



Council of State and Territorial Epidemiologists

**Occupational Health Indicators:
A Guide for Tracking Occupational Health Conditions and
Their Determinants**

Last updated August 2006

Council of State and Territorial Epidemiologists

**In Collaboration with the National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention**

Authors' Note

This document is intended to provide guidance to states for generating Occupational Health Indicators for the years 2003 – 2006. In some instances, these “how-to” guides will be applicable for generating data prior to 2003. If you are trying to generate Occupational Health Indicator data prior to 2003 and are experiencing difficulty, please contact LaKesha Robinson at CSTE for technical assistance: lrobinson@cste.org

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This document is intended to provide guidance to states regarding the minimal level of occupational health surveillance activity. The CSTE recommends that every state should have the ability to collect and utilize data from this minimal list of indicators on a regular basis.

In 1998, the Council of State and Territorial Epidemiologists (CSTE), in association with the National Institute for Occupational Safety and Health (NIOSH), convened the NIOSH-States Occupational Health Surveillance Work Group to make recommendations to NIOSH concerning State-based surveillance activities for the coming decade. The Work Group members (see Appendix) agreed that the surveillance planning process should be outcome driven; e.g., begin with the identification of occupational injuries, illnesses and hazards to be placed under surveillance. The Work Group also identified a number of surveillance issues that cut across specific conditions and made several recommendations to NIOSH for the implementation of comprehensive State-based occupational health surveillance systems (CSTE 2001). A draft of the Work Group report contributed to the NIOSH Surveillance Strategic Plan (NIOSH 2001).

The Work Group report described draft “profiles” for priority conditions to be placed under surveillance as part of State-based surveillance systems. Since the publication of the Work Group report, public health surveillance “indicators” have been developed in several areas, including chronic disease, injury control and environmental health (CSTE 1999, STIPDA 1999, CDC 2001, CSTE 2002). These indicators are a construct of public health surveillance that define a specific measure of health or risk status (i.e., the occurrence of a health event or of factors associated with that event) among a specified population. Surveillance indicators allow a state to compare its health or risk status with that of other states and evaluate trends over time within the state, and guide priorities for prevention and intervention efforts. **Occupational health indicators** can provide information about a population’s health status with respect to workplace injuries and illnesses or to factors that can influence health. These indicators can either be measures of health (work-related disease or injury) or factors associated with health, such as workplace exposures, hazards or interventions.

This document describes the recommended set of indicators for occupational health surveillance as defined by the Work Group in 2001 through 2004. The occupational health indicators that have been developed represent the consensus view of state and NIOSH representatives, and are intended as advisory to the states. The indicators represent a core set of data that, if collected at the state level, would assist in the development of programs to prevent workplace injuries and illnesses. The indicators are a subset of the larger number of conditions that were recommended for surveillance in 2001. The indicators are intended to be used in conjunction with other guidelines for the state-based surveillance of occupational injuries and illnesses (NIOSH 1995, CSTE 2001), and to be used as a complement to overall state and national goals to improve the health of the population (CDC 2000).

Background

State health agencies, which are vested with the legal authority to require disease reporting and collect other health data, play a central role in public health surveillance. Whereas public health surveillance was once focused primarily on infectious diseases, it has expanded in recent years to include surveillance of a wide range of health outcomes and their determinants, including

chronic diseases, injuries and health behaviors (Halperin 1998). National statistics on occupational injuries and illnesses have been collected largely outside of the public health infrastructure and rely almost entirely on data reported by employers. State health agencies that have access to a wide variety of public health data systems have an important role in the surveillance of occupational diseases, injuries and hazards. State health agencies are in a unique position to:

- Provide critically needed data on occupational diseases. State health agencies can augment and complement employer-based systems to fill the information gap using a variety of existing health data sources (e.g., death certificates, hospital discharge data, physician reports).
- Generate information necessary to evaluate the conventional occupational injury data sources. Both the annual Survey of Occupational Injuries and Illnesses and the Occupational Safety and Health Administration (OSHA) Data Initiative are based on employer reports of occupational injuries and illnesses. There has been longstanding concern about the accuracy of records maintained by employers (NRC 1987). State surveillance systems – derived from multiple data sources – can be used to supplement the Bureau of Labor Statistics (BLS) data sources to better understand the true economic and human burden of occupational diseases and injury.
- Link surveillance findings with intervention efforts at the State and local levels. State agencies are in a critical position to work with employers, labor unions, health and safety professionals, and community-based organizations to develop and disseminate feasible and effective interventions that can prevent targeted workplace illnesses, injuries and fatalities.
- Integrate occupational health into mainstream public health. Building surveillance programs at the state level that are actively linked to intervention efforts provides an opportunity to integrate occupational health into mainstream public health. Collaborations with partners outside the occupational health infrastructure such as school-based programs or community health clinics may yield benefits in disseminating prevention strategies to reduce the incidence of occupational injuries and illnesses.

In a nationwide surveillance system, all states should have core capacity to conduct a minimum level of surveillance of occupational injuries and illnesses (CSTE 1995). At a minimum, this capacity should include personnel and resources to conduct surveillance of basic occupational indicators using existing data systems, and the ability to develop working relationships with federal, state and local partners in both the public and private sectors. States and their partners may also conduct more in-depth surveillance, follow-up and intervention for specific, targeted diseases, injuries and hazards.

Methods for indicator development

From 2001 through 2003, the Work Group members developed an approach for indicator selection, and then subsequently drafted and finalized the set of occupational health indicators. The following criteria were considered in selecting the indicators:

- *Availability of easily obtainable state-wide data.* The access to existing data that would be available in all states was considered to be a critical element in the development of the indicator set. The Work Group recognized that some states might have access to other sources of data for occupational health surveillance, and that additional indicators may be developed, as these data will allow. However, this document sets out a “core” or minimum set of occupational health indicators that relies on data that should be available to most states.
- *Public health importance of the occupational health effect or exposure to be measured.* This criterion was used in identifying health effect and exposure indicators. Factors considered in determining public health importance included the magnitude or extent of the effect or exposure, severity of the health effect, economic impact, emergent status of the condition, and degree of public concern.
- *Potential for workplace intervention activities.* The indicator should inform program and policy development at the state level to protect worker safety and health.

The Work Group reviewed a number of sources to guide the selection of the final indicator set. This included CSTE recommendations for the surveillance of occupational injuries and illnesses, surveillance case definitions from the published literature, and indicators developed in other public health domains (CSTE 1999, STIPDA 1999, CDC 2001, CSTE 2002).

A total of 19 indicators were selected by Work Group consensus:

- 12 **Health effect** indicators (measures of injury or illness that indicate adverse effects from exposure to known or suspected occupational hazards),
- 1 **Exposure** indicator (measures of markers in human tissue or fluid that identify the presence of a potentially harmful substance resulting from exposure in the workplace),
- 3 **Hazard** indicators (measures of potential for worker exposure to health and safety hazards in the workplace),
- 2 **Intervention** indicators (measures of intervention activities or intervention capacity to reduce workplace health and safety hazards), and
- 1 **Socioeconomic impact** indicator (measure of the economic impact of work-related injuries and illnesses).

In addition, the Work Group determined that a profile of the employment demographics within a state should be developed.

The Work Group recognizes there may be other occupational health indicators that are important to individual states or local areas depending on state and local needs. In addition, the Work Group acknowledges significant limitations in the design of these indicators, both intrinsic to the nature of the indicators as well as to the data sources upon which they rely. While the indicators should be implemented in all states, some states will not have all of the data resources available to them.

The indicator pilot project and development of "how to" guides

The Work Group recognized the need to pilot the indicators to assess the feasibility of widespread implementation and to develop specific guidance on how to compute the proposed measures. In summer 2002, the five states with NIOSH Cooperative Agreements to conduct "Core Occupational Health Surveillance" (California, Massachusetts, Michigan, New York, and Washington) agreed to both pilot-test the indicators and to create user-friendly "how-to" guides so that other states could calculate the indicators. This pilot project met one of the established goals of the NIOSH Core Surveillance program: "to develop models for other states that can be used to establish a comprehensive, nationwide system of state-based occupational injury and illness surveillance."

An implementation plan was agreed upon, and the states worked on the indicators independently, communicating primarily through conference calls and e-mail. All five pilot states did each indicator; however, individual states took the lead on the various indicators, becoming the primary authors of the "how to" guides for their respective indicators. These guides and the indicator data were shared among the states. Monthly conference calls were held to discuss data issues including, for example, clarification of numerators and denominators, and inconsistencies in the data sources between the states.

Based upon the results of the pilot, the Core States and Work Group worked together to redefine the indicators and finalize the "how to" documents. For example, Indicator 8 ("Carpal Tunnel Syndrome Cases Filed with the State Workers' Compensation System") was modified from the original indicator of "Musculoskeletal Disorders Filed with the State Workers' Compensation System" because of difficulties in defining and obtaining information on all musculoskeletal disorders. Because of differences among states with regards to their data systems, particularly Workers' Compensation data, more general "how-to" guides were developed for indicators 5 and 8 ("Amputations and Carpal Tunnel Syndrome Cases Filed with the State Workers' Compensation System").

Subsequent to the initial pilot testing by the 5 "core" states, 8 additional states (Connecticut, Maine, Nebraska, New Jersey, New Mexico, North Carolina, Oregon and Wisconsin) have pilot tested the "how to guides". Feedback from these 8 additional states were incorporated into the development of the final "how to" guides.

This document is the final "how-to" guides that have been developed by the Core states for all of the 19 indicators and the employment demographics. While these guides may need to be reworked in the future based upon the changes in the content and accessibility of various data sets, they provide easy directions to states wishing to implement these indicators. Additional indicators may also be added in the future. The Core states and the Work Group are also developing a separate data document that will present the indicator data from the pilot states.

These indicators and the "how-to" guides are meant to assist states in building a capacity for occupational health surveillance. Results from the pilot project have shown that the process of generating the indicators is as useful as the data itself. All states will not be able to complete all indicators, nor will the indicators alone provide all of the information necessary for a state occupational health program. However, the process of generating the indicators will help raise awareness and build capacity for using available data, and also open dialogues among occupational health partners within the state. The indicator data itself will be most useful when

multiple years of data have been compiled and potential problems with rate instability can be minimized and trends across multiple years can be observed within each state. Comparing data across states for certain indicators may be difficult due to different limitations inherent in the data system used for that indicator. These limitations are discussed in the individual section for each indicator. The design and implementation of any public health surveillance system should be evaluated according to established criteria (MMWR 2001). Several factors should be considered in the design and evaluation of any occupational health surveillance system:

- Underreporting by employees and health care providers of occupational injuries and illnesses;
- Inadequate health care provider recognition of occupational injuries and illnesses;
- Failure by employers and/or health care providers to report cases according to applicable state laws;
- Difficulties in attributing diseases with long latency from time of exposure to disease manifestation and/or from multifactorial causes (e.g., silicosis, lung cancer);
- Possible exclusion of at-risk populations from surveillance (e.g., self-employed, military);
- Variations in coding the causes of injury, illness or death; and
- Differences in underlying populations at risk (“denominators”).

The Work Group remains committed to ensuring the ongoing viability of this project and assisting all 50 States to address the important public health issue of work-related injury and illness.

Council of State and Territorial Epidemiologists

The Council of State and Territorial Epidemiologists enhances the ability of state and other health agencies to detect, prevent, and control diseases and risks of public health significance. CSTE does this by developing and building effective relationships among state and other health agencies. As a professional organization, CSTE represents public health epidemiologists working in state and territorial health agencies. CSTE has nearly 500 members with surveillance and epidemiologic expertise in a broad range of areas including chronic disease, communicable disease, immunization, environmental health, occupational health, and injuries. The organization frequently provides technical advice and assistance to federal agencies, including the Centers for Disease Control and Prevention (CDC), on matters of state-based epidemiology. CSTE is an affiliate organization of the Association of State and Territorial Health Officials (ASTHO), the professional organization of chief public health executives in each state and territory.

Topic: DEMOGRAPHICS	
PROFILE: EMPLOYMENT DEMOGRAPHICS	
Demographic Group:	Employed persons.
Numerator:	Employed persons 16 years or older by specific demographic characteristics
Denominator:	Employed population 16 years or older for the same calendar year
Measures of Frequency:	<ol style="list-style-type: none"> 1. Percentage of civilian workforce unemployed. 2. Percentage of civilian employment self-employed. 3. Percentage of civilian employment employed part-time. 4. Percentage of civilian employment by number of hours worked (<40, 40, 41+). 5. Percentage of civilian employment by sex. 6. Percentage of civilian employment by age group (16-17, 18-64, 65+ years of age). 7. Percentage of civilian employment by race (White, Black, Other). 8. Percentage of civilian employment by Hispanic origin. 9. Percentage of civilian employment by industry. 10. Percentage of civilian employment by occupation.
Time Period:	Calendar year
Significance and Background:	There are an estimated 133 million civil, non-institutional workers in the United States of which 46% are female, 16% are of a racial minority, and 10% are of Hispanic origin. In addition, 17% of these are part-time workers. The makeup of the workforce differs between States and may be important in understanding the occupational health status between and within a state.
Rationale:	Work-related injuries and illnesses are preventable, and control of occupational hazards is the most effective means of prevention. Research has shown relationships between demographic characteristics of workers and the risk of occupational injury or illness. Understanding the basic characteristics of a State's workforce will help State health departments assess possible occupational health risks for their State.
Limitations of Indicator:	These indicators are not direct measures of occupational risk for a State's workforce or for individual workers.
Data Resources:	BLS Geographic Profiles of Employment and Unemployment (http://www.bls.gov/opub/gp/laugp.htm) (numerator for all measures of frequency, except age). BLS Geographic Profiles of Employment and Unemployment (denominator, except age). Current Population Survey (CPS) micro-data (http://ferret.bls.census.gov/cgi-bin/ferret) for age.
Limitations of Data Resources:	The Geographic Profiles data are based on the Current Population Survey (CPS), which is a monthly probability sample of households across the United States. Geographic Profiles excludes workers less than 16 years of age, active-duty members of the military, and inmates in institutions. These data may underestimate the percentage of certain racial or ethnic worker populations that do not have permanent residences, or are migratory in nature. Additional information is available at http://www.bls.gov/opub/gp/laugp.htm .
HP2010 Objectives:	None
CSTE Positions:	None
Other Available Data:	Data are available to report cross tabulations of many of these demographic indicators, including tabulations by major industry or occupation divisions on the Geographic Profiles website. Information on age distributions by age, educational, unionization, and income are available from the CPS micro-data, which States may be able to utilize (http://ferret.bls.census.gov/cgi-bin/ferret).
Recommendations:	States could report the available cross tabulations of demographic indicators provided within the Geographic Profiles reports.

HOW-TO GUIDE:

PROFILE OF EMPLOYMENT DEMOGRAPHICS

Note: As of March 2006, the full Geographic Profile of Employment and Unemployment for 2003 and more recent years was not available on the internet. The full report is required to calculate the following employment demographics: P2, P3, P4, P9, P10. If the report is unavailable when you try to generate these components, you will need to request the relevant tables from BLS. Ask them for employment figures for your state for self-employed, part-time jobs, number of hours worked, employment by industry, and employment by occupation. You can e-mail them at: gpinfo@bls.gov.

P1. Percentage of civilian workforce unemployed

To obtain the percentage:

- Go to: <http://www.bls.gov/gps/home.htm>.
- Scroll down to “TABLES CREATED BY BLS.”
- Select year of interest.
- Within the pdf document, find your state.
- Within the Total row, find the value under Unemployment Rate.

P2. Percentage of civilian employment self-employed

a) To obtain the number of self-employed workers:

- Locate the Geographic Profile of Employment and Unemployment table listing state employment levels by class of worker.
- The heading in the first column “Population group and State” should be “TOTAL.”
- Find the row corresponding to your state.
- Add the data in the column titled “Agricultural industries Self-employed” and the data in the column titled “Nonagricultural industries Self-employed”. Multiply the result by 1,000.

b) To obtain the total employed civilians 16 years or older:

- Go to “Geographic Profile of Employment and Unemployment” as described in P1.
- Find your state.
- Within the Total row, find Employment Number.
- Multiply the listed number by 1,000.

c) To calculate the percentage:

- Divide the number of self-employed persons (P2a) by the number of employed persons (P2b).
- Multiply the result by 100 to get the **“Percentage of civilian employment self-employed”**.

P3. Percentage of civilian employment in part-time jobs

a) To obtain the number of workers in part-time jobs:

- Locate the Geographic Profile of Employment and Unemployment table listing state employment levels by full- and part-time status.
- The heading in the first column “Population group and State” should be “TOTAL.”

- Find the row corresponding to your state.
- Find the column headed “Total” under “Part-time workers.” Multiply the listed number by 1,000.

b) To obtain the total employed civilians 16 years or older:

- Use P2b.

c) To calculate the percentage:

- Divide the number of part-time workers (P3a) by the total number employed (P3b).
- Multiply the result by 100 to get the **“Percentage of civilian employment in part-time jobs”**.

P4. Percentage of civilian employment by number of hours worked

a) To obtain the number of employed persons by hours worked:

- Locate the Geographic Profile of Employment and Unemployment table listing state employment levels by hours of work.
- The heading in the first column “Population group and State” should be “TOTAL.”
- Find the row corresponding to your state.

i) 0 to 39 hours worked:

- 0 hours worked. These are individuals who worked 0 hours during the week of the survey (e.g., due to vacation, sick leave). To obtain the number of employees working 0 hours, multiply the number listed under “Total at work” by 1,000, then subtract this from the total employed civilians 16 years or older (P2b).
- 1-14 hours worked. Multiply the number listed in the column “1 to 14 hours” by 1,000.
- 15-29 hours worked. Multiply the number listed in the column “15 to 29 hours” by 1,000.
- 30-34 hours worked. Multiply the number listed in the column “30 to 34 hours” by 1,000.
- 35-39 hours worked. Multiply the number listed in the column “35 to 39 hours” by 1,000.
- Sum the above together.

ii) 40 hours worked:

- Multiply the number listed in the column “40 hours” by 1,000.

iii) 41+ hours worked:

- 41-48 hours worked. Multiply the number listed in the column “41 to 48 hours” by 1,000.
- 49 hours and over worked. Multiply the number listed in the column “49 hours and over” by 1,000.
- Sum the above together.

b) To obtain the total employed civilians 16 years or older:

- Use P2b.

c) To calculate the percentages:

- Divide each of the subcategories by P4b.
- Multiply the result by 100 to get the **“Percentage of civilian employment by number of hours worked”**.

P5. Percentage of civilian employment by sex

a) To obtain the number of employed males and females:

- Go to “Geographic Profile of Employment and Unemployment” as described in P1.
- Find your state.
- Under ‘Total’, the second row lists data for ‘Men’; the third row lists data for ‘Women’.
- Find Employment Number. For each sex, multiply the listed number by 1,000.

b) To obtain the total employed civilians 16 years or older:

- Use P2b.

c) To calculate the percentages:

- Males. Divide the number of males employed (P5a) by the total number employed (P5b). Multiply the result by 100.
- Females. Divide the number of females employed (p5a) by the total number employed (P5b). Multiply the result by 100.

P6. Percentage of civilian employment by age group (16-17, 18-64, 65+ years of age)

a) To obtain the number of employed persons by age group:

- Go to <http://ferret.bls.census.gov/cgi-bin/ferret> to download the install file for the latest application version of DataFerrett.
- Once the download is complete, double click on the file and follow the on screen instructions to install DataFerrett to your machine. (For tutorials and other information for this new version of DataFerrett go here: <http://dataferrett.census.gov>)
- Open the Ferrett application from the desktop icon.
- Register as user by placing your e-mail address into the box and press OK.
- Click on Step1: Select Dataset and Variable at the top of the page.
- Within Select Dataset to Search, click on the + sign for Current Population Survey. Then click on the + sign for Basic.
- Select the months of interest. Multiple months can be highlighted by clicking and simultaneously using the control key. (Alternatively: a range of months can quickly be selected by clicking on one month (e.g., January 2003), then clicking on another month (e.g., December 2003) while holding down the Shift key. All the months within the range should then be highlighted.)
- Select View Variables.
- Select the following datasets from CPS: “Labor Force Variables”, “Geography Variables”, and “Demographic Variables” and then select Search Variables at the bottom of that box.
- On the next screen all of the available variables for the selected tables will be displayed. Select the following variables and value ranges:
- Demographic Variable = PRTAGE “Demographics-age top coded at 90 years old.” Click to highlight. Click on Browse/Select Highlighted Variables. Check the “Select” box on next

pop-up screen. Make the age range 16 to 90. Click on OK. Click on 'OK' again to confirm and to add the variable to your data shopping basket.

- Geography Variable = GESTCEN "Geography census state code" Click to highlight. Click on Browse/Select Highlighted Variables. Check the "Select" box on next pop-up screen Click "Deselect all values", Check your State code, then click on 'OK'. Click on 'OK' to confirm and to add the variable to your data shopping basket.
- Labor Force Variable = PEMLR "Labor force – employment status" Click to highlight. Click on Browse/Select Highlighted Variables. Check the "Select" box on next pop-up screen. Click "Deselect all values" and then check "Employed – At Work" and "Employed – Absent" then click OK. Click on 'OK' to confirm and to add the variable to your data shopping basket.
- Click on "Step2 DataBasket/Download/Make a Table".
- Select "Make a Table" from the table icon. You will see an empty spreadsheet on the left side of your screen and a box on the right with the variables in the shopping basket.
- Using your mouse, pull the variable titled PRTAGE from the right side to the top left corner of the empty spreadsheet and click on "GO Get Data" on the toolbar.
- In a few seconds the table will be populated with a total employment number for all of the single years of age between 16 and 90.
- The selections for the query are provided in simple SAS code on the right side of the screen. Verify that you have selected your state, ages between 16 and 90, "PEMLR=1" and "PEMLR=2" and the correct months of interest.
- Highlight the cells containing data in the spreadsheet. Select Copy from the Edit dropdown menu. Paste the copied cells into an Excel file.

i) 16 to 17 year olds

- In Excel, sum the average annual number of employed persons corresponding to 16-17 year olds.

ii) 18 to 64 year olds

- Follow the process above (i) for ages 18-64. (Note that if you simply highlight the values associated with the 18-64 group, Excel should illustrate the sum at the bottom of the screen.)

iii) 65+ year olds

- Follow the process above (i) for ages 65 to 90 (equivalent to 65 and older). (Again, summation can be done by Excel by simply highlighting the appropriate values.)

b) To obtain the total employed civilians 16 years or older:

- Sum the average annual number of employed for each of the three age groups.

c) To calculate the percentage:

- 16 to 17 year olds. Divide the number of 16 to 17 year olds by the total employment (P6b). Multiply the result by 100.
- 18 to 64 year olds. Divide the number of 18 to 64 year olds by the total employment (P6b). Multiply the result by 100.
- 65+ year olds. Divide the number of 65+ year olds by the total employment (P6b). Multiply the result by 100.

P7. Percentage of civilian employment by race

a) To obtain the number of employed by race:

- Go to “Geographic Profile of Employment and Unemployment” as described in P1.
- Find your state.
 - i) White.
 - Find Employment Number listed for row titled “White.” Multiply the number by 1,000.
 - ii) Black.
 - Find Employment Number listed for row titled “Black” (or in some years “Black or African American”). Multiply the number by 1,000.
 - iii) Other.
 - Sum the number of Whites (P7ai) and the number of Blacks (P7aii). Subtract this number from the “Total employed civilians 16 years or older” (P2b).

b) To obtain the total employed civilians 16 years or older:

- Use P2b.

c) To calculate the percentage:

- White. Divide the number of Whites employed (P7ai) by the total number employed (P7b). Multiply the result by 100.
- Black. Divide the number of Blacks employed (P7aii) by the total number employed (P7b). Multiply the result by 100.
- Other. Divide the number of Other races employed (P7aiii) by the total number employed (P7b). Multiply the result by 100.

P8. Percentage of civilian employment by Hispanic origin

a) To obtain the number of Hispanic origin employed:

- Go to “Geographic Profile of Employment and Unemployment” as described in P1.
- Find your state.
- Find Employment Number listed for row titled “Hispanic or Latino ethnicity” (or in some years, “Hispanic origin”).
- Multiply the number by 1,000.

b) To obtain the total employed civilians 16 years or older:

- Use P2b.

c) To calculate the percentage:

- Divide the number of Hispanic origin employed (P8a) by the total employment (P8b). Multiply the result by 100.

P9. Percentage of civilian employment by industry

- Locate the Geographic Profile of Employment and Unemployment table listing state employment levels by industry.
- The heading in the first column “Population group and State” should be “TOTAL.”

- Find the row corresponding to your state.
- Find the percent of the total employed in the various industries.

Prior to 2003, these categories were:

- Construction
- Manufacturing – Durable goods
- Manufacturing – Non-durable goods
- Transportation/communications/public utilities
- Trade
- Finance/insurance/real estate
- Services
- Government
- Agriculture.

Starting in 2003, the categories are:

- Mining
- Construction
- Manufacturing – Durable goods
- Manufacturing – Nondurable goods
- Wholesale and retail trade
- Transportation and utilities
- Information
- Financial activities
- Professional and business services
- Education and health services
- Leisure and hospitality
- Other services
- Public administration
- Agriculture and related.

P10. Percentage of civilian employment by occupation

- Locate the Geographic Profile of Employment and Unemployment table listing state employment levels by occupation.
- The heading in the first column “Population group and State” should be “TOTAL.”
- Find the row corresponding to your state.
- Find the percent of the total employed in the various occupations.

Prior to 2003, these categories were:

- Executive/administrative/managerial
- Professional specialty
- Technicians and related support
- Sales
- Administrative support including clerical
- Service
- Precision production/craft/repair
- Machine operators/assemblers/inspectors

- Transportation/material moving
- Handlers/equipment cleaners/helpers/laborers
- Farming/forestry/fishing.

Starting in 2003, the categories are:

- Management, business and financial operations
- Professional and related occupations
- Service
- Sales and related occupations
- Office and administrative support
- Farming, fishing, and forestry
- Construction and extraction
- Installation, maintenance, and repair
- Production
- Transportation and material moving.

Topic:	OCCUPATIONAL INJURIES AND ILLNESSES COMBINED
INDICATOR #1: NON-FATAL WORK RELATED INJURIES AND ILLNESSES REPORTED BY EMPLOYERS	
Demographic Group:	Employed persons in the private sector
Numerator:	Estimated cases of work-related injuries and illnesses Estimated cases of injuries and illnesses involving days away from work Estimated cases of injuries and illnesses involving more than 10 days away from work
Denominator:	Estimated total full-time equivalents (FTEs) worked for the same calendar year
Measures of Frequency:	Estimated annual total number of work-related injuries and illnesses (numerator) Estimated annual total work-related injury and illness incidence rate per 100,000 FTEs Estimated annual total number of cases involving days away from work (numerator) Estimated annual total incidence rate for cases involving days away from work per 100,000 FTEs Estimated annual total number of cases involving more than 10 days away from work (numerator)
Time Period:	Calendar year
Significance and Background:	In 1999, the U.S. Bureau of Labor Statistics (BLS) reported an estimated total of 5.7 million injury and illness cases within the private sector workforce, an estimated incidence rate of 6.3 cases per 100 full-time-equivalent workers. This included a total of 1.7 million injury and illness cases (1.9 cases per 100 FTE workers) requiring recuperation away from work beyond the day of the incident.
Rationale:	Work-related injuries and illnesses are preventable, and control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries can help target prevention programs and activities. Information on reported cases can be used to identify contributory factors and to develop improved or new prevention strategies or regulations to protect workers.
Limitations of Indicator:	Employers are required to record events that result in death, loss of consciousness, days away from work, restricted work, or medical treatment beyond first aid. They are only required to report the detailed case characteristics (e.g. nature, body part, event) when the injury or illness results in at least one day away from work. Employers do not always record all relevant events. Also, employers are often unaware of work-related conditions for which employees have obtained medical care from their personal health care providers, and conditions that have long latencies and are diagnosed long after an employee leaves their employment. With respect to injuries/illnesses involving days away from work, employers vary in their use of restricted work activity to reduce lost workdays among their employees with work-related conditions, thereby avoiding cases with days away from work.
Data Resources:	Annual BLS Survey of Occupational Injuries and Illnesses (SOII)
Limitations of Data Resources:	The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases. Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees. Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate State-specific estimates. Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details).
HP2010 Objectives:	None
CSTE Positions:	None
Other Available Data:	Industry, occupation, age, gender, race/ethnicity, nature of injury, body part, type of event and source of injury, length of service. Public sector should be looked at, if available.(Details are available only for injuries/illnesses involving days away from work.)

Recommendations:	SOII has many data elements that can be used to better define patterns of work-related injuries and illnesses in the state. These include, for example, industry-specific counts and rates, and, for cases involving days away from work, counts (not rates) of illnesses and injuries by occupation, length of service, age, gender, race/ethnicity and sources of injury.
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HOW-TO GUIDE – INDICATOR #1:

NON-FATAL WORK RELATED INJURIES AND ILLNESSES REPORTED BY EMPLOYERS

Two methods to obtain the data are offered - both methods will yield the same numbers. The first method uses the Bureau of Labor Statistics (BLS) website to access the data. The second method uses a CD-ROM, provided by BLS, to access the data. Because the BLS CD-ROM is needed for some of the other indicators, states may elect to use the CD-ROM for this indicator as well. The CD-ROMS can be obtained annually from state SOII programs or BLS regional offices. State contact information is provided at <http://www.bls.gov/iif/home.htm>

1.1 Estimated Annual Total Number of Work-Related Injuries and Illnesses

Method 1:

- Go to the BLS web site: <http://www.bls.gov/iif/home.htm#tables>.
- Scroll down to “Regional Resources” on the right hand side of the page.
- Select your state and click ‘Go’.
- Select “Case counts” under SOII for the specific year needed.
- From resulting Table 7, read across ‘Private Industry’ row and down major column ‘Total Recordable Cases’
- Multiply this cell’s value by 1,000 to get the ‘**Estimated annual total number of work-related injuries and illnesses**’.

Method 2:

- Use OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and install the profile program onto your computer following the instructions enclosed with the CD-ROM. Queries for specific states will necessitate the use of Disk 1 or Disk 2 depending upon region.
- Make sure the CD-ROM is inserted in the appropriate drive and double-click on your desktop shortcut ‘OSH_Profiles NAICS’. Click on ‘Enable Macros’. You will see a spreadsheet that says ‘Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System’ with a blue background.
- Click on ‘Click here!!!’. Click on ‘CDs’ button and select the drive for your CD-ROM (in most cases, it’s the D:\ drive). Then click ‘OK’. Click ‘OK’ again.
- Select ‘Annual Survey Summary Tables’ from ‘Publication Type’ column.
- Select State and Year.
- Click on ‘Create Profiles/Tables’.
- Select Table 7 - ‘Counts of injuries and illnesses by industry’. Click ‘OK’.
- Once automated data processing is complete, click ‘Close’, then click ‘Yes’ to exit system, and then ‘OK’.
- From resulting table, read across ‘Private Industry’ row and down major column ‘Total Recordable Cases.’
- Multiply the value of this cell by 1,000 to get the ‘**Estimated annual total number of work-related injuries and illnesses**’ for your state.
- Click on the ‘X’ sign on the top of the right hand side of the spreadsheet to close it. Click ‘NO’ to saving changes.

1.2 Estimated Annual Total Work-Related Injury and Illness Incidence Rate per 100,000 FTEs

Method 1:

- Go to the BLS web site: <http://www.bls.gov/iif/home.htm#tables>.
- Scroll down to “Regional Resources” on the right hand side of the page.
- Select your state and click ‘Go’.
- Select ‘Incidence Rates’ under SOII for the specific year data is needed.
- From resulting Table 6, read across ‘Private Industry’ row and down major column ‘Total Recordable Cases.’ (rate is provided per 100 FTEs).
- Multiply the value of this cell by 1,000 to get the **‘Estimated annual total work-related injury and illness incidence rate per 100,000 FTEs’**.

Method 2:

- Use OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and double-click on your desktop shortcut ‘OSH_Profiles NAICS’.
- Click on ‘Enable Macros’. You will see a spreadsheet that says ‘Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System’ with a blue background.
- Click on ‘Click here!!!’ Click on ‘CDs’ button and select the drive for your CD-ROM (in most cases, it’s the D:\ drive). Then click ‘OK’. Click ‘OK’ again.
- Select ‘Annual Survey Summary Tables’ from ‘Publication Type’ column.
- Select State and Year.
- Click on ‘Create Profiles/Tables’.
- Select Table 6 - ‘Incidence rate of injuries and illnesses by industry’. Click ‘OK’.
- Once automated data processing is complete, click ‘Close’, then click ‘Yes’ to exit system, and then ‘OK’.
- From resulting table, read across ‘Private Industry’ row and down major column ‘Total Recordable Cases’ (rate is provided per 100 FTEs).
- Multiply the value of this cell by 1,000 to get the **‘Estimated annual total work-related injury and illness incidence rate per 100,000 FTEs’**.
- Click on the ‘X’ sign on the top of the right hand side of the spreadsheet to close it. Click ‘NO’ to saving changes.

1.3 Estimated Annual Total Number of Cases Involving Days Away from Work

Method 1:

- Go to the BLS web site: <http://www.bls.gov/iif/home.htm#tables>.
- Scroll down to “Regional Resources” on the right hand side of the page
- Select your state and click ‘Go’.
- Select “Case counts’ under SOII for the specific year needed.
- From resulting Table 7, read across ‘Private Industry’ row and down major column ‘Cases with days away from work, job transfer, or restriction.’ Identify sub-column ‘Cases with days away from work.’

- Multiply the value of this cell by 1,000 to get the **‘Estimated annual total number of cases involving days away from work’**.

Method 2:

- Use OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and double-click on your desktop shortcut ‘OSH_Profiles NAICS’. Click on ‘Enable Macros’. You will see a spreadsheet that says ‘Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System’ with a blue background.
- Click on ‘Click here!!!’ Click on ‘CDs’ button and select the drive for your CD-ROM. Then click ‘OK’. Click ‘OK’ again.
- Select ‘Annual Survey Summary Tables’ from ‘Publication Type’ column.
- Select State and Year.
- Click on ‘Create Profiles/Tables’.
- Select Table 7 - ‘Counts of injuries and illnesses by industry’. Click ‘OK’
- Once automated data processing is complete, click ‘Close’, then click ‘Yes’ to exit system, and then ‘OK’.
- From resulting table, read across ‘Private Industry’ row and down major column ‘Cases with days away from work, job transfer, or restriction.’ Identify sub-column ‘Cases with days away from work.’
- Multiply the value of this cell by 1,000 to get the **‘Estimated annual total number of cases involving days away from work’**.
- Click on the ‘X’ sign on the top of the right hand side of the spreadsheet to close it. Click ‘NO’ to saving changes.

1.4 Estimated Annual Total Incidence Rate for Cases Involving Days Away from Work per 100,000 FTEs

Method 1:

- Go to the BLS web site: <http://www.bls.gov/iif/home.htm#tables>.
- Scroll down to “Regional Resources” on the right hand side of the page
- Select your state and click ‘Go’.
- Select ‘Incidence Rates’ under SOII for the specific year needed.
- From resulting Table 6, read across ‘Private Industry’ row and down major column ‘Cases with days away from work, job transfer, or restriction.’ Identify sub-column ‘Cases with days away from work’ (rate is provided per 100 FTEs).
- Multiply the value of this cell by 1,000 to get the **‘Estimated annual total incidence rate for cases involving days away from work per 100,000 FTEs’**.

Method 2:

- Use OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and double-click on your desktop shortcut ‘OSH_Profiles NAICS’. Click on ‘Enable Macros’. You will see a spreadsheet that says ‘Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System’ with a blue background.
- Click on ‘Click here!!!’ Click on ‘CDs’ button and select the drive for your CD-ROM. Then click ‘OK’. Click ‘OK’ again.
- Select ‘Annual Survey Summary Tables’ from ‘Publication Type’ column.
- Select State and Year.

- Click on 'Create Profiles/Tables'.
- Select Table 6 - 'Incidence rate of injuries and illnesses by industry'. Click 'OK'
- Once automated data processing is complete, click 'Close', then click 'Yes' to exit system, and then 'OK'.
- From resulting table, read across 'Private Industry' row and down major column 'Cases with days away from work, job transfer, or restriction.' Identify sub-column 'Cases with days away from work' (rate is provided per 100 FTEs).
- Multiply the value of this cell by 1,000 to get the '**Estimated annual total incidence rate for cases involving days away from work per 100,000 FTEs**'.
- Click on the 'X' sign on the top of the right hand side of the spreadsheet to close it. Click 'NO' to saving changes.

1.5 Estimated Annual Total Number of Cases Involving more than 10 Days Away from Work

- Use OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and double-click on your desktop shortcut 'OSH_Profiles NAICS'. Click on 'Enable Macros'. You will see a spreadsheet that says 'Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System' with a blue background.
- Click on 'Click here!!!' Click on 'CDs' button and select the drive for your CD-ROM. Then click 'OK'. Click 'OK' again.
- Select 'Case and Demo Numbers (Table1)' from 'Profile Type' column.
- Select State and Year.
- Select 'NAICS' from 'Characteristic Type'
- Select 'Private Industry' from 'Ownership'
- Select '000000 Total' from 'Characteristic Code' (includes all industries).
- Click on 'Create Profiles/Tables'.
- Once automatic data processing is complete, click 'Close', then click 'Yes' to exit system, and then 'OK'.
- On page 2 in the resulting table, under 'Number of days away from work', **highlight** the following three cells under the Private Industry column: '11 to 20 days', '21 to 30 days', and '30+ days'.
- On the right side of your screen (at the bottom), Excel will have summed the counts in these cells, 'Sum = xx,xxx'.
- Write down this sum, which is the '**Estimated annual total number of cases involving more than 10 days away from work**'.
- Click on the 'X' sign on the top of the right hand side of the spreadsheet to close it. Click 'NO' to saving changes.

Data Tips: Regional BLS offices can provide revised/updated counts and rates for any year. Numbers and rates may not be available from the CD-ROM or web-site if the estimate does not meet the publishable criteria of BLS. This is particularly true for small states and rare conditions.

Topic: OCCUPATIONAL INJURIES AND ILLNESSES COMBINED	
INDICATOR #2: WORK-RELATED HOSPITALIZATION	
Demographic Group:	Employed persons
Numerator:	Hospital discharges with primary payor coded as workers' compensation
Denominator:	Employed persons age 16 years or older for the same calendar year
Measures of Frequency:	Annual number of hospitalizations for persons age 16 years or older (numerator) Annual crude rate of hospitalization per 100,000 employed persons age 16 years or older
Time Period:	Calendar year
Significance and Background:	In 1999, there were 5.7 million work-related injuries and illnesses reported in private industry of which 1.7 million required lost work time beyond the day of the incident. Workers' compensation costs in the United States total more than \$100 billion dollars per year.
Rationale:	Individuals hospitalized with work-related injuries and illnesses have some of the most serious and costly work-related adverse health outcomes. Tracking of these significant adverse health effects should be undertaken to document the burden of occupational injuries and illnesses, to design, target, and evaluate the impact of prevention efforts over time, and to identify previously recognized settings in which workers may continue to be at high risk.
Limitations of Indicator:	Hospital discharge records are only available for non-federal, acute care hospitals. Individuals hospitalized for work-related injuries and illnesses represent less than 10 percent of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or longshore and maritime workers are not covered by state workers' compensation systems. Attribution of payor in hospital discharge may not be accurate. Data between states may not be comparable due to differences in states' workers' compensation programs.
Data Resources:	Hospital discharge data (numerator) BLS Current Population Survey Data (denominator)
Limitations of Data Resources:	Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients, to correctly diagnose work-related conditions, and/or to list the condition as a discharge diagnosis. Residents of one state may be hospitalized in another state and not be reflected in his/her state's hospitalization data. All admissions are counted, including multiple admissions for a single individual. Until hospital discharge data is available in all states, aggregation of state data to produce nationwide estimates will be incomplete. Data on race/ethnicity is not collected in some states and is incomplete and/or of questionable validity in others.
HP2010 Objectives:	None
CSTE Positions:	None
Other Available Data:	Age, gender, race/ethnicity, diagnosis, residence zip code
Recommendations:	Age, gender, race/ethnicity, zip code specific counts and rates can be used to better define the pattern of work-related hospitalizations. Proportion of all hospitalizations in the state can be examined.

HOW-TO GUIDE – INDICATOR #2:

WORK-RELATED HOSPITALIZATIONS

2.1 Annual number of hospitalizations for persons age 16 years or older

Obtain from the State Health Department the number of cases meeting the following criteria from the hospital discharge file:

- Primary payor = Workers' Compensation.
- Limit age to those 16 years and older.
- Select for state of residence='your state'.
- Exclude:
 - age unknown
 - out-of-state residents and unknown residence
 - out-of-state hospitalizations.
- Use unduplicated data (no exclusions for deaths, readmissions).
- Use discharge during calendar year, not fiscal year.
- Use all cases reported on the discharge file, regardless of length of stay.
- This will yield the '**Annual number of hospitalizations for persons age 16 years or older**'.

2.2 Annual crude rate of hospitalization per 100,000 employed persons age 16 years or older

a) To obtain the denominator for the rate:

- Go to <http://www.bls.gov/gps/#tables> to access the Geographic Profile of Employment and Unemployment (GPS) which contains Current Population Survey estimates for state-specific numbers of employed persons
- Page down to heading "TABLES CREATED BY BLS:"
- Find table for "Employment status of the civilian noninstitutional population in states by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age:" Note: Data from 1997 through 2002 can be found at <http://www.bls.gov/opub/gp/laugp.htm>
- Choose the Annual Averages for year of interest
- Scroll down to find your state.
- Read the 'Total' row for your state and the 4th data column – 'Employment Number'. This is the '**Number of Employed persons age 16 years or older**' (in thousands). Multiply by 1000.

b) To calculate the rate:

- Divide the numerator (2.1) by the denominator (2.2a).
- Multiply this result by 100,000 to get the '**Annual crude rate of hospitalization per 100,000 employed persons age 16 years or older**'.

Topic: ACUTE AND CUMULATIVE OCCUPATIONAL INJURIES	
INDICATOR #3: FATAL WORK-RELATED INJURIES	
Demographic Group:	Employed persons
Numerator:	All fatal work-related injuries reported to the Census of Fatal Occupational Injuries (CFOI)
Denominator:	Employed persons age 16 years or older for the same calendar year
Measures of Frequency:	Annual number of fatal work-related injuries (numerator) Annual crude fatality rate per 100,000 employed persons age 16 years or older
Time Period:	Calendar year
Significance and Background:	Each year, nearly 6,000 cases of work-related fatalities are reported to the Census of Fatal Occupational Injuries (CFOI) Program administered by the Bureau of Labor Statistics (BLS). On an average day, 16 workers die as a result of injuries sustained at work.
Rationale:	Multiple factors and risks contribute to work-related fatalities, including workplace/process design, work organization, worker characteristics, economics and other social factors. Surveillance of work-related fatalities can identify new hazards and case clusters, leading to the development of new interventions and development of new or revised regulations to protect workers.
Limitations of Indicator:	Fatalities of people younger than 16 may be included in the numerator but are not included in the denominator, since employment statistics are only available for those 16 years of age and older. Because the numbers of deaths among those less than 16 in any one state are small, these numbers are not broken out in the BLS tables and often do not meet the BLS publication criteria. Also CFOI reports data on work-related fatalities by the state in which the fatal incident occurred, which is not necessarily the state of death or the state of residence. The denominator data used for calculating rates is based on state of residence, thus rates may overestimate risk for a state if the fatal incidents involved victims who were out of state residents. Likewise, rates may be underestimated if fatal incidents occurred in other states. Deaths in the military are included in the counts but not the rates.
Data Resources:	Census of Fatal Occupational Injuries (numerator) BLS Current Population Survey Data (denominator)
Limitations of Data Resources:	CFOI program states are not permitted to release occupation or industry specific data when data are sparse. Such sparse data is categorized under 'others'. The CFOI program, although it has a data element for ICD codes, publishes findings according to the OIIC classification system rather than ICD. Therefore, data from CFOI may not be comparable to causes of death documented on death certificates.
HP2010 Objectives:	20-1 and 20-5
CSTE Positions:	None
Other Available Data	Industry and occupation, age, gender, race/ethnicity, nature, source of injury and event

HOW-TO GUIDE - INDICATOR #3:

WORK-RELATED FATAL INJURIES

Two methods to obtain the data are offered - both methods will yield the same numbers. The first method uses the Bureau of Labor Statistics (BLS) website to access the data, and is recommended. The second alternate method uses a CD-ROM, provided by BLS, to access the data. The CD-ROMS can be obtained annually from state CFOI programs or BLS regional offices. State contact information is provided at <http://www.bls.gov/iif/oshstate.htm>

3.1 Annual number of work-related traumatic fatalities

Method 1:

- Go to the BLS web site: <http://www.bls.gov/iif/home.htm#tables>.
- Scroll down to “Regional Resources” on the right hand side of the page.
- Select your state and click ‘Go’.
- Under CFOI, select ‘Profile of Occupational Fatalities’ file for the appropriate year.
- From resulting table (table 1), read across ‘Total’ row and down ‘Total’ column. This is the ‘**Annual number of work-related fatal injuries**’. A ^(P) notation next to the number denotes a preliminary count, subject to change at a later date.

Method 2:

- Use the CFOI Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and install the profile program onto your computer following the instructions enclosed with the CFOI Profiles CD-ROM.
- Make sure the CD-ROM is inserted and double-click on your desktop shortcut ‘CFOI_Profiles NAICS’. Click on ‘Enable Macros’. You will see a spreadsheet that says ‘Bureau of Labor Statistics Census of Fatal Occupational Injuries’ with a blue background.
- Click on ‘Click here!!!’. Click on ‘CDs’ button and select the drive for your CD-ROM (in most cases, it’s the D:\ drive). Then click ‘OK’. Again click ‘OK’. You will see a pull-down menu and with the title ‘CFOI Profiles and Tables’.
- Select ‘CFOI Numbers Profile (Table 1)’.
- Select state and year.
- From ‘Characteristic type’, select ‘NAICS’.
- From ‘Characteristic code’, select ‘T Total’.
- Click on ‘Create Profiles/Tables’.
- Once automated data processing is complete, click ‘Close’, then click ‘Yes’ to exit system, and then ‘OK’.
- From resulting table, read across the 1st row ‘Total’ and down the 2nd column ‘All industries’. This is the ‘**Annual number of work-related fatal injuries**’ for your state.
- Click on the ‘X’ sign on the top of the right hand side of the blank spreadsheet. Click ‘NO’ to saving changes.

3.2 Annual crude fatality rate per 100,000 employed persons age 16 years or older

a) To obtain the denominator for the rate:

- Go to <http://www.bls.gov/gps/#tables> to access the Geographic Profile of Employment and Unemployment (GPS) which contains Current Population Survey estimates for state-specific numbers of employed persons
- Page down to heading "TABLES CREATED BY BLS:"
- Find table for "Employment status of the civilian noninstitutional population in states by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age:" Note: Data from 1997 through 2002 can be found at <http://www.bls.gov/opub/gp/laugp.htm>
- Choose the Annual Averages for year of interest
- Scroll down to find your state.
- Read the 'Total' row for your state and the 4th data column – 'Employment Number'. This is the '**Number of Employed persons age 16 years or older**' (in thousands). Multiply by 1000.

b) To calculate the rate:

- Divide the 'Annual number of work-related fatal injuries' from 3.1 by the 'Number of employed persons 16 years of age or older' from 3.2a.
- Multiply the result by 100,000 to get the '**Annual crude fatality rate per 100,000 employed persons age 16 years and older**'.

NOTE: Because of data limitations, fatalities among persons less than 16 years of age may be included in the numerator (3.1) but are excluded from the denominator.

Data Tips: CFOI publishes preliminary data approximately nine months after the close of the calendar year. A year later, CFOI publishes final, updated counts. The indicator should be based on the final counts. Data for previous years are not available on BLS web site. State CFOI programs and regional BLS offices can provide revised/updated count and fatality rates for any year. Numbers may not be available from the CD-ROM or the web-site if the estimate does not meet the publishable criteria of BLS. This is particularly true for small states.

Topic: ACUTE AND CUMULATIVE OCCUPATIONAL INJURIES	
INDICATOR #4: WORK-RELATED AMPUTATIONS WITH DAYS AWAY FROM WORK REPORTED BY EMPLOYERS	
Demographic Group:	Employed persons in the private sector
Numerator:	Estimated cases of work-related amputation with days away from work (OIIIC nature code 031)
Denominator:	Estimated total full-time equivalents (FTEs) worked for the same calendar year
Measures of Frequency:	Estimated annual number of work-related amputation cases with days away from work (numerator) Estimated annual incidence rate of work-related amputation cases with days away from work per 100,000 FTEs
Time Period:	Calendar year
Significance and Background:	Each year, it is estimated that between 16,000 and 21,000 workers will experience a work-related amputation. About 90% of work-related amputations are to the fingers. Results of one study indicated that 22% of all employees who experienced finger amputations had to give up their original employment. These injuries may greatly affect a worker's job skills and reduce earnings.
Rationale:	Work-related amputations are a preventable serious injury, and control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries can help target prevention programs and activities. Information on reported cases can be used to identify contributory factors and to develop improved or new prevention strategies or regulations to protect workers.
Limitations of Indicator:	Employers are required to record events that result in death, loss of consciousness, days away from work, restricted work, or medical treatment beyond first aid. They are only required to report the detailed nature of injury when the injury results in at least one day away from work. Employers do not always record all relevant events. Employers vary in their use of restricted work activity to reduce lost workdays among their employees with work-related conditions, thereby avoiding cases with days away from work.
Data Resources:	Annual Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII)
Limitations of Data Resources:	The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases. Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees. Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate State-specific estimates. Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details). In addition, the SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. For example, a debilitating injury that occurs on the last day of the calendar year will have no lost work-time associated with it in the SOII.
HP2010 Objectives:	20-2
CSTE Positions:	None
Other Available Data:	Industry, occupation, age, gender, race/ethnicity, body part, type of event and source of injury. (Details are available only for injuries/illnesses involving days away from work.)
Recommendations:	SOII has many data elements that can be used to better define patterns of work-related amputations in the state. These may include, for example, industry-specific counts and rates of injuries, and for cases involving days away from work, counts (not rates) by occupation, length of service, age, gender, race/ethnicity and sources of injury.

HOW-TO GUIDE – INDICATOR #4:

WORK-RELATED AMPUTATIONS WITH DAYS AWAY FROM WORK REPORTED BY EMPLOYERS

Data for this indicator are available on CD-ROMs provided by the Bureau of Labor Statistics (BLS). These CD-ROMs can be obtained annually from state SOII programs or BLS regional offices. State contact information is provided at <http://www.bls.gov/iif/oshstate.htm>

4.1 Estimated Annual Number of Work-Related Amputations Involving Days Away from Work

- Use OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and install program onto your computer following the instructions enclosed with the CD-ROM. Queries for specific states will necessitate use of Disk 1 or Disk 2 depending upon region.
- Double-click on your desktop shortcut 'OSH_Profiles NAICS'. Click on 'Enable Macros'. You will see a spreadsheet that says 'Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System' with a blue background.
- Click on 'Click here!!!'. Click on 'CDs' button and select the drive for your CD-ROM (in most cases, it's the D:\ drive). Then click 'OK'. Again click 'OK'.
- From the 'Profile Type' column, select 'Case and Demo Numbers (Table 1)'.
- Select State and Year.
- From 'Characteristic Type', select 'Nature'.
- From 'Characteristic Code', select nature code '031 Amputations'.
- Click on 'Create Profiles/Tables'.
- When tables are completed, click on 'Close', then click 'Yes' to exit system, and then 'OK'.
- Read across 1st row 'Total' and down 3rd column 'Amputations (Code 031)' from resulting table. Multiply this cell's value by 100 to get the '**Estimated annual number of work-related amputations involving days away from work**'.
- Click on the 'X' sign on the top of the right hand side of the spreadsheet to close it. Click 'NO' to saving changes.

4.2 Estimated Annual Incidence Rate of Amputations Involving Days Away from Work per 100,000 FTEs

- Use the OSH Profile CD-ROM (CD-ROM is available from BLS).
- Insert the CD-ROM and double-click on your desktop shortcut 'OSH_Profiles NAICS'. Click on 'Enable Macros'. You will see a spreadsheet that says 'Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses Profiles System' with a blue background.
- Click on 'Click here!!!'. Click on 'CDs' button and select the drive for your CD-ROM. Then click 'OK'. Again click 'OK'.
- From the 'Profile Type' column, select 'Case and Demo Incidence Rates (Table 2)'.
- Select State and Year.
- From 'Characteristic Type', select 'Nature'.
- From 'Characteristic Code', select nature code '031 Amputations'.
- Click on 'Create Profiles/Tables'.
- When tables are completed, click on 'Close', then click 'Yes' to exit system, and then 'OK'.

- Read across 1st row 'Total' and down 3rd column 'Amputations (Code 031)' from resulting table. Multiply the value of this cell by 10 to get the '**Estimated annual incidence rate of work-related amputations involving days away from work per 100,000 FTEs**'.
- Click on the 'X' sign on the top of the right hand side of the spreadsheet to close it. Click 'NO' to saving changes.

Data Tips: Numbers and rates are not available on the CD-ROM when the estimates are not reliable and do not meet BLS publication criteria. BLS does not publish rates less than 0.05. Rates under 0.05 are not considered publishable in the case and demographics system.

Topic: ACUTE AND CUMULATIVE OCCUPATIONAL INJURIES	
INDICATOR #5: STATE WORKERS COMPENSATION CLAIMS FOR AMPUTATIONS WITH LOST WORK-TIME	
Demographic Group:	Workers covered by State workers' compensation system
Numerator:	Amputation cases filed with State workers' compensation system
Denominator:	Estimated number of workers covered by State workers' compensation system for the same calendar year
Measures of Frequency:	Annual number of amputations filed with State Workers' Compensation (numerator) Annual incidence rate of amputations filed with State Workers' Compensation per 100,000 workers covered by State workers' compensation system
Time Period:	Calendar year
Significance and Background:	It is estimated that between 16,000 and 21,000 workers each year experience a work-related amputation. About 90% of work-related amputations involve the fingers. Results of one study indicated that 22% of all employees who experienced finger amputations had to give up their original employment. These injuries may greatly affect a worker's job skills and reduce earnings.
Rationale:	Work-related amputations are preventable, and control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries can help target prevention programs and activities. Information on reported cases can be used to identify contributory factors and to develop improved or new prevention strategies or regulations to protect workers.
Limitations of Indicator:	Differences in the availability of data (i.e., for lost time cases only versus all medical benefits cases) and eligibility criteria between states indicate that data for this condition should be used to evaluate trends within a state but not to make state-to-state comparisons.
Data Resources:	Workers' compensation system (numerator) National Academy of Social Insurance (NASI) estimate of workers covered by workers' compensation (denominator)
Limitations of Data Resources:	Workers' compensation data is not complete, as the majority of individuals with work-related illnesses and many with work-related injuries do not file for workers' compensation. Workers' compensation claims may be denied. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or longshore and maritime workers may not be covered by state workers' compensation systems.
HP2010 Objectives:	20-2
CSTE Positions:	None
Other Available Data:	Age, gender, occupation and industry, type of event and source of injury
Recommendations:	Age, gender, occupation, and industry-specific counts and rates can be used to better define the pattern of occupational injuries/illnesses. Frequency distributions by events and source of injury can highlight important causes.

HOW-TO GUIDE – INDICATOR #5:

STATE WORKERS COMPENSATION CLAIMS FOR AMPUTATIONS WITH LOST WORK-TIME

5.1 Annual number of amputations filed with State Workers' Compensation

Variability in the coding systems used by State workers' compensation (WC) systems precludes a universal method for identifying amputation injuries. Data variables within State workers' compensation data systems may be incomplete and are often not subject to quality control.

Collaboration with the workers' compensation database manager is essential for completion.

NOTE: This is administrative data that changes over time. Therefore, this data should be collected at the same time each year. The following are tips for constructing the database for analysis:

- Identify cases by date of injury.
 - If date of injury is not available, use the date the claim was filed.
 - If a trend analysis is to be performed for state data, claim filing date is more appropriate to use than claim date of injury
- Include only accepted cases which result in lost workdays or 'time loss.'
- Identify coding system used for State workers' compensation amputation cases.
Common coding systems encountered by the pilot states include:
 - American National Standards Institute Z16.2 (ANSI Z16.2) – Nature of Injury Code = 100 'Amputation/Enucleation';
 - Occupational Injury and Illness Classification System (OIICS) – Nature of Injury Code = 031 'Amputation';
 - International Association of Industrial Accident Boards and Commissions Electronic Data Interchange Nature of Injury Code = 237028 'Amputation'.
- Exclude claims that involve the following body parts/regions unlikely to be associated with an amputation: eye, back, chest, abdomen, and body systems (e.g., respiratory system).
- Include claimants of all ages and those with age unknown.
- Include out of state residents.
- Recognize and document state workers' compensation laws that may affect state-to-state comparisons
 - Number of lost workdays for claim to be considered a 'time loss' claim
 - Statute of limitations for work-related injury claim filing
 - Criteria for acceptance of a work-related injury WC claim
 - Reporting of a workers' compensation claim to state workers' compensation system
 - Medical care delivery for work-related injury, e.g., physician choice by employee
 - Industries/occupations excluded from mandatory workers' compensation coverage
 - Inclusion or exclusion of claims from self-insured employers in WC data
 - Exclusions by employer size (e.g., compulsory workers' compensation insurance coverage for employers of 4 or more workers)
- This should yield the '**Annual number of amputations filed with State Workers' Compensation**'.

5.2 Annual incidence rate of amputations filed with State Workers' Compensation per 100,000 workers covered by State Workers' Compensation system

a) To obtain the denominator for the rate:

- Go to <http://www.nasi.org>.
- Click on menu 'Publications'.
- Click on 'Reports'.
- Click on report entitled: "Workers' Compensation: Benefits, Coverage, and Costs, <<YEAR>>"
- Click on 'Download' (must have Adobe Acrobat).
- Go to Table 4 "Number of Workers Covered by Workers' Compensation and Total Covered Wages, by State, <<YEARS>>".
- Identify state and read column for 'Covered Workers (in thousands)' for year of interest. Multiply number by 1,000.

b) To calculate the rate

- Divide the numerator (5.1) by the denominator (5.2a).
- Multiply the result by 100,000 to get the '**Annual incidence rate of amputations filed with State Workers' Compensation per 100,000 workers covered by State Workers' Compensation system**'.

Topic: ACUTE AND CUMULATIVE OCCUPATIONAL INJURIES	
INDICATOR #6: HOSPITALIZATION FOR WORK-RELATED BURNS	
Demographic Group:	Employed persons
Numerator:	Hospital discharges with primary diagnosis of burn injury (ICD-9-CM code 940 – 949) and with primary payor coded as workers' compensation
Denominator:	Employed population 16 years or older for the same calendar year
Measures of Frequency:	Annual number of work-related burn hospitalizations for persons age 16 years and older (numerator) Annual rate of work-related burn hospitalizations per 100,000 employed persons age 16 years or older
Time Period:	Calendar year
Significance and Background:	NIOSH has estimated that there are 150,000 work-related burns treated in emergency rooms each year in the U.S. An estimated 30-40 percent of burns are work-related, with a peak incidence among younger workers, and with males affected more frequently than females. According to data from the New England Regional Burn Program, 55 percent of all burns among adults are work-related.
Rationale:	Work-related burns are some of the most devastating injuries affecting workers. Although hospitalized burns are unusual events, they are painful, disabling, and expensive to treat. Many result in significant disfigurement. In addition, burns are the most common cause of work-related hospitalization for young workers.
Limitations of Indicator:	Individuals hospitalized for work-related injuries and illnesses represent less than 10 percent of all workers who receive workers' compensation. The majority of individuals with work-related illnesses and many others with injuries do not file for workers' compensation. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or longshore and maritime workers are not covered by state workers' compensation systems. Attribution of payor in hospital discharge may not be accurate. Data between states may not be comparable due to differences in states' workers' compensation programs.
Data Resources:	Hospital discharge data (numerator) Bureau of Labor Statistics (BLS) Current Population Survey Data (denominator)
Limitations of Data Resources:	Work-related burn injuries are experienced by employed individuals less than 16 years old, but corresponding denominator data is not readily available. Practice patterns and payment mechanisms may affect decisions by health care providers to hospitalize patients. Residents of one state may be hospitalized in another state and not be reflected in his/her state's hospitalization data. All admissions are counted, including multiple admissions for a single individual. Until hospital discharge data is available in all states, aggregation of state data to produce nationwide estimates will be incomplete. Data on race/ethnicity is not collected in some states and is incomplete and/or of questionable validity in others. Hospital discharge records are only available for non-federal, acute care hospitals.
HP2010 Objectives:	20-2
CSTE Positions:	None
Other Available Data:	Age, gender, race/ethnicity, and residence zip code
Recommendations:	Age, gender, race/ethnicity, and zip code specific counts and rates can be used to better define the pattern of burns. Can also look at proportion of all burn hospitalizations in the state.

HOW-TO GUIDE – INDICATOR #6:

HOSPITALIZATIONS FOR WORK-RELATED BURNS

6.1 Annual number of hospitalizations for work-related burns for persons age 16 years and over

Obtain from State Health Department the following information from the hospital discharge file:

- Use principle diagnosis from 940 through 949 (ICD-9-CM).
- Use only primary payor = Workers' Compensation.
- Limit age to those 16 years and older.
- Select for state of residence='your state'.
- Exclude:
 - age unknown
 - out-of-state residents and unknown residence
 - out-of-state hospitalizations.
- Use unduplicated data (no exclusions for deaths, readmissions).
- Use discharge during calendar year, not fiscal year.
- Use all cases reported on the discharge file, regardless of length of stay.
- This will yield the '**Annual number of hospitalizations for work-related burns**'.

6.2 Annual rate of hospitalization per 100,000 employed persons age 16 years or older

a) To obtain the denominator for the rate:

- Go to <http://www.bls.gov/gps/#tables> to access the Geographic Profile of Employment and Unemployment (GPS) which contains Current Population Survey estimates for state-specific numbers of employed persons
- Page down to heading "TABLES CREATED BY BLS:"
- Find table for "Employment status of the civilian noninstitutional population in states by sex, race, Hispanic or Latino ethnicity, marital status, and detailed age:" Note: Data from 1997 through 2002 can be found at <http://www.bls.gov/opub/gp/laugp.htm>
- Choose the Annual Averages for year of interest
- Scroll down to find your state.
- Read the 'Total' row for your state and the 4th data column – 'Employment Number'. This is the '**Number of Employed persons age 16 years or older**' (in thousands). Multiply by 1000.

b) To calculate the rate:

- Divide the numerator (6.1) by the denominator (6.2a).
- Multiply this result by 100,000 to get the '**Annual crude rate of work-related burn hospitalizations per 100,000 employed persons age 16 years or older**'.

Topic: ACUTE AND CUMULATIVE OCCUPATIONAL INJURIES	
INDICATOR #7: WORK-RELATED MUSCULOSKELETAL DISORDERS WITH DAYS AWAY FROM WORK REPORTED BY EMPLOYERS	
Demographic Group:	Employed persons
Numerator:	<ol style="list-style-type: none"> 1. Estimated cases of all musculoskeletal disorders (MSDs) involving days away from work 2. Estimated cases of MSDs of the upper extremities, neck, and shoulder involving days away from work 3. Estimated cases of carpal tunnel syndrome involving days away from work 4. Estimated cases of MSDs of the back involving days away from work
Denominator:	Estimated full-time equivalents (FTEs) worked for the same calendar year
Measures of Frequency:	Estimated annual incidence rate per 100,000 full-time-equivalents
Time Period:	Calendar year
Significance and Background:	The 1999 Annual BLS Survey identified 582,340 cases of musculoskeletal disorders that resulted in days away from work. Over half of these cases involved the back. Estimates of the costs of back injuries alone are \$50-100 billion per year. About 4% (27,832) of these injuries were carpal tunnel syndrome, 2% (11,945) involved the neck, 10% (56,834) involved the shoulder, and 15% (87,956) involved the upper extremities.
Rationale:	Work-related musculoskeletal disorders are preventable, and control of occupational hazards is the most effective means of prevention. Estimating the burden and tracking these injuries can help target prevention programs and activities. Information on reported cases can be used to identify contributory factors and to develop improved or new prevention strategies or regulations to protect workers.
Limitations of Indicator:	Employers are required to record events that result in death, loss of consciousness, days away from work, restricted work, or medical treatment beyond first aid. They are only required to report the detailed case characteristics (e.g., nature, body part, event) when the injury or illness results in at least one day away from work. Employers do not always record all relevant events. Also, employers are often unaware of work-related conditions for which employees have obtained medical care from their personal health care providers, and conditions that have long latencies and are diagnosed long after an employee leaves their employment. Regarding injuries/illnesses involving days away from work, employers vary in their use of restricted work activity to reduce lost workdays among their employees with work-related conditions, thereby avoiding cases with days away from work.
Data Resources:	Annual Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII)
Limitations of Data Resources:	The SOII is a function of BLS using a probability sample and not a census of all employers. It is based on injury and illness data maintained by employers and is subject to sampling error. There is a potential for additional sampling error if an employer has more than 30 cases with days away from work as an employer is only required to report on 30 such cases. Excluded from the survey are the military, self-employed individuals, farms with fewer than 11 employees, and Federal agencies. In some states, the survey does not cover the state and municipal employees. Therefore, the recommended measures of frequency are limited to private sector workforce only. Some states do not participate in the Federal-State survey, and in some participating states, the sample sizes are insufficient to generate State-specific estimates. Numbers and rates may not be published/released by BLS due to the reliability of the estimates. Employers vary with respect to how much they may reduce their potential reporting burden by placing affected workers on restricted work activity, thereby avoiding the reporting of lost workday cases (which require reporting of additional details). In addition, the SOII only collects data for the incident year, and does not capture lost work-time that may carry over to a new calendar year. For example, a debilitating injury that occurs on the last day of the calendar year will have no lost work-time associated with it in the SOII.
HP2010 Objectives:	20-3
CSTE Positions:	None

Other Available Data:	Age, gender, race/ethnicity, occupation, industry, type of event, and source of injury (Details are available only for injuries/illnesses involving days away from work.)
Recommendations:	SOII has many data elements that can be used to better define patterns of work-related MSDs in the state. These may include industry specific counts and rates, and counts (not rates) by age, gender, race/ethnicity, and occupation, source of injury/illness.

