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Alan Wayne Jones, Anita Holmgren. *What non-alcohol drugs are used by drinking drivers in Sweden? Toxicological results from ten years of forensic blood samples.* Pages 151–156.

Introduction and Metod: Using a forensic toxicology database (TOXBASE), the toxicological results from 10 years of forensic blood samples from people arrested for driving under the influence of alcohol and/or other drugs were reviewed. Results: Alcohol was the only drug identified in blood in $N = 35,704$ cases at a median blood-alcohol concentration (BAC) of 1.63 mg/g. The mean age (\pm SD) of these offenders was 40 ± 15 years and 89% were male. The median BAC was lower (1.30 mg/g) in drivers who had consumed alcohol and used a prescription drug before driving ($N = 1,251$). The mean age of this group of traffic offenders was 38 ± 13 years and 85% were male. Both the median BAC (0.97 mg/g) and the mean age were lowest (36 ± 11 years, 92% male) in $N = 3,153$ drivers who had consumed alcohol and used illicit drugs before driving. Cannabis, amphetamine, cocaine and morphine (metabolite of heroin) were the commonest illicit drugs identified in blood samples. Sedative-hypnotics (benzodiazepines) were the major prescription drugs co-ingested with alcohol. Poly-drug use was a common finding in these traffic delinquents, although individuals who only drank alcohol had a higher median BAC and were also several years older than drinking drivers combining alcohol with other drugs before driving. Impact on Industry: Zero-tolerance legislation did not deter hard-core offenders. In future there should be more focus on treatment for alcohol and substance abuse disorder rather than conventional punishments for this type of traffic crime.

Highlights: ▶ Average age of impaired drivers in Sweden was 38–40 y and 86–92% were male. ▶ Poly-drug use was a common finding in these traffic offenders. ▶ High median blood-alcohol concentrations (0.16 g%) suggest binge drinking. ▶ Cannabis,

amphetamine and cocaine were the major illicit drugs used with alcohol. ▶ Sedative-hypnotic prescription drugs were often co-ingested with alcohol.

- **Keywords:** Alcohol; Drugs; Driving; Blood-alcohol; Traffic safety

John M. Sullivan, Michael J. Flannagan. *Heavy trucks, conspicuity treatment, and the decline of collision risk in darkness. Pages 157–161.*

Introduction: The influence of amendments to Federal Motor Vehicle Safety Standard (FMVSS) 108, requiring conspicuity treatments on heavy tractors and trailers, was determined in analyses of the odds of fatal collisions in darkness. Method: Comparisons were made between crashes in which conspicuity treatment was likely relevant, and those in which it was likely irrelevant. Results: Over 23 years, the odds that a fatal collision involving a heavy truck occurred in darkness declined by 58% among relevant crashes, while little decline was observed for irrelevant crashes. Disaggregation into crash types revealed the largest declines occurred in fatal rear-end and angle collisions. A parallel analysis of light vehicles also found declines but no differences among crash type. Similar trends were also observed for nonfatal rear end collisions. Conclusion: The results suggest that detection failure may have contributed to the risk of striking a tractor-semitrailer in darkness, and that conspicuity treatments have reduced this risk. Impact on Industry: Conspicuity treatments appear to reduce risk of collision into heavy trucks in darkness. It is likely that this benefit would also extend to other vehicles that are not included in the FMVSS 108 regulation (e.g., buses, single unit trucks, recreational vehicles), although many are so equipped, regardless of the regulation.

Highlights: ▶ Odds of a fatal collision with a heavy truck in darkness declined 58% over 23 years. ▶ Strongest declines found for rear-end and angle collisions. ▶ Similar trends observed for nonfatal collisions.

- **Keywords:** Conspicuity marking; FMVSS 108; Heavy vehicles; Rear end collisions; Tractor-semitrailer

Eduardo Romano, Tara Kelley-Baker, John Lacey. *Passengers of impaired drivers. Pages 163-170.*

Introduction: The aims of this study are: (a) to estimate the prevalence of passengers riding with alcohol-impaired drivers; (b) to investigate the role of demographic factors (age, gender, race/ethnicity, educational status) and relevant driving conditions (time of the day, trip origin, vehicle ownership) on shaping the likelihood of alcohol-impaired driving; (c) to identify and estimate the prevalence of passengers as alternative drivers (PADs); and (d) to examine the role that vehicle ownership plays in shaping the

occurrence of PADs. Metod: Data came from a unique convenience sample of passengers obtained from the 2007 National Roadside Survey, a random sample of drivers from the 48 contiguous states. Results: The prevalence of PADs in the targeted population (mostly weekend night vehicles) was higher with drivers at $.00 < \text{BAC} < .08$ (17%-43%) than at $\text{BAC} \geq .08$ (6%-29%) drivers. The evidence suggests that targeted policies to encourage PADs to drive might be possible. However, vehicle ownership is a large impediment for PADs to act as designated drivers. We speculate that vehicle ownership may be a main reason for the less-than expected success of the "designated driver" concept.

Highlights: ▶ Based on the data from the 2007 National Roadside Survey. ▶ Drivers and their front row passengers tend to share similar characteristics. ▶ Some passengers were less impaired than their drivers. ▶ Vehicle ownership was an impediment for sober passengers to replace drinking drivers.

- **Keywords:** NRS; Passengers; Alternative drivers; Drinking and driving; Designated driver

Sigal Kaplan, Carlo Giacomo Prato. *Risk factors associated with bus accident severity in the United States: A generalized ordered logit model.* Pages 171-180.

Introduction: Recent years have witnessed a growing interest in improving bus safety operations worldwide. While in the United States buses are considered relatively safe, the number of bus accidents is far from being negligible, triggering the introduction of the Motor-coach Enhanced Safety Act of 2011. Metod: The current study investigates the underlying risk factors of bus accident severity in the United States by estimating a generalized ordered logit model. Data for the analysis are retrieved from the General Estimates System (GES) database for the years 2005–2009. Results: Results show that accident severity increases: (i) for young bus drivers under the age of 25; (ii) for drivers beyond the age of 55, and most prominently for drivers over 65 years old; (iii) for female drivers; (iv) for very high (over 65 mph) and very low (under 20 mph) speed limits; (v) at intersections; (vi) because of inattentive and risky driving.

Highlights: ▶ Generalized ordered logit model for bus accident severity in the United States ▶ Marginal effects of risk factors on bus accident severity are identified ▶ Bus severity is linked to driver's age, gender and risky behavior ▶ Bus severity is linked with intersections, low-speed areas and road curves ▶ Driver training, career length, vehicle standards and education are proposed.

- **Keywords:** Bus accidents; Accident severity; Injury severity; Bus safety operations; Generalized ordered logit model

Srinivas Konda, Audrey A. Reichard, Hope M. Tiesman. *Occupational Injuries among U.S. Correctional Officers, 1999-2008. Pages 181-186.*

Objective: This study describes fatal and nonfatal occupational injuries among U.S. correctional officers. **Methods:** Fatal injuries were obtained from the Census of Fatal Occupational Injuries; nonfatal injuries were identified from the National Electronic Injury Surveillance System- Occupational Supplement. **Results:** From 1999-2008, there were 113 fatalities and an estimated 125,200 (CI = \pm 70,100) nonfatal injuries were treated in emergency departments. Assaults and violent acts (n = 45, 40%) and transportation related fatalities (n = 45, 40%) were the two primary fatal injury events. Assaults and violent acts (n = 47,500 (CI = \pm 24,500), 38%) and bodily reaction and exertion (n = 25,400 (CI = \pm 16,800), 20%) were the leading events resulting in nonfatal injuries. **Conclusions:** While workplace violence is the primary cause of both fatal and nonfatal injuries among correctional officers, transportation events and bodily reactions are also leading causes of occupational injury. Future research is needed to identify risk factors unique to these events and develop appropriate prevention and intervention efforts. **Impact on Industry:** This study adds to the literature on occupational injuries among correctional officers and provides a national level description of fatal and nonfatal injuries across a 10-year period. Given that assaults and violent acts, transportation events, and bodily reaction and exertion were significant injury events, future research should describe detailed injury circumstances and risk factors for correctional officers unique to these events. This would allow appropriate prevention and control efforts to be developed to reduce injuries from these events.

Highlights: ▶ There were 113 fatalities among correctional officers from 1999-2008. ▶ Eighteen officers were killed by inmates from 1999-2008. ▶ Nonfatal work-related injuries were estimated at 125,200 over 10 years. ▶ Violent acts were responsible for 45% of fatal and 38% of nonfatal injuries. ▶ Transportation related events were responsible for as many deaths as assaults.

- **Keywords:** Prison guard; Correctional officers; Fatal; Nonfatal; Violence

Stephanie Baker, William A. Schaudt, J.C. Freed, Laura Toole. *A survey of light-vehicle driver education curriculum on sharing the road with heavy vehicles. Pages 187-194.*

Introduction: Light-vehicle driver education programs that contain content about sharing the road with heavy vehicles may be helpful in reducing future light-vehicle/heavy-vehicle interactions. However, the extent of curricula in the United States including such content is unclear. Method: Researchers developed an online survey targeted at instructors/administrators of state driver education programs to identify curricula addressing heavy vehicles and to determine perceived effectiveness. Results: Ninety-one percent of respondents indicated that the light-vehicle driver education curriculum they teach/administer included a component covering how to safely share the road with heavy vehicles (82% perceived this component to be effective). Discussion: Although a large proportion of these programs included a component on how to safely share the road with heavy vehicles, participants indicated there may be room for improvement. Impact on Industry: Participants recommended that future improvements to driver education programs include updated materials and student hands-on experience with heavy vehicles.

Highlights: ▶ We surveyed each state to investigate light-vehicle driver education curriculum. ▶ We specifically targeted curriculum on sharing the road with heavy vehicles. ▶ Ninety-one percent indicated their curriculum contained a heavy vehicle component. ▶ Participants indicated there may be room for improvement. ▶ Up-to-date materials and hands-on experience with heavy vehicles is recommended.

- **Keywords:** Passenger Vehicle; Commercial Motor Vehicle; Heavy Truck; Training; Teen Drivers

Allan F. Williams, Brian C. Tefft, Jurek G. Grabowski. *Graduated Driver Licensing Research, 2010-Present. Pages 195–203.*

This is the latest in a series of reviews of research on graduated driver licensing (GDL) published in the Journal of Safety Research, covering the period January 1, 2010-June 1, 2012 and works in progress. The intent is to keep researchers and policy makers current regarding the existing state of knowledge about GDL, and to identify information gaps and areas where clarification of research findings are needed. The recent research indicates that we continue to learn about ways to extend GDL benefits, but there remain important questions in need of further inquiry. In terms of impact on industry, the review provides guidance for the future GDL research agenda.

- **Keywords:** Driver licensing; Young drivers; Novice drivers; Motor vehicle crashes; Graduated licensing

Andrea Baumann, D. Linn Holness, Patrica Norman, Dina Idriss-Wheeler, Patricia Boucher. *The Ergonomic Program Implementation Continuum (EPIC): Integration of health and safety - A process evaluation in the healthcare sector.* Pages 205–213.

Introduction: This article presents a health and safety intervention model and the use of process evaluation to assess a participatory ergonomic intervention. Metod: The effectiveness of the Ergonomic Program Implementation Continuum (EPIC) was assessed at six healthcare pilot sites in Ontario, Canada. The model provided a framework to demonstrate evaluation findings. Results: Participants reported that EPIC was thorough and identified improvements related to its use. Participants believed the program contributed to advancing an organizational culture of safety (COS). Main barriers to program uptake included resistance to change and need for adequate funding and resources. The dedication of organizational leaders and consultant coaches was identified as essential to the program's success. Impact on Industry: In terms of impact on industry, findings contribute to the evidence-based knowledge of health and safety interventions and support use of the framework for creating a robust infrastructure to advance organizational COS and link staff safety and wellness with patient safety in healthcare.

Highlights: ▶ In this study, we present a health and safety intervention model in six pilot sites. ▶ Process evaluation is used to assess a participatory ergonomic intervention and demonstrate the health and safety intervention model. ▶ Findings contribute to evidence-based knowledge of health and safety interventions. ▶ Supports evidence for use of framework for creating a robust infrastructure. ▶ Advancing organizational culture of safety is linked to staff safety and wellness.

- **Keywords:** Culture of safety; Health and safety intervention model; Participatory ergonomics; Musculoskeletal; Slips, trips and falls

Mario Martínez-Córcoles, Markus Schöbel, Francisco J. Gracia, Inés Tomás, José M. Peiró. *Linking empowering leadership to safety participation in nuclear power plants: A structural equation model.* Pages 215–221.

Introduction: Safety participation is of paramount importance in guaranteeing the safe running of nuclear power plants. Metod: The present study examined the effects of empowering leadership on safety participation. Results: Based on a sample of 495 employees from two Spanish nuclear power plants, structural equation modeling showed that empowering leadership has a significant relationship with safety participation, which

is mediated by collaborative team learning. In addition, the results revealed that the relationship between empowering leadership and collaborative learning is partially mediated by the promotion of dialogue and open communication. Conclusions: The implications of these findings for safety research and their practical applications are outlined. Impact on Industry: An empowering leadership style enhances workers' safety performance, particularly safety participation behaviors. Safety participation is recommended to detect possible rule inconsistencies or misunderstood procedures and make workers aware of critical safety information and issues.

Highlights: ▶ Safety participation behaviors are extremely relevant practices for safety in nuclear power plants. ▶ Managers can specifically influence participative safety behavior. ▶ Empowering leaders influence in safety participation by means of collaborative team learning. ▶ Empowering direct leaders indirectly contribute to creating a collaborative learning environment within a team through the promotion of dialogue and open communication.

- **Keywords:** Empowering leadership; Safety participation; Collaborative learning; Communication; High reliability organizations

Karin A. Mack, Ann Dellinger, Bethany A. West. *Adult opinions about the age at which children can be left home alone, bathe alone, or bike alone: Second Injury Control and Risk Survey (ICARIS-2). Pages 223–226.*

Problem: This study describes adult opinions about child supervision during various activities. Methods: Data come from a survey of U.S. adults. Respondents were asked the minimum age a child could safely: stay home alone; bathe alone; or ride a bike alone. Respondents with children were asked if their child had ever been allowed to: play outside alone; play in a room at home for more than 10 minutes alone; bathe with another child; or bathe alone. Results: The mean age that adults believed a child could be home alone was 13.0 years (95% CI = 12.9-13.1), bathe alone was 7.5 years (95% CI = 7.4-7.6), or bike alone was 10.1 years (95% CI = 10.0-10.3). There were significant differences by income, education, and race. Discussion: Assessing adult's understanding of the appropriate age for independent action helps set a context for providing guidance on parental supervision. Guidelines for parents should acknowledge social norms and child development stages. Impact on Industry: Knowledge of social norms can help guide injury prevention messages for parents.

- **Keywords:** injury; prevention; children; supervision; social norms