was transportation incidents, accounting for 46 percent of all fatal work injuries. These incidents consisted primarily of highway incidents (motor vehicles traveling on roads), but also included nonhighway incidents (motor vehicles on farm and industrial premises) and workers being struck by vehicles.

- The second most frequent cause was contact with objects and equipment (25 percent). These cases included workers being struck by an object, caught in or compressed by equipment or objects, such as running machinery, and caught in or crushed by collapsing materials.

- Assaults and violent acts accounted for 6 percent of the workplace fatalities. Homicide, mostly by shooting, was the most frequent type of assault and violent act. Other assault fatalities were caused by suicide and attacks by animals. Assaults were the second-leading cause of fatalities among women, accounting for 14 percent of their deaths.

- The most common sources of the fatalities, the object, substance or exposure that directly inflicted the fatal injuries, were: highway vehicles (32 percent); floors, walkways and ground surfaces (15 percent); and machinery (13 percent).

- The most common locations of work-related fatalities were: streets and highways (34 percent); industrial premises (24 percent); and farms (21 percent).

- Operating a transportation vehicle was the most common worker activity at the time of the fatality (43 percent). The next most common worker activity was constructing, repairing and cleaning (23 percent).

Characteristics of fatally injured workers

Figures 5.4 through 5.7 show the percentages of the worker demographics and job characteristics of fatally injured workers for 1997 through 2001 combined.

Gender

- Men accounted for the overwhelming majority of fatally injured workers (92 percent).
- Among the industries with the highest percentage employment of women — retail trade, services and government — women accounted for 25 percent of the fatalities.
- Eight women were fatally injured in 2001, the highest annual total since 1993, when nine women were fatally injured (out of 113 total fatalities).
- Women accounted for 11 percent of the fatalities in 2001, the highest percentage since the CFOI program started in 1991.

Figure 5.4 Gender of fatally injured workers, 1997-2001

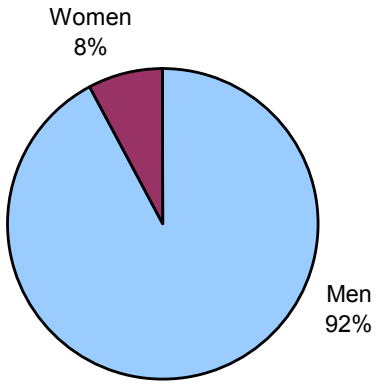
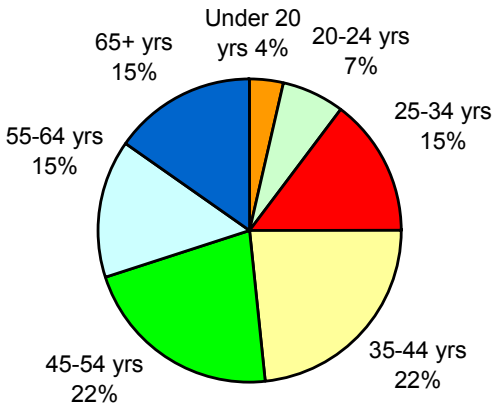


Figure 5.5 Age of fatally injured workers, 1997-2001



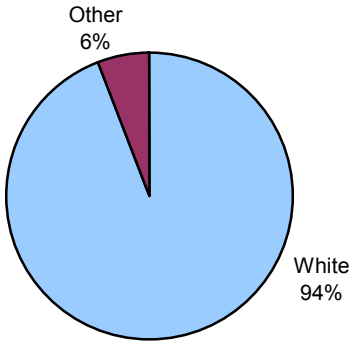
Age

- Fatally injured workers had a wide age distribution, with the greatest number among workers 35 to 44 years of age and 45 to 54 years of age.
- The age of fatally injured workers has been gradually increasing, matching the aging of the entire workforce. From 1992 through 1994, 24 percent of the fatalities were in the 25 to 34 year age group, which decreased to 15 percent during the 1997 to 2001 period.

Race

- White workers accounted for 94 percent of the fatalities. White, nonminority people account for 89 percent of the working-age population. For 1997 to 1999, the CFOI "white" category included white Hispanic workers; these groups were counted in separate categories starting in 2000.

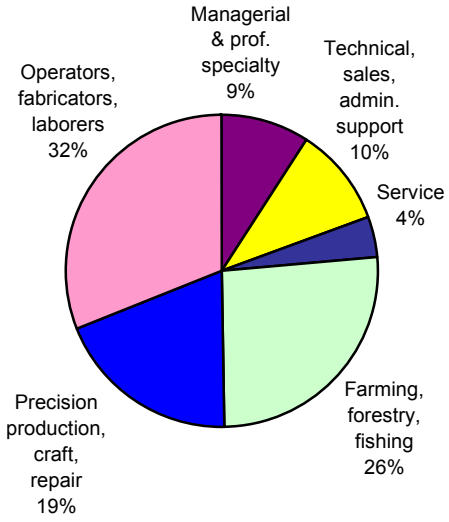
Figure 5.6 Race of fatally injured workers, 1997-2001



Occupation

- Fatally injured workers were concentrated in the occupation groups of operators, fabricators and laborers (32 percent) and farming, forestry and fishing (26 percent).
- The largest occupation among operators, fabricators and laborers was truck drivers, who accounted for 14 percent of all the fatally injured workers from 1997 through 2001.
- Nearly all the work fatalities among farming, forestry and fishing workers were to farmers, farm operators and farm workers.
- The precision production, craft and repair occupations include the construction trades, which accounted for 13 percent of the fatalities.

Figure 5.7 Occupation of fatally injured workers, 1997-2001



Fatalities in agriculture, forestry and fishing

Agriculture, forestry and fishing (agriculture) had the highest number of fatalities of any industry for eight of the past 11 years. These statistics are based on all fatalities from 1997 through 2001.

- Agriculture accounted for 24 percent of all fatalities (90 of 376 fatalities).
- Self-employed workers were 88 percent of the agriculture fatalities.
- Men were 99 percent of the fatalities.
- The fatally injured workers were older than in other industries: 67 percent were 55 years and older.
- Agriculture also accounted for all three workplace fatalities to workers less than 16 years of age.
- The most common type of event causing fatalities was transportation incidents (40 percent) and most of these involved tractors.
- Another 38 percent of fatalities were caused by contact with objects and equipment, with farmers being struck by objects or caught in running equipment.
- Eighty-two percent of the fatalities occurred farms or around farm residences, and 16 percent occurred on roads.

Fatalities in construction

Construction had the highest number of fatalities for three of the past 11 years, and had the highest number of fatalities in 2001. These statistics are based on all fatalities from 1997 through 2001.

- Construction accounted for 19 percent of all fatalities (73 of 376 fatalities).
- Wage and salary workers were 96 percent of the fatally injured construction workers.
- Men were 99 percent of the fatalities.
- The fatally injured workers were distributed among all age groups, with the highest concentration in the 45 to 54 year age range (23 percent).
- The three types of events accounted for 92 percent of the fatalities: falls, contact with objects and equipment, and transportation incidents.
- The most common event causing fatalities were falls (33 percent). Most of these involved falls from roofs and scaffolds.
- Contact with objects and equipment caused 30 percent of fatalities. Many of these fatalities occurred by being struck by falling objects.
- Another 29 percent of fatalities were due to transportation incidents, which included vehicle collisions on roads, off-road incidents and workers being struck by vehicles.
- Fifty-five percent of the fatalities occurred on construction sites and 26 percent occurred on roads.

6

Workplace safety programs and services of the Department of Labor and Industry

The Department of Labor and Industry (DLI) has a variety of programs and services to help employers maintain safe and healthful workplaces. Minnesota has an approved state occupational safety and health plan under the federal Occupational Safety and Health Act (OSHA). Minnesota operates its plan under the Minnesota Occupational Safety and Health Act of 1973 (MNOSHA) and its related standards.

DLI administers MNOSHA through two work-units, each with a focus on different parts of MNOSHA. The Occupational Safety and Health (OSH) Compliance unit is responsible for compliance program administration, which includes conducting enforcement inspections, adoption of standards and operation of other related MNOSHA activities. The Workplace Safety Consultation (WSC) unit provides free consultation services, on request, to help employers prevent workplace injuries and diseases by identifying and correcting safety and health hazards. Both divisions disseminate information about state and federal workplace safety and health standards.

Further information

For further information about MNOSHA requirements, standards and procedures, contact the OSH Compliance unit by phone at (651) 284-5050 or 1-877-470-6742, by fax at (651) 284-5741, by e-mail at OSHA.Compliance@state.mn.us, and on the Web at www.doli.state.mn.us/mnosha.html.

For further information about WSC services and programs, contact WSC by phone at (651) 284-5060 or 1-800-657-3776, by fax at (651) 284-5739, by e-mail at OSHA.Consultation@state.mn.us, and on the Web at www.doli.state.mn.us/wsc.html.

Occupational safety and health compliance

Workplace inspections

MNOSHA authorizes the department to conduct workplace inspections to determine whether employers are complying with safety and health standards. The department's inspectors are trained in OSHA standards and in recognition of safety and health hazards. With certain exceptions, the act requires inspections to be without advance notice. Employers are required to allow the inspector to enter work areas without delay and must otherwise cooperate with the inspection.

MNOSHA's compliance program is based on a system of inspection priorities. The priorities, highest to lowest, are imminent danger (established from reports by employees or the public or from observation by a MNOSHA compliance investigator), fatal accidents and catastrophes (accidents causing hospitalization of three or more employees), employee complaints (not concerning imminent danger), programmed inspections (which target high-hazard employers and industries) and follow-up inspections (for determining whether previously cited violations have been corrected).

Employers found to have violated OSHA standards receive citations for the violations and are assessed penalties based on the seriousness of the violations. These employers are also required to correct the violations. Employers and employees may appeal citations, penalties, and time periods allowed for correcting violations.

Figure 6.1 shows statistics for MNOSHA Compliance inspections from federal fiscal years (FFY) 1996 through 2002.

- An average of 1,900 inspections were conducted annually, covering between 60,000 and 100,000 workers.
- Two-thirds of inspections resulted in at least one violation. Among inspections with violations, an average of three violations were cited.
- Two events contributed to the reduced number of inspections during FFY 2002.
    - The State of Minnesota experienced a two-week employee strike. Hiring delays further impacted the ability to conduct inspections.
    - MNOSHA Compliance sent safety and health inspectors to provide worksite safety at the World Trade Center site.
- During 2002, inspections were more tightly focused on high-hazard industries (see the MNOSHA annual report for this list).
- During 2002, MNOSHA Compliance initiated inspections for 25 fatalities, nine of which were in the construction industry.
- MNOSHA Compliance investigated 33 serious injury incidents in 2002. Serious injuries involve amputations, loss of sight, electrocutions or electrical burns, falls from elevations, crushed-by injuries, workplace violence and struck-by accidents resulting in head or spine injuries, broken bones or multiple trauma.
- MNOSHA was involved in a state ergonomics task-force during 2002. The purpose was to determine how to reduce ergonomic injuries. The final report of this task force is available on the Web at: www.doli.state.mn.us/pdf/overview.pdf.
- The Compliance unit also performs outreach activities. Compliance staff members present information about OSHA standards and other workplace safety topics to employer organizations, safety professionals, unions and labor-management organizations. During FFY 2002, Compliance staff members participated in 83 outreach programs.

Figure 6.1 Minnesota OSHA Compliance inspections

Federal fiscal year [1]	Inspections conducted	Employees covered [2]	Inspections with violations	Violations	Penalties assessed ($millions)[3]
1996	2,131	76,882	1,217	4,029	$2.48
1997	1,775	64,515	964	2,786	$1.90
1998	2,062	73,898	1,291	3,829	$2.76
1999	1,876	103,029	1,255	3,957	$3.15
2000	1,991	84,575	1,368	4,068	$3.28
2001	1,953	73,451	1,342	3,855	$3.29
2002	1,691	68,113	1,165	3,462	$2.61

1. Federal fiscal-years are from Oct. 1 of the preceding year to Sept. 30 of the indicated year.
2. "Employees covered" refers to the number of employees who were affected by the scope of the inspection, but not always all employees at a facility.
3. These are the originally assessed amounts of penalties.

Source: OSHA Integrated Management Information System.

Figure 6.2 shows the most commonly cited OSHA standards violations for 2002.

- Violations associated with compliance with the A Workplace Accident and Injury Reduction (AWAIR) Act and the Employee Right-To-Know Act were the most commonly cited standards.

Under the AWAIR Act — also part of the state's Occupational Safety and Health Act — employers in high-hazard industries must develop and implement a written safety and health plan to reduce workplace injuries and illnesses.

Under the Employee Right-To-Know Act and its standards — part of the state's Occupational Safety and Health Act — employers must evaluate their workplaces for the presence of hazardous substances, harmful physical agents and infectious agents, and determine which employees are routinely exposed to these substances and agents. Identified employees must be provided with appropriate training and readily accessible written information about identified hazardous substances and agents in their work areas. Containers, work areas and equipment must be labeled to warn employees of associated hazardous substances or agents.

Figure 6.2 Minnesota OSHA's most frequently cited standards, 2002

Standard [1]	Description	Frequency
MN Statutes 182.653 subd. 8	A Workplace Accident and Injury Reduction (AWAIR) Program	220
MN Rules 5206.0700 subp.1B	Employee Right-To-Know written program	127
MN Rules 5206.0700 subp.1	Employee Right-To-Know training	111
MN Statutes 182.653 subd. 2	General Duty Clause — unsafe working condition	89
MN Rules 5205.0116 subp. 1 & 2	Forklifts — monitoring for carbon monoxide	82
29 CFR 1910.178(l)	Forklifts — operator training	82
29 CFR 1910.212(a)(1)	Machine guarding — general requirements	73
29 CFR 1910.151(c)	Emergency eyewash/shower facilities	73
29 CFR 1910.134(a)(2)	Respiratory protection program	72
29 CFR 1926.501(b)(1)	Fall protection in construction — general requirements	68
29 CFR 1910.242(b)	Compressed air used for cleaning	67
29 CFR 1910.212(a)(3)(ii)	Point of operation guarding of machines	67
MN Rules 5205.1200 subp. 3-5	Frequent and periodic inspections of cranes and hoists	66
29 CFR 1926.100(a)	Hard hats in construction	62
MN Rules 5206.0700 subp.1G	Frequency of Employee Right-To-Know training	59
29 CFR 1910.305(d)	Electrical hazards involving switchboards and panelboards	59
29 CFR 1910.147(c)(4)	Development and use of lockout/tagout procedures	53
29 CFR 1926.451(g)(1)	Fall protection on scaffolds above 10 feet	52
29 CFR 1926.652(a)(1)	Use of sloping or protective systems to prevent excavation cave-ins	49
29 CFR 1926.501(b)(13)	Fall protection in residential roofing	49

1. 29 CFR refers to the U.S. Code of Federal Regulations Title 29, which covers the U.S. Department of Labor.

Source: OSHA Integrated Management Information System.

Workplace safety consultation

WSC offers a variety of workplace safety services. The services are voluntary, confidential and separate from the OSH Compliance unit.

Workplace consultations

WSC offers a free consultation service to help employers prevent workplace accidents and diseases by recognizing and correcting safety and health hazards. This service is targeted primarily toward smaller businesses in high-hazard industries, but is also available to public-sector employers. During FFY 2002, WSC conducted 821 initial worksite safety and health visits.

WSC safety and health professionals conduct the on-site consultations. During consultations, employers are assisted in determining how to improve workplace conditions and practices to comply with MNOSHA regulations and to reduce accidents and illnesses and their associated costs. The consultants make recommendations dealing with all aspects of an effective safety and health program.

No citations are issued or penalties proposed as a result of WSC consultations. Employers are obligated to correct, in a timely manner, any serious safety and health hazards found. As shown in the industry-specific tables in chapter 4, consultants identify hazards in more than 90 percent of the visits. Information about an employer is not reported to the OSH Compliance unit, unless the employer fails to correct the detected safety and health hazards within a specified period. This has happened only once in the past eight years.

Since 1998, WSC visits have resulted in the identification and correction of safety and health hazards that would have cost employers an average of $2.1 million annually in MNOSHA penalties.

Safety and health training seminars

WSC provides seminars to help employers and employees understand and comply with safety and health regulations and to develop and implement mandatory programs, including Employee Right-To-Know, AWAIR and labor-management safety committees. The seminars provide information that safety directors, supervisors, safety committee members and employees can use to help train their coworkers. Many of the WSC seminars are coordinated and conducted with nine training-partner organizations throughout the state, which include community and technical colleges, labor-management associations and government training centers.

During 2002, WSC conducted 473 safety and health training sessions for 19,200 participants. These included 53 training sessions about the OSHA recordkeeping requirements that became effective in January 2002.

Labor-management safety committees

MNOSHA also requires all public and private employers with more than 25 employees, and smaller employers in high-hazard industries, to establish and use a joint labor-management safety committee. Employees must select their safety committee representatives and the committee must meet regularly.

The WSC Labor-Management Safety Committee program emphasizes safety committee structure through a joint effort with the state Bureau of Mediation Services. This program reinforces the importance of labor-management cooperation in workplace safety issues to help prevent workplace injuries. Services include interpretation of OSHA standards, training in self-inspection techniques and instruction for preparing and implementing education and training programs.

WSC provides training to companies and large groups about the elements of effective labor-management safety committees. During FFY 2002, WSC conducted 72 training and assistance visits.

Loggers' safety education program

WSC also provides one-day logger safety training (LogSafe) seminars throughout the state. To receive workers' compensation premium rebates from the Targeted Industry Fund, logging employers must maintain current workers' compensation insurance and they or their employees must have attended, during the previous year, a Logsafe seminar or a seminar

approved by DLI. WSC conducted 22 LogSafe seminars during FFY 2002, attended by 1,218 logging employers and employees. An additional six safety sessions were conducted for sawmill workers.

Additionally, WSC conducts training sessions for public-sector employers and employees who are involved in tree removal. Their logging work usually relates to cleanup following storms or other circumstances. In many cases, the trees are damaged and hazardous to work on by workers for whom logging is not a daily activity. WSC conducted 12 public-sector logging training sessions.

Safety Grants Program

The Safety Grants Program is a 100-percent state-funded program that awards funds up to $10,000 to qualifying employers for projects designed to reduce the risk of injury and illness to their employees. The project must be consistent with the recommendations of a safety and health inspection. Qualified applicants must be able to match the grant money awarded.

During state fiscal year 2002, WSC awarded $1.9 million to 284 employers. From 2000 through 2002, safety grants totaling $4.2 million were matched with $9.5 million in employer contributions for a total of $13.7 million in workplace safety improvements.

State government units, nursing homes, manufacturers and construction employers were the four most frequent recipients of safety grants, accounting for 85 percent of the grant funds.

Workplace Violence Prevention Program

This program helps employers and employees reduce the incidence of violence in their workplaces by providing on-site consultation, telephone assistance, education and training seminars, inspections, and a resource center. This program is targeted toward workplaces at high risk of violence, such as convenience stores, service stations, taxi and transit operations, restaurants and bars, motels, guard services, patient care facilities, schools, social services, residential care facilities and correctional institutions.

The Workplace Violence Prevention Program is a 100-percent state-funded program. In FFY 2002, WSC presented 76 violence-related outreach presentations, covering 3,450 employers and employees.

MNSHARP

The Minnesota Safety and Health Achievement Recognition Program (MNSHARP), under WSC, is a voluntary program that assists small high-hazard employers in achieving safety and health improvements and recognizes them for doing so. For program purposes, high-hazard employers are those in high-hazard industries (e.g., construction and food processing) or special-emphasis industries (e.g., fabricated metals manufacturing and nursing homes) and those with higher-than-average lost-workday injury and illness rates for their industry. Eligibility is limited to employers with up to 500 workers at the worksite and priority is given to employers with fewer than 100 workers.

MNSHARP participants receive a free comprehensive safety and health consultation survey from WSC, which results in a one-year action plan. Within a year, in consultation with WSC, participants must correct hazards identified in the initial survey and develop and implement an effective safety and health program with full employee involvement. The goal is to reduce the employer's total injury and illness rate and lost-workday case rate to a point below the national industry average for at least one year. Participants must also consult in advance with WSC about changes in work processes or conditions that might introduce new hazards.

After a year, a second on-site visit occurs to determine whether the employer has met these requirements and the injury and illness reduction goal. If so, the employer receives a MNSHARP Certificate of Recognition and is exempted from programmed MNOSHA compliance inspections for one year. (Inspections will occur, however, in the event of imminent danger, fatalities or other catastrophes, formal complaints or referrals, or as follow-ups on previously cited violations.)

Certified MNSHARP employers may apply annually for certification renewal. If an on-site survey by WSC determines the employer

continues to meet program requirements, the employer's certification is renewed and it continues to be exempt from programmed MNOSHA Compliance inspections.

Seven MNSHARP employers retained certification and one new participant was certified in FFY 2002. Seven of the eight employers are manufacturers. The total injury and illness case rates for these employers are half the national rates for their industries.

MNSTAR

MNSTAR is a voluntary program patterned after the federal Voluntary Protection Program.[9] It is available to Minnesota employers of all sizes. In comparison with MNSHARP, MNSTAR has more rigorous requirements and confers a higher level of recognition on certified employers. There are currently 10 MNSTAR employers.

MNSTAR relies mainly on employer self-assessment and requires an extensive application, including submission of written safety and health policies and procedures. After one or more on-site safety and health surveys, the employer will qualify for MNSTAR status if all eligibility requirements have been met, including an injury and illness rate below the state and national averages for the industry. MNSTAR recognition exempts the employer from programmed MNOSHA Compliance inspections for three years.

[9] See www.osha.gov/oshgrogs/vpp

Appendix A

Definitions of key concepts in the BLS Survey of Occupational Injuries and Illnesses

The U.S. Bureau of Labor Statistics conducts the annual *Survey of Occupational Injuries and Illnesses* to provide nationwide and state-level information about workplace injuries and illnesses, including their number and incidence.[10] The survey includes all nonfatal cases recorded by participating employers on their OSHA 200 logs (the form used to record injuries and illnesses in 2001). Injuries and illnesses logged by employers conform with definitions and recordkeeping guidelines set by the Occupational Safety and Health Administration.

Recordable injuries and illnesses are:

1. Occupational deaths, regardless of the time between injury and death or the length of the illness; or
2. Nonfatal occupational illnesses; or
3. Nonfatal occupational injuries that involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job or medical treatment (other than first aid).

Information about the recordkeeping guidelines is available at www.doli.state.mn.us/recordkeeping.html.

Occupational injury is any injury, such as a cut, fracture, sprain or amputation, that results from a work-related event or from a single instantaneous exposure in the work environment.

Occupational illness is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to factors associated with employment. It includes acute and chronic illnesses or diseases that may be caused by inhalation, absorption, ingestion, or direct contact.

Publishable industry data are summary data about an industry selected for publication in the survey that meet the BLS reliability and confidentiality criteria. As part of the survey sample selection process, states decide which industries will include enough surveyed companies to provide potentially publishable data. The remaining industries are grouped into residual industries that provide data for the next-higher level of categorization.

The reliability criteria consider changes in an industry's employment during the survey period, the relative standard error for the number of lost workday cases, and whether there is a minimum level of employment in that industry. The confidentiality criteria are used to ensure that the identity of data providers and the nature of their data cannot be determined. Industries must have more than six employees and three employers, there must be at least one reported case, one company cannot contribute more than 60 percent of employment or report more than 90 percent of the cases, and the total recordable case rate must be at least 0.05.

Days away from work are days after the injury or onset of illness when the employee would have worked but does not because of the injury or illness.

[10] The survey and other BLS occupational safety and health statistics are described in greater detail in Chapter 9 of the *BLS Handbook of Methods,* at www.bls.gov/opub/hom/homtoc.htm.

Days of restricted work activity are days after the injury or onset of illness when the employee works reduced hours, has restricted duties, or is temporarily assigned to another job because of the injury or illness.

Lost workday (LWD) cases are cases that involve days away from work, days of restricted work activity, or both.

1. *Lost workday cases involving days away from work* (DAFW cases) are cases that result in days away from work, or a combination of days away from work and days of restricted work activity.

2. *Lost workday cases involving restricted work activity* are cases that result in restricted work activity only.

Cases without lost workdays are recordable cases with no days away from work or days with restricted work activity.

Median days away from work is the measure used to summarize the varying lengths of absences from work among the cases with days away from work. The median is the halfway point in the distribution, in that half the cases involved more days and half involved fewer days.

Incidence rates represent the number of injuries and illnesses per 100 full-time workers. They are calculated as: (N/EH) x 200,000 where:

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

Nature of injury or illness names the principal physical characteristic of a disabling condition, such as sprain/strain, cut/laceration or carpal tunnel syndrome.

Part of body affected is directly linked to the nature of injury or illness cited, for example, back sprain, finger cut, or wrist and carpal tunnel syndrome.

Event or exposure signifies the manner in which the injury or illness was produced or inflicted, for example, overexertion while lifting or fall from ladder.

Source of injury or illness is the object, substance, exposure or bodily motion that directly produced or inflicted the disabling condition cited. Examples are a heavy box, a toxic substance, fire/flame and bodily motion of the injured worker.

Appendix B

Incidence rates and numbers of cases from the BLS Survey of Occupational Injuries and Illnesses

Nonfatal occupational injuries and illnesses by industry and case type, Minnesota, 2001

		Incidence rate				Number of cases			
			Lost-workday cases				Lost-workday cases		
Industry[2]	SIC code[3]	Total cases	Total[4]	With days away from work[5]	Cases without lost work days	Total cases	Total[4]	With days away from work[5]	Cases without lost work days
All Industries including State and local government[6]		6.2	3.0	1.7	3.2	125.8	61.3	34.5	64.6
Private Industry[6]		6.3	3.1	1.7	3.2	112.0	55.5	30.3	56.6
Agriculture, forestry and fishing[6]		8.3	4.5	3.1	3.9	1.6	0.8	0.6	0.7
Agricultural production[6]	01-02	10.7	6.0	3.9	4.7	0.9	0.5	0.3	0.4
Agricultural production-crops[6]	01	8.5	3.8	1.3	4.7	0.3	0.1	([11])	0.2
Agricultural production - livestock[6]	02	12.1	7.5	5.7	4.6	0.6	0.4	0.3	0.2
Agricultural services	07	6.4	3.3	2.6	3.1	0.7	0.3	0.3	0.3
Mining[7]		4.5	2.7	1.6	1.9	0.3	0.2	0.1	0.1
Metal mining[8]	10	4.6	2.7	1.8	1.8	0.2	0.1	0.1	0.1
Iron ores[8]	101	4.6	2.7	1.8	1.8	0.2	0.1	0.1	0.1
Construction		10.7	5.3	3.6	5.4	11.7	5.8	4.0	6.0
General building contractors	15	11.7	5.0	3.6	6.7	2.8	1.2	0.9	1.6
Residential building construction	152	9.2	4.0	3.0	5.2	1.1	0.5	0.3	0.6
Nonresidential building construction	154	14.2	6.0	4.3	8.3	1.8	0.7	0.5	1.0
Heavy construction, except building	16	8.8	4.5	3.6	4.3	1.1	0.6	0.5	0.6
Highway and street construction	161	12.4	5.3	4.1	7.1	0.7	0.3	0.2	0.4
Heavy construction, except highway	162	6.1	3.9	3.2	2.2	0.5	0.3	0.2	0.2
Special trade contractors	17	10.7	5.5	3.6	5.2	7.7	4.0	2.6	3.8
Plumbing, heating, air-conditioning	171	14.0	6.8	3.9	7.1	2.4	1.2	0.7	1.2
Electrical work	173	8.7	3.9	2.6	4.7	1.2	0.6	0.4	0.7
Masonry, stonework and plastering	174	10.0	5.3	4.5	4.6	0.9	0.5	0.4	0.4
Manufacturing		7.9	3.9	1.8	4.0	31.9	15.7	7.1	16.2
Durable goods		8.1	3.7	1.7	4.4	19.3	8.7	4.1	10.6
Lumber and wood products	24	13.3	6.8	2.8	6.6	2.6	1.3	0.6	1.3
Millwork, plywood and structural member	243	14.0	6.9	2.9	7.0	1.9	1.0	0.4	1.0
Millwork	2431	14.0	7.6	3.4	6.4	1.2	0.7	0.3	0.6

Industry[2]	SIC code[3]	Incidence rate: Total cases	Incidence rate: Lost-workday cases: Total[4]	Incidence rate: Lost-workday cases: With days away from work[5]	Incidence rate: Cases without lost work days	Number of cases: Total cases	Number of cases: Lost-workday cases: Total[4]	Number of cases: Lost-workday cases: With days away from work[5]	Number of cases: Cases without lost work-days
Furniture and fixtures	25	17.8	9.9	4.8	7.8	1.2	0.7	0.3	0.5
Stone, clay and glass products	32	5.6	3.2	2.3	2.4	0.6	0.3	0.2	0.2
Fabricated metal products	34	9.9	4.2	1.9	5.7	3.5	1.5	0.7	2.0
Fabricated structural metal products	344	9.2	4.9	2.0	4.3	1.0	0.5	0.2	0.5
Metal forgings and stampings	346	12.5	5.1	2.9	7.4	0.6	0.2	0.1	0.3
Industrial machinery and equipment	35	6.5	2.7	1.5	3.9	4.4	1.8	1.0	2.6
Farm and garden machinery	352	11.0	4.6	2.5	6.4	0.5	0.2	0.1	0.3
Metalworking machinery	354	9.4	4.0	2.7	5.4	0.6	0.3	0.2	0.3
Computer and office equipment	357	1.2	0.4	0.2	0.7	0.2	0.1	([11])	0.1
Refrigeration and service machinery	358	8.1	3.2	1.3	4.9	0.6	0.2	0.1	0.4
Industrial machinery, n.e.c.	359	8.5	3.1	1.6	5.4	1.1	0.4	0.2	0.7
Industrial machinery, n.e.c.	3599	8.1	3.0	1.7	5.2	0.9	0.3	0.2	0.6
Electronic and other electric equipment	36	5.1	2.3	1.2	2.8	1.6	0.7	0.4	0.9
Electrical industrial apparatus	362	6.0	2.0	1.4	4.0	0.3	0.1	0.1	0.2
Electronic components and accessories	367	5.2	2.8	1.3	2.4	0.7	0.4	0.2	0.3
Transportation equipment	37	21.1	9.5	3.6	11.6	3.1	1.4	0.5	1.7
Motor vehicles and equipment	371	32.0	12.6	4.0	19.4	2.1	0.8	0.3	1.3
Instruments and related products	38	2.9	1.2	0.5	1.8	1.1	0.5	0.2	0.7
Measuring and controlling devices	382	2.8	1.4	0.7	1.4	0.3	0.2	0.1	0.2
Medical instruments and supplies	384	3.0	1.1	0.4	1.8	0.6	0.2	0.1	0.4
Miscellaneous manufacturing industries	39	8.6	3.1	1.7	5.4	0.6	0.2	0.1	0.4
Nondurable goods		7.6	4.2	1.8	3.4	12.6	7.0	3.0	5.6
Food and kindred products	20	10.8	6.9	2.4	3.9	5.7	3.6	1.2	2.1
Meat products	201	15.8	9.7	1.3	6.1	2.7	1.7	0.2	1.0
Poultry slaughtering and processing	2015	13.8	7.8	0.5	6.1	1.0	0.6	([11])	0.5
Dairy products	202	9.4	5.8	2.3	3.5	0.8	0.5	0.2	0.3
Preserved fruits and vegetables	203	7.5	4.0	2.1	3.6	0.4	0.2	0.1	0.2
Grain mill products	204	5.0	2.8	1.4	2.2	0.4	0.2	0.1	0.2
Paper and allied products	26	6.5	3.3	1.8	3.2	1.8	0.9	0.5	0.9
Paper mills	262	8.3	3.4	2.3	4.9	0.4	0.2	0.1	0.2
Paperboard containers and boxes	265	9.3	5.4	3.7	3.9	0.4	0.2	0.2	0.2
Printing and publishing	27	5.1	2.4	1.3	2.7	2.4	1.1	0.6	1.2
Newspapers	271	6.2	2.7	1.8	3.5	0.4	0.2	0.1	0.2
Commercial printing	275	5.9	2.5	1.3	3.3	1.3	0.6	0.3	0.7
Chemicals and allied products	28	3.8	2.0	0.7	1.8	0.4	0.2	0.1	0.2
Rubber & miscellaneous plastics products	30	9.9	4.9	2.5	5.0	1.9	0.9	0.5	1.0
Miscellaneous plastics products, n.e.c.	308	9.6	4.6	2.5	5.0	1.6	0.8	0.4	0.9
Transportation and public utilities[9]		6.0	3.6	2.3	2.4	7.0	4.2	2.6	2.8
Railroad transportation[9]	40	4.4	3.4	2.7	1.0	0.2	0.2	0.1	0.1
Local and inter-urban passenger transit	41	7.6	3.1	2.7	4.5	0.7	0.3	0.2	0.4
Trucking and warehousing	42	6.9	4.5	3.0	2.3	2.2	1.5	1.0	0.7
Trucking and courier services, except air	421	6.8	4.4	3.0	2.3	2.1	1.4	0.9	0.7
Transportation by air	45	8.7	6.5	3.0	--	2.0	1.5	0.7	--
Communications	48	3.2	1.4	0.9	1.8	0.8	0.3	0.2	0.4
Telephone communications	481	2.0	1.0	0.7	1.1	0.3	0.2	0.1	0.2
Electric, gas and sanitary services	49	6.1	2.1	1.0	4.1	0.9	0.3	0.1	0.6
Electric services	491	7.7	2.3	1.2	5.4	0.6	0.2	0.1	0.5

Industry[2]	SIC code[3]	Incidence rate				Number of cases			
		Total cases	Lost workday cases		Cases without lost work days	Total cases	Lost workday cases		Cases without lost work-days
			Total[4]	With days away from work[5]			Total[4]	With days away from work[5]	
Wholesale and retail trade		6.3	2.9	1.6	3.5	29.6	13.5	7.6	16.1
Wholesale trade		6.5	3.6	1.8	2.9	9.3	5.1	2.6	4.1
Wholesale trade — durable goods	50	5.2	2.5	1.4	2.7	4.3	2.1	1.2	2.2
Motor vehicles, parts and supplies	501	8.5	4.6	2.6	3.9	0.8	0.4	0.3	0.4
Lumber and construction materials	503	9.6	5.1	2.9	4.5	0.6	0.3	0.2	0.3
Professional and commercial equipment	504	2.5	1.5	1.1	1.0	0.6	0.3	0.2	0.2
Machinery, equipment and supplies	508	4.9	2.3	1.2	2.6	0.8	0.4	0.2	0.5
Wholesale trade — nondurable goods	51	8.4	5.2	2.4	3.2	5.0	3.1	1.4	1.9
Groceries and related products	514	10.9	8.4	2.5	2.5	2.1	1.6	0.5	0.5
Retail trade		6.3	2.6	1.5	3.7	20.4	8.3	5.0	12.0
Building materials and garden supplies	52	6.8	3.5	2.0	3.2	1.3	0.7	0.4	0.6
Lumber and other building materials	521	7.7	4.1	2.4	3.6	0.9	0.5	0.3	0.4
General merchandise stores	53	6.5	3.4	1.6	3.0	3.0	1.6	0.8	1.4
Department stores	531	6.4	3.5	1.6	2.8	2.7	1.5	0.7	1.2
Food stores	54	9.8	3.4	1.9	6.4	3.9	1.3	0.8	2.5
Grocery stores	541	10.1	3.3	2.0	6.8	3.6	1.2	0.7	2.4
Automotive dealers and service stations	55	7.8	3.6	2.4	4.1	3.6	1.7	1.1	1.9
New and used car dealers	551	10.0	4.6	3.0	5.4	2.0	0.9	0.6	1.1
Apparel and accessory stores	56	2.1	0.8	0.6	1.3	0.2	0.1	0.1	0.1
Furniture and homefurnishings stores	57	5.1	3.0	1.4	2.0	1.1	0.6	0.3	0.4
Eating and drinking places	58	6.0	1.4	1.3	4.6	5.8	1.4	1.2	4.4
Miscellaneous retail	59	3.4	2.2	0.9	1.3	1.5	1.0	0.4	0.6
Finance, insurance and real estate		1.6	0.6	0.4	1.0	2.5	0.9	0.6	1.5
Real estate	65	3.8	2.0	1.5	1.8	0.8	0.4	0.3	0.4
Services		5.5	2.9	1.5	2.6	27.5	14.4	7.7	13.1
Hotels and other lodging places	70	7.6	4.0	1.8	3.7	1.5	0.8	0.3	0.7
Hotels and motels	701	6.9	4.2	1.9	2.7	1.2	0.8	0.3	0.5
Personal services	72	3.8	1.8	0.7	1.9	0.7	0.4	0.1	0.4
Business services	73	2.5	1.2	0.8	1.2	1.9	1.0	0.6	1.0
Auto repair, services and parking	75	3.1	0.9	0.6	2.2	0.6	0.2	0.1	0.4
Miscellaneous repair services	76	4.4	2.1	1.4	2.3	0.2	0.1	0.1	0.1
Amusement and recreation services	79	5.1	2.1	1.4	3.0	1.1	0.5	0.3	0.6
Health services	80	8.9	5.0	2.6	3.9	15.2	8.6	4.4	6.6
Nursing and personal care facilities	805	17.3	11.7	4.6	5.6	5.4	3.6	1.4	1.7
Hospitals	806	12.1	7.0	4.2	5.1	7.1	4.1	2.4	3.0
Home health care services	808	6.7	3.9	2.7	2.8	0.4	0.2	0.1	0.2
Educational services	82	3.1	1.3	1.0	1.8	0.8	0.3	0.3	0.4
Social services	83	6.9	3.7	1.9	3.1	4.0	2.2	1.1	1.8
Residential care	836	7.7	3.6	1.8	4.2	1.7	0.8	0.4	0.9
State and local government		5.2	2.2	1.6	3.0	13.8	5.8	4.2	8.0
State government		4.6	1.4	1.1	3.2	2.8	0.9	0.7	2.0
Services		4.2	1.2	1.1	3.0	1.5	0.4	0.4	1.1
Educational services	82	3.8	0.5	0.4	3.3	1.2	0.2	0.1	1.0
Public administration		5.0	1.5	1.2	3.5	1.0	0.3	0.2	0.7

Industry[2]	SIC code[3]	Total cases	Lost workday cases		Cases without lost work days	Total cases	Lost workday cases		Cases without lost work-days
			Total[4]	With days away from work[5]			Total[4]	With days away from work[5]	
Local government		5.4	2.4	1.7	3.0	10.9	4.9	3.5	6.0
Services		5.3	2.4	1.7	3.0	7.0	3.1	2.2	3.9
Health services	80	10.4	5.8	3.9	4.6	1.5	0.9	0.6	0.7
Hospitals	806	9.2	4.7	3.0	4.4	1.0	0.5	0.3	0.5
Educational services	82	4.6	1.9	1.4	2.7	4.6	1.9	1.4	2.7
Public administration		4.5	1.9	1.3	2.6	3.0	1.3	0.9	1.7

[1] Incidence rates represent the number of injuries and illnesses per 100 full-time workers and were calculated as: (N/EH) x 200,000 where

N = number of injuries and illnesses

EH = total hours worked by all employees during the year

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

[2] Totals include data for industries not shown separately.

[3] *Standard Industrial Classification Manual,* 1987 Edition.

[4] Total lost-workday cases involve days away from work, days of restricted work activity or both.

[5] Days-away-from-work cases include those that result in days away from work with or without restricted work activity.

[6] Excludes farms with fewer than 11 employees.

[7] Data conforming to OSHA definitions for mining operators in coal, metal and nonmetal mining is provided to BLS by the Mine Safety and Health Administration, U.S. Department of Labor. Independent mining contractors are excluded from the coal, metal, and nonmetal mining industries. Data for mining (Division B in the Standard Industrial Classification Manual, 1987 edition) includes establishments not governed by the Mine Safety and Health Administration (MSHA) rules and reporting, such as those in oil and gas extraction.

[8] Data conforming to OSHA definitions for mining operators in this industry is provided to BLS by the Mine Safety and Health Administration, U.S. Department of Labor. Independent mining contractors are excluded.

[9] Data conforming to OSHA definitions for employers in railroad transportation is provided to BLS by the Federal Railroad Administration, U.S. Department of Transportation.

[10] Incidence rate less than 0.05.

[11] Fewer than 50 cases.

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

n.e.c. = not elsewhere classified.

-- Indicates data not available.

Source: Bureau of Labor Statistics, U.S. Department of Labor, *Survey of Occupational Injuries and Illnesses* , in cooperation with participating state agencies.