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A History of the Science and Law behind DUI

As driving under the influence begins to rise for the first time in years, lessons may be found in previous successes and research efforts.

Driving under the influence (DUI) is perhaps the most preventable traffic safety problem: no one is compelled to drink alcohol and drive, and the vast majority of Americans have repeatedly expressed support for DUI prevention efforts. But alcohol and driving are so deeply engrained in American culture that the problem is unlikely to ever go completely away.

Still, there has been success in recent years in reducing the incidence of DUI. In 1980, nearly 60% of fatal crashes had alcohol as a factor. By 1993, that number had dropped to 43%. In the ensuing years the frequency of DUI as measured in the fatal crash index remained relatively steady overall. But it now appears to be on the rise overall, with marked spikes among certain groups.

Recently, alcohol-related deaths are reported to have risen for the third year running, according to the latest statistics from the National Highway Transportation Safety Administration.

The reasons for the initial success are not completely clear, but a significant factor would appear to be a drastic shift in cultural norms that made impaired driving a highly visible problem. However, the message may have been integrated too well, as to create the impression that the problem had been solved. This would be in keeping with the cyclical nature of past anti-drinking and driving successes: peaking first in the late 1930s after the repeal of Prohibition, followed by another round of gains in the early 1960s, with the formation of the first federal traffic safety agencies, and, most recently, the early 1980s.

By looking at the evolution of scientific knowledge about DUI and past successful prevention efforts, it may be possible to identify elements that could be re-introduced or amplified to reverse the new rise in DUI.

The Grand Rapids Study

Considering the pervasiveness of alcohol consumption in the U.S., there are surprisingly large gaps in the scientific knowledge about driving while under the influence. It's a difficult subject to study. The taboos associated with alcohol consumption make people less likely to be willing to talk about their alcohol use, and, short of extremely intrusive actions, there is no easy way to identify drinking drivers while they are on the road.

The study that is still regarded as the watershed is the 1964 Grand Rapids Study. Its primary goals were to determine: how a driver's blood alcohol concentration affected his chances of being in a crash; the share of drivers who had been drinking; and the type of person who drives after drinking.

Researchers interviewed drivers at roadblocks and measured their blood alcohol concentrations with Breathalyzers to create a control sample of more than 17,000 subjects. They were compared to more than 3,300 drivers who had been in crashes.

One of the major accomplishments of the Grand Rapids Study was to establish the scientific foundation for "per se" legislation, which triggers sanctions at a certain blood alcohol concentration. The study also served to validate the Breathalyzer's effectiveness and accuracy. For the first time, it was possible to measure a person's blood alcohol concentration instantaneously without invasive procedures.

The study was also important for what it didn't accomplish, because of what the lead author, Robert F. Borckenstein, described as the "formidable gap between law and science." The Grand Rapids Study showed that a blood alcohol concentration as low as 0.04% was enough to significantly increase a driver's likelihood of being involved in a collision. But the legal limit for the first per se laws that the study inspired was 0.15% because a lower limit wouldn't have been politically acceptable. Given the geometric rise in risk as blood alcohol rises, the gap in the sobriety and risk between 0.04% and 0.15% is indeed formidable.

Resistance to more aggressive laws can be explained by a number of reasons. The beverage and entertainment industries are concerned about economic damage if sales drop too much; lawmakers face objections from citizens about excessive government intrusion into their private lives if enforcement is too intrusive; and government risks needlessly criminalizing a large portion of the population and making them into scofflaws if limits are too low.

The great leveler

Borckenstein found that the presence of alcohol in the bloodstream is a great leveler in terms enhancing negative risk. In the absence of alcohol, drivers with the most education, the highest socio-economic background, the most experience and in the middle age ranges are markedly less likely to die or be injured in a crash. But once alcohol is present, all drivers experience markedly greater likelihoods of negative outcomes, and any advantages enjoyed by the group with the fewest risk factors are eliminated.

His study also found that lower socio-economic status also tends to correlate positively with the chances that someone will drive while under the influence. Borckenstein also confirmed an intuitive assumption: that drivers who drink heavily are more likely to drive after having had something to drink than are moderate drinkers.

Making the alcohol connection

The first sanctions against operating a vehicle while under the influence of alcohol were imposed by the railroad industry in the mid-1800s. But scientific studies to determine alcohol's physiological effects didn't occur until the early 1900s.

The resumption of the wide availability of alcohol with the repeal of Prohibition in 1933-34 created more interest. In 1939, Indiana became the first state to enact a law that used blood alcohol concentration as a trigger for sanctions. However, there was still plenty of leeway for interpretation. A 1943 report provided the first measure of alcohol's specific effects on driving abilities such as vision and hand-eye coordination. It was also the first to study the whole spectrum of drinkers: abstainers, moderate drinkers and heavy ones. While it was true that abstainers suffered from impairment much sooner than moderate or heavy drinkers, even heavy drinkers showed deterioration in some abilities, such as vision, at blood alcohol concentrations as low as 0.04%.

When the number of cars on the road doubled in the immediate post-War period, safety became a higher priority. Between 1945 and 1965, approximately 30 alcohol-related driving studies were carried out, but there was no steady support for enforcement programs, tougher laws or public education campaigns. Following Borckenstein, "per se" laws were passed, and later strengthened by "implied consent" laws, which require motorists to undergo a breathalyzer test or face sanctions. In 1968, the federal Office of Alcohol Countermeasures was created.

MADD enters the picture

The next significant development was the spontaneous formation of citizen-based advocacy groups, the best-known and largest being Mothers Against Drunk Driving (MADD), founded in 1980 by Candace Lightner in Fair Oaks, CA, after her daughter was killed in a drunk-driving collision.

As described by H. Laurence Ross of the University of New Mexico in a 1995 paper for the Transportation Research Board, MADD appeared on the scene at an auspicious time for its agenda, with the Reagan administration's emphasis on a morality-based conservatism. Laws imposing jail time, vehicle forfeiture and other stiff measures were passed, and money was appropriated for well-publicized enforcement campaigns.

Police arrests for DUI increased by more than 50% to nearly 2 million a year in 1982 and stayed near that level for the rest of the 1980s. This was the period of the greatest drop in alcohol-related fatal crashes, from 60% in 1980 to 43% in 1993.

But the impact of the activist movement soon peaked, Ross reports. Surveys in the late 80s showed other dangers crowding out driving under the influence in the popular and academic press. By 1992, arrests had dropped to 1.6 million and fell again in 1993, which, as one expert pointed out, could be a sign of success if it meant that fewer people were driving after drinking. In an encouraging sign, the BAC among those arrested fell significantly.

Researchers are divided over how much groups like MADD contributed to the dramatic steady decline in alcohol-related driving deaths. For one thing traffic deaths overall fell in the same period. There is general agreement, though, that citizen activism created the impetus for passage of stricter laws.

Ross suggests that enforcement may only be successful up to a point and that to reach the resistant group of offenders untouched by conventional measures may require alternative policies. Tighter controls on alcohol availability and more alternatives to driving could help this group, he said, but neither is particularly easy to carry out.

What does the DUI driver look like?

One picture of the DUI driver emerges from a 2002 study using data from the 1997 Behavioral Risk Factor Surveillance Systems Survey of adults 18 and older. On average, half of the respondents said they had had at least one alcoholic drink in the previous month. And of those, on average, 4.2% reporting driving "when you've had perhaps too much to drink." As in earlier studies, men were overwhelmingly more likely than women to admit to such behavior, in this case three times as likely.

Two 1993 studies looked at the drinking histories of drivers with blood alcohol concentrations above 0.15% who were killed in crashes. Using the most inclusive interpretation of indicators, 57% could be called problem drinkers, but the least inclusive interpretation of the same criteria placed the share at only 22%. Far clearer is the role of gender: 86% of fatally injured drivers with high BAC were men, versus 50% of those with zero BAC.

Interestingly, the share of fatally injured drivers with moderately high BAC, between 0.10% and 0.15%, did not change between 1993 and 2001. The steady number of drivers with this level of BAC suggests that most current enforcement measures are not having much effect on this key group.

Sanctions and penalties: what works

The literature suggests that the following policies seem to show promise or to have a deterrent effect on DUI:

- Primary seatbelt laws, which permit enforcement of seatbelt use without evidence of any other violation
- The 0.08% BAC limit, now in effect across the U.S.
- Laws allowing suits against bars for drunken actions by their patrons
- Mandatory punishment for the first DUI offense
- Higher minimum legal drinking age laws (now set at 21 in the U.S.)
- Zero-tolerance laws for under-aged drivers, where any measurable BAC is an offense and is grounds for immediate license suspension
- DUI education and rehab requirements, which reduce recidivism for DUI offenders
- Administrative license revocation and vehicle impoundment, which permits officers to impose sanctions without a full judicial hearing.

