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SPECIAL ISSUE: OUR AGING POPULATION

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Injury Insights

June/July 2002

Letter from the Editor:

This issue marks the first anniversary of Injury Insights™. The past six issues have addressed a remarkably diverse group of topics that have emerged in the safety and health arena—everything from cell phone use while driving to behavioral components of building evacuation to off-the-job injury costs. This special 12-page anniversary issue focuses on our aging population in the workplace, on our roads, and in our homes and communities—the three venues that the National Safety Council is concentrating its efforts on in fulfilling our mission. We are delighted with the opportunity to publish work by leading researchers in their respective fields of interest. We encourage comments, responses, and further contributions to this important area of safety and health. Send all correspondence to Jonathan Thomas at jthomas@nsc.org.

Occupational

The Burden of Occupational Fatal Injury for Older Workers in the United States

by Daniel Hartley, Ed.D., Elyce Biddle, M.S.,
James Grosch, Ph.D. and Suzanne Marsh

Prior research has shown that older workers experience high fatality rates due to traumatic occupational injuries. Between 1980 and 1997, there were 21,887 fatalities of civilian workers aged 55 years and older reported through the National Traumatic Occupational Fatalities (NTOF) surveillance system. Historically, the occupational fatality rate for workers 55 years and

older has been far greater than the rate for younger workers. During this 18 year time period, the average fatality rate of 8.3 per 100,000 workers for workers aged 55 and older was nearly double the rate for workers aged 16-54. Furthermore, the rate for workers 65 and older, 13.5, was nearly three times the rate for younger workers.

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Home & Community

Interventions to Reduce the Multifactorial Risks for Falling

by Laurence Rubenstein, M.D., MPH and Karen Josephson, MPH

While extremely common, falls are an exceedingly complex phenomenon in the elderly population and require a detailed evaluation and creative treatment strategies. The many risk factors for falls commonly interact and occur with varying prevalence among different subgroups of the aged population. Likewise, there is great variance in the prognostic significance of falls. A fall may be the first indicator of an acute problem (e.g., infection, postural hypotension), or may indicate progression of a chronic disease (e.g., parkinsonism, dementia), or simply may be a marker for the onset of "normal" age-related changes in vision, gait and strength.

No simple approach can be adequate for evaluating or treating falls. Diagnosis and prevention must reflect the diverse nature of falling, and must pay attention as well to maintaining optimal independence and quality of life without unduly restricting activity. Ideally, interventions directed to the underlying risk factors be-

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Transportation

Keeping Older People Safely Mobile: Inputs from a National Agenda

by John Eberhard, Ph.D.

The United States faces a revolution in transportation, driven by its growing population of older persons, those over 65. Health and medical advances make it possible for people to live without disabilities longer, and the baby boomers are moving toward their retirement years. Today, 35 million Americans are 65 years old or older—about 13% of the population. By 2030, one in five Americans will be 65 years old or older, doubling to 70 million people.

The nation must take steps to address the transportation needs of its aging population. Continued neglect of these needs could cause the number of older people killed in crashes to possibly triple, as the number of older drivers and the average miles driven increases. This neglect could also leave many more stranded in distant suburban or rural homes. Our older generation has every right to expect safe mobility.

Without rapid improvement in the highways, vehicles, and user programs, the nation will face a major crisis in

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Occupational

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The highest industry-specific rates for workers aged 55 and older were in agriculture/forestry/fishing, mining, construction, and transportation/communications/public utilities. For workers aged 16 to 54, the highest industry-specific rate occurred in mining, followed by agriculture/forestry/fishing, construction, and transportation/communications/public utilities, respectively. Farmers/foresters/fishers, transportation/material movers, laborers, and

years and 18.4 for workers 55 and older.

The characteristics of work-related fatalities among workers aged 55 years and older, the industries and occupations with the highest numbers and rates of worker deaths, and the leading causes of death have been identified in previous research efforts. Far fewer studies have focused on the economic risk associated with this worker group. Lifetime costs were calculated using the NIOSH Division of Safety Research computerized cost modeling system. During the period of 1980 through 1997, the cost to society for occupa-

on the future societal burden associated with occupational injury fatalities in this age group. Increasing retirement age and a rapid population growth have contributed to the considerable expansion of the civilian labor force over the past quarter century. According to the Bureau of Labor Statistics, the number of workers aged 55 and older is expected to increase by 47% between the years 2000 and 2010 from 18.2 to 26.6 million. Corresponding to the increase in numbers is an expected increase of almost 4% of the share of total labor force participation. On average, workers aged 55 years and older accounted for 21%

Table 1. Number, Rate, and Mean Cost of Occupational Fatal Injuries

Year	Number of Fatalities		Rate per 100,000 Workers		Mean Cost (1999 Dollars)	
	16-54 Years	55 Years and Older	16-54 Years	55 Years and Older	16-54 Years	55 Years and Older
1980-84	25,908	6,738	5.6	9.7	\$930,320	\$293,953
1985-89	22,806	6,176	4.7	8.4	\$951,748	\$308,520
1990-94	20,819	5,487	4.0	7.7	\$936,153	\$292,370
1995-97	12,423	3,486	3.7	10.3	\$915,786	\$302,016
All Years	81,956	21,887	4.6	8.3	\$935,562	\$298,951

precision production/craft/repairers had the highest occupation-specific rates for workers 55 and older. Similarly, the highest occupation-specific rate for the younger age group was among transportation/material movers, followed by farmers/foresters/fishers, laborers and precision production/craft/repairers.

Motor-vehicle-related incidents and machinery-related incidents were the leading causes of death for workers aged 55 and older, accounting for nearly one-half of those deaths. Falls, homicide, and struck by falling objects accounted for another one-third of the fatalities for this age group. Comparatively, the leading cause of death for workers aged 16 to 54 was also motor-vehicle-related incidents. However, the order of the remaining four leading causes of death for these workers were homicide, machine-related incidents, falls, and electrocutions. While the proportions of motor-vehicle-related fatalities for both groups were nearly identical, the rates per 100,000 workers were not—10.8 for workers aged 16 to 54

tional fatalities to workers 55 years and older was \$6.5 billion in 1999 dollars. The mean and median cost for this age group were \$298,951 and \$291,871 respectively. The mean and median cost for the 16 to 54 year old age group during this same period were \$935,562 and \$901,952. Table 1 summarizes the number, rate, and lifetime mean cost of occupational injuries by age group for 5-year increments during the study period.

These estimates are based on valuing the worker in terms of their lost earnings over time. Therefore, the societal burden of an older worker's fatality will be lower than a younger worker's whose death results in the loss of longer periods of future employment opportunity. Although other methods overcome this perceived limitation by generating a single cost estimate regardless of age, their theoretical basis presents substantial limitations for use in public policy analysis.

NIOSH not only focuses on the historical and current burden, but also

of the occupational fatalities annually during the 1980 through 1997 time period. It is likely that the number of older worker fatalities will increase as the number of older workers participating in the labor force increases.

The five occupations that had the largest numbers of older worker fatalities during the years 1980 through 1997 were sales supervisors, non-horticultural farmers, truck drivers, construction laborers, and non-construction laborers. For these selected occupations a linear technique was used to project the number of fatalities for workers aged 55 years and older to the year 2007. Of these five selected occupations, non-horticultural farmers is the only occupation projected to experience a decrease in numbers of fatal occupational injuries, because the downward trend in fatalities among this group is expected to outweigh the slight upward trend in employment within this occupation. The largest proportional increase in occupa-

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tional fatalities among these occupations is expected to occur in the sales supervisors occupation, with an increase of 83%. Occupational fatalities among construction laborers, truck drivers, and non-construction laborers are also projected to increase by 50%, 41%, and 20%, respectively. Projecting the occupations that will see increases in fatalities will allow researchers to focus their efforts on those high-risk groups.

Complementing the research that provided the findings presented in this article, NIOSH staff are conducting a variety of studies involving fatal and non-fatal injuries and illnesses. To provide a comprehensive data source, NIOSH is developing a chart book that will assemble and integrate surveillance information on the occupational safety and health experiences of older workers. This document will contain similar demographic information to the *NIOSH Worker Health Chart Book, 2000*, and will include additional elements such as workforce participation, access to health care, well-being outcomes, and health behaviors. Other researchers are conducting database analyses using data from the Bureau of Labor Statistics, the Health and Retirement Survey, and the National Health Interview Survey. This project will identify occupations and industries expected to have the largest number of older workers during the next decade and examine health conditions and risks that workers face as they grow older. This study will focus on determining at what age health conditions or disabilities begin to change, with particular attention to those that appear to be further accelerated by work, or

where the workplace might offer an opportunity to decelerate rates of disease.

In addition to intramural research, NIOSH has supported several projects focusing on the safety and health of older workers. The scope of these projects varies from studying individual injuries or illnesses to examining the overall injury and illness experience of older workers. For example, one study focuses on slips and falls by investigating the changes in walking and the ability to recover from these events with increases in age. A second study expands to assess the injury and musculoskeletal disorders among aging workers in an industrial workforce. Two additional studies are broader in scope—collecting data that will describe occupational safety and health risks facing older workers and another studying the causes, consequences, and prevention of work injuries and illnesses in older workers.

Historically, NIOSH has developed collaborative efforts to improve the safety and health of the workforce. Examination of older workers is no exception. A partnership between NIOSH and the National Institute on Aging (NIA) developed an occupational supplement to a four-year, multi-site study that is examining how age-related changes in functioning impact an older person's ability to successfully interact with technology. The supplement will collect occupational and industry history and exposure information for all participants, and physiological measures to assess stress levels for subjects participating in a simulated work task. In addition, a measure developed by the Finnish Institute of

Occupational Health called "work ability" is being included in the supplement. Since this measure has been widely used internationally, work ability comparisons between U.S. workers and those in other countries will be possible. Additional data analysis, which began in 2001, is examining the link between age, occupation, and changes in cognitive functioning and health. Finally, NIOSH, NIA, and the Environmental Protection Agency have commissioned the National Research Council to convene a committee. The committee will define the expected size, composition, and other dimensions of the older adult workforce over the next 20-30 years. It will also examine the changing nature of work and its implications for workers over the age of 50. The committee will identify the range of policy and research issues that should be addressed over the coming decade regarding the health and safety of older workers, including the effects, if any, of inappropriate working conditions on working capacities and occupational injuries and the effects of longer working lifetimes on health. Relationships between retirement patterns and characteristics of the older adult workforce and their jobs will also be explored. The committee will prepare a report of its findings, conclusions, and recommendations that will help provide a framework to guide occupational safety and health research efforts associated with older workers in the upcoming years.

Note: Dr. Hartley, Elyce Biddle, Dr. Grosch and Suzanne Marsh are all employed at the National Institute for Occupational Safety and Health. For additional information or references related to this article, contact Dr. Hartley at ds33@cdc.gov +

Transportation

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drive, walk and have mobility later in life. A resource is NHTSA's *Safe Mobility for Life Notebook*.

- Promote safer and easier to use highways to accommodate older road users found in FHWA's *Guidelines for Older Drivers and Pedestrians*.
- Promote easier to use transportation

systems for seniors and those with disabilities who have the most difficulty in retaining their mobility.

- Inform the media, older people and their care providers, that older people need safe mobility and that we can reduce traffic fatality rates for older people while extending their mobility.

Note: Dr. Eberhard is Senior Research Psychologist at the National Highway Traffic Safety Administration. Questions, comments or requests for further information can be sent to jeberhard@nhtsa.dot.gov

** Excerpted from Eberhard, J.W. and Trilling, D. *Safe Mobility for a Maturing Society – A National Agenda*, U.S. Department of Transportation, Washington, D.C. 2002 which is under review +*