Annual Report for

Sandia National Laboratories

1994

Epidemiologic Surveillance

Prepared by the Epidemiologic Surveillance Data Center, a joint program of the Oak Ridge Institute for Science and Education in conjunction with the Office of Epidemiologic Studies, U.S. Department of Energy

This report was prepared by the staff of the Center for Epidemiologic Research, within the Environmental and Health Sciences Division of the Oak Ridge Institute for Science and Education in conjunction with the Office of Epidemiologic Studies, U.S. Department of Energy.

Questions or comments may be directed to:

Dr. Bonnie Richter or
Dr. Cliff Strader
U.S. Department of Energy
Office of Epidemiologic Studies
Mail Stop: 270CC/EH-62
19901 Germantown Road
Germantown, MD 20874-1290

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Foreword

The U.S. Department of Energy (DOE) is committed to assuring the health and safety of its workers through the development of epidemiologic surveillance activities. An epidemiologic surveillance program has been implemented at selected DOE sites during the past several years. This approach has been expanded to include surveillance of all medical conditions that result in an absence of 5 or more consecutive workdays, occupational injuries and illnesses, and deaths among active employees. This annual epidemiologic surveillance report provides the final summary of the 12-month period January 1, 1994, through December 31, 1994, for Sandia National Laboratories (SNL).

Caution is required when comparing this information with that of other DOE facilities. Interpretation of these data must take into account the occupational medicine program, health and safety practices, the composition of the work force, and potential occupational exposures unique to this facility; therefore, the data presented are pertinent only to SNL. Continuing surveillance and data examination may suggest emerging trends that change the preliminary interpretation of the data. Plans for future annual reports include a discussion of important new findings and changes occurring since previous reports and the incorporation of information from the National Center for Health Statistics and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program. This information will allow early recognition and investigation of possible work-related problems, as well as an analysis of trends over time. In addition, the results of epidemiologic surveillance will be combined with those of medical and exposure surveillance to form an integrated approach to worker health protection.

SNL at a Glance: 1994

- During 1994 the SNL work force increased by about 2.5%. No substantial changes in the occupational composition of the work force were observed.
- About 7.5% of the SNL work force experienced at least one absence of 5 or more days due to illness or injury during 1994, slightly lower than the 9% observed in 1993.
- The highest diagnosis rate for both men and women involved respiratory diseases. Respiratory diagnosis rates were more than twice as high for women as for men.
- As in 1993, diagnosis rates were about 3 times higher for hourly than for salaried workers. Diagnosis rates were consistently higher among hourly occupational groups, but the difference may reflect under-reporting of health events by salaried workers.
- In 1994, 209 Occupational Safety and Health Administration (OSHA) events were recorded, down approximately 17% from the 252 OSHA-recordable events recorded last year. The diagnosis rate for OSHA-recordable events was higher for women (35.1 per 1,000 workers) than for men (21 per 1,000 workers). For both women and men, the rate of sprains and strains was higher than the rate of other types of OSHA-recordable events.

Introduction

Epidemiologic surveillance at DOE facilities consists of regular and systematic collection, analysis, and interpretation of data on absences due to illness and injury in the work force. Its purpose is to provide an early warning system for health problems occurring among employees at participating sites. Data are collected by coordinators at each site and submitted to the Epidemiologic Surveillance Data Center, located at the Oak Ridge Institute for Science and Education, where quality control procedures and analyses are carried out. Rates of absences and rates of diagnoses associated with absences are analyzed by occupation and other relevant variables. They may be compared with the disease experience of different groups within the DOE work force and with populations that do not work for DOE to identify disease patterns or clusters that may be associated with work activities.

In this annual report, the 1994 morbidity data for the Sandia National Laboratories (SNL) are summarized. These analyses focus on absences of 5 or more consecutive workdays occurring among workers aged 15-76 years. They are arranged in five sets of tables that present: 1) the distribution of the labor force by occupational category and pay status; 2) the absences per person, diagnoses per absence, and diagnosis rates for the whole work force; 3) diagnosis rates by type of disease or injury; 4) diagnosis rates by occupational category; and 5) relative risks (RR) for specific types of disease or injury by occupational category. In addition to this information, the report contains health events that are considered recordable by the Occupational Safety and Health Administration (OSHA). The analyses of the OSHA data are presented in the same format as those presented for absences of 5 or more workdays. The OSHA-recordable events are those that occurred on the job and involve fatalities (regardless of the time between the injury and death); lost workday cases other than fatalities; and nonfatal cases without lost workdays resulting in transfer to another job, termination of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also recordable are any diagnosed occupational health events reported to the employer that are neither fatal nor result in lost workdays. Deaths occurring among active workers are listed separately; they are not included in any tables. All rates presented in this report are age-adjusted (see glossary) and represent the number of diagnoses reported per 1,000 persons in 1 year.

Throughout this report, the symbol "NA" means "not available" or "not applicable." An empty cell in a table indicates that the value of the cell is zero or that the value cannot be computed.

The tables show the results of analyses of diagnoses resulting from absences. An *absence* is defined as a period of 5 or more consecutive workdays away from work due to some health problem such as an illness or injury. In tables presenting analyses of *diagnoses*, each diagnosis is counted because a diagnosis is for a specific illness or injury. A worker can have more than one diagnosis related to one absence from work. For example, a worker's single absence might involve both a back injury and pneumonia. Unlike analyses of absences, analyses of diagnoses focus on the rates of occurrence of specific types of disease and injury. Thus the worker with one absence in which he had a back injury and pneumonia would be counted twice in the analysis of diagnoses, because two separate diagnoses are recorded for this one absence.

The data included in this report are supplemental to, but do not replace those reported in other safety, industrial hygiene, and health physics reports prepared by DOE. There has been no attempt to validate diagnoses with medical records, pathology, or other laboratory reports. Also, there has been no attempt to validate occupational information reported by the site. For reporting purposes, occupational titles have been grouped into broad categories within which a great deal of diversity in tasks and exposures is likely to exist. Additional material outlining the methods used and explaining the diagnostic categories and frequently used terms can be found on the inside back cover.

Facility Overview

The original mission of SNL was research and development of nuclear weapons. However, the scope of its mission has expanded to include work on other advanced military technologies, energy programs, arms verification and control technology, and applied research.

The SNL headquarters and main laboratory are located near Albuquerque, New Mexico, at Kirtland Air Force Base. Until October 1, 1993, the multi-program research and development facility was managed and operated by American Telephone and Telegraph for DOE.

The facility, which is now managed and operated by Lockheed Martin Energy Systems, has state-of-the-art equipment for environmental testing, radiation research, combustion research, computing, and microelectronics research and production. In addition to a primary standards laboratory, the facility also includes transonic, supersonic, and hypersonic wind tunnels as well as design, fabrication, and process development laboratories.

Labor Force by Occupational Category and Salary Status, 1994

During 1994, there were 8,680 employees (aged 15-76) identified by SNL as participants in epidemiologic surveillance. Sixty-nine percent (5,973 workers) were men, and 31% (2,707 workers) were women. Seventy-one percent (6,123 workers) were Caucasian, and 21% (1,841 workers) were Hispanic. The remaining 8% (716 workers) included African Americans, Asians, and Native Americans.

The composition of the labor force by occupational category and salary status is given in Table 1A; the change in labor force by year is depicted in Table 1B. The occupational categories used in these tables are based on the occupation and industry codes created by the Bureau of the Census in 1980. Because workers can change occupational category over the course of a year, workers were counted in the occupational category where they spent most of their time during the year.

A small number of workers (11%) were placed in the "non-regular" category. This category includes both salaried and hourly workers who worked part-time or at regularly scheduled intervals (for example, the first 2 weeks of each month).

Seventy-two percent of the workers were salaried, whereas 17% were hourly. The occupational categories with the largest number of employees were professional staff (50%) and support staff (22%).

Compared with 1993, the labor force in 1994 increased by 208 employees (2.5%). The biggest increase was among non-regular workers whose numbers increased 29.8%. The occupational category with the largest percentage decrease was crafts and manual labor with a 6.0% decrease from 1993.

	Occupational Category	Number of Workers in 1994	Number of Workers in 1993	% Change from Last Year
Salaried	Professional	4,342	4,247	+2.2
	Support	1,908	1,999	-4.6
	Subtotal	**6,250**	**6,246**	**+0.1**
Hourly	Clerical	693	666	+4.1
	Crafts and Manual Labor	630	670	-6.0
	Security	141	146	-3.4
	Subtotal	**1,464**	**1,482**	**-1.2**
	Non-Regular	966	744	+29.8
	TOTAL	**8,680**	**8,472**	**+2.5**

Table 1A. Labor Force by Occupational Category and Salary Status

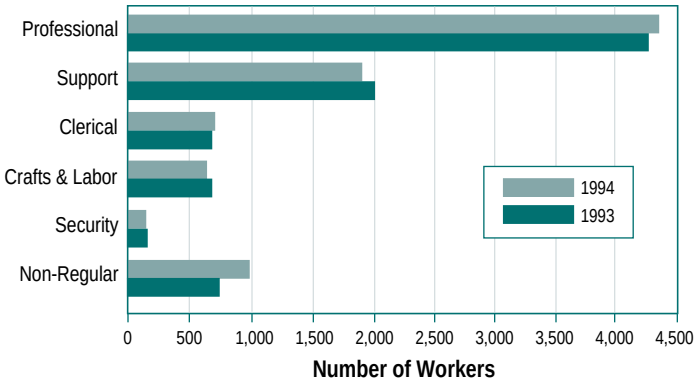

Table 1B. Change in Labor Force by Year

Absences Among Work Force, 1994

Absences per Person. In 1994, 651 SNL employees reported an absence of 5 or more consecutive workdays because of illness or injury. Eighty (12%) of these workers had two or more absences. A total of 751 absences were reported by the employees (Table 2A).

Diagnoses per Absence. A total of 1,140 diagnoses were associated with the 751 absences of 5 or more consecutive workdays. Multiple diagnoses were reported for 261 (35%) absences (Table 2B).

Diagnosis Rates for Absences. In 1994, 1,140 diagnoses noted for absences of 5 or more consecutive workdays yielded an age-adjusted rate of 126.0 diagnoses per 1,000 persons. The diagnosis rate for women (205.3 per 1,000) was more than double the rate for men (89.4 per 1,000) (Table 2C).

Employee Category	Number of Workers in 1994	Number of Absences					Total Persons Absent at Least Once	Total Number of Absences
		0	1	2	3	4		
Men	5,973	5,618	314	33	5	3	355	407
Women	2,707	2,411	257	31	7	1	296	344
TOTAL	**8,680**	**8,029**	**571**	**64**	**12**	**4**	**651**	**751**

Table 2A. Absences per Person

Employee Category	Number of Diagnoses per Absence					Total Number of Absences	Total Number of Diagnoses†
	1	2	3	4	5+		
Men	287	74	28	11	7	407	601
Women	203	102	25	13	1	344	539
TOTAL	**490**	**176**	**53**	**24**	**8**	**751**	**1,140**

Table 2B. Diagnoses per Absence

Employee Category	Number of Workers in 1994	Total Number of Diagnoses†	Crude Rate per 1,000	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Men	5,973	601	100.6	89.4	82.1	97.4
Women	2,707	539	199.1	205.3	187.5	224.7
TOTAL	**8,680**	**1,140**	**131.3**	**126.0**	**118.5**	**134.1**

Table 2C. Diagnosis Rates for Absences

† Includes all diagnoses reported with an absence of 5 or more days, including absences for pregnancy and delivery.
* Standardized to age distribution of 1970 U.S. population

Diseases and Injuries by Diagnostic Category, 1994

The age-adjusted diagnosis rate for each diagnostic category is given for all workers in Table 3. Tables 4 and 5 show diagnosis rates by gender to further describe the disease and injury patterns in the work force. Diagnoses associated with pregnancy, labor, and delivery are described in Table 6.

For all workers, the three diagnostic categories with the highest rates were diseases of the respiratory system (23.5 per 1,000), pregnancy and childbirth (20.7 per 1,000), and diseases of the musculoskeletal system (18.4 per 1,000). Together these three categories accounted for 39% of all diagnoses.

Men. The diagnostic category with the highest rate among men was diseases of the respiratory system (16.2 per 1,000), with 112 diagnoses reported among 67 men. This accounted for 19% of all diagnoses among men. Of the 112 diagnoses, 52 were related to upper respiratory diseases, 28 each to pneumonia/bronchitis and chronic respiratory conditions, and 4 to other respiratory diseases. Twenty-nine men had multiple diagnoses.

The second highest rate, accounting for 17% of the total diagnoses, was injury and poisoning (15.3 per 1,000), with 105 diagnoses reported for 82 men. Within this category, several subcategories had relatively high numbers of diagnoses. Sprains and strains accounted for 28% of these diagnoses, with 29 diagnoses among 26 men. Twelve diagnoses were sprains and strains of the lower extremities, seven of the shoulder, and ten of the back. Three men had multiple diagnoses. "Other" injuries accounted for 27% of the injury and poisoning diagnoses, with 28 diagnoses among 27 men. These diagnoses included ten unspecified injuries, eight complications of medical or surgical care, three contusions, two abrasion/friction burns, two allergies, one toxic or adverse effects due to venom, one heat stroke, and one spinal cord injury. One man had multiple diagnoses. Fractures accounted for 20% of the injury and poisoning diagnoses, with 21 diagnoses among 19 men. These diagnoses included eight fractures to the lower extremities, five to the arm, four to the ribs, two to the vertebral column, and two to the face.

Two men had multiple diagnoses. Dislocations also accounted for 20% of the injury and poisoning diagnoses, with 21 diagnoses among 19 men. These diagnoses included 17 dislocations of the knee, and 1 each of the shoulder, finger, and ankle, and an ill-defined location.

Musculoskeletal disorders (14.7 per 1,000) ranked third, with 99 diagnoses reported for 76 men. Thirty-four diagnoses were related to dorsopathies (spinal disorders), 42 to joint disease, 18 to rheumatism (excluding the back), 4 to deformities to the extremities, and 1 unspecified injury to the bone. Twenty men had multiple diagnoses.

Seventeen cancer diagnoses were reported among 15 men in 1994. Eight men had a total of eight diagnoses of prostate cancer. Two men had a total of two diagnoses of skin cancer; one man had two diagnoses for malignant melanoma of the skin. One man each had a diagnosis for cancer of the colon, liver, bladder, and brain. The man with liver cancer also had one diagnosis for secondary lung cancer.

Women. The diagnostic category with the highest rate among women was diseases of the respiratory system (41.6 per 1,000), with 107 diagnoses reported among 74 women. This accounted for 20% of all diagnoses among women. Fifty-two diagnoses were related to upper respiratory diseases, 28 to chronic respiratory conditions, 23 to pneumonia/bronchitis, and 4 to other respiratory diseases. Twenty-one women had multiple diagnoses.

The category with the second highest rate, accounting for 13% of the total diagnoses, was diseases of the musculoskeletal system (30.2 per 1,000), with 71 diagnoses among 50 women. Of the 71 diagnoses, 23 were related to rheumatism (excluding the back); 21 to dorsopathies (spinal disorders); 19 to deformities, including 1 scoliosis; 7 to joint disease; and 1 for inflammation to the bone and cartilage. Fifteen women had multiple diagnoses.

Injury and poisoning (24.5 per 1,000) ranked third, with 61 diagnoses reported for 44 women. Within this category, three subcategories had relatively high numbers of diagnoses. Sprains and strains accounted for 41% of these diagnoses, with 25 diagnoses for 18 women. Twenty-two diagnoses were for sprains and strains to the back, and three were to the lower extremities. Seven women had multiple diagnoses. "Other" injuries accounted for 25% of the injury and poisoning diagnoses, with 15 diagnoses among 13 women. These diagnoses included five complications of medical or surgical care, three unspecified injuries, two contusions of the extremities, two unspecified effects of drugs, medicinal, or biological substances; and one diagnosis each for a late effect of an injury, a crushing injury to the thigh, and a poisoning by pituitary hormones. Two women had multiple diagnoses.

Eight cancer diagnoses were reported among eight women in 1994. Four women each had a diagnosis of breast cancer; one woman each had a diagnosis for cancer of the uterus, ovary, thyroid, and gall bladder.

Table 3. Diseases and Injuries by Diagnostic Category - Men and Women

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	30	3.3	2.3	4.9
Malignant neoplasms	140-208, 230-234	25	3.1	2.1	4.6
• Digestive organs	150-159	3	0.4	0.1	1.3
• Respiratory system	160-165	0			
• Breast	174-175	4	0.4	0.2	1.2
• Genitourinary	179-189	11	1.4	0.8	2.6
• Nervous system	191-192	1	0.1	0.0	0.8
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	13	1.4	0.8	2.4
Endocrine and metabolic diseases	240-279	17	1.7	1.1	2.8
Blood and blood-forming organs	280-289	3	0.2	0.1	0.8
Mental disorders	290-319	25	2.8	1.8	4.3
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	59	6.0	4.6	7.9
Circulatory system	390-459	60	6.7	5.2	8.7
• Hypertension	401	8	0.8	0.4	1.6
• Acute myocardial infarction	410	8	0.9	0.4	1.7
• Ischemic disease, not M.I.	411-414, 429.2	11	1.3	0.7	2.4
• Cerebrovascular disease	430-438	4	0.5	0.2	1.4
Respiratory system	460-519	219	23.5	20.5	27.1
• Upper respiratory	460-465, 470-478	104	11.2	9.1	13.7
• Pneumonia/bronchitis	466, 480-487	51	5.4	4.1	7.2
• Chronic respiratory conditions	490-496	56	6.0	4.6	7.9
Digestive system	520-579	98	10.6	8.6	13.0
• Hernias	550-553	22	2.5	1.6	3.8
• Gall bladder disease	574-575	19	1.9	1.2	3.1
Genitourinary system	580-629	69	7.2	5.7	9.3
• Benign prostatic hypertrophy	600	1	0.1	0.0	0.8
• Endometriosis	617	4	0.4	0.1	1.0
• Ovarian cysts	620.0-620.2	4	0.4	0.2	1.2
• Female genital pain/bleeding	625-626	11	1.2	0.6	2.1
Pregnancy and childbirth[1]	630-676	53	20.7	15.5	27.8
Skin and subcutaneous tissue	680-709	16	1.5	0.9	2.6
Musculoskeletal system	710-739	170	18.4	15.7	21.5
• Dorsopathies	720-724	55	5.9	4.5	7.8
Congenital anomalies	740-759	5	0.5	0.2	1.1
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	58	6.6	5.0	8.7
Injury and poisoning	800-999	166	17.6	15.0	20.7
• Fractures, all sites	800-829	33	3.4	2.3	4.8
• Dislocations	830-839	27	2.8	1.9	4.2
• Sprains and strains	840-848	54	5.8	4.4	7.7
• Intracranial injuries	850-854	3	0.4	0.1	1.4
• Internal injuries	860-869	1	0.1	0.0	0.5
• Open wounds	870-897	5	0.5	0.2	1.1
• Other injuries	900-999	43	4.6	3.4	6.4
Health status/health service contract	V01-V82	54	7.3	5.4	9.9
• Family history of health problems	V10-V19	6	0.6	0.3	1.3
• Circumstances related to reproduction/development	V20-V28	41	5.8	4.1	8.2
• Specific procedure/aftercare	V50-V59	5	0.6	0.3	1.6
Total minus pregnancies		**1,087**	**118.5**	**111.3**	**126.2**
TOTAL		**1,140**	**126.0**	**118.5**	**134.1**

† Includes all diagnoses reported with an absence of 5 or more days.
* Standardized to age distribution of 1970 U.S. population.
[1] Only women aged 18-45 were included in the calculation of the rates for these diagnostic categories.

Table 4. Diseases and Injuries by Diagnostic Category - Men

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	17	3.1	1.8	5.4
Malignant neoplasms	140-208, 230-234	17	2.9	1.8	4.6
• Digestive organs	150-159	2	0.3	0.1	1.4
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	9	1.6	0.8	3.1
• Nervous system	191-192	1	0.1	0.0	1.0
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	5	0.8	0.3	2.0
Endocrine and metabolic diseases	240-279	14	1.9	1.1	3.3
Blood and blood-forming organs	280-289	2	0.2	0.1	1.0
Mental disorders	290-319	3	0.7	0.2	2.8
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	37	5.5	3.9	7.8
Circulatory system	390-459	49	7.4	5.6	9.9
• Hypertension	401	5	0.7	0.3	1.7
• Acute myocardial infarction	410	8	1.2	0.6	2.3
• Ischemic disease, not M.I.	411-414, 429.2	11	1.7	0.9	3.1
• Cerebrovascular disease	430-438	4	0.7	0.3	1.9
Respiratory system	460-519	112	16.2	13.3	19.6
• Upper respiratory	460-465, 470-478	52	7.7	5.8	10.3
• Pneumonia/bronchitis	466, 480-487	28	3.8	2.6	5.6
• Chronic respiratory conditions	490-496	28	4.0	2.8	5.9
Digestive system	520-579	66	9.8	7.6	12.6
• Hernias	550-553	20	3.1	2.0	4.8
• Gall bladder disease	574-575	11	1.6	0.9	2.8
Genitourinary system	580-629	18	2.5	1.6	4.0
• Benign prostatic hypertrophy	600	1	0.1	0.0	1.0
• Endometriosis	617	NA			
• Ovarian cysts	620.0-620.2	NA			
• Female genital pain/bleeding	625-626	NA			
Pregnancy and childbirth	630-676	NA			
Skin and subcutaneous tissue	680-709	9	1.1	0.6	2.1
Musculoskeletal system	710-739	99	14.7	11.9	18.2
• Dorsopathies	720-724	34	4.8	3.4	6.8
Congenital anomalies	740-759	2	0.3	0.1	1.1
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	36	5.6	3.9	7.9
Injury and poisoning	800-999	105	15.3	12.4	18.8
• Fractures, all sites	800-829	21	3.2	2.0	5.1
• Dislocations	830-839	21	3.2	2.0	5.2
• Sprains and strains	840-848	29	4.2	2.8	6.3
• Intracranial injuries	850-854	1	0.1	0.0	1.0
• Internal injuries	860-869	0			
• Open wounds	870-897	5	0.6	0.3	1.5
• Other injuries	900-999	28	3.9	2.7	5.7
Health status/health service contract	V01-V82	10	1.4	0.8	2.7
• Family history of health problems	V10-V19	4	0.6	0.2	1.5
• Circumstances related to reproduction/development	V20-V28	1	0.1	0.0	0.8
• Specific procedure/aftercare	V50-V59	4	0.6	0.2	1.7
TOTAL		**601**	**89.4**	**82.1**	**97.4**

† Includes all diagnoses reported with an absence of 5 or more days.
* Standardized to age distribution of 1970 U.S. population.

Table 5. Diseases and Injuries by Diagnostic Category - Women

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	13	4.4	2.5	8.0
Malignant neoplasms	140-208, 230-234	8	3.5	1.7	7.5
• Digestive organs	150-159	1	0.7	0.1	5.3
• Respiratory system	160-165	0			
• Breast	174-175	4	1.7	0.6	5.1
• Genitourinary	179-189	2	0.7	0.2	3.0
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	8	2.7	1.3	5.8
Endocrine and metabolic diseases	240-279	3	1.0	0.3	3.3
Blood and blood-forming organs	280-289	1	0.3	0.0	1.8
Mental disorders	290-319	22	7.7	5.0	11.8
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	22	7.7	4.9	11.9
Circulatory system	390-459	11	4.6	2.4	8.7
• Hypertension	401	3	1.0	0.3	3.2
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	107	41.6	33.9	51.1
• Upper respiratory	460-465, 470-478	52	19.5	14.5	26.1
• Pneumonia/bronchitis	466, 480-487	23	9.1	5.8	14.1
• Chronic respiratory conditions	490-496	28	11.5	7.7	17.3
Digestive system	520-579	32	11.6	8.1	16.6
• Hernias	550-553	2	0.6	0.1	2.4
• Gall bladder disease	574-575	8	2.9	1.4	5.9
Genitourinary system	580-629	51	18.4	13.7	24.6
• Benign prostatic hypertrophy	600	NA			
• Endometriosis	617	4	1.3	0.5	3.5
• Ovarian cysts	620.0-620.2	4	1.6	0.5	4.8
• Female genital pain/bleeding	625-626	11	4.4	2.3	8.3
Pregnancy and childbirth[1]	630-676	53	20.7	15.5	27.8
Skin and subcutaneous tissue	680-709	7	3.0	1.3	6.8
Musculoskeletal system	710-739	71	30.2	23.6	38.8
• Dorsopathies	720-724	21	8.2	5.3	12.7
Congenital anomalies	740-759	3	0.8	0.3	2.5
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	22	8.0	5.2	12.4
Injury and poisoning	800-999	61	24.5	18.7	32.2
• Fractures, all sites	800-829	12	4.3	2.3	8.2
• Dislocations	830-839	6	2.1	0.9	4.9
• Sprains and strains	840-848	25	10.5	6.9	15.9
• Intracranial injuries	850-854	2	1.5	0.4	6.0
• Internal injuries	860-869	1	0.3	0.0	1.8
• Open wounds	870-897	0			
• Other injuries	900-999	15	5.8	3.4	10.1
Health status/health service contract	V01-V82	44	16.4	12.0	22.5
• Family history of health problems	V10-V19	2	0.7	0.2	3.0
• Circumstances related to reproduction/development	V20-V28	40	14.2	10.3	19.7
• Specific procedure/aftercare	V50-V59	1	0.7	0.1	5.3
Total minus pregnancies		**486**	**186.5**	**169.5**	**205.2**
TOTAL		**539**	**205.3**	**187.5**	**224.7**

† Includes all diagnoses reported with an absence of 5 or more days.
* Standardized to age distribution of 1970 U.S. population.
[1] Only women aged 18-45 were included in the calculation of the rates for these diagnostic categories.

Diagnoses Associated with Pregnancy, Labor, and Delivery

During 1994, 53 pregnancy-related diagnoses were reported among 46 women (Table 6). Six women had multiple diagnoses. There were 17 diagnoses for complications related to pregnancy — 3 for complications of labor, delivery, and puerperium; 1 diagnosis for ectopic and molar pregnancy/abortive outcomes; and 1 for other indications for care in pregnancy, labor, and delivery. Thirty-one women had normal deliveries.

Diagnoses by Occupational Category, 1994

During 1994, the age-adjusted diagnosis rate for all employees (Table 7) was more than 3 times higher among hourly workers than salaried workers (351.4 versus 110.3 per 1,000 persons). Workers in the crafts and manual labor category, who comprised 7% of the work force, had the highest diagnosis rate (352.4 per 1,000), with 232 diagnoses reported for 116 workers. Clerical workers had the second highest diagnosis rate (325.5 per 1,000), with 191 diagnoses reported among 104 persons. Security workers ranked third, with 31 diagnoses reported for 16 workers (215.6 per 1,000). Non-regular workers had the lowest rate (8.0 per 1,000 workers), with nine diagnoses among six workers.

Men. The diagnosis rate among men (Table 8) was 3 times higher for hourly workers (239.7 per 1,000) than for salaried workers (75.3 per 1,000). Crafts and manual labor workers had the highest rate (316.0 per 1,000), with 172 diagnoses reported for 92 men. The second highest rate was among the clerical workers (170.2 per 1,000), with 25 diagnoses reported among 10 men. Support staff ranked third, with 130 diagnoses reported among 76 men (101.6 per 1,000). Non-regular workers had the lowest rate (1.5 per 1,000), with two diagnosis for two men.

Women. The diagnosis rate among women (Table 9) was twice as high for hourly workers (410.3 per 1,000) as for salaried workers (202.3 per 1,000). Security workers had the highest rate (910.9 per 1,000), with 14 diagnoses reported among 5 women. The second highest rate was among the crafts and manual labor workers (604.1 per 1,000), with 60 diagnoses reported among 24 women. Clerical workers ranked third, with 166 diagnoses reported among 94 women (328.6 per 1,000). Non-regular workers had the lowest rate (18.9 per 1,000), with seven diagnoses among four women. Women had higher diagnosis rates than the men; this suggests a greater tendency among women to report injury or illness.

Table 6. Diagnoses Associated with Pregnancy, Labor, and Delivery

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Ectopic and Molar Pregnancy/Abortive Outcome	630-639	1	0.3	0.0	1.8
Complications Related to Pregnancy	640-648	17	7.4	4.5	12.3
Normal Delivery	650	31	11.7	8.0	17.2
Other Indications for Care in Pregnancy, Labor, and Delivery‡	651-659	1	0.3	0.0	1.8
Complications of Labor, Delivery, and Puerperium	660-676	3	1.1	0.3	3.8
TOTAL		**53**	**20.7**	**15.5**	**27.8**

† Includes all diagnoses reported with an absence of 5 or more days.
* Only women aged 18-45 were included in the calculation of the rates for these diagnostic categories.
‡ Includes delivery by cesarian section and multiple births.

Table 7. Diagnoses by Occupational Category - Men and Women

	Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional	4,342	380	85.5	74.5	98.0
	Support	1,908	297	165.1	142.0	192.0
	Subtotal	**6,250**	**677**	**110.3**	**99.5**	**122.3**
Hourly	Clerical	693	191	325.5	268.3	395.0
	Crafts and Manual Labor	630	232	352.4	262.2	473.8
	Security	141	31	215.6	137.6	337.8
	Subtotal	**1,464**	**454**	**351.4**	**306.5**	**402.9**
	Non-Regular	966	9	8.0	3.7	17.5
	TOTAL	**8,680**	**1,140**	**126.0**	**118.5**	**134.1**

Table 8. Diagnoses by Occupational Category - Men

	Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional	3,517	255	68.7	57.6	81.9
	Support	1,187	130	101.6	83.2	124.0
	Subtotal	**4,704**	**385**	**75.3**	**65.9**	**86.0**
Hourly	Clerical	87	25	170.2	110.5	262.2
	Crafts and Manual Labor	553	172	316.0	218.1	457.8
	Security	127	17	86.9	48.6	155.2
	Subtotal	**767**	**214**	**239.7**	**199.3**	**288.4**
	Non-Regular	502	2	1.5	0.4	6.2
	TOTAL	**5,973**	**601**	**89.4**	**82.1**	**97.4**

Table 9. Diagnoses by Occupational Category - Women

	Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional	825	125	157.9	119.2	209.1
	Support	721	167	264.5	216.8	322.8
	Subtotal	**1,546**	**292**	**202.3**	**174.5**	**234.5**
Hourly	Clerical	606	166	328.6	268.8	401.6
	Crafts and Manual Labor	77	60	604.1	466.7	782.0
	Security	14	14	910.9	500.1	1,659.3
	Subtotal	**697**	**240**	**410.3**	**346.6**	**485.8**
	Non-Regular	464	7	18.9	7.9	45.3
	TOTAL	**2,707**	**539**	**205.3**	**187.5**	**224.7**

† Includes all diagnoses reported with an absence of 5 or more days, including absences for pregnancy and delivery.
* Standardized to age distribution of 1970 U.S. population.

Deaths Among Active Workers, 1994

There were 15 deaths reported among active workers in 1994. Five were due to cancer, three to external causes, two to diseases of the genitourinary system, two to endocrine and metabolic diseases, two to heart disease, and one to an infectious disease.

Relative Risk for All Diseases and Injuries by Occupation

In Table 10, the risk of one or more absences associated with selected diagnostic categories for specific occupational categories is compared with all other occupational categories in the SNL work force. This comparison takes into account the possible confounding effects of age and gender. In contrast to the previous series of tables, these analyses examine the risk of a worker having one or more absences for 5 or more consecutive workdays during 1994. This was done to minimize the problem associated with one person having multiple absences for the same condition.

Throughout this report, various tables and discussions refer to rates of illness or injury. Rates in this report reflect the number of events (e.g., absences, diagnoses) per 1,000 "person-years." A "person-year" is a unit of measurement combining persons and time; it is equivalent to one person followed up for 1 year. When an individual worker remains in the work force for the entire year, she or he contributes one person-year to the calculation of rates of disease and injury presented in the report. Rates of disease and injury are often presented as the number of diagnoses or absences from work per thousand workers per year, or per 1,000 person-years.

The statistical methods used to compare the incidence of absences are the relative risk and the 95% confidence interval.

Disease	Professional 4,342 Person-Years				Support 1,908 Person-Years				Clerical 693 Person-Years				Crafts and Manual Labor 630 Person-Years			
	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%	Persons with at Least One Event*	Relative Risk**	Confidence Limit Lower 95%	Confidence Limit Upper 95%
All Diseases and Injuries	239	0.6	0.5	0.7	170	1.1	0.9	1.3	104	1.4	1.1	1.8	116	3.0	2.5	
Infections and Parasitic Diseases	13	0.8	0.3	1.9	8	1.2	0.5	2.8	5	1.8	0.5	6.2	2	1.0	0.2	
Malignant Neoplasms	13	1.1	0.4	3.0	6	1.2	0.5	3.1	4	1.7	0.5	6.0	0			
Benign Neoplasms	5	0.7	0.2	2.1	4	1.3	0.4	4.7	1	0.4	0.05	3.0	3	5.4	1.3	
Endocrine and Metabolic Diseases	3	0.1	0.04	0.5	5	1.7	0.6	5.1	1	0.8	0.1	8.5	7	8.9	3.1	
Nervous System and Sense Organs	17	0.4	0.2	0.8	11	0.8	0.4	1.6	13	3.3	1.5	7.2	9	2.8	1.3	
Circulatory System	28	0.9	0.5	1.6	9	0.8	0.4	1.7	2	0.6	0.2	2.0	9	2.3	1.1	
Respiratory System	38	0.4	0.3	0.6	36	1.1	0.7	1.5	32	1.9	1.3	2.9	30	4.0	2.6	
Digestive System	33	0.5	0.3	0.8	20	1.0	0.6	1.7	16	2.4	1.3	4.4	12	2.0	1.1	
Genitourinary System	18	0.8	0.5	1.5	19	1.7	1.0	3.1	5	0.5	0.2	1.1	3	1.2	0.4	
Musculoskeletal System	37	0.4	0.3	0.6	37	1.3	0.9	1.9	12	0.7	0.3	1.3	35	5.2	3.4	
Symptoms, Signs and Ill-Defined Conditions	19	0.4	0.2	0.8	14	1.2	0.6	2.1	9	1.9	0.8	4.2	13	4.0	2.1	
Injury and Poisoning	36	0.4	0.2	0.5	29	1.0	0.6	1.4	22	2.2	1.2	3.8	36	4.9	3.3	
Injury and Poisoning: Fractures	9	0.4	0.2	0.9	9	1.3	0.6	2.9	5	2.0	0.6	6.2	7	3.7	1.6	
Injury and Poisoning: Sprains and Strains	10	0.3	0.2	0.6	11	1.0	0.5	2.0	8	1.8	0.8	4.4	13	5.5	2.8	
Injury and Poisoning: "Other" Injuries	13	0.4	0.2	0.8	7	0.7	0.3	1.6	8	2.9	1.1	7.3	11	4.6	2.2	

* Persons with multiple absences during the time period were counted only once.
** Adjusted for age and gender — compared with all occupational categories.

The relative risk is the rate of absence in one group divided by the rate in a reference (comparison) group. The reference group is all workers other than the occupational category of primary interest. A relative risk of *1.0* indicates that both groups have the same risk of absence. A relative risk *greater than 1.0* indicates that workers in a selected occupational category have a higher risk of absence than workers in all other occupational categories combined. A relative risk *less than 1.0* implies that the selected occupational group has a lower risk of absence compared to all other occupational categories combined.

The confidence interval is a statistical measure of the precision of the risk estimate. A 95% confidence interval indicates the range in which one would expect the relative risk to fall 95% of the time. If the confidence interval includes the value *1.0*, then the rate of absence is likely to have occurred by chance; in other words, the relative risk is not statistically significant at the 95% confidence level. For example, a relative risk of 2.0 with a confidence interval of *0.9 to 2.1* would not be considered statistically significant, whereas a relative risk of 1.4 with a confidence interval of *1.2 to 1.7* would be considered statistically significant.

The width of the confidence interval indicates the amount of uncertainty in the risk estimate and is affected by sample size and the number of events in the diagnostic category.

Clerical workers (RR=1.4), crafts and manual labor workers (RR=3.0), and security workers (RR=2.0) had a statistically significant increased risk of being absent 5 or more consecutive workdays in 1994 due to disease or injury (Table 10). Professional workers (RR=0.6) had a statistically significant decreased risk of absence.

Table 10.
Relative Risk for Selected Disease and Injury Categories by Occupation

Relative Risk for Selected Disease and Injury Categories by Occupation

Table 10 also presents the relative risks of absences of 5 or more consecutive workdays for selected disease categories among workers by each occupational category.

Clerical workers were significantly more likely to be absent at least once during 1994 for diseases of the nervous system and sense organs (RR=3.3); diseases of the respiratory system (RR=1.9); diseases of the digestive system (RR=2.4); injury and poisoning (RR=2.2), as a whole; and "other" injuries (RR=2.9) as a subcategory of injury and poisoning. Crafts and manual labor workers were significantly more likely to be absent at least once during 1994 for benign neoplasms (RR=5.4); endocrine and metabolic diseases (RR=8.9); diseases of the nervous system and sense organs (RR=2.8); diseases of the circulatory system (RR=2.3); diseases of the respiratory system (RR=4.0); diseases of the digestive system (RR=2.0); diseases of the musculoskeletal system (RR=5.2); symptoms, signs, and ill-defined conditions (RR=4.0); injury and poisoning (RR=4.9) as a whole; and fractures (RR=3.7), sprains and strains (RR=5.5), and "other" injuries (RR=4.6) as subcategories of injury and poisoning.

Security workers were found to have a statistically significant elevated risk associated with diseases of the digestive system (RR=3.9), and diseases of the genitourinary system (RR=9.1).

The lower overall diagnosis rates observed among salaried workers were also apparent in the relative risk analyses. Professional workers were significantly less likely to be absent at least once during 1994 for endocrine and metabolic diseases (RR=0.1); diseases of the nervous system and sense organs (RR=0.4); diseases of the respiratory system (RR=0.4); diseases of the digestive system (RR=0.5); diseases of the musculoskeletal system (RR=0.4); symptoms, signs, and ill-defined conditions (RR=0.4); injury and poisoning (RR=0.4) as a whole; and fractures (RR=0.4), sprains and strains (RR=0.3), and "other" injuries (RR=0.4) as subcategories of injury and poisoning. Non-regular workers had a statistically significant decreased risk of diseases of the respiratory system (RR=0.1).

The reasons for the large differences in overall diagnosis rates and relative risks for particular diagnostic categories among different occupational categories may be due to small numbers. However, the consistency of the differences across broad diagnostic categories suggests that compliance with reporting back to work through an occupational physician varies among occupational categories.

OSHA-Recordable Events Among SNL Employees, 1994

OSHA-Recordable Events per Person. In 1994, 199 SNL employees had an OSHA-recordable event. Ten (5.0%) of these workers had two or more events. There was a total of 209 OSHA-recordable events among all employees (Table 11A).

Diagnoses per OSHA-Recordable Event. A total of 228 diagnoses were associated with the 209 OSHA-recordable events recorded during 1994. Multiple diagnoses were reported for 18 (9%) of the events (Table 11B).

Diagnosis Rates for OSHA-Recordable Events. In 1994, the 228 diagnoses noted for the OSHA-recordable events yielded an age-adjusted rate of 25.2 per 1,000 persons. The age-adjusted diagnosis rate for women (35.1 per 1,000) was higher than the rate for men (21.0 per 1,000) (Table 11C).

Employee Category	Number of Workers in 1994	Number of OSHA-Recordable Events			Total Persons with at Least One Event	Total Number of Events
		0	1	2		
Men	5,973	5,852	114	7	121	128
Women	2,707	2,629	75	3	78	81
TOTAL	**8,680**	**8,481**	**189**	**10**	**199**	**209**

Table 11A. OSHA-Recordable Events per Person

Employee Category	Number of Diagnoses per OSHA Event			Total Number of Events	Total Number of Diagnoses
	1	2	3		
Men	119	9	0	128	137
Women	72	8	1	81	91
TOTAL	**191**	**17**	**1**	**209**	**228**

Table 11B. Diagnoses per OSHA-Recordable Event

Employee Category	Number of Workers in 1994	Number of Diagnoses	Crude Rate per 1,000	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Men	5,973	137	22.9	21.0	17.4	25.3
Women	2,707	91	33.6	35.1	28.2	43.8
TOTAL	**8,680**	**228**	**26.3**	**25.2**	**21.9**	**29.0**

* Standardized to age distribution of 1970 U.S. population.

Table 11C. Diagnosis Rates for OSHA-Recordable Events

OSHA-Recordable Diseases and Injuries by Diagnostic Category, 1994

The age-adjusted diagnosis rate for each diagnostic category is presented for all workers combined in Table 12. Tables 13 and 14 show diagnosis rates by gender to further describe the disease and injury patterns in the work force.

For all workers (Table 12), the diagnostic category with the highest rate was injury and poisoning (18.0 per 1,000), with 163 diagnoses reported for 149 people, which accounted for 71% of all the diagnoses. Within this category were two subcategories with relatively higher rates: sprains and strains (9.5 per 1,000), with 85 diagnoses among 80 workers, and "other" injuries (4.8 per 1,000), with 44 diagnoses among 44 workers.

Men. The leading diagnostic category among men (Table 13), accounting for 77% of all diagnoses, was injury and poisoning (16.1 per 1,000), with 105 diagnoses among 97 men. Within this category were two subcategories with relatively higher rates. Sprains and strains (8.0 per 1,000) accounted for 48% of the diagnoses, with 50 diagnoses among 48 men. Seven diagnoses were sprains and strains of the back, 3 of the lower body, 2 of the upper body, and 38 of unspecified sites. Two men had multiple diagnoses. "Other" injuries (4.5 per 1,000) accounted for 29% of the injury and poisoning diagnoses, with 30 diagnoses among 30 men. These included 11 diagnoses for contusion; 6 toxic effects, 5 unspecified injuries, 3 abrasion/friction burns, 2 burns of unspecified degree, 2 superficial injuries to the eye, and 1 insect bite.

Women. The diagnostic category with the highest rate was the same among women as for men (Table 14). Injury and poisoning (23.1 per 1,000) accounted for 64% of all diagnoses, with 58 diagnoses among 52 women. Within this category were two subcategories with relatively higher rates. Sprains and strains (13.7 per 1,000) accounted for 60% of the diagnoses, with 35 diagnoses for 32 women. Five of these were sprains and strains of the back, 3 of the lower extremities, 1 of the shoulder, and 26 of unspecified sites. Two women had multiple diagnoses. "Other" injuries (5.3 per 1,000) accounted for 24%, with 14 diagnoses for 14 women. These included five diagnoses for contusions, three toxic effects, two unspecified injuries, two abrasion/friction burns, one burn of unspecified degree, and one heat exhaustion.

Table 12. OSHA-Recordable Diseases and Injuries by Diagnostic Category - Men and Women

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	0			
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	1	0.2	0.0	1.2
Endocrine and metabolic diseases	240-279	0			
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	0			
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	5	0.5	0.2	1.2
Circulatory system	390-459	1	0.1	0.0	0.8
• Hypertension	401	0			
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	3	0.3	0.1	0.9
• Upper respiratory	460-465, 470-478	3	0.3	0.1	0.9
• Pneumonia/bronchitis	466, 480-487	0			
• Chronic respiratory conditions	490-496	0			
Digestive system	520-579	1	0.1	0.0	0.7
• Hernias	550-553	1	0.1	0.0	0.7
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	0			
• Benign prostatic hypertrophy	600	0			
• Endometriosis	617	0			
• Ovarian cysts	620.0-620.2	0			
• Female genital pain/bleeding	625-626	0			
Pregnancy and childbirth	630-676	0			
Skin and subcutaneous tissue	680-709	3	0.3	0.1	0.9
Musculoskeletal system	710-739	32	3.5	2.4	5.1
• Dorsopathies	720-724	8	0.7	0.3	1.4
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	19	2.3	1.4	3.7
Injury and poisoning	800-999	163	18.0	15.2	21.3
• Fractures, all sites	800-829	11	1.0	0.5	1.7
• Dislocations	830-839	1	0.1	0.0	0.5
• Sprains and strains	840-848	85	9.5	7.6	12.0
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	22	2.6	1.7	4.1
• Other injuries	900-999	44	4.8	3.5	6.6
Health status/health service contract	V01-V82	0			
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
Total minus pregnancies		**228**	**25.2**	**21.9**	**29.0**
TOTAL		**228**	**25.2**	**21.9**	**29.0**

† Includes all diagnoses reported with an absence of 5 or more days.

* Standardized to age distribution of 1970 U.S. population.

Table 13. OSHA-Recordable Diseases and Injuries by Diagnostic Category - Men

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	0			
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	1	0.2	0.0	1.5
Endocrine and metabolic diseases	240-279	0			
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	0			
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	2	0.2	0.1	1.0
Circulatory system	390-459	0			
• Hypertension	401	0			
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	0			
• Upper respiratory	460-465, 470-478	0			
• Pneumonia/bronchitis	466, 480-487	0			
• Chronic respiratory conditions	490-496	0			
Digestive system	520-579	1	0.1	0.0	1.0
• Hernias	550-553	1	0.1	0.0	1.0
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	0			
• Benign prostatic hypertrophy	600	0			
• Endometriosis	617	NA			
• Ovarian cysts	620.0-620.2	NA			
• Female genital pain/bleeding	625-626	NA			
Pregnancy and childbirth	630-676	NA			
Skin and subcutaneous tissue	680-709	0			
Musculoskeletal system	710-739	18	2.6	1.6	4.2
• Dorsopathies	720-724	7	0.8	0.4	1.8
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	10	1.7	0.8	3.5
Injury and poisoning	800-999	105	16.1	13.0	20.0
• Fractures, all sites	800-829	8	1.0	0.5	2.0
• Dislocations	830-839	1	0.1	0.0	0.8
• Sprains and strains	840-848	50	8.0	5.9	11.0
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	16	2.4	1.4	4.2
• Other injuries	900-999	30	4.5	3.0	6.8
Health status/health service contract	V01-V82	0			
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
TOTAL		**137**	**21.0**	**17.4**	**25.3**

† Includes all diagnoses reported with an absence of 5 or more days.

* Standardized to age distribution of 1970 U.S. population.

Table 14. OSHA-Recordable Diseases and Injuries by Diagnostic Category - Women

Category of Diagnoses	ICD9-CM Code	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Infections and parasitic diseases	001-139	0			
Malignant neoplasms	140-208, 230-234	0			
• Digestive organs	150-159	0			
• Respiratory system	160-165	0			
• Breast	174-175	0			
• Genitourinary	179-189	0			
• Nervous system	191-192	0			
• Leukemia, lymphoma	200-208	0			
Benign neoplasms and other	210-229, 235-239	0			
Endocrine and metabolic diseases	240-279	0			
Blood and blood-forming organs	280-289	0			
Mental disorders	290-319	0			
• Alcoholism	303	0			
• Drug abuse	304-305	0			
Nervous system and sense organs	320-389	3	1.3	0.3	4.6
Circulatory system	390-459	1	0.4	0.1	3.1
• Hypertension	401	0			
• Acute myocardial infarction	410	0			
• Ischemic disease, not M.I.	411-414, 429.2	0			
• Cerebrovascular disease	430-438	0			
Respiratory system	460-519	3	1.0	0.3	3.2
• Upper respiratory	460-465, 470-478	3	1.0	0.3	3.2
• Pneumonia/bronchitis	466, 480-487	0			
• Chronic respiratory conditions	490-496	0			
Digestive system	520-579	0			
• Hernias	550-553	0			
• Gall bladder disease	574-575	0			
Genitourinary system	580-629	0			
• Benign prostatic hypertrophy	600	NA			
• Endometriosis	617	0			
• Ovarian cysts	620.0-620.2	0			
• Female genital pain/bleeding	625-626	0			
Pregnancy and childbirth	630-676	0			
Skin and subcutaneous tissue	680-709	3	1.0	0.3	3.3
Musculoskeletal system	710-739	14	5.1	2.9	8.9
• Dorsopathies	720-724	1	0.3	0.0	2.1
Congenital anomalies	740-759	0			
Certain perinatal conditions	760-779	0			
Symptoms, signs, and ill-defined conditions	780-799	9	3.2	1.6	6.2
Injury and poisoning	800-999	58	23.1	17.5	30.5
• Fractures, all sites	800-829	3	1.0	0.3	3.1
• Dislocations	830-839	0			
• Sprains and strains	840-848	35	13.7	9.5	19.6
• Intracranial injuries	850-854	0			
• Internal injuries	860-869	0			
• Open wounds	870-897	6	3.2	1.4	7.4
• Other injuries	900-999	14	5.3	3.0	9.3
Health status/health service contract	V01-V82	0			
• Family history of health problems	V10-V19	0			
• Circumstances related to reproduction/development	V20-V28	0			
• Specific procedure/aftercare	V50-V59	0			
Total minus pregnancies		**91**	**35.1**	**28.2**	**43.8**
TOTAL		**91**	**35.1**	**28.2**	**43.8**

† Includes all diagnoses reported with an absence of 5 or more days.

* Standardized to age distribution of 1970 U.S. population.

OSHA-Recordable Diagnoses by Occupational Category, 1994

During 1994, the age-adjusted diagnosis rate among all employees (Table 15) was more than 5 times higher for hourly workers than for salaried workers (84.9 versus 16.1 per 1,000 persons). Crafts and manual labor workers, who comprised 7% of the work force, had the highest diagnosis rate (124.1 per 1,000), with 79 diagnoses reported for 65 persons. The second highest diagnosis rate was among security workers (101.6 per 1,000), with 12 diagnoses for 12 persons. Clerical workers (50.7 per 1,000) ranked third, with 41 diagnoses among 34 workers. The diagnosis rate for workers in the category of non-regular workers was substantially lower than all other occupational categories (4.2 per 1,000 workers), with eight diagnoses for eight workers.

Men. The diagnosis rate among men (Table 16) was over 10 times higher for hourly workers (120.0 per 1,000) than for salaried workers (11.7 per 1,000). Crafts and manual labor workers had the highest rate (120.7 per 1,000), with 63 diagnoses reported for 53 men. Security workers ranked second (102.2 per 1,000), with ten diagnoses among ten men. Clerical workers followed, with seven diagnoses for five men (54.3 per 1,000). As seen with the combined groups, non-regular workers had the lowest rate (0.8 per 1,000) with only one diagnosis reported.

Women. The diagnosis rate among women (Table 17) was more than 2 times higher for the hourly workers (63.7 per 1,000) than for the salaried workers (26.0 per 1,000). The diagnosis rate for workers in the crafts and manual labor category (143.9 per 1,000) was the highest with 16 diagnoses reported among 12 women. Security workers (137.1 per 1,000) ranked second with two diagnoses for two women. The third highest rate occurred in the category of clerical workers (49.4 per 1,000), with 34 diagnoses among 29 women. The diagnosis rate was the lowest among the non-regular workers (8.6 per 1,000) with seven diagnoses for seven women.

Table 15. OSHA-Recordable Diagnoses by Occupational Category - Men and Women

	Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional	4,342	40	11.4	7.2	18.2
	Support	1,908	48	27.0	18.7	39.1
	Subtotal	**6,250**	**88**	**16.1**	**12.0**	**21.7**
Hourly	Clerical	693	41	50.7	35.5	72.5
	Crafts and Manual Labor	630	79	124.1	69.6	221.2
	Security	141	12	101.6	52.0	198.2
	Subtotal	**1,464**	**132**	**84.9**	**66.8**	**107.8**
	Non-Regular	966	8	4.2	1.8	9.9
	TOTAL	**8,680**	**228**	**25.2**	**21.9**	**29.0**

Table 16. OSHA-Recordable Diagnoses by Occupational Category - Men

	Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional	3,517	23	6.9	3.7	12.9
	Support	1,187	33	26.6	17.3	40.9
	Subtotal	**4,704**	**56**	**11.7**	**8.0**	**17.0**
Hourly	Clerical	87	7	54.3	24.9	118.4
	Crafts and Manual Labor	553	63	120.7	61.6	236.8
	Security	127	10	102.2	48.9	213.3
	Subtotal	**767**	**80**	**120.0**	**79.8**	**180.4**
	Non-Regular	502	1	0.8	0.1	5.5
	TOTAL	**5,973**	**137**	**21.0**	**17.4**	**25.3**

Table 17. OSHA Diagnoses by Occupational Category - Women

	Occupational Category	Number of Workers in 1994	Number of Diagnoses†	Age-Adjusted Rate per 1,000*	Lower 95% Confidence Limit per 1,000	Upper 95% Confidence Limit per 1,000
Salaried	Professional	825	17	19.9	10.5	37.6
	Support	721	15	27.6	14.5	52.6
	Subtotal	**1,546**	**32**	**26.0**	**16.6**	**40.9**
Hourly	Clerical	606	34	49.4	33.6	72.8
	Crafts and Manual Labor	77	16	143.9	87.4	237.2
	Security	14	2	137.1	26.1	719.0
	Subtotal	**697**	**52**	**63.7**	**46.9**	**86.4**
	Non-Regular	464	7	8.6	3.0	24.2
	TOTAL	**2,707**	**91**	**35.1**	**28.2**	**43.8**

† Includes all diagnoses resulting from an OSHA-recordable event.
* Standardized to age distribution of 1970 U.S. population

OSHA-Recordable Relative Risk for All Diseases and Injuries by Occupation

In Table 18 and Tables 19A through 19F, the risk of one or more OSHA-recordable events associated with selected diagnostic categories for specific occupational categories is compared with all other occupational categories in the SNL work force.

In contrast to the previous series of tables, these analyses examine the risk of a worker having one or more OSHA-recordable events during 1994. This was done to minimize the problem associated with one person having multiple events for the same condition.

Clerical workers (RR=2.0), crafts and manual labor workers (RR=7.0), and security workers (RR=4.3) had statistically significant increased risks of an OSHA-recordable event in 1994 (Table 18). Professional workers (RR=0.2) and non-regular workers (RR=0.3) had a statistically significant decreased risk of an event.

OSHA-Recordable Relative Risk for Selected Disease and Injury Categories by Occupation

Tables 19A through 19F present the relative risk of an OSHA-recordable event for selected disease categories among workers by each occupational category.

Clerical workers were significantly more likely to have at least one OSHA-recordable event during 1994 for injury and poisoning (RR=1.8) as a whole, and sprains and strains (RR=2.1), as a subcategory of injury and poisoning. Crafts and manual labor workers were also significantly more likely to have at least one OSHA-recordable event during 1994 for diseases of the musculoskeletal system (RR=9.9); injury and poisoning (RR=7.8) as a whole; and fractures (RR=4.5), sprains and strains (RR=9.4), open wounds (RR=4.6), and "other" injuries (RR= 9.9), as subcategories of injury and poisoning. Security workers were significantly more likely to have at least one OSHA-recordable event during 1994 for injury and poisoning (RR=5.6) as a whole, and fractures (RR=11.8), sprains and strains (RR= 6.1), and "other" injuries (RR= 4.1), as subcategories of injury and poisoning.

Professional workers had a statistically significant decreased risk of having an OSHA-recordable event due to diseases of the musculoskeletal system (RR=0.2); injury and poisoning (RR=0.2) as a whole; and sprains and strains (RR=0.1), open wounds (RR=0.3), and "other" injuries (RR=0.2), as subcategories of injury and poisoning. Non-regular workers were also at a significantly decreased risk for injury and poisoning (RR=0.3) as a whole, and "other" injuries (RR=0.2), as a subcategory of injury and poisoning.

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	36	0.2	0.2	0.3
Support	1,908	44	0.9	0.7	1.3
Clerical	693	34	2.0	1.3	3.0
Crafts and Manual Labor	630	65	7.0	5.1	9.6
Security	141	12	4.3	2.4	7.7
Non-Regular	966	8	0.3	0.1	0.6
TOTAL	**8,680**	**199**			

* Persons with multiple absences during the time period were counted only once.
** Adjusted for age and gender — compared with all occupational categories.

Table 18. All OSHA-Recordable Diseases and Injuries by Occupational Categories

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	5	0.2	0.1	0.5
Support	1,908	8	1.2	0.5	2.8
Clerical	693	5	1.8	0.7	4.7
Crafts and Manual Labor	630	11	9.9	4.2	23.5
Security	141	0			
Non-Regular	966	1	0.2	0.01	4.8
TOTAL	**8,680**	**30**			

Table 19A. Diseases of the Musculoskeletal System

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	26	0.2	0.1	0.3
Support	1,908	29	0.8	0.5	1.2
Clerical	693	22	1.8	1.1	3.1
Crafts and Manual Labor	630	54	7.8	5.4	11.0
Security	141	12	5.6	3.1	10.3
Non-Regular	966	6	0.3	0.1	0.8
TOTAL	**8,680**	**149**			

Table 19B. Injury and Poisoning

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	4	0.5	0.2	1.6
Support	1,908	1	0.3	0.04	2.3
Clerical	693	1	1.4	0.1	21.6
Crafts and Manual Labor	630	3	4.5	1.1	18.4
Security	141	2	11.8	2.4	56.8
Non-Regular	966	0			
TOTAL	**8,680**	**11**			

Table 19C. Injury and Poisoning: Fractures

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	10	0.1	0.1	0.3
Support	1,908	15	0.8	0.4	1.3
Clerical	693	15	2.1	1.1	4.1
Crafts and Manual Labor	630	32	9.4	5.9	14.9
Security	141	6	6.1	2.6	14.2
Non-Regular	966	2	0.1	0.02	1.2
TOTAL	**8,680**	**80**			

Table 19D. Injury and Poisoning: Sprains and Strains

* Persons with multiple absences during the time period were counted only once.
** Adjusted for age and gender — compared with all occupational categories.

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	5	0.3	0.1	0.8
Support	1,908	5	1.0	0.4	2.8
Clerical	693	2	1.1	0.2	5.1
Crafts and Manual Labor	630	6	4.6	1.7	12.2
Security	141	1	2.7	0.3	20.9
Non-Regular	966	3	2.0	0.1	33.9
TOTAL	**8,680**	**22**			

Table 19E. Injury and Poisoning: Open Wounds

Occupational Category	Person-Years	Persons with at Least One Event*	Relative Risk**	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Professional	4,342	8	0.2	0.1	0.5
Support	1,908	9	0.9	0.4	1.8
Clerical	693	5	1.7	0.5	5.3
Crafts and Manual Labor	630	18	9.9	5.2	19.1
Security	141	3	4.1	1.3	13.3
Non-Regular	966	1	0.2	0.05	0.9
TOTAL	**8,680**	**44**			

Table 19F. Injury and Poisoning: "Other" Injuries

* Persons with multiple absences during the time period were counted only once.
** Adjusted for age and gender — compared with all occupational categories.

DIAGNOSTIC CATEGORIES

Category of Diagnoses	ICD-9-CM Code	Types of Illness in Category
All conditions	001-V82	All reported health events.
Infectious and parasitic diseases	001-139	Diseases caused by bacteria, viruses, and parasites.
Malignant neoplasms	140-208, 230-234	All cancers, regardless of the part of the body affected.
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature	210-229, 235-239	Tumors that are not cancerous or that do not exhibit clearly malignant behavior, regardless of the part of the body affected.
Endocrine, nutritional and metabolic diseases, and disorders of the immune system	240-279	Diseases and conditions affecting the hormone secreting glands and organs; nutritional disorders, such as vitamin deficiency; metabolic diseases, such as diabetes and gout; and problems affecting the antibody producing system.
Diseases of the blood and blood-forming organs	280-289	Includes anemia and hemophilia, but excludes leukemia.
Mental disorders	290-319	Psychiatric diagnoses, such as dementia, schizophrenia, depression, and anxiety disorders; alcoholism; drug dependence; and eating disorders, such as bulimia.
Diseases of the nervous system and sense organs	320-389	Diseases affecting the brain, spinal cord, and peripheral nerves. Examples include meningitis; encephalitis; hereditary diseases, such as Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma; and diseases of the ear, such as conductive hearing loss and otitis.
Diseases of the circulatory system	390-459	Diseases involving the heart, arteries, veins, and lymphatic system. Examples include rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis.
Diseases of the respiratory system	460-519	Includes colds, sinusitis, laryngitis, pneumonia and influenza, chronic bronchitis, asthma, and emphysema.
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 genitourinary system	580-629	Diseases affecting the kidneys, the prostrate, and testes; benign breast diseases; infertility (male and female); pelvic inflammatory disease; diseases of the ovary; and menstrual disorders.
Complications of pregnancy, childbirth, and puerperium	630-676	Includes miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; pre-eclampsia; premature labor or other complications of labor.
Diseases of the skin and subcutaneous tissue	680-709	Includes acne, cellulitis, sunburn, psoriasis, and seborrhea.
Diseases of the musculoskeletal system and connective tissue	710-739	Includes arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc ("slipped disc"), lumbago, sciatica, rheumatism, tendinitis, and osteoporosis.
Congenital anomalies	740-759	Abnormal anatomical development present at birth. Includes spina bifida, cleft palate, harelip, and various chromosomal anomalies, such as Klinefelter's syndrome.
Certain conditions originating in the perinatal period	760-779	Conditions or diseases of the mother that can produce perinatal illness or death of the fetus or newborn. Examples include maternal high blood pressure, maternal malnutrition, ectopic pregnancy, and breech birth. Also includes other conditions originating in the perinatal period, such as fetal malnutrition or slow growth, injuries related to birth trauma, and perinatal jaundice.
Symptoms, signs, and ill-defined conditions	780-799	Symptoms, signs, abnormal results of laboratory or other tests, and conditions for which no specific diagnosis has been made. Examples include blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn.
Injury and poisoning	800-999	Dislocation of joints; sprains and strains of joints and associated muscles; concussions; bruises; cuts; internal injuries due to crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heat stroke; 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 include injuries to muscle from overexertion or from stretching the muscle beyond its normal limit. Sprains include injuries involving tearing or overextending the ligaments of a joint.
Intracranial injuries excluding those with skull fractures	850-854	Includes concussions, internal bruises, and hemorrhages within the skull without a fracture of the bones of the skull.
Internal injuries of the chest, abdomen, and pelvis	860-869	Includes internal injuries to the chest, abdomen, and pelvis and the organs within these areas of the body that do not involve an open wound.
Open wounds	870-897	Includes animal bites, cuts, lacerations, punctures, and amputations, excluding the arteries and veins.
Other injuries and 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, heat stroke, electrocution, and altitude sickness.
Motor vehicle traffic accidents	E810-E819	Includes accidents involving motor vehicles alone or with other motor vehicles, pedestrians, or vehicles operated by pedals.
Other accidents	E916-E928	Includes accidents involving falling objects or machinery; accidents related to explosions; and those related to electrical current, radiation, hot or corrosive substances, noise, and overexertion.
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	Includes 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	Includes 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.

GLOSSARY

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

Epidemiologic Surveillance - The regular and systematic collection of data and interpretation of the distribution of illness, injury, and death in the DOE labor force over time.

ICD-9-CM - The ICD-9-CM (International Classification of Diseases-9th Revision-Clinical Modification) is based on the ICD-9 originally published by the World Health Organization and widely accepted as a standard for the coding of cause of death. The ICD-9-CM is required for the reporting of morbidity to all U.S. Public Health Service programs.

Diagnoses Rate - The number of new, reported health events observed among DOE workers per thousand DOE workers at risk during a given period of time.

Person-year - A unit of measurement combining persons and time equivalent to one person followed up for one year. In Epidemiologic Surveillance reports, rates are often expressed as the number of events (e.g., illness absences, injuries) per 1,000 person-years.

STATISTICAL NOTE

The age-adjusted rate was calculated using the 1970 U.S. population. The age-adjusted rate represents the hypothetical rate that would have been observed if the 1993 group had the same age distribution as the 1970 U.S. population. The age-adjusted rate is used to compare populations that differ in age. The 1970 U.S. population was selected because it is the standard most used for published morbidity data.

The illness and injury absence rate is defined as an absence due to illness or injury of 5 or more consecutive work days, divided by the total number of workers. OSHA-recordable events may or may not involve an absence fromwork.

The 95% confidence interval is based on the normal approximation to the binomial distribution where the calculated illness and injury absence rate falls within the interval. The true rate lies within this interval 95% of the time.