

The BLS Survey of Occupational Injuries and Illnesses: A Primer

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Abstract

The Survey of Occupational Injuries and Illnesses is the nation's primary surveillance vehicle for nonfatal injuries and illnesses that occur in the workplace. Based on recordable injuries and illnesses as defined by the Occupational Safety and Health Administration, the SOII provides annual counts and rates by industry and state for workers in private industry and state and local government. In addition, the SOII provides details about the most severe injuries and illnesses, including characteristics of the workers involved and details of the circumstances surrounding the incident. To accompany articles that discuss research into the completeness of SOII data, this commentary provides an overview of the SOII. Included is information about the history of capturing data on workplace injuries and illnesses, current survey processes, annual outputs, and an introduction to the current concerns about underreporting.

Key words: occupational injuries; injury surveillance; survey

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The three articles that accompany this introduction discuss research conducted under grants from the U.S. Bureau of Labor Statistics (BLS) as part of continuing efforts to identify and understand the potential undercount in the BLS Survey of Occupational Injuries and Illnesses (SOII). Briefly, the SOII is a survey of approximately 250,000 private industry and state and local government establishments that, when selected, maintain a log of Occupational Safety and Health Administration (OSHA)-recordable workplace injuries and illnesses for one year and report that information to the BLS. Since 1972, the SOII has served as the nation's primary source of information on non-fatal workplace injuries and illnesses, providing annual counts and rates and, more recently, details about the workers involved and the circumstances surrounding the incident. Annual SOII data can be used to track trends in workplace injuries and illnesses; for example, survey data reveal a significant increase during the 1990s in the share of cases that resulted in restricted work (i.e. light duty) rather than time away from work, especially among manufacturers.

History of BLS occupational safety and health data

Soon after it was established in 1884, the BLS began conducting studies of worker safety. These were largely individual industry studies, such as reports on workplace injuries in the iron and steel industries. With the introduction of workers' compensation laws in the 1910s and 1920s, there became a de facto requirement for employers to report worker injuries as they identified workers' compensation cases. The specifics of these laws varied by state and thus there were state to state variations in data, the result of differing definitions and details. In 1926, the BLS began an annual survey of the frequency and severity of industrial injuries, including fatalities, focused largely on manufacturing. This program ran through the early 1970s and served as the precursor to today's data. More frequent data were collected during World War II, in recognition of the need to maintain wartime industrial production. [Drudi, 1997]

All of these early efforts suffered from concerns about employer compliance. Data collection was voluntary and some argued that employers were finding ways to avoid reporting, such as transferring employees. These concerns were recognized in development of the Occupational Safety and Health Act of 1970. Development of statistics was specifically identified in the OSH

Act, with provisions included to help mitigate some of the concerns about the existing data collection effort. The Act specifies that the Secretary of Labor “ shall develop and maintain an effective program of collection, compilation, and analysis of occupational safety and health statistics...”

The Act includes four major tenets that today form the basis for the BLS Occupational Safety and Health Statistics program:

- Compile accurate statistics on work injuries and illnesses, whether or not involving loss of time from work, other than minor injuries requiring only first aid treatment ...
- Cover all employments whether or not subject to any other provisions of the Act
- Require employers to file reports
- The program shall be a shared Federal and state program, with states required to pay at least 50 percent of the cost

The first tenet, regarding the types of injuries and illnesses to be reported, is the foundation for OSHA recordkeeping requirements. Today, OSHA defines recordable occupational injuries and illnesses as those that fall into one of the following categories:

- Death
- Days away from work
- Restricted work or transfer to another job
- Medical treatment beyond first aid
- Diagnosis of a significant injury or illness by a physician or other licensed health care professional.

OSHA requires certain employers, based on industry and employment, to maintain logs of occupational injuries and illnesses annually, and to post those logs where employees can review them soon after the beginning of the year. Other employers are “partially exempt” from this recordkeeping requirement, except when selected by BLS for the SOII. In such cases, employers

are required to maintain occupational injury and illness records for the survey year and to provide those records to BLS.

The OSH Act specifically excludes small farms (those with fewer than 11 employees) from data collection. Data from the railroad and mining industries are obtained by BLS from the Federal Railway Administration and the Mine Safety and Health Administration, respectively, and are therefore not part of BLS data collection from employers. Except where required by State law, State and local governments are not required to maintain logs and submit data to the BLS. In these cases, survey participation is voluntary.

Finally, the OSH Act requires Federal-state cooperation in the development and compilation of occupational safety and health statistics. To participate, States must provide a portion of the funding. In 2013, 42 States plus the District of Columbia, Puerto Rico, the Virgin Islands, and Guam participated in the program. Participating agencies vary from State to State and include departments of labor, health, workers' compensation, and others. In return for participating, BLS develops the data in ways that ensure the availability of detailed data by state. For States that do not participate, BLS collects worker injury and illness information from a small number of employers within the State to include in national estimates.

The SOII captures and publishes data on the number and rate of occupational injuries and illnesses by industry, state, establishment employment size, and case type, the latter being an OSHA designation based on the severity of injury or illness as follows:

- Cases involving days away from work
- Cases involving only job transfer or restricted work
- Other recordable case (not involving days away or job transfer)

During the 1970s and 1980s, the BLS Occupational Safety and Health Statistics program also included information about the workers involved and circumstances surrounding the injury or illness derived from workers' compensation data in a limited number of states, as well as some special reports on selected worker injuries (such as falls) obtained through employee interviews.

Also during that time, the survey was the source of data on fatal work injuries. These additional outputs were the subject of scrutiny in the late 1980s, when several studies recommended that BLS revise its occupational safety and health statistics program to provide more complete data. [Pollack et al, 1987] These recommendations form the basis for today's program.

Beginning in 1992, the SOII began capturing additional data for certain occupational injury and illness cases identified through the survey. Known as the *case and demographic data*, the SOII now captures information on the circumstances surrounding the injury or illness (the "case") and characteristics of the worker involved (the "demographics"). Since 1992, these data have been captured annually for all cases that resulted in days away from work, thought to be the most severe cases and representing nearly half of all cases in the first year of collection. Since that time, the share of cases resulting in only job transfer or restricted work has increased greatly; in certain industries like manufacturing, job transfer or restricted work is now the predominant case type. To address this shift in case type, BLS recently began capturing case and demographic data for a sample of these job transfer cases. [BLS, 2013]

Also in 1992, BLS ended the practice of identifying fatal work injuries through the SOII. Because work-related fatalities are comparatively rare events, their enumeration through a sample survey yielded inconsistent data and likely missed many fatalities. [Pollack et al, 1987] In its place, the BLS began the Census of Fatal Occupational Injuries, a Federal-State cooperative program that identifies all fatal work injuries in the country based on multiple source documents, such as death certificates, police and coroner reports, media coverage, and other sources. Over the past two decades, the CFOI has become a well-respected and authoritative count of fatal work injuries. [Layne, 2004]

The SOII process today

It takes three years to produce SOII data for a given year. Year 1 involves identification of the sample of establishments, year 2 has that sample of establishments maintaining records of their OSHA-recordable injuries and illnesses, and year 3 is for data collection and estimation. Table I identifies the process in recent years.

Table I. A 3-year process to produce SOII data

| Year of activity | Reference year 2012 data | Reference year 2013 data | Reference year 2014 data |
|-------------------------|---------------------------------|---------------------------------|---------------------------------|
| 2011 | Sample identification | | |
| 2012 | Record injuries | Sample identification | |
| 2013 | Collect and publish | Record injuries | Sample identification |
| 2014 | | Collect and publish | Record injuries |
| 2015 | | | Collect and publish |

The process begins with identification of the universe from which the sample is drawn. Like many BLS establishment-based surveys, the SOII universe is derived from unemployment insurance files submitted to BLS from the States.

Prior to selecting a sample from this universe, participating States (those agreeing to share the cost of the program) identify industries for which they would like to publish estimates, including industries that are common across the United States as well as industries with unique concentration in particular States. These industries, based on the North American Industry Classification System (NAICS), are used as input to the sample selection process. Within the constraints of sample size, budget, and the need to produce national estimates, samples are stratified with a focus on those industries identified by each State. Small samples, sufficient to produce national but not State estimates, are also selected for non-participating States.

Samples are selected in time to notify establishments of their requirement to maintain records for the reference year of the survey. Such notices, which include references to OSHA forms and recordkeeping guidelines, are mailed in December prior to the reference year. At present, there is no systematic reminder or follow-up notification to employers during the reference year.

Data collection occurs one year later, with an initial notice sent to sampled employers in January following the reference year. This notice instructs employers about the various means available to submit their data, including a BLS data collection application on the internet. About 80 percent of data are currently captured via this internet application.

Data collection is monitored by the State agencies, with additional mailings and other follow-up notifications provided to non-respondents until collection ends in the summer. Survey response among private industry establishments is mandated by the OSH Act and typically results in about a 95 percent response rate. A lower response rate from State and local governments, around 80 percent, reflects the fact that in many States collection of these data from government units is not mandatory. Concurrent with data collection, the case details submitted in narrative form for about 250,000 cases each year are reviewed and translated into codes. Narratives describing the workers occupation are classified using the Standard Occupational Classification (SOC) system. Narratives describing the circumstances surrounding the injury or illness case are classified by the BLS Occupational Injury and Illness Classification System (OIICS) [Northwood et al, 2012], which includes the following characteristics:

- Nature of disabling condition (such as sprain or fracture)
- Part of body (such as finger or back)
- Source directly resulting in injury and, if applicable, secondary source (contributing factor) (such as health care patient or piece of equipment)
- Event or exposure (such as fall or struck by object)

Various post-collection processes are completed in the summer and early fall of each year, designed to adjust data for non-response and other anomalies, such as an employer providing data for more than one location. SOII data are typically published in October and November following the reference year, as described in the next section.

Among the known limitations for the SOII is the difficulty in capturing data on workplace illnesses. [Pollack et al, 1987] Over 90 percent of the cases identified by the SOII each year are injuries, often acute incidents that are easily identified. Most of the illnesses identified in the survey are also acute events, such as contact dermatitis or poisonings. Long-latency illnesses may be added by employers to OSHA logs when identified, but such identification may be long after SOII data are collected from the employer.

SOII outputs

At present, SOII data are released in two parts – summary estimates of the count and rate of occupational injuries and illnesses followed by case and demographic details. Examples of summary data, released in October following the reference year, include the number of injuries and illnesses recorded (3.5 million in 2011), the rate of injuries and illnesses per 100 full-time equivalent workers (3.5 in 2011), separate counts and rates for injuries and illnesses, and these same data elements for very detailed industries, by size of establishment, and for most states. In addition, counts and rates are shown separately for various types of cases, including days-away-from-work cases, job-transfer-or-restriction cases, and other recordable cases.

Less than a month after the SOII summary data are released, SOII case and demographic data are released providing considerable additional detail. Currently these data are produced for all days-away-from-work cases and for a small number of job-transfer-or-restriction cases in selected industries. Of particular importance among the case and demographic data is occupation, providing additional information on the type of work being done when a workplace injury occurred. Other demographic characteristics include:

- Gender
- Age
- Race
- Length of service

As noted, cases are coded based on the BLS Occupational Injury and Illness Classification System, which results in publication of details on the nature of the disabling condition, the part of body affected, the source directly resulting in the injury or illness (and, if applicable, secondary source/contributing factor), and the event or exposure leading to the injury or illness.

Data are also available on the time of day and day of week of the incident, as well as the number of hours on the shift when the event occurred. Finally, by capturing the number of days away from work (or, separately, the number of days of job transfer or restriction), some information is available on the severity of the injury or illness. Data on days away from work (and days of job

transfer or restriction) are right truncated and therefore are presented as medians and distributions, rather than means.

SOII summary and case and demographic data are available free of charge on the BLS Internet site; the site provides tables and charts, technical details, analytical articles, as well as query tools to allow user-defined access. Certain more detailed tabulations from the SOII data can be produced, subject to confidentiality restrictions. These data may be requested from BLS. In addition, researchers may apply to access survey microdata at BLS to conduct more detailed research. Some research that questioned the completeness of the SOII was based on work done through microdata access agreements with BLS.

Concerns about completeness of SOII data

Prior to the OSH Act of 1970, BLS occupational safety and health statistics were captured from employers on a voluntary basis. On several occasions, concerns were raised that such statistics were incomplete. While the OSH Act makes compliance mandatory for many employers, concerns still exist that the SOII data are not complete. Among studies that focused on these concerns were those released in the mid-2000s that compared SOII microdata with workers' compensation data in several states. [Rosenman et al, 2006; Boden et al, 2008] These studies conclude that SOII undercounts workplace injuries and illnesses, perhaps to a large extent.

From these studies, and Congressional concerns, BLS began the research effort that resulted in the articles published here. In an effort to confirm the existence of an undercount, quantify the magnitude, and identify means of improving data quality, BLS provided grants to several States and researchers. The grantees were to (1) conduct additional matching of SOII and workers' compensation data, (2) conduct a multisource matching effort using SOII, workers' compensation, and other records to identify a broader set of workplace injuries, and (3) interview employers regarding their injury and illness recording practices. These projects were completed in 2012.

BLS acknowledges the concerns about completeness of SOII data and is leading efforts to understand and mitigate any undercount. These publications are another effort to be transparent

about the concerns and improvement efforts. [Nestoriak and Pierce, 2009, Ruser, 2008] Following up on the research published here, BLS is currently sponsoring an extensive series of employer interviews to learn more about employer injury and illness recording practices; also underway is a match of multiple years of SOII and workers' compensation data designed to identify any trends in the undercount over time. In addition, research efforts are currently underway to explore means of improving the consistency of occupation and case data through computer-assisted coding techniques. BLS intends to continue the research and improvement efforts in the future.

Conclusion

The 40 years of SOII summary data and 20 years of case and demographic data provide a compendium of occupational injury and illness details and trends, tracking such phenomena as the impact of the expanding service and information economy on occupational injury and illness rates, the growth in musculoskeletal disorders, and the movement toward handling cases through job transfer rather than time away from work. During that time, BLS has adapted to changes in OSHA recordkeeping definitions and to changes to industry and occupation classification systems, the result of which are several breaks in series. BLS identifies these series breaks when presenting data and cautions data users about making comparisons across inconsistent series. In addition, BLS has championed many program improvements, including expanding data to include occupational injuries and illnesses among State and local government workers nationwide, updating the injury and illness classification system to reflect current workplace hazards, and greatly reducing processing time to make data available more rapidly. The SOII is a versatile data collection system designed to reflect today's workplace.

The SOII is continually evolving to meet the need for a comprehensive surveillance system to provide accurate workplace injury and illness data, within the constraints of a small sample (especially for State data) and the limitations of self-reported data. The SOII has served as a platform for two special studies of unique safety and health topics – respirator use and workplace violence prevention policies. [BLS, 2012] These projects provided a preview of how the SOII can be used when resources become available to study unique populations or incidents, such as injuries occurring to truck drivers or those resulting from falls. In the meantime, BLS is

continuing its plans to expand the detailed data available for occupational injuries and illnesses that result in job transfer or restricted work, with the long-term goal of having complete data for all workers. In addition, BLS will continue to allow qualified researchers to use SOII and other data to provide new insights into the safety and health of America's workers.

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