

**Methods:** The driver population drove box trucks, delivering goods to convenience stores. This study used an on-board video recording system (OVRS) with forward- and driver-facing cameras which recorded driver behaviors, and accelerometers that detected vehicle maneuvers such as hard braking, acceleration, and speeding. When a vehicle event was triggered by a harsh maneuver, the OVRS saved a 30-second video/audio clip, 15 seconds before and after the triggering event. The videos were viewed by the OVRS vendor's trained observers and coded for approximately 60 different risky driving behaviors of varying severity. Two types of feedback to the drivers were evaluated: instant feedback from lights on the dashboard that flashed yellow or red to denote harsh vehicle maneuvers, and one-on-one coaching between supervisor and driver, consisting of viewing the recorded video events involving the driver and discussing safe driving behaviors. All trucks at seven business sites were equipped with OVRS, for a total of 158 OVRSs at the start of the study. The seven sites were assigned to an intervention group ( $n=5$ ) that received instant driver feedback and supervisory coaching, or control group ( $n=2$ ) that received no feedback. The data presented here cover 17 months of monitoring using OVRS in the intervention and control groups.

**Results:** Over the 17 months, there were approximately 237,000 useable trigger events recorded. Driving unbelted was the most common risky behavior; using hand-held electronic devices ranked 4<sup>th</sup>. Coaching varied among the sites, from a low of 52% of the drivers that should have been coached at one site to a high of 96% at another. The rate of overall risky driving behaviors decreased significantly in the intervention (lights plus coaching) group ( $RR=0.47$ ,  $p<0.001$ ), with no significant change seen in the control group ( $RR=0.93$ ,  $p=0.44$ ).

**Conclusions:** Preliminary results show that the OVRS intervention was associated with a decrease in risky driving behaviors that may reduce collisions, injuries and fatalities.

### A5.3

#### **Title: Impact of a motor-vehicle crash prevention program in a large police department**

Authors: Hope Tiesman, Jeff Rojek, Geoff Alpert, Melody Gwilliam, Srinivas Konda, Jennifer Bell, Scott Hendricks

**Objectives:** Motor-vehicle crashes (MVCs) are the leading cause of on-duty injury death among law enforcement officers. In 2009, a large municipal police agency developed a three-pronged crash prevention program that included policy changes, new training requirements, and a marketing campaign. We evaluated the impact of this program on MVCs and motor-vehicular injuries.

**Methods:** Data were obtained from four agency databases: hours worked from human resource/payroll, MVCs from internal crash files, mileage data from fleet services, and injuries from workers' compensation claim data. Motor-vehicular injury rates were defined as the total number of workers' compensation claims for a MVC divided by the total productive hours and expressed per 100 full-time equivalents (FTEs). MVC rates were defined as the total number of MVCs divided by total miles driven and expressed per 100,000 miles. MVC rates and motor-vehicular injury rates were compared between the three years before program implementation (2007-2009) and three years after full implementation (2011-2013). The year of implementation was not included in the analysis (2010). Differences between the pre- and post-intervention rates were evaluated using Poisson regression.

**Results:** Preliminary analyses show that the agency's motor-vehicular injury rate significantly declined 41% from pre- to post-intervention (pre-intervention=3.5; post-intervention=2.1;  $RR = 0.59$ , 95%CI = 0.48 - 0.72). This was most pronounced in the patrol divisions where the motor-vehicular injury rate was cut in half (pre-intervention=4.0; post-intervention=1.9;  $RR=0.47$ , 95%CI=0.36 - 0.62). The agency's MVC rate also significantly declined 15% from 2.2 to 1.9 crashes per 100,000 miles driven ( $RR = 0.85$ , 95%CI = 0.79 - 0.91).

**Conclusions:** Preliminary analyses indicate that the crash prevention program was associated with a significant reduction in both motor-vehicular injury and MVC rates. Future analyses will measure changes in injury severity and characteristics of MVCs pre- and post-intervention. Additionally, the 2007-2013 MVC trends from two other large municipal law enforcement agencies will be used as comparison groups for the current study results.

### A5.4

#### **Title: ATV and UTV safety training for agricultural workers: A safety workshop piloted with Iowa farmers**

Authors: Charles Jennissen, Karisa Harland, Andy Winborn, Gerene Denning

**Objectives:** Although some occupational all-terrain vehicle (ATV) and utility task vehicle (UTV) safety education resources are available, few operators receive any formal training. The study objective was to develop and evaluate a workshop that provides farmers education on the safe occupational use of ATVs/UTVs.

**Methods:** Training with evidence-based safety information for agricultural workers was developed, and is being piloted. Demographic information, safety behaviors, crash experiences, and safety knowledge (20 questions) is being collected prior to training. The reported likelihood of using the workshop information,

the effects on short- and long-term knowledge, and the safety behaviors being practiced at a 6-month follow is being assessed. Descriptive and comparative analyses will be performed.

**Results:** A total of 65 subjects will be enrolled and their results presented. To date, 24 have participated in the training with 71% being male and a mean age of 39 years. About half enrolled were employees, and the other half owners/operators and family members. Only four had received ATV/UTV training of any kind. Most (92%) had used ATVs for occupational purposes in the prior 5 years, with nearly half reporting daily use. Of occupational ATV users, 63% reported daily or weekly use on public roadways and 77% reported having ridden with passengers. Almost all never wore a helmet. Most (71%) reported using UTVs for occupational purposes in the prior 5 years as well, with over 40% reporting daily use. Of occupational UTV users, 70% reported daily or weekly public roadway use and 60% reported never using the restraint device. Four (17%) had an occupational crash in the prior year. No difference in baseline knowledge scores were found by age, farming operation role, or riding frequency. Mean knowledge scores pre-workshop were 7.4 (range 3-12) and post-workshop 14.2 (range 10-19). Mean change was 6.8 (95% CI 5.4-8.2,  $p<0.0001$ ). All subjects reported they were very likely (58%) or likely (42%) to use the safety information presented.

**Conclusions:** Agricultural workers frequently use ATVs/UTVs for occupational purposes. Most practice unsafe behaviors. The safety training employed in this study increased short term knowledge and participants stated they would use the information provided.

### Session B1.0

#### Title: Surveillance – General 1

Moderator: Nancy Romano

##### B1.1

#### Title: Underreporting of workplace injuries and illnesses in workplaces represented by the United Steelworkers International Union: Prevalence, causes and solutions

Authors: James Frederick, Nancy Lessin

**Objectives:** Discuss results of surveys regarding the underreporting of occupational injuries and illnesses conducted with members of the United Steelworkers International Union (USW) from various industries across the United States and Canada, to describe the extent and nature of injury and illness underreporting, review employer practices that discourage workers from reporting, and explore interventions to address injury and illness underreporting.

**Methods:** Between 2008 and 2013 the USW conducted several surveys with local union officers, health and safety committee representatives and members to assess the prevalence and nature of under-reporting of job injuries and illnesses and employer practices that discourage workers from reporting job injuries and illnesses. The surveys were conducted at large USW International Union Health, Safety and Environment Conferences involving approximately 1,000 USW members each, with response rates ranging from approximately 33% to 50%.

**Results:** Survey results were consistent over a five year period, documenting the presence of one or more employer programs, practices or policies that discouraged workers from reporting occupational injuries and illnesses in over 90% of workplaces represented by the United Steelworkers International Union. While the amount of practices seems to be relatively constant, the nature of these practices appears to be shifting away from "prize" programs (where workers get rewards when injuries go unreported) to drug testing and disciplinary policies (where workers receive punishment or threats of punishment when injuries are reported).

**Conclusion:** The USW surveys are part of a growing body of evidence documenting the extent and nature of employer practices that discourage workers from reporting occupational injuries and illnesses. Some survey respondents included comments on interventions that were successful in eliminating practices that discouraged injury and illness reporting. Given the recent focus on the quality of occupational injury and illness data and government efforts to improve the tracking of workplace injuries and illnesses, including a recent OSHA proposal to prohibit employers from taking adverse action against employees for reporting injuries and illnesses; an exploration of USW's survey results will contribute to this important and on-going dialog.

##### B1.2

#### Title: Trends of fatal and nonfatal injuries in the US construction industry after the recent economic downturn

Authors: Xiuwen Sue Dong, Xuanwen Wang, Julie Largay

**Objectives:** Construction is one of the most dangerous industries in the U.S., suffering a disproportionate share of the nation's work-related fatal and nonfatal injuries. This study examines the trends of fatal and nonfatal injuries in construction over time, especially after the recent economic downturn.

**Methods:** Four large national datasets (the Census of Fatal Occupational Injuries, the Survey of Occupational Injuries and Illnesses, the Current Population Survey, and the Current Employment Statistics), covering 1992 to

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