

Identifying factors that predict persistent driving after drinking, unsafe driving after drinking, and driving after using cannabis among young adults.

Begg DJ; Langley JD; Stephenson S. *Accident Analysis and Prevention* 35(5): 669-675, 2003. (25 refs.)

The main aim of this study was to identify adolescent/young adulthood factors that predicted persistent driving after drinking, persistent unsafe driving after drinking, and persistent cannabis use and driving among young adults. It was a longitudinal study of a birth cohort (n=933, 474 males and 459 females) and was based on data collected at ages 15, 18, 21 and 26 years. At each of these ages members of the cohort attended the research unit for a personal interview by a trained interviewer, using a standardised questionnaire. For this study, the data for the outcome measures (persistent driving after drinking, persistent unsafe driving after drinking, and persistent driving after using cannabis) were obtained at ages 21 and 26 years. The main explanatory measures were collected at ages 15, 18, 21 years and included demographic factors (academic qualifications, employment, parenting); personality measures; mental health measures (substance use, cannabis dependence, alcohol dependence, depression); anti-social behaviour (juvenile arrest, aggressive behaviour, court convictions); early driving behaviour and experiences (car and motorcycle licences, traffic crashes). The analyses were conducted by gender. The results showed that females who persisted in driving after drinking (13%, n=61) were more likely than the others to have a motorcycle licence at 18. The males who persisted in driving after drinking (28%, n=135) were more likely than the other males to have some school academic qualifications and to be employed at age 26. Compared to the other males, those who persisted in unsafe driving after drinking (4%, n=17) were more likely to be aggressive at 18 and alcohol dependent at 21. Only six (1%) females persisted in unsafe driving after drinking so regression analyses were not conducted for this group. For persistent driving after using cannabis, the univariate analyses showed that females who persisted with this behaviour tended to have high substance use at 18, cannabis dependence at 21, police contact as a juvenile, and to be a parent at 21. For this group, because of the small numbers (3%, n=13) multivariate analyses were not appropriate. For the males who persisted in driving after using cannabis (14%, n=68) a wide range of variables were significant at the univariate stage. The multivariate analysis showed that the most important factors were dependence on cannabis at

21, at least one traffic conviction before 21, a non traffic conviction before 18, and low constraint at 18. Conclusion: These results show different characteristics were associated with persistence in each of these outcome behaviours. This indicates that different approaches would be required if intervention programmes were to be developed to target these behaviours. Copyright 2003, Elsevier Science.

Effect of lowering the alcohol limit in Denmark.

Bernhoft IM; Behrendorff I. *Accident Analysis and Prevention* 35(4): 515-525, 2003. (8 refs.)

On 1 March 1998, the Danish per se limit was lowered from 0.08 to 0.05% blood alcohol concentration (BAC) for motor vehicle drivers. Based on accident data and drivers' drinking habits before and after the amendment, the effect of the new limit has been evaluated. Interviews revealed a significant decrease in the number of drinks that drivers allow themselves to drink within a 2-h period before driving. The proportion of drivers, who would not drink at all or only have one drink, increased from 71% before the amendment to 80% after the amendment. Drivers with changed drinking habits most often stated the lower limit as the main reason for having less alcohol. However, based on accident data from the first year after the amendment, this has not resulted in a marked decrease in the proportion of injury accidents with impaired motor vehicle drivers (BAC greater than or equal to 0.05%) compared to all injury accidents. On the contrary, the proportion of fatal accidents with drink-drivers compared to all fatal accidents has increased in the after-period. The total number of drink-driving sentences were a little larger in 1999 than in 1997 because of the lower limit, but a significant change from higher towards lower alcohol levels can be seen. Copyright 2003, Elsevier Science Ltd.

Alcohol availability as a predictor of youth drinking and driving: A hierarchical analysis of survey and archival data.

Treno AJ; Grube JW; Martin SE. *Alcoholism: Clinical and Experimental Research* 27(5): 835-840, 2003. (23 refs.) Background: Much attention has recently been directed toward developing preventive interventions to reduce drinking and driving through efforts to limit the numbers and locations of alcohol outlets at the community level. Although evaluations of these efforts have suggested linkages between alcohol outlets and problem outcomes, they have not addressed the linkage between outlets and

drinking and driving among youth. The analysis reported here investigates the relationship between alcohol outlet densities and underage drinking and driving as self-reported on two telephone surveys conducted in California. Methods: These analyses were based on data obtained from two telephone surveys conducted by the Prevention Research Center and archival data collected by the California Department of Alcoholic Beverage Control and the US Census Bureau. The sample for the first survey consisted of 15- to 20-year-old adolescents and young adults contacted by telephone, using a random digit dialing of exchanges in the greater San Francisco Bay Area. A second set of survey data was similarly collected by a random sample of households throughout California, and the Bay Area subset was also used for this analysis. Results: At the individual level, older respondents were more likely to report drinking and driving and riding with drinking drivers, whereas females and Asians were less so. At the aggregate or city-level, alcohol outlet density, as measured by the number of on- and off-premises establishments licensed to sell alcohol, was associated with both drinking and driving and riding with drinking drivers. These effects were moderated by a number of individual level effects, with younger respondents and females more likely to be affected by outlet densities. Conclusions: The findings here provide support for the implementation of policies targeting alcohol outlet density reductions. Areas with large numbers of such outlets provide ample opportunities to youth for alcohol purchases. Copyright 2003, Research Society on Alcoholism.

Motorcycle casualties sustained during Daytona Beach bike week 2000: Lessons learned.

Kanny D; Schieber RA; Jones BH; Ryan GW; Sorensen BJ. *Annals of Emergency Medicine* 41(6): 792-797, 2003. (3 refs.)

Study objective: In March 2000, an estimated 500,000 people attended an annual motorcycle rally in Daytona Beach, FL, where approximately 64,000 residents live year-round. The media reported 15 deaths during this 10-day event. To more, comprehensively assess the extent of trauma and need for emergency medical care we, investigated all motorcycle crashes, regardless of outcome. Methods: Motorcycle-related crash data from local medical examiner, hospital, emergency medical services (EMS), and police sources were linked. Frequencies of crashes, injuries, hospitalizations, and deaths were determined, and EMS use data were analyzed. Results: During Bike Week 2000, 570 people were involved in 281 motorcycle-related crashes. Two hundred thirty (40%) people were injured, of which 147 (64%) sought treatment in emergency departments, 72 (31%) were hospitalized, and 11 (5%) died. In crashes between motorcycles and

passenger cars, individuals exposed as motorcycle occupants were 8.7 times more likely to be injured than car occupants (95%, confidence limit 1.7, 15.7). Of 205 EMS dispatches for motorcycle-related crashes, two thirds resulted in transport to an ED. Data needed to assess known risk factors (eg, alcohol use, speed, lack of helmet use) were not routinely ascertained at either the Crash site or ED. Conclusion: Although fatalities first called attention to the problem, nonfatal injuries outnumbered deaths 20:1. The manpower resources of civil service and health resources could become overwhelmed or exhausted in circumstances in which many people are injured or killed throughout a relatively long period. The situation deserves future study. Better risk factor surveillance is needed to help prevent crashes. Copyright 2003, American College of Emergency Physicians.

Alcohol-related crashes and alcohol availability in grass-roots communities.

McCarthy P. *Applied Economics* 35(11): 1331-1338, 2003. (13 refs.)

This paper employs a unique panel data from 111 small non-metropolitan incorporated cities in California during a 108 month period from January 1981 to December 1989 in order to analyse the effect of alcohol availability on highway safety. Negative binomial regression models are estimated which include alcohol licences per square mile as a measure of alcohol availability. Theoretically, the sign of the alcohol licence density is indeterminate as it reflects a trade-off of its effect on traffic exposure and on the time price alcohol. Among the findings, increases in the density of general alcohol licences for off-site (on-site) alcohol consumption are beneficial (detrimental) to highway safety whereas increasing the density of beer/wine licences have non-uniform effects. Additional findings important to municipal policymakers are that DUI arrests and increasing the price of alcohol reduce alcohol-related crashes. Copyright 2003, Routledge.

Comparison of the prevalence of alcohol, cannabis and other drugs between 900 injured drivers and 900 control subjects: Results of a French collaborative study.

Mura P; Kintz P; Ludes B; Gaulier JM; Marquet P; Martin-Dupont S et al. *Forensic Science International* 133(1-2): 79-85, 2003. (24 refs.)

A collaborative case-control study was conducted in France in order to determine the prevalence of alcohol, cannabinoids, opiates, cocaine metabolites, amphetamines and therapeutic psychoactive drugs in blood samples from drivers injured in road accidents and to compare these values with those of a control population. Recruitment was performed in emergency departments of six university or

general hospitals and comprised 900 drivers involved in a non-fatal accident and 900 patients (controls) who attended the same emergency units for a non-traumatic reason. Drivers and controls were matched by sex and age. Alcohol was determined by flame ionization-gas chromatography, drugs of abuse (DOA) by gas chromatography-mass spectrometry with the same analytical procedures in the six laboratories, and medicines by high performance liquid chromatography with diode array detection. Blood alcohol concentration exceeding 0.5 g/l (i.e. the legal French threshold) was found in 26% of drivers and 9% of controls. In the 18-27 years age range, alcohol was the only toxic found in blood samples of 17% drivers and 5% controls, leading to an odds-ratio (OR) of 3.8. A significant relationship was found between alcohol blood concentrations and OR values. All age groups confounded, the main active substance of cannabis, Delta(9) tetrahydrocannabinol (THC), was found in 10% of drivers and 5% of controls. In the less than 27 years old, THC (>1 ng/ml) was detected alone in the blood of 15.3% drivers and of 6.7% controls, giving OR = 2.5, whereas there was no link between THC blood concentrations and OR value. THC was found alone in 60% of cases and associated with alcohol in 32%, with OR = 4.6 between drivers and controls for this association. The difference in morphine prevalence between drivers (2.7%) and controls (0.03%) was highly significant ($P < 0.001$), with OR = 8.2. The number of positive cases for amphetamines and cocaine metabolites was too low for reaching any interpretation. The most frequently observed psychoactive therapeutic drugs were by far benzodiazepines, that were found alone in 9.4% of drivers and 5.8% of controls, which led to OR = 1.7 ($P < 0.01$). This study demonstrates a higher prevalence of opiates, alcohol, cannabinoids and the combination of these last two compounds in blood samples from drivers involved in road accidents than in those from controls, which suggests a causal role for these compounds in road crashes. Copyright 2003, Elsevier Scientific Publishers Ireland.

The incidence of drugs in drivers killed in Australian road traffic crashes.

Drummer OH; Gerostamoulos J; Batziris H; Chu M; Caplehorn JRM; Robertson MD; Swann P. *Forensic Science International* 134(2-3): 154-162, 2003. (38 refs.)
The incidence of alcohol and drugs in fatally injured drivers were determined in three Australian states; Victoria (VIC), New South Wales (NSW) and Western Australia (WA) for the period of 1990-1999. A total of 3398 driver fatalities were investigated which included 2609 car drivers, 650 motorcyclists and 139 truck drivers. Alcohol at or over 0.05 g/100 ml (%) was present in 29.1% of all drivers. The highest prevalence was in car drivers (30.3%)

and the lowest in truckers (8.6%). WA had the highest rate of alcohol presence of the three states (35.8%). Almost 10% of the cases involved both alcohol and drugs. Drugs (other than alcohol) were present in 26.7% of cases and psychotropic drugs in 23.5%. These drugs comprised cannabis (13.5%), opioids (4.9%), stimulants (4.1%), benzodiazepines (4.1%) and other psychotropic drugs (2.7%). 8.5% of all drivers tested positive for Delta(9)-tetrahydrocannabinol (THC) and the balance of cannabis positive drivers were positive to only the 11-nor-Delta(9)-tetrahydrocannabinol-9-carboxylic acid (carboxy-THC) metabolite. The range of THC blood concentrations in drivers was 0.1-228 ng/ml, with a median of 9 ng/ml. Opioids consisted mainly of morphine (n = 84), codeine (n = 89) and methadone (n = 33), while stimulants consisted mainly of methamphetamine (n = 51), MDMA (n = 6), cocaine (n = 5), and the ephedrines (n = 61). The prevalence of drugs increased over the decade, particularly cannabis and opioids, while alcohol decreased. Cannabis had a larger prevalence in motorcyclists (22.2%), whereas stimulants had a much larger presence in truckers (23%). Copyright 2003, Elsevier Science.

Alcohol and/or benzodiazepine use in injured road users.

Kurzthaler I; Wambacher M; Golser K; Sperner G; Sperner-Unterweger B; Haidekker A et al. *Human Psychopharmacology: Clinical and Experimental* 18(5): 361-367, 2003. (13 refs.)

Blood samples of all patients (269) involved in a traffic accident and admitted to the Emergency Room of the University Hospital of Trauma Surgery in Innsbruck were analysed for alcohol and benzodiazepines. The large majority were drivers (55%) followed by passengers (19.7%), cyclists (12.6%) and pedestrians (12.3%). Alcohol was obviously the most commonly found drug in all groups (drivers: 36.9%; passengers: 15.1%; cyclists: 29.4%; pedestrians: 18.2%), with a mean BAC (blood alcohol concentration) high above the legal limit at the time of the study in Austria of 0.8 g/l (drivers: 1.49 +/- 54 g/l; passengers: 1.52 +/- 71 g/l; cyclists: 1.72 +/- 51 g/l; pedestrians: 1.67 +/- 25 g/l). The percentage of alcohol users was highest in drivers. Concerning BAC levels no significant differences were found between the groups. The most commonly detected benzodiazepine was diazepam. Benzodiazepine consumption (drivers: 8.1%; passengers: 5.7%; cyclists: 8.8%; pedestrians: 3%) as well as plasma levels (drivers: 68.7 +/- 62.6 mug/l; passengers: 61.0 +/- 69.3 mug/l; cyclists: 135.7 +/- 118.3 mug/l; pedestrians: 18 mug/l) were nearly equal in all groups. Concerning alcohol or benzodiazepine use, females showed lower frequencies of both alcohol and benzodiazepine positive blood samples. The frequency of

alcohol use was higher in patients less than or equal to 60 years of age. Copyright 2003, John Wiley Sons, Ltd.

Do the designated drivers of college students stay sober?

Timmerman MA; Geller ES; Glindemann KE; Fournier AK. *Journal of Safety Research* 34(2): 127-133, 2003. (32 refs.)

Problem: By numerous accounts, alcohol abuse is considered the number one drug problem facing young people today. Alcohol consumption and its negative consequences, especially those due to drinking and driving, continue to have devastating effects on the college student population. **Method:** This field study examined the blood alcohol concentration (BAC) levels of male and female designated drivers (DD), non-DD, and their respective passengers as they were leaving drinking establishments in a university town. Also investigated were the effects of group size and gender on DD use. **Results:** A 2 Gender X 2 Driver type (DD vs. non-DD) analysis of variance (ANOVA) for BAC indicated significant main effects for Gender and Driver type, with higher BAC for men and non-DD ($p < .001$). A significant Gender X Driver type interaction ($p < .05$) was primarily due to female DD having lower BAC than male DD. In addition, larger groups were more likely to have a DD. **Impact on Industry:** Results indicate that the success of DD programs may be influenced by group size and a DD's gender. While larger groups are more likely to have a DD, students riding home with a male DD may still be at risk for the negative consequences of drunk driving. Copyright 2003, National Safety Council and Pergamon Press.

Unsafe driving by high school senior's: National trends from 1976 to 2001 in tickets and accidents after use of alcohol, marijuana and other illegal drugs.

O'Malley PM; Johnston LD. *Journal of Studies on Alcohol* 64(3): 305-312, 2003. (20 refs.)

Objective: This study reports trends from 1976 to 2001 in the number of tickets or warnings that high school seniors receive, the number of vehicle accidents in which they are drivers and the number of these events that occur after use of alcohol, marijuana or other illegal drugs. **Method:** The data come from the Monitoring the Future study, in which nationally representative samples of high school seniors have been surveyed annually since 1976. **Results:** Results demonstrate that the problem of unsafe or inappropriate driving among American youth is of considerable magnitude, although there has been a downward trend when adjusted for number of miles driven. The frequency of tickets received and vehicle accidents that occurred after use of alcohol has diminished markedly compared to the incidence of tickets and accidents after use of marijuana

over the interval from 1976 to 2001. **Conclusions:** Despite the decline in the number of vehicle accidents occurring and tickets received after drinking or using illicit drugs, aggressive policies are still needed to deter youths from engaging in such risky behaviors. Copyright 2003, Alcohol Research Documentation, Inc.

Medication and fitness to drive.

Del Rio MC; Alvarez FJ. *Pharmacology and Drug Safety* 12(5): 389-394, 2003. (17 refs.)

Purpose: The aim of this study is to analyze the consumption patterns of medicaments among motor vehicle drivers who attend 'Medical Driving Test Centres' and the relation between habitual consumption of medicaments and fitness to drive. **Methods:** The study was carried out on 8043 drivers who attended 25 Medical Driving Test Centres. **Results:** 24.7% of drivers chronically consume medicaments while 6.8% consume medicaments along with alcohol every day. Of those who chronically consume medicaments with a warning about the medications on driving, 65.8% were considered 'fit' to drive, 27.3% 'fit with restrictions', 5.1% 'suspended' and 0.4% 'unfit'. **Conclusions** The results show how frequent the consumption of medicaments along with alcohol is and that the great majority of drivers who take medicaments are considered fit to drive. Copyright 2003, John Wiley Sons, Ltd.

Why do they do it? A qualitative study of adolescent drinking and driving.

Walters ED; Grube JW; Keefe D. *Substance Use & Misuse* 38(7): 835-863, 2003. (21 refs.)

Despite a decline in the prevalence of fatal traffic crashes involving adolescent drinking drivers in recent years, underage drinking and driving (DD) and riding with drinking drivers (RWDD) remain serious problems. This article reports the findings of a qualitative study investigating the influence of beliefs and expectancies on adolescents' decisions to participate in DD or RWDD. Forty-four adolescents, who in a previous survey admitted to having been involved in either DD or RWDD, were interviewed in 2000 about their experiences concerning either driving after drinking or getting into a car with a driver who had been drinking. Findings indicate that adolescent DD and RWDD are complex behaviors. Expectancies and control beliefs do not seem to influence the decision, whereas normative beliefs to some extent do. However, findings also indicate that increased enforcement of the laws may be helpful in preventing young people from getting involved in drinking and driving. Copyright 2003, Marcel Dekker, Inc.