



Healthcare Workers in British Columbia, Canada

Exploring the contributions of age and tenure on work-related injury

Siow, S., Ngan, K., Yu, S., Guzman, J.

All authors affiliated with the Occupational Health & Safety Agency for Healthcare (OHSAH) in British Columbia.

Siow, S. & Guzman, J. also affiliated with the Faculty of Medicine, University of British Columbia.

BACKGROUND

Work-related injury and illness represent a significant source of morbidity in developed countries. Previous research identifies age and job tenure as determinants influencing occupational injury. Reviews show that both adolescent (15-19 years old) and young adult (20-24 years old) workers experience an increased risk for work injury, compared to adult workers (25 years and over). Also, newly-hired workers demonstrate increased likelihood for injury than those with longer job tenures. However, the extent to which age and job tenure may independently contribute to differences in occupational injury has yet to be documented for the healthcare sector.

OBJECTIVE

We examine the independent contributions of age and job tenure to the incidence of occupational injury, accounting for their potential interaction, for healthcare workers in British Columbia, Canada. Understanding age and job tenure as risk factors in the healthcare sector would enable improved targeting of health education and prevention programs.

METHODS

Study Design

The study cohort includes employees of three health regions in BC over a two-year period, 1 January 2005 to 31 December 2006. Workers were divided into mutually exclusive groups based on age and job tenure for each calendar year.

Age

- A *young worker* is any worker under 25 years of age;
- An *older worker* is greater or equal to 25 years of age.

Job Tenure

- A *new hire* has just started their first job in the health region;
- A *relocated worker* changed position within the same health region;
- An *experienced worker* has a minimum six months experience in the job within the same health region.
- Workers who did not change positions during the year but had less than six months experience before each calendar year were excluded.

Data Source

The Workplace Health Indicator Tracking and Evaluation (WHITE™) Database collects regional (surveillance and administrative) data on healthcare workers in BC.

Statistical Methods

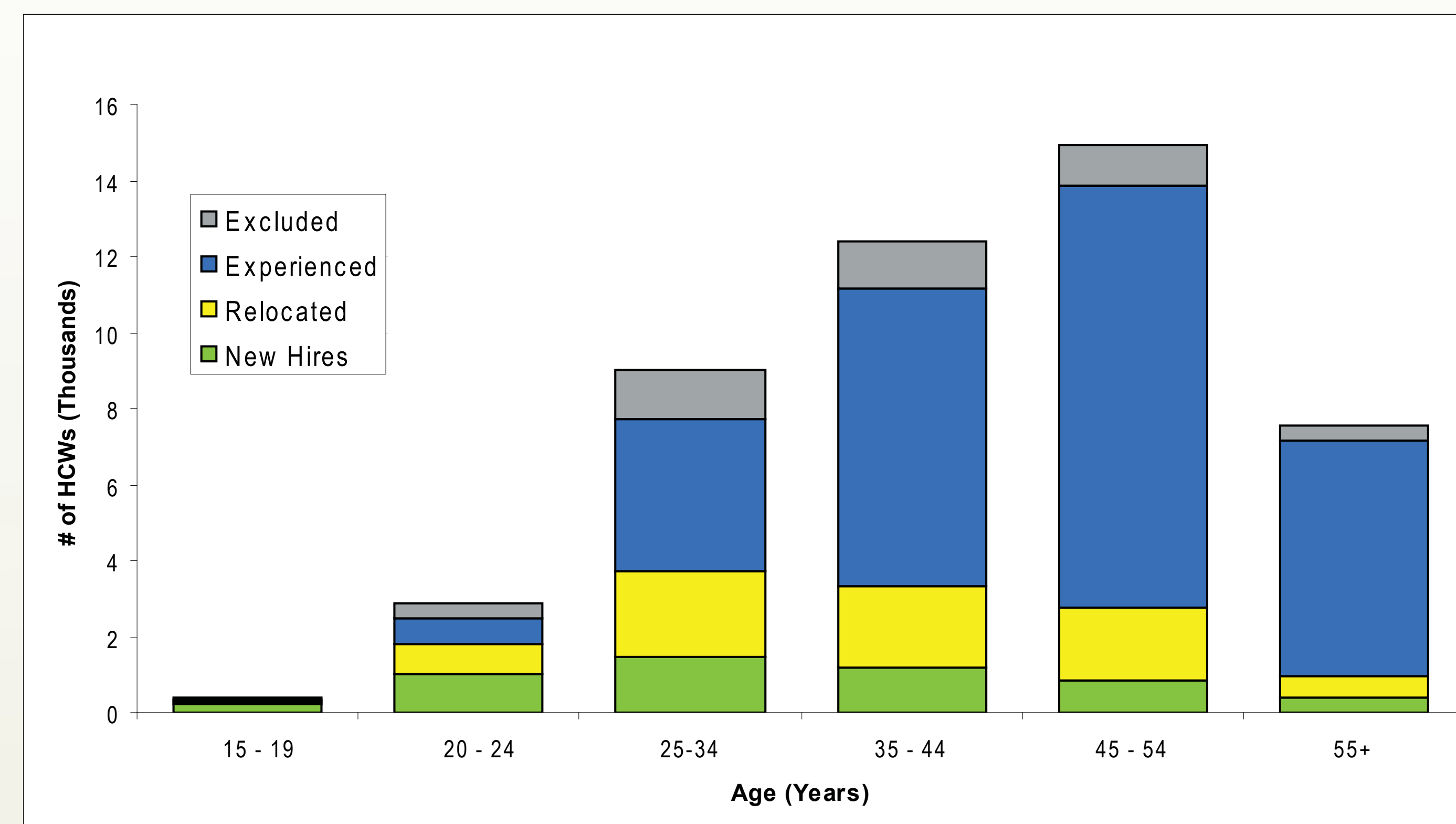
To calculate injury rates, the number of compensation-approved claims, incidents requiring medical care, and concerns/near-misses (without medical care) reported by workers in each category were used as the numerator. The denominator was the total number of productive hours (actual hours worked, regular and overtime). Crude relative risks were calculated for each injury type. Adjusted relative risks were computed, controlling for gender, age, healthcare sub-sector, occupation, employment status, seniority, and tenure as appropriate.

RESULTS

Descriptive statistics

In 2006, there were 47,205 healthcare workers employed by three health regions. Of these, there were 5,128 new hires and 2,829 young workers.

Figure 1: Frequency distribution of healthcare workers by age and tenure (2006)

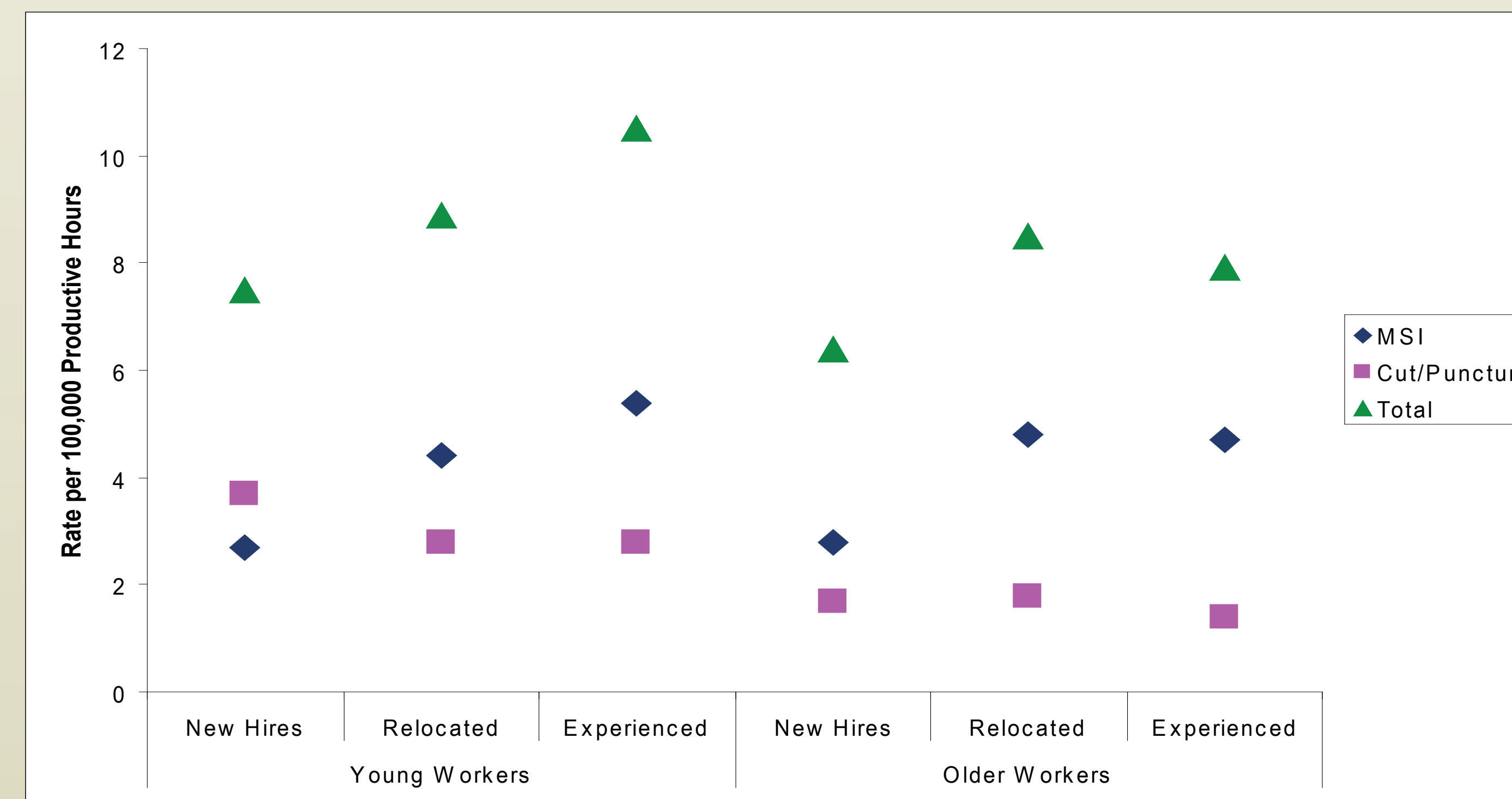


The number of total workers increases across age groups, until 45-54 years (with 13,881 workers in this group). As expected, the number and proportion of experienced healthcare workers also increases with age. But there are substantial numbers of new hires and relocated workers even in the 55+ category.

Rates of work-related injury, incident, and concern types

In absolute numbers, older experienced workers reported the most injuries (10,445 injuries) whereas young experienced workers reported the fewest (125 injuries). Figure 2 depicts injury rates for all injuries as well as rates for two injury types with the greatest incidence – musculoskeletal injuries (MSI) and cut/puncture.

Figure 2: Rates of work-related injury, incident, and concern types per 100,000 productive hours (2005 & 2006)



Relative risks of work-related injury, incident, and concern types

Table 1: Crude relative risks (with 95% CI) for all injuries, MSI, and cut/puncture (2005 & 2006)

	Crude RR (95% CI)		
	All Injuries	MSI	Cut/Puncture
Age Group (years)			
<25	1.00(ref.)	1.00 (ref.)	1.00 (ref.)
25-34	0.99 (0.90, 1.08)	1.05 (0.92, 1.21)	0.69 (0.57, 0.83)*
35-44	0.96 (0.87, 1.04)	1.06 (0.93, 1.21)	0.66 (0.55, 0.79)*
45-54	0.99 (0.91, 1.08)	1.12 (0.99, 1.27)	0.63 (0.53, 0.75)*
55+	0.92 (0.84, 1.01)	1.03 (0.90, 1.18)	0.58 (0.48, 0.70)*
Tenure (Experience)			
New Hires	0.88 (0.81, 0.95)*	0.66 (0.57, 0.75)*	1.43 (1.21, 1.67)*
Relocated	1.07 (1.03, 1.12)*	0.98 (0.93, 1.05)	1.34 (1.22, 1.48)*
Experienced	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)

Table 2: Adjusted relative risks (with 95% CI) for all injuries, MSI, and cut/puncture (2005 & 2006)

	Adjusted RR (95% CI)		
	All Injuries	MSI	Cut/Puncture
Age Group (years)			
<25	1.00(ref.)	1.00 (ref.)	1.00 (ref.)
25-34	1.03 (0.93, 1.13)	1.01 (0.88, 1.168)	0.81 (0.67, 0.98)*
35-44	0.93 (0.85, 1.02)	0.94 (0.82, 1.07)	0.78 (0.65, 0.94)*
45-54	0.94 (0.85, 1.03)	0.94 (0.82, 1.08)	0.77 (0.64, 0.92)*
55+	0.87 (0.79, 0.96)*	0.86 (0.74, 0.99)*	0.71 (0.58, 0.87)*
Tenure (Experience)			
New Hires	1.00 (0.91, 1.09)	0.80 (0.70, 0.92)*	1.40 (1.17, 1.67)*
Relocated	1.06 (1.01, 1.11)	0.98 (0.91, 1.05)	1.27 (1.14, 1.42)*
Experienced	1.00 (ref.)	1.00 (ref.)	1.00 (ref.)

As shown in Tables 1 and 2 our data in healthcare workers do not support an across-the-board increased risk of injury for young and new workers. Specifically, our adjusted relative risk estimates suggest that this is only applicable to certain types of injuries such as cut/puncture; but does not apply to MSI, the most common type of injury in healthcare. New hires, independent of their age, reported the lowest risk of injury overall and showed a decreased risk for MSI [RR (95% CI) = 0.66 (0.57-0.75)], still significant in the adjusted model [RR (95% CI) = 0.80 (0.70-0.92)]. Cut/puncture injuries did behave as expected based on previous studies, with both younger age and shorter tenure in the job independently increasing the risk of injury in crude and adjusted models.

Limitations of our findings include underreporting of injuries and categorical misrepresentations. For example: New hires to a health region could have experience in the field from another region or from out of the province.

CONCLUSIONS

Neither age nor tenure influenced overall rates of injuries for all healthcare workers; they did, however, influence specific types of injuries. Health education and prevention programs targeted to new and young workers should consider specific situations with increased risk, such as percutaneous procedures.

Prevention efforts for MSIs are relevant to all ages and job tenures, although MSI frequency tends to directly increase in relation to job experience. Prevention has always been key in reducing work-related injury no matter the age or experience.

“Making healthcare a healthier place to work”