

reduce performance variability. These choices include reducing workplace hazards, work organization, and training. Field application of the model might offer useful data to evaluate training and financially support performance improvement strategies that can be tested for their ability to reduce human error, thereby encouraging greater adherence to critical job elements.

### Session 19: National Surveillance Systems

#### ***Trends in Occupational Fatal Injury Rates in the United States (1983-1992)***—Bailer AJ, Stayner LT, Reed LD, Stout NA, Gilbert SJ

Data from the U.S. National Traumatic Occupational Fatality (NTOF) database were combined with data on employment from the U.S. Bureau of Labor Statistics (BLS). The combined NTOF-BLS data were used in a Poisson regression in which the rates of occupational fatality were modeled as functions of year (1983-1992), race (black, white, other), gender, age, industry and occupation.

A decline in race-gender-age adjusted fatal injury rates is observed across a majority of industries (9 of 10 industries) and occupations (9 of 11 occupations). Annual changes over 10 industries ranged from a significant decline of 5.3% per year in “public administration” to significant increases in “wholesale trade.” Annual changes over 11 different occupations ranged from a significant decline of 6.2% per year in “technological and related support” to a significant increase of 1.6% per year in “machine operators, assemblers, and inspectors.” In general, race-gender-age adjustments resulted in estimated changes that were smaller and beyond demographic characteristics of the worker population. While this finding is encouraging, the increase of fatal injury rates in particular industries and occupations suggests that efforts to improve workplace safety should continue.

#### ***Occupational Deaths Associated with Traffic-Related Motor Vehicle Crashes: 1990-1992***—Kisner S, Jenkins EL

Occupational injury surveillance systems consistently indicate that motor vehicle crashes are the leading cause of work-related death. Data from the National Traumatic Occupational Fatalities (NTOF) surveillance system indicate that traffic-related motor vehicle incidents accounted for 13,017, or 20% of all work-related fatalities from 1980 through 1989. To better describe these occupational fatalities, data from NTOF were matched with data from the Fatal Accident Reporting System (FARS) for the years 1990 through 1992. This study identifies the industries and occupations with the highest numbers and rates of worker deaths associated with traffic-related motor vehicle incidents, summarizes the characteristics of the events, vehicles, and persons involved in these incidents, and identifies areas for future research and prevention efforts. NTOF is a death certificate-based surveillance system that includes occupational injury deaths to workers aged 16 years and older and FARS is a census of fatal traffic crashes with data abstracted from multiple sources, including police records and coroner/medical examiner reports. Because the FARS data includes detailed information for traffic-related incidents not included on death certificates, the NTOF data were matched with the FARS data to better describe these fatalities. There were 2,474 events that involved at least one

work-related fatality. These events involved 2,135 motor vehicles that were occupied by at least one fatally injured worker and 337 motor vehicles that fatally struck 351 pedestrians who were working. These events resulted in 2,562 work-related fatalities. Seventy-one percent of the events occurred on three roadway types: 27% on a state highway, 24% on an interstate, and 20% on a US highway. Thirty-five percent of the vehicles occupied by at least one fatally injured worker were tractor trailers, 16% were pickups, and 14% were 2- or 4- door sedans. The majority (76%) of those killed were drivers, 14% were pedestrians, and 9% were passengers. Thirty-two percent of the drivers worked in the trucking service, 9% in construction, 5% in crop production, and 4% in justice/public order/safety. Twenty-six percent of the events that involved pedestrians occurred in a construction/ maintenance zone. Thirty-two percent of the pedestrians worked in construction, 10% in trucking service, 7% in automobile repair, and 7% in justice/public order/safety. Of the 1,468 drivers for which blood alcohol concentrations (BACs) were provided, 87% had no indication of alcohol, 5% had BACs between .01 and .09 grams per deciliter, while 8% had BACs of .10—the legal limit of intoxication in most states. Prevention efforts must be emphasized to reduce the number and rate of occupational fatalities involving motor vehicles. These efforts need to address risks common across all industries as well as those specific to particular tasks, such as flagging in construction. Prevention efforts should include education, enforcement, and engineering controls. Additionally, research efforts must continue to address the many remaining questions regarding risk factors and the most effective strategies for reducing occupational motor vehicle-related deaths.

#### ***Sentinel Physician Visits and Their Contribution to the Canadian Agricultural Injury Surveillance Program (CAISP)***—Alberg NM

In 1996, a collaborative organization representing agricultural groups, government agencies and academics was established in Canada. With a mandate to develop a sustainable and national surveillance system for injury-related farm fatalities and hospitalizations, CAISP is also tracking the progress of out-patient surveillance projects in three provinces.

In Manitoba, sentinel physician offices are used to track out-patient visits for agricultural injuries and illnesses. These out-patient data complement provincial hospitalization and fatality statistics which have been monitored since 1983. The additional data fill important gaps, including the identification of patterns unique to illnesses and non-trauma injuries. All three levels of data, out-patient to fatality, demonstrate the unique “workplace” risks of the youth and elderly members of the farm population.

Extrapolation of this regional surveillance to the provincial scene estimates that for each hospitalization recorded, there are another 20-25 cases seen in out-patient settings.

Analysis of out-patient data in Manitoba, coupled with fatality and hospitalization data from the CAISP program, can provide comprehensive surveillance of agricultural injury events on a population basis. We consider this a vital step in the development of injury prevention programs in our province. This presentation will outline the methodology used in the development of these surveillance systems, and highlight examples that have assisted us in our prevention efforts.