

## **Journal of Safety Research – rok 2008, ročník 39**

### **Číslo 5**



**Michael Sivak, Omer Tsimhoni. *Improving traffic safety : conceptual considerations for successful action. S. 453-457.***

**Abstract: Introduction:** In the early stages of motorization, it did not take rigorous scientific research to achieve major improvements in traffic safety. Instead, early traffic-safety countermeasures were often based exclusively on common sense. Since then, scientific research has gradually increased in importance as the basis for developing successful interventions. This shift was not made by choice but mostly by necessity: Many of the "easy" problems have already been addressed, and the remaining problems are generally too complex for an approach based solely on common sense. Fortunately, our understanding of the complexities involved in traffic safety has recently made major gains, and common sense can now be supplemented, to some degree, by valid technical analysis. **Approach:** This article discusses major conceptual issues that should be considered in guiding the future development of effective, science-based traffic-safety countermeasures. **Impact on industry:** After briefly discussing the conceptual issues, the article offers a list of implications for action.

- **Keywords:** Traffic safety; Countermeasures; Conceptual considerations; Common sense; Science based interventions

**F. Dennis Thomas, Richard D. Blomberg, Raymond C. Peck, Linda A. Cosgrove, Philip M. Salzberg. *Evaluation of a high visibility enforcement project focused on passenger vehicles interacting with commercial vehicles. S. 459-468.***

**Abstract: Introduction:** In 2004, Washington State applied NHTSA's High Visibility Enforcement model used in the Click It or Ticket seat belt campaign in an attempt to reduce unsafe driving behaviors around commercial motor vehicles (CMVs). The program was called Ticketing Aggressive Cars and Trucks (TACT). This paper details the methods used to evaluate the program's effectiveness and the results of the evaluation. **Method:** Four high-crash interstate highway corridors, each approximately 25 miles in length, were selected. Two of these corridors received TACT media messages and increased enforcement over an 18-month period while two comparison corridors did not receive any increased media or enforcement. **Results:** A total of 4,737 contacts were made with drivers during the two enforcement waves, and 72% of these contacts led to a citation. Drivers at the intervention sites who said they saw or heard any of the TACT messages increased from 17.7% in the pre period to a high of 67.3% in the post periods. Drivers at the intervention sites also reported increased exposure to the core message of leaving

more space when passing trucks (14% pre to 40% post period). The percentage of drivers who said they leave more room when passing trucks than when passing cars rose from 16% in the pre period to 24% in the post period at the intervention sites, while comparison sites showed no change. Over 150 hours of video recorded by law enforcement officers in unmarked vehicles were utilized to examine violation rates and severity of violations before and after the intervention campaigns. Statistical analyses showed that violation rates were reduced significantly at the intervention sites (between 23% and 46%), while remaining constant at the comparison sites. Analyses of the video data also showed that the seriousness of the residual violations at the intervention sites decreased. **Conclusions:** Overall, the evaluation results provide a consistent picture of the effectiveness of the TACT pilot project. Success was demonstrated at every step - messages were received and understood, knowledge was changed in the intended direction, self reported driving behavior around large trucks improved, and observed driving behaviors confirmed the self reports. **Impact on Industry:** After this initial success in Washington State, the TACT model will continue to be implemented and evaluated by FMCSA in an attempt to validate the program. Based on the results of this study and the consistent positive results found for other sSTEP projects, it is likely that TACT will show continued success in a variety of settings and will help reduce the number and severity of crashes involving CMVs. Future research should attempt to use many of the methods described here to further validate the methods for not only evaluations of TACT programs, but also for any other highway safety programs that require measurements of the program's effectiveness.

- **Keywords:** Ticketing Aggressive Cars and Trucks; TACT; sSTEP; High visibility enforcement; Highway safety; Evaluation; Methods

**Kristen A. Conner, Huiyun Xiang, Jonathan I. Groner, Gary A. Smith.**  
***Using data linkage to assess the impact of motorized recreational vehicle-related injuries in Ohio. S. 469-475.***

**Abstract: Problem:** Motorized recreational vehicle (MRV)-related injuries can result in severe medical and financial consequences. The objective of this study was to describe the epidemiology, and clinical and financial impact of MRV-related injuries in Ohio. **Method:** Probabilistically linked statewide Emergency Medical Services (EMS) and hospital (inpatient and emergency department) data for 2003 and 2004 were examined. Record pairs with a MRV-related E-code (E821-E823, E825) were included in this study. **Results:** There were 2,893 patients with MRV-related injuries, who had linked EMS and hospital records, resulting in more than \$15 million in hospital charges and 1,921 inpatient days of hospitalization. The male-to-female ratio was nearly 4:1, and 19% were younger than 16. Almost 82% of cases were not wearing a helmet; there was a trend of decreasing helmet use with increasing age. Mean (SE) inpatient hospital charges and length of stay (LOS) were \$22,218 (\$1,290) and 3.8 (0.2) days, respectively. The mean (SE) Injury Severity Score (ISS) for inpatients was 9.2 (0.4). Individuals injured on a street/highway were 3.20 times more likely to sustain an ISS  $\geq$  16 (95% CI: 1.03, 9.88;  $p = 0.044$ ) and 3.05 times more likely to sustain a traumatic brain injury (TBI) (95% CI: 1.17, 7.94;  $p = 0.024$ ) than those who were injured at a place designated for sport or recreation. Children aged 12 to 15 and young adults aged 16 to 25 were 2.47 and 2.14 times more likely, respectively, to sustain a TBI than adults aged 36 or older (aged 12 to 15: 95% CI: 1.13, 5.38;  $p = 0.024$ ; aged 16 to 25: 95% CI: 1.26, 3.64;  $p = 0.005$ ). Higher ISS was associated with both higher total charges ( $p < 0.001$ ) and longer LOS ( $p < 0.001$ ). **Discussion:** This study demonstrates that MRV-related injuries are an important public health problem in Ohio, with a substantial clinical and financial impact. **Impact on Industry:** Enactment and enforcement of statewide MRV safety legislation and training of MRV users offer valuable opportunities to prevent these costly injuries.

- **Keywords:** Trauma; Injury; Motor Vehicle; All-Terrain Vehicle (ATV); Motorized Recreational Vehicle (MRV); Data Linkage; Hospital Charges; Length of Stay; Injury Severity; Prevention

**Monica Rosales, Lorann Stallones. Coverage of motor vehicle crashes with injuries in U.S. newspapers : 1999-2002. S. 477-482.**

**Abstract: Problem:** The aims of the study were to evaluate information on motor-vehicle crashes with injuries provided in newspaper reports and to assess the frequency of thematic and episodic reporting of motor-vehicle crashes. **Method:** The study used Fatal Analysis Reporting System (FARS) derived variables to code a nationally representative sample of U.S. newspaper reports of motor-vehicle crashes from 1999-2002. A total of 473 newspaper reports of motor-vehicle crashes with injuries were included. Information on the crash event, people involved, and vehicles was extracted. The reports were coded for episodic and thematic news framing. **Results:** A majority of newspaper reports used episodic framing. The majority of reports included information on the type of crash, but characteristics about people and vehicles were rarely reported. **Discussion:** Lack of information in newspapers makes them an incomplete source from which to influence public perceptions and attitudes. **Impact on industry:** This provides an opportunity for news print media to improve public health content. Newspapers represent an important source of public information; they are, however, an incomplete source [Voight, B., Lapidus, G., Zavoski, R., & Banco, L. (1998). Injury reporting in Connecticut newspapers. *Injury Prevention*, 4, 292-294.; Baullinger, J., Quan, L., Bennett, E., Cummings, P., & Williams, K. (2001). Use of Washington state newspaper for submersion injury surveillance. *Injury Prevention*, 7, 339-342]. To increase the accuracy of information provided to the public through media sources, there is a need for increased communication between public health professionals and reporters. The results of this study raise concerns about the contents of motor-vehicle crash information provided in newspapers and suggest that newspapers do not provide information to allow public perception to be in accord with the importance of motor-vehicle crash injuries and health promoting actions to reduce risk of injury. More balanced and detailed information in newspapers would provide an opportunity for news print media to improve public health programs and public perception about the impact of motor-vehicle crashes on safety for all.

- **Keywords:** Motor vehicle injuries; Newspaper reports

**Rebecca C. Gray, Mohammed A. Quddus, Andrew Evans. Injury severity analysis of accidents involving young male drivers in Great Britain. S. 483-495.**

**Abstract: Introduction:** Young male drivers are over-represented in traffic accidents; they were involved in 14% of fatal accidents from 1991 to 2003 while holding only 8% of all drivers licenses in the UK. In this study, a subset of the UK national road accident data from 1991 to 2003 has been analyzed. The primary aim is to determine how to best use monetary and progressive resources to understand how road safety measures will reduce the severity of accidents involving young male drivers in both London and Great Britain. **Method:** Ordered probit models were used to identify specific accident characteristics that increase the likelihood of one of three categorical outcomes of accident severity: slight, serious, or fatal. **Results:** Characteristics found to lead to a higher likelihood of serious and fatal injuries are generally similar across Great Britain and London but are different from those predicted to lead to a higher likelihood of slight injuries. Those characteristics predicted to lead to serious and fatal injuries include driving in darkness, between Friday and Sunday, on roads with a speed limit of 60 mph, on single carriageways, overtaking, skidding, hitting an object off the carriageway, and when passing the site of a previous accident. Characteristics predicted to lead to slight injuries include driving in daylight, between Monday and Thursday, on roads with a speed

limit of 30 mph or less, at a roundabout, waiting to move, and when an animal is on the carriageway. **Impact on Industry:** These results aid the selection of policy options that are most likely to reduce the severity of accidents involving young male drivers.

- **Keywords:** Young male drivers; Severity of accidents; Ordered probit models; Safety targets; Safety policy

**Miguel A. Camino López, Dale O. Ritzel, Ignacio Fontaneda, Oscar J. González Alcantara. *Construction industry accidents in Spain. S. 497-507.***

**Abstract: Problem:** This paper analyzed industrial accidents that take place on construction sites and their severity. *Method:* Eighteen variables were studied. We analyzed the influence of each of these with respect to the severity and fatality of the accident. This descriptive analysis was grounded in 1,630,452 accidents, representing the total number of accidents suffered by workers in the construction sector in Spain over the period 1990-2000. *Results:* It was shown that age, type of contract, time of accident, length of service in the company, company size, day of the week, and the remainder of the variables under analysis influenced the seriousness of the accident. *Impact on injury prevention:* The results obtained show that different training was needed, depending on the severity of accidents, for different age, length of service in the company, organization of work, and time when workers work. *Impact on industry:* The research provides an insight to the likely causes of construction injuries in Spain. As a result of the analysis, industries and governmental agencies in Spain can start to provide appropriate strategies and training to the construction workers.

- **Keywords:** Accidents; Construction; Variables; Severity

**Kelly A. Loring, John R. Myers. *Tracking the prevalence of rollover protective structures on U.S. farm tractors : 1993, 2001, and 2004. S. 509-517.***

**Abstract: Problem:** Between 1992 and 2005, 1412 workers on farms died from tractor overturns. A Rollover Protective Structure (ROPS) is a proven intervention to reduce overturn deaths. However, farm characteristics that are associated with the adoption of ROPS are not well understood. **Methods:** ROPS prevalence statistics were derived from National Institute for Occupational Safety and Health (NIOSH) surveys that tracked ROPS use on farms. Data were from the years 1993, 2001, and 2004. **Results:** In 1993, 38% of tractors were equipped with ROPS. This increased to 51% by 2004. ROPS prevalence rates were higher on farms in the Southern region of the United States, on farms where the operator was 25-34 years old, and on farms with \$100,000 or more of farm sales. Low ROPS prevalence rates were associated with farm operators 65 years old or older and with farms with less than \$10,000 of farm product sales. **Summary:** The increase in ROPS prevalence between 1993 and 2004 has not been sufficient to decrease the rate of tractor overturn deaths on farms. Incentive programs targeting older farm operators and low-income farm operations are suggested to increase ROPS use on tractors. **Impact on Industry:** The study provides farm characteristics associated with low ROPS prevalence rates. The results can be used to target farms for future ROPS promotion activities.

- **Keywords:** Agriculture; Tractor overturn fatalities; ROPS prevalence; Trends; Risk factors

**Gil Luria, Anat Rafaeli. *Testing safety commitment in organizations through interpretations of safety artifacts. S. 519-528.***

**Abstract: Problem:** Safety culture relates to injuries and safety incidents in organizations, but is difficult to assess and measure. We describe a preliminary test of assessing an organization's safety culture by examining employee interpretations of organizational safety artifacts (safety signs). **Method:** We collected data in three organizations using a new safety culture assessment tool that we label the Safety Artifact Interpretation (SAI) scale; we then crossed these data with safety climate and leadership evaluations. **Results:** SAI were interpreted by employees in accordance with two conceptually distinct themes that are salient in the literature on organizational safety culture: safety compliance and commitment to safety. A significant correlation exists between SAI scores and the organizational safety climate. A similar (though insignificant) relationship was observed between SAI scores and leadership ratings. **Impact on industry:** Employee perceptions and interpretations of safety artifacts can facilitate assessments of safety culture and can ultimately lead to understanding of and improvements in the level of organizational safety.

- **Keywords:** Artifacts; Symbols; Culture; Safety signs; Safety climate; Leadership

**Richard Retting, Ivan Cheung. *Traffic speeds associated with implementation of 80 mph speed limits on West Texas rural interstates.* S. 529-534.**

**Abstract: Problem:** In 2006 Texas raised the daytime speed limit for passenger vehicles on segments of I-10 and I-20 from 75 to 80 mph. **Methods:** Traffic speeds were measured before and 3, 12, and 16 months after the limit was changed. **Results:** During the 16-month period following the speed limit increase, mean speeds of passenger vehicles on I-20 increased by 9 mph relative to the comparison road, where no speed limit change occurred and traffic speeds declined. On I-10 mean speeds increased by 4 mph relative to the comparison road. Limiting the analysis to the month before the speed limit change and 1 year later, the proportion of drivers exceeding 80 mph was 18 times higher on I-20 and 2 times higher on I-10. **Discussion:** The smaller speed increases on I-10 may be related to its proximity to the U.S. border with Mexico. Highly visible border patrol activity coincided with posting of the higher speed limit. Long-term monitoring in other states suggests that traffic speeds in Texas are likely to continue to increase. **Impact on Industry:** The present study adds to the wealth of evidence that increased speed limits lead to increased travel speeds. The primary countermeasures to reduce the risk of speed-related crashes include highly visible police traffic enforcement and the use of speed cameras accompanied by publicity.

- **Keywords:** Speed limits; Travel speeds; Automated enforcement; Motor vehicle crashes; National maximum speed limit

**Christopher M. Love, Robert K. Welsh, Joshua J. Knabb, Sheryn T. Scott, David W. Brokaw. *Working with cognitively impaired drivers : legal issues for mental health professionals to consider.* S. 535-545.**

**Abstract: Introduction:** Mental health professionals are gatekeepers of patient confidentiality. Yet, confidentiality held too strictly, by allowing a potentially dangerous driver to assume control of a car, endangers society. Recent court cases have mandated that mental health professionals must warn those who may be potentially harmed by patients. In spite of this, disagreements linger as to whether it is the responsibility of governmental agencies or mental health professionals to decide who is unfit to operate a vehicle because of cognitive impairment. **Methods:** This article addresses the legally relevant considerations when working with cognitively compromised individuals who operate a motor vehicle. Legal issues surrounding confidentiality, patient rights, foreseeable risk, and the duty to warn and protect are presented in order to understand their relationship to recent court rulings. **Impact on industry:** The impact on the mental health care industry includes not only concerns about increased insurance premiums or

costs due to alleged negligence or litigation expenses secondary to failure to ensure the safety of an impaired client under their care. Mental health care providers are aware that the welfare of clients with impairment to cognitive decision making ability may require unique considerations for safety such as ensuring safe and appropriate transportation.

- **Keywords:** Cognition; Impairment; Driving; Mental health professional; Law

**Kathleen Beullens, Keith Roe, Jan Van den Bulck. *Television news' coverage of motor-vehicle crashes. S. 547-553.***

**Abstract: Problem:** Traffic crashes are a major cause of injury and death. Although it has been argued that a skewed estimation of personal risks may be partly attributable to news representations of mortality causes, the manners in which traffic crashes are covered in the news have not received much attention in the literature. **Method:** The current study used content analysis to examine the framing of traffic crashes in television news. **Results:** The data indicated that Flemish television news does not report traffic crashes from a public health perspective and consequently it misses opportunities to inform the public on the causes and consequences of risk-taking in traffic. **Impact on industry:** It is important that professionals are aware of these findings and stress contextual factors surrounding traffic crashes in their communication with journalists. This may lead to more accurate reports and a more accurate risk perception of viewers.

- **Keywords:** Risk taking; Traffic; Crash; News; Content analysis