IMPEDIMENTS TO EFFECTIVE DRINKING DRIVING COUNTERMEASURES WITH A PROPOSAL FOR A DRIVER'S LICENSE INTERLOCK

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SYNOPSIS

The difficulties of formulating effective drinking-driving countermeasures are discussed, including the lack of information regarding the target population, the complications posed by moral and legal issues, and the fact that legal sanctions frequently are not enforced. A proposal is made to devise a system whereby a person legally prohibited from driving could not operate a vehicle. Magnetic coding of the driver's license effectively to lock the vehicle has a number of advantages: it can create genuine hardship but attempts no social judgment; it can be imposed administratively; and it can be applied to all situations in which a license might be withdrawn.

INTRODUCTION

Reading through the enormous literature on drinking driving can be an interesting experience, but reading with an eye to proven countermeasures can be a discouraging one. In spite of so many good intentions, so much effort over so long a period of time, as well as substantial investment of talent and of money, the problem of deterring drunken driving is as salient today as ever. There are, to be sure, a few programs that claim limited success, but often these are not verifiable, or reproducible, or transferable. We are reminded of a Rubik's cube: just when some colors line up, others melt away. Why is this problem so inordinately difficult? Bearing in mind that both drinking and driving are deeply imbedded in western society, the reader is struck by the fact that efforts to prevent their simultaneous occurrence have usually been quite superficial. By this I mean, partly, that they are often not based on good research, exact knowledge, or comprehensive planning but, more importantly, they are based on the assumption that somehow a way can be found which does not substantially disturb social patterns and community values.

One of the most persistent and most basic difficulties is a widespread conviction that a sincerely held desire to deter drunk driving contributes to an understanding of how

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to do so. Indeed, a goodly part of the effort and resources devoted to the subject is directed towards preaching the desirability of the goal instead of exploring, in an objective manner, paths which might lead to it. These passionate sermons are then interpreted as "progress;" they do appear to satisfy many people's need "to be involved," although their involvement contributes little if anything towards deterrence. A recent editorial in Transportation Quarterly stated that conditions are now "favorable for a national attack on the universal problem of the drunk driver," but cites no evidence that this may be the case beyond a renewed wave of public and media interest. Congressman Barnes, an important political figure in the field, addressing a national symposium last year, said, "If we remain committed, we can have an enormous impact. We're going to reduce the tragic incidence of death and injury on the highways as a result of drunk driving."

We should confront squarely the fact that this problem is much more difficult than Rubik's cube—hundreds of people can solve that—and yet the resources brought to bear are often nothing more than goodwill and a willingness to try. The recent Presidential Commission contained few if any members with expertise or technical qualifications, although we must suppose that most would wish from the bottom of their hearts to find a solution.

The second difficulty affecting countermeasures is a lack of sufficient objective information regarding the target population. Although, the pharmacological issues have been thoroughly and seriously addressed, the social and demographic problems have not. The populations most at risk from drunken driving are not as well known as those at risk from AIDS, and the drivers most responsible are not profiled as accurately as aircraft hijackers.

It is often stated that everyone who drinks and drives deserves punishment but others suggest that our target is more narrowly a small core of problem drinkers, or even of alcoholics. Some writers go even further and claim that the target should be narrowed to those having an increased risk of an accident when drunk (Zylman, 1975). In spite of these (very different) formulations, there now seems to be an emerging consensus that the majority of alcohol-related fatal crashes involve heavy problem drinkers, as stated in the National Highway Traffic Safety Administration (NHTSA 1981) highway safety program. Ross (1983) went beyond fatal crashes to emphasize that "contrary to common opinion, the overwhelming bulk of motor vehicle crashes in which alcohol plays a role... (does not involve) merely one or two drinks--far greater quantities of alcohol are involved". McDermott (1983), in an insurance industry publication, stated that "the majority of alcohol related crashes are
caused by heavy problem drinkers, who are usually repeat offenders."

Although, these characterizations are all rather different, current research does seem to support the idea that there are relatively small groups of drivers who should be the primary target for countermeasures, if countermeasures are to be directed at drivers. We should now ask: What are the identifiable characteristics of persons in these groups? If we do so, the answer is unclear. Most would say that the members of the target group are male, perhaps young but perhaps not so young, perhaps unmarried, but perhaps not, and more than likely to be in some other kind of trouble with society. A fuzzy group, indeed. Better demographic indicators would be: income, occupation, family size, housing level, nutrition, education, number and type of vehicles owned, trip diary information, patterns of consumption (including alcohol), and recreation. None of this information seems to be available for drinking-driving research, although it is collected, or at least sampled, by various agencies in other contexts. The Fatal Accident Recording System File, for example, does not contain anything that would permit personal identification, not even postal code or license plate number. In such a situation, we should not wonder that the desire to do good is so often coupled with nearly complete ignorance about how to do it.

Good intentions mixed with ignorance lead to the acceptance of nearly anything plausible as a countermeasure, and to some things which are not very plausible. Programs that show some mild efficacy in one situation are transplanted with hope and enthusiasm to another; worse yet, some that are manifestly absurd or counterproductive are adopted because of a perceived need to keep busy. A year ago, the administrator of the NHTSA, surely the foremost official voice on drunk driving, produced a list of what the citizen might contribute. One item told us to "provide plenty of hearty food" at our parties, and to "stop serving drinks early." We should also invite our tipsy guests to spend the night with us and (rather mysteriously) to "sponsor a light in the window." Furthermore, we should urge our bartender to send his drunken clients home by taxi.

1 Kunkel (1983) pointed out that "the DWI driver may not understand this information as advice about how to separate drinking from driving but as advice about how to safely combine drinking and driving."

2 For a review of "server intervention" programs see Mosher (1983).
In a serious vein, NHTSA has produced an honest and valuable appraisal of the situation in its 1981 action plan, but, beyond appraisal, the recommendations are rather feeble. Six in number, they can be summarized as follows: change the social attitudes of the nation; generate citizen support; make convicted offenders bear the cost of their own punishment/treatment; adopt the ever popular "systems approach"; put the responsibility at the state and local level; and adopt general deterrence of some unspecified nature. If we read this (and similar) serious programs, skipping the rhetoric, the statistics, and the boilerplate with a view to the probable consequences of the measures proposed, not to social euphoria but specifically to drinking-driving, we are not encouraged.

Another substantial handicap to effective drunken driving programs is a commitment to some vast goal (such as changing the social attitudes of the nation), which goes far beyond the drunk driving agenda. Instead of addressing the relatively narrow issue of drunken people in charge of motor vehicles, some huge, vague, longstanding social malaise is outlined, often the problem of alcohol in western society, with the understanding that if this is solved, drunken driving will automatically cease. Chafetz (1982), a member of the Presidential Commission, expressed this point of view: "Can we expect ever to affect the problem drinkers adequately without dealing with them as alcoholics and not merely from the standpoint of their becoming involved in traffic crashes?" "The main thing is to find a means to make intoxication socially unacceptable".

The attitude implicit in these remarks greatly compounds the technical problem, for it raises a complicated spectrum of moral and legal issues which are far more intractable than mere drunken driving. It is surely possible to prevent an alcoholic from driving without curing him of his alcoholism. Furthermore, it does not follow that changing social attitudes will lead to changed behavior in the target group or in the population at large. There are numerous research studies showing that a change in attitudes about drinking does not lead to a change of behavior, for example, Clark and Powell (n.d.) in Australia. Thus, it is impossible to agree with the NHTSA conclusion that "society's general acceptance of drinking and driving is a

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3 By placing the emphasis on alcohol use alone, it is also possible to reverse the argument and use accident involvement as a springboard for advocacy of prohibition. A new group called "Chemical People" seems to be headed in this direction.
main obstacle to a successful anti-drinking and driving program" if this statement is intended to imply that the removal of such acceptance would greatly facilitate a successful program. The experience with the national 55-mph speed-limit is an example: that same agency has managed by really successful propaganda to make the speed limit socially accepted— at least in middle class circles— without having any substantial impact on its observance by those who endorse it.

Thus, changing social attitudes is, in the language of mathematics, neither necessary nor sufficient to change behavior; indeed, it seems irrelevant. We should pursue the narrow goal of preventing the operation of motor vehicles on public roads by drivers who have absorbed some stated amount of alcohol or, even more narrowly, in circumstances where a collision is likely to result. The overall rehabilitation of society, politics, transportation, and human nature can be left to succeeding generations.

**DRINKING DRIVING COUNTERMEASURES**

This paper is based on the narrow agenda of drunken driving per se and argues that technical methods can probably be devised which will substantially reduce the practice, which may be cost effective and which will be acceptable within the framework of the existing criminal justice system. I do not claim, however, that the proposal will necessarily be politically acceptable; that is a problem for our colleagues in MADD, SADD, and the other ADD's.

Rehabilitation shows little promise. Mann et al., (1983) in a recent survey concluded: "The effectiveness of these rehabilitation programmes has yet to be established.

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4A more recent research note (Vegega, 1983) from NHTSA again emphasizes the agency's commitment to 2 conclusions which I believe are erroneous: (1) that changes in public attitudes are necessary, and (2) that such changes can be manipulated by federal programs. "More needs to be done, especially with long-term attitude change, if the severity of this program is to be mitigated. One important aspect of the National Highway Traffic Safety Administration's Alcohol Highway Safety Program Plan is the development of long-term programs designed to change societal attitudes towards drinking and driving."
Although, a multitude of rehabilitation programmes exist, few apart from the Alcohol Safety Action Projects [ASAP's] have been evaluated." Furthermore, the ASAP evaluation conducted by the General Accounting Office concluded that the ASAP's did "not show any overall national results" (IIHS, 1979). Also, the mere fact that recidivists are a substantial group of those detected tends to argue that treatment methods are far from effective.

Countermeasures which affect the consumption of alcohol per se, such as dram shop laws, price increases, and total prohibition, run counter not only to a major industry but also to habits and addictions ingrained in western society. Similarly, methods which are intended to reduce the availability of private motor transport—compulsory taxis, buses, restricted parking near pubs, and so forth—prove to have legal, fiscal, and institutional problems which are well-nigh insurmountable.

Within the enforcement system, however, there are promising developments at nearly every link in the chain. It is becoming increasingly feasible to detect drunken operators without stopping traffic (Jonah & Wilson, 1983). It is also increasingly possible to stop cars for alcohol surveillance, as legal barriers are overcome. Once stopped, there are new and apparently effective screening tests which can be used either alone or as a cue to breath or blood testing (Anderson, Schweitz, & Snyder, 1983). Once cited, per se laws now permit more effective disposition of cases, often on a purely administrative basis without substantial involvement of the criminal justice system (Jonah & Wilson, 1983).

The real problem lies in sentencing. First, consider imprisonment. In spite of demand by victims' associations, this option is being very much resisted, and probably for good reason. Mandatory jail sentences reduce the probability that a detected drunken driver will be arrested, reduce the probability that the arrested person will be convicted, greatly increase the chance of a time-consuming legal wrangle clogging court calendars and, finally, if carried out, often throws families onto public assistance. We have not doubt come a long way in our understanding of the Scandinavian experience since the first Ross paper (1975)—for example, see Votey (1983) and Votey and Shapiro (1983)—but the fact remains that one of the main problems with imprisonment is that the cost is substantially out of proportion to the benefits. Incidentally, it offends against the doctrine (which has just received new biochemical support, cf. New York Times, 1983) that alcoholism is a disease rather than a crime.
Imprisonment may, of course, be justified as an expression of social outrage for certain actions and in Scandinavia, with strong public feeling against alcohol use, it is possibly used as much for this reason as for a practical deterrent.

As Jonah and Wilson (1983) pointed out, "Incarceration in jails may be an inappropriate, ineffective and undesirable sanction for many convicted impaired drivers. Such persons do not normally represent a danger to society so long as they are prevented from driving.... Furthermore, incarceration is very costly to taxpayers and many prisons are already overcrowded."

It is also worth mentioning the doctrine that imprisonment serves as a "general deterrent" directed towards the population at large, just as in the Napoleonic Wars, when a dilatory British admiral was hanged, it was said to be "to encourage the others." But this view seems to be incorrect. In a recent survey, Grasmick (1980) concluded that "the variable severity of punishment is on the verge of disappearing from the current version of the deterrence doctrine. While researchers commonly observe that perceived certainty of legal sanctions is inversely related to involvement in illegal behavior, most conclude that perceptions of the severity of punishment if [one is] caught are not involved in the process of social control."

Another type of sanction comes under the general heading of "rehabilitation," that is, programs designed to reduce recidivism by various types of education, treatment, indoctrination, and so on. A comprehensive review of several such programs (Mann et al., 1983) suggests that there may be a limited effect, especially with certain types of individuals, but that there is insufficient evidence available to be sure that any program is effective, or if so, which one, or on what type of offender. An examination of the results of the 34 programs listed by Mann et al., does not provide evidence that such interventions are effective especially in dealing with hard core cases.

5 According to a forthcoming study by the Department of Justice, increased enforcement of tougher drunk driving laws mandating jail sentences has "exerted pressure on all parts of the criminal justice system, particularly on resources and facilities for confining violators." Court caseloads grew, but the greatest strains occurred in holding facilities and jails (Highway and Vehicle Safety Report, 1983).
Another difficulty with many rehabilitation programs is that they often serve to circumvent the need to award prison sentences, where such sentences are considered to be inappropriate for one reason or another. These "fig leaf" programs permit the authorities to talk tough without actually being tough, to shout "Jail!" to satisfy victims groups without costly overcrowing of correctional facilities.

The third judicial or administrative penalty often used is some action against driving privileges, such as withdrawal or suspension of the driver's license. This procedure has the overwhelming logical attraction of hitting precisely the behavior which it intends to prevent. It is cheap, easy to calibrate to different degrees of culpability, and in fact seems to have only one flaw: most unlicensed drivers continue to drive. NHTSA (1980) has estimated 80-90% do so; estimates from other jurisdictions are also very high. In other words, for all practical purposes of deterrence, withdrawal of driving licenses might almost as well not be done at all. It is sometimes argued that illegal drivers drive more circumspectly to avoid detection, so that license withdrawal does prevent accidents in a roundabout way. This line of reasoning rather begs the question: surely the prospect of having to drive carefully is not as threatening as not being able to drive at all. Furthermore, the evidence available (NHTSA 1979) "is overwhelming that suspended and revoked drivers are over involved in fatal crashes, and probably in all crashes."

There are several pernicious effects of this hemorrhage on the enforcement process. Obviously, it means that a great deal of the resources invested in anterior stages of the process are being wasted. Second, it must promote contempt for the enforcement process as a whole. Finally, it seems likely that if driving privileges were really and truly curtailed in proportion to the offense, that curtailment might satisfy certain demands for harsh retribution short of expensive and unrealistic programs.

The remainder of this paper discusses the possibilities now available for making it difficult or impossible to drive a motor car when under suspension or revocation.

**PROPOSAL FOR A LICENSE INTERLOCK**

The goal is to devise a system whereby a person legally prohibited from driving could not operate any vehicle, not even to move it in his/her own driveway. It seems probable that such a goal could never be achieved, but it is worthwhile to consider to what extent illegal driving could be suppressed by technical means.
About 10 years ago, NHTSA investigated the possibility of a "visible driver's license." This document, about the size of 2 credit cards, was to be placed in a special windshield pocket. It was color coded to show the sex and other visible characteristics of the driver. A number of research publications (McGuire, 1973a, 1973b; McGuire & Spaulding, 1973) discussed the advantages and pitfalls of the system. It is not clear from these documents why the visible drivers license never got beyond the planning stage, but I understand that civil libertarian arguments were important.

In the 10 years since the visible license proposal, a great deal of progress has been made both in electronic scanning and in vehicle interlocks. There are now systems for scanning railroad cars from a distance, and a similar method is used for trucks. Our experience with the ill-fated seatbelt interlock shows that there is no problem with making cars inoperable without special electronic connections. In parking lots and in some hotels, a card key is used to open gates or doors. A driver's license magnetically coded in this way could be the key to the vehicle, rather than the usual type of ignition key. It may also be possible to make operation of a vehicle by defeating the system easily detected, either by roadside installations or police patrols. After all, it is already clear to a police car whether a vehicle has a license plate or various required windshield stickers. The license plate is mainly a fiscal device and the safety sticker is only slightly related to actual crash experience. The driver's license, on the other hand, is essential both for safe operation, as nearly everyone admits, and for effective enforcement. Yet it is now impossible for the police to verify the license without stopping the car; even then, some jurisdictions do not require that a license be immediately produced, but only within a few days.

There is also a precedent for hands-off surveillance of drivers' licenses. A study by Arthur Young & Company (1977) discusses methods for "identifying and apprehending suspended and revoked drivers in a moving stream of traffic." Five specific techniques are given, all of which, I believe, could be substantially improved with current technology.

I propose in this paper not to discuss the engineering which would be needed to produce such a device; that should, of course, be the subject of research and development, together with careful economic analysis. I will, instead, discuss some of the advantages and disadvantages of the proposal, from the point of view of deterrence of drinking driving. I begin with the advantages.
First, it goes to the heart of the problem. It permits drunks to stay drunk if they wish, and attempts no social judgment and no criminal punishment on those it affects.

Second, it makes the sums now being put into the traffic enforcement system more effective and, thus, improves the efficiency of each stage in that process.

Third, it can be applied to all the other situations in which a license might be withdrawn in addition to drunken driving.

Fourth, it permits the administrative imposition of license actions, saving the time and effort of court proceedings. An easy method for doing this is cited by Jonah and Wilson (1983) as a recommendation of the New York Governor's Alcohol and Highway Safety Task Force to follow immediately from a BAC (Blood Alcohol Concentration) reading of 0.10% or above.

Fifth, it enables easy calibration of license withdrawal from, say, 24 hours to life. Therefore, it could impact both the chronic offender and the occasional deviant. There is no reason why certain individuals could not be sentenced to very long periods for repeated severe infractions.

Sixth, it utilizes technology already available.

Seventh, it could avoid the problem of police being unwilling to arrest.

Eight, it makes the policy of raising the drinking age more effective, for example, by requiring drivers during their first 5 years of experience to maintain a zero BAC while driving (as I believe is now done in Tasmania).

Ninth, it fits in with arguments given by Ross (1982) in favor of decriminalization.

Tenth, it makes easier to implement other license action proposals, such as that given by Marshall at the 1982 International Symposium on Alcohol and Driving "to impound any vehicle operated on a highway by an individual whose driver's license is suspended or revoked for an alcohol-related driving offense," or the NHTSA recommendation of "monitoring to assure compliance with court ordered sanctions."

Eleventh, it leaves aside questions of alcohol rehabilitation as irrelevant and, in any case, as not a safety responsibility.
Twelfth, it would probably create enough genuine hardship (loss of employment, recreational opportunities, etc.) to satisfy some of the demands of the victims' associations. In extreme cases, where moral condemnation is desired in addition to specific behavior change, the prison alternative would be easier to achieve.

Thirteenth, it entails, when a recidivist's term of license suspension is over, a special magnetic coding of the new license which could alert police to monitor the driver for signs of drunkenness.

There are also a number of problems with the proposed license interlock system, and these also deserve some discussion. The first one that may occur to the reader is that of emergency situations. It would, naturally, be necessary to provide an override to be used in such cases as medical emergency. This could be tied to a stigma, such as all lights on or horn honking, that would by law require an official adjustment to restore to normal operation.

A second objection might be that it is unfair to the poor, who are more likely to drink away from home and who would find it more difficult to go to work by taxi. This applies equally to the whole drinking-driving apparatus that now exists: it is nearly impossible to find any countermeasure, existing or proposed, that would not be easier to bear if you are rich.

A third objection would be that the system could be defeated by some careful rewiring. However, this would require not only starting the car, but also showing a simulated driver's license while driving. The penalties for defeating the system would presumably be no less severe than they now are for driving without a license, frequently among our most severely punished traffic offenses.

Of course, magnetic licenses could be borrowed or stolen, and one must anticipate some passing of licenses among friends and family. But even if no device could be invented to prevent this, the friends and family would be taking the risk of being themselves involved in a further loss of license.⁶

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⁶The NHTSA research on the visible driver's license goes into some detail regarding miscellaneous questions like out-of-state drivers, rental cars, and so forth. There are clearly a number of minor pitfalls that need detailed study.
The final point to be considered is whether the license interlock would have any important impact on the traffic fatality and injury rate. The NHTSA has calculated, on purely statistical grounds, that if arrested drivers were to be totally removed from the road during the following year, approximately 5% of a year's fatalities could be forestalled. While the basis of this calculation may be open to challenge, most research workers would agree, I think, that the impact in a succeeding year would be slight, owing mainly to the random nature of traffic crashes. However, it is not necessary to confine the expected effect to the immediately following years. As recidivists appear, longer periods of license withdrawal are normally prescribed, and if these were made effective, as suggested in this paper, a small segment of incorrigibles might be kept permanently from driving.

The present paper is not intended to address the question of whether it is desirable to remove drunken drivers from the traffic stream. There appears to be a social and political consensus on the objective. I offer only a possible means to carry it out.

REFERENCES


7 In Pennsylvania, for example, there are about 400,000 (putative) suspensions and revocations annually out of about 7,000,000 current licenses.


Votey, H. L. Recent evidence from Scandinavia on deterring alcohol impaired driving. Accident Analysis & Prevention, 15: 523-533.


