



## Differences in safety training among smaller and larger construction firms with non-native workers: Evidence of overlapping vulnerabilities



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### A B S T R A C T

Collaborative efforts between the National Institute for Occupational Safety and Health (NIOSH) and the American Society of Safety Engineers (ASSE) led to a report focusing on overlapping occupational vulnerabilities, specifically small construction businesses employing young, non-native workers. Following the report, an online survey was conducted by ASSE with construction business representatives focusing on training experiences of non-native workers. Results were grouped by business size (50 or fewer employees or more than 50 employees). Smaller businesses were less likely to employ a supervisor who speaks the same language as immigrant workers ( $p < .001$ ). Non-native workers in small businesses received fewer hours of both initial safety training ( $p = .005$ ) and monthly ongoing safety training ( $p = .042$ ). Immigrant workers in smaller businesses were less likely to receive every type of safety training identified in the survey (including pre-work safety orientation [ $p < .001$ ], job-specific training [ $p < .001$ ], OSHA 10-hour training [ $p = .001$ ], and federal/state required training [ $p < .001$ ]). The results highlight some of the challenges a vulnerable worker population faces in a small business, and can be used to better focus intervention efforts. Among businesses represented in this sample, there are deficits in the amount, frequency, and format of workplace safety and health training provided to non-native workers in smaller construction businesses compared to those in larger businesses. The types of training conducted for non-native workers in small business were less likely to take into account the language and literacy issues faced by these workers. The findings suggest the need for a targeted approach in providing occupational safety and health training to non-native workers employed by smaller construction businesses.

### 1. Introduction

Social structures such as race, class, and gender; employment trends such as the growth of the temporary workforce; and organizational factors such as business size can all contribute to the greater vulnerability of some workers to workplace illness or injury than others.

A worker with overlapping vulnerabilities is simultaneously a member of two or more at-risk groups, such as being an immigrant and a temporary worker, or being a young worker and employed by a small, non-union business. Each vulnerability has characteristics that add unique barriers to the worker's occupational safety and health (OSH). For example, a non-native worker may fear deportation for reporting unsafe conditions [Flynn et al., 2015] and younger workers may accept work injuries as “part of the job” because of their inexperience and lack of job control [Breslin et al., 2007]. OSH vulnerability may also intensify existing barriers to safety that are common for all workers, such

as lack of training in small businesses due to financial constraints [Cunningham et al., 2014]. As these vulnerabilities are independently associated with additional risk of workplace injury or illness, the interaction between risk factors may create even more risk for groups experiencing multiple vulnerabilities than for those who experience only one risk factor. However, more work is needed to clarify how these overlapping vulnerabilities interact and may intensify the risk for occupational injury and illness and how OSH professionals can effectively reduce these risks.

In 2015, the American Society of Safety Engineers (ASSE) and the National Institute for Occupational Safety and Health (NIOSH) initiated an intervention effort to reach workers experiencing overlapping OSH vulnerabilities in small construction businesses. Their initial efforts resulted in the report *Overlapping Vulnerabilities: The Occupational Health and Safety of Young Immigrant Workers in Small Construction Firms* [NIOSH and ASSE, 2015]. This report focused on three populations that

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research indicates are at increased risk for adverse work-related health outcomes—Hispanic immigrants (individuals born in Latin America who currently live in the United States), employees of small businesses (firms with fewer than 20 employees), and young workers (< 25 years old)—with a specific focus on implications for the construction industry. The report explored how the combination of risk factors may result in overlapping vulnerabilities for young immigrants in small construction firms and discussed the implications for OSH professionals.

Construction fatality counts remain among the highest of all industries, accounting for nearly 20% of all workplace fatalities in 2015 (2 + /day, mostly due to falls) [BLS, 2016a]. Numerous studies report a linear, inverse relationship between organization size and injury, illness, and/or fatality rates [Buckley et al., 2008; Fabiano et al., 2004; Fenn and Ashby, 2004; Mendeloff et al., 2006; Morse et al., 2004; Page, 2009; Peek-Asa et al., 1999]. In 2015, construction businesses with 11–49 employees had an average incidence rate of 4.1 per 100 full-time workers, while construction businesses with 1000 or more employees had an incidence rate of 1.3 per 100 full-time workers [BLS, 2016b].<sup>1</sup> According to U.S. Census data, in 2013, the total number of construction workers employed in businesses with fewer than 10 employees was almost 2 million (1,873,475) [U.S. Census Bureau, 2014]. Of the nearly 1.5 million (1,482,495) Hispanic immigrants working in construction, about 40% (551,928) worked in firms with fewer than 10 employees. The proportion is similar for young workers. In 2013, there were over three-quarters of a million (758,613) construction workers aged 24 or younger, of whom nearly a third (221,531) worked in construction firms with fewer than 10 employees.

Young Hispanic immigrants are more likely to work for a very small business than are other racial and ethnic groups that make up much of the construction workforce. In 2013, approximately 122,000 foreign-born Hispanics employed in construction were 16–24 years of age, and from 2009 to 2013, just under half of all young Hispanic immigrants in construction worked for a very small business. Additionally, according to estimates based on the National Health Interview Survey [CDC, 2013], approximately two-thirds of Hispanic construction workers in the United States in 2013 were not citizens, a factor that has been identified as a possible contributor to occupational health disparities among immigrants [Liebman et al., 2016; Flynn et al., 2015]. These survey data also indicate nearly one quarter (23.5%) of all U.S. Hispanic construction workers have been on the job for less than a year, and nearly three quarters (70.4%) have been on the job for less than 5 years.

Among immigrants returning to Mexico from January to March 2010 ( $n = 5458$ ), approximately 75% of respondents worked for a business with 50 or fewer employees, and those who worked for smaller establishments were less likely to get training (28% of respondents in workplaces with 50 or fewer employees received training, compared with 39% in workplaces with more than 50 employees) [CONAPO, 2010]. Additionally, those who worked for smaller establishments were less likely to sign a contract with their employer and were less likely to have benefits.

On the basis of these data, one can conclude it is likely that non-native Hispanics working in the United States face greater OSH challenges than native-born workers, not only because of the unique barriers they encounter as non-native workers but also because of the lack of OSH resources available in smaller businesses, where the majority of Hispanic immigrants are employed.

<sup>1</sup> Many small businesses are exempt from Occupational Safety and Health Administration (OSHA) reporting regulations, which are, for the most part, not required for companies with 10 or fewer employees (with some exceptions, including in the case of a fatal incident) [OSHA, 2014]. Thus, while the inverse relationship between business size and fatality rates is detectable in data provided by the Bureau of Labor and Statistics, injury rates for the smallest size segment (1–10 employees) are likely higher than reported due to underreporting of injuries by smaller businesses [Mendeloff et al., 2006].

The NIOSH and ASSE report concluded with a call to business leaders, researchers and policy makers to consider the efforts needed to address and reduce the pervasive and persistent occupational health disparities experienced by vulnerable workers:

- Evaluating the potential overlap and interaction of different vulnerabilities,
- Developing interventions tailored to all relevant vulnerabilities,
- Working with organizations known to the target community, for effective dissemination and diffusion of interventions,
- Building relationships between OSH professionals and community organizations and focusing on the sustainability of interventions.

As a follow up, a survey was conducted by ASSE with construction business representatives intended to address the first two areas of need outlined in the ASSE/NIOSH report and results were shared with NIOSH researchers. NIOSH researchers analyzed the data collected by ASSE to further explore the training experiences of non-native workers in the construction industry and to identify needs for further research and intervention to protect vulnerable workers experiencing overlapping vulnerabilities.

## 2. Methods

A survey was developed consisting of 34 items that explore how workplace safety and health training differs among smaller (fewer than 50 employees) and larger (50 or more employees) construction businesses that employ non-native workers. Specifically, the survey was aimed to determine how workplace safety and health training differs between small and large construction firms that employ non-native workers in terms of:

- To whom training is provided
- The types of training provided
- How much training is provided
- How training is delivered
- How training is evaluated

To establish face validity, the survey was based on a comprehensive review of the professional and academic literature. A member of the ASSE Spanish Professionals and the Latino Workforce work group cognitively tested the survey instrument with two potential respondents to ensure the items were clearly understood. The cognitive interviews were structured and focused on eliciting participant understandings of the concept and their decision making processes in the selection of a response [Miller, 2003; Willis, 2005]. Revisions were made to the instruments based on the results of this testing, and confusing or poorly worded items were revised or eliminated.

To establish content validity, the survey was reviewed by eight experts in occupational safety and health. These experts represented various occupational safety and health leadership functions among trade, labor, and professional organizations in the construction industry. Suggested revisions and recommendations offered by the experts were incorporated into the final survey instrument.

The survey was administered online by ASSE using SurveyGizmo (<https://www.surveygizmo.com/>). Respondents were recruited via email using a snowball-sampling method: first, a list of 2907 construction business representatives were sent an email inviting them to complete the survey. That same recruitment email also requested that the recipient forward the survey invitation to additional construction business representatives. Following the initial recruitment email, the survey was available for a period of four weeks. To increase the number of small residential construction business respondents, another recruitment email was sent to 19 residential construction business representatives following initial review of the survey responses.

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