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Sandia National Laboratories - Albuquerque Annual Epidemiologic Surveillance Report

Sandia National Laboratories – Albuquerque
2000 Epidemiologic Surveillance Report

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Additional information about the Department of Energy's Office of Health Programs, the Epidemiologic Surveillance Program, and annual reports for DOE sites participating in this program can be found at:

http://tis.eh.doe.gov/health/epi/surv/ index.html

ACKNOWLEDGEMENT

Sandia National Laboratories – Albuquerque 2000

At A Glance

The occupational injury rates for both men and women declined in 2000, a reduction that was statistically significant among women. The reduction among women was largely attributable to fewer diagnoses for sprains and strains.

Over the past 8 years, we observed an overall 43 percent decline in the diagnosis rate for women and a 46 percent decline for men.

Recent rate decreases for all illness and injury categories combined for both men and women probably reflect the addition of over 1,000 Non-Regular workers to the roster of active workers. These workers reported only 9 absences from 1998 to 2000, so their addition to the roster contributed to the observed rate reduction.

Injuries accounted for 32 percent of the OSHA-recordable diagnoses reported among women and 51 percent of the diagnoses reported among men.

Looking at personal injuries and illnesses combined with occupational, the rate of 5-day absences due to injury or illness was 11 per 100 for women and 6 per 100 men. These rates are unchanged from the 1999 rates reported for women and men.

The Crafts and Manual Labor group had the highest absence rate for both men and women. This job category has had the highest rate among women since 1997.

We continue to monitor the occurrence of prostate cancer following an apparent substantial increase observed in 1996. Reported cases in more recent years have decreased and do not suggest cause for concern.

Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system to detect health problems among workers. The Epidemiologic Surveillance Program monitors illnesses and health conditions that result in an absence of 5 or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

This report provides a summary of epidemiologic surveillance data collected from Sandia National Laboratories–Albuquerque (SNL-AL) from January 1, 2000 through December 31, 2000. The data were collected by a coordinator at SNL-AL and submitted to the Epidemiologic Surveillance Data Center, located at Oak Ridge Institute for Science and Education, where quality control procedures and preliminary data analyses were carried out. Epidemiologic surveillance has been conducted at SNL-AL since 1993.

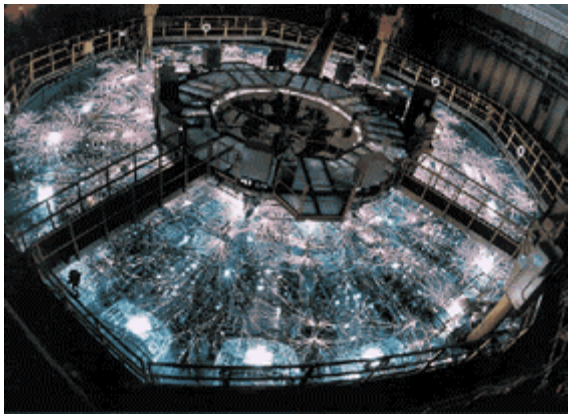
The information presented in this report provides highlights of the data analyses conducted. Surveillance reports and additional supporting tables are posted on the Office of Health Programs' Web site (**http://tis.eh.doe.gov/health/epi/surv/index.html)**, or are available by request. The main sections of the report include: work force characteristics; absences due to injury or illness of 5 or more consecutive workdays; workplace injuries, illnesses, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers. The report also includes sections on time trends that provide comparative information on the health of the work force from 1993 to 2000.

Note: In the figures and calculations that follow, percentages have been rounded to the nearest whole number.

DOE sites vary by mission, function, job classification, and worker exposures, so comparisons of SNL-AL with other DOE sites should be made with caution. In addition, many factors can affect the completeness and accuracy of health information reported at the sites, thereby affecting the observed patterns of illness and injury.

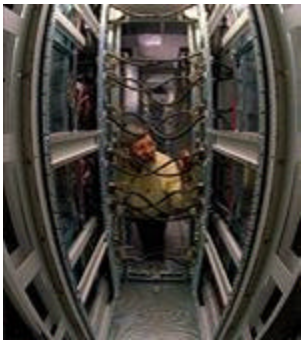
Site Overview

Sandia National Laboratories-Albuquerque (SNL-AL) is located at the foot of the Manzano Mountains adjacent to the city of Albuquerque,



New Mexico, and is essentially surrounded by Kirtland Air Force Base. For more than 50 years, Sandia has served as one of the major national defense research and development (R&D) laboratories. The facility started in 1945 as Z Division of what is now Los Alamos National Laboratory. As part of the Manhattan Project, the site's mission was ordnance design, testing, and assembly.

The original mission of SNL-AL's R&D nuclear weapons activities expanded to include support of the space program and work on other advanced military technologies, energy programs, arms verification, and control technology and applied research. Sandia's mission continues to evolve, but the site's core mission remains stewardship and development of the nation's nuclear stockpile. Sandia assumed "cradle to grave" responsibility for nuclear weapons in 1995, which includes partnering with the other national laboratories, the military services, and industry to ensure the reliability of the weapons and to oversee their removal from the nuclear stockpile when they are retired. Sandia also continues to conduct vital programs in environmental testing, radiation research, combustion research, computing, microelectronics research and production, and other related fields. In September 1999, the largest construction project ever proposed by SNL-AL—the Microsystems and Engineering Sciences Application (MESA) facility—received DOE approval to proceed with a conceptual design. The purpose of the project is to join Sandia's expertise in weapon design, very fast computing, and microsystems into an immersive environment in which scientists can imagine, design, and create the 21st century's best non-nuclear components of nuclear weapons.

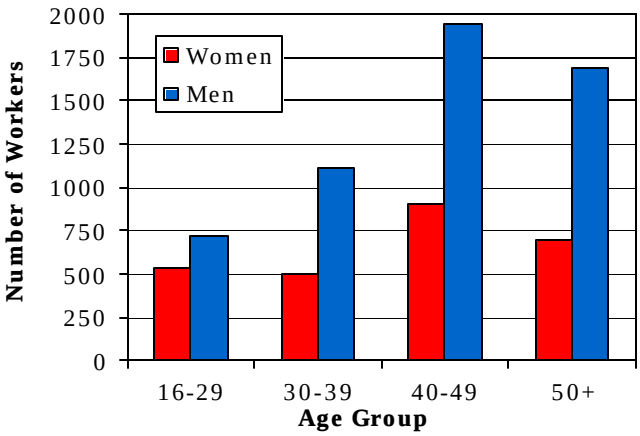


The Sandia Corporation, a Lockheed Martin Company, manages and operates the laboratory under a 1998 modified contract through September 2003.

The Sandia Work Force - 2000

A total of 8,097 SNL-AL employees were included in epidemiologic surveillance in 2000, 184 fewer workers than were present in 1999. The gender and age distribution of the 2000 work force is shown in Figure 1. There were 2,627 (32 percent) women and 5,470 (68 percent) men in the work force with an average age of 41 years for women and 43 years for men. Most of the workers were White (70 percent). Hispanics comprised 22 percent and Native Americans, African Americans, and Asians made up the remaining 8 percent of the work force.

Figure 1. The Work Force by Gender and Age



The distribution of workers by job category and gender is shown in Figure 2. Individual job titles reported by SNL-AL were grouped together into six job categories. This was done because there were either too few workers or health events among workers within a particular job title, thereby limiting the types of analyses that could be conducted. Men and women were not distributed equally among the various job categories. The Professional Staff job category contained over half (55 percent) of the total SNL-AL work force. Sixty-two percent of men were

Professional Staff workers, while 40 percent of the women were in this category. Significant portions of the women were in the Non-Regular (20 percent) and Support Staff (20 percent) categories.

Figure 2. The Work Force by Job Category and Gender

Job Category	Women	Men
Professional Staff	1,056 40%	3,404 62%
Support Staff	525 20%	733 13%
Clerical	435 16%	35 1%
Crafts & Manual Labor	72 3%	433 8%
Security	9 <1%	107 2%
Non-Regular	530 20%	758 14%

Number and Length of Absences

Epidemiologic surveillance examines illness and injury absences of 5 or more consecutive workdays (also referred to as "5-day absences"). It is based on DOE Order 440.1 that requires contractor management to notify

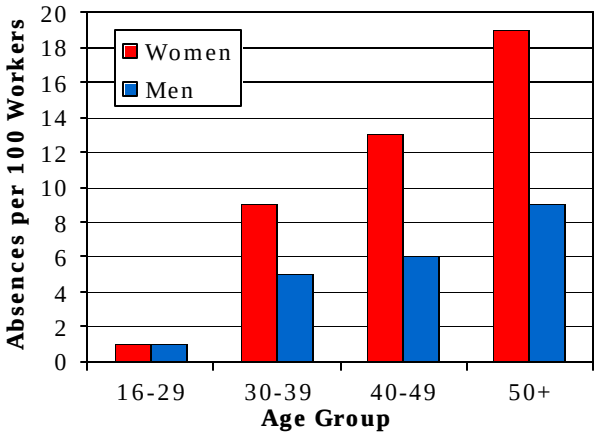
Occupational Medicine when a worker has been absent for 5 or more consecutive workdays. If an absence on a Friday continues through Tuesday, the length of that absence includes the weekend. All injuries and illnesses due to a work-related incident must be reported. Non-occupational illnesses and injuries that involve absences of fewer than 5 days do not routinely require a medical clearance for return to work and are excluded from these analyses.

One change from earlier surveillance reports is the exclusion of some types of health events resulting in an absence of 5 or more consecutive workdays. These include 22 women with 22 reported absences due to maternity leave and 2 women with reported absences due to elective surgical procedures that were not related to the treatment of an illness or injury. No men reported any of these types of absences.

Throughout this report, analyses take gender, age, and occupation into account because the risk of illness and injury varies by these factors.

The rate of 5-day absences due to injury or illness varied by gender and age (Figure 3). There were 300 absences among 2,627 women resulting in an absence rate of 11 (300 / 2,627) per 100 women. Among the 5,470 men, 339 absences resulted in an absence rate of 6 (339 / 5,470) per 100 men. These rates are the same as the 1999 rates reported for men and women. The rate of 5-day absences increased with age among both men and women. Among workers aged 30 and older, the absence rate among women was about twice the absence rate among men. Two percent of female and less than 1 percent of male workers had two or more 5-day absences in 2000.

Figure 3. Absence Rate by Gender and Age



The decrease in the number of absences reported by Sandia workers observed in 1997 and 1998 has not continued. In 1998, the decrease in absences occurred only among men (8

percent), and the number of absences among women increased 8 percent. In 1999, the number of absences reported by women increased 25 percent, while the number of absences reported by men increased 6 percent compared with the number reported in 1998. There was little

change in the number of absences from 1999 to 2000. The number of men and women in the work force was also steady from 1999 to 2000.

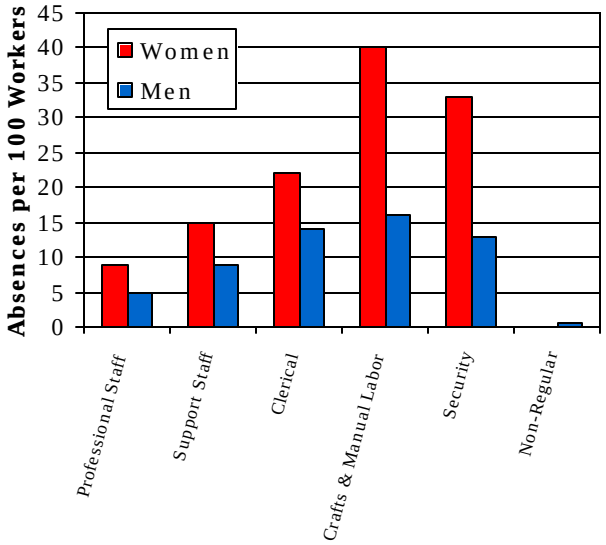
The average length of absence was 22 days for men and 23 days for women (Figure 4). This is a change from 1998 and 1999, when the average length of absence for women was less than for men. The average length of absence among men increased with age. We noted little change in average duration of absence among women 30 years of age and older.

Figure 4. Number of Days Absent by Gender and Age

Gender	Age	Number of Absences	Number of Days Absent	Average Number of Days Absent
Women	16-29	6	100	17
	30-39	46	1,082	24
	40-49	115	2,671	23
	50+	133	3,075	23
	Total	300	6,928	23
Men	16-29	9	163	18
	30-39	51	956	19
	40-49	121	2,547	21
	50+	158	3,818	24
	Total	339	7,484	22

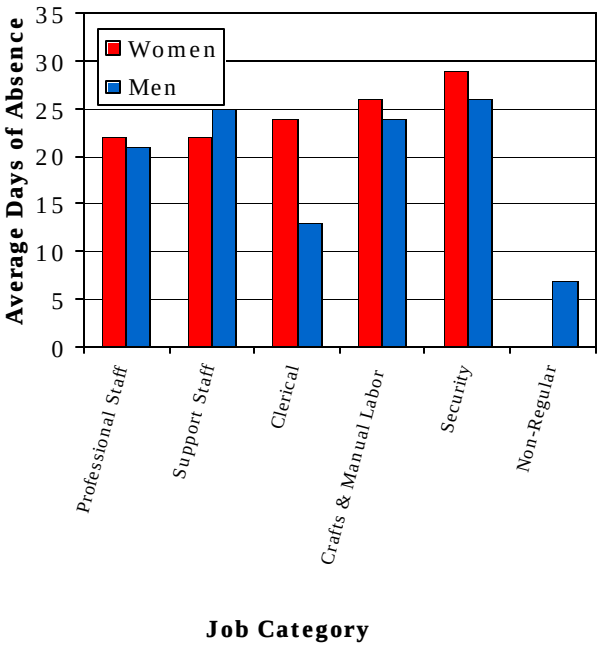
The rate of 5-day absences due to illness or injury varied by job category for both men and women (Figure 5). Women had higher rates of absence than did men in every job category except the Non-Regular group. No absences were reported in this group for women. The highest absence rate was noted in the Crafts and Manual Labor group for both men and women: 40 per 100 for women and 16 per 100 for men. Among women, this job category has had the highest rate since 1997. Among men, Security workers had the highest rate from 1997 through 1999.

Figure 5. Absence Rate by Job Category and Gender



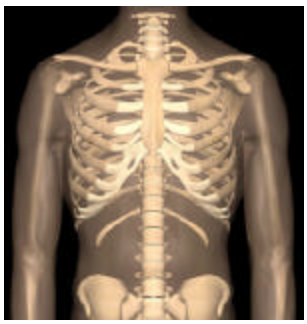
The average duration of absence by job category and gender is shown in Figure 6. Women had longer absences than men in every job category except the Support Staff and Non-Regular groups. Men and women in the Security group had the longest average absence duration; 26 days for men and 29 days for women. As noted above, there were no absences reported among women in the Non-Regular group.

Figure 6. Average Duration of Absence by Job Category and Gender

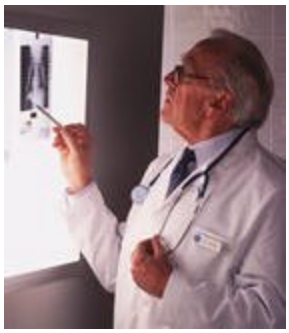


Diagnostic Categories

Epidemiologic surveillance monitors *all* illnesses and injuries among active workers because it is not always possible to determine which health effects are due to occupational exposures and which ones are due to other causes. Most illness and injury diagnoses were reported to the occupational medicine clinic by workers who required return-to-work clearances. An absence due to illness or injury may involve more than one diagnosis, and epidemiologic surveillance includes all reported diagnoses. In addition, the OSHA 200 Log provides information on recorded occupational injuries and illnesses whether or not they involve absences.



This report organizes illness and injury categories based on a standard reference, the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). This reference is used to classify diagnoses for statistical purposes. You can find specific diagnoses in the Explanation of Diagnostic Categories.



The number of reported diagnoses categorized according to the ICD-9-CM diagnostic categories and number of lost calendar days are presented in Figure 7. Women reported 392 diagnoses and men reported 420 diagnoses in 2000. The most frequently reported diagnoses were similar for men and women.

Figure 7. Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender

Diagnostic Category	Women		Men	
	Number of Diagnoses	Number of Lost Calendar Days	Number of Diagnoses	Number of Lost Calendar Days
Benign Growths	21	605	5	129
Blood	2	47	2	21
Cancer	8	242	15	494
Digestive	28	433	44	758
Endocrine/ Metabolic	9	234	7	82
Existing Birth Condition	7	221	4	47
Genitourinary	41	871	13	238
Heart/ Circulatory	20	564	24	445
Infectio ns/ Parasites	8	126	4	31
Injury	38	944	60	1,229
Miscarriage	6	78	NA	NA
Muscles & Skeleton	64	1,292	100	2,340
Nervous System	28	461	20	439
Psychological	14	670	25	713
Respiratory	66	620	65	681
Skin	6	83	17	251
Unspecified Symptoms	26	616	15	162

Note: Lost calendar days for each absence are counted more than once when multiple diagnoses occur in different diagnostic categories for the same absence.

Women lost 6,928 calendar days due to injury and illness. Respiratory conditions (17 percent), muscles and skeleton conditions (16 percent), genitourinary disorders (10 percent), and injuries (10 percent) accounted for 53 percent of all reported diagnoses among women. Over half (61 percent) of the respiratory conditions were due to upper respiratory infections, such as colds and sinusitis, followed by bronchitis and asthma (24 percent) and flu and pneumonia (12 percent). Arthritis and joint disorders made up 34 percent of the muscles and skeleton conditions, followed by rheumatism (27 percent) and acquired deformities, primarily of the toes (23 percent). Eighty-five percent of the genitourinary disorders were conditions of the female reproductive organs. Of the 38 injury diagnoses, 34 percent were reported as sprains and strains, 32 percent as dislocations, and 18 percent as fractures. Two diagnoses related to medical care complications were reported among the injuries.

Men lost 7,484 calendar days due to injury and illness. Fifty-three percent of all reported diagnoses among men were due to conditions of the muscles and skeleton (24 percent), respiratory conditions (15 percent), and injuries (14 percent). Upper respiratory infections such as colds and sinusitis accounted for 69 percent of the respiratory conditions, followed by pneumonia and flu (15 percent) and bronchitis and asthma (12 percent). Thirty-eight percent of the reported muscles and skeleton conditions were disc disorders and back problems, 36 percent were arthritis and joint disorders, and 16 percent were rheumatism. The 60 diagnoses categorized as injuries included dislocations (37 percent), sprains and strains (25 percent), and fractures (17 percent).

These diagnoses varied little by age among men. Disorders of the muscles and skeleton, conditions affecting the respiratory system, and injuries were

the top three diagnostic categories for men in all age groups except 30-39 year olds. Men in most age groups commonly reported digestive disorders. Forty men reported 44 digestive diagnoses: 36 percent for hernias, 16 percent for appendicitis, and 16 percent for intestinal disorders.

The most frequently reported diagnoses among women varied with age to some extent. Respiratory conditions were among the most frequently reported diagnoses, regardless of age. Muscles and skeleton disorders were common diagnoses for women in most age groups. Injuries were common among workers aged 30-49 years old. Women in the oldest age group frequently reported conditions of the heart / circulatory and digestive systems. Thirteen women in this age group reported 17 heart / circulatory diagnoses: 41 percent for disorders of the peripheral veins, and 18 percent for hypertension and ischemic heart diseases (restricted blood flow to a blood vessel). Sixteen women reported 17 diagnoses for digestive conditions: 35 percent for disorders of the intestines and 29 percent for conditions related to the mouth and oral cavity. Women in the youngest age group reported few diagnoses.

Figure 8 displays the frequency of reported diagnoses by job category for men and women. The types of diagnoses did not vary significantly by job category. Among women, conditions affecting the muscles and skeleton, respiratory diagnoses, genitourinary disorders, injuries, and digestive disorders were common in most job categories.

Figure 8. Most Frequently Reported Diagnoses by Job Category and Gender

Job Category	Men	Women
Professional Staff	Muscles & Skeleton (63) Respiratory (38) Digestive (27) Injury (22)	Respiratory (22) Genitourinary (16) Injury (15) Muscles & Skeleton (12)
Support Staff	Injury (20) Muscles & Skeleton (17) Psychological (12) Respiratory (12)	Respiratory (23) Muscles & Skeleton (17) Genitourinary (11) Digestive (10)
Clerical	Muscles & Skeleton (3) Genitourinary (1) Heart/Circulatory (1) Respiratory (1)	Muscles & Skeleton (26) Genitourinary (14) Digestive (13)
Crafts & Manual Labor	Muscles & Skeleton (15) Injury (13) Respiratory (13) Digestive (8) Unspecified Symptoms (8)	Respiratory (9) Muscles & Skeleton (8) Injury (7) Heart/Circulatory (5)
Security	Injury (5) Digestive (2) Muscles & Skeleton (2) Skin (2)	Nervous System (2) Muscles & Skeleton (1)
Non-Regular	Genitourinary (1) Nervous System (1)	None

Note: Numbers in parentheses represent the number of reported diagnoses.

Among men, muscles and skeleton conditions, injuries, and respiratory conditions appeared in most job categories. The number of heart / circulatory diagnoses reported was similar for men and women. However, the kinds of conditions reported by each gender were very different. Twenty-one men reported 24 such diagnoses; 16 women reported 20 diagnoses. Among men, 54 percent of the diagnoses were for high blood pressure or ischemic heart disease (restricted blood flow to a blood vessel), but among women, only 15 percent of the diagnoses were for these conditions. The most common diagnoses for women were for disorders of the peripheral veins (40 percent), primarily thrombosis (blood clot in a vein) or hemorrhoids.

Rates of Disease Occurrence

A Word about Rates: The previous section considered the **number** of absences and diagnoses among various worker groups. For example, Figure 7 shows that men reported 60 and women reported 38 diagnoses involving injuries during 2000. Men, therefore, reported 58 percent more injuries than women. As there were more than twice as many men as women at Sandia, it seems reasonable to expect more injuries among men than women. Does this mean that men were at greater risk of injuries compared with women in 2000? To correctly answer the question, the total number of men and women in the work force must be considered. To compare risk among men and women, it is necessary to calculate the injury rate for each gender. Rates are calculated by dividing the number of injury diagnoses in a given gender by the total number of employees of that gender. Multiply this number by 1,000 to get the diagnosis rate per 1,000 workers.

For example:

60 injury diagnoses ÷ 5,470 men =
.011 x 1,000 =
11 injury diagnoses per 1,000 men

38 injury diagnoses ÷ 2,627 women =
.014 x 1,000 =
14 injury diagnoses per 1,000 women

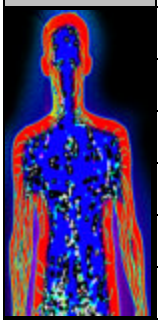
Comparing these rates now correctly suggests that the rate of reported injuries among women is greater than the rate for men. These rates are called **crude rates** because they do not account for possible differences between men and women such as age and other factors that might affect the individual's risk of having an injury. Because age is so strongly related to the risk of disease and injury, epidemiologists almost always take age into account when comparing groups. This is done by using age-specific categories, or by using statistical methods of adjustment.

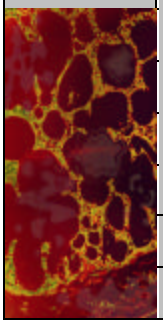
The diagnosis rate, also called the illness and injury rate, is the number of occurrences of a given disease or health condition observed over the course of a year per 1,000 workers at risk of getting that condition (see shaded box). One health condition, arthritis for example, may result in several 5-day absences over a year. Conversely, one 5-day absence may be associated with multiple diagnoses (e.g., the flu and a sprained wrist) recorded for epidemiologic surveillance.

In the following set of analyses, the four age groups previously used were collapsed into two groups, workers less than 50 years of age and those 50 or older (Figure 9). These groups were collapsed to ensure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented in Figure 9: all illnesses and injuries combined, cancer, heart / circulatory system, respiratory system, and injury. Additional information about 13 other disease groups are also analyzed and can be found in the Supplemental Tables.

In most job categories, the rates of all illnesses and injuries combined among men and women were greater for Sandia workers 50 years of age and older than for younger workers. This is the opposite of what was seen for women in 1999. It is similar to what was reported for men in 1997 and 1998. In 1999, the relationship between age and diagnosis rates was less consistent among men. Women tended to have higher rates than men in a given job category in 2000.

Figure 9. Illness and Injury Rates by Job Category, Gender, and Age

Diagnostic Category	Rate per 1,000			
All Illnesses & Injuries Combined	Job Category	Age	Men	Women
	Professional Staff	<50	50	93
		50+	95	152
	Support Staff	<50	107	186
		50+	145	210
	Clerical	<50	200	283
		50+	160	321
	Crafts & Manual Labor	<50	167	340
		50+	241	1,040
	Security	<50	116	333
		50+	238	0
	Non-Regular	<50	3	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Cancer	Job Category	Age	Men	Women
	Professional Staff	<50	3	4
		50+	6	4
	Support Staff	<50	0	0
		50+	4	0
	Clerical	<50	0	4
		50+	0	5
	Crafts & Manual Labor	<50	0	0
		50+	6	80
	Security	<50	0	0
		50+	0	0
	Non-Regular	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Heart/ Circulatory	Job Category	Age	Men	Women
	Professional Staff	<50	1	3
		50+	7	15
	Support Staff	<50	10	0
		50+	4	11
	Clerical	<50	100	4
		50+	0	29
	Crafts & Manual Labor	<50	7	0
		50+	13	200
	Security	<50	12	0
		50+	0	0
	Non-Regular	<50	0	0
		50+	0	0

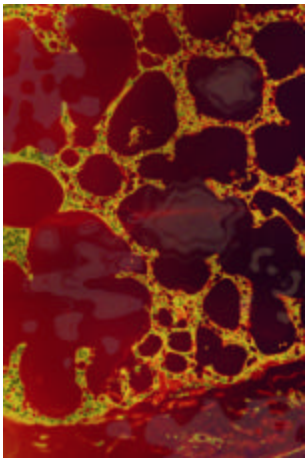
Diagnostic Category	Rate per 1,000			
Respiratory	Job Category	Age	Men	Women
	Professional Staff	<50	10	18
		50+	14	30
	Support Staff	<50	12	47
		50+	24	39
	Clerical	<50	0	31
		50+	40	24
	Crafts & Manual Labor	<50	29	106
		50+	32	160
	Security	<50	12	0
		50+	0	0
	Non-Regular	<50	0	0
		50+	0	0

Diagnostic Category	Rate per 1,000			
Injury	Job Category	Age	Men	Women
	Professional Staff	<50	6	14
		50+	7	15
	Support Staff	<50	31	6
		50+	20	11
	Clerical	<50	0	40
		50+	0	14
	Crafts & Manual Labor	<50	29	85
		50+	32	120
	Security	<50	35	0
		50+	95	0
	Non-Regular	<50	0	0
		50+	0	0

Cancer rates presented in this report are based on reported 5-day absences due to cancer. A worker may experience several periods of absence related to one cancer diagnosis due to medical complications or treatment regimens. Each absence results in the report of a cancer diagnosis. However, it does not imply that this is necessarily a new cancer. The cancer rates in this report are *not* comparable to the *incident* rates frequently published in

many articles on cancer with which you may be familiar. Incident cancer rates are based on the number of *new* cancer cases diagnosed within a given time, usually 1 year.

The likelihood that an individual in the U.S. will develop cancer increases with age. At SNL-AL, in all job categories in which cancer was reported, rates tended to be higher among older workers. Twenty-three 5-day absences related to cancer were reported: 15 diagnoses among 14 men and 8 diagnoses among 6 women. Six of the workers reporting cancer in 2000 reported cancer in previous years. One of the 6 workers reported a cancer at a site different from the previous cancer site; the man reported colon cancer in 2000 and had previously reported prostate cancer. The other man and the 4 women reported cancer at the same site in 2000 as reported previously: the oral cavity, breast (3 women), and thyroid. Among the 6 women who reported cancer in 2000, 3 Professional Staff members and 1 Crafts and Manual Labor worker reported breast cancer. Their ages ranged from early 40s to early 50s.



In 1996, we noted that 11 of the 20 men who reported cancer had prostate cancer. Nine of the 11 men reporting prostate cancer in 1996 were in the 50-59 age range and 1 was in the 40-49 age group, relatively young compared with the age distribution of men with prostate cancer reported in both national and New Mexico Tumor Registry statistics. Six of the 11 workers reporting prostate cancer were Professional workers; 3 others were Support Staff. The frequency of reported prostate cancer subsequently declined. The same age distribution was observed in the 1995 Sandia cancer data, which contained 6 prostate cancer diagnoses, 5 among men under the age of 60. In 1997, we noted only 3 new diagnoses, all among Professional workers. They were similar to the age distribution observed in previous years. Four men reported prostate cancer in 1998, all Professional Staff members who were at least 50 years old and had never reported cancer previously. Of the 3 men who reported prostate cancer in 1999, 1 had also reported prostate cancer in 1996. Two were Professional Staff and 1 was a Support Staff member. All were at least 50 years old. In 2000, 6 of the 14 men reporting cancer reported prostate cancer. None of the 6 had reported cancer previously. All were Professional Staff members who ranged in age from late 40s to early 60s. The occurrence of reported prostate cancer over time does not suggest an unusual pattern, nor is the number of reported cases unusual. Prostate cancer occurrence appears to vary substantially from year to year. For example, prostate cancer was the

most frequently reported cancer diagnosis among men at Hanford in 1999 (12 of 20 cancers reported), but only 4 cases were reported in 1998.

Women aged 50 or older had higher rates of heart / circulatory problems than did younger workers. Among men, age was not related to the rates of heart / circulatory diagnoses. Men in the Clerical group had the highest rates of heart / circulatory disorders; this group also had the highest rates in 1999. Fifty percent of the 24 diagnoses among men occurred in workers aged 50 or older. High blood pressure and ischemic heart disease (restricted blood flow through an artery) accounted for half (6 / 12) of the diagnoses. Seventeen of the 20 heart / circulatory diagnoses reported by women were among workers aged 50 or older. Three of the diagnoses involved high blood pressure or ischemic heart disease. Crafts and Manual Labor workers were at almost 3 times the risk of reporting a heart / circulatory diagnosis compared to workers in other job categories.

Women generally had higher rates of respiratory disease than did men. Crafts and Manual Labor workers had the highest rates of respiratory diagnoses among women and men. Among women, the same group had the highest rate in 1999. Crafts and Manual Laborers were almost 4 times as likely to report respiratory diagnoses compared with other workers. A similar risk increase was noted among the Crafts and Manual Labor group in 1999.

Injury rates were generally greater in older workers than in younger workers. Crafts and Manual Labor workers had the highest rates of injury among women. The Security group had the highest rates among men; this group also had the highest rates in 1999. Security workers were 5 times more likely to report an injury than were workers in other job categories. Crafts and Manual Labor workers were 4 times more likely to report an injury as workers in other job categories and were 7 times more likely to report a sprain and strain other than to the back. Security workers were 5 times more likely to report a dislocation. This group reported a similar increased risk for the same type of injury in 1999.

In other analyses, we compared the risk of illness and injury among workers classified in one job category with the risk to workers in the remaining five job categories. Clerical, Crafts and Manual Labor, and Security workers were at 2 to 3 times greater risk than were all other groups. The Crafts and Manual Labor group was at increased risk for many types of conditions: 8 times the risk for infectious diseases; 7 times the risk for symptoms, signs, and ill-defined conditions; 6 times the risk for

endocrine / metabolic / immunity disorders; 3 times the risk of skin conditions; and 2 times the risk of digestive disorders and muscles and skeleton conditions. The Security group had 7 times the risk of skin conditions and 5 times the risk of nervous system disorders compared with workers in other job categories.

Time Trends

Why Are Rates Age-Adjusted?

The injury and illness rates in this section of the report are **age-adjusted**. Differences in the age composition among groups of workers are taken into consideration in the analyses and one rate is calculated for an entire group. This allows us to make comparisons between groups of different ages. Age-adjusted rates are calculated using the age distribution of the 1970 U.S. population as a reference.

Age-adjusted rates for all illness and injury categories combined are presented in Figure 10. It is important to note that the age-adjusted rates for the years 1993 and 1994 presented in this report differ from those reported in the 1993 and 1994 *Annual Epidemiologic Surveillance Reports* due to the exclusion of diagnoses associated with maternity leave.

The age-adjusted rates for all illness and injury categories combined continued to decline over the past 8 years, but the trends were somewhat different between women and men. The rate for 2000 was virtually unchanged from the 1999 rate among both men and women. Over the 8-year period, we observed an overall 43 percent decline in the diagnosis rate for women. Among men, the decline noted from 1993 to 1994 was followed by an overall rate that remained essentially unchanged until 1998, when the rate began to decline again. Overall, the rate among men declined 46 percent over the 8 years. It is likely that the decline noted for both women and men in 1998 and 1999 to some extent reflects the addition of over 1,000 Non-Regular workers to the SNL-AL roster of active workers. These workers had no reported absences during 1998, only 7 absences in 1999, and 2 reported absences in 2000, so their addition to the roster contributed to the observed rate reduction. In the discussion that follows, any rate decreases noted from 1997 to 2000 should be considered in light of the impact of these Non-Regular workers.

We noted no important changes in the diagnosis rates for cancer, heart / circulatory conditions, respiratory disease, or injuries in either women or men during 1993-2000. Rates of muscles and skeleton disorders increased in 2000 among men and women. An increase in all types of muscles and skeleton diagnoses occurred recently among women and, to a lesser extent, among men. Among men, the increase resulted from more diagnoses reported for derangements of the knee, disc disorders, low back pain, and sciatica. Among women, the increase was the result of more diagnoses for arthritis, derangements of

the knee, and acquired deformities of the toes. Among men, the rates for disorders of the nervous and digestive systems continued to decline in 2000. Rates of digestive disorders have shown little change since 1995 among women or men. Nervous system diagnoses rates rose among women in 1999 and 2000 due to an increase in the number of eye disorders reported (Figure 11).

The significant decline in the rate for all diagnostic categories combined in 1998 among women in the Crafts and Manual Labor Group has not continued (Figure 12). We noted no consistent trend in all diagnoses combined among Clerical workers over the 8-year period. Among female clerical workers, the increase in the rate resulted from an increase in conditions of the muscles and skeleton. Clerical workers in the oldest age group reported an increase in the number of diagnoses, but no specific diagnosis was associated with this increase. An increase in diagnoses for heart / circulatory conditions, muscles and skeleton disorders, and injuries among women 50 years of age or older increased the rate among Craft and Manual Labor workers. We noted no evidence of significant change among women in 2000 for the Support Staff or Professional Staff job categories.

Over the 8-year period, the diagnosis rate declined substantially among women in Security with dramatic changes from year to year. Such wide fluctuations in the overall diagnosis rate were observed only among female Security personnel. The dramatic changes in rate among female Security workers reflect relatively small changes in the actual number of diagnoses among this small group of workers. The number of women in SNL-AL's Security job category ranged from 9 to 14 individuals over the 8-year period. In 1993, 14 diagnoses were reported among these workers; in 2000, only 3 diagnoses were reported.

Among men, we noted a modest but steady decline in the overall diagnosis rate similar to that observed in women. The decline in rates observed since 1995 among Crafts and Manual Labor workers has not continued in the past 3 years. The rate among Support workers more than doubled from 1999 to 2000. An increase in the number of diagnoses for psychological disorders contributed to this increase. There was no evidence of any important change among men in the Professional Staff job category over the 8-year period. The overall diagnosis rates for men in both the Security and Clerical groups have not been consistent over the 8-year period.

Figure 10. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men from 1993 to 2000

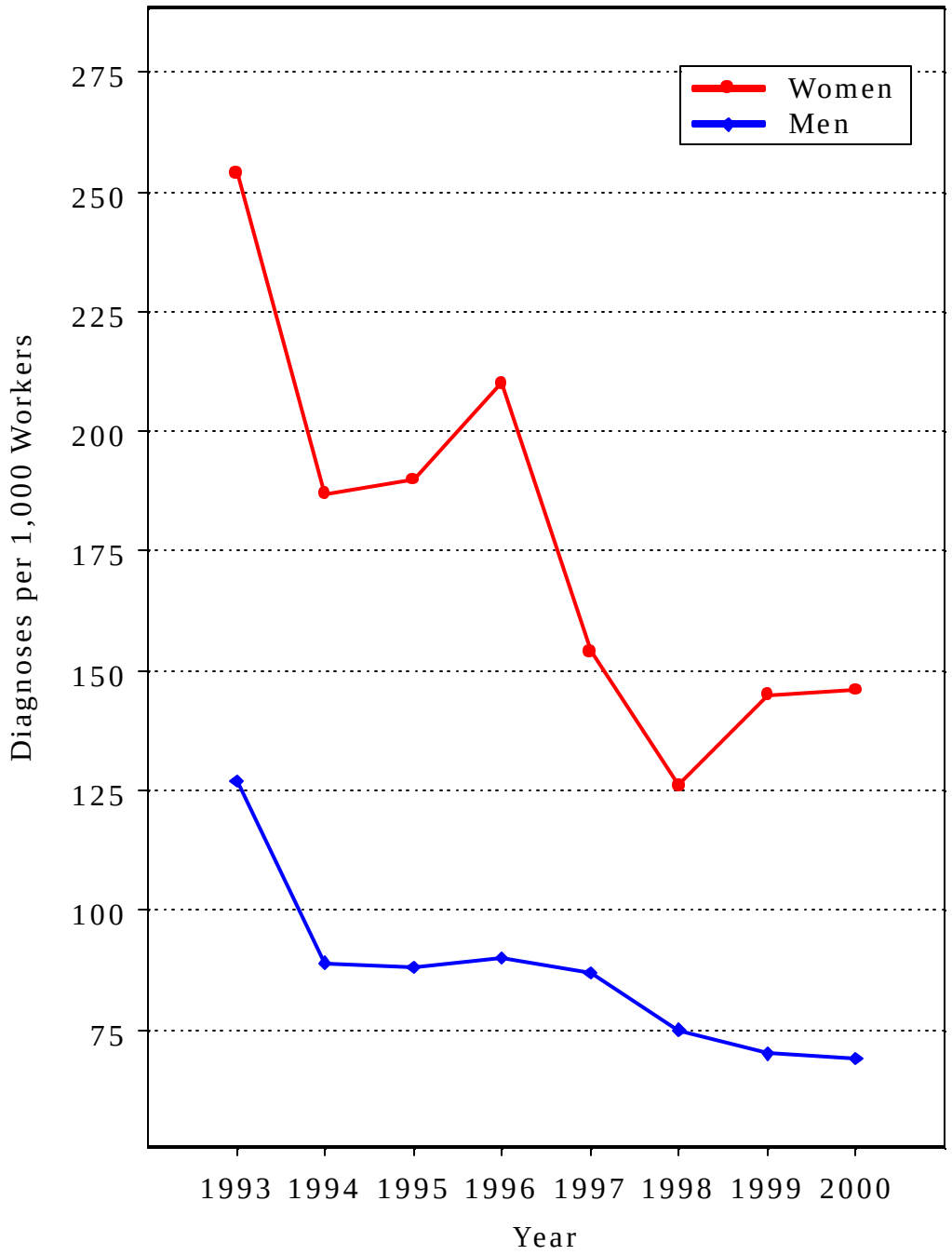


Figure 11. Age-Adjusted Rates for Selected Diagnostic Categories Among Women and Men from 1993 to 2000

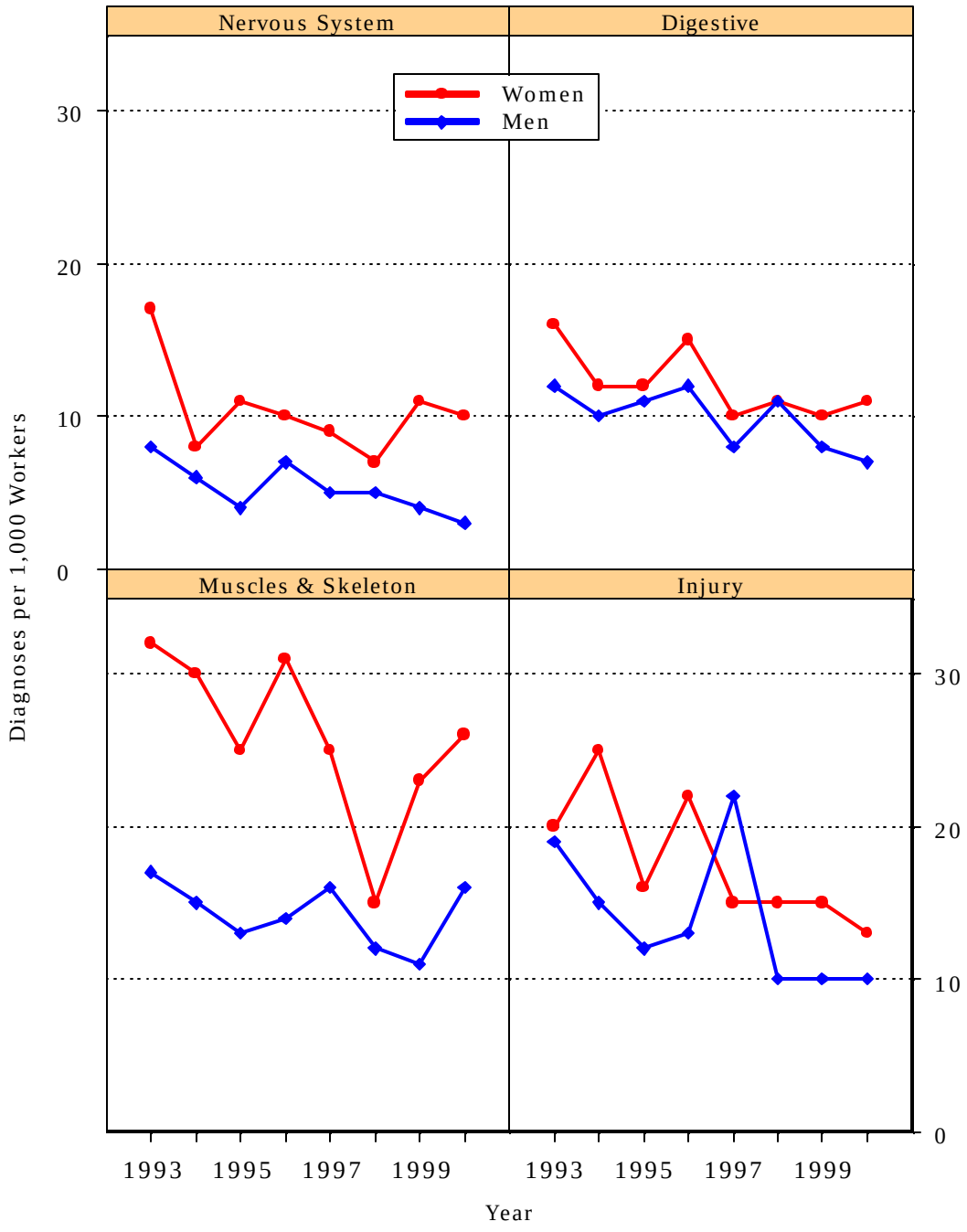
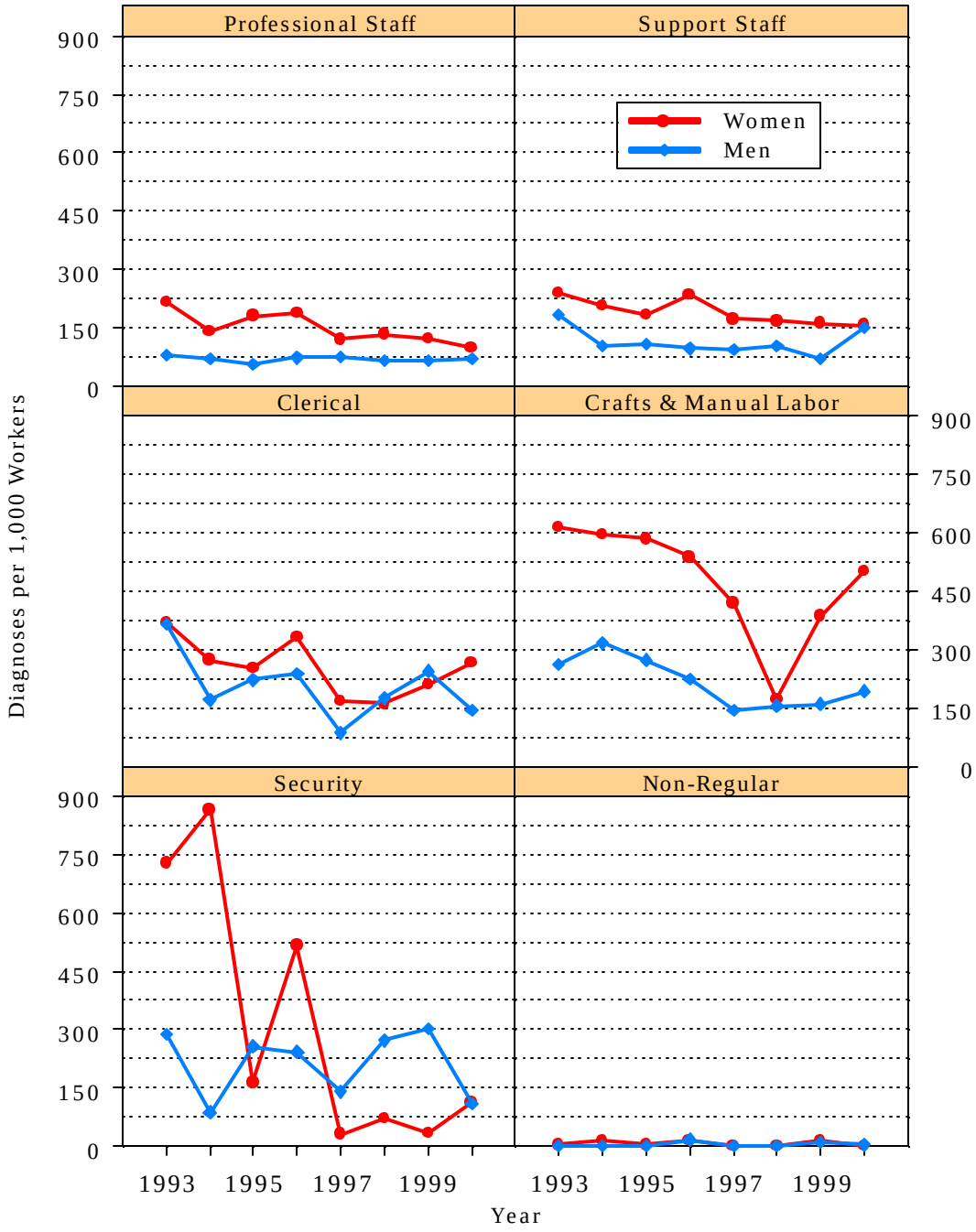


Figure 12. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1993 to 2000



Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, injury, or death that is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering control, personal protection, or medical care may be required to reduce the risk of illness or injury in the work force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as sentinel health events (see Supporting Tables). Although sentinel health events may indicate an occupational exposure, many may result from non-occupational exposures. Due to this uncertainty, sentinel health events are assessed in two categories:

Definite Sentinel Health Events: Diseases that are unlikely to occur in the absence of an occupational exposure. Asbestosis, a lung disease resulting from exposure to asbestos, is an example.

Possible Sentinel Health Events: Conditions such as lung cancer or carpal tunnel syndrome may or may not be related to occupation. Detailed occupational and non-occupational information is required to determine the work-relatedness of the illness. For example, lung cancer may result from asbestos exposure or from cigarette smoking. Carpal tunnel syndrome may result from a job requiring typing or from a hobby such as playing the piano.

One *definite* sentinel health event was reported in 2000. A female Clerical worker reported an inflammation of the lung from an allergic reaction to the environment. Seven of 812 (1 percent) diagnoses were identified as *possible* sentinel health events (Figure 13). Four of the 7 possible sentinel health events were identified as carpal tunnel syndrome. These diagnoses, reported by three workers, resulted in 89 lost calendar days. The workers included two Security workers and one Professional Staff employee. All of the carpal tunnel syndrome diagnoses occurred among workers aged 40 or older.

Figure 13. Characteristics of SHEOs by Gender

	Total Number of SHEO Diagnoses		Total Number of Days Absent	
	Men	Women	Men	Women
Definite	0	1	0	11
Possible	4	3	156	89
Total	4	4	156	100

Disabilities Among Active Workers

Five men and two women were placed on long-term disability in 2000. Medical conditions responsible for the disabilities included two cancers (both leukemia) and one each for psychological disorder, back disorder, chronic infection, post-polio syndrome, and fatigue. The disabled workers were excluded from other analyses in this report because they were not actively working. Four workers were in the Support Staff category, two were classified as Professional Staff, and one worker was a Crafts and Manual Laborer. All the disabled workers were aged 40 and above.

Deaths Among Active Workers

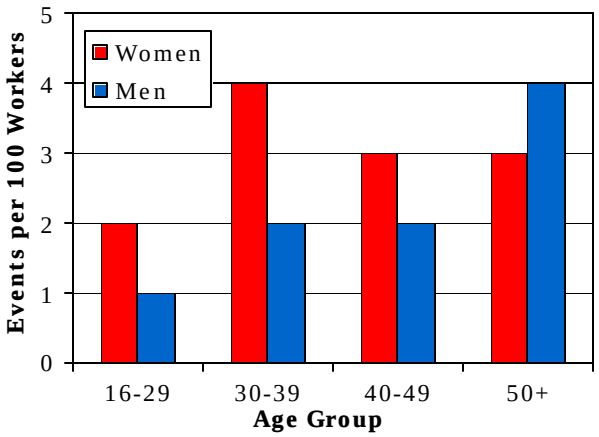
Three male Sandia workers died during 2000. The causes of death were drug intoxication, blunt head trauma, and lung cancer.

OSHA-Recordable Events

The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational injuries and illnesses that have occurred among employees and to make that information available to OSHA upon request. Employers maintain the information from these OSHA-recordable events in the OSHA 200 Log. OSHA-recordable events differ from health events captured through return-to-work clearances in at least two important respects: 1) they do not necessarily result in days lost from work, and 2) they are usually accompanied by a specific determination that they are work-related.

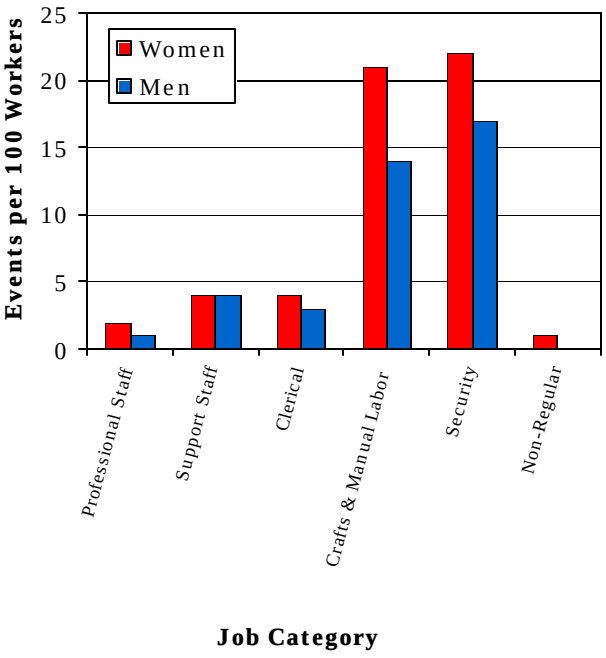
The distribution of OSHA events by gender and age is shown in Figure 14. Eighty women and 134 men had at least one OSHA-recordable event noted. The rate of OSHA-recordable events was the same for women and men (3 per 100). The rate of OSHA-recordable events increased with age among men. The highest rates were among women aged 30-39 (4 per 100) and men aged 50+ (4 per 100). The rate was higher among women than men in all age groups examined except 50+.

Figure 14. OSHA-Recordable Events by Gender and Age



The rates of OSHA-recordable events by job category and gender are shown in Figure 15. The highest rates occurred among Security workers for both women (22 per 100) and men (17 per 100). Women had higher rates than did men in all job categories except Support Staff (4 per 100 for both men and women).

Figure 15. OSHA-Recordable Events by Job Category and Gender



The average number of workdays lost or with restricted activity due to an OSHA event was 10 days. We noted a total of 937 lost or restricted workdays among women and 1,310 workdays lost or restricted among men. Women averaged 12 lost or restricted workdays compared with 9 days among men. Among women, the longest average duration of absence was observed among workers aged 30-39 (22 days); for men, the longest average duration of absence occurred among the 40-49 age group (17 days).

Overall, the average number of lost or restricted workdays was highest among workers in the Crafts and Manual Labor category (22 days). Men in this job category had an average of 17 lost or restricted workdays. The highest average lost or restricted workdays among men occurred in the Clerical group (30 days). This was based on one event where a worker in the 30-39 age group reported low back pain and hip pain radiating into the leg due to overexertion from heavy lifting. The event resulted in 30 days of restricted activity. Among women, Crafts and Manual Laborers had the highest average lost or restricted workdays (42 days).

Diagnostic and Accident Categories for OSHA-Recordable Events

The 225 OSHA events recorded on the OSHA 200 Logs involved 119 diagnoses among women and 173 diagnoses among men (Figure 16). Injuries accounted for 32 percent of the diagnoses reported among women and 51 percent of the diagnoses reported among men. The most common (43 percent) OSHA-recordable injuries were unspecified (55 percent among women and 37 percent among men). Male workers also frequently reported open wounds (29 percent).

Figure 16. OSHA-Recordable Diagnoses by Diagnostic Category and Gender

Diagnostic Category	Gender	
	Women	Men
Muscles & Skeleton	61	70
Nervous System	0	3
Respiratory	0	2
Skin	3	2
Unspecified Symptoms	17	7
Injury	38	89
Dislocations	1	1
Back Sprains & Strains	2	2
Other Sprains & Strains	3	7
Open Wounds – Head, Neck, Trunk	0	5
Open Wounds – Upper Limb	5	20
Open Wounds – Lower Limb	0	1
Superficial Injuries	1	7
Bruises	1	1
Crushing Injuries	0	2
Foreign Bodies Entering Orifice	0	7
Burns	0	1
Unspecified Injuries	21	33
Adverse Reactions to Non-Medical Substances	1	1
Adverse Reactions to External Causes	3	1

Ninety-six percent (216) of the 225 OSHA events were described as an accident in the OSHA logs (Figure 17). The majority of events were “other accidents.” Overexertion and strenuous movements made up the majority of that category. Falls made up the second most common type of accident for both women and men.

Figure 17. OSHA-Recordable Accidents by Type and Gender

Accident Category	Gender	
	Women	Men
	Number of Accidents	Number of Accidents
Motor Vehicle Traffic	0	1
Motor Vehicle Non-Traffic	0	2
Poisoning – Non-Medicinal	1	1
Falls	20	22
Natural/Environmental Factors	1	3
Submersion/Suffocation/ Foreign Bodies	0	7
Other Accidents	55	103
Struck by an Object	6	17
Caught Between Objects	1	5
Machinery	0	3
Cutting/Piercing Instrument/Object	6	20
Hot, Corrosive, or Caustic Material/Steam	1	2
Electric Current	1	0
Visible/UV Light	0	1
Overexertion/Strenuous Movements	29	44
Repetitive Trauma	11	11
Total	77	139

Rates of OSHA-Recordable Events

The rates of all OSHA-recordable events by age and job categories and gender are shown in Figures 18 and 19. The OSHA-recordable rates were highest among male Security workers aged 50+, male Clerical employees less than age 50, and women Crafts and Manual Laborers and Security workers less than age 50. We saw no consistent relationship between age and the rate of OSHA-recordable events among men; women less than age 50 tended to have higher rates than older women. Security workers had the highest rates of injuries among both men and women.

Figure 18. OSHA-Recordable Rates by Age and Job Categories Among Women, All Diagnoses Combined

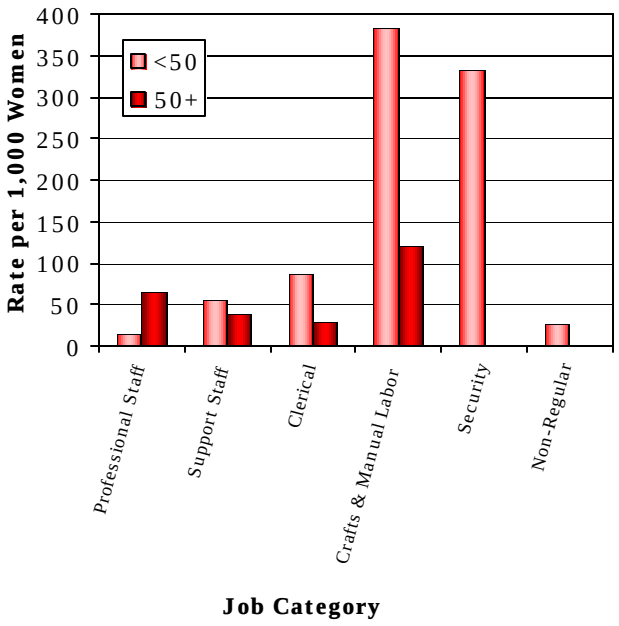
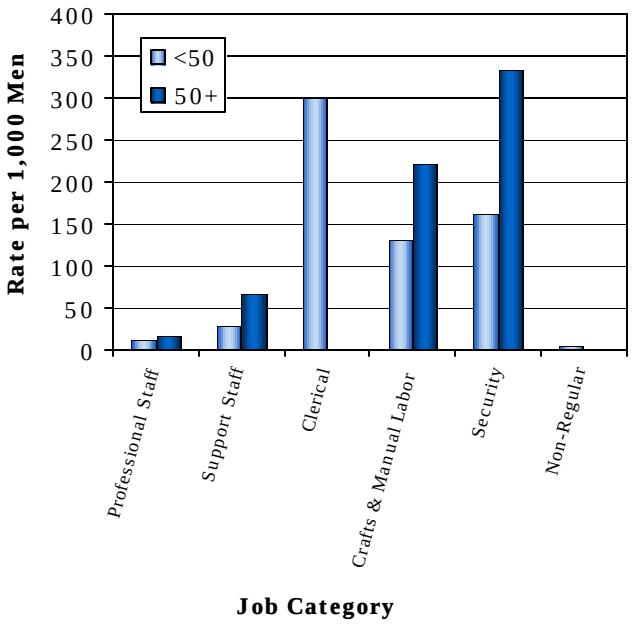


Figure 19. OSHA-Recordable Rates by Age and Job Categories Among Men, All Diagnoses Combined



We noted a dramatic increase in the number of muscles and skeleton conditions and arthropathies (diseases or conditions of the joints) in 1999 and 2000 compared with previous years. The increase, observed among both men and women, coincided with the implementation of the Incident Tracking System (ITS), which may have led to improved capture of information concerning these events.

We also observed that the overall number of injuries, and sprains and strains of the back and of other sites all decreased in 2000 among both men and women. Concomitantly, the number of "unspecified" diagnoses increased. SNL-AL decreased the length of narrative descriptions of diagnoses provided for OSHA-recordable events in 1999, a change which may also have resulted in more diagnoses being coded as "unspecified" for lack of sufficient information to assign a more specific diagnostic code. Queries to the site in an attempt to explain the changes lead to an inconclusive response.

Not all workers were at equal risk for occupational injury. Compared with other workers, Crafts and Manual Laborers were 10 times more likely to report a sprain and strain other than of the back than other groups. They also were at higher risk for an open wound to the upper limb (12 times) and complications and unspecified injuries (6 times). Security workers were also at greater risk of sprains and strains (18 times greater for sprains and strains other than of the back). They were also 5 times more likely than other workrs to report an open wound to the upper limb. Crafts and Manual Laborers and Security workers were also at greater risk for muscles and skeleton disorders (6 times and 8 times, respectively). In addition, the Crafts and Manual Laborers were at 7 times greater risk of symptoms, signs, and ill-defined conditions.

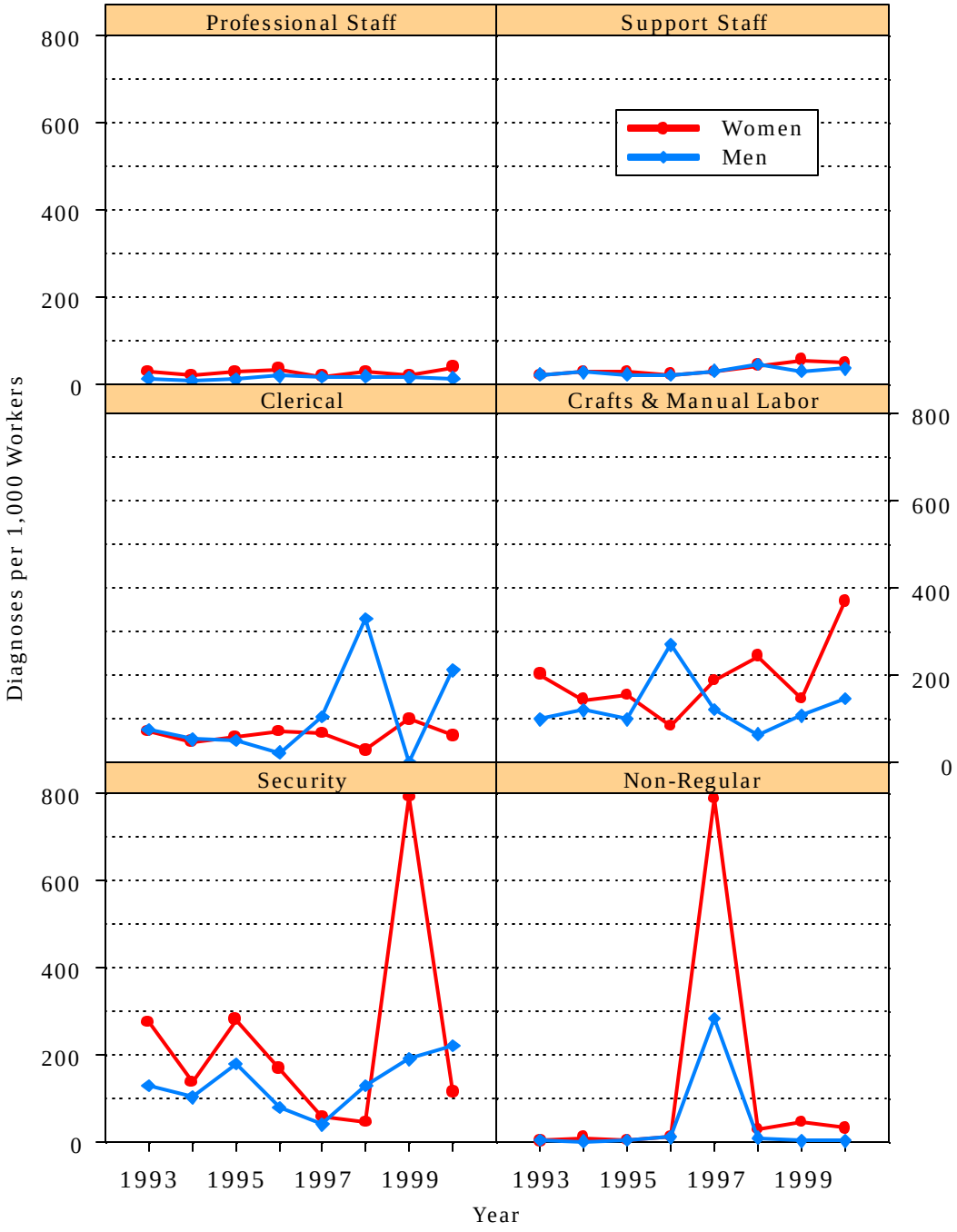
Time Trends for OSHA-Recordable Events

The age-adjusted rates for all OSHA-recordable diagnostic categories combined from 1993 to 2000 are shown in Figure 20**.** We found no indication of systematic changes in the overall rates of OSHA-recordable events among Sandia workers during the 8-year period. The rate for all diagnoses combined, which increased dramatically during 1997 for men and women in the Non-Regular group, declined to close to the 1996 level beginning in 1998. Rates remained stable over the 8-year period for women in the Professional Staff. An upward trend noted for Support Staff beginning in 1997 decreased in 2000. Although rates were more erratic among women in Crafts and Manual Labor and Security, there was no evidence of a consistent trend.

Among men, Professional Staff and Support Staff had stable rates throughout the 8-year period. The OSHA-recordable rate among men in Security declined from 1995 to 1997, but has increased since 1998. The rate among Crafts and Manual Laborers has remained unstable throughout the 8-year period, providing no evidence of a trend. The variation in the rates for men in the Clerical group is due to the small number of employees and events during this time.

The injury rates for both men and women showed a decrease in 2000, which was significant for women. The 56 percent decrease in the overall number of injury diagnoses reported by women from 1999 to 2000 was largely due to fewer diagnoses for sprains and strains.

Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women and Men by Job Category from 1993 to 2000



Glossary

Adjustment: A mathematical procedure for rates in which the effects of differences of a characteristic (such as age or gender) between groups have been removed. The purpose of adjustment is to allow comparisons between two or more groups with the effect of the differences for the characteristic removed.

Age-Adjusted Rate: A rate that has been mathematically adjusted to account for the effects of differences in the age composition between groups.

Age-Specific Rate: A rate that is calculated for a specific age group (e.g., 16 to 29 years old). Only people in the specific age group are included in the calculation of the rate.

Confidence Interval: A range of values determined by the degree of random variability in the data. The width of the confidence interval is affected by the size of the group being studied and how often the event whose true value is sought occurs. Generally, as the size of the group or the frequency of the event increases, the width of the confidence interval decreases. The level of confidence, for example a 95 percent confidence level, indicates the percentage (e.g., 95 percent) of time that the true value is expected to fall within the confidence interval if the mathematical procedure is repeated 100 times.

Demographics: Characteristics of human populations related to their size, density, age distribution, and vital status.

Diagnosis (diagnoses): Identification of a disease or health condition from signs and symptoms.

Diagnosis Rate: The number of occurrences of a given disease or health condition observed during a given time period per the number of workers at risk of getting that disease during that time period. It is usually multiplied by 100 or 1,000 to produce a rate expressed as a convenient number.

Diagnostic Category: A particular type of disease, a group of related health conditions, or diseases that all affect the same organ system.

Epidemiologic Surveillance: The ongoing evaluation of the health of a human population which is based on the collection and interpretation of demographic and health information for that population.

Epidemiology: The study of the distribution and determinants of diseases and health conditions in human populations.

ICD-9-CM Code: An abbreviation for the *International Classification of Diseases, 9th Revision, Clinical Modification.* An internationally accepted standardized system for the classification of disease and health data collected from medical records.

OSHA: An acronym for the Occupational Safety and Health Administration.

OSHA Event: An abbreviation used throughout this report for an OSHA-Recordable Event.

OSHA-Recordable Event: An accident that occurs on the job and involves fatalities (regardless of time between injury and death), time lost from work, transfer of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also included is any diagnosed occupational health event reported to the employer that is neither fatal nor results in workdays lost. By law, these events are recordable in the OSHA 200 Log.

Person-Year: A unit of measurement combining the number of people being studied with the time that each was observed equivalent to 1 person followed for 1 year. For example, 5 people followed for 1 year contribute five person-years, as do 10 people each followed for half a year.

Relative Risk: The ratio of the occurrence of a disease or health condition in one group compared to the rate of occurrence of that same disease or health condition in another group.

Explanation of Diagnostic Categories

Throughout this report, health conditions have been grouped into a number of diagnostic categories which come from the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). For the text of this report the categories are abbreviated to make the report easier to read. The following table lists the abbreviated categories used throughout the annual report and the corresponding ICD-9-CM codes found in the supporting tables.

Abbreviated Categories Used in the Annual Report	ICD-9-CM Codes
Benign Growths	210-229 235-239
Blood	280-289
Cancer	140-208 230-234
Digestive	520-579
Endocrine / Metabolic	240-279
Existing Birth Conditions	740-759
Genitourinary	580-629
Heart / Circulatory	390-459
Infections / Parasites	001-139
Injury	800-999
Miscarriage	630-676
Muscles and Skeleton	710-739
Nervous System	320-389
Psychological	290-319
Respiratory	460-519
Skin	680-709
Unspecified Symptoms	780-799

ICD-9-CM Codes

All conditions	001-V82	All reported health events
Infectious and parasitic diseases	001-139	Diseases caused by bacteria, viruses, and parasites
• Intestinal infections	001-009	Infections of the bowel or gut
• Tuberculosis	010-018	TB in the lungs and other organs
• Zoonotic bacterial diseases	020-027	Bacterial diseases that animals transmit to humans
• Other bacterial diseases	030-041	Whooping cough, diphtheria, strep throat, and gangrene
• Human Immunodeficiency Virus (HIV) infection	042	AIDS
• Poliomyelitis and other non-arthropod diseases of the central nervous system	045-049	Viral meningitis (swelling of the layers covering the brain and spinal cord); viral encephalitis (swelling of the brain); and polio
• Viral diseases accompanied by exanthem	050-057	Diseases accompanied by rashes or blisters like chickenpox, measles, shingles, and herpes
• Arthropod-borne viral diseases	060-066	Encephalitis (swelling of the brain) caused by bites from virus-carrying ticks or mosquitoes
• Other diseases caused by viruses and chlamydiae	070-079	Viral hepatitis, mumps, rabies, and mononucleosis
• Rickettsioses and other arthropod-borne diseases	080-088	Rocky Mountain spotted fever, malaria, and lyme disease
• Other spirochetal diseases	100-104	Trench mouth and Weil's disease (jaundice caused by coil-shaped bacteria)
• Mycoses	110-118	Athlete's foot; fungal infections of fingernails and toenails; and thrush
• Helminthiases	120-129	Pinworms, tapeworms, roundworms, and whipworms

• Other infectious and parasitic diseases	130-136	Lice, chiggers, scabies, and mites
• Late effects of infectious or parasitic diseases	137-139	Side effects of TB, chickenpox, or polio even though the disease is no longer active
Malignant neoplasms	140-208, 230-234	All cancers, regardless of the part of the body affected
• Lip, oral cavity, and pharynx	140-149	Lip, mouth, throat, and tongue
• Digestive organs and peritoneum	150-159	Stomach, esophagus (tube that transports food to the stomach), intestines, colon, rectum, anus, liver, pancreas, and gallbladder
• Respiratory system and intrathoracic organs	160-165	Sinuses, throat, voice box, lungs, and heart
• Bone, connective tissue, skin, and breast	170-176	Bone, muscle, ligament, tendon, blood vessels, fat, skin, and breast
• Genitourinary organs	179-189	Kidney, bladder, and cervix, ovary, uterus, and prostate
• Other and unspecified sites	190-199	Eye, brain, and thyroid
• Lymphatic and hematopoietic tissue	200-208	Leukemia, lymphoma, Hodgkin's disease, multiple myeloma, lymphosarcoma, and reticulum cell sarcoma
• Carcinoma in situ	230-234	A cancer that is confined to the site of origin (has not spread to neighboring tissue)
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	210-229 235-239	Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected
Endocrine, nutritional, and metabolic diseases and disorders of the immune system	240-279	Diseases affecting the hormone secreting glands and organs. Overactive thyroid; underactive thyroid; vitamin deficiency; diabetes; gout; and problems affecting the antibody producing system

Disorders of the blood and blood forming organs	280-289	Anemia and hemophilia (excludes leukemia)
Mental disorders	290-319	Psychiatric diagnoses - Non-psychotic disorders: depression; anxiety, fear, and stress disorders; alcoholism; drug dependence; and eating disorders, such as anorexia; Psychotic disorders: dementia, schizophrenia, and manic depression
Diseases of the nervous system and sense organs	320-389	Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma
• Inflammatory diseases of the central nervous system	320-326	Bacterial meningitis (swelling of the layers covering the brain and spine); bacterial encephalitis (swelling of the brain); and brain and spinal abscesses
• Hereditary and degenerative diseases of the central nervous system	330-337	Alzheimer's and Parkinson's disease, tremors, and Huntington's chorea
• Other disorders of the central nervous system	340-349	Multiple sclerosis (MS), cerebral palsy, epilepsy, and migraine
• Disorders of the peripheral nervous system	350-359	Nerve disorders of the face, carpal tunnel syndrome, muscular dystrophy
• Disorders of the eye	360-379	Inflammation and ulcers of the eye and eyelid; detached retina; pink eye; problems with tear ducts; glaucoma; and cataracts
• Diseases of the ear and mastoid process	380-389	Infections of the outer, middle, or inner ear; ringing of the ears; hearing loss

Diseases of the circulatory system	390-459	Rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis
• Acute rheumatic fever	390-392	High fever and joint pain with possible heart damage
• Chronic rheumatic heart disease	393-398	Long lasting swelling and damage to the heart which results from rheumatic fever
• Hypertensive disease	401-405	High blood pressure
• Ischemic heart disease (Restricted blood flow to the heart)	410-414	Heart attack and angina
• Diseases of pulmonary circulation	415-417	Blood clots in the lung and pulmonary aneurysm (bulge that develops in the wall of the pulmonary artery, which is the artery that carries blood to the lungs)
• Other forms of heart disease	420-429	Swelling of the inner lining, middle lining, or sac enclosing the heart; heart failure; and irregular heartbeat
• Cerebrovascular disease	430-438	Stroke, bleeding in the brain, and blockage or low blood flow in blood vessels of the brain
• Diseases of the arteries and capillaries	440-448	Hardening of the arteries; aneurysm (bulge that develops in the walls of arteries); and blood clots
• Diseases of the veins, lymphatics, and other circulatory system diseases	451-459	Phlebitis (swelling of a vein), thrombophlebitis (swelling of a vein which has a blood clot), varicose veins, and hemorrhoids

Diseases of the respiratory system	460-519	Colds, sinusitis, laryngitis, pneumonia, influenza, chronic bronchitis, asthma, and emphysema
• Acute respiratory infections	460-466	Colds, sore throat, sinus infections, swollen tonsils, and bronchitis
• Other diseases of the upper respiratory tract	470-478	Allergies, hay fever, sinus infections, bronchitis, and sore throat that continue for a long time
• Pneumonia and influenza	480-487	"The flu" and pneumonia caused by a bacteria or virus
• Chronic obstructive pulmonary diseases and allied conditions	490-496	Emphysema and asthma
• Pneumoconiosis and other lung diseases caused by external agents	500-508	Black lung; miners' asthma; asbestosis; silicosis; berylliosis; and conditions caused by chemical fumes and vapors
• Other diseases of the respiratory system	510-519	Pleurisy (swelling of the lining of the lungs), collapsed lung, and respiratory failure
Diseases of the digestive system	520-579	Diseases affecting the teeth and mouth, salivary glands, digestive tract, and the abdominal cavity. Examples include dental abscess, ulcers, appendicitis, hepatitis (excluding viral hepatitis), cirrhosis of the liver, gallstones, pancreatitis, abdominal hernia, and intestinal polyps
• Diseases of the oral cavity, salivary glands, and jaw	520-529	Tooth problems (too many, too few, abnormal shape or size, cavities, bleeding gums, toothaches), and infections and swelling of the mouth, jaw, and tongue
• Diseases of the esophagus, stomach, and duodenum	530-537	Ulcers of the esophagus (tube that transports food to the stomach), stomach, and small intestine; indigestion; and uncontrollable vomiting

• Appendicitis	540-543	Swelling of the appendix (rupture, surgery, or both may result)
• Hernia of the abdominal cavity	550-553	Ruptures of the groin and diaphragm (muscle which separates the chest area from the lower part of the trunk)
• Non-infectious enteritis and colitis	555-558	Crohn's disease and swelling of the intestine and colon
• Other diseases of the intestines and peritoneum	560-569	Irritable bowel syndrome, blockage of the intestine, constipation, and diarrhea
• Other diseases of the digestive system	570-579	Diseases of the liver, gallbladder, and pancreas; hepatitis; blood in stool; and bleeding in the stomach and intestine
Diseases of the genitourinary system	580-629	Diseases affecting the kidneys, the prostate, and testes; benign breast diseases; infertility (male and female); diseases of the ovary; pelvic inflammatory disease; and menstrual disorders
• Nephritis, nephrotic syndrome, and nephrosis	580-589	Swelling of the kidney; swelling of the small blood vessels in the kidney; and kidney failure
• Other diseases of the urinary system	590-599	Swelling and infection of the kidney and bladder; kidney stones; and difficulty urinating
• Diseases of the male genital organs	600-608	Enlarged prostate; swelling of the scrotum and prostate; and abscess of the prostate
• Disorders of the breast	610-611	Benign tumors, cysts, and infections of the breast
• Inflammatory disease of the female pelvic organs	614-616	Swelling of the uterus, ovary, fallopian tubes, or cervix
• Other diseases of the female genital tract	617-629	Conditions associated with menopause and postmenopause; PMS; infertility; and cramps

Complications of pregnancy, childbirth, and the puerperium	630-676	Miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; preeclampsia; and premature labor or other complications of labor
• Ectopic and molar pregnancy	630-633	Development of fetus outside the uterus and growth of cysts
• Other pregnancy with abortive outcome	634-639	Miscarriage and complications associated with miscarriage
• Complications mainly related to pregnancy	640-648	Abnormal bleeding and possible miscarriage; infections; high blood pressure caused by pregnancy; and premature labor
• Normal delivery, and other indications for care in pregnancy, labor, and delivery	650-659	Delivery requiring little or no assistance; multiple births; breech birth; and problems of the fetus or placenta which affect care of mother
• Complications occurring mainly in the course of labor and delivery	660-669	Long labor; unusually fast delivery; and abnormal bleeding after delivery
• Complications of the puerperium	670-676	Infections of the breast; blood clot in lung; and varicose veins
Diseases of the skin and subcutaneous tissue	680-709	Acne, cellulitis, sunburn, psoriasis, and seborrhea
• Infections of the skin and subcutaneous tissue	680-686	Abscesses, boils, hair-containing cysts, and pus-filled blisters
• Other inflammatory conditions of skin and subcutaneous tissue	690-698	Skin rashes caused by detergents, oils, greases, solvents, sun, food, drugs, or medicine
• Other diseases of the skin and subcutaneous tissue	700-709	Corns, calluses, heat rash, swollen hair follicles, acne, and ingrown fingernails and toenails

Diseases of the musculoskeletal system and connective tissue	710-739	Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc ("slipped disc"), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis
• Arthropathies and related disorders	710-719	Arthritis; joint pain and stiffness; and other diseases of the connective tissue which supports and connects internal organs, forms bones and blood vessel walls, and attaches to bones
• Dorsopathies	720-724	Swelling of the spine; herniated, slipped, and ruptured disc; rheumatoid arthritis of the spine; lumbago; and sciatica
• Rheumatism, excluding the back	725-729	Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis
• Osteopathies, chondropathies, and acquired musculoskeletal deformities	730-739	Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands
Congenital anomalies	740-759	Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter's syndrome
Certain conditions originating in the perinatal period	760-779	Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice
Symptoms, signs, and ill-defined conditions	780-799	Blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn

• Symptoms	780-789	Hallucinations, fainting, convulsions, dizziness, fatigue, fever, sleep disturbance, rash, headache, sore throat, chest pain, nausea, vomiting, and heartburn
• Non-specific abnormal findings	790-796	Abnormal x-ray, blood, stool, and urine test results
• Ill-defined and unknown causes of morbidity and mortality	797-799	Senility; asphyxia; respiratory arrest; nervousness; and unexplained death within 24 hours of onset of symptoms
Injury and poisoning	800-999	Dislocation of joints; sprains and strains of associated muscles; concussions; bruises; cuts; internal injuries from crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heatstroke; and complications of medical or surgical care
• Fractures, all sites	800-829	Cracks or breaks of any bone
• Dislocations	830-839	Separation of a bone from its normal socket or joint
• Sprains and strains of joints and adjacent muscles	840-848	Strains are injuries to muscle from overuse or stretching the muscle beyond its normal limit; sprains are injuries involving tearing or overextending the ligaments of a joint
• Intracranial injuries excluding those with skull fractures	850-854	Concussions; internal bruises; and bleeding within the head without a fracture of the bones of the skull
• Internal injuries of the thorax, abdomen, and pelvis	860-869	Bruising, crushing, tearing, or rupturing the chest, abdomen, and pelvis and the organs within these areas of the body
• Open wounds	870-897	Animal bites; cuts; lacerations; punctures; and amputations, excluding the arteries and veins

• Other injuries and late effects of external causes	900-999	Miscellaneous injuries, including injuries to the arteries and veins; problems that occur an extended period of time after the injury has taken place (”late effects”); superficial bruises and abrasions; burns; post-injury shock; poisoning; toxic side effects of chemicals; heatstroke; electrocution; and altitude sickness
Supplementary classifications related to personal or family history of disease	V10-V19	Covers situations in which the person is not ill or injured but has a personal or family history of problems, such as cancer, mental illness, allergies, or arthritis that may affect his or her risk of illness
Supplementary classifications related to health care for reproduction and child development	V20-V28	Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child
Contact with health services for reasons other than illness or injury	V50-V59	Care for workers who have been treated previously for an illness or injury that is no longer present but who receive care to complete treatment or prevent recurrence

NOTES