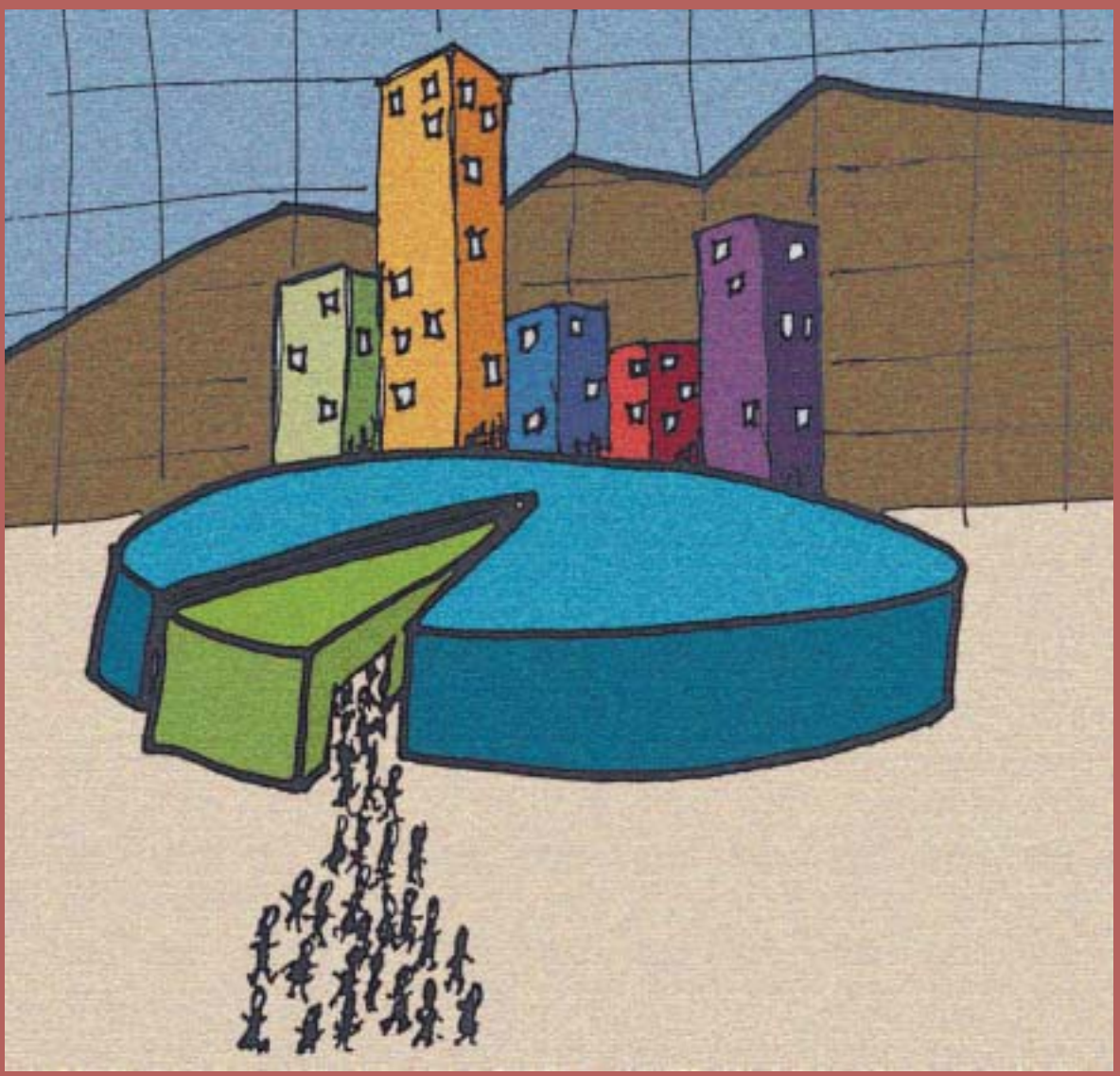
CDC
Workplace Safety and Health

Worker Health Chartbook, 2000

Nonfatal Injury



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

NIOSH

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Department of Health and Human Services
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DHHS (NIOSH) Publication Number 2002-119

April 2002

FOREWORD

The content of this booklet is taken from the *Worker Health Chartbook, 2000* (DHHS NIOSH Publication No. 2000-127), a comprehensive guide to surveillance data for work-related fatal and nonfatal injury and illness. The publication of the chartbook is an important step toward identifying and filling significant gaps in workplace injury and illness information. Several Federal agencies worked with NIOSH to compile data for the chartbook, using a variety of systems that track the nature, prevalence, and incidence of workplace injuries and diseases. These data help us identify new and emerging problems, analyze trends over time, target and evaluate the effectiveness of intervention efforts, and anticipate future needs and concerns. This booklet highlights nonfatal injury. It is intended for anyone interested in this topic, including occupational safety and health practitioners, policy makers, health care providers, educators, researchers, workers, and employers. The tracking of injury and illness is a cornerstone of prevention. We hope this booklet contributes to that effort.

Kathleen M. Rest, Ph.D., M.P.A.
Acting Director
National Institute for Occupational
Safety and Health

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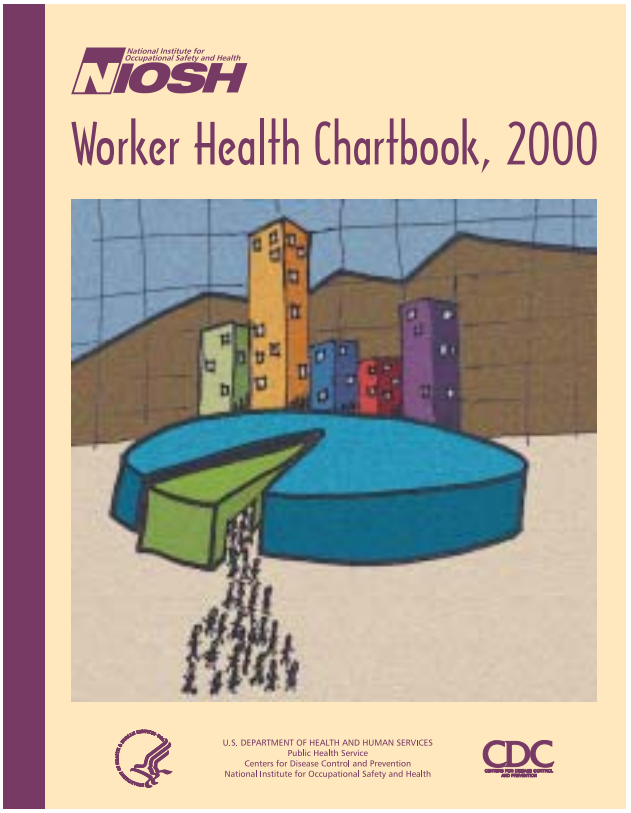

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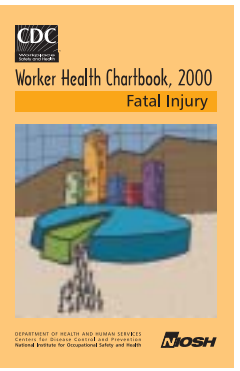
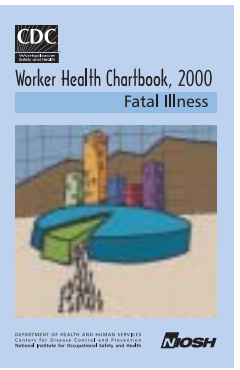


Fatal Injury (2002-117)



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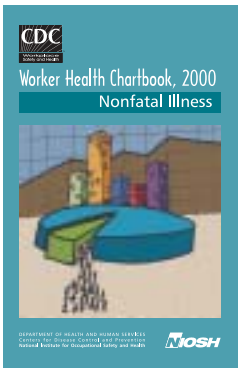

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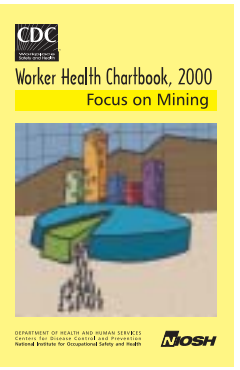

Focus on Mining (2002-121)

EXECUTIVE SUMMARY

During 1976–1997, the total number of nonfatal occupational injuries has fluctuated between 4.7 and 6.4 million per year, as recorded by the Bureau of Labor Statistics (BLS) in the Survey of Occupational Injuries and Illnesses (SOII). However, the incidence rates for total nonfatal injuries in private industry declined from highs of 9.2 cases per 100 full-time workers in 1978–1979 to a low of 6.6 cases per 100 full-time workers in 1997. The greatest change occurred among cases without lost workdays, which decreased from 5.5 to 3.5 cases per 100 full-time workers. For 1988–1997, the rate of cases with days away from work declined 40%, but there was a 120% increase in the rate of cases with restricted work activity only.

Approximately 5.7 million injuries were reported in SOII in 1997. Those injuries represent 93% of the 6.1 million injuries and illnesses documented by employer records in the private sector. Agriculture, construction, manufacturing, and transportation reported rates above the average of 6.6 per 100 full-time workers for all industries. Sprains, strains, and tears accounted for a disproportionately large share of cases with days away from work (nearly 800,000 cases in 1997). Nearly half of those cases involved the back. Overexertion accounted for more than 60% of back injuries.

According to the National Electronic Injury Surveillance System (NEISS), occupational injuries treated in hospital emergency departments numbered 3.6 million in 1998. Rates for those injuries were highest among men and workers under age 25. Lacerations, punctures, sprains and strains, contusions, abrasions, and hematomas accounted for 70% of all injuries treated in emergency departments.

CONTENTS

ABBREVIATIONS

BLS ..... Bureau of Labor Statistics
CI ..... confidence interval
DHHS ..... U.S. Department of Health and Human Services
NEISS ..... National Electronic Injury Surveillance System
NHAMCS ..... National Hospital Ambulatory Medical Care Survey
NIOSH ..... National Institute for Occupational Safety and Health
SOII ..... Survey of Occupational Injuries and Illnesses

ACKNOWLEDGMENTS

This document was prepared by the staff of the National Institute for Occupational Safety and Health (NIOSH). All contributors are affiliated with NIOSH unless otherwise indicated. We extend special thanks to our technical reviewers for their constructive comments and suggestions.

Editors

Roger R. Rosa, Ph.D.
Michael J. Hodgson, M.D.
R. Alan Lunsford, Ph.D.
E. Lynn Jenkins, M.A.
Kathleen Rest, Ph.D.

Document Design

David Peabody, Synectics for Management Decisions, Inc.
Suzanne Meadows Hogan, M.A.
Chris Cromwell, Synectics for Management Decisions, Inc.
Toni Garrison, Synectics for Management Decisions, Inc.

Contributors

Toni Alterman, Ph.D.
Ricki Althouse, M.S.
Ki Moon Bang, Ph.D.
Margot Barnett, M.S., Strategic Options Consulting
Jerome M. Blondell, Ph.D., M.P.H., U.S. Environmental Protection Agency
Winifred L. Boal, Ph.D.
Richard Braddee, M.S.
Carol Burnett, M.S.
Geoffery Calvert, M.D., M.P.H.
Scott Campbell, National Center for Infectious Diseases
Denise M. Cardo, M.D., National Center for Infectious Diseases
Robert Castellan, M.D., M.P.H.
Virgil Casini
Janice Devine, M.S., Bureau of Labor Statistics
Ann N. Do, M.D., National Center for HIV, STD, and TB Prevention
Barbara Fotta, M.S.
Jennifer Flattery, M.P.H., California Department of Health Services

Janie L. Gittleman, Ph.D., M.R.P.
Robert Harrison, M.D., M.P.H., California Department of Health Services
Dan Hecker, M.S., Bureau of Labor Statistics
Steven Hipple, M.S., Bureau of Labor Statistics
Janice Huy, M.S.
Larry Jackson, Ph.D.
Angela Booth Jones, M.S.
Larry Layne, M.A.
Suzanne Marsh
Elizabeth Marshall, M.S., M.P.H., New York State Department of Health
Linda McCaig, M.P.H., National Center for Health Statistics
Louise N. Mehler, M.D., California Environmental Protection Agency
Teri Palermo
Adelisa L. Panlilio, M.D., M.P.H., National Center for Infectious Diseases
Audrey Podlesny
Mary Jo Reilly, M.S., Michigan Department of Public Health,
Michigan State University
Robert Roscoe, M.S.
Kenneth Sacks, Ph.D., M.B.A.
Lee Sanderson, Ph.D.
John Sestito, J.D.
Jackilen Shannon, Ph.D., Texas Department of Health
Rosemary Sokas, M.D., M.O.H.
Lisa Thomas
Catherine Thomsen, M.P.H., Oregon Health Division
James Walker, Ph.D.
John M. Wood, M.S.
William Weber, M.S., Bureau of Labor Statistics
Ian T. Williams, Ph.D., M.S., National Center for Infectious Diseases

Technical Reviewers

Heinz Ahlers, J.D.
Letitia Davis, Sc.D., Massachusetts Department of Health
Rick Ehrenberg, M.D., M.P.H.
William Eschenbacher, M.D.
Larry Grayson, Ph.D.
William Halperin, M.D., M.P.H.
Joseph Hurrell, Ph.D.
Jeff Kohler, Ph.D.
Gail McConnell, V.M.D.

Kenneth Rosenman, M.D., Michigan State University
Mitchell Singal, M.D., M.P.H.
Nancy Stout, Ed.D.
Gregory Wagner, M.D.
Carol Wilkinson, M.D., IBM Corporation

Editorial and Production Support

Vanessa Becks
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NONFATAL INJURY

Three surveillance systems provide information about the characteristics of nonfatal occupational injuries: the Survey of Occupational Injuries and Illnesses (SOII), the National Electronic Injury Surveillance System (NEISS), and the National Hospital Ambulatory Medical Care Survey (NHAMCS). SOII is based on employer-generated workplace incident logs, and NEISS and NHAMCS are based on visits to emergency departments in hospitals. NEISS and NHAMCS both collect data on occupational injuries, but they use different methods.

Nonfatal occupational injuries constitute more than 90% of the events recorded by SOII. In 1997, more than 5.7 million nonfatal occupational injuries were estimated to have occurred in the United States, resulting in a rate of 6.6 cases per 100 full-time, private-sector workers. Among industry divisions, incidence rates for the total number of nonfatal injuries ranged from a low of 2.0 cases per 100 full-time workers in finance, insurance, and real estate to a high of 9.3 cases per 100 full-time workers in construction (Figure 1). Rates for four of the eight industry divisions are above the average for all industries.

Injuries treated in emergency departments* are usually more urgent or severe than those treated in physicians' offices or walk-in clinics. NEISS estimates that approximately 3.6 million nonfatal occupational injuries were treated in U.S. hospital emergency departments in 1998. The average rate for all nonfatal occupational injuries treated in emergency departments that year was 2.8 per 100 full-time workers. The rate for men (3.4 per 100 full-time workers) was nearly twice the rate for women (2 per 100 full-time workers) (Figure 2). Rates were higher in younger workers (aged 16 to 19), with steady declines in both male and female workers aged 20 and older (Figure 2). Hands and fingers were the most commonly injured parts of the body, accounting for 30% of the total (Figure 3). Lacerations and punctures (26%), sprains and strains (25%), and contusions, abrasions, and hematomas (19%) were the most frequent types of injuries recorded in NEISS in 1998.

*The term *emergency departments* is used in this chapter to refer to hospital emergency rooms (NEISS data) as well as to hospital outpatient departments and hospital emergency departments (NHAMCS data).

Figures 4 and 5 present the average annual rates of emergency department visits related to nonfatal occupational injuries recorded in NHAMCS for 1995–1997. Male workers aged 16–17 had the highest rate (nearly 10 per 100 full-time workers). The rate for black male workers was higher than the average rate for all workers. Overall, the rate for men exceeded the rate for women.

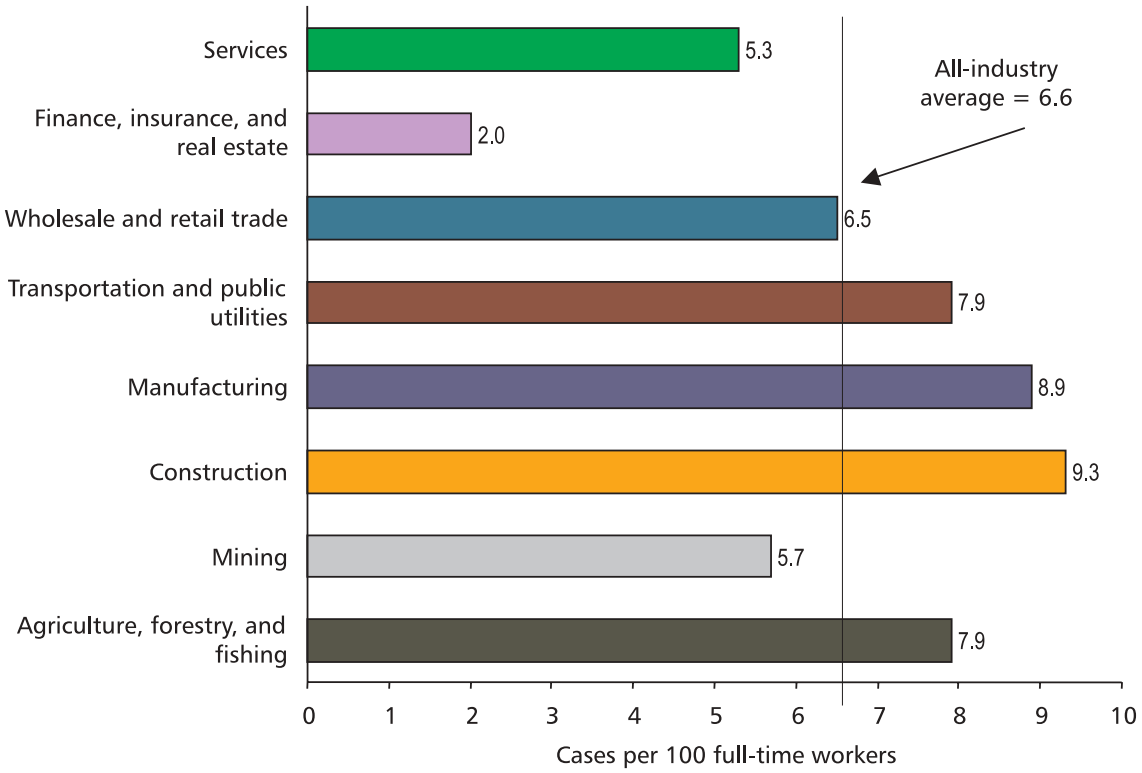

Figure 1. Incidence rates for nonfatal occupational injuries in private industry by major industry division, 1997. (Source: SOII [1999].)

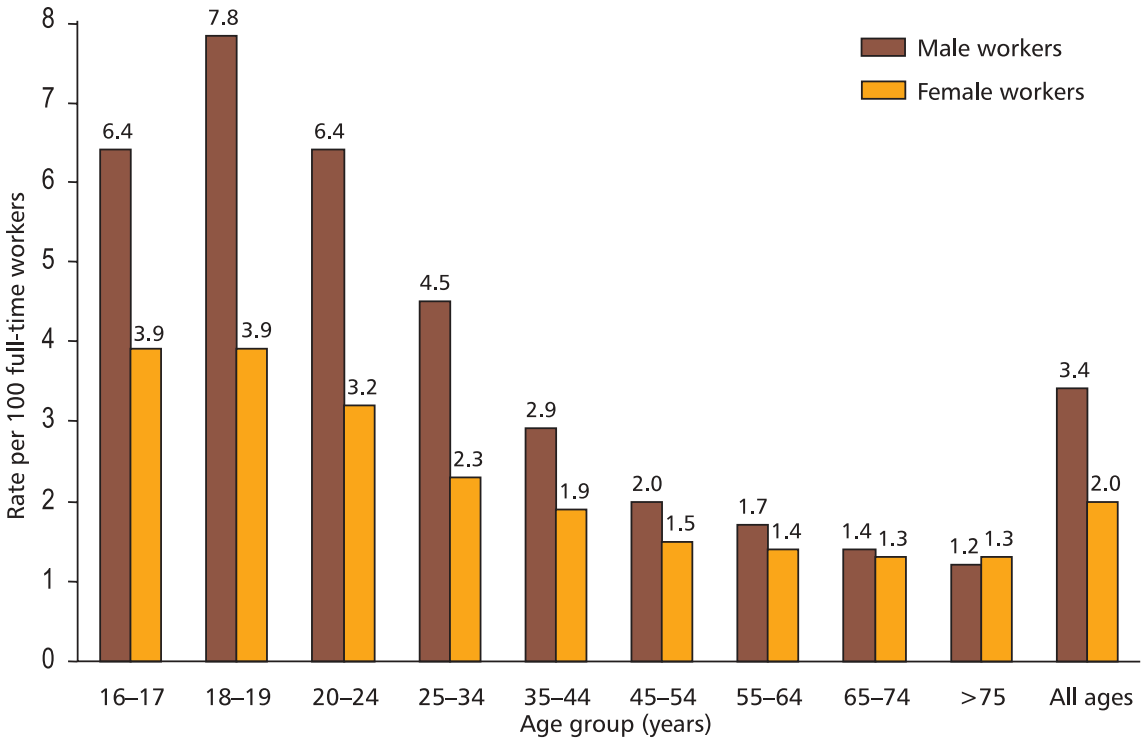

Figure 2. Rate of nonfatal occupational injuries treated in emergency departments, by age and sex, 1998. (Source: NEISS [1999].)

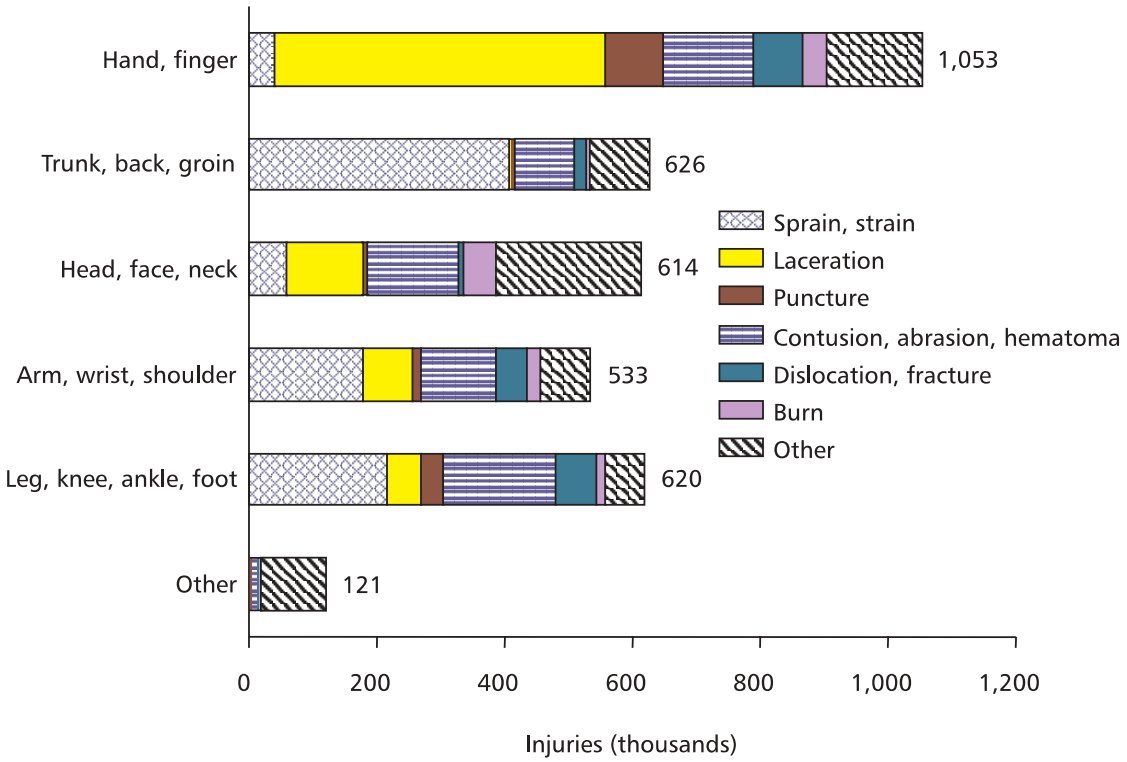

Figure 3. Number of nonfatal occupational injuries treated in emergency departments, by anatomic site and type of injury, 1998. (Source: NEISS [1999].)

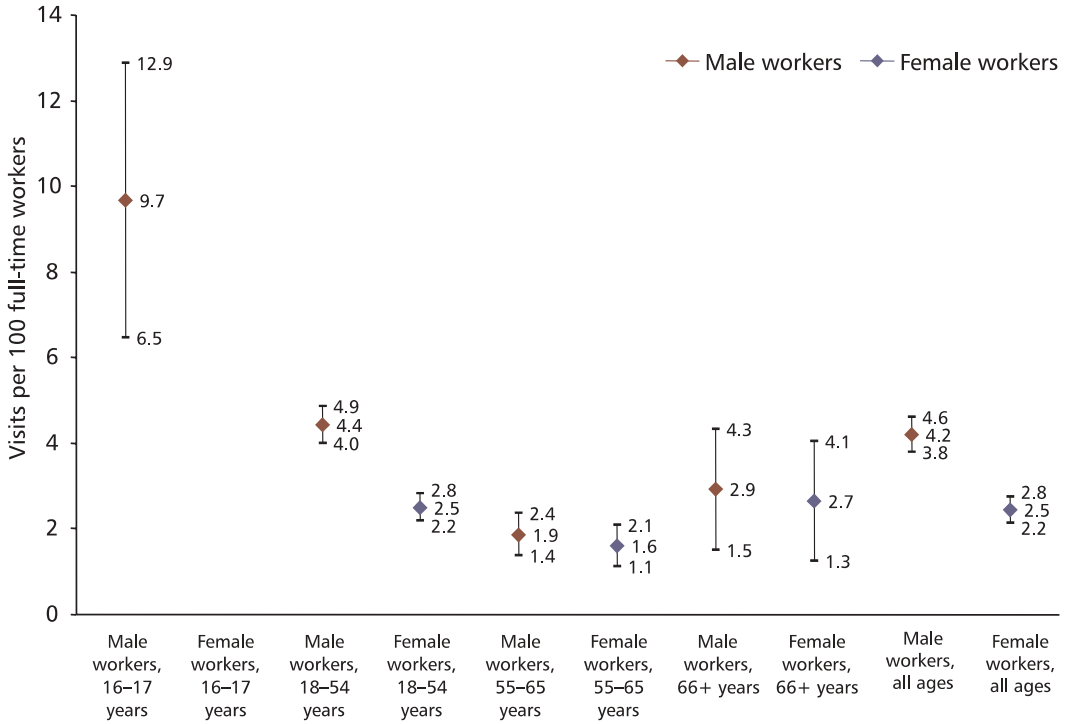

Figure 4. Annual rates (and 95% CIs) of emergency department visits related to nonfatal occupational injuries in male and female workers aged 16 and older, by age group—averaged for 1995–1997. (The rate for female workers aged 16–17 does not meet the standards of reliability or precision.) (Source: NHAMCS [1999].)

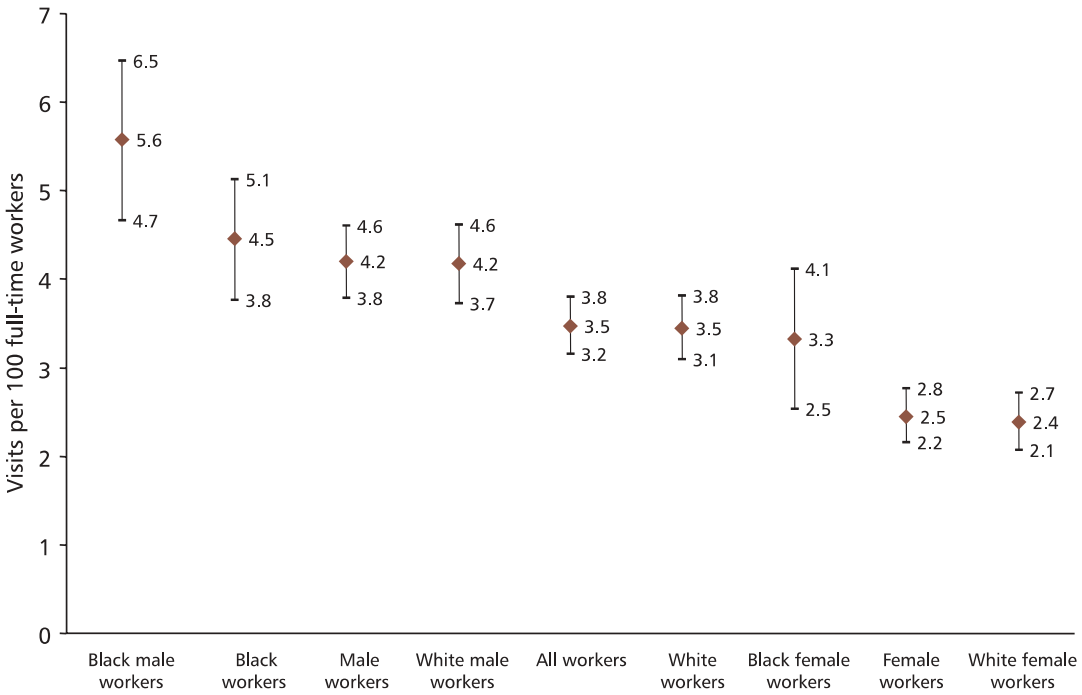

Figure 5. Annual rates (and 95% CIs) of emergency department visits related to nonfatal occupational injuries in black and white male and female workers aged 16 and older—averaged for 1995–1997. (Source: NHAMCS [1999].)

Nonfatal Occupational Injuries by Industry and Cases with Lost Workdays

The total number of nonfatal occupational injuries recorded by the Bureau of Labor Statistics (BLS) in SOII has fluctuated between 4.7 and 6.4 million per year over the last two decades. Many of these cases involved lost workdays.[†] The number of cases with days away from work fluctuated during that period; however, there was a 10-fold increase in cases with restricted work activity only (Figure 6). By 1997, 53% of cases involved no time away from work, 31% required at least 1 day away from work, and 16% involved restricted work activity only.

The incidence rate for total nonfatal occupational injuries over the past two decades ranged from a high of 9.2 cases per 100 full-time workers in 1978–1979 to a low of 6.6 cases per 100 full-time workers in 1997 (Figure 7). The incidence rate for cases with days away from work declined steadily from 1988 to 1997, and the incidence rate rose 120% for cases involving restricted work activity only.

Incidence rates for lost-workday cases of nonfatal occupational injury are shown for 1992–1997 by industry division in Figure 8. For all private industry during this period, the incidence rate declined 14% to 3.1 cases per 100 full-time workers. Finance, insurance, and real estate had the largest relative decline (27%), and construction had the largest absolute decline (1.3 cases per 100 full-time workers). Transportation and public utilities showed the least decline, both relatively (4%) and absolutely (0.2 cases per 100 full-time workers). Injury cases with and without lost workdays in 1997 (including days away from work and days of restricted activity only) are shown by industry division in Figure 9. The number of injuries ranged from a low of 46,000 in mining to a high of 1.7 million in manufacturing. The percentage of injury cases involving lost workdays ranged from a low of 38% in finance, insurance, and real estate to a high of 73% in mining.

The increasing incidence rate for cases involving restricted work activity only (Figure 7) is presented by industry division in Figure 10 for 1992–1997. The percentage of cases with restricted work activity only is shown for each industry division in Figure 11 for 1992 and 1997. In both years, manufacturing had the largest percentage of lost-workday cases with restricted activity only (32% and 48%, respectively).

[†]Lost-workday cases include cases with days away from work and cases with restricted work activity only (i.e., cases in which workers report to their jobs for limited duty).

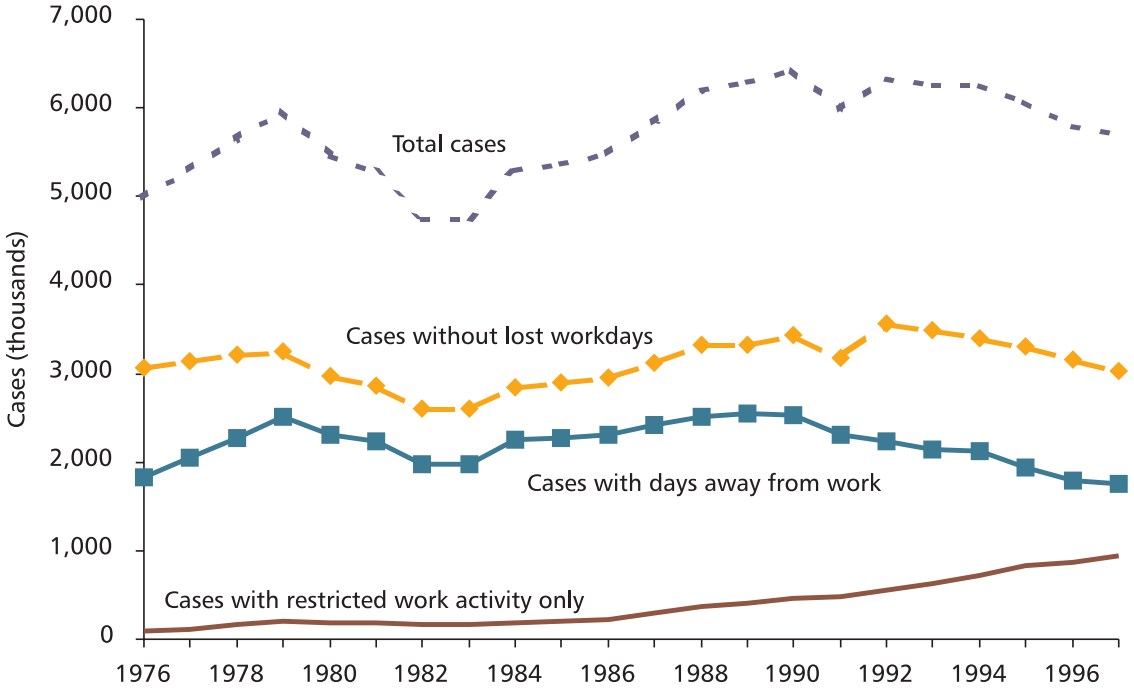

Figure 6. Number of nonfatal occupational injury cases in private industry by type of case, 1976–1997. (Source: SOII [1999].)

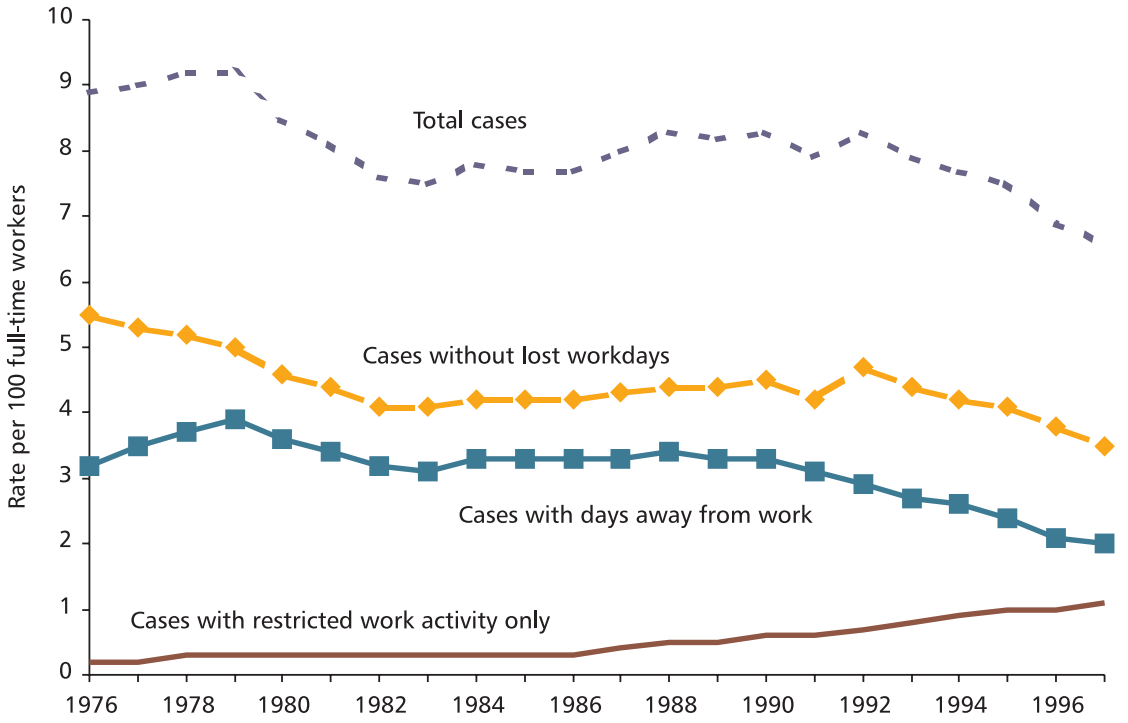

Figure 7. Incidence rate of nonfatal occupational injury cases in private industry by type of case, 1976–1997. (Source: SOII [1999].)

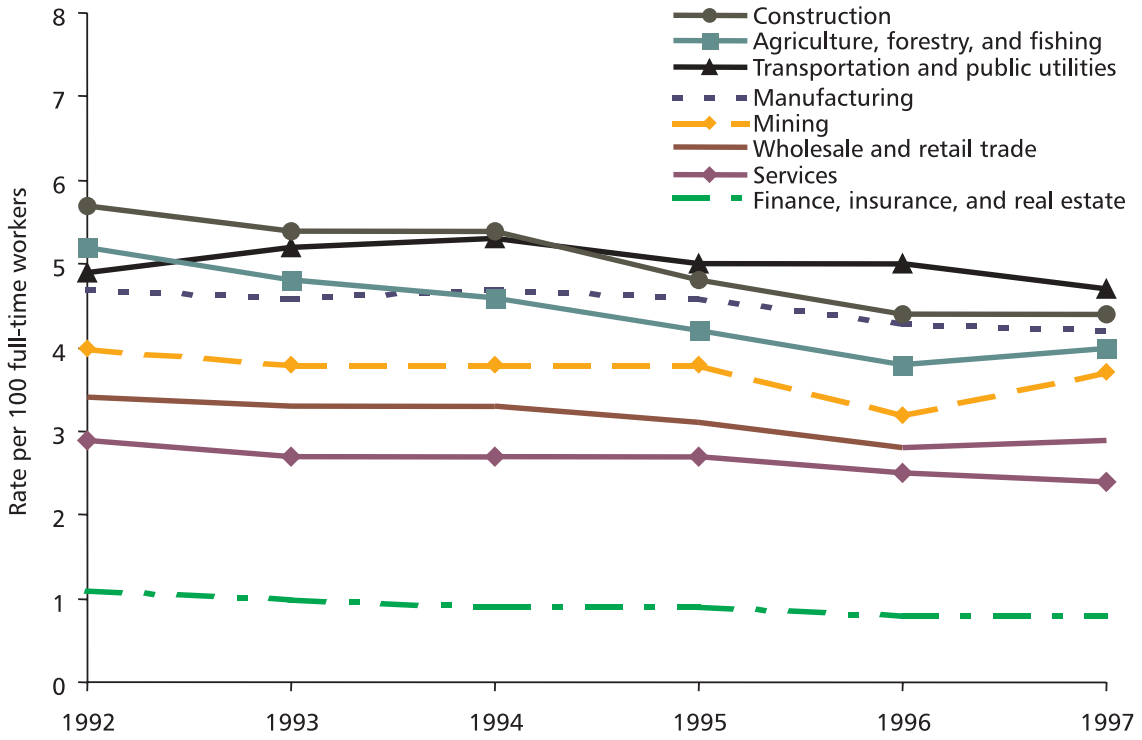

Figure 8. Incidence rates for lost-workday cases of nonfatal occupational injury in private industry by industry division, 1992–1997. (Source: SOII [1999].)

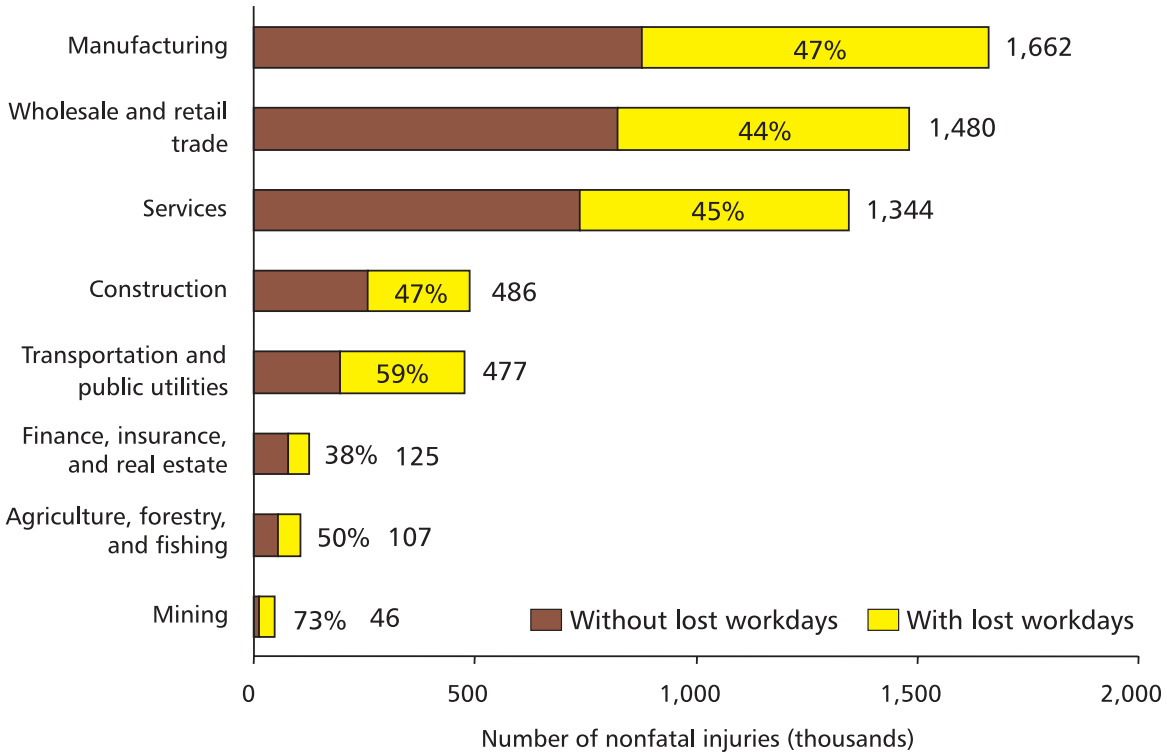

Figure 9. Number of nonfatal occupational injury cases in private industry without and with lost workdays by industry division, 1997. Percentage of cases with lost workdays also is shown. (Source: SOII [1999].)

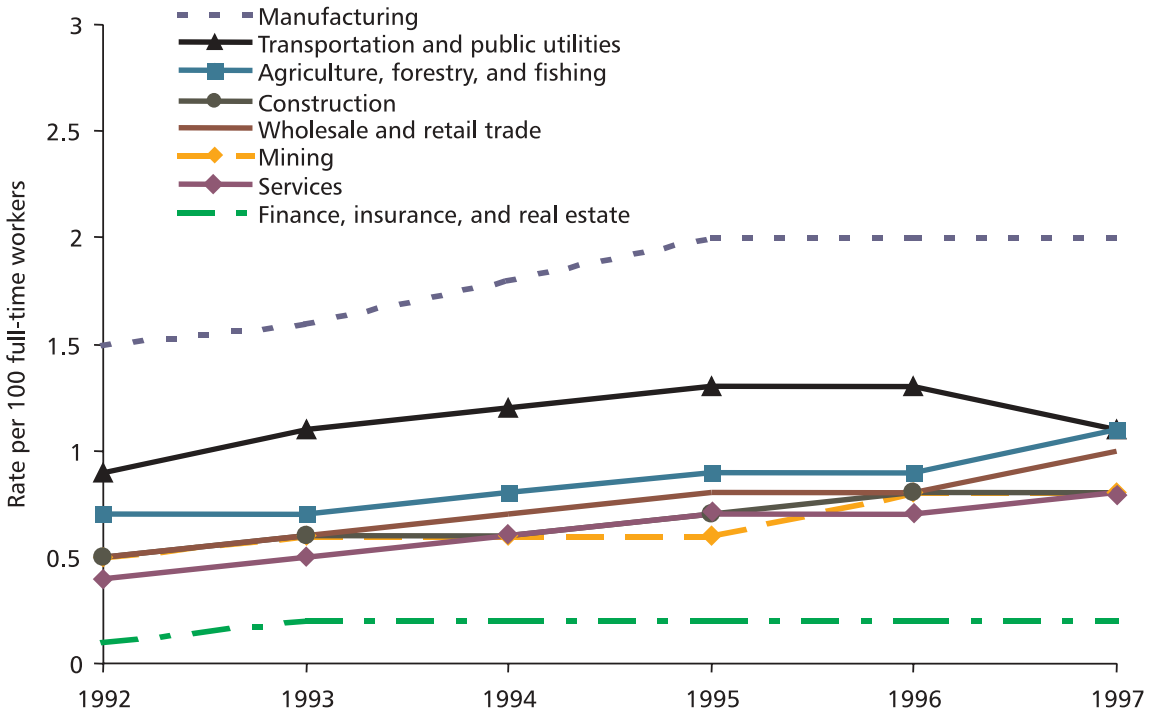

Figure 10. Incidence rates in private industry for nonfatal occupational injury cases involving days of restricted work activity only, by industry division, 1992–1997. (Source: SOII [1999].)

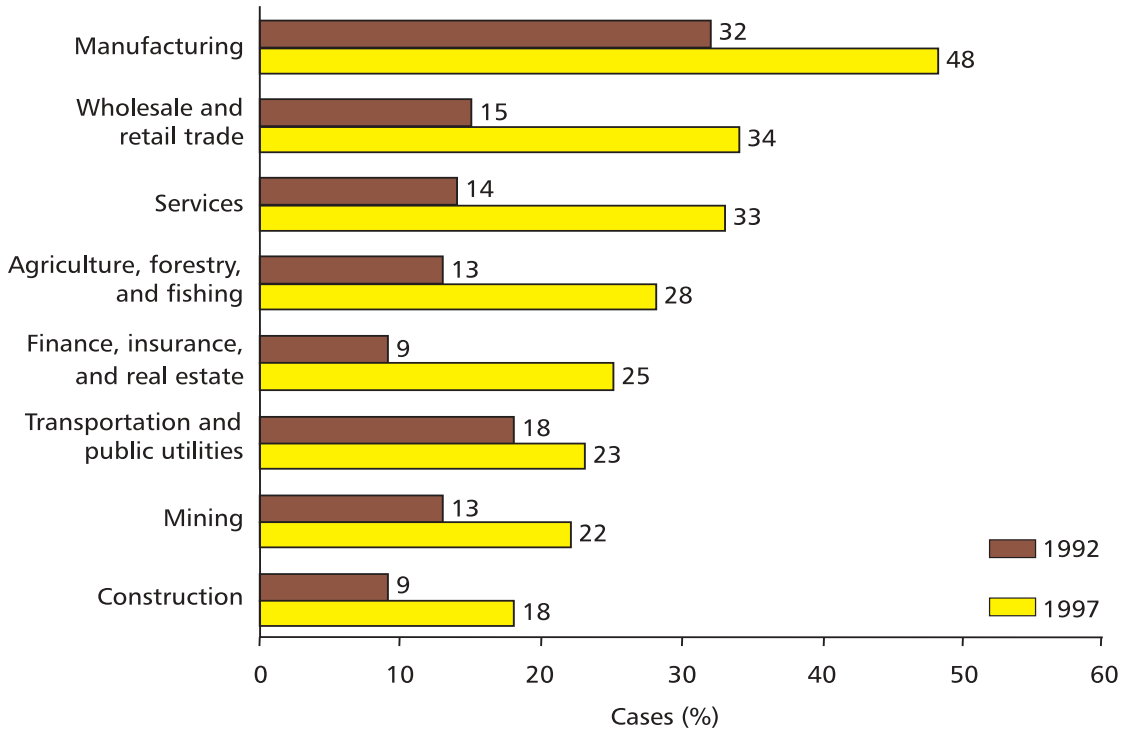

Figure 11. Percentage of nonfatal occupational injury cases with lost workdays involving restricted work activity only, by industry division, 1992 and 1997. (Source: SOII [1999].)

Characteristics of Injury Cases with Days away from Work

The total number of nonfatal occupational injury cases involving days away from work for 1992–1997 is shown in Figure 12 for seven injury categories. Sprains, strains, and tears accounted for the largest number of events, with approximately 799,000 cases in 1997. Nearly half those cases (about 385,000) involved the back, accounting for more than 80% of all traumatic injuries and disorders to the back. Other categories accounting for many days away from work included bruises and contusions (with nearly 166,000 cases in 1997), cuts and lacerations (with approximately 134,000 cases), and fractures (with approximately 119,000 cases). Presented separately for each of the seven injury categories are charts showing the distributions of cases by (1) major industries, (2) occupational groups, and (3) the sources of the disorder, events or exposures leading to the disorder, or the body parts affected.

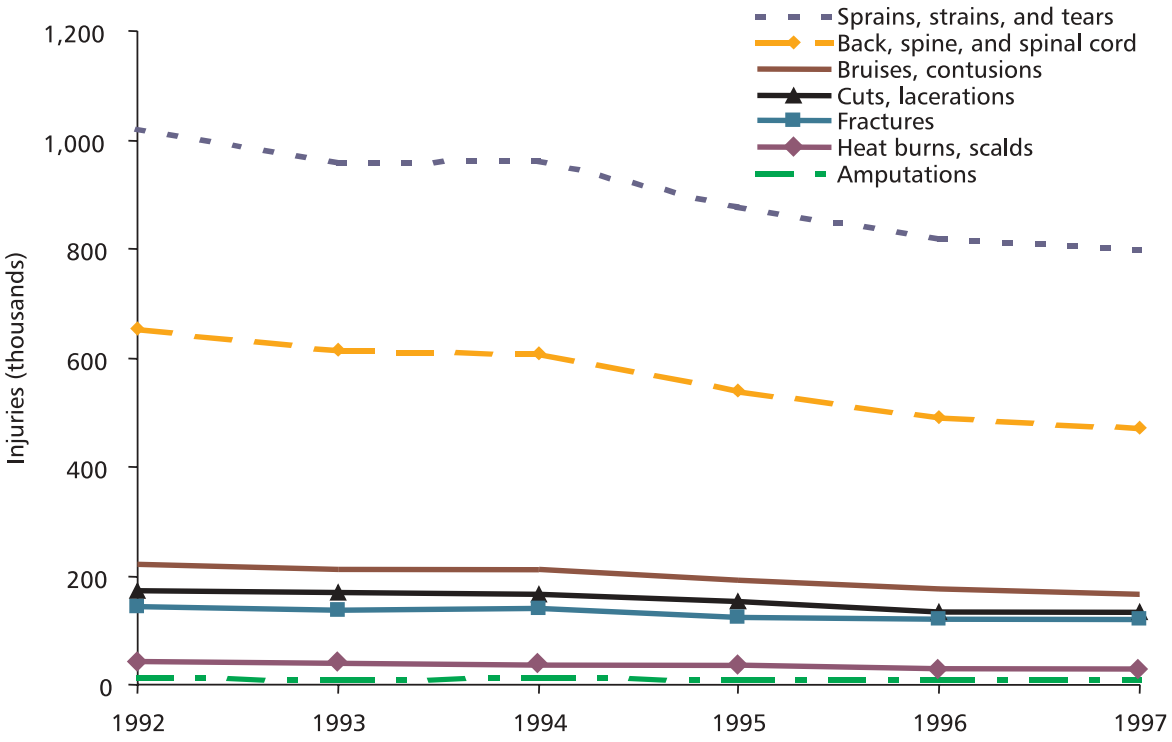

Figure 12. Number of nonfatal occupational injury cases with days away from work in private industry by type of injury, 1992–1997. (Source: SOII [1999].)

Sprain, Strain, and Tear Cases with Days away from Work, 1997

Nearly half of the approximately 799,000 cases of sprains, strains, and tears involving days away from work in 1997 occurred in services (27%) and manufacturing (21%) (Figure 13). Most of these injuries were experienced by operators, fabricators, and laborers (42%) and service personnel (19%) (Figure 14). Overexertion was the most common event leading to a sprain, strain, or tear (Figure 15). Men accounted for nearly two-thirds of the sprain, strain, and tear cases. Half of the cases required 6 or more days away from work.

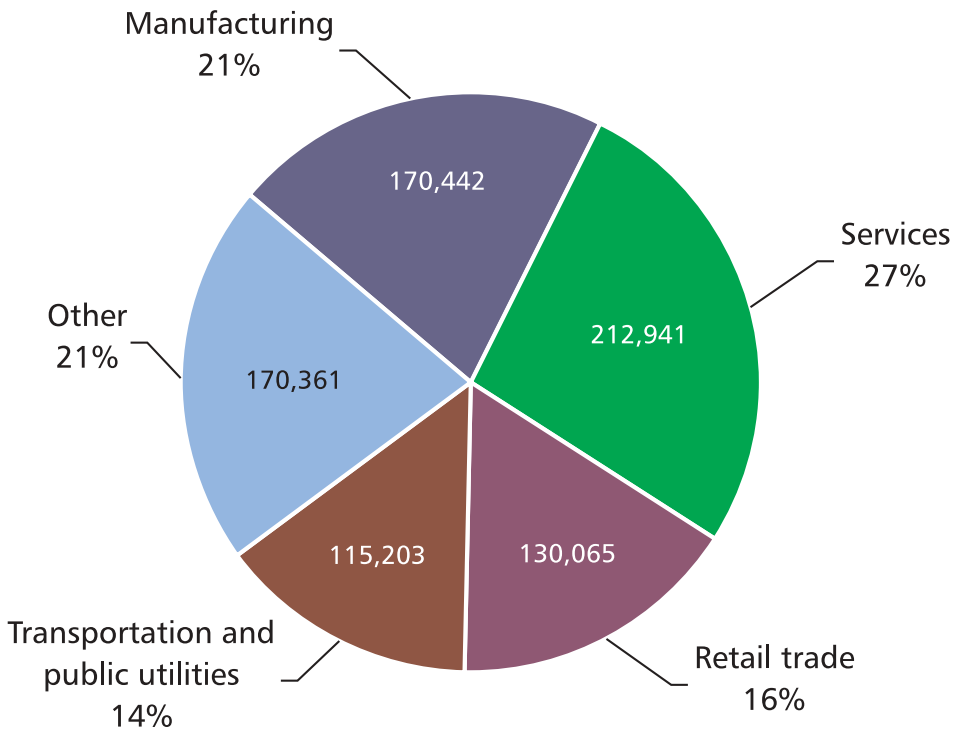

Figure 13. Number and distribution of sprain, strain, and tear cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

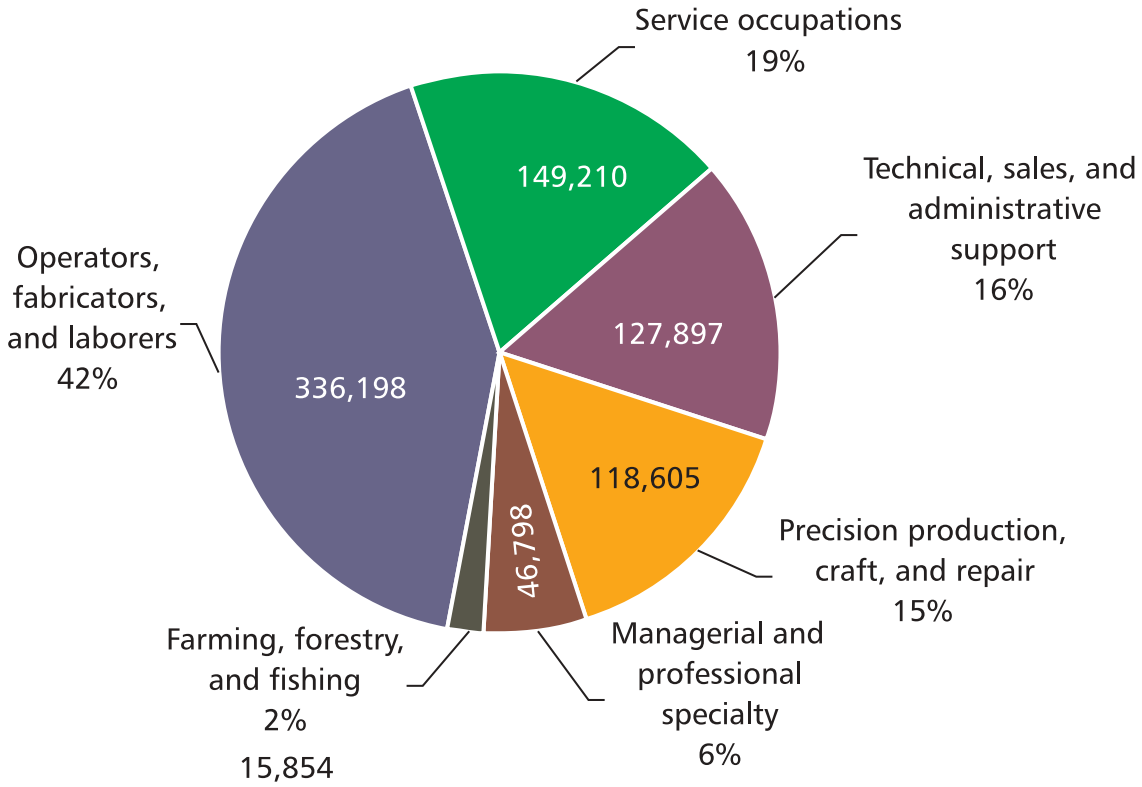

Figure 14. Number and distribution of sprain, strain, and tear cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

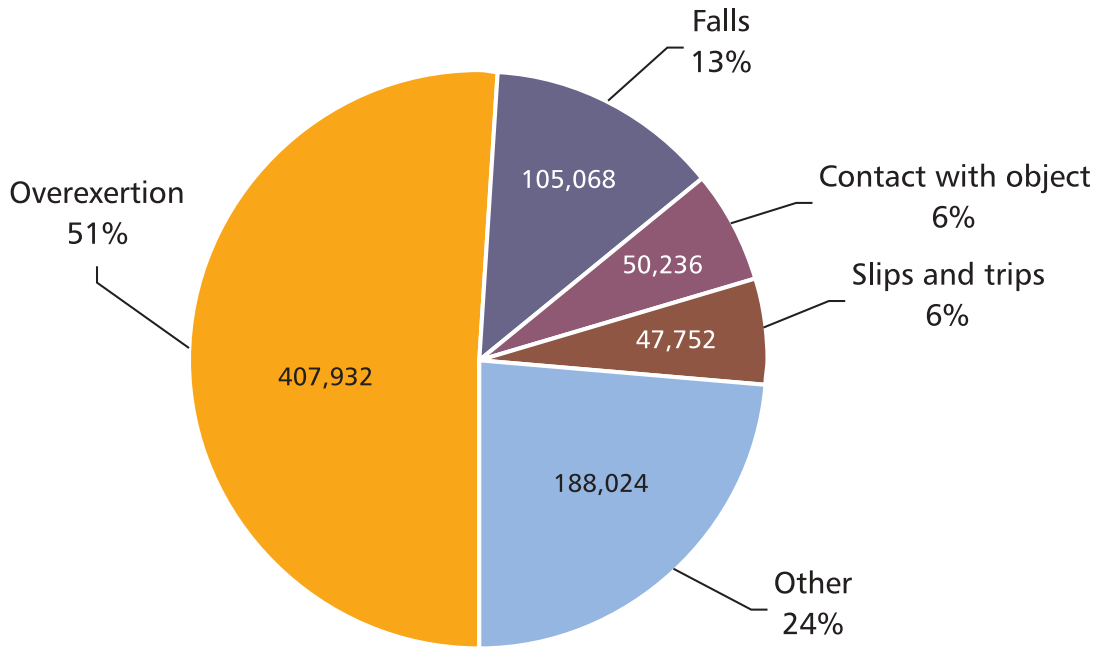

Figure 15. Number and distribution of sprain, strain, and tear cases with days away from work in private industry by event or exposure, 1997. (Source: SOII [1999].)

Back, Spine, or Spinal Cord Cases with Days away from Work, 1997

Nearly two-thirds of the approximately 472,000 back, spine, and spinal cord cases in 1997 occurred in services (28%), manufacturing (21%), and retail trade (16%) (Figure 16). Most of the back, spine, and spinal cord disorders were experienced by operators, fabricators, and laborers (41%) and service personnel (19%) (Figure 17). The most common sources of cases were containers (26%), worker motion or position (17%), and parts and materials (12%) (Figure 18). The event associated with most cases was overexertion, which accounted for 63% of the cases.

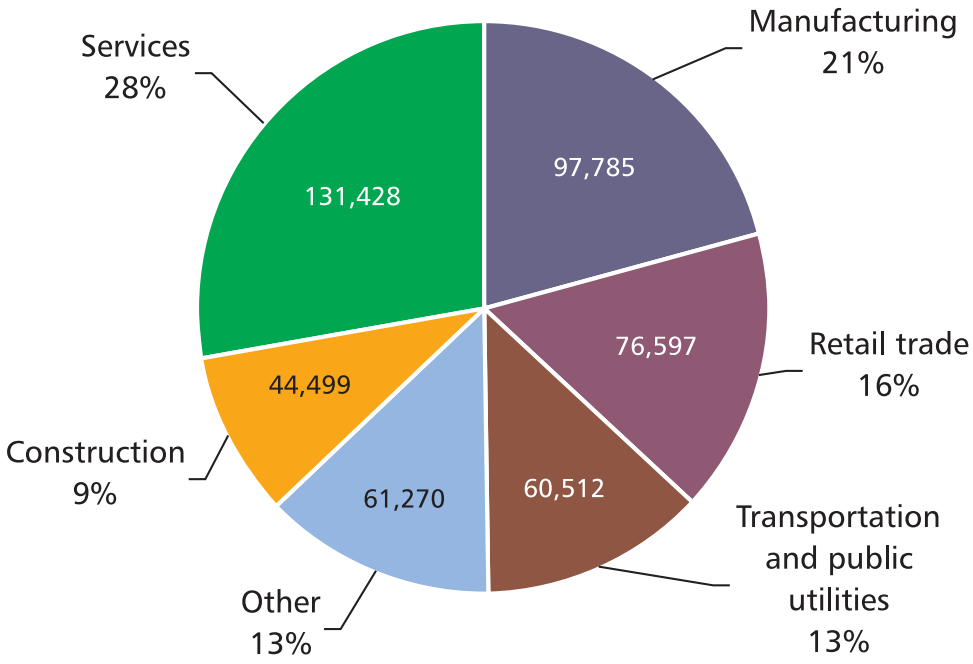

Figure 16. Number and distribution of back, spine, and spinal cord cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

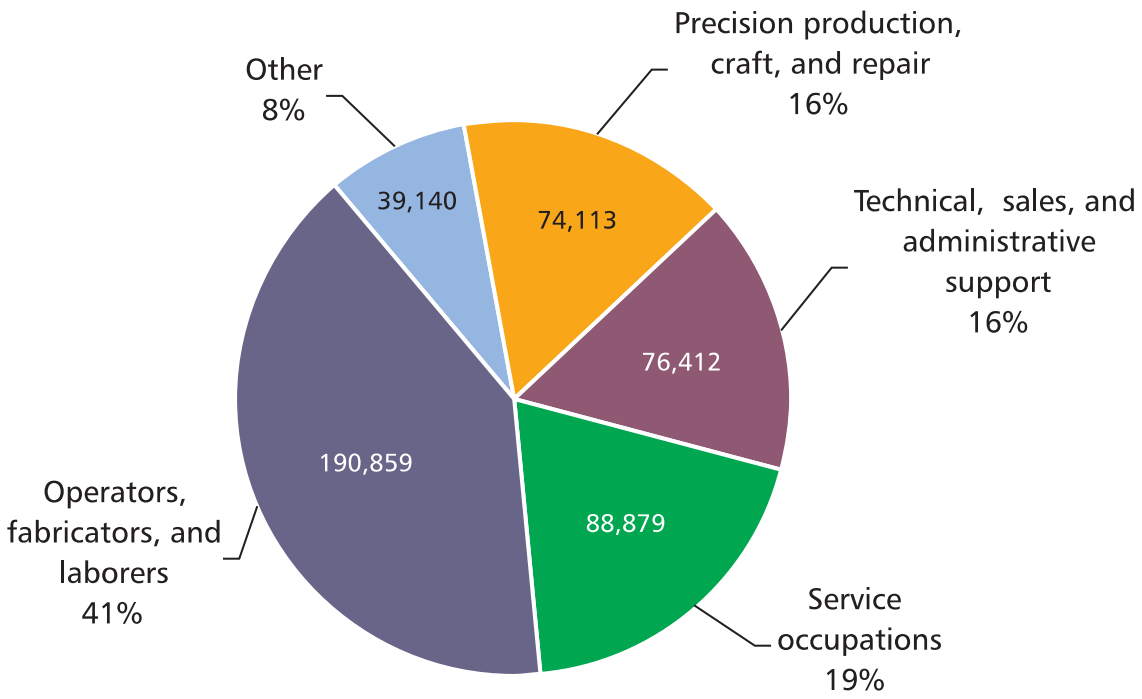

Figure 17. Number and distribution of back, spine, and spinal cord cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

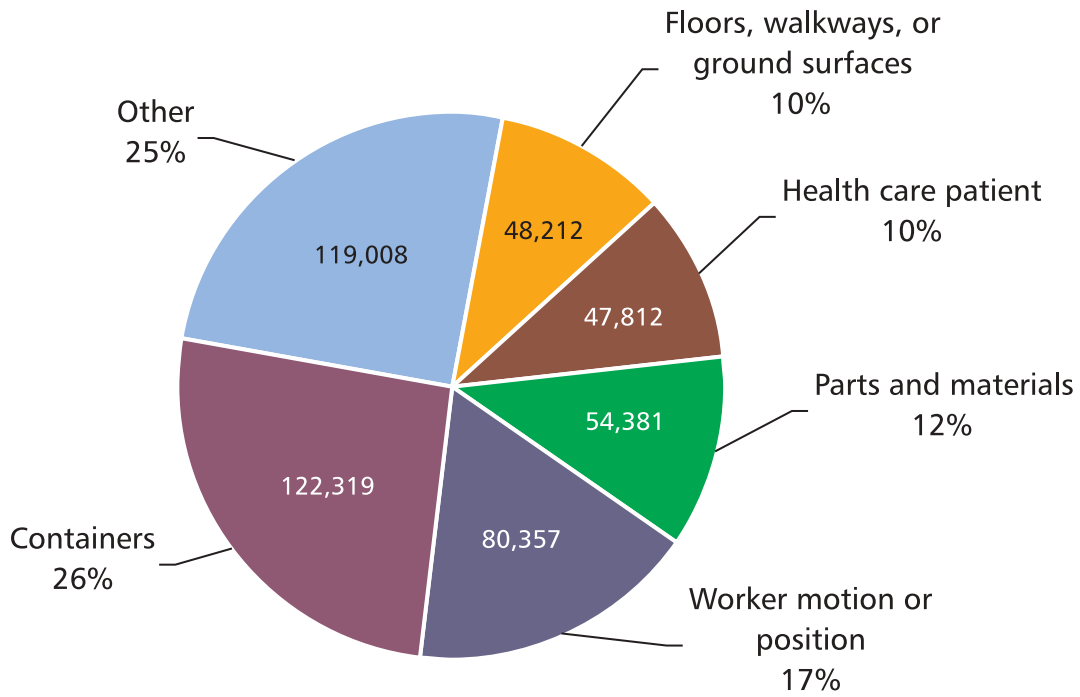

Figure 18. Number and distribution of back, spine, and spinal cord cases with days away from work in private industry by source of disorder, 1997. (Source: SOII [1999].)

Bruise and Contusion Cases with Days away from Work, 1997

Most of the approximately 166,000 bruise and contusion cases with days away from work in 1997 occurred in manufacturing (24%), services (22%), and retail trade (19%) (Figure 19). Together, operators, fabricators, and laborers and service personnel experienced more than half of these injuries (Figure 20). The most common sources of injury were floors and ground surfaces (26%), vehicles (15%), and parts and materials (13%) (Figure 21). Most job-related bruises and contusions resulted from workers being struck by, struck against, or caught in objects, equipment, or materials. In 1997, a median of 3 lost workdays resulted from bruises and contusions. Nearly 9% of these injuries required 31 or more days away from work.

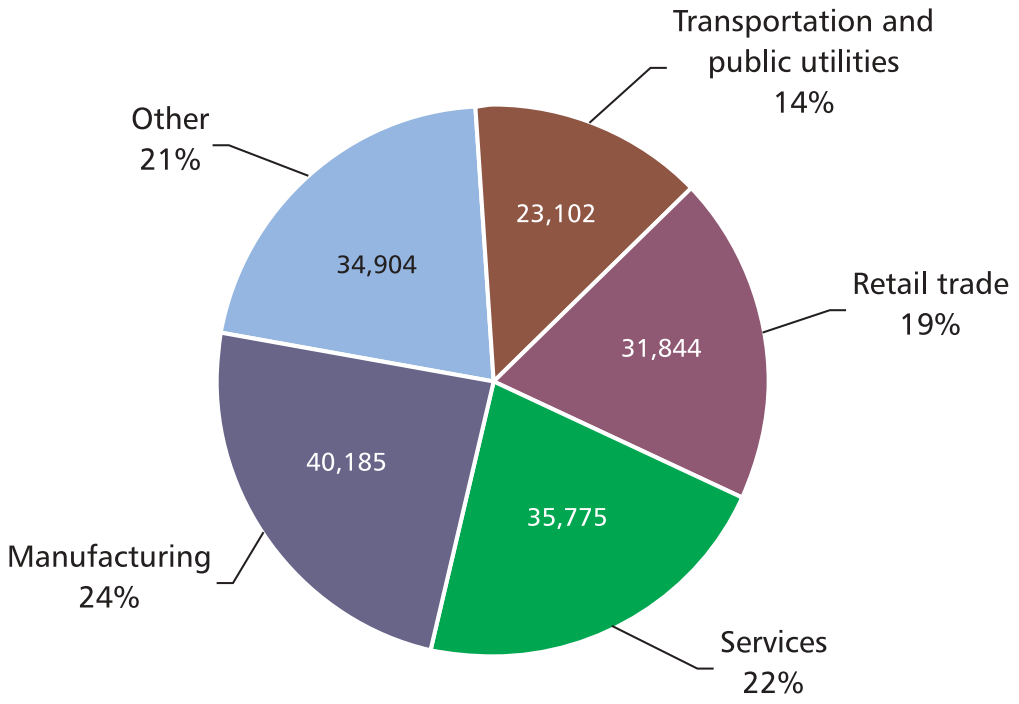

Figure 19. Number and distribution of bruise and contusion cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

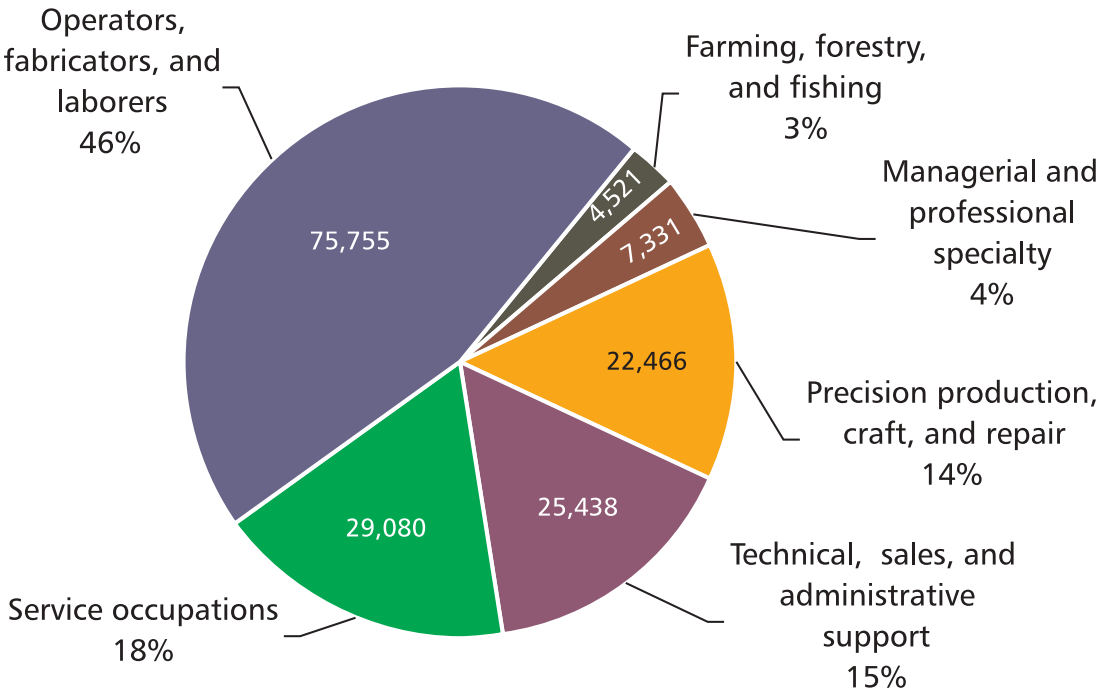

Figure 20. Number and distribution of bruise and contusion cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

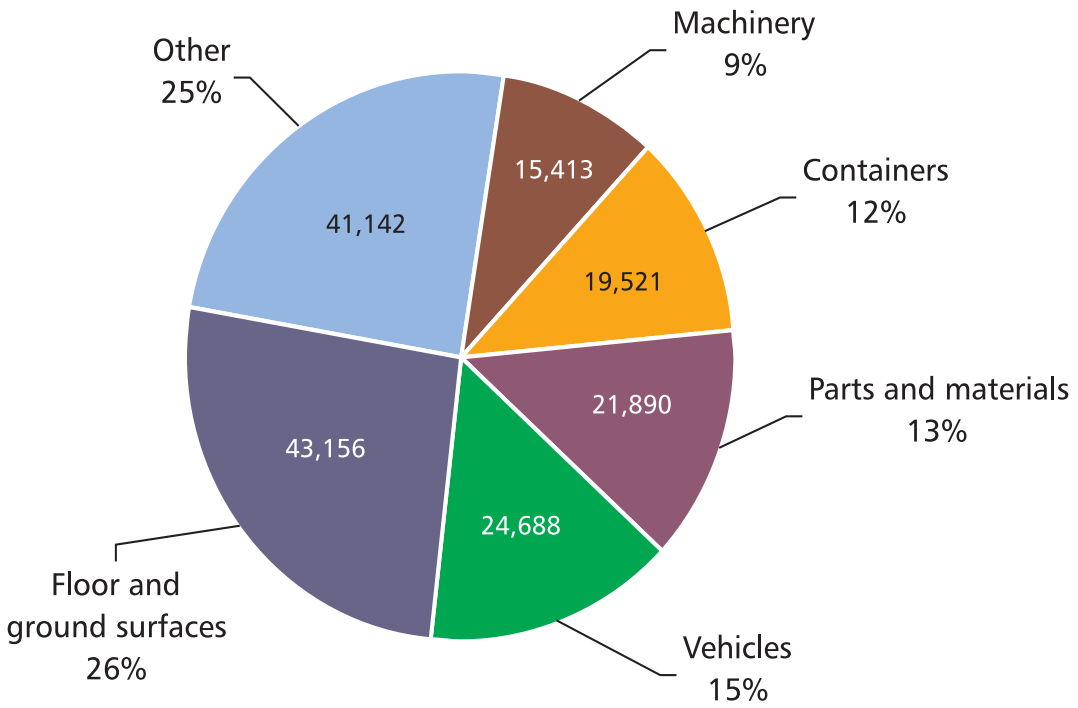

Figure 21. Number and distribution of bruise and contusion cases with days away from work in private industry by source of disorder, 1997. (Source: SOII [1999].)

Cut and Laceration Cases with Days away from Work, 1997

More than half of the approximately 134,000 cut and laceration cases with days away from work in 1997 were in manufacturing (28%) or retail trade (26%) (Figure 22). Operators, fabricators, and laborers experienced 42% of cuts and lacerations, and precision production, craft, and repair personnel experienced 24% (Figure 23). The most common sources of injury were floors and ground surfaces (25%), machinery (21%), and parts and materials (20%) (Figure 24). Finger cuts and lacerations accounted for half of all cuts and lacerations involving days away from work. A median of 3 days away from work resulted from cuts and lacerations.

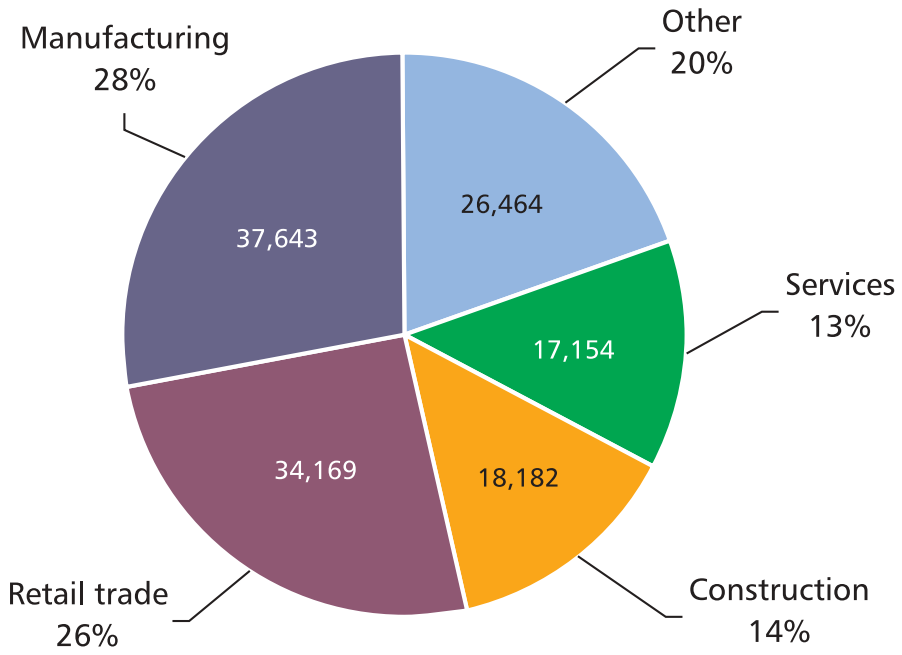

Figure 22. Number and distribution of cut and laceration cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

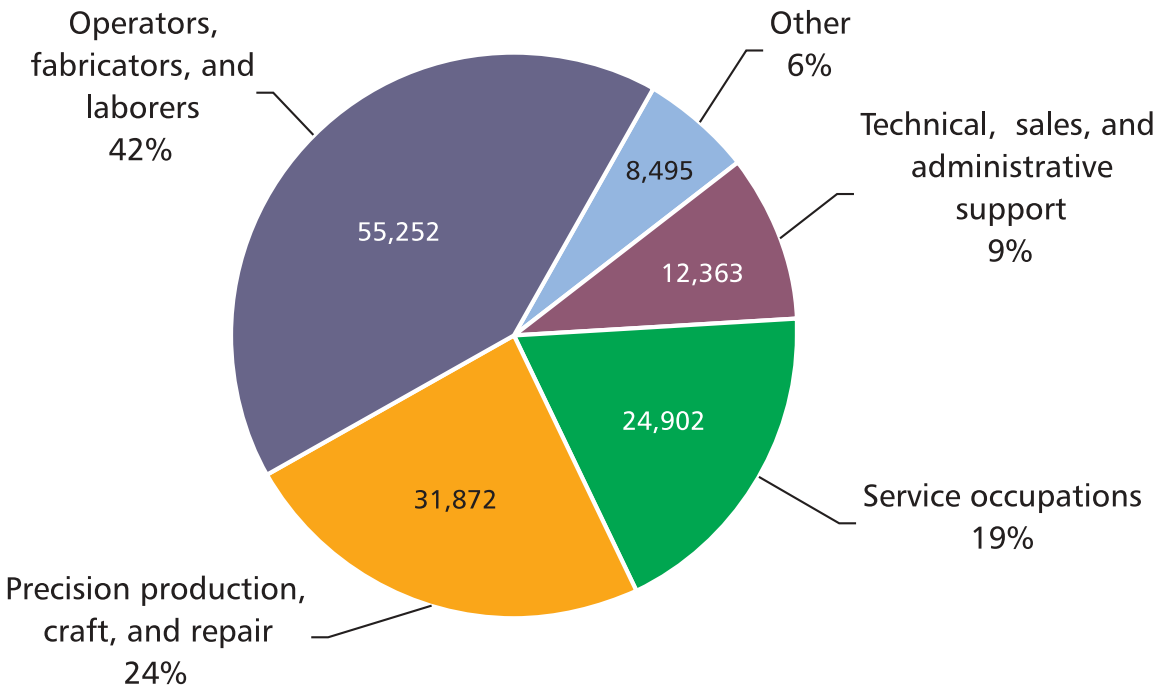

Figure 23. Number and distribution of cut and laceration cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

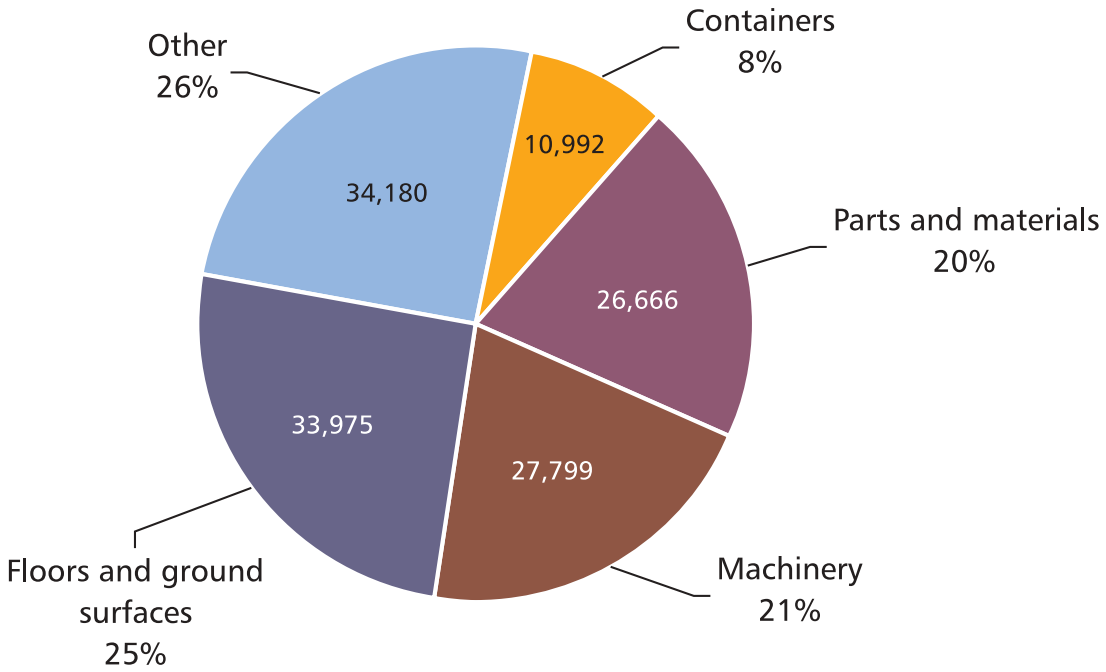

Figure 24. Number and distribution of cut and laceration cases with days away from work in private industry by source of disorder, 1997. (Source: SOII [1999].)

Fracture Cases with Days away from Work, 1997

Most of the approximately 119,000 fracture cases with days away from work in 1997 occurred in manufacturing (25%), services (18%), and construction (16%) (Figure 25). Most of these injuries were experienced by operators, fabricators, and laborers (43%) and precision production, craft, and repair personnel (23%) (Figure 26). The most common sources of injury were floor and ground surfaces (43%) and parts and materials (14%) (Figure 27). Half of the occupational fractures in 1997 required 21 or more days away from work for recuperation. The categories *struck by object* and *falls on the same level* each accounted for more than 30,000 fractures.

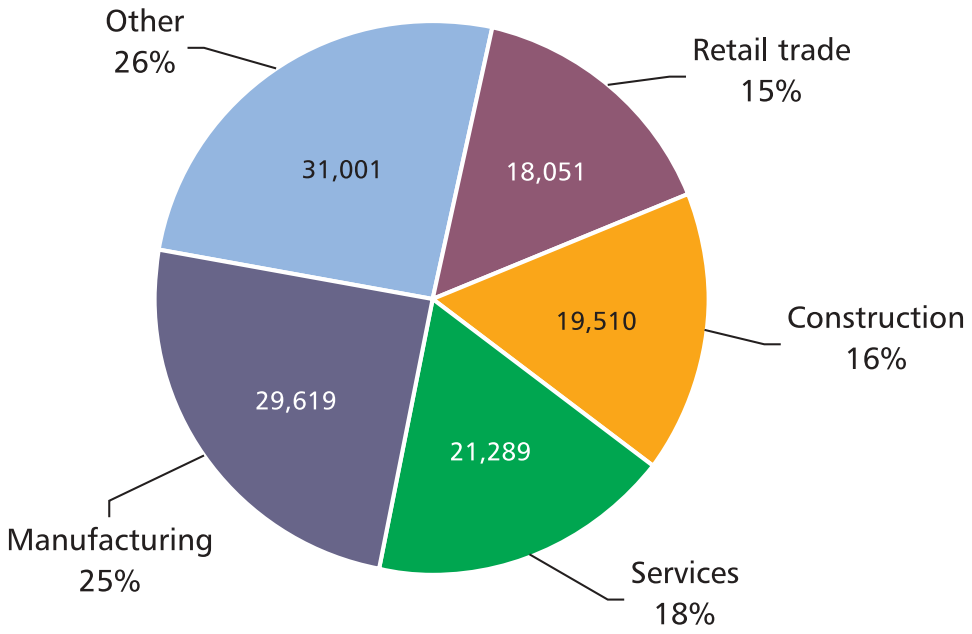

Figure 25. Number and distribution of fracture cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

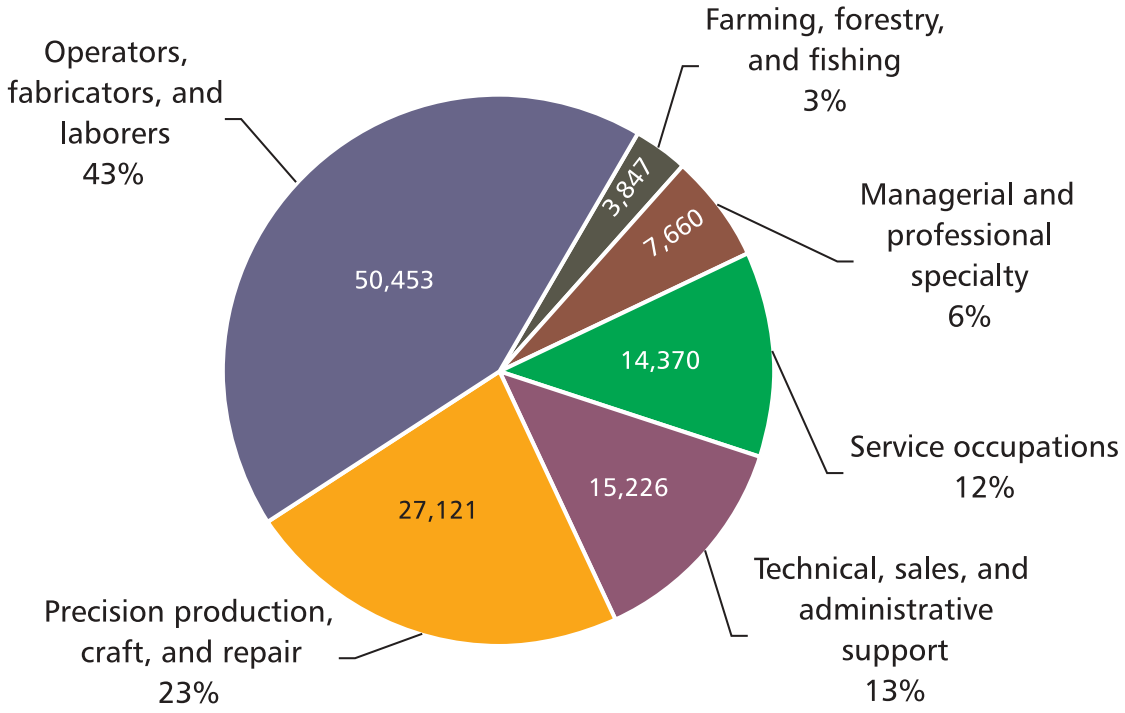

Figure 26. Number and distribution of fracture cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

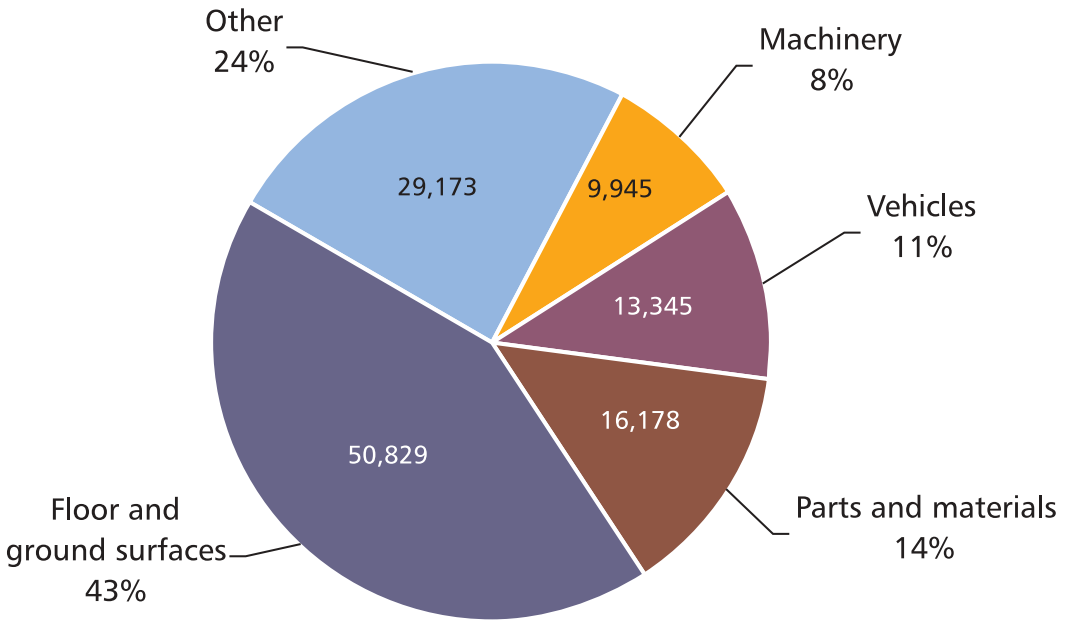

Figure 27. Number and distribution of fracture cases with days away from work in private industry by source of disorder, 1997. (Source: SOII [1999].)

Heat Burn and Scald Cases with Days away from Work, 1997

More than half of the approximately 30,000 heat burn and scald cases with days away from work in 1997 occurred in retail trade (39%) and manufacturing (26%) (Figure 28). Most of these injuries were experienced by service personnel (44%) and operators, fabricators, and laborers (30%) (Figure 29). Twenty-four percent of heat burn and scald cases affected the hand (except fingers), 14% affected multiple body parts, and 12% affected the foot or toe (Figure 30). A median number of 4 days away from work resulted from heat burns and scalds.

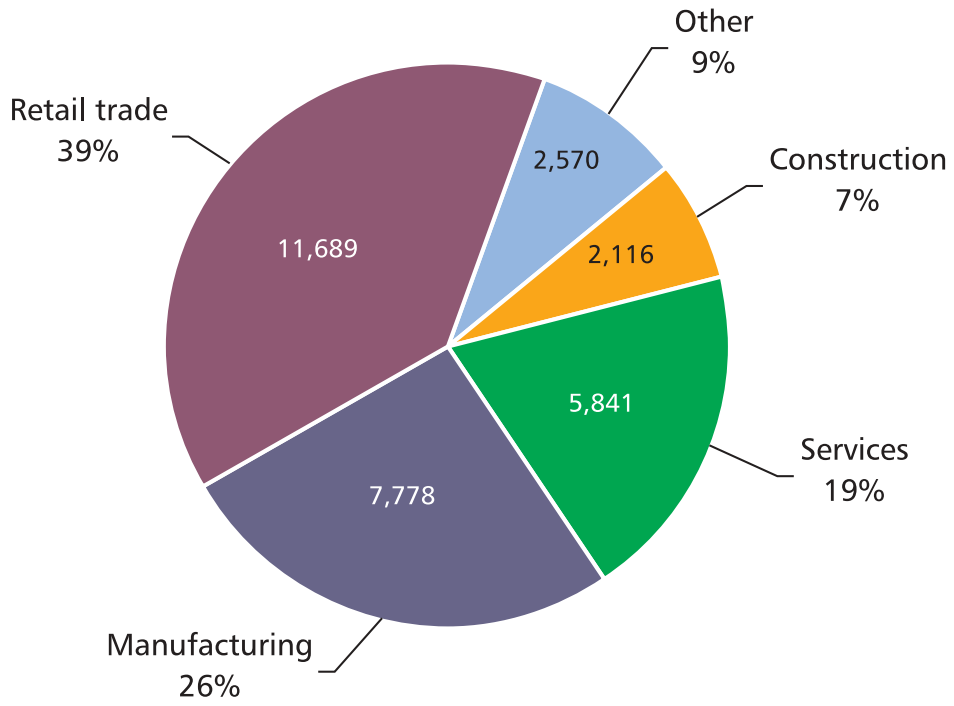

Figure 28. Number and distribution of heat burn and scald cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

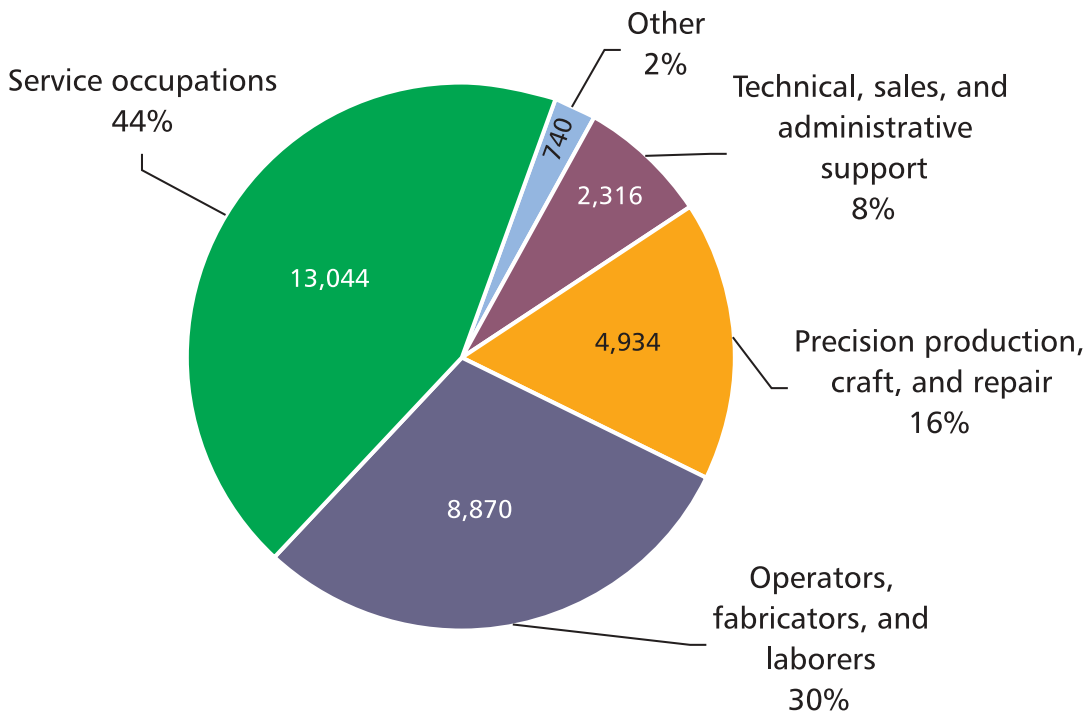

Figure 29. Number and distribution of heat burn and scald cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

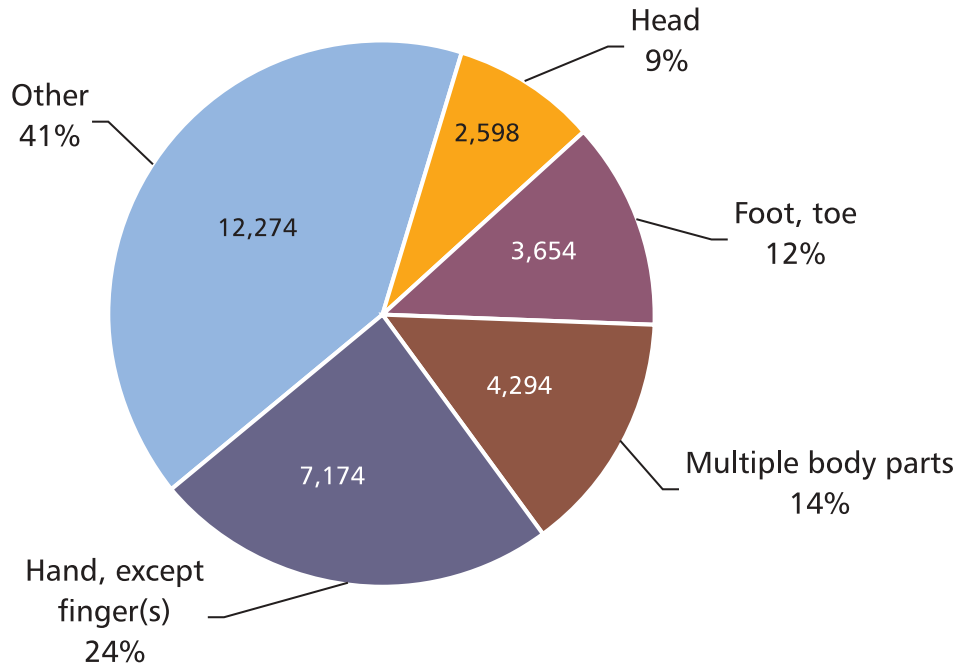

Figure 30. Number and distribution of heat burn and scald cases with days away from work in private industry by part of body affected, 1997. (Source: SOII [1999].)

Amputation Cases with Days away from Work, 1997

More than half of the approximately 10,850 amputation cases with days away from work in 1997 occurred in manufacturing (51%) (Figure 31). Operators, fabricators, and laborers experienced 60% of amputations (Figure 32). Machinery was the major source of amputation injury (57%) (Figure 33). Men accounted for 87% of occupational amputations. Nearly 10,200 amputations (93.8%) were to fingers. A median number of 18 days away from work resulted from amputations.

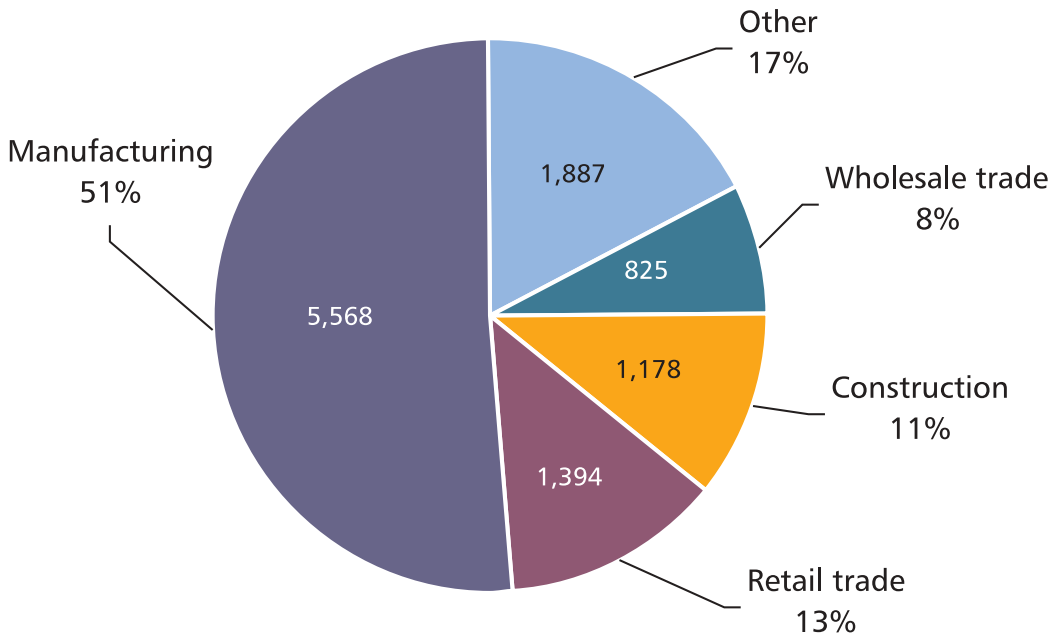

Figure 31. Number and distribution of amputation cases with days away from work in private industry by industry division, 1997. (Source: SOII [1999].)

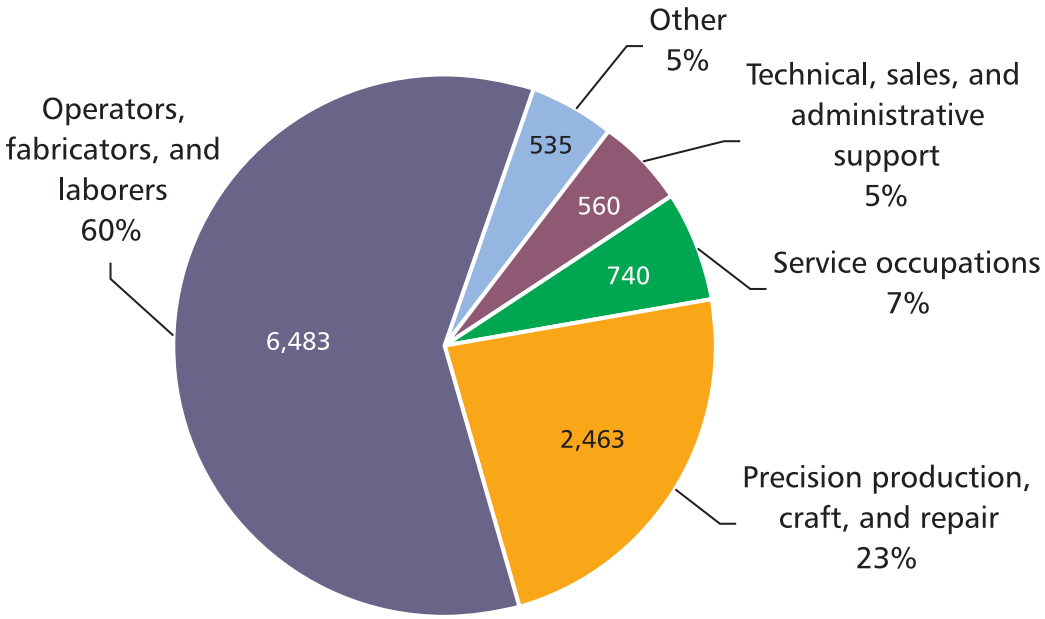

Figure 32. Number and distribution of amputation cases with days away from work in private industry by occupational group, 1997. (Source: SOII [1999].)

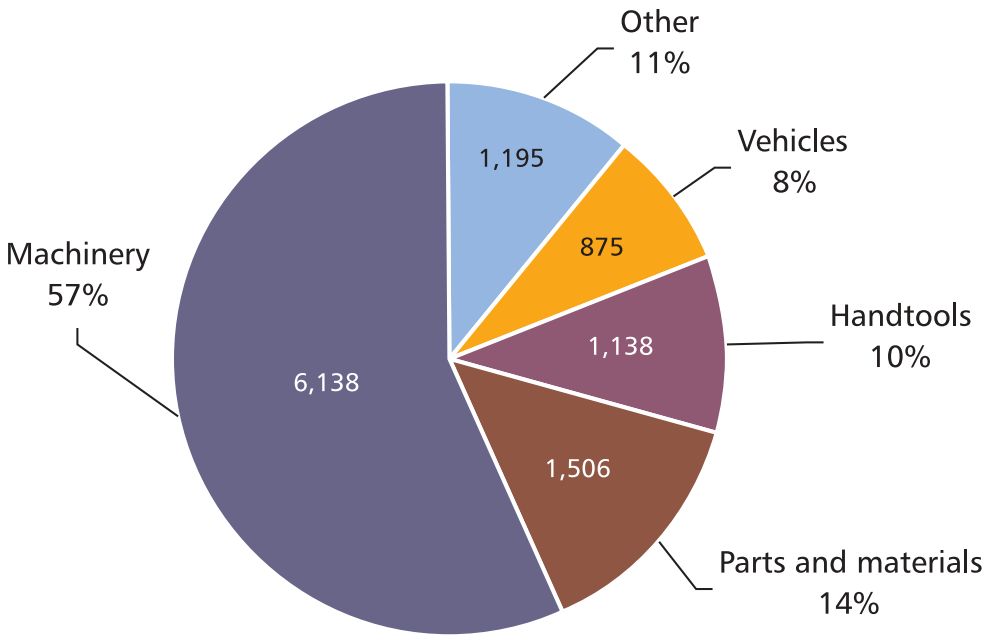

Figure 33. Number and distribution of amputation cases with days away from work in private industry by source of disorder, 1997. (Source: SOII [1999].)

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DHHS (NIOSH) Publication No. 2002-119