

**B4.2 The 1990'S : Claims Management Versus Injury Management—Alberg NM**

Over the past decade, Canada has generally seen a downward trend in occupational injury rates, as tracked by claims filed with the provincial Workers' Compensation Boards (WCB). Prior to this time, many provincial Compensation Boards were faced with large unfunded liabilities which threatened their capacity for long range planning. In the province of Manitoba, Canada, the frequency of timeloss injury claims has seen a 25% reduction from the 1990 rate of 42.9 per 1000 workers, to 34 per 1000 in 1998. During the same period, the severity of Manitoba timeloss injury, as measured by the average days lost per claim, has declined from a period high of 18.1 days in 1991 to 14.8 days in 1998.

Although the 1990's displayed this downward trend, a review of Manitoba's rates over the past two decades shows two plateaus separated by a substantial fall in timeloss rates in the early 1990's. The 1990's saw many local initiatives both in occupational safety and health and in the administration of the Compensation system. Each initiative of injury prevention, early return and modified work routines, compensation pay-outs, experience rating, among others, has had some impact on subsequent profiles of injury claims.

A 10 year review of trends in Manitoba WCB injury claims, using both timeloss and no timeloss or medical aid claims, suggests some achievements in primary prevention of injury, intermingled with other impacts of claims management strategies. This latest multiplicity of intervening factors requires a variety of approaches to defining "risk" when analyzing WCB data. The new dilemma for safety and health professionals is how to interpret and use the information presented by WCB claims data in the 21st century. How best can we determine which parts of the changing injury rates reflect true primary prevention of injury at the workplace?

**B4.3 Struck-by Injuries to Construction Workers—Welch LS, Hunting KL**

Struck-by injuries are a leading cause of fatal and non-fatal injuries in the construction industry, yet much work is still needed to understand the nature of this diverse group of injuries. Using a data set of 3390 injured construction workers treated at the George Washington University Emergency Department in Washington, DC, we looked at the injuries to workers who were struck by an object. To identify these injuries we examined injuries in which the circumstance was E-coded as stuck-by, struck against, caught, or cut, or where the injury involved a machine, an explosion, or a vehicle. To focus on those injuries where a worker was stuck by an object that was not under his control, we then removed injuries that were due to being caught between two objects, or where the worker was moving and hit himself on an object. There were 747 stuck-by injuries in this sub-set.

We will describe in detail the nature and circumstances of these injuries. For example, we found that laborers were more likely to be involved in a "struck-by" injury (40% vs. 29% for all workers combined). The injured worker was most frequently struck by a metal object (14% of all struck-by injuries), a pipe (8%), a board (7%), a beam (6%), a power tool (5%), and a scaffold (4%). A struck-by injury resulted more frequently in a contusion, a head injury or a fracture than did other causes of injury.

We will present more detail on these injury patterns and discuss opportunities for prevention of struck-by injuries. This group of struck-by injuries differs from those that would be defined by E-codes or BLS groupings alone; the implications of this will be discussed, and results compared to an analysis based on the BLS classification.

**B4.4 Occupational Fatalities in the U.S. Highway Construction Industry, 1992-1997—Pratt SG**

Highway construction workers (Standard Industrial Classification [SIC] 1611) risk injury from varied exposures: traffic vehicles, construction equipment, electric current, falls, and collapsing materials. Data from Census of Fatal Occupational Injuries research files for 1992-1997 were used to characterize these fatalities by event, source, employer class, and person type.

Of the 708 fatalities during 1992-1997, construction laborers (252, 35.6%) and truck drivers (91, 12.9%) together accounted for nearly half. Five hundred (70.6%) worked for private contractors, 110 (15.5%) for local government, and 98 (13.8%) for state government. Major injury sources were trucks (285, 40.3%), construction machines (127, 17.9%), and cars (84, 11.9%).

Three distinct event types were identified: contractor vehicle events inside work areas (288, 40.7%); traffic vehicles entering work areas (159, 22.5%); and other traffic crashes, without mention of a work area (135, 19.1%). The remainder were other events, including electrocutions, falls, and trench collapses (126, 17.8%). Trucks contributed substantially to traffic vehicle events inside work areas (46.5%), other traffic crashes (68.2%), and contractor vehicle events (41.0%). Traffic vehicles entering work areas were 45.0% of state government fatalities, compared with 20.6% for private contractors and 10.9% for local government.

Data were analyzed by person type for 582 fatalities with a vehicle or machine as the injury source; 57.0% were workers on foot, 35.1% were operators, and 7.9% were passengers. Workers on foot were involved in high proportions of traffic vehicle events inside work areas (93.1%) and contractor vehicle events (60.1%). Among other traffic crashes, operator fatalities predominated (77.8%).

This research identified fatality types within SIC 1611 and differences by injury source, employer class, and person type. Emphasis on risks from traffic vehicles entering the work area and contractor vehicles should continue; however, other traffic crashes and non-vehicular events (37% of fatalities) should also be addressed by employer safety programs.

### ***B4.5 In-depth Analyses of Falls From Heights in the Construction Industry***—Kines PA

Numerous epidemiological studies have been carried out on accidents in the construction industry, and a majority of them conclude that there is a need for more details surrounding the contributory factors. This study deals with the investigation and analysis of the complex interrelationships between technical, psychosocial and organisational risk factors involved in serious and fatal accidents in the construction industry. The study involves the use of retrospective quantitative and qualitative analyses of conventional injury reports and statistics, as well as prospective in-depth investigations and analyses. The in-depth methodology will include detailed interviews of victims, colleagues, foremen, managers etc. to investigate the processes that lead up to events immediately preceding the injury, and to study their sequential and spatial relationships. The purpose of this study is to develop a method for uncovering comprehensive knowledge regarding the antecedents of occupational injuries, and to analyse the potential of this knowledge in contributing concise information for use in effective accident prevention.

#### **Session: B5.0**

##### **Title: Work Organization**

Category: Intervention Evaluation

Organized by the NORA Organization of Work Team

Moderator(s): Steven Sauter and Jane Lipscomb

### ***B5.1 A Longitudinal Study of Workplace Organizational Factors and Injury Rates***—Gilbert JW, Shannon HS

The current research follows up and expands previous work which compared, cross-sectionally, organizational aspects of firms with their workers' compensation lost time frequency rates (LTFR). The unit of analysis was the workplace. Specific areas investigated were organizational structure and philosophy, organizational philosophy on occupational health and safety, the role of labor markets and unions, the internal responsibility system, perceived risk and physical conditions, and financial performance and profitability. Data on these areas were captured via a survey of management and labor at each workplace and related to LTFR.

Among the factors found to be related to lower LTFR in the initial research were: concrete demonstration by management of commitment to safety; greater involvement of workers in

general decision making; greater willingness of the joint health and safety committee to solve problems internally; and greater experience of the workforce.

At the time of writing, data have been obtained on the subsequent LTFR for these workforces, a follow up of 10 years. Analysis is beginning to answer several questions:

- 1) Were there important changes or trends in LTFR over the 10 years of follow-up at these workplaces?
- 2) Were there significant changes or trends in non-lost-time injury rates?
- 3) Was there a significant change in the severity of injuries reported over the follow-up period by workplace, initial injury rate, or by type of industry?
- 4) Was there an important change in the types of injuries reported over the follow-up period by workplace, initial injury rate, or by type of industry?
- 5) Did the workplace characteristics at the start of follow-up period predict the subsequent patterns of LTFR?

Results of the analyses will be presented at the symposium. A brief discussion of the initial and current research will be given and conclusions presented.

### ***B5.2 When am I My Brother's Keeper? Defining Others' Safety and Well-Being as In-Role Versus Extra-Role Behavior***—Hofmann DA, Morgeson FP

Extra-role behaviors, or organizational citizenship behaviors, have been well researched within the organizational sciences. Essentially, these behaviors constitute actions that are not formally prescribed, but which individuals perform in order to help the organization be more effective. In this study, we focused on safety-related citizenship behaviors; namely, safety-related behaviors that deal with helping others within a work team perform more safely. Examples of these behaviors included voicing concern for others' safety-related performance, suggesting improvements in organizational procedures to make them more safe, coaching fellow team members that safety violations will not be tolerated, etc.

The primary focus of the study was an investigation of when employees perceive these safety-related citizenship behaviors to be part of their formal job responsibilities (i.e., in-role) versus above and beyond the call of duty (i.e., extra-role). The results indicated that organizational (e.g., organizational justice), leadership climate (e.g., leader-subordinate relations, leader openness), team (e.g., effective working relationships among team members), and safety climate factors (e.g., management commitment to safety) were associated with defining these behaviors as more in-role. Furthermore, employees that rated these behaviors as more in-role were more likely to engage in these behaviors. The implications for building a safe and learning oriented culture are discussed.



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## ABSTRACTS

**National Occupational  
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