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COMMENTARY

The Critical Need for Improved Enumeration and Surveillance of the Logging Workforce

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Logging has long been recognized as one of the most dangerous areas in which to work both as an industry and as an occupation.[1] In 2012, the logging industry accounted for 62 deaths in the United States. This results in a fatality rate of 127.8 per 100,000 logging workers, which is even higher than fishing workers (117) and more than 40 times higher than the overall rate of 3.2 in the United States.[2] This industry is an essential part of the US economy as an important source of employment and generation of economic resources. Insufficient information and lack of understanding of the risk factors, causes, nature, and outcomes of injury in this sector has prevented development and prioritization of effective interventions to improve the safety and health of logging workers.

Identifying and characterizing existing surveillance data sources on logging workers is vital in order to generate useful information for planning and developing safer logging activities, and protecting worker health from the hazards associated with logging work. A pilot study on this was funded through the Southwest Center for Agricultural Health, Injury Prevention, and Education (SW Ag Center). The SW Ag Center at The University of Texas Health Science Center at Tyler (UTHSC-T) serves the five-state region of US Public Health Region VI—Arkansas (AR), Louisiana (LA), New Mexico (NM), Oklahoma (OK), and Texas (TX). This research contributes to the Agriculture, Forestry and Fishing (AgFF) sector-specific priority of the National Occupational Research Agenda (NORA).[3] As part of the AgFF research agenda, the National Institute for Occupational Safety and Health (NIOSH) AgFF Council proposed nine strategic

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TABLE 1. Data Sources Available to Enumerate Logging Workers in the United States

Data source	Description	Enumerating logging workers
Bureau of Labor Statistics (BLS)		
Current Employment Statistics (CES)[19]	CES is a monthly survey of about 145,000 business establishments and government agencies, representing about 557,000 individual worksites; provides estimates of employment, hours, and earnings data by NAICS.	Logging is grouped together with mining at the state level. Mining, logging, and construction are grouped together for some areas within states.
Quarterly Census of Employment and Wages (QCEW)[20]	QCEW reports quarterly count of employment and wages reported by employers covering 98% of US jobs; includes data on number of establishments, monthly employment, and quarterly wages by NAICS industry, by county, and by ownership.	Statewide annual logging data (NAICS 113310) were available. This included number of employees, number of establishments, total wages, average weekly wage, and average annual pay. County data are also available for the logging industry, but the majority is not disclosable because it does not meet BLS or state agency disclosure standards.
Occupational Employment Statistics (OES) Survey[21]	OES survey conducts a semiannual mail survey of approximately 200,000 establishments designed to produce estimates of national, statewide, metropolitan, and nonmetropolitan areas data on employment and wages for specific occupation.	For statewide employment data on logging workers, this database provides both classification systems, NAICS and SOC. Information on detailed logging occupations, such as fallers, graders, and scalers, is available.
United States Census Bureau (USCB)		
County Business Patterns (CBP)[22]	CBP provides economic data by geographic area, industry detail (NAICS), and enterprise size. Statistics on business establishments with paid employees are available on the national, state, and county levels.	Logging industry data can be retrieved for state and for specific metropolitan and metropolitan statistical areas. Small logging operations without large number of logging workers may be missed on the Company Organization Survey mail survey.
Nonemployer Statistics[23]	Nonemployer statistics reports economic data for businesses without paid employees but are subject to federal income tax. These are self-employed individuals operating unincorporated businesses (known as sole proprietorships). The source is primarily from the annual or quarterly business income tax filled with the IRS.	Forestry and logging establishments are aggregated.
Longitudinal Employer-Household Dynamics (LEHD)[24] The LEHD Partnership offers several data tools, including OnTheMap, Quarterly Workforce Indicators (QWI) Online, Local Employment Dynamics Extraction Tool, and Industry Focus.	States share Unemployment Insurance earnings data and the Quarterly Census of Employment and Wages (QCEW) data with the Census Bureau. LEHD program conglomerates these data, additional administrative data and data from censuses and surveys.	From these data, the program creates statistics on employment, earnings, and job flows at detailed levels of geography and industry and for different demographic groups. OnTheMap provides mapping of the broad sector agriculture, forestry, and fishing (AFF). QWI online provides valuable data on the logging industry. Local Employment Dynamics Extraction Tools provides thorough logging industry data. Industry Focus provides information on the detailed industry: “Forestry and Logging.”

goals. This research has addressed an important goal on surveillance: "Improve surveillance within the Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupational hazards; and worker populations at risk for adverse health outcomes." Three intermediate goals within this included utilizing existing or new data systems, improving collection of worker demographic information, and assuring timely dissemination of surveillance data to workers, employers, scientists, and the public.

Previous studies on logging workers have focused on particular states such as Alaska,[4] Kentucky,[5] Pennsylvania,[6] West Virginia,[7–9] and Louisiana[10–13] and have used data from trauma registries, NIOSH's Fatality Assessment and Control Evaluation program, patient charts, mail surveys, and workers' compensation systems. Studies focused on national level[14,15] used data from the Bureau of Labor Statistics Census of Fatal Occupational Injuries (CFOI) and National Traumatic Occupational Fatality Surveillance System. There are also review reports on logging fatalities as investigated by the Occupational Safety and Health Administration (OSHA).[16,17] These studies identified high-risk worker groups with respect to demographics and occupations (e.g., truck drivers, machine/equipment operators, fellers, limbers, buckers, choker setters). Regional differences in logging fatality rates were reported with the highest fatality rates occurring in those regions harvesting primarily hardwood saw timber.

A lack of reliable and comprehensive denominator data source has been a key barrier to defining who is at risk and accurately calculate injury rates for logging workers. We have performed a detailed search of possible data sources that are available to generate numbers and characteristics of logging workers. Currently there are two coding systems used to classify logging business establishments and logging workers. The North American Industry Classification (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing data related to US business economy. The 2010 Standard Occupational Classification (SOC) system is also used by federal statistical agencies to classify workers into occupational categories. The Bureau of Labor Statistics and the United States Census Bureau (both agencies of the US Federal Government) are the two most important providers of data sources on logging worker employment and demographic information at the state and national level. Each has a series of databases that provides information on logging workers, such as employment, hours, earnings, and demographic data, among others. Table 1 summarizes our findings.

CONCLUSIONS

Surveillance in the forestry sector suffers from the fragmented and incomplete nature of occupational safety and health surveillance in this country, but experiences even more difficult challenges due to the diverse subsets of workers, many of who are in the more invisible informal sector (including immigrant workers) or work on small firms that may remain unprotected from federal regulations, and therefore escape the capture of routine surveillance systems in the United States, such as the Department of Labor Bureau of Labor Statistics (BLS) surveys, or even National Agricultural Worker Survey. Specifically, surveillance challenges inherent in this sector include (1) inconsistencies in the definition of work and employment; and (2) incomplete reporting from unpaid family workers, small employers, the self-employed, and owners and partners in unincorporated firms.

We anticipate undertaking a subsequent study after this project is completed. In this follow-up project, we will propose to access the data from these sources, compare and contrast the available data through the capture-recapture method,[18] find ways to aggregate data from multiple sources, and develop the methods to calculate and present logging health and safety indicators.

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