

11. Evaluate the application of new technologies in various enforcement environments. Study should distinguish current "state of the art" equipment from earlier or first generation equipment that may have been deployed in the past and may still be in use today.

Statewide Systems

Earlier in this paper, it was suggested that the DWI arrest rate across states and regions was variable. High arrest rates were found in California, Colorado and other western states. Arrest rates in the south and southwest were particularly low in relation to the underlying drinking and driving problem as measured by fatally injured drivers. Arrest data were based on the FBI Uniform Crime Reporting System which relies on the voluntary cooperation of police agencies, not all of which participate. Thus, state to state variance based on these data must be viewed with some caution. Nevertheless, it appears that major arrest rate differences do exist. These differences may be the result of resource allocation, legislation, cultural differences or any number of other factors.

12. Track arrest rates, state by state, overtime; identify reasons for state to state variance; and, if appropriate, recommend actions that states can take to increase rates.

This concludes the list of possible research topics for the near future. As mentioned above, the list is not all-inclusive nor is it sufficiently detailed to permit actual research activities to begin. Rather, the objective was to suggest a starting point for a more comprehensive discussion.

REFERENCES

1. Federal Bureau of Investigation. *1989 Crime in the United States*. U.S. Department of Justice, Uniform Crime Reports, Washington, D.C., August, 1990.
2. Jones, I.S. and Lund, A.K. Detection of alcohol-impaired drivers using passive alcohol sensor. *Journal of Police Science and Administration*, 1986, 14(2), 153-160.
3. Lund, A.K. and Wolfe, A.C. *Changes in the Incidence of Alcohol-Impaired Driving in the United States, 1973-1986*. Insurance Institute for Highway Safety, Arlington, VA, February, 1989.
4. National Highway Traffic Safety Administration. *Fatal Accident Reporting System, 1990*. U.S. Department of Transportation, Washington, D.C., 1991.

5. Preusser, D.F., Ulmer, R.G. and Preusser, C.W. *Obstacles to Enforcement of Youthful (under 21) Impaired Driving*. Final report to the National Highway Traffic Safety Administration (contract number DTNH22-91-C-05020). PRG, Inc., Bridgeport, CT, February, 1992.

6. Voas, R.B., Rhodenizer, E. and Lynn, C. *Evaluation of the Charlottesville Checkpoint Operations: Final Report December 30, 1983 to December 30, 1984*. City of Charlottesville Police Department (NHTSA contract DTNH22-83-C-05088), Charlottesville, VA, May, 1985.

7. Voas, R.B. and Williams, A.F. Age differences of arrested and crash involved drinking drivers. *Journal of Studies on Alcohol*, 1986, 47(3), 244-248.

8. Wells, J.K., Preusser, D.F. and Williams, A.F. Enforcing alcohol-impaired driving and seatbelt use laws, Binghamton, NY. *Journal of Safety Research*, 1992, 23, 63-71.

APPENDIX D5A

DETERRENCE AND REHABILITATION:

SECTION 1 - DETERRENCE

Carol Lederhaus Popkin

INTRODUCTION

The goal of most DWI programs has been to prevent drinking driving behavior. Deterrence theory is predicated on the belief that a behavior can be prevented by the threat of punishment. According to this theory, the effectiveness of the perceived threat depends on the perceived certainty, celerity, and severity of the punishment. The effect of deterrence may be specific or general.

Specific deterrence seeks through punishments, education and treatment to influence the drinking driver who has already been apprehended to refrain from drinking and driving in the future. Roadside surveys indicate that most drinking drivers have low BACs (Lund and Wolfe 1988). In contrast, a significant portion of fatally injured drivers have high BACs (Simpson and Mayhew 1991). Research has shown that drivers fatally injured in alcohol related (A/R) crashes are more likely to have a history of previous DWI convictions (Brewer et al. 1991). Simon (1992) reports that recent studies of DWI recidivism conducted in Minnesota indicate that an increasing proportion of drivers arrested for DWI are recidivists. Furthermore, Minnesota has also experienced an increase in the percentage of drinking drivers

involved in fatal accidents who have had one or more prior alcohol-related incidents on their driver history records. Given the growing proportion of previously convicted DWI offenders in the fatally injured driver population and the increasing proportion of recidivists among those arrested for DWI, increasing attention should be focused on specific deterrence.

Unlike specific deterrence, general deterrence strives to influence all drivers, especially those who drink and drive who have not yet been apprehended for DWI. Because of the potential to influence a much greater number of people, the general deterrence value of various countermeasures and sanctions has been evaluated most often.

Most sanctions/countermeasures have a dual deterrent function; e.g., an effective specific deterrent may serve as a powerful general deterrent. For example, loss of a license may be a strong specific deterrent to those who have experienced this sanction, and at the same time it may be a powerful general deterrent to those who consider it a consequence of drinking, driving and getting caught.

Numerous evaluations have been made of the impact of various sanctions (Voas 1986; Nichols and Ross 1989). However, it has been challenging to determine the deterrent value of individual sanctions because they are frequently implemented as part of a comprehensive set of countermeasures so that their individual contribution is difficult, if not impossible, to assess. Moreover, many evaluations have been handicapped by a lack of agreement on appropriate criteria for measuring effectiveness.

Evaluation of sanctions has further been complicated by the uniqueness of the settings in which they have been employed. The philosophy of the citizens of a state or jurisdiction shapes its public policy/law making. This means that the entire milieu in which sanctions and countermeasures are evaluated may differ not only state by state but also county by county and court by court. The variations are numerous, and interpretations of the successfulness of a particular program as well as its transferability to other jurisdictions must be carefully considered. Researchers must endeavor to untangle the complexities of laws, enforcement practices, impositions of sanctions, etc. before they suggest that a particular sanction has had a deterrence effect.

Finally, as researchers and policy makers consider the combinations of sanctions that may have the optimal effect on the drinking driver problem, they must not lose sight of the fact that formal sanctions have been evaluated with little or no consideration given to the particular population or subgroup on which they have been imposed, or to the effect of informal sanctions,

such as social disapproval, or peer pressure, imposed on people who drink and drive.

STATE OF KNOWLEDGE

Licensing Policies

Licensing policies have traditionally sought to reduce the crash risk inherent to or posed by certain segments of the driving population. Policies have been used to limit the driving of younger drivers, medically impaired drivers, and other high risk groups. The past decade has witnessed increased emphasis on the use of driving restrictions as a sanction for DWI, and most states have adopted mandatory license suspension/revocation policies. Since the anticipated social and economic consequences of this sanction may be the greatest perceived cost of a DWI arrest, it is not surprising that this sanction appears to be one of the most effective DWI deterrents.

Provisional/Graduated Licenses for Novice and Youthful Drivers

It is a well established fact that persons in their teens through their early twenties have more crashes and more traffic related convictions than the rest of the driving population (Evans 1988; Maleck and Hummer 1986). In addition, data from the Fatal Accident Reporting System (FARS) indicate that drivers between the ages of 16 and 24 have the highest rates (per mile travelled and per licensed driver) of fatal accidents after drinking (Fell, 1984). For this reason, all the states in the U.S. and many countries have implemented special policies for dealing with younger drivers. These may include provisional licensing, curfew laws, and lower BAC levels for these drivers. Provisional licensing programs, in effect, acknowledge that young drivers are at greater risk to themselves and others and seek to lower this risk by modifying the circumstances under which they may drive. These modifications include

- Additional parent/adult supervised driving practice.
- Longer waiting period after failing the driving test.
- Use of curfews to restrict driving times.
- Restrictions on transport of passengers.
- Restrictions on the use of alcohol.
- Use of special license plates for families with provisional licensees.
- More comprehensive testing.

- Activation of post licensing control sanctions at lower number of traffic violation points.
- Special driving skills courses.
- Restrictions on speeds driven.
- Restrictions on the engine size of vehicle driven.

Some programs have motivated younger drivers to drive safely with gradual reduction of restrictions when certain driving performance indicators are realized; e.g., a violation-free period, completion of special skills tests. The idea of requiring a period of violation-free driving in order to qualify for a regular license appears to have merit in that it creates an incentive to drive within the law and avoid traffic violations that could lengthen the provisional period. Several studies have reported reductions in crashes and convictions for more serious moving violations among younger drivers as a result of provisional licensing programs/curfews (McKnight et al. 1983, 1990; Preusser et al. 1983; Williams 1987). McKnight (1986) suggests that provisional licensing schemes must require restrictions that are distasteful to drivers in order to be effective. Without restrictions such as curfews and mandatory driver improvement action following any violation, a provisional driver has little motivation to obtain a regular license.

Driving Curfews to Deter Drinking and Driving by Young Offenders. Curfew laws limiting the hours during which youthful drivers may operate a vehicle have been passed in 11 states, generally in response to the proportion of younger driver fatal crashes which occur at night. Curfews are beneficial in that they may reduce sleep deprivation (shown to increase crash risk in young people even at low BAC levels), and reduce the driving of younger persons at the times of greatest risk. Unfortunately, the evaluations of their effectiveness have produced inconsistent results. Preusser, et al. (1984) reported that after the imposition of restricted hours in New York and Pennsylvania, this age group experienced dramatic reductions in crashes. He also cited additional data from Louisiana and Maryland that supported the efficacy of restricted driving hours for youth.

In contrast, McKnight et al. (1983, 1990) evaluated Maryland's provisional licensing law, implemented in the early 1980's, and found that the law, which basically has a nighttime driving curfew for young people, led to a 5 percent reduction in accidents and a 10 percent reduction in convictions among the 16-17 year olds, the age group affected by the law. However, no effect on nighttime crashes was detected. They attributed this to the relatively small number of accidents occurring at night and also speculated that those who drive at late night hours are not readily deterred by a curfew. They

attributed some of the reductions in nighttime crashes reported by Preusser to a long-term downward trend in nighttime crashes by 16 year olds.

Lower BAC Limits. Because younger people are over-involved in crashes, even at very low BAC levels, eight states have moved to adopt lower legal BAC limits for young people. In most of these states, license revocation is either discretionary or an automatic penalty for any arrest with a BAC in the lower limit. Studies of lower BAC limits both in the U.S. and in Australia (Hingson et al. 1989; Hingson et al. 1991; Drummond et al. 1987; Smith 1986) indicate that such limits appear to have a positive impact on reducing teenage involvement in nighttime fatal crashes. Hingson also found that Maine youth who were aware of these provisions of the law reported that they were less apt to drink and drive.

Other Restrictions. Several other states have experimented with license revocations and sanctions against youth for alcohol and other drug offenses that were not in conjunction with driving. These types of penalties may be imposed for offenses ranging from underage alcohol purchase to fraudulent use of an identification card to purchase alcohol. Most of these restrictions have been implemented as part of a comprehensive youth-oriented legislative package, thus making their individual deterrent value difficult to evaluate.

A Model Graduated Program

To date, probably the most comprehensive graduated licensing program designed was the graduated licensing system in Victoria, Australia (Boughton et al. 1987). This system, which is applied to all newly licensed drivers regardless of age, is rather complex and contains different restrictions and requirements for various ages. A learner's permit may be obtained starting at age 16. The permit must be held for at least 12 months before the next probationary stage is reached, but the applicant must be at least 18 years of age to receive a full license. The probationary phase lasts for 3 years and successful completion of a special hazard perception test is required for a permit holder to graduate to full licensure. Two specific restrictions, a zero BAC requirement and a restriction on the power of the vehicle that can be operated, are applied during the probationary phase. Passenger restrictions are imposed during the learner's phase and in cases where the probationary drivers are convicted of a serious offense during the first 12 months. A unique feature of Victoria's system is that drivers under the graduated licensing system must display special plates on their

vehicles. Several modifications have been made in the program and evaluations are incomplete.

In summary, some highway safety benefits have been reported in states and countries employing provisional licensing programs. These may be beneficial because they offer new drivers an opportunity to gain driving experience under conditions that minimize their risk to themselves and others and serve to penalize poor driving behaviors. However, not all provisional license programs have affected nighttime single vehicle and A/R crashes. Inability to affect A/R crashes may indicate that some programs are not comprehensive enough to show an effect, or are ineffective in deterring high risk teenage drivers, or have not achieved a high perception of risk of detection because they are difficult to enforce, or have not been adequately publicized. More information is needed about the drivers affected by provisional licensing programs and those who are not. Further evaluation of the effects of these laws is needed. In addition, evaluations should consider the broader effects of these programs on other aspects of the drinking driver system, e.g., how will enforcement and adjudication be affected?

Licensing Penalties

All states provide some type of licensing sanction for drivers who violate drinking driver laws. In general, the apprehended drinking driver may be subject to two different types of licensing actions—those judicially imposed and those administratively imposed. Judicially imposed licensing actions are the result of a trial and the imposition of a series of sanctions upon determination of guilt. The length of time between arrest and disposition of a court case routinely takes 2 to 6 months. Judicially imposed licensing sanctions usually follow legislated directives, but may be moderated to some extent depending upon the discretion of the court. Such moderations include the suspension of licensing sanctions if certain other criteria are met, and the granting of a hardship license.

The failure of traffic courts to uniformly impose license sanctions was partially responsible for the adoption of administrative per se laws. As of 1990 there were 28 states with administrative license revocation (ALR) laws (Williams 1991). The administratively imposed license revocation is usually applied when an individual refuses or fails a chemical test. Usually the license is revoked for a period of 10 to 90 days. Only the accuracy of the chemical test and whether or not the officer had probable cause to stop may be challenged by the individual. Thus, the failure or refusal triggers the licensing action, regardless of determination of criminal guilt. Individuals who have an administrative revocation usually have a set period of time in which to request a

hearing to appeal the removal. Some states require that the hearing be held within a specified period of time; others do not. Laws differ as to whether or not the licensing action is stayed pending the results of the hearing.

Because many of these laws were enacted as part of comprehensive legislative packages, evaluations of their effectiveness have been difficult to conduct. In general, ALRs have been followed by significant increases in the number of offenders receiving licensing actions and by small, but significant reductions in A/R fatal crashes. Several studies have demonstrated the ability of ALR laws to reduce alcohol related crashes or their surrogates (Ross 1987; Blomberg et al. 1987; Klein 1989; Zador et al. 1989). In addition to their general deterrent effectiveness, ALR laws appear to have a beneficial specific deterrent effect. Stewart et al. (1988) studied the specific deterrent effect of ALR in three states and found a reduction in DWI recidivism in two of the three states and a reduction in DWLR in the other. These effects endured well beyond the period of suspension. However, it is unclear whether this is a residual effect or if the offenders never applied for relicensure.

In summary, evaluations of removal or suspension of the driving privilege (Votey and Shapiro 1983, 1985) indicate that it may be the most effective sanction yet tried and that its effect endures well beyond the period of revocation. This appears to be true even though there is substantial evidence indicating that 25 to 75 percent of suspended drivers continue to drive during their period of suspension (Hagen 1977; Peck et al. 1985; Ross and Gonzales 1988). Peck (1991) evaluated the deterrent effects of DUI sanctions and reported that driver license suspension/revocation reduces crashes and DUI offenses by 30-50 percent during the period of suspension.

Limited Licenses. A hardship license is often granted to offenders so that they are able to continue to drive to work, while at the same time limiting their recreational driving. Few studies of deterrence effect of this 'softer' license sanction exist, but it seems reasonable to assume that its use mitigates to some extent the deterrent value of license sanctions. Nichols and Ross (1989) suggest that limited licenses do not work as well as those that are coupled with at least a month of hard license suspension.

In summary, license suspension appears to be an effective general and specific deterrent. If one believes the deterrence model, then it would appear that the ALR laws should be most effective in deterring DWI and preventing A/R crashes. While most of the studies of the effectiveness of suspension on specific deterrence have been based on judicial suspension, there is reason

to believe that the specific deterrent effects of ALR would be as great or greater. However, the components of these laws vary considerably from state to state, particularly with regard to the length of time of revocation and what benefits may be derived from requesting a hearing. Studies are needed on the relative effectiveness of these variations in ALR laws.

Adjudication

Adjudicative trends in the 1980s have moved toward the uniform imposition of more severe penalties. As mentioned earlier, jurisdictions may vary considerably in their interpretation of drunken driving laws and in their imposition of sanctions. Clearly, important differences do occur with regard to prosecution policies and imposition of sanctions. These differences may contribute significantly to the public's perception of risk and its attendant deterrence value.

Prosecution Policies

In most overcrowded traffic courts in the United States, plea bargaining has become a prosecutorial means of clearing the court docket. Recently, the increased pressure of citizen activist groups on the courts has resulted in fewer cases of plea bargaining and a greater likelihood of imposition of penalties. As of 1991, 20 states had enacted some type of anti-plea bargaining laws for those convicted of DWI (NHTSA, 1991).

Some jurisdictions have adopted judicial directives prohibiting charge reductions and plea bargaining as well as setting BAC levels above which a case will be tried and establishing sentencing procedures for those cases. Surla and Koons (1989) examined the effect of these policies in Arkansas and Kentucky and found that conviction on the DWI charge increased dramatically. Popkin et al. (1985) evaluated the deterrence effects of a major change in DWI legislation in North Carolina which included elimination of plea bargaining. This study indicated that those found guilty of the original charge of DWI increased from 59 to 72 percent. For those at the per se level, the guilty rate rose from 72 to 92 percent. Decreases in A/R crashes were reported in both studies, but these changes could not be attributed to the elimination of plea bargaining because other countermeasures were implemented at the same time. Council (1981) evaluated the effect of well-publicized high DWI conviction rates on A/R crashes in North Carolina, and found a small but significant relationship.

Changes in plea bargaining practices result in fewer reduced charges. This, in turn, may contribute to an increase in reported DWI recidivism. As Shinar (1992) states, "In the absence of no plea-bargaining laws, true

recidivism is actually higher than reported because repeat offenders are often not classified as such, having plea bargained their previous offense." The effect of this reduction on the 'recurrent' first time offender should be considered in any evaluations of deterrence.

Sentencing Policies

The public's perception of the risk of sanctions being imposed may be enhanced through the development of sentencing guidelines for offenders. Just as there is a demand for matching the offender with the treatment, there is an increasing demand that the sanctions applied to DWI offenders reflect the gravity of their offenses, the risk of a relapse, and the potential for remediation. Homel (1981, 1988) conducted a complicated analysis of the impact of penalties on the convicted drunk driver and found that the effects of punishments differ with respect to offender characteristics and outcome measures. He found no beneficial effects of imprisonment.

The certainty of application is important. Several studies indicate that mandatory license actions are more effective in reducing DWI recidivism than discretionary ones (Hagen 1977; Paulsruide and Klingberg 1975). Shinar (1992) mentions that court monitoring is associated with increases in conviction rates and that it may lead to increases in application of sanctions. While certainty of sanctions has highway safety benefits, it is not apparent that the severity of sanctions is important: e.g., Vingilis et al. (1990) found that increasing fines were associated with increasing likelihood of DWI recidivism.

When one aspect of the system is modified repercussions can be expected elsewhere; e.g., when DWI arrestees perceive that the consequences of their offense may be greater, they are probably more likely to contest their guilt. On the other hand, this may also result in increased satisfaction on the part of police officers and a greater likelihood that they will make a DWI arrest. While not well-evaluated, it appears that the public's perception of the increased likelihood of a guilty verdict and increased certainty that sanctions will be applied should enhance the deterrence effect of sanctions.

Sanctions (Other than Licensing)

Sanctions are important to deterrence theory since they reflect the consequences of negative behavior. According to Lacey and Voas (1991), DWI sanctions have eight purposes: punishment, education, rehabilitation, incapacitation, general deterrence, program financing, community service, and retribution/education. Limited

evaluations have been undertaken of the variety of sanctions applied to DWI offenders. Their respective effectiveness has been difficult to evaluate given the lack of uniformity of application to those convicted of DWI. While to some extent this failure to uniformly apply sanctions has been the result of resource limitations, to a greater extent, it is the result of prosecutorial and judicial discretion. For example, many sanctions including jail and license suspension are set aside as an inducement to accept treatment. Fines are also reduced to assist the offender in paying for the cost of treatment. A brief discussion of the deterrent effectiveness of these sanctions is discussed below:

Incarceration and Incapacitation Alternatives

The past decade has witnessed a substantial increase in legislation mandating incarceration for those convicted of DWI. Twenty-five states now proscribe mandatory jail terms for drunken driving, with first offenders typically ordered to serve 24 to 48 hours and repeat offenders to serve 10 days to 2 weeks. While the imposition of jail as a sanction has great appeal to those advocating the punitive aspects of sanctions, incarceration is costly. In some jurisdictions resources are not available for handling DWI offenders, particularly women. Popkin et al. (1985) found numerous complaints of jail crowding on weekends due to DWI offenders serving their jail time in a manner that would not affect their employment. Furthermore, because of overcrowding, many of those sentenced fail to serve their time or are released within a few hours. Situations such as these serve to erode perceived risk of jail as a sanction.

The effectiveness of jail as a sanction is much less evident than that of license suspension. Several reviews of the research literature have been conducted and have shown little deterrent benefit for jail (Ross and Voas 1989; Nichols and Ross 1989; Salzberg and Paulsruide 1984; Ross et al. 1990; and Jones and Lacey 1991). However, a few studies have reported beneficial effects. Falkowski (1984) and Cleary and Rodgers (1986) examined the effect of Minneapolis, Minnesota's judicial policy to sentence all first time DWI offenders to 48 hours in jail and found a 20 percent reduction in nighttime fatal crashes after the policy had been in place for two months. Jones et al. (1987) evaluated a mandatory 2 day jail sentence in Tennessee and concluded that the legislation might have produced up to a 15 percent reduction in A/R crashes. However, as in Minneapolis, there was a time lag before the effect was observed.

The public is increasingly demanding imposition of longer jail or prison sentences for multiple DWI offenders, in spite of the fact that long-term incapacitation appears to have very limited effectiveness in terms of the number of lives saved (Simon 1992). Furthermore, the annual cost of incarceration is estimated to be \$17,000 a year/per person. These factors make incapacitation alternatives seem highly appealing. Programs such as the Anoka County, Minnesota Repeat Offender Program provide a high degree of supervision, loss of freedom and treatment and education at a lower cost. In addition these programs require the offender to pay part of the cost of the program.

House Arrest and Electronic Monitoring. House arrest and electronic monitoring present an incapacitation alternative that might be used, for example, with multiple offenders as a condition of bail or probation. The basic technology calls for the wearing of a signal-emitting bracelet on the offender's wrist or ankle. The signal is relayed to the monitoring agency's computer by means of the offender's phone. If the offender leaves the house, the signal ceases, and the computer notifies the police. Costs of the program are paid for by the offender. However, real problems exist with the use of this as a sanction because when the offender violates the house arrest, adequate personnel must be available to handle the case. Furthermore, the courts must be willing to incarcerate these violators. Petersilia (1987) studied the effect of electronic monitoring and house arrest on drunk driving in Linn County, Oregon and found that none of the drivers participating in the home detention study were rearrested for drunk driving as compared with 15 percent of those on regular probation. This seems a positive enough finding to warrant further investigation.

In summary, the limited number of studies conducted in this country indicate that jail terms for first offenders can have a small general deterrent effect. However, the cost of jail as a sanction may outweigh its potential benefits. If all convicted DWI offenders had to serve jail time, more offenders would contest their guilt. Thus, the small deterrent effect derived from jail may be offset by crowding and reduced likelihood of a guilty verdict. Rather than completely eliminating jail, states may choose to make it a discretionary sanction or a mandatory sanction reserved for more serious offenders (multiple, manslaughter, etc.). Additional research is needed on the effectiveness of alternatives to incarceration.

Sanctions that Target the Vehicle

Vehicle Impoundment, Tag Identification, and Tag Confiscation. The probability of being caught with a suspended or revoked license is small, and most states do not have serious sanctions levied against those who drive while license revoked (DWLR). Unfortunately, a large number of DWI offenders with suspended or revoked licenses do drive and, more importantly, drive drunk. This has led 30 states to enact laws to permit the impoundment of their vehicles or license tags (NHTSA 1991).

There is a great deal of variation from state to state regarding who may be subject to impoundment and the circumstances under which it may be imposed. Two Canadian provinces, Manitoba and Alberta, permit vehicle seizure and impoundment for 30 days for persons found driving with a revoked license. These provinces have reported both a large number of impoundments and law enforcement officer satisfaction (Neil Warner 1992). However, in the U.S., there is apparently some reluctance on the part of enforcement officers to use this sanction particularly in conjunction with a first time DWI.

Tag Confiscation. An alternative to vehicle impoundment is tag confiscation. Minnesota permits police to confiscate plates of those persons stopped who have had three or more DWI's within the 5 year period. They may also confiscate the plates of any other vehicles owned by the person.

Tag Identification. In some states, imposition of special markings such as zebra stripes on the license of those caught driving with a revoked license provides the officer with probable cause to stop the vehicle. Both Ohio and Minnesota replace conventional tags with a special tag to alert enforcement that this vehicle is owned by a suspended driver. The effectiveness of these laws must still be evaluated, but they appear to have a high specific deterrent effect since they facilitate detection and also may stigmatize the convicted DWI offender.

The Ignition Interlock. The ignition interlock is a technological device attached to the car's ignition system which prevents the operator from starting the vehicle if the BAC level exceeds a predetermined threshold. A BAC lower than the limit allows the driver to start the vehicle. The interlock bypasses any decision making requirement on the part of the driver. Thus, the driver is prevented from driving regardless of any personality or situational factors that might influence that decision. The possibility of incapacitating the car so that the driver

who is drunk cannot drive has intuitive appeal given the difficulties with educating or coercing drinking drivers to change their behavior or changing their social environment. Ignition interlocks target the car as a point of intervention, provide the driver with a reminder not to drink and drive each time s/he enters the car, and give immediate feedback on level of intoxication.

Being relatively new devices, ignition interlocks have received few evaluations. Existing studies have been limited by a lack of random assignment and short periods of follow-up. Four preliminary studies indicate that the interlock may have a positive effective on DWI recidivism (Morse and Elliot 1990; EMT Group 1990, Jones and Wood 1989; Popkin 1992). Popkin reports that those second time DWI offenders in North Carolina receiving conditional licenses and the interlock at the end of 2 years of a hard license revocation fared better than those second time offenders with the traditional 4 year hard license revocation. Unfortunately, recidivism levels for both the study and control groups returned to higher levels after full licensing privileges were returned and interlocks were removed.

The Autotimer. A new technological device, the Autotimer, has been developed by Voas (1992). This device, installed on the car of an offender who has been granted a limited driving permit, records the time of day during which the car is driven. The Autotimer is monitored by the probation officer. If the individual is found to have driven outside the acceptable time frame, the probation officer may revoke the permit. While no evaluation of this device has been undertaken, initial reports suggest that those with a limited driving permit curb their illegal driving behavior after a few counseling sessions with the probation officer.

In summary, interlocks depend on the car and not behavioral changes to separate the drinking driver from the road. Further evaluation of the utility of the interlock seems warranted, particularly obtaining information about the types of DWI offenders who would benefit from them, the optimal administrative setting under which to monitor those with interlocks, the long-term deterrent value of the interlock and the potential to use interlocks in conjunction with treatment programs.

Other Sanctions

Victim Restitution/Community Service

Victim Restitution. Citizen activist groups and others have argued that DWI offenders must pay retribution to their victims. Victim restitution programs direct the offender to pay financial and service benefits to the

victim or his family. However, the DWI convict frequently has no victim other than the community, and many who are responsible for A/R crashes in which there are personal injuries are frequently not prosecuted when they are injured themselves (Maull et al. 1984). This means that the group with the greatest likelihood of a victim is seldom penalized. For these reasons, this sanction has not enjoyed much popularity. No evaluations of the general or specific effect of this sanction have been conducted.

Community Service. Community service is a widely applied sanction which directs the offender to pay restitution to the community by providing general service through activities such as picking up litter on public roadways. Some community service programs attempt to tailor the particular skills of the offender to meet the needs of the community, thus optimizing the potential benefit. Some frequently mentioned impediments to community service programs are difficulties finding jobs, liability risk, the cost of supervision, and failure to provide service. Stenzel et al. (1985) failed to find any significant effects of a well-publicized community service program on self-reports of drinking and driving and crashes in Baton Rouge, La. Although Zador (1988) found that states with laws providing for mandatory jail or community service in lieu of jail had lower A/R crash rates, there is little evidence that use of community service alone when applied to a large number of offenders has a deterrent impact. None the less it may provide low cost payback to the community when well orchestrated.

Public Condemnation

Public disapproval/humiliation has seldom been used as a sanction for DWI offenders. Public sanctioning may take the form of published lists of DWI offenders or marking the vehicles of those convicted of DWI. While this seems an undesirable sanction, it does put the punishment in the hands of the community; and public disapproval has been shown to be a powerful deterrent in reducing undesirable behaviors, e.g., cigarette smoking in the United States. Clearly, there is an increasing amount of public sentiment that indicates public disapproval of drinking and driving. The extent to which social stigma contributes to general and specific deterrence requires further examination.

Fines and Other Financial Costs

Fines. In the United States, the value of fines as a deterrent has received little study. While in some jurisdictions fines provide a means of maintaining DWI countermeasure and treatment programs, in most they

are only a modest portion of the cost of a DWI conviction. Because fines have not been indexed to the rate of inflation, they have declined in terms of financial impact, and have certainly declined relative to the overall costs of insurance and legal fees. In addition, collection mechanisms have been extremely inadequate.

Imposition of fines has been evaluated in Europe and Australia. In Sweden, the offender's fine is linked to his annual income and with the severity of the offense. Votey and Shapiro (1983, 1985) found that the fines imposed in Scandinavian countries were associated with reductions in fatal crashes. In Australia, Homel (1989) found that increased fines were associated with decreases in DWI recidivism for those who were also charged with driving while disqualified, but not for other groups.

Insurance Rates. Insurance penalties/surcharges and costs of assessment and treatment present the DWI offender with additional financial penalties. Only one study (Lacey et al 1992) has evaluated the general deterrent effect of insurance sanctions accompanied by an intensive PI & E campaign. The authors concluded that it did not hold much promise as a general deterrent.

In summary, the deterrent value of fines and other financial sanctions has not been demonstrated in this country largely because they are generally not high and are often not collected. Given the effectiveness of this sanction elsewhere, the use of fines should be examined more closely in this country. Fines should be indexed to the offender's income and the gravity of the offense. Better collection mechanisms could certainly be developed. More information is required about financial costs associated with a DWI conviction to gain a better understanding of how they affect DWI offenders. Their deterrent value requires further evaluation especially since excessive fines may exacerbate the offender's problems and/or drive them out of the licensing and remediation systems.

DISCUSSION

In the United States over the past decade, the effects of prevention, education, and other deterrence methods have resulted in reductions in A/R fatalities and in BAC levels of drivers participating in roadside surveys (Lund and Wolfe 1989). However, it appears that an increasing proportion of those arrested for DWI have had a previous DWI arrest, and that an increasing number of those involved in A/R crashes have had a previous DWI. These findings suggest that countermeasures are having a modest effect on DWI behavior, e.g., the proportion of

people arrested for first time DWI is declining. They also suggest that many of our strategies are less effective in deterring problem drinkers. In order to achieve a greater degree of deterrence, more must be done and innovative approaches must be explored.

Our review examined a substantial body of deterrence literature. Clearly, most sanctions, especially when accompanied by intensive public information and education, contribute to deterrence. Of those reviewed, licensing sanctions appeared to be most effective as both a specific and a general deterrent.

Important factors act as impediments to understanding which sanctions or combinations of sanctions might be most likely to deter. First, it is difficult to isolate individual sanctions in order to determine their contribution to general and specific deterrence. This is complicated by the fact that jurisdictions vary considerably in their application of sanctions. Moreover, when evaluating the effect of a particular sanction, in many cases researchers have only fragmentary information on other factors at work in the setting such as changes in enforcement levels and directives, adjudication policies, public information, education about DWI laws and sanctions, and specific factors affecting public attitudes toward the offense such as the frequency of negative publicity about drinking and driving. Moreover, the jurisdictional and/or state philosophy towards DWI has seldom been considered in deterrence evaluations.

Second, little is known about what actually deters people from drinking and driving. Apparently, the perception of swift and certain punishment is an important deterrent, but what other factors are at work? Are there informal sanctions that may be contributing as much or more to the reductions observed in DWI? For example, in states where there has been public demand for stricter drinking driving laws, is the public disapproval of this activity as significant a deterrent as the legislation that is being enacted? In other words, are we measuring the correct deterrent?

Donovan and Marlatt (1982) have demonstrated that there are several drinking driver types, yet little is known about which types of drinkers are affected by which sanctions. Perhaps fear of detection and the swift and certain imposition of sanctions have the greatest impact on those who are not problem drinkers. Unfortunately, approximately 30 percent of DWI offenders repeat the offense, and a substantial portion of them are problem drinking drivers. Of this group, the high BAC drivers appear to have been less deterred from drinking and driving (Laurell 1991). Some literature (Simpson and Mayhew 1992) suggests that high BAC drivers are not like other people who are deterred by the sanctions

discussed above. They are frequently aware of the laws and attendant sanctions associated with drinking and driving, and their behavior is unaffected by them. So more information is needed both on the ways in which people are deterred and on effective strategies to be used with various drinking driver types.

Thus, if we expect to make substantial changes in drinking and driving, we need to better understand who is being deterred by which sanctions; and we need to broaden our understanding of why people drink and drive. To accomplish this, the drinking driver must be viewed in a broader social context so that we may better understand where he does his drinking, under what circumstances and what his attitudes are toward drinking and driving. Furthermore, we need to understand to what extent his life revolves around his drinking behavior and what deters him from drinking and driving. This information should be helpful in designing more effective programs.

Specific Recommendations for Increasing Deterrence:

1. **Develop and evaluate more comprehensive provisional licensing programs.** These programs must be well publicized, and should use innovative approaches such as decals or special license plates. Extend some of the post-licensing control components of the program through the age of 20, a period when many younger drivers continue their over-involvement in traffic crashes.

2. **Increase the detectability of high risk drivers and evaluate.**

- a. A special plate for provisional licensees will help increase the perception of risk of detection particularly during curfew hours.

- b. Use a tag marker to identify a vehicle owned by a driver with a license revocation, and make it large enough so that it can enhance the likelihood of detection at night.

3. **Develop guidelines for sanctioning that link the seriousness of offense with the severity of the sanction and conduct a process evaluation.**

- a. Use previous DWI activity, BAC level, and/or injury causation as measures of severity.

- b. Do not make the penalties so severe as to lessen the likelihood that they will be levied or increase the likelihood that the offender will remain outside the system. Omit jail as a sanction except for the offender who has injured someone or who habitually refuses to comply with sanctions applied.

4. **Develop and evaluate a sliding scale for the imposition of fines that includes both the severity of the offense and the income level of the offender, and develop an effective collection mechanism.**

5. **Impound vehicles of those who habitually drive out of the system.**

6. **Use a period of hard license revocation, and then provide an opportunity for the granting of a limited driving privilege given that the offender will use special plate identification and will participate in remediation.**

7. **Develop and evaluate combinations of treatment, licensing sanctions and active probation with different offender types.** Consider the use of case control studies. More effective programs may be developed when specific deterrence sanctions and remediation approaches are combined.

8. **Increase cooperation between funding agencies in identifying and funding research programs.**

Because of severe limitations in research dollars, and because there are numerous agencies investigating DWI activity from a number of different perspectives, it is important that agencies better coordinate their research efforts and share research findings.

Future research should focus on identifying some of the informal sanctions which may be at work in states, communities, peer groups, and families to deter drinking drivers and how these may be enhanced. Similarly, more data is needed on which factors deter which types of drinking drivers. With regard to currently used deterrence methods, research is needed on

- The effect of fines and insurance sanctions on general deterrence;
- The extent to which fines may contribute to the offender's broader problems and to the likelihood that he will drive outside the system;
- The extent to which the recidivist is currently contributing to the A/R crash problem;
- The use of interlocks for both first time, high risk drivers and multiple offenders, and whether positive benefits endure after license reinstatement and interlock removal;
- The use of the interlock or similar devices as treatment monitoring tools;
- Methods to mark vehicles to increase detection;
- The value of social stigmatization;
- The relative effectiveness of variations in ALR laws;
- The residual effectiveness of licensing sanctions with or without attendant remediation; and
- Identifying younger DWI offenders who become DWI recidivists.

At the present time there are a limited number of deterrence options. As in many other areas in our society, barriers to change exist within the system. By expanding our understanding of differences in various

jurisdictions, differences in laws, differences in offender types, and differences in the ways in which sanctions are applied, we will be able to design and implement more effective and comprehensive programs to deter drinking drivers and also to plan more effective DWI treatment programs. Sound research is needed in order to make informed policy decisions. A pivotal question which should always be addressed: Is there really a sufficient amount of reliable research data available to permit the federal government to advocate changes in policy?

REFERENCES

1. Baker, E.A. and K.H. Beck. 1991. Ignition Interlocks for DWI offenders -- A useful tool? *Alcohol, Drugs and Driving*, 7(2): 107-116.
2. Blomberg, R.; Preusser, D.; and Ulmer, R. 1987. *Deterrent Effects of Mandatory License Suspension for DWI Convictions*. DOT-HS-0807-138. Washington, DC: National Highway Traffic Safety Administration.
3. Boughton, C.; Carrick, C.; and Noonan, G. 1987. Development of graduated licensing in Australia. In Benjamin, T. (Editor) *Young drivers impaired by alcohol and other drugs*. London, U.K.: Royal Society of Medicine.
4. Brewer, R.D.; Morris, P.; Cole, T.; Catkins, S.; Rodgman, E.; and Popkin, C. 1991. The risk of alcohol-related fatal motor vehicle crashes among drivers previously arrested for driving while impaired. Paper presented at the annual APHA meetings in Atlanta, Georgia.
5. Cleary, J., and Rodgers, A. 1986. *Analysis of the Effects of Recent Changes in Minnesota's DWI Laws*, Part III: Longitudinal Analysis of the Policy Impacts. St. Paul, MN: Research Department, Minnesota House of Representatives.
6. Compton, R. 1986. *Preliminary Analysis of the Effect of Tennessee's Mandatory Jail Sanction on DWI Recidivism*. Research Notes. Washington, DC: National Highway Traffic Safety Administration.
7. Compton, R.P. 1988 Potential for application of ignition interlock devices to prohibit operation of motor vehicles by intoxicated individuals. Washington, D.C. NHTSA (DOT HS 807 281).
8. Council, F.M. 1981. Evaluation of the effect of DUI conviction rate on alcohol-related crashes. *Proceedings of the American Association for Automotive Medicine*. October 1981. pp. 145-160.
9. Donovan, D.M. and Marlatt, G.A. 1982. Personality subtypes among driving-while-intoxicated offenders: Relationship to drinking behavior and driving risk. *Journal of Consulting and Clinical Psychology* 50(2): 241-249.

10. Drummond, A.E.; Cave, T.C.; and Healy, D.J. 1987. The risk of accident involvement by time of week. An assessment of the effect of zero BAC legislation and the potential of driving curfews. In young drivers impaired by alcohol and drugs. Royal Society of Medicine Services.
11. Eavy, P.; Edwards, M.; and Lee-Gosselin, M. 1986. Group interviews for probationary drivers with low violation levels: An evaluation of the traffic safety impact. Lansing, Michigan. Michigan Department of state.
12. EMT Group (1990). Evaluation of the California interlock pilot program for DUI offenders. Sacramento, California.
13. Evans, L. 1987. Young driver involvement in severe car crashes. General Motors Research Laboratory Publication GMR 5835, Warren, Michigan.
14. Falkowski, C. 1984. *The impact of two-day jail sentences for drunk drivers in Hennepin County, Minnesota*. Final Report on Contract No. DTNH-22-82-05110. Washington, DC: National Highway Traffic Safety Administration, 1984.
15. Fell, J.C. 1984. Alcohol in fatal accidents for various driver age groups. *Research Notes*. USDOT, NHTSA National Center for Statistics and Analysis, Research and Development, Washington, DC.
16. Fleming, A. 1991. Young driver laws. State law facts 1991. Insurance Institute for Highway Safety. Arlington, Va.
17. Foldvary, L.A. 1978. Road accident involvement per miles travelled - IV. *Accident Analysis and Prevention*. 10(2): 143-176.
18. Hagen, R. 1977. *Effectiveness of license suspension for drivers convicted of multiple driving-under-the-influence offenses*. Report No. 59. Sacramento, CA: Department of Motor Vehicles.
19. Hagge, R.A.; and Marsh, W.C. 1988. *An evaluation of the traffic safety impact of provisional licensing*. Sacramento, California: Department of Motor Vehicles. Research Report No. CAL-DMV-RSS-88-116.
20. Harding, W.M.; Apsler, R.; and Walsh, W.A. 1990. Determine feasible and acceptable age 21 support programs. Final Report. US DOT HS 807 667. Washington, DC.
21. Hingson, R.; Heeren, T.; and Morelock, S. 1989. "Effects of Maine's 1982 .02 law to reduce teenage driving after drinking." *Alcohol Drugs and Driving*. Vol. 5 (1): 25-36.
22. Hingson, R.; Heeren, T.; Morelock, S.; and Lederman, R. 1987. The Effect of Maine's .02 Law. T. Benjamin (ed.) *Young drivers impaired by alcohol and drugs*. London, UK: Royal Society of Medicine Services.
23. Hingson, R.; Heeren, T.; Howland, J.; and Winter, M. 1991. Reduced BAC limits for young people (Impact on night fatal crashes). *Alcohol, Drugs and Driving* Vol. 7 (2): 117-127.
24. Homel, R. 1988. *Policing and punishing the drinking driver: A study of general and specific deterrence*. New York: Springer Verlag.
25. Homel, R., Carseldine, D., and Kearns, I. 1988. Drunk-driving countermeasures in Australia. *Alcohol, Drugs and Driving*. Vol. 4(2): 113-144.
26. Homel, R. 1990. Random breath testing and random stopping programs in Australia. In: Wilson, R.J. and Mann, R.E. (eds). *Drinking and driving. Advances in research and prevention*. The Guilford Press, NY, NY.
27. Jacobs, J.B. 1989. *Drunk driving: an American dilemma*. U. of Chicago Press, Chicago, Ill.
28. Jones, B. and Wood, N. 1989. Traffic safety impact of the 1988 ignition interlock pilot program. Oregon Motor Vehicles Division.
29. Jones, R.; Joks, H.; Lacey, J.; and Schmidt, H. 1987. *Field Evaluation of Jail Sanctions for DWI*. Final Report, Mid-America Research Institute, for the National Highway Traffic Safety Administration, Washington, DC, 1987.
30. Klein, T. 1989. Changes in alcohol-involved fatal crashes associated with tougher state alcohol legislation. DOT. NHTSA Contract No. DTNH22-88-C745. Washington, DC.
31. Klette, H. 1985. Drinking and driving in Sweden—The law and its effects. In: Kaye, S, and Meier, GW, eds. *Alcohol, Drugs and Traffic Safety: Proceedings of the Ninth International Conference on Alcohol, Drugs and Traffic Safety*. San Juan, PR, pp. 757-772.
32. Koons, S.S. and Surla, L.T. 1988. An evaluation of the elimination of plea bargaining for DWI offenders. DOT NHTSA DTNH22-88-C-07328.
33. Lacey, J.H.; Popkin, C.L.; Stewart, R.; and Rodgman, E. *Preliminary Evaluation of the North Carolina Safe Roads Act of 1983*. Chapel Hill, NC: Highway Safety Research Center, University of North Carolina, 1984.
34. Laurell, H. 1991. The Swedish experience: Changes in BAC legislation. *Alcohol, Drugs and Driving*, Vol. 7 (3-4):261-265.
35. Lund, A.K. and Wolfe, A.C. 1989. Changes in the incidence of alcohol-impaired driving in the U.S., 1973-1986. Insurance Institute for Highway Safety, Washington, DC.
36. Maleck, T. and Hummer J. 1986. Driver age and highway safety. Paper presented at the 65th Annual meeting of the Transportation Research Board, Washington, DC.
37. Maull, K.I., Kinning, L.S. and Hickman, J.K.

1984. Culpability and accountability of hospitalized injured alcohol-impaired drivers: A prospective study. *JAMA* 252 (14): 1880-1883.

38. Mann, R.E.; Vingilis, E.R.; Gavin, D.; Adlaf, E.; and Anglin L. 1991. Sentence severity and the drinking driver: relationships with traffic safety outcome. *Accident Analysis and Prevention* 23(6): 483-491.

39. Mayhew D.R. and Simpson, H.M. 1990. New to the road. Young drivers and novice drivers: similar problems and solutions? Traffic Injury Research Foundation, Ottawa, Canada.

40. Mayhew D.R. and Simpson, H.M. 1989. Trends in alcohol use among fatally injured drivers, Canada, 1973-1987. In: P.C. Noordjzi and R. Roszbach (eds.), *Alcohol, Drugs and Traffic Safety. Proceedings of the 11th International Conference on Alcohol, Drugs and Traffic Safety*, pp. 319-324. Amsterdam: Elsevier.

41. McKnight, A.J. 1986. Intervention and teenage drunk driving. *Alcohol, Drugs and Driving* Vol. 2 (1): 17-28.

42. McKnight, A.J. and Edwards, M. 1987. A taste of suspension: The preventive and deterrent value of limited license suspension. *Proceedings of the 31st conference of AAAM*, New Orleans, October 1987. pp. 45-59.

43. McKnight, A.J.; Hyle, P.; and Albrecht, L. 1983. *Youth License Control Demonstration Project*. National Highway Traffic Safety Administration. Report No. DOT-HS-7-01765. Springfield, Virginia: National Technical Information Service.

44. McKnight, A.J., Tippetts, A.S.; and Marques, P.R. 1990. Provisional driver licenses system for follow-up evaluation of Maryland Youth License Control demonstration project. Final Report, NHTSA DTNH22-88-P-05102.

45. McKnight, A.J. and Voas, R.B. 1991. The effect of license suspension upon DWI recidivism. *Alcohol, Drugs and Driving*. Vol. 7 (1): 43-54.

46. Morse, B.J. and Elliot, D.S. 1990. Hamilton County drinking driver study: 30 month report. Boulder, Colorado: Institute of Behavioral Science, University of Colorado.

47. National Highway Traffic Safety Administration. 1985. Community service restitution programs for alcohol related traffic offenders: The 5 As of community service. DOT HS 806 767. Washington, DC.

48. National Highway Traffic Safety Administration 1991. Digest of alcohol highway safety related legislation. DOT HS 807 359. Washington, DC.

49. Nichols, J.L. and Ross, H.L. 1990. The effectiveness of legal sanctions in dealing with drunk drivers. *Alcohol, Drugs and Driving* 6(2): 33-60.

50. Nichols, J.L. and Ross, H.L. 1989. The

effectiveness of legal sanctions in dealing with drunk drivers. In: *Surgeon General's Workshop on Drunk Driving Background Papers*. pp. 93-112. Washington, DC. US Department of Health and Human Services.

51. Paulsrude, S. and Klingberg, C. 1975. License suspension: a paper tiger? Washington state Research and Technology Division Report No. 32. Department of Motor Vehicles, Olympia, Washington.

52. Peck, R.C. 1991. The general and specific deterrent effects of DUI sanctions: A review of California's experience. *Alcohol, Drugs and Driving*. Vol. 7 (1): 13-42.

53. Peck, E.; Sadler, D.; and Perrine, M. 1985. The comparative effectiveness of alcohol rehabilitation and licensing control actions for drunken driving offenders: A review of the literature. *Alcohol, Drugs and Driving: Abstracts and Reviews* 1(4): 15-39.

54. Perrine, M.W. and Sadler, D.D. 1987. Alcohol treatment program versus license suspension for drunken drivers: The four-year traffic safety impact. In: P.C. Noordjzi and R. Roszbach (editors) *Alcohol, Drugs and Traffic Safety. Proceedings of the 11th International Conference on Alcohol, Drugs and Traffic Safety*, pp 555-560. Amsterdam: Elsevier.

55. Petersilia, J. 1987. Expanding options for criminal sentencing. Santa Monica, California. Rand Corporation.

56. Popkin, C.L. 1991. Drinking and driving by young females. *Accid. Anal. & Prev.* 23(1):37-44.

57. Popkin, C.L. 1992. Unpublished research.

58. Popkin, C.L. and Lacey, J.H. 1985. System and Deterrence Effects of a Major Change in DWI Legislation in North Carolina. *29th Proceedings of the American Association for Automotive Medicine*. Washington, DC. pp. 23-39.

59. Popkin, C.L.; Stewart, J.R.; and Lacey, J.H. 1988. A follow-up evaluation of North Carolina's Alcohol and Drug Education Traffic Schools and mandatory substance abuse assessments. Final Report. Chapel Hill, NC: The UNC Highway Safety Research Center.

60. Preusser, D.F.; Williams, A.F.; Lund, A.; and Zador, P.L. 1990. City curfew ordinances and teenage motor vehicle injury. *Accident Analysis and Prevention* 22(4): 391-397.

61. Preusser, D.F.; Williams, A.F.; Zador, P.L.; and Blomberg, R.D. 1983. The effect of curfew laws on motor vehicle crashes. Washington, DC. Insurance Institute for Highway Safety.

62. Rodgers, A., and Cleary, J. 1983. *Analysis of the effects of recent changes in Minnesota's DWI laws, Part II: The perceptions of Minnesota's drivers. Report*. St. Paul, MN: Research Department, House of Representatives.

63. Ross, H.L. 1987. Administrative license

revocation in New Mexico: An evaluation. *Law and Policy* 9(1): 4-5.

64. Ross, H.L. 1991. License deprivation as a drunk-driver sanction. *Alcohol, Drugs and Driving*, Vol. 7(1):63-69.

65. Ross, H.L. and Gonzales, P. 1988. The effect of license revocation on drunk-driving offenders. *Accident Analysis and Prevention* 20(5): 379-391.

66. Ross, H.L.; Klette, H.; and McCleary, R. 1984. Liberalization and rationalization of drunk-driving laws in Scandinavia. *Accident Analysis and Prevention*, 16(5/6): 471-487.

67. Sadler, D. 1986. An evaluation of the California drunk driving countermeasure system: An evaluation of the process efficiency and traffic safety impact of the California implied consent program. Sacramento, CA: Department of Motor Vehicles.

68. Salzberg, P., and Paulsruide, S. 1983. *Legal sanctions for driving while intoxicated: The effectiveness of short-term license suspension*. Research Report No. 50, Olympia, WA: Department of Licensing.

69. Shinar, D. 1992. Court monitoring and no-plea bargaining laws. *Alcohol, Drugs and Driving*. Vol. 8(1): 17-31.

70. Siegal, H. 1985. *Impact of Driver Intervention Program on DWI recidivism and problem drinking*. Final Report on Contract No. DTNH 22-83-C-05150. Washington, DC: National Highway Traffic Safety Administration.

71. Simon, S.M. 1991. Incapacitation alternatives for repeat DWI offenders. *Alcohol, Drugs and Driving*. Vol. 8(1): 51-61.

72. Simpson, H.M. and Mayhew D.R. 1991. *The Hard Core Drinking Driver*. Ottawa, Ontario. Traffic Injury Research Foundation.

73. Smith, D.I. and Burvill, P.W. 1986. Effect on traffic safety of lowering the drinking age in three Australian states. *Journal of Drug Issues* 16(2): 183-198.

74. Snyder, M.B. 1992. Lower alcohol levels, driver impairment and crash risk. *Auto & Traffic Safety* Vol. 1 (1):11-19.

75. Stenzel, W.; Manak, J.; and Murphy, P. 1987. *An evaluation of a community service sanction for DWI: The Baton Rouge Community Service Work Program. Volume 1. Executive Summary* Report No. DOT HS 807 200. Washington, DC: National Highway Traffic Safety Administration.

76. Stenzel, W.; Manak, J.; and Murphy, P. 1987. *An evaluation of a community service sanction for DWI: The Baton Rouge Community Service Work Program. Vol. 2. Report No. DOT HS 807 201*. Washington, DC: National Highway Traffic Safety Administration.

77. Stewart, K.; Gruenewald, P.; and Roth, T. 1988. An evaluation of the specific deterrence effects of administrative license revocation. In: *Proceedings of the 35th International Congress on Alcohol and Drug Dependence*, Oslo, Norway.

78. Sweedler, B.M. 1990. Strategies to reduce youth drinking and driving. *Alcohol Health and Research World*. Vol. 14(1):76-80.

79. Tashima, H. and Peck, R. 1986. *An Evaluation of the California Drunk Driving Countermeasure System: Volume 3, An Evaluation of the Specific Deterrent Effects of Alternative Sanctions for First and Repeat DUI Offenders*. Sacramento, CA: Department of Motor Vehicles.

80. Vingilis, E.R. 1990. A new look at deterrence. In: Wilson, R.J. and R.E. Mann (eds.). *Drinking and driving. Advances in research and prevention*. The Guilford Press, NY, NY.

81. Vingilis, E.R.; Mann R.; Gavin, D.; Adlaf, E.; and Anglin, L. 1990. The effects of sentence severity on drinking driving offenses. *Alcohol, Drugs and Driving*, 6 (3-4): 189-197.

82. Vingilis, E.R., and Smart, R.G. 1981. Effects of raising the legal drinking age in Ontario. *British Journal of Addictions* 76(4): 415-424.

83. Voas, R.B. 1992. Personal communication.

84. Voas, R.B. 1975. A systems approach to the development and evaluation of countermeasure programs for the drinking driver. In: M.E. Chafez (ed.). *Research treatment and prevention: Proceedings of the Fourth Annual Alcoholism Conference of NIAAA*. DHEW Publication No. (ADM)76-284. Washington, DC; U.S. Government Printing Office.

85. Voas, R.B. and Tippetts, A.S. 1990. Evaluation of treatment and monitoring programs for drunken drivers. *J. Traffic Med.* Vol. 18 (1): 15-26.

86. Voas, R.B. and Williams, A.F. 1986. Age differences of arrested and crash-involved drinking drivers. *Journal of Studies on Alcohol* 47(3):244-248.

87. Votey, H.L. 1982. Scandinavian drinking-driving control: Myth or institution? *J. of Legal Studies*. Vol. 11: 93-116.

88. Wagenaar, A.C. 1981. Effects of an increase in the legal minimum drinking age. *Journal of Public Health Policy*, Vol. 2: 206-225.

89. Wagenaar, A.C. 1982. Raised legal drinking age and automobile crashes: A review of the literature. *Abstracts and Reviews in Alcohol and Drinking* 3(3): 3-8.

90. Wagenaar, A.C.; Douglass, R.L.; Compton, C.P.; with Pettis, L.C. 1981. *Raising the legal drinking age in Michigan and Maine*. Springfield, VA: National Technical Information Service (PB82-184854).

91. Warner, N. 1992. Personal communication.
92. Williams, A.F. 1987. Effective and Ineffective Policies for Reducing Injuries Associated with Youthful Drivers. *Alcohol, Drugs, and Driving*, Vol. 3 (3-4): 109-117.
93. Williams, A.F.; Weinberg, K.; and Fields, M. 1991. The effectiveness of administrative license suspension laws. *Alcohol, Drugs and Driving*, Vol. 7(1): 55-62.
94. Williams, A.F.; Lund, A.; and Preusser, D. 1985. Night driving curfews in New York and Louisiana: Results of a questionnaire survey. *Accident Analysis and Prevention*, Vol. 17(6): 461-466.
95. Wilson, RJ and Mann, RE (editors). 1990. *Drinking and driving. Advances in research and prevention*. The Guilford Press, NY, NY.

A Model Program

Because unrealistically severe penalties often force drinking drivers to operate outside the system, increasing consideration should be given to methods to keep them in the system while reducing their potential risk. Because driving is integral to social and economic survival in this country, all but the most serious offenders should be permitted to drive after a reasonable period of hard license suspension (period determined by severity of the offense). A model program should realistically deal with the fact that the automobile is frequently the only source of transportation available to most people and the fact that most people drive even when their license is revoked. For first time offenders begin with a hard license sanction of 90 days, while their license is revoked their car should receive a special plate to facilitate detection. Tie the granting of limited driving privileges to participation in some type of remediation and the use of vehicle markings to increase fear of detection. If the individual is picked up driving while impaired, punish with another license suspension and tie issuance of a limited license to the installation of an interlock device. When the individual with an interlock tampers with it or drives another car, forfeit the vehicle. Make the issuance of the driver's conditional license also contingent upon the payment of a set of fees which is tied into to the individual's income (using the past years income tax return).

If all else fails, imprison.

APPENDIX D5B

DETERRENCE AND REHABILITATION:

SECTION 2 — REHABILITATION AND SCREENING

Elizabeth Wells-Parker

INTRODUCTION

Convicted DUI offenders constitute a highly visible group of drinking drivers and exhibit a range of problems that potentially contribute to traffic safety risk. The identification of effective methods for dealing with convicted offenders continues to be a high priority among key actors (judges, etc.) within the system. Furthermore, some groups of drinking drivers, such as high BAC (>.15) drivers, are at elevated risk of having had a DUI offense prior to becoming involved in a fatal accident (Simpson and Mayhew 1991; Lewis, personal communication) and are unlikely to be affected by DUI prevention strategies targeting the general driving public. The population of detected offenders is an appropriate target for prevention of fatal accidents among such groups. Interventions that effectively target detected DUIs could become models for more broadly based prevention programs for undetected high risk drinking drivers who are relatively unlikely to be affected by traditional educational and media-based prevention strategies.

The major purpose of this paper is to provoke ideas about how to improve intervention methods with convicted DUI offenders. It is suggested that research on remedial intervention with DUI offenders must move beyond existing strategies and creatively consider new and untried approaches for improvements to occur. Also, the broader term "remedial intervention" is favored over rehabilitation and treatment to encourage the expansion of options that might be investigated.

For succinctness, reviews of such issues as efficacy of traditional rehabilitation, treatment, and probation approaches, treatment matching, and many technical screening issues have been omitted; however, these subjects have been qualitatively reviewed elsewhere (Mann, Leigh, Vingilis, and DeGenova 1983; Stewart and Ellingstad 1988; Wells-Parker, Landrum and Topping 1990; Wells-Parker and Bangert-Drowns 1991).