

# Employer Reasons for Failing to Report Eligible Workers' Compensation Claims in the BLS Survey of Occupational Injuries and Illnesses

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**Background** Little research has been done to identify reasons employers fail to report some injuries and illnesses in the Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses (SOII).

**Methods** We interviewed the 2012 Washington SOII respondents from establishments that had failed to report one or more eligible workers' compensation claims in the SOII about their reasons for not reporting specific claims. Qualitative content analysis methods were used to identify themes and patterns in the responses.

**Results** Non-compliance with OSHA recordkeeping or SOII reporting instructions and data entry errors led to unreported claims. Some employers refused to include claims because they did not consider the injury to be work-related, despite workers' compensation eligibility. Participant responses brought the SOII eligibility of some claims into question.

**Conclusion** Systematic and non-systematic errors lead to SOII underreporting. Insufficient recordkeeping systems and limited knowledge of reporting requirements are barriers to accurate workplace injury records. *Am. J. Ind. Med.* 59:343–356, 2016. © 2016 The Authors. *American Journal of Industrial Medicine* Published by Wiley Periodicals, Inc.

**KEY WORDS:** workplace injuries and illnesses; injury underreporting; occupational health; SOII undercount; injury recordkeeping

## INTRODUCTION

The Bureau of Labor Statistics (BLS) publishes state and national estimates of the number of nonfatal occupational injuries and illnesses that occur each year, based on employer responses to the Survey of Occupational Injuries and Illnesses (SOII). Through SOII, BLS annually collects case and

demographic data on workplace injuries and illnesses resulting in days away from work allowing for estimation of injury counts and rates by industry, occupation, worker, and injury characteristics. SOII is the only surveillance system publishing national level data and state level data for a majority of US states. In gathering and publishing work injury and illness data with detailed industry, occupation, and incident information, BLS endeavors to provide informative occupational safety and health data critical to the prevention of workplace injuries.

Concerns about the accuracy of employer-reported BLS data are long standing [National Research Council Panel on Occupational Safety and Health Statistics, 1987; Drudi, 1997; Ruser, 2008; US House of Representatives, 2008], and a growing body of evidence supports such concerns [Oleinick et al., 1995; Glazner et al., 1998; Stanbury et al., 2003; Leigh et al., 2004; Morse et al., 2004; Smith et al., 2005; Rosenman et al., 2006; Boden and Ozonoff, 2008; Lipscomb et al., 2008; Probst et al., 2008; Dong et al., 2011; Mendeloff and Burns, 2013; Davis et al., 2014; Joe et al., 2014; Spieler and Wagner, 2014]. In general, three

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approaches have been used to assess the accuracy of SOII data: comparisons of SOII data to other sources of workplace injury data to estimate the magnitude of and variations in underreporting; explorations of the reporting pathway between injured worker and employer to identify reporting barriers faced by workers; and evaluations of employer injury records and recordkeeping practices to identify practices that may result in underreporting.

Several comparisons to other data sources suggest SOII underestimates work injuries and illnesses by approximately 30–50% [Leigh et al., 2004; Smith et al., 2005; Boden and Ozonoff, 2008; Boden, 2014], although estimates have ranged from 3% to 68%, depending on state and study methodology [Oleinick and Zaidman, 2004; Rosenman et al., 2006]. Underreporting appears to vary by industry [Biddle et al., 1998], establishment size [Oleinick et al., 1995; Glazner et al., 1998; Dong et al., 2011], injury type [Rosenman et al., 2006; Nestoriak and Pierce, 2009], month of injury [Pierce, 2015], and worker characteristics [Dong et al., 2011]. Non-acute occupational illnesses are also not well captured by the SOII [National Research Council Panel on Occupational Safety and Health Statistics, 1987; Ruser, 2008; Wiatrowski, 2014]. While demonstrating the severity of underreporting, comparisons to other data sources are limited in their ability to explain the reasons why underreporting occurs.

Insights into incomplete occupational injury surveillance data can be gained from interviews with workers, whose reluctance to report injuries can lead to underreporting in any data source, including SOII and workers' compensation claims data. Workers fail to report injuries to their employer because they fear retaliation by their employer or stigma from their coworkers or because they perceive the injury to be too minor or an accepted part of the job [Weddle, 1996; Pransky et al., 1999; Lipscomb et al., 2013; Moore et al., 2013]. These reporting barriers may arise from a work environment that incentivizes low injury rates through the inclusion of injury data in bids for contracted work, by linking the record-keeper's job performance to injury data, or by rewarding workers for low injury rates [Pransky et al., 1999; Azaroff et al., 2002; US Government Accountability Office, 2012]. Injuries not reported by the worker to the employer are unlikely to be reported in the data sources frequently compared to SOII—specifically workers' compensation data—since employers are often central to the workers' compensation claim filing process and because injured workers face similar barriers to claim filing. Thus, studies of reporting barriers faced by injured workers are informative in describing reasons for underreporting in SOII beyond the level observed through comparisons with workers' compensation data, but offer little explanation for employer underreporting to SOII relative to workers' compensation data.

SOII data, based on employer reports of Occupational Safety and Health Administration (OSHA) recordable cases that occurred during the survey year, reflect inaccuracies

contained within employer injury, and illness data. Evaluation of workplace injury and illness records, including audits of employer OSHA logs, suggest several recordkeeping errors that may impact SOII data accuracy including: failing to maintain injury logs; omitting recordable cases from the logs; and incorrectly recording the severity of the injury or illness [Eisenberg and McDonald, 1988; Seligman et al., 1988; Eastern Research Group and the National Opinion Research Center, 2009]. Interviews with SOII respondents identified additional recordkeeping errors including: incorrectly counting days of missed work and employing some definition other than the prescribed case definition [Phipps and Moore, 2010; Wuellner and Bonauto, 2014]. These inaccuracies in the interpretation and application of the recordkeeping regulations may represent only a fraction of the recordkeeping practices that result in underreporting, as the focus of the studies were the OSHA logs and general injury recordkeeping practices.

To our knowledge, no study has asked SOII respondents to discuss individual injuries omitted from SOII and the reasons for the omissions. In this study, we hypothesized that the reasons given by SOII respondents regarding their decision-making process for exclusion of likely eligible cases on the SOII, might confirm reasons identified in previous observational studies and generate additional hypotheses for exploration regarding employer recordkeeping inaccuracies.

This study combines two approaches to evaluating the accuracy of employer-reported SOII data. We linked SOII data to workers' compensation claims data and used the results of the record linkage in interviews with SOII respondents. The interviews discussed specific workers compensation claims that were deemed eligible through the worker compensation administrative data for reporting in the SOII but were not reported by the SOII respondent. The interviews identified reasons why these specific workers compensation claims went unreported to SOII.

## METHODS

We matched the 2012 Washington SOII data to SOII-eligible workers' compensation claims data to identify establishments with unreported claims. We conducted semi-structured interviews with SOII respondents from establishments found to have one or more SOII-eligible claims not included in SOII case reporting and asked respondents why the claims had not been reported.

### Data Sources

#### ***BLS Survey of Occupational Injuries and Illnesses data***

The SOII is an annual survey of approximately 240,000 establishments nationwide and 5,500 establishments in

Washington. All sampled establishments, including those usually exempt from OSHA recordkeeping based on employment size or industry classification, are required to maintain OSHA injury and illness recordkeeping forms during the survey year. After the survey year has ended, establishments are required to provide the BLS with: (i) aggregate numbers of OSHA recordable cases and employment data; and (ii) case reports for injuries or illnesses that resulted in one or more days away from work (DAFW) beyond the day of injury. The DAFW case report captures detailed information about the incident, the worker, and identifies the worker by name. Based on data submitted by sampled establishments, BLS publishes state and national estimates of the annual occurrence of occupational injuries and illnesses. The BLS provided survey response data from the 2012 Washington SOII establishments for this study.

### ***Washington workers' compensation data***

Washington State industrial insurance laws mandate that all employers obtain workers' compensation insurance through the Washington State Fund workers' compensation insurance program, unless they are covered by another insurance system,<sup>1</sup> or meet the requirements to self-insure. The State Fund is administered by the Washington State Department of Labor and Industries (L&I). The self-insurance program is also regulated by L&I, and self-insured employers are required to comply with the recordkeeping and reporting requirements that mandate routine submission of claims data to L&I. Over 99% of Washington workers' compensation employer accounts are insured through the State Fund. The remaining accounts are self-insured and typically represent Washington's largest employers.

Workers' compensation accounts are associated with an employer's Uniform Business Identifier (UBI), a Washington State specific employer identifier that links an employer across Washington State government administrative databases (e.g., Washington Department of Labor and Industries and Washington State Employment Security Department).

A Washington State workers' compensation claim is initiated by an injured worker and a healthcare provider who together complete a Report of Industrial Injury or Occupational Disease and file it with L&I. After receiving the report, L&I notifies the employer that a workers' compensation claim has been opened. Workers' compensation insurance pays for medical treatment of a work injury or illness. The injured worker becomes eligible for wage replacement if missed work extends beyond the three calendar days immediately following the day of injury.

<sup>1</sup> In general, these are limited to federal and postal workers insured through the Federal Employees' Compensation Act and maritime workers covered under the Jones Act or the Longshore and Harbor Workers' Compensation Act.

### ***Washington unemployment insurance data***

The Washington State Employment Security Department collects and maintains unemployment insurance (UI) data on Washington employers. Each employer in Washington is assigned an account, which may be divided into multiple report units to denote separate worksites, each described by a unique report unit number and address. Employers submit quarterly payroll data that include worker names and social security numbers for each UI account (worker names and social security numbers are not available at the level of the report unit). The UI account is associated with the Washington UBI.

BLS samples establishments for participation in the SOII from the UI data in the form of the Quarterly Census of Employment and Wages [Selby et al., 2008]. Sampled establishments may represent an entire UI account or one of many report units within an account.

UI data were made available through a data sharing agreement with the Washington State Employment Security Department.

### ***Identification of Workers' Compensation Claims Eligible for SOII***

The UI data were used to bridge the SOII and workers' compensation data. The SOII data include UI account and report unit numbers that were used to identify the establishments within the UI data, which were then linked to the workers' compensation data through the Washington UBI and worker social security number.

### ***Establishment inclusion criteria***

To protect the confidentiality of the injured worker, the study was restricted to SOII sampled establishments that represented an entire UI account. Where the SOII establishment represents an entire UI account, claims among the SOII sampled workforce are readily identifiable within the workers' compensation data using the social security number of workers listed in the UI account data. Where the SOII establishment represents a report unit within a UI account, claims among the entire UI account are identified using social security numbers, and then reduced to those among the sampled report unit using establishment address elements. Comparing address data can be an imperfect method of reconciling establishments across data systems. Thus, unlinked claims among sampled report units may be due to a failure of the employer to report the injury, or to irreconcilable difficulties in identifying the sampled workforce within workers' compensation data that results in over-estimating the scope of the SOII-sampled workforce

within the workers' compensation data. We excluded sampled report units from this study to avoid disclosing to a respondent who may not have otherwise had access to the claim information for injured workers not part of the intended SOII sample but erroneously identified as unreported. In the interest of claimant confidentiality, we restricted the SOII establishment data to UI accounts sampled in their entirety, reasoning that the SOII respondent (responsible for reporting to SOII all OSHA recordable incidents for the UI account) would have received prior notification from L&I of all filed claims associated with the account. Two-thirds of SOII establishments were sampled at the level of the UI account. The distribution varied by industry sector, with the percent of establishments sampled as an entire UI account ranging from 94% among construction to 35% among Retail Trade. In all other industry sectors, UI accounts made up at least half of the sampled establishments. Controlling for industry and establishment size, there was no difference in the DAFW case rate between establishments representing an entire UI account and those representing a sub-account.

Temporary staffing agencies were also excluded from the study. Injuries among temporary workers are reported to SOII by the client employer whereas the workers' compensation claims for the injuries are the responsibility of the staffing agency. The workers' compensation administrative data do not capture sufficient information to determine which claims among temporary workers were for injuries that occurred at a SOII sampled establishment.

### **Case inclusion criteria**

Workers (both injured and not injured) employed by SOII establishments at any time during the 2012 survey year were identified using the UI account information. Using the UBI and the worker's social security number from the UI account to identify claims among SOII-sampled establishments, State Fund and self-insured claims with an injury date in 2012 were extracted from the workers' compensation claims data.

Administrative claims data were used as proxy indicators of SOII eligibility as DAFW cases. Claims were considered to be SOII-eligible if they received wage replacement payments for lost work time or were designated as "Kept on Salary."<sup>2</sup> Claims were further limited to those with relevant claim activity dates within the survey year thus likely meeting the SOII case reporting criteria during the survey year. Claims were considered not to have been SOII-eligible as a DAFW case during the survey year when dates for the following exceeded the survey year: initial medical

visit; claim established with L&I; or initial time loss payment. Although these claims were likely OSHA recordable as a DAFW case, they were considered not to have met the DAFW criteria until sometime after the survey year.

Among establishments instructed by BLS to limit reported cases to a subset based on injury date (to reduce response burden), only claims with an injury date within the subset were included.

### **Record linkage**

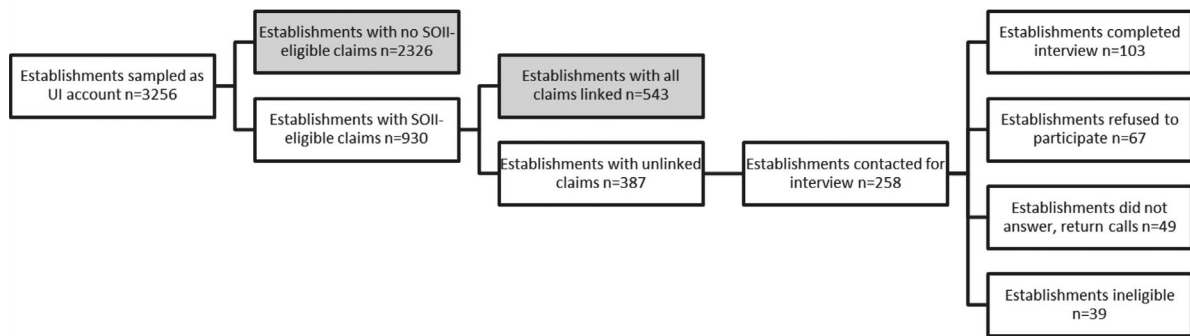
Workers' compensation claims data were extracted March 2013, 3 months after the end of the 2012 SOII survey year. BLS provided periodic updates of the establishment and case and demographic data between May and August 2013, as the 2012 SOII data was being collected and processed.

SOII cases were first linked to workers' compensation claims based on exact matches on worker first name, last name, date of injury, and date of birth or, when not provided, age at injury. Remaining records were linked using an algorithm developed by study personnel that incorporated fuzzy matching techniques to allow for inexact matches. Within each UI account, all possible combinations of cases and claims not linked through exact matches were evaluated based on the similarity of worker names, dates of injury, and dates of birth or age at injury. Links were then accepted in a stepwise fashion, with less restrictive linking criteria at each subsequent step. Links were manually reviewed to confirm true matches. Record linkage procedures were executed for each periodic update of SOII data so that SOII respondents could be contacted for the interview soon after completing the SOII. Record linkage was performed using SAS version 9.3 (Copyright, SAS Institute Inc., Cary, NC), with the SPEDIS function to score similarity of names.

### **Recruitment and Interview Protocol**

Using the SOII contact data provided by BLS, we sent recruitment letters via email to establishments randomly selected from among those with unlinked SOII-eligible claims (see Fig. 1 for diagram of establishment selection process). Approximately 1 week later, respondents were contacted by phone to conduct or schedule an interview. Before the interview was conducted, respondents verbally gave consent to participate, confirmed that they had access to workers' compensation claim data for their establishment (to prevent disclosure of identifiable workers compensation claim information to individuals who would not otherwise have access to the claims data), and were then provided with a description of the unlinked claims to be discussed during the interview. Interviewers described the claims by claim ID number, worker name, and the injury description as documented on the Report of Industrial Injury or Occupational Disease.

<sup>2</sup> "Kept on Salary" classification denotes a claim for an injured worker whom the employer retains on payroll at full pay during the period of disability in an effort to reduce the employer's workers' compensation costs.



**FIGURE 1.** Diagram of establishment eligibility and selection from SOII sample through interview participation.

Semi-structured telephone interviews were conducted by trained research staff and lasted approximately 30 min. Interviews began with a questionnaire that assessed injury and illness recordkeeping knowledge and practices and business practices that might impact recordkeeping. After completing the questionnaire, respondents were asked about the unlinked workers' compensation claim(s) and whether they recalled why the injury or illness had not been included among the cases reported to SOII. Interviewers also asked if the injury or illness had been included on the establishment OSHA log as a DAFW case. Interviewers followed a series of planned prompts and asked follow up questions as necessary to probe for additional information from the participant. Interviews took place between July 2013 and March 2014. Recruitment ended when respondents repeated reasons conveyed by others in earlier interviews and interviews yielded no new reasons for unlinked claims.

## Data Analysis

Qualitative content analysis methods were used to identify themes and patterns in the responses to questions about unreported claims. Workers' compensation data was also considered during the coding process, with medical record, physician authorized disability, and L&I correspondence with the worker and employer providing insights into the circumstances of the incident. Responses were coded collaboratively by a team of three researchers on a weekly basis. In the initial stage of analysis, we used open coding methods to identify themes, grouping narratives based on the unique reasons conveyed by participants. Ultimately, a hierarchical coding structure was developed to categorize reasons for unlinked claims at three levels: a primary code describing the principal reason for the discrepancy between SOII and workers' compensation claims data and secondary

and tertiary codes to provide additional detail. Once the codebook was finalized, all interview responses were reviewed and assigned the most relevant codes.

The study was reviewed and approved by the Washington State Institutional Review Board.

## RESULTS

Of the 2,384 SOII-eligible workers' compensation claims among sampled UI accounts, 1,689 claims (70.8%) linked to a SOII case, and 695 claims (29.2%) were unlinked. There were 387 UI accounts with unlinked workers' compensation claims, constituting 12% of the 3,256 sampled UI accounts, and 42% of the 930 sampled UI accounts with SOII-eligible claims.

From the 387 sampled UI accounts with unlinked SOII-eligible workers' compensation claims, 258 establishments were contacted for an interview by telephone after being sent letters of recruitment. Of the establishments selected for participation, 103 participated in the study, 67 refused to participate, 49 did not answer repeated calls or return phone messages, and 39 were considered ineligible because: the establishment was out of business; the 2012 SOII respondent was no longer employed at the establishment; or the respondent did not have access to workers' compensation claim information. The response rate was 47%, and the completion rate was 61% [American Association for Public Opinion Research, 2015]. A total of 171 claims were discussed over the course of the 103 interviews.

Construction, Manufacturing, and Health Care and Social Assistance were the industry groups with the greatest numbers of respondents (Table I). In general, the proportional distribution of industry groups represented by the participating establishments was similar to the industry distribution of establishments with unlinked claims. Most

**TABLE I.** Number of Establishments With SOII-Eligible Workers' Compensation Claims, Washington 2012.\*

	Establishments with SOII-eligible claims <sup>a</sup>		Establishments with one or more unlinked claims		Establishments with unlinked claims contacted for interview		Establishments with unlinked claims that participated in the interview	
Total	930	100%	387	100%	258	100%	103	100%
Industry								
Agriculture, Forestry, Fishing, and Hunting	81	9%	36	9%	26	10%	5	5%
Construction	123	13%	58	15%	34	13%	20	19%
Manufacturing	180	19%	67	17%	42	16%	17	17%
Wholesale and Retail Trade	103	11%	44	11%	28	11%	10	10%
Transportation, Warehousing, and Utilities	51	5%	19	5%	16	6%	7	7%
Information and Financial Activities	26	3%	8	2%	6	2%	1	1%
Professional and Business Services	57	6%	33	9%	26	10%	7	7%
Educational Services	66	7%	33	9%	15	6%	9	9%
Health Care and Social Assistance	123	13%	48	12%	34	13%	15	15%
Leisure and Hospitality	63	7%	23	6%	18	7%	4	4%
Other services (except public administration)	28	3%	9	2%	8	3%	4	4%
Public administration	29	3%	9	2%	5	2%	4	4%
Establishment size								
1–10 employees	15	2%	5	1%	4	2%	3	3%
11–49 employees	184	20%	56	14%	26	10%	7	7%
50–249 employees	469	50%	195	50%	137	53%	45	44%
250–999 employees	198	21%	92	24%	73	28%	36	35%
1,000+ employees	64	7%	39	10%	18	7%	12	12%
Total SOII-eligible claims (linked + unlinked)								
1 claim	459	49%	133	34%	75	29%	23	22%
2–4 claims	339	36%	157	41%	115	45%	47	46%
5+ claims	132	14%	97	25%	68	26%	33	32%
Unlinked SOII-eligible claims								
0 claims	543	58%						
1 claim	261	28%	261	67%	163	63%	70	68%
2–4 claims	104	11%	104	27%	80	31%	28	27%
5+ claims	22	2%	22	6%	15	6%	5	5%

Data shown are n and column %.

\*Establishments limited to those that represent an entire UI account.

<sup>a</sup>Total establishments with SOII-eligible workers' compensation claims, both linked and unlinked.

respondents were from establishments with more than 50 employees, and among these approximately half were employed by firms with over 250 employees. Nearly a quarter (22%) of participating establishments had only one SOII-eligible claim during the survey year. Thirty-two percent of participating establishments had more than one unlinked SOII-eligible claim.

Among those contacted, refusals were most common in the Agriculture, Forestry, Fishing, and Hunting (46%), Professional and Business Services (46%), and Leisure and Hospitality (44%) industries. Not having enough time or being "too busy" were the most common reasons for refusal to participate.

Most respondents (94%) indicated that their establishment had kept an OSHA 300 log during the survey year, and

92% reported that they personally typically completed or assisted with the log.

Over the course of the study, we identified 44 unique reasons for unreported workers' compensation claims in the SOII. Responses ranged from thorough accounts of the recordkeeping decisions relating to the claim in question, to potential justifications for omitting a claim. All possible reasons given for each claim were coded. In all, five mutually exclusive themes emerged that described the primary reasons that compensable claims for the establishments in our sample were not reported to the BLS SOII: (i) noncompliance with OSHA recordkeeping rules; (ii) noncompliance with SOII reporting instructions; (iii) the employer did not consider the injury work-related; (iv) data entry errors; and (v) claims

with indeterminate SOII eligibility. Within these primary themes, detailed reasons clustered into secondary categories which described the event, factor or claim characteristic that led to the primary reason for non-report (Table II). For a small number (5%) of the claims, respondents were not able to provide enough information to allow for a primary category determination. Primary and secondary reasons are described below.

**TABLE II.** Reasons for Non-Report Grouped by Primary Reason and Secondary Category

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**1. Noncompliance with OSHA recordkeeping rules**

**Misunderstanding recordkeeping rules**

- Establishment does not record *Kept on Salary* claims with missed work as DAFW cases on OSHA log
- Non-full time workers treated differently on records
- Injury resulted in both DAFW and days of work restriction, respondent chooses severity category with greater number of days
- Injured worker paid full salary via vacation leave. There was no WC wage replacement, DAFW were not recorded
- Physician recommended DAFW, but injured worker returned to work
- Employer cannot accommodate physician recommended job modifications, but does not record DAFW (based on claim information, not information provided by respondent)

**Injury information transfer or communication failure**

- Injury was not reported through company system, was not put on OSHA log
- Break down in recordkeeping system, information transfer did not occur as it should have
- Employer policies suppressed reporting of injury (mandatory post-injury drug screen)
- Waiting on L&I for resolution of claim before recording on OSHA log, or before recording DAFW
- Waits to record DAFW until injured worker returns to work
- Employer “lost touch” with worker immediately after the injury, no DAFW recorded
- Current DAFW not provided to respondent by others within company
- Respondent has no record of DAFW for this claim
- Notified of injury after the SOII was completed
- Responsibility of prior record-keeper

**2. Noncompliance with SOII reporting instructions**

**Did not include all sampled locations or workers**

- Confusion about the establishment’s business structure led respondent to believe the claim was not SOII eligible
- Reported cases for some company sites, but not all

**Did not keep OSHA logs or track injuries during survey year**

- SOII completed from memory, no injury tracking system
- Respondent was aware of the injury, but keeps no OSHA logs
- Randomly selected subset of cases for inclusion in the SOII

**Did not include all types of injuries**

- Respondent believes non-acute injuries are not SOII reportable

**3. Employer did not consider the injury work-related**

- Late notification of injury
- Employer believed activities outside the work environment caused injury
- Injury was not attributed to a specific incident
- Employer believed the injury was due to a pre-existing condition

**4. Data entry errors**

- Date of injury recorded incorrectly
- Injury erroneously recorded on previous year’s OSHA log
- Classified as DAFW, but number of days on OSHA log was left blank or zero days away were recorded
- Multiple similar cases caused confusion
- Respondent was aware of injury, felt discrepancy was due to record-keeper oversight—“Just missed it”
- Respondent was aware of injury, but did not know why there was a discrepancy—“I DK why”

(Continued)

TABLE II. (Continued)

**5. Indeterminate SOII eligibility****OSHA Recordable, but not as a DAFW case during the survey year**

- All DAFW occurred when worker was no longer employed at the establishment
- The injury did not result in any missed work
- Employee refused modified duty from employer and stayed home
- All DAFW occurred after the survey year
- DAFW were for a medical visit only

**Injury not OSHA Recordable**

- Injury occurred outside OSHA jurisdiction
- Considered outside work environment per OSHA regulation

**Injury not included in the SOII sampled workforce**

- Based on recorded characteristics, respondent did not believe the case fell into the requested BLS workforce
- The injury did not occur at establishment worksite; on OSHA log at other site

**Injuries not Sampled by BLS based on Location**

- A date of injury difference between the SOII and WC led to the discrepancy
- Injured worker's name differed between the SOII and WC, link was obscured
- Assigned to previous employer after claims extracted for linking

## Noncompliance With OSHA Recordkeeping Rules

Failure to follow OSHA recordkeeping regulations resulted in the greatest proportion of unlinked claims. These include claims for injuries and illnesses omitted from the sampled establishment's OSHA log, and claims for cases recorded on the log but not classified as DAFW.

### *Misunderstanding recordkeeping rules*

Respondents conveyed a range of errant practices for counting days of missed work. One respondent felt that, at their establishment, supervisors responsible for tracking an injured worker's DAFW tended to count missing shifts instead of the required calendar days, differentially affecting part-time workers who may not have been regularly scheduled to work during physician recommended time away from work. In another case, the respondent reported that the injured employee had returned to work following the injury, despite a health care practitioner's recommendation to stay home. Contrary to regulation, this injury was not included on the OSHA log because no actual days of work were missed.

Several DAFW classification errors were associated with a specific workers' compensation claim designation known as "Kept on Salary." In Washington State, employers have the option of paying an injured worker 100% of his or her salary during the period of disability to prevent undesirable changes in workers' compensation premiums. In these instances, respondents did not consider claims where the worker was kept on salary as having OSHA

recordable DAFW because no workers' compensation wage replacement was paid.

Some respondents misunderstood the requirement for classifying the severity of the injury on the OSHA log if it resulted in both days away from work and days of job transfer and restriction; if the number of days of modified or restricted duty was greater than the number of days away from work, the respondents classified these injuries as less severe than DAFW, contrary to OSHA regulation, leading them to fail to report the injury in SOII DAFW case reports.

For a subset of claims, workers' compensation documentation revealed that a health care professional had determined that restricted or modified duty was appropriate for the worker from the date of injury; however, the employer was either unable to accommodate the restricted duty, or job modifications took a number of days to put into place. As a result, these injured workers missed several days of work and received workers' compensation wage replacement payments for time loss, but the establishment OSHA logs reflected only the physician recommended job transfer or restriction days.

### *Injury information transfer or communication failure*

Many of the reasons given for inaccuracies on establishment OSHA 300 logs could be described as failures to successfully communicate injury information within the company. In some cases, proper injury reporting was the issue: the injury was not reported through the company system and therefore the OSHA log entry process was not triggered; the respondent believed that the injury was reported after SOII submission; or the respondent believed



that, although the worker had filed a workers' compensation claim through their medical provider, they had not reported their injury directly to the company due to a policy of mandatory drug testing following all workplace injuries.

In other cases, record-keepers were aware of the claim, but the records were incomplete because current days away from work were not provided by the employee or company department responsible for conveying that information (e.g., the injured worker's supervisor or the company health and safety representative) to the record-keeper, or the respondent "lost touch" with the employee immediately after the injury. We also received reports that information transfer did not occur as it should have because of unusual business circumstances, such as the injury occurring around the time a new injury tracking software system was implemented, or because the injury occurred during a period of company "turmoil."

Established recordkeeping practices of intentionally delaying OSHA log information entry led to failure to report. Specifically, waiting for the injured worker to return to work, or until resolution of the workers' compensation claim, before recording any days of missed work resulted in a situation where the OSHA log field for the number of DAFW was blank at the time of survey completion, and the respondent failed to recognize a claim as a SOII eligible DAFW case.

A number of respondents reported that the date of injury for an unreported claim occurred before the respondent's employment with the establishment, and that recording the injury on the OSHA log would have been the responsibility of a prior record-keeper. They were unable to give us any explanation for the incorrect records, or a reason why the injury was not reported in the SOII because no information about the injury had been communicated to them.

## **Noncompliance With SOII Reporting Instructions**

These claims went unreported due to an error or omission during completion of the SOII, or the respondent did not follow the survey year recordkeeping instructions given by the BLS.

### ***Did not include all sampled locations or workers***

Although all of the establishments in our sample had been asked to include information in the SOII for their entire Washington workforce, some respondents misunderstood this instruction and only included injury and illness information from the site where they were located. One respondent told us that he readily had access to the other location's OSHA logs and had assisted the employees there with filling it out, but he did not believe that he was supposed to report these injuries to the BLS.

Confusion about which unemployment insurance account was included in the SOII sample, and which account an injured worker was assigned to in a company with multiple accounts, led a respondent to believe an eligible claim was not reportable.

### ***Did not keep OSHA logs or track injuries during survey year***

Some respondents admitted that their establishments did not keep an OSHA log or systematically track injuries and illnesses as required during the survey year. In this category, there were instances in which the SOII was completed from memory and the claim had been inadvertently omitted. One respondent without an OSHA log reported simply choosing "a couple of injuries" from among the company accident report forms to include in SOII case reporting.

### ***Did not include all types of injuries***

One respondent did not include a claim for carpal tunnel syndrome in the SOII, believing only acute injuries to be SOII eligible.

## **Employer Did Not Consider the Injury Work-Related**

There were a number of claims that met workers' compensation eligibility requirements, but employers declined to record the injuries on establishment OSHA logs because they denied that the injuries were truly work-related. Late notification on the part of the injured worker, not being able to attribute the injury to a specific incident, and the belief that activities outside of the work environment were the true cause of the injury were some of the reasons given by respondents for doubting the injury's association with work. Ten of the twelve claims with this code were from establishments in the construction industry.

## **Data Entry Errors**

Data entry errors on the part of the record-keeper led to both OSHA log and SOII inaccuracies. Some reasons involved simple errors in date of injury recording, resulting in respondents believing that the injuries occurred outside the survey year. In one case, the injury was reported in the SOII; however, the respondent had entered an incorrect date of injury and the claim appeared unlinked.

Similar injuries during the survey year proved problematic. In one case, the respondent did not record the case on the OSHA log because it was similar in many aspects to an injury that was previously documented on the log and the

respondent thought the claim had already been recorded. Another respondent felt that the likely reason a claim was not reported in the SOII was because the same employee had two DAFW cases on the OSHA log in the same year, and mistakenly, only one was included.

In a number of instances, a failure to record an injury or DAFW on the OSHA log led to claim non-report, but the respondent could give no reason for the omission other than he or she must have “just missed it.” Other claims appeared as DAFW claims on establishment OSHA logs but were not reported in the SOII because of an unexplained oversight on the part of the survey respondent.

### **Indeterminate SOII Eligibility**

Participant responses called the SOII eligibility of a number of the unlinked claims into question.

#### ***Injury OSHA recordable, but not as a DAFW case during the survey year***

Some of these claims were OSHA recordable injuries, but were less severe than a DAFW case during the survey year. In several of these cases, the worker received workers’ compensation wage replacement payments for modified duty or restricted work hours, but did not ever miss a full day of work. Other times, the employer had indicated to the workers’ compensation claim manager that they would pay the injured worker’s regular wages during any term of disability; no work absence ever occurred, but the “Kept on Salary” designation remained in the workers’ compensation administrative database.

In many cases, all days away from work due to the injury in the survey year occurred after the injured worker’s employment arrangement had ended with the establishment. Provided the injury was not the reason that the employee left the job, the establishment does not need to classify these injuries as DAFW cases on their OSHA logs. Workers’ compensation still paid time loss wage replacement during the survey year in these cases. These situations included: those where no days away from work were prescribed until after the claimant underwent surgery for the injury, which occurred post-employment; times when the employer was able to accommodate modified duty while the injured worker was employed with the company, but after separation, workers’ compensation wage replacement for time loss was received; or instances where a claim was not filed until after the worker was no longer employed at the establishment.

#### ***Injury not OSHA recordable***

A small number of claims met the eligibility requirements for workers’ compensation wage replacement for time loss, but

were not considered OSHA recordable injuries based on regulations. Some were injuries that occurred outside of the OSHA designated work environment, either in a motor vehicle accident in a company vehicle in transit to the worksite, or an injury that occurred while in travel status on a layover. In two instances, an injury had occurred on an international flight, and was therefore outside of OSHA jurisdiction.

#### ***Injury not included in the SOII sampled workforce***

In these instances, employer records concerning the incident differed from administrative information in the workers’ compensation system, and we were unable to verify the accuracy of the information. Based on information given by the respondent, the employer reasonably found these cases to be outside the SOII sample. One claim involved an injured worker who was not an employee, but a vocational training client who was working onsite at the establishment. In another case, the claim involved an injury that did not occur at the SOII sampled establishment, but at a separate establishment under the same ownership. The respondent indicated that the injury had been recorded on the OSHA log of the establishment where the injury took place.

#### ***Injury was reported in the SOII***

These claims had been reported by the employer in the SOII, but differences between variables in the two datasets obscured the link based on matching parameters. There was no suggestion that these represented data entry errors on the part of the respondent. In one case, the injury date for a non-acute condition was more than 2 months different in the employer’s records than in the workers’ compensation system. In other instances, a substantial difference in all worker identifiers between systems was responsible for the inability to link the claim to a reported case.

## **DISCUSSION**

The BLS relies on employer-reported data to estimate state and national incidence of occupational injuries and illnesses. Employer underreporting has been a concern through the decades [National Research Council Panel on Occupational Safety and Health Statistics, 1987; Drudi, 1997; US House of Representatives, 2008], and recent studies suggest that it persists, hampering current BLS estimates of non-fatal work injury incidence [Mendeloff and Burns, 2013; Boden, 2014; Davis et al., 2014; Joe et al., 2014]. Whereas previous studies of underreporting have quantified the number of injuries or illnesses missed by the SOII [Leigh et al., 2004; Rosenman et al., 2006; Boden and Ozonoff, 2008], we sought to identify underreporting on an

establishment basis. In our study, most employers were not classified as under-reporters, but among those with SOII-eligible workers' compensation claims, more than two in five establishments failed to report an eligible claim.

By interviewing respondents from these underreporting establishments about individual workers' compensation claims not reported in the SOII, we built on the work of earlier interview studies with SOII respondents that provided insights into recordkeeping practices, but were limited to discussions of generalities or, among respondents with limited experience, hypothetical recordkeeping scenarios [Phipps and Moore, 2010; Wuellner and Bonauto, 2014]. To our knowledge, this is the first study to discuss with the SOII respondent specific workers' compensation claims not reported in the SOII.

Reasons for underreporting in SOII were varied, and reflected both systematic recordkeeping errors or anomalies and indiscriminate data entry mistakes. Previous studies of OSHA log data identified several recordkeeping errors, including incorrect severity classification among cases recorded on the OSHA log and omission of recordable cases from the log [Eisenberg and McDonald, 1988; Conway and Svenson, 1998; Messiou and Zaidman, 2005; Eastern Research Group and the National Opinion Research Center, 2009]. Our study identified recordkeeping practices that can result in these errors. Omissions and misclassifications followed confusion about whether to record the physician's recommended restrictions, the employee's actual restrictions, or the restrictions paid by workers' compensation. Injuries also went unreported because of the difficulties inherent in tracking the development of a case over time, collecting data from different sources (e.g., worker, supervisor, human resources, or previous record-keeper) and updating records when necessary. Seligman et al. [1988] found no logs maintained by 25% of establishments required to do so. In our study, some establishments failed to maintain not only OSHA logs, but an injury tracking system of any sort. The SOII instructions were another source of confusion, with respondents failing to report on all requested worksites.

Linking workers' compensation claims data to SOII data made it clear that some employers critically engage in the determination of an injury's work-relatedness. Although the OSHA recordkeeping rule "provides that the determination of work-relatedness ultimately rests with the employer,"<sup>3</sup> it is noteworthy that several employers disagreed with the workers' compensation determination, and instead decided that the injury was not work-related. Some employers invoked the second exception to the rule's geographic presumption requirement, asserting that the injury for the claim in question may have had symptoms that surfaced at work but resulted solely from a non-work-related event or exposure that occurred outside the work environment. Other employers contested the assumption that the symptoms surfaced at work, and instead believed that the worker was

seeking workers' compensation insurance coverage for a non-work injury that became symptomatic outside of the work environment. Employers who make special effort to justify the omission of a case from the OSHA log are likely motivated by a company or industry-wide use of OSHA injury records in awarding contracts, bonuses, or prizes [Pransky et al., 1999; US Government Accountability Office, 2012; Peters and Kosmoski, 2014; Wuellner and Bonauto, 2014]. This is in opposition to the stated intent of the OSHA injury and illness data as a "no-fault system." It is unclear whether these recordkeeping decisions would withstand the scrutiny of an OSHA inspection.

Some recordkeeping anomalies may cluster among establishments with similar characteristics while others likely differ at the level of the record-keeper. For example, limited knowledge of recordkeeping regulations and the absence of an injury tracking system are more likely to be found among smaller establishments in low hazard industries where injuries are rare events. At the other end, where workplace injuries are more common and injury records hold monetary consequence, acute scrutiny into whether the reported injury was work-related may be a more common practice. An example of recordkeeping errors that differ by record-keeper is the failure to follow SOII reporting instructions—where the data reported hold no consequence for participating establishments, be they high or low numbers of injuries, accurate, or erroneous. Similarly, simple data entry errors may be dependent more on the fastidiousness of the individual record-keeper and less on the characteristics of the establishment.

The diversity of the reasons behind underreporting holds implications for improving the accuracy of SOII data and suggests that no single solution will address all the underlying reasons for underreporting. Enhanced education and outreach efforts on recording and reporting requirements may help resolve systemic recordkeeping errors among establishments with limited knowledge of the requirements. Streamlined and electronic recording processes may facilitate accurate recordkeeping and address both systemic and random recordkeeping errors. Efforts like OSHA's that aim to discontinue the use of OSHA log data in safety incentive programs and contracted work [Occupational Safety and Health Administration, 2012] may improve the accuracy of OSHA log data, especially in industries where the practice is more prevalent. Requiring the employer to accept a physician's determination of work-relatedness may promote recordkeeping uniformity (although this uniformity may only extend to establishments within the same state; however, as the threshold for work-relatedness may vary

<sup>3</sup> "Occupational Injury and Illness Recording and Reporting Requirements; Final Rule" Supplementary Information. Summary and Explanation; Who Makes the Determination? 66 Federal Register 5916–6135 (January 19, 2001).

by workers' compensation system [US Chamber of Commerce, 2011; Hollenbeck et al., 2013]). While each may incrementally increase SOII data accuracy, none of these approaches addresses the issue of injury recordkeeping as a relatively low priority among many establishments, nor do they solve the problem of willful underreporting. Increased attention to injury records during OSHA inspections may lead to marginal improvements in these areas. Inspections would need to include establishments usually exempt from recordkeeping requirements to improve reporting among all SOII establishments.

Finally, this study underscored the difficulty determining OSHA and SOII eligibility from workers' compensation administrative data. In some cases, claims data were insufficient for identifying injuries ineligible for OSHA recordability but eligible for workers' compensation insurance coverage (e.g., claims for injuries that occurred during travel status); in other cases, the incident was OSHA recordable, but the work absence was questionable. While these findings suggest that some SOII undercount studies include cases not eligible for SOII in the estimate of underreporting, the overestimation of SOII-eligible cases may be offset by the specious exclusion of other SOII-eligible cases.

There are several limitations to this study. First, because the aim of the study was to identify the various causes of unreported workers' compensation claims, relative frequencies of the causes are not presented. Further research would be needed to quantify the reasons for unreported claims. Findings may not be representative of the reasons for underreporting among all SOII participants. Washington's Department of Labor and Industries administers both the state OSHA program and the state funded monopolistic workers' compensation insurance system such that Washington record-keepers operate in a regulatory environment different from many other states. These forces may influence the recordkeeping of establishments in the state, especially the recording of injuries that result in workers' compensation claims. The study was further limited to SOII-sampled UI accounts, excluding sampled sub-accounts where additional reasons for unreported claims may have been identified, likely related to the identification of the sampled workforce and differences in defining the boundary around the sampled workforce—either by the record-keeper, or by the procedures used to link the SOII data to workers' compensation claims data. Additionally, the study design precluded the ability to discuss, by name, cases omitted from the SOII data that were also not captured in the workers' compensation claims data. Further research is needed to identify reasons these injuries are unreported, although one could speculate that the lack of a workers' compensation claim would be one such reason. Furthermore, study data were dependent on self-reported responses. Although respondents appeared to openly convey numerous aspects of recordkeeping noncompliance, and

several respondents admitted to not recording an injury they deemed unrelated to work—in direct opposition to the workers' compensation ruling—some respondents may not have felt comfortable discussing willful underreporting. Establishments who refused to participate in the study may have engaged in recordkeeping practices that differed from participants and included willful underreporting.

Barring a change in workplace injury recordkeeping practices at the establishment level, underreporting to SOII will likely continue. Indeed, an employer-based survey may never achieve complete case capture of all eligible cases, but that does not mean it is without merit. There are advantages to the SOII as a source of occupational injury surveillance data that can be used to inform injury prevention efforts. Estimates are available annually, with a relatively short turn around between data collection and publication; the scope is broad, extending to 44 states and covering all but a select group of workers; and the detail and characterization of industry, occupation, injury, and incident exceed that which is available in most other work injury data sources. Researchers may consider other data sources for enumeration of injuries and illnesses and instead, utilize the SOII for the characterization of reported cases.

## **AUTHORS' CONTRIBUTIONS**

All authors made significant contributions to the study design and interpretation of the data. C. Rappin and S. Wuellner conducted acquisition and analysis of the data and drafted the manuscript. All authors revised the manuscript, approved the version to be published, and agree to be accountable for all aspects of the work so that questions related to the accuracy and integrity of the research are appropriately investigated and resolved.

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The views expressed here do not necessarily reflect the views of the BLS.

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The authors report no conflicts of interests.

## DISCLOSURE BY AJIM EDITOR OF RECORD

Steven Markowitz declares that he has no competing or conflicts of interest in the review and publication decision regarding this article.

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