

## **OFFENDER EDUCATION RESEARCH SUMMARIES**

**Vol. 2, No. 2, March 2009**

### **EVALUATION OF NHTSA'S CHECKPOINT STRIKEFORCE PROGRAM**

Checkpoint Strikeforce is a NHTSA regionwide DWI enforcement program implemented in NHTSA's Mid-Atlantic Region (Region 3) comprised of Delaware, the District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia. The program emphasizes frequent, well publicized checkpoints implemented on a sustained basis throughout the July-to-December period of each calendar year. The program was initiated in 2002 and continues. A new report presents the evaluation results for the first three years of the program from 2002 to 2004. Results indicate that it is feasible to implement such a DWI enforcement and public information program on a regionwide and continuing basis. Each jurisdiction was able to meet and generally dramatically exceed the goal of conducting at least one checkpoint per week throughout the program period. This included even the smaller jurisdictions in Delaware. Public awareness measures indicated some modest shifts in the desired direction in terms of awareness of the checkpoint program and self-reported behavior. Roadside breath test surveys of the blood alcohol concentration (BAC) of nighttime drivers in two of three jurisdictions revealed reductions in the proportion of drivers with BACs of .05 grams per deciliter or greater. Analysis of fatal crash data indicated a reduction in alcohol-involved drivers in fatal crashes on the order of 7% when compared to the rest of the United States. This reduction approached, but did not reach, statistical significance.

The report, DOT HS 811 056, was authored by John H. Lacey, Tara Kelley-Baker, Katharine Brainard, Scott Tippetts, and Maria Lyakhovich and can be viewed at: [www.nhtsa.dot.gov](http://www.nhtsa.dot.gov).

### **DRIVING AFTER DRINKING IN CANADA: FINDINGS FROM THE CANADIAN ADDICTION SURVEY**

A study by Doug Beirness and C.G. Davis from the Canadian Centre on Substance Abuse looked at driving after drinking in Canada. The findings were published in the Canadian Journal of Public Health (Vol. 98, No. 6). Despite substantial decreases in the magnitude of the alcohol-crash problem over the past 25 years, many Canadians continue to drive under the influence of alcohol, causing thousands of serious injuries and deaths every year. Data from the 2004 Canadian Addiction Survey (CAS) were used to determine the prevalence of self-reported driving after drinking and the characteristics of those who engage in the behaviour. Overall, 11.6% of licensed drivers in Canada reported operating a vehicle within an hour of consuming two or more drinks containing alcohol. Less than 5% of licensed drivers accounted for 86% of the more than 20 million (estimated) past-year drinking and driving occurrences. Drinking drivers reported more extensive and problematic use of alcohol, and were more likely to report illegal drug use relative to non-drinking drivers.

It was concluded that driving after drinking remains a common behaviour among Canadian drivers. Those who persist in driving after drinking can be distinguished from other drivers on the basis of their greater use of alcohol and drugs. Those who drive after drinking frequently consume even greater quantities of alcohol on more frequent occasions and are more likely to experience problems as a result of their drinking. These findings suggest that countermeasure efforts need to be continued on all levels and expanded to specifically target high-risk heavy drinkers.

### **CRIMINAL AND ALCOHOL PROBLEMS AMONG SWEDISH DRUNK DRIVERS - PREDICTORS OF DUI RELAPSE**

The prevalence and types of crime offences, as well as predictors of relapse, among drivers suspected of driving under influence (DUI) were investigated. A total of 1830 Swedish DUI drivers responded to the Alcohol Use Disorders Identification Test - AUDIT. Information about previous DUI offences, other traffic offences along with other types of criminal offences was taken from a crime register. A total criminality (including all traffic offences) of 64% in the period of five years before investigation was analyzed. 40% of the sample had other criminality besides traffic violations during that period. 14.3% of the drivers relapsed to DUI in the two-year period after the investigation. In terms of DUI relapse, the following factors were the main predictors: previous traffic violations, previous DUI offences, previous other criminality (frauds or other acts of dishonesty) and detection hours between 12.00 and 19.00. Detection in general traffic controls and high BAC (blood alcohol concentration) when detected were the strongest factors with negative correlation to DUI re-offence.

The study was conducted by B. Hubicka, Hans Laurell, and H. Bergman and was ePublished in 2008 in the International Journal of Law Psychiatry.

### **SUBSTANCE-INVOLVED DRIVING: PREDICTING DRIVING AFTER USING ALCOHOL, MARIJUANA, AND OTHER DRUGS**

Substantial research has examined the influence of alcohol, marijuana, and other illicit drugs on driving performance; however, which psychosocial characteristics of individuals who drive while under the influence of alcohol (DUIA), marijuana (DUIM), and other drugs (DUID), how these characteristics interrelate with each other, and how they differ across degrees of substance-involved driving (SID) have not been thoroughly investigated. An article appearing Traffic Injury Prevention (Vol. 9, Issue 6, 2008) identified psychosocial predictors of SID while accounting for driving behavior and the type and level of substance use and examined the associations of psychosocial characteristics and SID with citations for traffic offenses. Telephone survey data and state driver history records for a sample of 5,244 young adults were analyzed using t-tests and logistic and multinomial logistic regression analysis to examine the correlates and predictors of substance-involved driving. Psychosocial characteristics predicted DUIA, DUIM, and DUID when tested in separate models and adjusting for driving behavior. When the substance in question was added to each model, a unique association between psychosocial characteristics and DUIA remained, but the associations between psychosocial characteristics and DUIM and DUID were completely mediated by the frequency of marijuana use and level of other drug use in their respective models. Multinomial logistic regression predicting the degree of SID, which was based on the types and combinations of SID behaviors, showed that after

controlling for the use of alcohol, marijuana, and other drugs, psychosocial characteristics maintained a unique association with the degree of SID. Finally, when adjusting for driving behavior and psychosocial characteristics, the degree of SID predicted having a traffic offense.

These results indicate that reducing substance use is not the only means of targeting substance-involved driving. Interventions could have enhanced effectiveness if they also targeted individual psychosocial and behavioral characteristics, either to alter these behaviors or by tailoring the intervention or program for these characteristics. The article was authored by C. Raymond Bingham, Jean T. Shope and Jian Zhu from the University of Michigan, Transportation Research Institute and School of Public Health.

### **THE IMPACT OF BENZODIAZEPINES ON SAFE DRIVING**

Benzodiazepines are prescribed to relieve anxiety and aid sleep. Studies demonstrate that benzodiazepines increase odds of crash involvement, but little evidence exists regarding their impact on crash responsibility. A study in *Traffic Injury Prevention* ( Vol. 9, Issue 5, 2008) conducted by Sacha Dubois, Michel Bedard and Bruce Weaver from Thunder Bay, Ontario, Canada, examined the impact of benzodiazepines on crash responsibility by drug half-life and driver age, using a case-control design with drivers aged 20 and over involved in fatal crashes in the United States from 1993-2006.

Drivers (all with BAC = 0) were classified as having no benzodiazepines detected versus short, intermediate, or long half-life benzodiazepines. Cases were drivers with at least one potentially unsafe driving action (UDA) in relation to the crash (e.g., speeding), a proxy measure for crash responsibility; controls had no UDAs recorded. Odds ratios (ORs) of any UDA by benzodiazepines half-life exposure were calculated, with adjustment for age, sex, other medication usage, and prior driving record. Compared with drivers not using benzodiazepines, drivers taking intermediate or long half-life benzodiazepines demonstrated increased odds of an UDA from ages 25 to 55. Drivers taking short half-life benzodiazepines did not demonstrate increased odds compared to drivers not using benzodiazepines. Given the potential impact of benzodiazepines on driver safety, further experimental research is needed to better understand the effect of benzodiazepines on crash responsibility.

### **TRENDS IN DRINK DRIVING ACCIDENTS AND CONVICTIONS IN DENMARK**

An article in *Traffic Injury Prevention* ( Vol. 9, Issue 5, 2008) describes the long-term trends in injury accidents involving drink drivers and in drink driving convictions in Denmark. The article also identifies drink drivers' characteristics useful for targeted countermeasures. Accident-involved drink drivers have been divided into subgroups by age and gender. The database of convicted drivers has been linked to databases with information about age, gender, and various socio-demographic variables, such as education and employment. Per capita rates have been used to describe the changes in the road safety variables and in the criminal convictions variables during the study period.

In the past four decades there has been a sharp reduction in the per capita rate of Danish male drink drivers involved in injury accidents for all age groups, with the slope of the curve

significantly lower in recent years. Although this rate reduction is much more marked for male drivers aged 18-24 compared to all other age groups, their rate is still around three times higher than for those aged 25-64. Danish male convicted drink drivers, including those who were involved in accidents, are mainly drivers with only primary school education or workers, unemployed drivers, and drivers who use their car for work. Strategies against drink driving should bear in mind that a differentiation between men and women and young people and middle-aged people is necessary, that education and occupation play an important role, that drink driving may be related to the workplace, and that enforcement activities towards young drivers should be concentrated on weekends. The article was authored by Inger Marie Bernhoft, Tove Hels and Allan Steen Hansen of the Department of Transport, Technical University of Denmark.

## **DRAFT TRB CIRCULAR ON YOUNG IMPAIRED DRIVERS AVAILABLE ONLINE**

A compilation of papers written for the Transportation Research Board Committee on Alcohol, Other Drugs and Transportation workshop on young impaired drivers is now available online. The Circular, entitled Young Impaired Drivers: The Nature of the Problem and Possible Solutions, includes a summary and analysis of the traffic safety risks posed by young, inexperienced drivers impaired by alcohol and other drugs. Papers address the levels of risk and types of crashes most likely to involve young impaired drivers as well as characteristics of young Texas drivers. The Circular also discusses the nature of problems and possible solutions for college students and young people in the military, legal and enforcement approaches to young impaired drivers, and new technologies that can have an impact on this difficult traffic safety problem. Papers are included discussing the nature of the problem and prevention programs in the European Union and in Australia. Committee Chair, Kathryn Stewart, edited the Circular. ICADTS was a cosponsor of the workshop which took place in Woods Hole, Massachusetts in June of 2008. The draft Circular and the workshop presentations, can be viewed on the ICADTS website ([www.icadts.org](http://www.icadts.org)) as well as at the Resource Link website of the Prevention Research Center of Pacific Institute for Research and Evaluation: <http://www.resources.prev.org/prcpublications.html>.

## **PRIMARY PREVENTION OF DRINK DRIVING BY THE LARGE-SCALE USE OF ALCOLOCKS IN COMMERCIAL VEHICLES**

Alcolocks are commercial breath test devices that prevent a motor vehicle from starting when a driver's blood alcohol concentration (BAC) is elevated. This report is an evaluation of the experiences and BAC data from the first use of alcolocks in commercial vehicles as a primary prevention strategy. In most applications, the alcolock is imposed only after an impaired driving conviction. This study, implemented in Sweden, estimates drink driving on a large scale in a variety of commercial vehicles. Officials from 118 companies were interviewed representing 3689 alcolock-equipped vehicles used by 9614 professional drivers, an 80% compliance rate. In a contrast group of 230 transport businesses without alcolocks the interview compliance rate was 57%. Survey results probed motivation for and experience with alcolocks. Analysis of BAC test patterns showed alcohol consumption among employees through prevalence estimates of drink-driving attempts at the rate of BAC  $\geq$  the legal limit 0.020%. Before alcolock installation, 64% of the employers suspected alcohol problems among their employees and their motive for installing alcolocks (cost averaged 1700euro/vehicle) was to improve the transport quality.

Several companies had technical problems with the alcolocks; but 98% recommended that other companies install alcolocks. Among 600, heavy vehicles, 0.19% of all starts were prevented by elevated BAC; most during weekends and mornings. Daytime Saturday and Sunday mornings 0.72% of the drivers had elevated BAC. The authors concluded that the prevalence of drink driving among professional drivers is probably similar to that among drivers in general. Alcolocks would improve the safety margin and reduce public risk. Provided that the entire fleet of trucks, buses, and taxis in Sweden had installed alcolocks that would correspond to about half a million drink driving trips being prevented every year. The study was conducted by B. Bjerre and J. Kostela of the Swedish Road Administration and appeared in *Accident Analysis and Prevention* (Vol. 40, No.4, 2008).

### **THE IMPACT OF UNDERAGE DRINKING LAWS ON ALCOHOL-RELATED FATAL CRASHES OF YOUNG DRIVERS**

James C. Fell, Deborah A. Fisher, Robert B. Voas, Kenneth Blackman, and A. Scott Tippetts  
[Alcoholism: Clinical and Experimental Research](#)  
Published Online: 9 Apr 2009

**Background:** This study used a pre- to post-design to evaluate the influence on drinking-and-driving fatal crashes of 6 laws directed at youth aged 20 and younger and 4 laws targeting all drivers.

**Methods:** Data on the laws were drawn from the Alcohol Policy Information System data set (1998 to 2005), the Digests of State Alcohol Highway Safety Related Legislation (1983 to 2006), and the Westlaw database. The Fatality Analysis Reporting System data set (1982 to 2004) was used to assess the ratio of drinking to nondrinking drivers involved in fatal crashes [fatal crash incidence ratio (CIR)]. The data were analyzed using structural equation modeling techniques.

**Results:** Significant decreases in the underage fatal CIR were associated with presence of 4 of the laws targeting youth (possession, purchase, use and lose, and zero tolerance) and 3 of the laws targeting all drivers (0.08 blood alcohol concentration illegal per se law, secondary or upgrade to a primary seat belt law, and an administrative license revocation law). Beer consumption was associated with a significant increase in the underage fatal CIR. The direct effects of laws targeting drivers of all ages on adult drinking drivers aged 26 and older were similar but of a smaller magnitude compared to the findings for those aged 20 and younger. It is estimated that the 2 core underage drinking laws (purchase and possession) and the zero tolerance law are currently saving an estimated 732 lives per year controlling for other exposure factors. If all states adopted use and lose laws, an additional 165 lives could be saved annually.

**Conclusions:** These results provide substantial support for the effectiveness of under age 21 drinking laws with 4 of the 6 laws examined having significant associations with reductions in underage drinking-and-driving fatal crashes. These findings point to the importance of key underage drinking and traffic safety laws in efforts to reduce underage drinking-driver crashes.

### **REPEAT DUI OFFENDERS WHO HAVE HAD A DRUG DIAGNOSIS: ARE THEY MORE PRONE TO TRAFFIC CRASHES AND VIOLATIONS?**

Janet C'de Baca; Garnett P. McMillan; Sandra C. Lapham

Published in *Traffic Injury Prevention*, Volume 10, Issue 2 April 2009, pages 134 - 140

**Objective:** Study objectives are to test for differences (1) in rates of negative traffic outcomes between DUI offenders who have lifetime drug use disorders (DUD) and those with no lifetime DUD; and (2) by drug class for those with a DUD.

**Methods:** The study sample of 379 male and 74 female repeat DUI offenders was interviewed using the Composite International Diagnostic Interview.

**Results:** Compared to those with an alcohol use disorder (AUD) only, the relative risk of being involved in a vehicular crash was greater for those with a central nervous system (CNS) depressant use disorder. The risk of being convicted of a traffic offense was higher for those with any DUD and for those with a CNS stimulant use disorder. Differences by class of drug used, after adjusting for demographics, were a 47 percent (confidence interval: 6-103%) greater risk of being in a crash with a CNS depressant use disorder and 28 percent (confidence interval: 11-48%) greater risk of a traffic conviction with a stimulant use disorder.

**Conclusions:** Results underscore the increased risk of negative traffic outcomes among repeat DUI offenders diagnosed with DUD, particularly CNS depressant disorders, supporting the call to establish policies that include comprehensive evaluation and treatment for this population.

### **TRAFFIC RISK BEHAVIORS AT NIGHTLIFE: DRINKING, TAKING DRUGS, DRIVING, AND USE OF PUBLIC TRANSPORT BY YOUNG PEOPLE**

A. Calafat; N. Blay; M. Juan; D. Adrover; M. A. Bellis; K. Hughes; P. Stocco; I. Siamou; F. Mendes; K.

*Traffic*, Volume 10, Issue 2 April 2009, pages 162 - 169

Road traffic crashes associated with nightlife alcohol and recreational drug use are a major health problem for young people.

**Objectives:** This study explores use of different forms of transport to and from nightlife environments and the relationships between traffic risk behaviors, drunkenness, and drug consumption.

**Methods:** 1363 regular nightlife users from nine European cities in 2006 completed a self-administered and anonymous questionnaire. Sampling utilized a variation of respondent-driven sampling.

**Results:** Private car was the most frequent form of transport used when going out, especially by males and older individuals. Drug use was related to crashes and traffic risk behaviors, including having a lift from someone drunk or driving drunk or driving having taken drugs; drunkenness was related to risk behaviors but not to crashes (possibly because drunk people tend to use the private car less). Males showed higher levels of drunkenness and drug consumption, traffic risk

behaviors, and traffic crashes. Age is not related to the traffic risk behaviors, but older individuals had less crashes.

Conclusions: There are serious health problems related to transport and recreational nightlife activities. It is necessary to improve later public transport services, complemented by actions that deter the use of private cars. The relationships of both drunkenness and cannabis/cocaine use with traffic risk behaviors should be addressed and programs implemented to change risk perceptions on the effects of illegal drugs on driving.

### **EFFECTS OF A COLLEGE COMMUNITY CAMPAIGN ON DRINKING AND DRIVING WITH A STRONG ENFORCEMENT COMPONENT**

Anne T. McCartt; Laurie A. Hellinga; Joann K. Wells

Published in: journal Traffic Injury Prevention, Volume 10, Issue 2 April 2009 , pages 141 - 147

#### **Abstract**

Objectives: A program of publicized intensive enforcement of minimum drinking age law and drinking and driving laws was implemented in a college community. The effects on driving at various blood alcohol concentrations (BACs) were evaluated, particularly for drivers ages 16-24 targeted by the program.

Methods: Objective measures of driver BACs were collected through nighttime roadside surveys before and during the program in the experimental college community and a comparison college community. Logistic regression models estimated the program's effects on the likelihood of driving at various BAC thresholds in the program community, after accounting for BAC patterns in the comparison community.

Results: Relative to the comparison community, consistent reductions in driving at various BAC levels (positive BAC and BAC at least 0.02, 0.05, or 0.08%) were achieved in the experimental community. Reductions were greatest for 16- to 20-year-olds (from 66% for positive BAC to 94% for BAC  $\geq$  0.05%), followed by 21- to 24-year-olds (from 32% for positive BAC to 71% for BAC  $\geq$  0.08%) and drivers 25 and older (from 23% for positive BAC to 53% for BAC  $\geq$  0.08%). All reductions for 16- to 20-year-olds were significant ( $p < 0.05$ ), and all except the reduction for BAC  $\geq$  0.08 percent were significantly greater than the corresponding reductions for drivers 25 and older. Reductions for 21- to 24-year-olds were significant for BACs at least 0.02, 0.05, and 0.08 percent, but they were not significantly greater than the corresponding reductions for drivers 25 and older. Although large, reductions for drivers 25 and older were not significant, based on 95 percent confidence intervals.

Conclusions: A college community program with a strong enforcement component produced substantial reductions in drinking and driving among teenagers and young adults and smaller reductions among older adults. It is hoped that this will encourage colleges and communities to incorporate enforcement into interventions directed at alcohol use among young people.

### **THE VICTORIAN LEGISLATIVE FRAMEWORK FOR THE RANDOM TESTING DRIVERS AT THE ROADSIDE FOR THE PRESENCE OF ILLICIT DRUGS: AN**

## **EVALUATION OF THE CHARACTERISTICS OF DRIVERS DETECTED FROM 2004 TO 2006**

Martin Boorman; Katherine Owens

Traffic Injury Prevention, Volume 10, Issue 1 February 2009 , pages 16 - 22

### **Abstract**

In December 2004, a new legislative framework for the random drug screening of drivers modeled on the successful random alcohol screening methodology came into force in Victoria, Australia. The new framework prohibits driving while methamphetamine (MA), 3,4-methylenedioxymethamphetamine (MDMA), and cannabis, delta-9-tetrahydrocannabinol (THC), are present at any level in a driver's specimen. This is enforced by police who have the legislative authority to randomly drug test drivers for the presence of MA, MDMA, and THC by oral fluid (saliva) sample screening at the roadside. This article outlines the new random drug testing legislative framework and the drug testing procedures currently in place in Victoria. This article also examines the data collected through the operation of the framework for the first two years since implementation in Victoria (December 2004-December 2006).

## **EFFECTS OF ALCOHOL ON PERFORMANCE ON A DISTRACTION TASK DURING SIMULATED DRIVING**

Allyssa J. Allen, Shashwath A. Meda, Pawel Skudlarski, Vince D. Calhoun, Robert Astur, Kathryn C. Ruopp, and Godfrey D. Pearlson

Alcoholism: Clinical and Experimental Research Volume 33 Issue 4, Pages 617 - 625

**Background:** Prior studies report that accidents involving intoxicated drivers are more likely to occur during performance of secondary tasks. We studied this phenomenon, using a dual-task paradigm, involving performance of a visual oddball (VO) task while driving in an alcohol challenge paradigm. Previous functional MRI (fMRI) studies of the VO task have shown activation in the anterior cingulate, hippocampus, and prefrontal cortex. Thus, we predicted dose-dependent decreases in activation of these areas during VO performance.

**Methods:** Forty healthy social drinkers were administered 3 different doses of alcohol, individually tailored to their gender and weight. Participants performed a VO task while operating a virtual reality driving simulator in a 3T fMRI scanner.

**Results:** Analysis showed a dose-dependent linear decrease in Blood Oxygen Level Dependent activation during task performance, primarily in hippocampus, anterior cingulate, and dorsolateral prefrontal areas, with the least activation occurring during the high dose. Behavioral analysis showed a dose-dependent linear increase in reaction time, with no effects associated with either correct hits or false alarms. In all dose conditions, driving speed decreased significantly after a VO stimulus. However, at the high dose this decrease was significantly less. Passenger-side line crossings significantly increased at the high dose.

**Conclusions:** These results suggest that driving impairment during secondary task performance may be associated with alcohol-related effects on the above brain regions, which are involved with attentional processing/decision-making. Drivers with high blood alcohol concentrations may be less able to orient or detect novel or sudden stimuli during driving.

**STATES HAVE UNIVERSALLY ADOPTED A .08-PERCENT BLOOD-ALCOHOL LEVEL AS PRESUMPTION OF DRUNK DRIVING, BUT NO SUCH STANDARD EXISTS FOR DRIVING UNDER THE INFLUENCE OF OTHER DRUGS. NEW MEXICO, HOWEVER, IS SEEKING TO ESTABLISH GUIDELINES THAT OTHER STATES COULD EMULATE.**

The [Associated Press](#) reported Feb. 19 that New Mexico Gov. Bill Richardson is backing a plan to establish blood-concentration levels for five illicit drugs as a legal presumption of intoxication. The drugs are marijuana, cocaine, heroin, amphetamine, and methamphetamine. Supporters said the standards would be especially useful for when drivers mix alcohol and other drugs, since it can be difficult to prosecute offenders if their blood-alcohol level is below .08 percent. In New Mexico, 90 percent of drivers who failed field sobriety tests but had blood-alcohol levels below .08 percent tested positive for marijuana, researchers found. Currently, many states consider any positive test for the presence of illicit drugs per-se evidence of impairment.