

Part B. Statistical Methods

1. Universe

Due to difficulties in producing reliable and detailed estimates for fatal occupational injuries from a sample survey, the Bureau of Labor Statistics (BLS) compiles a census of these fatalities using multiple data sources, primarily solicited from Federal and State agencies. States match source documents to ensure that each recorded fatal injury is in fact work-related and is counted only once.

The BLS received information for approximately 5,800 fatalities (injuries plus illnesses) over the 5 years of 2013-2017 nationwide. About 15 percent of the fatalities need to have a follow-back questionnaire sent either to be substantiated as work-related or to obtain missing information needed to compile the data.

2. Information collection procedures

The OSHA program, including the Census of Fatal Occupational Injuries (CFOI), is a Federal/State cooperative program. The State partner in each State, city, or territory:

- arranges with the various State agencies involved to obtain, on a flow basis, source documents on all occupational fatalities in the State during the reference year;
- uses multiple source documents to verify if an injury is work-related and to obtain detailed information on the circumstances of that injury;
- ensures that each fatality is counted only once;
- conducts follow-back on fatalities identified by only one source document as being work related and fatalities for which work-relationship is questionable;
- clarifies data with employers when certain information is missing or inconsistent between source documents;
- codes data elements; and
- enters the data into the BLS online application.

Attachment 2 contains the introductory letter and structured questionnaire for the follow-back.

BLS trains State CFOI staff and provides a procedural manual with periodic updates via technical memoranda for program operation. These documents establish processing standards to ensure comparability among State data and to generate verifiable nationwide counts of fatal workplace injuries. To satisfy the desired accuracy in the CFOI data, the operations guide and technical memoranda detail the following quality assurance measures:

- Each fatal injury will be substantiated by two or more independent sources or a source document and a follow-back questionnaire.
- Data are entered using a BLS online application that includes standardized edits to ensure valid entries and consistency between data elements.
- BLS has an annual Data Acceptance Program that includes inspection of the State data.

BLS obtains source documents from several federal agencies and distributes them to states partners to further identify and validate occupational fatalities. These agencies include the Office of Workers' Compensation Programs, National Highway Traffic Safety Administration, U.S. Coast Guard, Occupational Safety and Health Administration, Federal Railroad Administration, and National Transportation Safety Board. BLS has begun to use machine learning techniques, which are continuing to be developed, to link Occupational Safety and Health Administration records to the CFOI case file, improving linkage accuracy and efficiency.

Additionally, BLS has created a webscraping tool called the CFOI Public Data Management System to identify, index, and store information on workplace fatalities. This tool provides state partners with a searchable compilation of online data sources that is used to further substantiate fatal injury information.

3. Maximizing the response

With the use of diverse data sources and the follow-back questionnaire, the CFOI compiles the most complete count of fatal occupational injuries possible.

When a second source document is unavailable to substantiate that the fatal injury is work-related or if certain important data regarding the injury are missing, an additional source document or a completed follow-back questionnaire is generally required. In this situation, a follow-back questionnaire will often be sent to the employer, the informant named on the death certificate, or the certifying physician or coroner/medical examiner. A telephone follow-up is conducted when the questionnaire has not been returned or is incomplete. If repeated attempts to reach a contact fail, the State agency tries to reach an alternative person named on the source documents for the needed information.

At the end of the data collection cycle, BLS reviews available documentation for unsubstantiated cases¹ (around 1 percent of the file) and, together with the State partner, determines whether to include the case on the database. This procedure ensures that all legitimate work-related injury fatalities are included in the fatality counts each year.

4. Tests of procedures

The CFOI procedures were tested successfully by Colorado and Texas in 1989 and 1990. (See Windau and Goodrich, "A census approach to compiling data on fatal work injuries," *Monthly Labor Review*, December 1990 available on the BLS website at <http://www.bls.gov/opub/mlr/1990/12/rpt2full.pdf>). State and regional office recommendations were incorporated into the follow-back questionnaire and data collection procedures that were used to collect reference year 1991 data from 31 States. A national conference was held in September 1992 to present preliminary data for 1991 and to discuss various data collection issues. Research papers presented at the conference are included in BLS Report 845, "Fatal Workplace Injuries in 1991: A Collection of Data and Analysis," dated April 1993. These papers

¹ Unsubstantiated cases refers to cases where only one source document was found to verify the case. In counting single-source document cases, all OSHA reports appearing on a case are counted as one source document.

discussed various data sources used (death certificates, toxicology reports, farm bureau reports, and information from the next-of kin) as well as the usefulness of CFOI data in studying fatal occupational injuries (highway fatalities, homicides, occupational fatality rates, length of tenure of fatally-injured workers). Another paper studying the CFOI (See Connie Austin, “An evaluation of the Census of Fatal Occupational Injuries as a system for surveillance,” in BLS Report 891, “Fatal Workplace Injuries in 1993: A Collection of Data and Analysis,” June 1995) concluded that the procedures used in the CFOI data collection process achieve the following program objectives:

- Accuracy: Work-related injury fatalities are substantiated by two or more independent source documents or a source document and follow-back questionnaire.
- Timeliness: States follow established procedures for quick access to source documents to ensure availability of current data to users. Data are published approximately twelve months after the reference period.
- Usefulness: The database contains information useful for understanding fatal injuries and developing injury prevention strategies, including characteristics of the incident, the employer, and the deceased.
- Completeness: Diverse data sources are used to compile a more complete roster of fatal work injuries, including those to private and public sector employees and the self-employed.

BLS updates the CFOI State operating manual and computer system periodically to incorporate State and user recommendations for more efficient data collection as well as additional edits to improve data quality.

5. Statistical contact person

The data collection is a complete census of fatal work injuries and is not probability based. Organizations involved in various aspects of occupational safety and health—statistics, research, injury prevention—were consulted about the data collection design. Jeff Gonzalez (202-691-7517), chief of the Statistical Methods Group in the Office of Compensation and Working Conditions, is the contact person at BLS.

One agency in each of the State partners is designated the data collection organization for the CFOI. A list of participating State partners and agency contacts is available on request.