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Short Communication

Aging Workers and Trade-Related Injuries in the US Construction Industry

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ABSTRACT

The study was designed to identify any trends of injury type as it relates to the age and trade of construction workers. The participants for this study included any individual who, while working on a heavy and highway construction project in the Midwestern United States, sustained an injury during the specified time frame of when the data were collected. During this period, 143 injury reports were collected. The four trade/occupation groups with the highest injury rates were laborers, carpenters, iron workers, and operators. Data pertaining to injuries sustained by body part in each age group showed that younger workers generally suffered from finger/hand/wrist injuries due to cuts/lacerations and contusion, whereas older workers had increased sprains/strains injuries to the ankle/foot/toes, knees/lower legs, and multiple body parts caused by falls from a higher level or overexertion. Understanding these trade-related tasks can help present a more accurate depiction of the incident and identify trends and intervention methods to meet the needs of the aging workforce in the industry.

Construction is one of the largest industries in the United States and employs about 9.1 million workers [1]. Construction employment is expected to grow by approximately 2 million wage-and-salary jobs between 2010 and 2020, more than double the growth rate projected for the overall US economy [1]. The construction industry is consistently ranked among the most dangerous occupations and accounts for a disproportionately large percentage of all occupationally related illnesses, injuries, and deaths. Moreover, the number and proportion of older workers in the United States is increasing [2]. Between 1985 and 2010, the average age of construction workers jumped from 36.0 years to 41.5 years [1]. As workers age, many of the tasks they used to complete easily may become increasingly difficult. According to the United States National Institute for Occupational Safety and Health [3], physically demanding jobs present the danger of more severe injuries and longer recovery times incurred by older workers. Physical activities associated with individual trades may also increase the cases of worker injury and may lead to worker carelessness or shortcuts. Factors that increase the aging worker's potential for injury include muscle weakness, balance problems, vision problems, and side effects from medicines. Older worker groups had lower injury rates, but when older workers were injured, recovery times were longer compared with those of younger workers [4,5]. Also, the population of older workers that forgo retirement because of various factors (e.g., better health, changes in social or retirement policy, lack of younger replacement workers, economic need, or desire to change careers) is growing [5]. In many ways, the trend of older workers remaining in the workforce can be beneficial for the nation's economy. Their expertise is valuable, and many companies prefer to keep their older employees as long as possible [6]. Despite the challenges of the aging workforce, there are only a few studies about injury-related absences in construction and even fewer as the injuries relate to the age and trade of heavy/highway contractors. The purpose of this study was to identify any trends of injury type as it relates to the age and trade of the heavy construction workers.

A heavy highway project in the Midwestern United States was used to gather the injury information. A total of 196 construction

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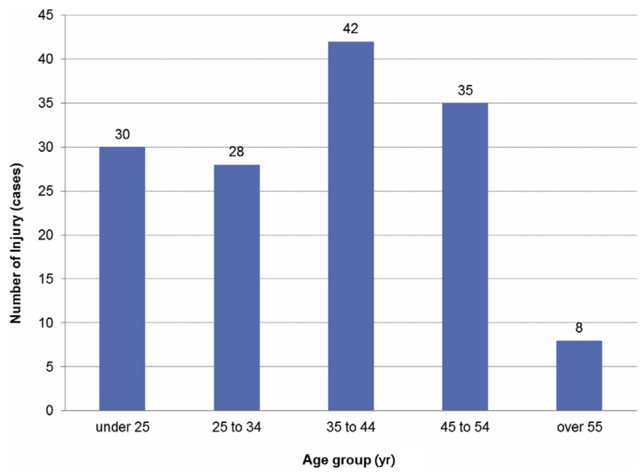

Fig. 1. Injuries by age group.

contractors had been enrolled in the project at the time, and > 2,000 individual workers had completed the mandatory job site orientation. The types of contractors involved in the project included the following: general contractors, structural steel, rebar installation, earthmoving, concrete and steel demolition, electrical, painting/staining, engineering, bridge builders, underground boring, caisson drillers, trucking, and concrete flat work, which account for the highest numbers of employees with many small tier subcontractors involved thereafter. In order to document the injury cases, a spreadsheet was developed as one research method in this study. The spreadsheet was designed to gather as much information as possible about the injury and individual at the time of the incident. The primary focus was to present specific information about the injury and the individual, the type of work being completed, and the occupation to identify possible trends in relation to injuries, age, and occupation. It begins by collecting background information about the individual: age, sex, wage rate, trade, and forms of training completed. It is followed by medical information such as date of the injury, injury time, medical only or compensation, event date to hire, event to close, associated costs, and lost time days. Specific information about the injury follows in the form of injury cause, type of hazard, injury area, and type of damage. The collection of data from the injuries, specific to the project was from October 2004 to November 2006. During this period, a total of 143 injury reports were collected.

The first section of the information presented identifies the age groups of the injured workers and the frequency of injuries within the age groups (average age = 38.3 years; standard deviation = 11.3 years). Fig. 1 depicts the following age groups: < 25 years with 30 injuries (21%), 25–34 years with 28 injuries (20%), 35–44 years with 42 injuries (29%), 45–54 years with 35 injuries (25%), and > 55 years with eight injuries (6%). The two age groups with the highest number of injuries were 35–44 years and 45–54 years. These injuries make up 54% of all reported incidents (77 injuries of 143 total cases; Fig. 1).

Data were also collected at the time of the injury regarding the type of work being performed as it relates to the individual trade of the injured worker. The four trade groups with the highest injury rates were laborers, carpenters, iron workers, and operators. The laborers accounted for 45% (65 injuries), followed by carpenters with 23% (33 injuries), iron workers with 11% (16 injuries), and operators with 10% (15 injuries) of the total injuries. The remaining trade groups accounted for the remaining 11% (Table 1).

The body part of injury in each trade and age group was also identified. The fingers/hand/wrist were the most frequent body part injured (26%; i.e., 37 of 143 total cases), followed by back (10%), foot/ankle (9%), eye (9%), multiple body parts (9%), and knee (8%; Fig. 2). Sprains/strains were the most common type of injuries that occurred (35%; i.e., 50 of 143 total cases), followed by contusion/crushing bruise (20%), and cut/laceration (16%; Fig. 3). The age groups of under 25 and 25–34 years sustained 20 injuries to their fingers/hand/wrist because of cut/laceration, contusion, and sprains/strains. The age group of 35–44 years had 15 injuries in their fingers/hand/wrist due to contusion, cut/laceration, or puncture caused by being caught between objects, or struck by or against an object. The 45–54 years and > 55 years age groups suffered from sprains/strains and contusion/crushing bruise injuries due to falls from a higher level and overexertion while lifting objects. Of these injuries, the older worker groups had increased injuries to their ankle/foot/toes, knee, lower leg, forearm/upper arm, neck, back, and multiple body parts (Table 1).

With older workers becoming more prevalent within the construction industry, there is a growing need for a sustained focus on aging worker health and safety [6]. Businesses that change their perceptions of older workers, including their value and contribution to the workplace, will be in front of the curve to take advantage of the changing demographics. Older workers bring the benefit of desirable construction experience to the workplace. They often have specific knowledge of construction methods—usable tools such as process management and material handling—that can help improve productivity and bring safety to the workplace. Understanding the older worker, changing the work environment to accommodate them, and changing the way we train adults will create a healthier, safer, and more productive workforce for the largest working population in the United States [7]. However, older workers are at a disadvantage when it comes to overall task performance. Older workers have decreased capacity in areas such as vision, hearing, strength, balance, and response time. Although much of the literature does not explicitly state that older workers suffer increased error rates, it does show this factor to be a concern. To accommodate seniors in the workplace, employers must acknowledge that these workers are a valuable resource and establish policies, procedures, and practices conducive to their retention [8]. Education may be an effective tool to accommodate the challenges of the aging construction workforce. Older workers need to understand what types of changes to expect in their bodies. The older worker needs to be aware of the types of ergonomic hazards that are potentially more threatening to their health and safety on the job and at home, and learn new ways to avoid them or work around them. Education for the aging worker that helps them understand their physiological changes could be a proactive approach to avoiding injuries. If the worker knows what to expect in the way of approaching physiological changes a few years further into their career, they may begin to think about the task they are performing today and look for new ways to complete the task in the future that minimizes exposure to ergonomic hazards. Educating the workforce may begin to produce new ways to reduce the hazards they are exposed to now through cooperative efforts between management, engineering, and first-line supervision. The informed older worker can begin to look for new tools, interventions, processes, and approaches to completing the necessary tasks of the construction project. Additionally, training strategies for the aging workforce will need to adapt to the cognitive capabilities of individual workers. Learning and retention abilities will vary between computer-based training and hands-on training; therefore, a test could be utilized in order to rate or grade an individual's abilities after training. Incident investigation plays an important role with identifying an underlying root cause of the incident. More in-depth information should be collected pertaining to the physical activity taking place, such as lifting a piece of plywood, pounding in a