

Designing a Household Survey of Occupational Injuries and Illnesses: Converting the SOII into the HSOII

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Abstract

The Survey of Occupational Injuries and Illnesses (SOII) is the primary source of information for the Bureau of Labor Statistics (BLS) on nonfatal workplace injuries and illnesses. In this surveillance system, sampled employers maintain logs of workplace injuries and illnesses that occur to workers during the calendar year that meet recordability requirements established by the Occupational Safety and Health Administration. The SOII estimates are subject to underreporting due to potential filtering effects of injury and illness reporting that can lead both employers and workers to not report in-scope injuries or illnesses. Employers may underreport injuries and illnesses to keep injury and illness rates low. Further, they may be unaware of reportable events when workers do not report incidents to avoid losing their job or other opportunities. One way to reduce underreporting due to filtering effects of employer reporting of injuries and illnesses is to collect this information directly from workers. NORC assisted BLS in developing and testing a questionnaire for a household survey on occupational injuries and illnesses (HSOII).¹

Key Words: questionnaire design, cognitive interviews, measurement error

1. Introduction

The *Survey of Occupational Injuries and Illnesses (SOII)* is the primary source of information for the U.S. Bureau of Labor Statistics (BLS) on nonfatal workplace injuries and illnesses. In this surveillance system, sampled employers maintain logs of workplace injuries and illnesses during the calendar year that meet recordability requirements established by the Occupational Safety and Health Administration (OSHA). Nonfatal recordable injuries and illnesses are those that result in loss of consciousness, days away from work, restricted work activity or job transfer, or medical treatment beyond first aid. There is concern that SOII estimates are subject to underreporting due to potential filtering effects that can lead both employers and workers to not report in-scope injuries or illnesses.

A potential method to reduce underreporting is to collect this information directly from workers in a household survey. NORC assisted BLS in developing a questionnaire for a

¹ Further information about the study may be found at: <https://www.bls.gov/iif/norc-final-report.pdf>.

Household Survey on Occupational Injuries and Illnesses (HSOII) on non-fatal workplace injuries and illnesses.

NORC was tasked with converting the SOII employer-based survey forms into a household survey questionnaire on nonfatal workplace injuries and illnesses intended for household respondents. This paper highlights several sections of the HSOII, showing transformation of items in the SOII forms to survey questions, findings from cognitive testing, and recommended HSOII questions.

2. Methodology

2.1 Creating the HSOII Questionnaire:

The SOII was converted into a HSOII for cognitive testing:

- Examined SOII establishment survey forms²
- Conducted review of the literature to identify prior methodological work on surveys of occupational injuries and illnesses and issues related to proxy reporting
- Adapted questions from existing surveys
- Created new questions

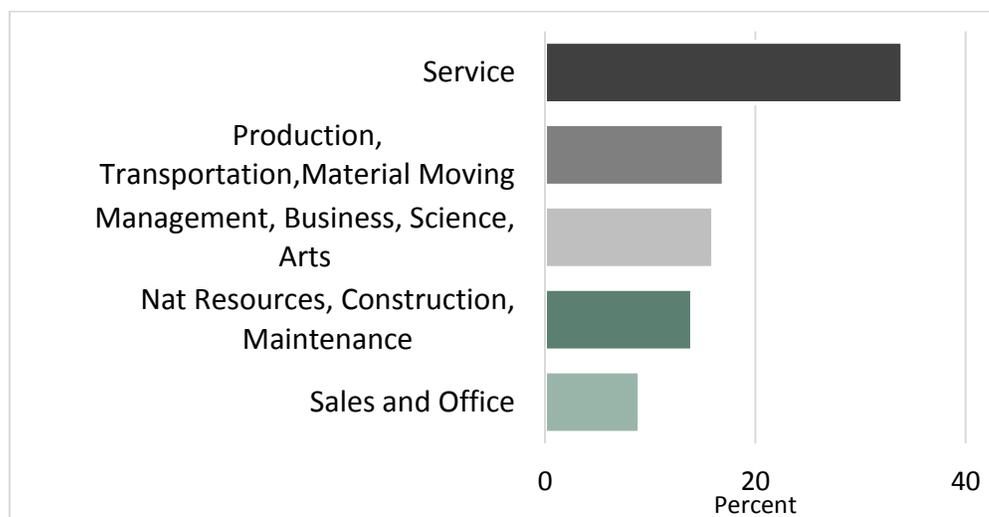
2.2 Cognitive Testing Methodology

The draft HSOII questionnaire was tested and refined in cognitive interviews:

- 3 rounds of iterative testing
- In-person and phone interviews, including proxy interviews
- 64 respondents were interviewed
 - 58 main respondents and 6 proxy respondents

As illustrated in Exhibit 1, the respondents who participated represented a broad range of occupations. The largest portion worked in the service industry.

Exhibit 1. Respondent Occupations



² SOII forms available at: <https://www.bls.gov/respondents/iif/forms.htm>

3. Findings

Below we present the findings from the cognitive testing of three of the sections of the questionnaire: Screener, Characteristics of the Injury or Illness, and Effects on Work

3.1 Screener Section

3.1.1 Goal of HSOII Screener Section

The Screener section is intended to capture all incidents of work-related injuries or illnesses occurring in the last 12 months for any member of the household. There were several challenges respondents faced in accurately reporting work-related injuries and illnesses:

- Understanding what counts as a work-related injury or illness
- Recalling relevant events
- Recalling dates of events

3.1.2 HSOII Screener Questions

The final set of Screener questions for the HSOII included the following questions. To prevent underreporting, the Screener provided multiple opportunities for respondents to report an incident.

#1. *Screener question with NO cues to injuries:* In the last 12 months, have you experienced any injuries or illnesses related to any job you held?

#2. *Screener question with cues to injuries:* In the last 12 months, have you experienced any [other] injuries, such as the following, related to any job you held?

Cues: Sprains, strains or tears, Soreness or pain, Bruises, Cuts or punctures, Broken bones, Injury to muscles or joints, Open wounds, Burns, Carpal tunnel syndrome, Any other injury?

#3. *Screener question with cues to illnesses:* In the last 12 months, have you experienced any [other] illnesses, such as the following, related to any job you held?

Cues: Skin disorders, Respiratory conditions, Poisonings, Hearing loss, A disease or infection, Cancer, Anxiety or depression, Any other illness?

3.1.3 Findings from Cognitive Testing

Cognitive testing revealed that respondents generally understood what it means for an injury or illness to be work related. Some remarks from respondents are summarized below:

- ❖ *Work-related means occurs during normal work or work hours. Could be a fall, broken bones, chemicals that cause sickness.*
- ❖ *Getting a cold does not count; minor cut or paper cut does not count.*
- ❖ *Occasional misunderstanding. Example: Respondent mistakenly thought it does not count if you were doing something you weren't supposed to at work, such as racing golf carts.*

Recall cues in the screener questions reminded respondents of additional work-related injuries and illnesses. Respondents remembered dates of events and were able to explain how they remembered.

- ❖ *A respondent had been asked often about the accident and had to fill out insurance claims.*
- ❖ *The injury happened on the respondent's anniversary.*
- ❖ *The injury happened just before the Christmas holiday.*

Alternative questions and interviewer guidance were needed for chronic and gradual onset conditions, such as soreness and difficulty breathing, which were difficult to pinpoint to a single day of onset.

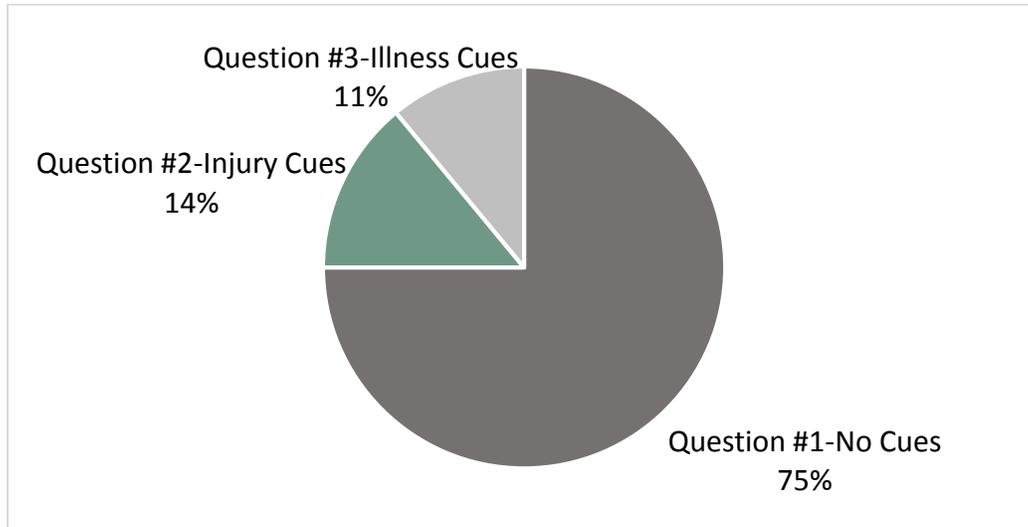
- ❖ *Respondent could not give an exact date because the anxiety came on slowly.*
- ✓ Questions were revised to determine whether respondents experienced symptoms at any time during the reference period:

Did this injury/illness occur on a specific day or did it develop over time?

Did you experience symptoms related to this injury/illness in the last 12 months?

The series of Screener questions was effective in aiding respondent recall of work-related injuries and illnesses. As shown in Exhibit 2, the majority of injuries and illnesses were reported in response to the first screener item. However, the additional screener questions were effective in eliciting additional reports.

Exhibit 2. Percent of Incidents Reported for Each Screener Question



3.2 Characteristics of the Injury or Illness

3.2.1 Goal of Characteristics Section

This section is intended to capture characteristics of each occupational injury or illness.

Nature of the injury

Part of body that was affected

Source of the injury

The event or exposure that caused the injury or illness

A challenge to designing this section is capturing sufficient detail on injury or illness to allow for later coding.

3.2.2 HSOII Questions on Characteristics of the Injury/Illness

Below are the final survey questions on the characteristics of the injury or illness.

- #1: Please describe how the injury, illness, or condition occurred, and what caused it.
For example: When ladder slipped on wet floor, I fell 20 feet; I developed soreness in wrist over time.
- #2: Were there any other objects, substances, or persons involved in the injury or illness that you didn't mention? Please include equipment, chemicals, vehicles, or anything else.
- #3: Please describe the injury, illness, or condition. How was [BODY PART, ORGAN] affected? You can use medical terms if you know them, or just talk about the symptoms you experienced. For example: strained back; chemical burn on hand; fainted or passed out.
- #4: Were there any other parts of your body or organs affected by the injury or illness that you may not have included in your description? How was [BODY PART, ORGAN] affected?

3.2.3 Findings from Cognitive Testing

Questions in the SOII forms were too specific for acute and physical injuries. To address this issue:

- ✓ Reference to the respondent's "condition" was added to account for chronic and gradual onset injuries and illnesses.

Examples in the SOII were lengthy and burdensome. To address this issue:

- ✓ Example list was shortened and is now to be read by the interviewer only if needed.

The SOII question on what the worker was doing just before the injury/illness was interpreted in multiple ways, with "just before" being understood as minutes before to hours before. To address this issue:

- ✓ Question on what happened just before the injury/illness was removed from the questionnaire.

Below are examples of responses to questions on characteristics of the injury/illness:

- ❖ *Respondent was swinging sledgehammer, missed and hit his leg. There was bruising and hematoma. Foot bruised as well.*

- ❖ *Respondent, a firefighter, was descending from stairs after putting out a fire. There must have been a broken step and he fell and slid down 6 or 7 feet...had his mask on and a bunch of tools. His back went out, pulled a muscle and disc herniation.*
- ❖ *Respondent was cutting up onions in a rush. She was cutting faster than normal and cut the bottom part of her hand. Very sharp knife. She said it was very painful and required stitches. She cut the palm of her hand.*
- ❖ *Respondent had soreness in forearm, numbness in ring and pinky fingers, arthritic right collarbone. She types and reaches from right to left side of keyboard at data entry job.*

3.3 Effects on Work

3.3.1 Goal of HSOII Section on Effects on Work

This section of the instrument is intended to capture information on number of days of work missed, transfer to another job, restriction in duties, and other effects of the injury/illness. The effect the injury/illness on one's ability to work is a criteria for determining whether the injury or illness should be counted.

3.3.2 Challenges to Designing Section on Effects on Work

There were a number of difficulties respondents faced in reporting the effects of their injury or illness on work. For example:

- Respondents may have difficulty with terms (e.g., transfer jobs).
- Those with chronic or gradual onset conditions may face particular challenges in reporting effects on work.

3.3.3 Findings from Cognitive Testing

Determining whether the respondent was able to work the next day and whether they were able to work usual hours could be difficult in some situations.

- ❖ *Next day could be respondent's day off work.*
- ❖ *Respondents with irregular work schedules do not work usual hours.*
- ✓ Alternative question wordings were developed to determine whether the respondent was able to work (if scheduled) or whether the respondent would have been able to work (if not scheduled).

For chronic/gradual onset conditions questions on ability to work the next day do not make sense.

- ✓ Alternative question was added to ask whether the condition had effects on work at any time during the reference period.

4. Lessons Learned

The development and testing of the HSOII highlighted key issues in converting the SOII to the HSOII:

- Cueing respondents on the incidents of interest in the HSOII is key to reducing underreporting of workplace injuries and illnesses.
- Including lists of injuries and illnesses as recall cues in the screener is helpful in addressing underreporting.

- Creating questions for chronic and gradual onset conditions (such as hearing loss, respiratory conditions, anxiety) required more adaptation than for acute conditions (such as broken bones, concussions, cuts).

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