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Effects of drivers' license suspension policies on alcohol-related crash involvement: Long-term follow-up in forty-six states.

Wagenaar AC; Maldonado-Molina MM. *Alcoholism: Clinical and Experimental Research* 31(8): 1399-1406, 2007. (39 refs.)

Background: We evaluated the effects of driving under the influence (DUI) mandatory preconviction and postconviction drivers' license suspension laws in each of 46 U.S. states using 1 to 2 decades of long-term follow-up data on fatal car crashes. State-specific results were combined using meta-analytic techniques, and provide a direct test of the concept of celerity-time between offending behavior and consequent punishment-from deterrence theory. Methods: Four key outcome measures of monthly fatal alcohol-related crash involvement were examined using data from January 1976 through December 2002: single-vehicle nighttime, breath or blood alcohol concentration (BAC)=0.01 to 0.07, BAC=0.08 to 0.14, and BAC \geq 0.15 g/dL. Missing BAC test data for some individual cases were filled using multiple imputation methods, and consequent increases in standard errors were incorporated into subsequent analyses. Separate ARIMA models were estimated for each state, including controls for state-specific levels of crash involvement over time due to other factors and effects of other major DUI countermeasures. Estimates were pooled across states using inverse variance weighting methods. Results: Administrative or preconviction drivers license suspension policies have statistically significant and substantively important effects in reducing alcohol-related fatal crash involvement by 5%, representing at least 800 lives saved per year in the United States. Moreover, these laws have similar effects on drivers at all drinking levels-from lower-risk drivers below the legal alcohol limit to drivers at extreme levels of intoxication. In clear contrast, postconviction license suspension policies have no discernable effects. Conclusions: The effectiveness of a deterrence policy appears to be more strongly affected by clarity-the speed by which punishment is applied after the offending behavior-than by the high severity of the penalty. This finding could be fruitfully applied to other areas of alcohol control policy and

laws and regulations in general. Copyright 2007, Research Society on Alcoholism

Criminality and continued DUI offense: Criminal typologies and recidivism among repeat offenders.

LaBrie RA; Kidman RC; Albanese M; Peller AJ; Shaffer HJ. *Behavioral Sciences and the Law* 25(4): 603-614, 2007. (24 refs.)

We examined over 20,000 arraignment records to define criminal typologies and post-treatment driving under the influence of alcohol (DUI) convictions for a select cohort of 1,281 repeat DUI offenders who were offered and elected treatment as an alternative to incarceration; we compared this information with a similar data analysis collected 20 years previously. Analyses of 8,600 prior-to-treatment convictions defined four basic crime profiles: only DUI and other substance-related offenses (60%), plus crimes against property (18%), plus crimes against people (8%), plus crimes against both property and people (13%). During the six years after inpatient treatment, 15.5% of the cohort was convicted of another DUI. The reoffense rate was significantly different across criminal types and was not related to the time post treatment years at risk. The findings show there has been no significant improvement in treatment outcome over the last 20 years. New and innovative DUI offender policies and practices are needed to better engage the heterogeneous offender population, and reduce the incidence of repeat DUI. Copyright 2007, John Wiley & Sons.

General deterrence effects of US statutory DUI fine and jail penalties: Long-term follow-up in 32 states.

Wagenaar AC; Maldonado-Molina MM; Erickson DJ; Ma L; Tobler AL; Komro KA. *Accident Analysis and Prevention* 39(5): 982-994, 2007. (47 refs.)

Introduction: We examined effects of state statutory changes in DUI fine or jail penalties for firsttime offenders from 1976 to 2002. Methods: A quasi-experimental time-series design was used (n = 324 monthly observations). Four outcome measures of drivers involved in alcohol-related fatal crashes are: single-vehicle nighttime, low BAC (0.01-0.07 g/dl), medium BAC (0.08-0.14g/dl), high BAC (\geq 0.15 g/dl). All analyses of BAC outcomes included multiple

imputation procedures for cases with missing data. Comparison series of non-alcohol-related crashes were included to efficiently control for effects of other factors. Statistical models include state-specific Box-Jenkins ARIMA models, and pooled general linear mixed models. Results: Twenty-six states implemented mandatory minimum fine policies and 18 states implemented mandatory minimum jail penalties. Estimated effects varied widely from state to state. Using variance weighted meta-analysis methods to aggregate results across states, mandatory fine policies are associated with an average reduction in fatal crash involvement by drivers with BAC ≥ 0.08 g/dl of 8% (averaging 13 per state per year). Mandatory minimum jail policies are associated with a decline in single-vehicle nighttime fatal crash involvement of 6% (averaging 5 per state per year), and a decline in low-BAC cases of 9% (averaging 3 per state per year). No significant effects were observed for the other outcome measures. Conclusions: The overall pattern of results suggests a possible effect of mandatory fine policies in some states, but little effect of mandatory jail policies. Copyright 2007, Elsevier Science.

Positive health-care effects of an alcohol ignition interlock programme among driving while impaired (DWI) offenders.

Bjerre B; Kostela J; Selen J. *Addiction* 102(11): 1771-1781, 2007. (14 refs.)

Aims: To compare the costs of hospital care and sick leave/disability pensions between two groups of driving while impaired (DWI) offenders: participants in an alcohol ignition interlock programme (AIIP) and controls with revoked licences, but with no comparable opportunity to participate in an AIIP. Setting: As an alternative to licence revocation DWI offenders can participate in a voluntary 2-year AIIP permitting the offender to drive under strict regulations entailing regular medical check-ups. The participants are forced to alter their alcohol habits and those who cannot demonstrate sobriety are dismissed from the programme. Participants are liable for all costs themselves. Design: Quasi-experimental, with a non-equivalent control group used for comparison; intent-to-treat design. Based on the number of occasions/days in hospital and on sick leave/disability pension, the health-care costs for public insurance have been calculated. Finding: Average total health-care costs were 25% lower among AIIP participants (1156 individuals) than among controls (815 individuals) during the 2-year treatment period. This corresponds to over 1000 (SEK9610) less annual costs per average participant. For those who complete the 2-year programme the cost reduction was more pronounced;

37% during the treatment and 20% during the post-treatment period. Conclusions: The positive health-care effects were due apparently to reduced alcohol consumption. The social benefit of being allowed to drive while in the AIIP may also have contributed. The reduction in health-care costs was significant only during the 2-year treatment period, but among those who completed the entire AIIP sustained effects were also observed in the post-treatment period. The effects were comparable to those of regular alcoholism treatment programmes. Copyright 2007, Society for the Study of Addiction to Alcohol and Other Drugs.

Policing the drunk driver: Measuring law enforcement involvement in reducing alcohol-impaired driving.

Dula CS; Dwyer WO; LeVerne G. *Journal of Safety Research* 38(3): 267-272, 2007. (49 refs.)

Introduction: With many thousands of deaths still annually attributable to driving under the influence (DUI), it remains imperative that we continually address the problem of producing and sustaining effective countermeasures, and that we subject these efforts to empirical scrutiny. This article presents relevant findings from state-wide datasets. Results: A formula generating a potentially useful metric for assessing aspects of the DUI prosecutorial chain is presented, focusing on the rate of proactive DUI arrests. While in need of cautious interpretation due to issues of inherent inaccuracies in large databases, small numbers of crashes and/or arrests in multiple jurisdictions, and the lack of replication in other states, the analyses show no relationship between the level of DUI arrest activity and DUI-related crashes. This finding brings into question the efficacy of the many millions of dollars devoted each year to targeted DUI enforcement, as it is currently being implemented. Conclusions: Results are discussed in terms of developing adequate disincentives to DUI so as to raise general deterrence via dramatic increases in proactive DUI enforcement and then engaging in pervasive and persistent social marketing of such efforts to maximize the perception that arrest and punishment for DUI is always imminent, that penalties will be swift, certain, and severe. It is echoed that accurate data need to be collected at all levels of the DUI arrest and prosecution process in every jurisdiction within a state, so as to facilitate the empirical assessment of countermeasure efficacy in reducing alcohol-related crashes. Impact on Industry: Given that this work needs to be replicated, the impact on the traffic safety industry is potentially huge. The present data indicate that law enforcement efforts to further abate DUI-related crashes are apparently

ineffective, though likely necessary to maintain reductions achieved in the 80s and early 90s. Thus, to attain additional systematic reductions, a dramatic increase in enforcement will be necessary as will a diversification of abatement efforts, including an increase in aggressive social marketing tactics to positively impact our traffic safety culture by making DUI universally unacceptable (for a discussion of this latter issue and on the use of positive reinforcement to change driver behavior, see Dula & Geller, 2007). Copyright 2007, National Safety Council.

Recommendations for toxicological investigation of drug impaired driving.

Farrell LJ; Kerrigan S; Logan BK. *Journal of Forensic Sciences* 52(5): 1214-1218, 2007. (6 refs.)

Investigation of a suspected alcohol or drug impaired driving (DUID) case ideally contains several key elements, including a trained officer documenting observations of driving and subject behavior, and collection of a biological specimen for comprehensive toxicology testing. There is currently no common standard of practice among forensic toxicology laboratories in the United States as to which drugs should be tested for, and at what analytical cutoff. Having some uniformity of practice among laboratories would ensure that drugs most frequently associated with driving impairment were consistently evaluated, that appropriate methods were used to screen and confirm the presence of drugs, and that more accurate data were collected on the extent of drug use among drivers. A survey of United States laboratories actively involved in providing analytical support to the Drug Evaluation and Classification Program identified marijuana, benzodiazepines, cocaine, prescription and illicit opiates, muscle relaxants, amphetamines, CNS depressants, and sleep aids used as hypnotics, as being the most frequently encountered drugs in these cases. This manuscript presents recommendations as to what specific members of these drug classes should at a minimum be tested for in the investigation of suspected DUID cases. Additionally we include recommendations for analytical cutoffs for screening and confirmation of drugs in blood and urine. Adopting these guidelines would ensure that the most common drugs would be detected, that laboratories could compare epidemiological findings between jurisdictions, and that aggregate national statistics on alcohol and drug use in drivers involved in fatal injury collisions were representative of the true rates of drug use in the driving population. Copyright 2007, Blackwell Publishing.

Risk of road traffic accidents associated with the prescription of drugs: A registry-based cohort study.

Engeland A; Skurtveit S; Morland J. *Annals of Epidemiology* 17(8): 597-602, 2007. (24 refs.)

PURPOSE: The aim of this study was to examine the risk of a car driver being involved in a road traffic accident while using prescribed drugs. We used data from population-based registries. **METHODS:** Information on prescriptions, road traffic accidents, and emigrations/deaths was obtained from population-based registries. The incidence of accidents in the exposed person-time was compared with the incidence in the unexposed person-time, by the standardized incidence ratio (SIR). All Norwegians ages 18-69 between April 2004 and September 2005 (3.1 million), were included in the study. **RESULTS:** A total of 13,000 road traffic accidents with personal injuries were registered. The risk of being involved in an accident was somewhat increased in users of prescribed drugs in the first seven days after the date of dispensing (SIR for both sexes combined = 1.4; 95% confidence interval: 1.3-1.5). The risk was markedly increased in users of natural opium alkaloids (2.0; 1.7-2.4), benzodiazepine tranquilizers (2.9; 2.5-3.5), and benzodiazepine hypnotics (3.3; 2.1-4.7). Somewhat increased or unchanged SIRs were found for nonsteroidal antiinflammatory drugs 0.5; 1.3-1.9), selective beta-2-adrenoreceptor agonists (i.e., antiasthmatics, 1.5; 1.0-2.1), calcium receptor antagonists (0.9; 0.5-1.5), and penicillin (1.1; 0.8-1.5). **CONCLUSIONS:** The increased risk of being involved in a road accident as driver while receiving prescribed opiates and benzodiazepines supported the results from other studies. Copyright 2007, Elsevier Science.

The impact of later trading hours for hotels (public houses) on breath alcohol levels of apprehended impaired drivers.

Chikritzhs T; Stockwell T. *Addiction* 102(10): 1609-1617, 2007. (19 refs.)

Aims: To examine the impact of extended trading permits (ETPs) for licensed hotels in Perth, Western Australia on impaired driver breath alcohol levels (BALs) between July 1993 and June 1997. **Design:** Forty-three hotels obtained ETPs allowing later closing hours and 130 maintained standard closing time (controls). Impaired driver BALs were linked to 'last place of drinking' hotels. Before and after period BALs of drivers who last drank at ETP or non-ETP hotels were compared by time of day of apprehension and sex, controlling for age. **Findings:** Impaired female drivers apprehended between 10.01 p.m. and 12 midnight (before closing time) had significantly lower

BALs after drinking at ETP hotels. Male drivers aged 18-25 years and apprehended between 12.01 and 2.00 a.m. after drinking at ETP hotels had significantly higher BALs than drivers who drank at non-ETP hotels. Conclusions: At peak times for alcohol-related offences, late trading is associated with higher BALs among those drinkers most at risk of alcohol-related harm. Copyright 2007, Society for the Study of Addiction to Alcohol and Other Drugs.

The impact of outlet densities on alcohol-related crashes: A spatial panel approach.

Treno AJ; Johnson FW; Remer LG. *Accident Analysis and Prevention* 39(5): 894-901, 2007. (35 refs.)

Background: A number of studies using cross-sectional data have demonstrated that the availability of alcohol, measured by the number and types of alcohol outlets, is directly related to numerous measures associated with drinking and driving. The current study contributes the first observation of relationships over time between alcohol outlet densities on one hand and both automobile crashes and related injuries on the other hand. Method: The study examined longitudinal data from 581 consistently defined zip code areas represented in the California Index Locations Database, a geographic information system that coordinates population and ecological data with spatial attributes for areas across the state. Six years of data were collected on features of local populations (e.g., demographics, household size) and places (e.g., retail markets) thought to be related to two measures of automobile crashes (hospital discharges related to car crash injuries geocoded to the zip code of patient residence, and police reports associated with car crashes geocoded to the zip code of crash location). Both crash measures were positively associated with two outlet types: bars, and off-premise outlets. Additionally, restaurants appear to provide a protective effect relative to the residence-based measure. Crash rates were also related to changes in population and place characteristics using random effects models with controls for spatial autocorrelation ($n \times t = 3486$ observations). Changes in population and place characteristics of adjacent (spatially lagged) areas were also considered. Results: Over time, both local and lagged population and place characteristics were related to automobile crash-related measures.

Conclusion: Controlling for cross-sectional differences between zip code areas, changes in numbers of licensed alcohol retail establishments, especially bars and off-premise outlets, affect rates of car crashes and related injuries. Copyright 2007, Elsevier Science.

Cannabis and driving: Results from a general population survey.

Alvarez FJ; Fierro I; Del Rio MC. *Forensic Science International* 170(2/3, special issue): 111-116, 2007. (27 refs.)

The role of illicit drugs on driving, and particularly of cannabis and driving, is the object of increasing awareness. While there is increasing evidence of their effect on psychomotor performance and increased risk of involvement in traffic accidents, limited information is available concerning factors that can predict the likelihood of driving under the influence of cannabis. The present study aims to determine the past year prevalence of driving under the influence of cannabis, and of being a passenger in a vehicle driven by a person under the influence of cannabis, as well as to examine the correlations with a broad range of potential risk factors. A total of 2500 people, aged between 14 and 70 and living in Castille and Leon (Spain), were surveyed in 2004 with regard to their consumption of alcohol and illicit drugs. Among those who reported cannabis use in the previous year, further assessment was carried out. 15.7% of those surveyed reported cannabis consumption in the previous 12 months, of whom 9.7% reported driving a vehicle under the influence of cannabis during this period, on average eight times. One out of five (19.9%) reported being a passenger in a vehicle driven by a person under the influence of cannabis, on average five times in the previous 12 months. The predictors of driving under the influence of cannabis were the population size of community, the number of drugs consumed, reference to cannabis-related problems and to being a passenger in a vehicle driven by a person under the influence of alcohol. The data show that cannabis consumption and driving is common, and requires more attention from policy makers. Copyright 2007, Elsevier Science.