Methods Underlying New Workplace Injury and Illness Rates by Demographic Group

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Beginning with the 2006 survey year, BLS began publishing new estimates of injury and illness rates for days-away-from-work cases by certain demographic characteristics. This article describes the methodology used to produce these new data and provides some illustrative examples of how to use the statistics.

Introduction

BLS annually produces statistics detailing nonfatal work-related injuries and illnesses. As part of that annual publication cycle, BLS reports nonfatal injury and illness counts requiring days away from work for certain demographic groups and for certain incident characteristics. For example, BLS reported that in 2005, an estimated 415,880 incidents resulting in days away from work occurred to females working in private industry in the United States.[1] Of these incidents, an estimated 136,340 were classified as being musculoskeletal disorders.[2]

BLS also reports nonfatal injury and illness days-away-from-work rates, primarily by industry and case characteristics. Injury and illness rates are calculated using estimated injury totals in conjunction with hours worked data provided by establishment respondents to the Survey of Occupational Injuries and Illnesses (SOII). For example, BLS reported that in 2005, an estimated 2.6 nonfatal amputations occurred per 10,000 full-time equivalent workers that resulted in days away from work in private sector manufacturing in the United States.[3]

Prior to November 2007, however, BLS did not produce injury rates estimates by demographic group. The SOII survey instrument asks respondents the total number of hours worked by all employees, but it does not ask respondents to separately report total hours worked by workers in the various demographic groups. Therefore, constructing an estimate of the injury rate among, for example, female workers would require either a change to the survey instrument and a subsequent increase in the burden on survey respondents or access to external estimates of hours worked totals separately by gender.

Beginning in November 2007, BLS began publishing new estimates of injury and illness rates for days-away-from-work cases by certain demographic characteristics for the 2006 survey year.[4] These estimates are constructed by incorporating data on employment and hours worked, from sources external to the SOII, along with SOII estimates of injury and illness counts. This article describes the statistics produced and the data sources and methods used to produce them. It also presents some illustrative statistics and describes several important caveats for data users.

What New Estimates Are Produced?

Beginning with the 2006 survey year, the SOII program began publishing private sector estimates of injury and illness rates for days-away-from-work cases by gender, by age group, by occupation, and by occupational group.[5] Statistics are available at the national level and at the State level for States that participate in the SOII. Occupational estimates are available at the detailed Standard Occupational Classification (SOC) level for national statistics, and at the major group level for State and national level statistics.[6] Injury and illness rates also are available by demographic characteristics and certain injury characteristics, such as the nature, event, and source of the incident, and the part of body affected. For example, BLS now publishes an estimated injury and illness rate for all days-away incidents occurring to female workers, as well as for musculoskeletal disorders occurring to female workers.

Methods

The SOII program incidence rates for case characteristics represent the number of injuries and illnesses per 10,000 full-time workers and are calculated as follows:

incidence rate = (N÷EH) × 20,000,000,

where

N = number of injuries and illnesses with the given characteristic,

EH = total hours worked during the calendar year, and

20,000,000 = base for 10,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

To apply this formula for constructing incidence rates for a particular subsample of the data, BLS uses the N and EH totals relevant to the subsample of interest.

For example, consider the previously mentioned rate of 2.6 amputations per 10,000 FTE workers in private sector U.S. manufacturing. To construct that estimate, BLS uses the formula above with N set equal to the SOII survey's total reported number of amputations occurring in U.S. private manufacturing, and with EH set equal to the SOII survey's total reported number of hours worked by employees in U.S. private manufacturing. The base of 20,000,000 is applied and rates are reported per 10,000 FTE workers.

In producing demographic incidence rates, BLS similarly takes the N and EH totals to refer to the demographic group subsample of interest. Estimates for the numerator term N, the number of injuries and illnesses, are available directly from the SOII survey. Estimates for the denominator term EH are derived jointly from the SOII and external data. The denominator term EH that is relevant to the demographic group is derived by multiplying the total hours worked for all employees (from the SOII survey), and the fraction of hours worked by members of the demographic group (from the external data).

In symbols, the incidence rate for workers of demographic group *j* is

$$\text{incidence rate for group } j = (N_j \div EH_j) \times 20{,}000{,}000$$

$$= (N_j \div (EH \times f_j)) \times 20{,}000{,}000,$$

where

N_j = number of injuries and illnesses occurring to group *j* workers,

EH = total hours worked during the calendar year by workers,

EH_j = total hours worked during the calendar year by workers in group *j*,

f_j = fraction of all hours worked attributable to workers in group *j*, and

20,000,000 = base for 10,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

For example, to construct an estimate of the injury rate for female workers in U.S. private industry, set N_j equal to the SOII survey's total reported number of injuries and illnesses occurring *to females* in U.S. private industry, and set EH_j equal to an estimate of the total reported number of hours worked *by female* employees in U.S. private industry. BLS constructs this estimate of EH_j by calculating the proportion of all hours worked that are worked by females (f_j, from external data), and applying that proportion to the SOII estimate for total hours worked by all employees (EH).[7]

This method apportions the SOII total hours worked estimates across demographic groups in proportion to the hours worked totals by demographic group as observed in the external data. This apportioning guarantees that the weighted average of the

demographic group incidence rates returns the overall incidence rate. This method works best where the external data can deliver accurate estimates for the proportion of hours worked that are worked by the demographic group in question, for the population of workers within scope of the SOII.

Incidence Rates By Age Group Or Gender

The Current Population Survey (CPS) is the external data source providing hours worked totals for constructing injury and illness rate estimates by age group or gender. The CPS is conducted monthly by the Census Bureau for BLS and is a household survey used primarily to produce unemployment rates and employment totals. Each month, the survey of about 60,000 households collects a substantial amount of information on individual demographic and employment characteristics. Demographic characteristics include gender and age. Employment information includes occupation, industry, self-employment status, and hours worked variables for individuals' main and secondary jobs.[8]

The CPS data have several advantages for the purpose at hand. CPS monthly surveys are pooled to give annual totals, providing a fairly large data set. The CPS sample design gives representative annual estimates for adult employment at the State or national level, which are the geographic areas of interest for the SOII. CPS employment detail can be used to narrow the CPS sample to a scope similar to that of the SOII survey. Finally, the CPS reported hours data allow an estimate of total hours worked to be constructed that mimics the SOII concept of hours at risk for injury.

To produce hours worked estimates for a sample comparable to the SOII scope, certain classes of workers must be excluded from the CPS data, principally the unincorporated self-employed and government workers.[9] The CPS microdata reports age and gender for individuals, along with hours worked on individuals' main and secondary jobs. Using the CPS microdata weights, summing hours worked across individuals of like age, or of like gender, provides estimates of the proportion of hours worked by a particular demographic group (the f_j of the previous equation).

Table 1 and table 2 give some example statistics using 2005 data.[10] Table 1 shows rates by gender, while table 2 shows rates by age group. The statistics in each table refer to national data for the private sector. The first column of numbers in each table shows the published injury and illness count, the second column shows the demographic group's employment fraction from CPS data, and the third column shows the injury rate.

Table 1 shows that the bulk of injuries and illnesses resulting in days away from work occur to male workers. Male workers who are in scope experienced nearly twice as many incidents as did female workers. However, males worked approximately 59 percent of all hours worked by private sector employees in 2005, as measured by the CPS. That implies that injury and illness rate differences by gender are likely to be smaller, proportionally, than the differences in the injury and illness counts shown in the first column. In fact, the estimated injury and illness rate for men of 152.7 is roughly 37 percent greater than the rate of 111.4 for women.

Table 2 carries out a similar exercise using age groups. Injury and illness case counts are higher among prime-aged workers than they are at the youngest and oldest age ranges. Clearly this is due to the fact that there are more prime-age workers, and that prime-age workers, on average, work more per year. The second column of the table quantifies these differences in work by age group, using CPS data. For example, workers aged 16 to 19 work approximately 3.2 percent of the total hours worked by employees of any age. Column 3 shows that incidence rates are much more uniform across age groups than the injury and illness counts might lead one to believe. Of further interest is the fact that the incidence rates are 144.1 and 144.5 for the 16- to 19-year olds and 20- to 24-year olds, respectively, versus a rate of 122.4 for the 65 years and older age group.

Incidence Rates By Occupation

To produce incidence rates by occupation or occupational aggregate, BLS combines employment count estimates from the Occupational Employment Statistics (OES) program with hours worked data from the CPS. Combining these two data sources introduces some additional complexity to the occupational calculations, but the OES data possess some advantages that make the extra complexity worth undertaking.

The OES is a large establishment survey expressly designed to produce State and national level estimates of occupational employment counts.[11] The OES detailed occupational codes follow the Standard Occupational Classification (SOC) system, which the SOII program also uses. The CPS coding scheme is also based on the detailed SOC codes, but in some instances the CPS data are collapsed across SOC codes. Furthermore, the OES occupational reports are likely to be more comparable to SOII occupational reports, because both the SOII and OES survey are establishment surveys.

OES data provide only employment counts estimates, however, rather than total hours worked estimates. Furthermore, the OES scope excludes certain agricultural industries that are within the scope of the SOII program. Therefore, the CPS data are needed to provide estimates of average hours worked per job, as well as to provide occupational hours worked estimates in those agricultural industries outside the scope of OES.[12]

The estimated proportion of hours worked by employees in an occupation (the f_j of the previous equation) is constructed from estimates of total hours worked by occupation using CPS and OES data. The estimate for total hours worked by employees in an occupation is the sum of two terms. The first term represents total hours worked by those in the occupation that are in scope for both the OES and SOII programs. This equals the OES occupational employment estimate for the occupation multiplied by the CPS estimate for average hours worked per year for workers in the occupation and in scope for the private sector OES tabulations. The second term represents the total hours worked by those in the occupation that are in scope of the SOII program but working in the agricultural industries that are out of scope for the OES program. This second term equals the CPS estimate for the total hours worked for occupational employees that are in those agricultural industries outside the OES scope.[13]

In symbols, the proportion fj of hours worked that are attributable to employees in a given occupation j is given by

$$f_j = TH_j / \sum TH_j = ((N_j \times h_j) + A_j) / \sum TH_j,$$

where

TH_j = external data estimate of total hours worked by employees in occupation *j*,

N_j = OES survey employment count in occupation *j*,

h_j = CPS average hours worked per year in occupation *j* jobs in industries in scope to the SOII and OES surveys, and

A_j = CPS total hours worked by employees in occupation *j* jobs in those agricultural industries in scope to the SOII survey and out of scope to the OES survey. [14]

The occupation's fraction of all hours worked, f_j, essentially apportions the total hours worked estimates that are derived directly in the SOII. For higher level occupational aggregates, the *j* subscripts in this formula are taken to refer to the occupational aggregate rather than to a detailed occupation, with the exception that the h_j is defined to be an average across detailed occupations using OES employment counts as weights.

To give some flavor for the resulting incidence rates, tables 3, 4, and 5 give select occupational rate statistics. Table 3 shows rates at the occupational group level, for the private sector in the United States and for the private sector in California. The key point of interest in this table is that the calculated occupational rates tend to be lower than average for white collar occupations, and they tend to be higher for blue collar occupations. For example, the rate of 30.5 for management, business, and financial occupations is less than one-fourth of the overall national rate of 135.7 in 2005. On the other hand, the rates for construction and extraction occupations and for transportation and material moving occupations are more than twice the overall national rate. These patterns also seem to hold roughly in the State of California as well.

Table 4 gives incidence rates for those detailed occupations estimated to have more than 20,000 injuries or illnesses resulting in days away from work. These high incident count occupations tend to represent a large fraction of the total hours worked within the scope of the survey. For example, the combined OES-CPS estimate is that about 2 percent of all hours worked in scope in 2005 were worked by laborers. The incidence rates for most of these detailed occupations are quite high relative to the national aggregate rate of 135.7. Two interesting exceptions are retail salespersons, with a rate of 102.6, and registered nurses, whose rate of 132.5 is very much on par with the national level figure of 135.7. It appears that the high counts of injuries and illnesses to retail salespersons and registered nurses can be attributed to the fact that these occupations have large employment and hours worked totals.

Table 5 shows the injury and illness counts and rates for select detailed occupations, with the occupations chosen to have the highest rates, subject to the condition that the occupation have at least one-tenth of 1 percent of all employment. All occupations listed in table 5 have an incidence rate above 350 per 10,000 workers. The top three listed occupations all have an incidence rate above 500 per 10,000 workers. Other occupations that appear on this list but not in table 4 are roofers; industrial machinery mechanics; cooks, institution and cafeteria; butchers and meat cutters; and welders, cutters, solderers and brazers. Note also that several of the occupations shown in table 4 also appear in table 5. This implies that the high incidence of injuries to, say, nursing aides, orderlies and attendants is not simply due to high employment in that occupation. The high incidence reflects a high estimated rate of injury or illness for those workers as well.

Incidence Rates By Demographic Characteristic And Incident Characteristic

The SOII program publishes a substantial amount of detailed data on the particular characteristics associated with injury and illness episodes. Injury and illness counts and incidence rates are published for the nature and source of the episode, the part of body affected, and the event characteristic. As an example, data collected on incident characteristics are used to determine how many injury and illness cases are due to musculoskeletal disorders (MSDs).[15]

Adapting the previously given formulas to produce incidence rates by demographic group and incident characteristic is straightforward, because no additional hours worked estimates are required. Simply let the injury count estimate refer to the particular case characteristics of interest, and let the hours estimate still refer to the given demographic group.

For example, to compute an incidence rate for MSDs among females, use the number of MSD incidents occurring to females as the numerator. For the denominator, use the estimated total hours worked by female employees. This denominator is the same denominator used for the overall incidence rate among females.

Table 6 shows the gender-specific national MSD rates for 2005. Note that a greater fraction of females' than males' injuries are classified as MSDs. Nevertheless, the incidence rate of MSDs is roughly comparable for men and women, if not slightly higher among males. Males appear to be at least as much at risk for MSDs as are women.

Caveats

The incidence rate statistics described in this article are somewhat different from most others produced by the Survey of Occupational Injuries and Illnesses (SOII) program, because they require external data. As a result, special care should be exercised when using them. Statisticians often distinguish between two sorts of error: sampling error and nonsampling error. Describing these sources of error may help users understand the quality of the demographic rate statistics.

Sampling error refers to the fact that estimates are based on a survey and not a census. Therefore any particular estimate will not likely equal the population's true value, but will instead exhibit some variation from that true value. Constructing statistics using external data therefore involves sampling error from the external data as well as sampling error in the SOII. All of the three surveys described here--the SOII, the OES survey, and the CPS--take steps to minimize sampling error by using appropriate sampling design and estimation techniques. The SOII survey further screens publication reports to suppress reporting of statistics with high injury count sampling error. In the current context, the data user should treat extreme values with caution in situations where small samples are a possible issue. No estimates of sampling error were calculated for the

new injury and illness rate statistics presented in this article; therefore, statistical statements made could not be validated given the unavailability of estimates of sampling error.

Nonsampling error refers to all other errors that can affect survey estimates. Examples include such possible factors as biased reporting by respondents, incorrect coding of survey responses, programming errors in estimation, and so forth. Although nonsampling error is inherently difficult to gauge and measure, all survey programs continually take steps to detect and mitigate such errors.

The demographic rate statistics are constructed by joining two or more surveys. It is possible and indeed likely that this merging of data induces some nonsampling error in the joint product that is present in none of the surveys separately. Although care has been taken to minimize this error, it is not entirely avoidable. It is part of the price of producing these statistics. This section is designed to identify some of this nonsampling error.

One set of possible error involves different scopes in the various survey data used. The exclusions imposed in the CPS microdata, as well as the special tabulations produced by the OES program, are designed to mimic the scope of the SOII. Although all indications are that this effort has been largely successful, there are still some remaining differences. The SOII survey excludes agricultural establishments with fewer than 11 employees, whereas the CPS survey does not. The CPS scope is for the adult population, meaning for ages 16 years and older, whereas the SOII records injury and illness cases for employees confirmed younger than 16 years of age. Also, the CPS identifies State location based on household residence, whereas the OES and SOII surveys identify State location based on place of employment. Finally, the exclusions imposed in the CPS data so that it mimics the scope of the SOII are largely derived from individual responses to questions rather than more directly through employer administrative reports. For instance, the self-employed are inherently out of scope for the SOII because the SOII universe is primarily based on administrative records from State unemployment insurance programs. In contrast, the CPS sample requires exclusion of the self-employed via an individual response to a question detailing the class of job held by the worker. Those different avenues should arrive at similar definitions of scope, but they are not guaranteed to match scope exactly in the different surveys.

The issue of scope can also arise where the different data sources have different definitions governing which employees are in a given group. This is not likely to be an issue for age and gender definitions, but it may arise for occupational definitions. For example, the CPS data on occupation are based on self-reports rather than establishment reports. Although the OES survey and SOII use the same coding structure, they may effectively code occupations differently simply because of different respondent detail or different methods of slotting respondent information into occupations.[16] Generally speaking, this should be less of a problem at higher levels of occupational aggregation, or in detailed occupations that are well defined. Another example involves the situations in which CPS coding structure is less fine than the SOC detailed occupational structure used in SOII and OES. In those situations, part of the information that is used to construct an estimate of total hours worked in a particular detailed occupation is based on a slightly broader occupational detail in the CPS.

A final type of nonsampling error that can occur is the possibility that hours worked reports by individual respondents in the CPS are based on inherently different concepts than hours worked reports by establishments. It is possible that employers, were they asked, might give different responses to hours worked questions than do their employees, and that furthermore such a difference could lead to different estimated hours worked totals within a demographic group.

Due to these possible sources of nonsampling error, data users should use the new rate statistics with caution, especially in situations where large scope differences are possible between the surveys. In the majority of situations, however, such scope differences are likely to be relatively small, and the new rate statistics can aid in our understanding and potentially in mitigating workplace injuries and illnesses.

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Notes

1 See *Nonfatal Occupational Injuries and Illnesses Requiring Days Away from Work, 2005*, USDL 06-1982 (U.S. Department of Labor), November 17, 2006, table 1; available on the Internet at http://www.bls.gov/iif/oshwc/osh/case/osnr0027.pdf.

2 See *Case and Demographic Characteristics for Work-related Injuries and Illnesses Involving Days Away From Work*, table 11; available on the Internet at http://www.bls.gov/iif/oshwc/osh/case/ostb1655.pdf.

3 See *Nonfatal Occupational Injuries and Illnesses Requiring Days Away from Work, 2005*, USDL 06-1982 (U.S. Department of Labor), November 17, 2006, table 7; available on the Internet at http://www.bls.gov/iif/oshwc/osh/case/osnr0027.pdf.

4 *Nonfatal Occupational Injuries and Illnesses Requiring Days Away from Work, 2006*, USDL 07-1741 (U.S. Department of Labor), November 8, 2007; available on the Internet at http://www.bls.gov/news.release/pdf/osh2.pdf.

5 All estimates in this note are for injury and illness cases resulting in days away from work.

6 For more information, see *2000 Standard Occupational Classifications (SOC) System*, on the Internet at http://www.bls.gov/soc/home.htm.

7 For some injury and illness cases, the case characteristic is missing. For example, gender may not be reported for each case. The incidence rate formula adjusts for such non-reports by imputing characteristics for those cases and including the imputed total in the Nj count. These adjustments are numerically very small, as case characteristics are missing only infrequently.

8 For more information on the CPS, see the CPS home page at http://www.bls.gov/cps/home.htm. The CPS sample each month consists of short overlapping panels: households are in the survey for 4 consecutive months, out for 8 months, and then back in sample for 4 final consecutive months. The new estimates of injury and illness rates for days-away-from-work cases by demographic characteristics utilize the public use CPS microdata, which are available on the Internet at http://dataferrett.census.gov/index.html.

9 The scope of the CPS data after these exclusions approximates the SOII survey scope, but there are some remaining differences in scope. These differences are discussed in the section below on caveats.

10 The 2005 incidence rates by demographic group presented in this article are for illustrative purposes. BLS has not generated a comprehensive set of such rates for 2005. Survey year 2006 is the first for which a full set of incidence rates by demographic group have been published.

11 The Occupational Employment Statistics (OES) program provides OSHS with unpublished tabulations for the private sector subsample required by the SOII scope. For more information, see the OES home page at http://www.bls.gov/oes/home.htm.

12 The OES program scope includes logging and agricultural support activities for animal and crop production (NAICS industries 1151, 1152, and 1133), and excludes other industries in NAICS sector 11. For more on NAICS, see *North American Industry Classification System (NAICS)* at BLS, available on the Internet at http://www.bls.gov/bls/naics.htm.

13 Exclusions to CPS data to fit SOII scope are, as in the case of the gender and age group statistics, primarily self-employed and government workers. The SOII scope excludes farms with fewer than 11 employees, but CPS data do not identify establishment size and hence that exclusion in the CPS data cannot be replicated.

14 Combining CPS and OES data requires merging those data at the detailed occupational level. The CPS occupational classification is in some instances coarser than the detailed SOC codes used in the SOII. In these instances the A_j and h_j of this equation must be imputed at the detailed SOC level using CPS data at the slightly coarser level dictated by the CPS classification. In these instances annual average hours worked in the detailed SOC code (the h_j) is imputed to be the average observed in the coarser CPS occupational classification. Agricultural sector hours worked (the A_j) is imputed by apportioning the CPS agricultural sector hours worked total for the coarser occupational level across the detailed SOC codes. The apportionment is in proportion to the employment distribution observed in the OES. This method assumes that the agricultural and nonagricultural sectors have similar detailed SOC distributions within the given CPS level of occupational detail. Most detailed SOC codes have little agricultural sector employment relative to the employment observed in OES, and hence apportioning the A_j has little effect on the estimates. For detailed occupations that are primarily agricultural and hence in sectors outside of OES scope, BLS reports incidence rates at the coarser level of detail observed in the CPS rather than at the detailed SOC level.

15 The U.S. Department of Labor defines a musculoskeletal disorder (MSD) as an injury or disorder of the muscles, nerves, tendons, joints, cartilage, or spinal discs. MSDs do not include disorders caused by slips, trips, falls, motor vehicle accidents, or similar accidents.

16 Some occupational estimates are suppressed where it is believed that issues of scope or definition might be more important. Examples include detailed occupations in which the external data define the occupation to be out of scope. For example, all CPS workers coded as farmers also were coded as being unincorporated self-employed workers.

Table 1. U.S. private sector nonfatal injury and illness rate per 10,000 full-time workers by gender, 2005

Gender	Nonfatal injuries and illnesses	Employment fraction	Rate of nonfatal injuries and illnesses
Male	814,250	0.588	152.7
Female	415,880	0.412	111.4
Total	1,234,680	1	135.7

Table 2. U.S. private sector nonfatal injury and illness rate per 10,000 full-time workers by age group, 2005

Age group	Nonfatal injuries and illnesses	Employment fraction	Rate of nonfatal injuries and illnesses
16 to 19	41,530	0.032	144.1
20 to 24	133,760	0.103	144.5
25 to 34	290,500	0.235	136.9
35 to 44	311,830	0.256	135.0
45 to 54	282,310	0.233	134.7
55 to 64	135,290	0.116	129.4
65 and older	27,050	0.025	122.4
Total	1,234,680	1.000	135.7

Table 3. U.S. and California private sector nonfatal injury and illness rate per 10,000 full-time workers by occupational group, 2005

Occupational Group	United States		California	
	Nonfatal injuries and illnesses	Rate of nonfatal injuries and illnesses	Nonfatal injuries and illnesses	Rate of nonfatal injuries and illnesses
Management, business, and financial occupations	28,110	30.5	4,980	41.8
Professional and related occupations	83,060	61.5	8,400	51.5
Service occupations	247,270	169.2	26,510	161.8
Sales and related occupations	80,020	74.5	8,880	69.8
Office and administrative support occupations	91,400	60.3	14,510	79.7
Farming, fishing, and forestry occupations	15,540	165.7	5,210	173.9
Construction and extraction occupations	152,490	288.6	19,540	306.4
Installation, maintenance, and repair occupations	107,770	243.8	11,730	275.3
Production occupations	173,440	191.3	14,830	168.7
Transportation and material moving occupations	253,570	321.2	26,210	314.1
Total	1,234,680	135.7	141,340	132.5

Table 4. U.S. private sector nonfatal injury and illness rate per 10,000 full-time workers for selected occupations, 2005

Occupation	Nonfatal injuries and illnesses	Employment fraction	Rate of nonfatal injuries and illnesses
Laborers and freight, stock, and material movers, hand	92,240	0.02	504.7
Truck drivers, heavy and tractor-trailer	65,930	0.017	419.9
Nursing aides, orderlies, and attendants	52,150	0.011	543.4
Construction laborers	39,270	0.008	517.6
Truck drivers, light or delivery services	32,740	0.01	360.3
Retail salespersons	32,300	0.035	102.6
Janitors and cleaners, except maids and housekeeping cleaners	31,440	0.012	283.7
Carpenters	31,270	0.009	396
Maintenance and repair workers, general	23,170	0.011	239
Stock clerks and order fillers	23,060	0.013	196.6
Registered nurses	20,100	0.017	132.5

Note: Occupations are selected to have 20,000 or more injuries and illnesses resulting in days away from work in 2005.

Table 5. U.S. private sector nonfatal injury and illness rates per 10,000 full-time workers for selected occupations, 2005

Occupation	Nonfatal injuries and illnesses	Rate of nonfatal injuries and illnesses
Nursing aides, orderlies, and attendants	52,150	543.4
Construction laborers	39,270	517.6
Laborers and freight, stock, and material movers, hand	92,240	504.7
Roofers	4,540	455.3
Industrial machinery mechanics	10,040	446.8
Truck drivers, heavy and tractor-trailer	65,930	419.9
Carpenters	31,270	396
Cooks, institution and cafeteria	6,460	396
Butchers and meat cutters	4,340	395.9
Welders, cutters, solderers, and brazers	12,700	367.7

Note: These selected occupations have the highest injury and illness rates, from among those occupations accounting for at least one-tenth of 1 percent of all employment.

Table 6. U.S. private sector nonfatal injury and illness rates per 10,000 full-time workers for musculoskeletal disorders by gender, 2005

Gender	All cases	Rate, all cases	MSD cases	MSD rate
Male	814,250	152.7	238,630	44.8
Female	415,880	111.4	136,340	36.5
Total	1,234,680	135.7	375,540	41.3