The Relationship Of Alcohol Abuse To Highway Safety

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Safety Bureau
Washington, D.C. 20591
October 1970

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The background for the National Highway Safety Bureau's Alcohol Countermeasures Program

Presented to the Women's Conference of the National Safety Congress

October 24, 1970

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Among the major achievements of this last century, along with the splitting of the atom and the landing on the moon, has been the conquest of infectious disease. This has meant that fewer of our people have died in childhood or have been maimed, doomed to live handicapped lives. At the same time, our economic system has greatly improved our standard of living, giving us many new kinds of mechanical devices to make life easier and more enjoyable. The most prominent of these is the automobile. The result of these two trends has been to leave highway accidents as the number-one killer of our young people from 5 to 35. The highway is far and away the greatest source of violent death in this country.

Accidents have joined cancer and heart disease as major killers of Americans. They are most marked by the fact that they kill and maim the young. At this time the greatest risk to losing a son, a husband or brother is the highway, not war, disease or crime!

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The American public has allowed this new epidemic to creep up on it, by focusing interest on automobile styling and power. But now, we are beginning to see signs of this trend being reversed. A significant step was taken in 1966 when the Congress, through the Highway Safety and the Motor Vehicle Acts of 1966, established the National Highway Safety Bureau. This agency, working in close cooperation with the Detroit auto manufacturers, has been and continues to develop safety performance standards for new cars.

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Eventually these cars will be so "forgiving" that normal drivers will rarely be seriously injured. Increased safety for the driver can be achieved by improved "occupant packaging." This is done in two ways: The front end of motor vehicles must be so designed that it will help absorb the impact of an accident and will not allow the motor to smash into the driver's compartment. Secondly, the driver himself must be protected against flying forward and hitting the windshield or other sharp areas within the vehicle. This can be done through wider use of the seat belts which are on most present cars, or by a passive system such as an "air bag," a blanket, or net, which becomes operable at the time of impact, holds the person against his seat and protects the occupants from the second collision within the vehicle.

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To demonstrate the potential of life saving through these methods, the Bureau has recently signed contracts with three manufacturers to develop an "Experimental Safety Vehicle." Eventually, it is hoped that future vehicles will be able to protect their occupants from injury in head on collisions at speeds as high as 40 to 60 miles an hour.

As new and safer vehicles come on the market, those who drive properly will begin to enjoy relative safety except for the threat posed by drivers who operate outside the normal limits of driving. By outside the normal limits of driving, we mean; those who go the wrong way on a freeway; those who cross the double white lines at high speed; those who pass on curves and hills; those who operate at speeds 20, 30 and more miles an hour above the limit. Who are these drivers? This kind of erratic outside the normal limit behavior can involve a number of sick or deviant individuals. Some are psychopathic. Some are drug users. Some are young drivers, long on energy, short on judgment and skill. But most, by far the most, are <u>drivers with a drinking problem</u>.

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Let's look at the evidence. In a recent study of fatal accidents in Michigan, it was found that 9 of 10 wrong way drivers in fatal accidents had been drinking. That 2 our of 3 drivers in fatal accidents who were cited for speeding had been drinking. That half of all the drivers in fatal accidents cited for driving left of the center line, had been drinking.

The study also showed drinking to be involved twice as frequently in fatal accidents over 60 miles an hour as in fatal accidents below 60 miles an hour.

These, then, are the drivers operating outside the normal limits. Operating at such excessive speeds that it will be difficult, if not impossible, to protect them with the new safety designs for vehicles. Of perhaps more interest, it will be equally difficult to protect their passengers and the innocent drivers and pedestrians they kill by their deviant behavior.

Note for example, a recent study in Minneapolis of fatal accidents in which 131 drinking drivers were killed, it was determined that 121 other innocent, non-drinking drivers and passengers were also killed.

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Moreover, drivers with drinking problems may also be among the last to have the proposed air bags installed in their cars, since many are young drivers who cannot afford new cars, and many others are from lower economic classes who also drive older cars. It is interesting that, in the Michigan study cited earlier, cars 9 years old or older were more likely to be operated by drinking drivers involved in fatal accidents than by drivers in fatal accidents who had not been drinking.

We must begin at once to focus on the largest single group in this category; the problem drinkers who drive.

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Let's look quickly at what we know about the relationship between alcohol and fatal accidents. We must start by asking how many drivers there are on the road who have been drinking? This question has been studied by scientists at the University of Vermont under a contract with the National Highway Safety Bureau. They went out onto the roads at the times and places where fatal accidents had occurred (which is mostly in the evenings; particularly during weekends) and persuaded passing motorists to take a breath test. When this was done, it was found that about two percent had blood alcohol concentrations above the level which the National Highway Safety Bureau defines as being intoxicated (0.10% blood alcohol concentration (BAC)).

If now we take the blood alcohol concentrations in drivers fatally injured in crashes as recorded in the records of coroners, we can compare the proportions of these drivers who had been drinking with those of all drivers on the road. Let us look first at innocent drivers killed in accidents initiated by others. Between 1 in 5 and 1 in 6 of these drivers had been drinking to the extent that they would have been judged to be intoxicated based on their blood alcohol concentration. These are the drivers who were unable to take evasive actions to avoid an accident initiated by someone else.

Clearly, excessive us of alcohol makes a person less able to save himself from other people's mistakes. But how much more dramatic is the effect of alcohol if we consider those drivers who were responsible for the initiation of their accidents. For these drivers approximately half were above the level defined as intoxicated by the National Highway Safety Bureau. Other studies have shown between 40 and 50% of responsible drivers intoxicated. While only 1 in 50 drivers using the road at times and places of fatal accidents are intoxicated, nearly half of those responsible for initiating fatal accidents are intoxicated. Several studies similar to this one are summarized in the Secretary of Transportation's report on Alcohol and Highway Safety to the Congress in 1968. As a result of the research summarized in this report is has come to be generally accepted that alcohol plays a role in approximately 50 percent of all fatal accidents.

Note that in describing the role of alcohol in fatal accidents, we must keep carefully in mind that accidents nearly always have multiple causes - wet pavement, faulty brakes, bald tires. But the sober driver is nearly always able to deal with these hazards without being involved in an accident. The intoxicated driver is much less able to overcome these hazards as is indicated by the high proportion of intoxicated drivers among these responsible for initiating fatal accidents.

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The role of alcohol can be roughly summarized in the following way: the number of highway fatalities in the United States was estimated to be 56,400 in 1969 by the National Safety Council. Of the half of these in which alcohol plays a role we would estimate that two-thirds result from accidents initiated by "problem drinkers" who drive. The other third are related to abusive drinking by "social drinkers" particularly heavy social drinkers on their way home from a spree, or young drivers (particularly teen agers) who are both learning to drink and to drive.

Why do we say that two-thirds of these fatalities result from "problem drinkers" who drive? Evidence that these fatalities are being produced by individuals who are not typical social drinkers takes two major forms. First of all, the very high blood alcohol concentrations present in the drivers responsible for initiating fatal accidents, suggest that their drinking is beyond that normally associated with social activities in the United States. Let's consider for example, the number of drinks that it takes to get up to the high levels (0.10%) defined as indicating intoxication by the National Highway Safety Bureau and typical of 40 to 50% of the drivers responsible for initiating fatal accidents. Most of the drivers who have been drinking and who are responsible for their fatal accidents are even above this level. In many cases, far above this concentration. Sometimes as much as twice as high.

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How many drinks does it take for a man to reach the blood alcohol 0.10% concentration? It depends on two primary factors; his weight and whether he has eaten. Alcohol is normally absorbed directly into the bloodstream. However, if there is food in the stomach this absorption is delayed and blocked so that it takes more drinks to reach a given blood alcohol concentration. A 200-pound man requires 9, 1/2 one ounce, 80-proof drinks an hour to reach a BAC of 0.10 percent if he is drinking within two hours of eating. For a 160-pound man, this number is reduced to 7 1/2. For people drinking on an empty stomach -- the cocktail hour ritual -- these numbers would be reduced by about one-third.

When one considers that between 40 and 50 percent of the drivers responsible for fatal crashes who have been drinking are at least at this level, and many are much higher, it is clear that these drivers have been using alcohol to an extent which is far beyond the normal drinking pattern of most Americans.

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There is another type of evidence to indicate that the majority of drinking drivers responsible for initiating fatal accidents are not typical "social drinkers." Studies of fatally injured drivers and of convicted drinking drivers have indicated that they often have been arrested before for offenses involving alcohol. Some of these involve previous drinking driving arrests, others may involve non-traffic arrests such as "drunk and disorderly" and even serious crimes committed under the influence of alcohol.

Moreover, if a careful study is made of hospital and social agency records, other indications of problems stemming from drinking may be found. Admission to the hospital for alcoholism, families broken or disadvantaged because the father drinks and cannot hold a job and so on. Moreover, interviews with the families or employers of the drinking drivers often indicate that these drivers have marital problems or job absenteeism relating to drinking.

Thus, we have two types of evidence that these individuals have a drinking problem:

1. Their excessive drinking level, and
2. Presence in their background of problems resulting from the overuse of alcohol.

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The recent studies which have produced these data have reoriented our thinking about the problem of drinking and driving. While it is clear that "social drinkers," when they go on a spree and drink excessively, can and do become involved in fatal accidents, the Bureau estimates that two-thirds of the intoxicated drivers involved in such accidents are not typical "social drinkers," they are problem drinkers. While it is generally conceded that almost any amount of alcohol has a negative effect upon the important skills and judgments required by drivers, these studies have demonstrated that there is a minimal increase in the risk of being involved in a fatal or serious accident at blood-alcohol concentrations below 0.05 percent. Most people will stay at or below this level if they limit their drinking to one,

one ounce drink of 80-proof whisky per hour, since the body's mechanism of getting rid of alcohol will clear the system of about one drink per hour.

As an individual's blood-alcohol-concentration goes above this level, the risk of being involved in a fatal or serious accident also climbs. By the time the 0.10 percent level which the National Highway Safety Bureau defines as intoxicated is reached, the probability of being involved in an accident is 7 1/2 times the normal risk. From this point on, the risk curve climbs dramatically. At 0.15 percent the risk is nearly 27 times normal and above this level, the risk in a fatal accident increases to 50 or more times greater than normal.

Of fatally injured drivers who have been drinking at all, more than half are above this extremely high 0.15 percent level. It is these people that are a particular challenge for highway safety because of their large role in initiating fatal accidents, and because of the evidence that they have a drinking problem.

Thus, while no one should be encouraged to drink and then drive, it is clear that a large portion of the driving population does indeed drink moderately, and drive responsibly without greatly increasing their risk of an accident. Most Americans who drive fail to understand this distinction between moderate and responsible drinking and the risk incurred by excessive use of alcohol.

Most states have laws defining drunkeness at the 0.10 percent level or even as high as the 0.15 percent level. This means that the majority of American social drinkers do not run a substantial risk of ever being arrested for drinking and driving. Even when these moderate or low volume social drinkers feel slightly "high," they may still be well below the 0.10 percent level.

None of this is to suggest that it is safe to drive after drinking, particularly when one feels "high." However, in order to obtain the necessary support of the public for the type of legislation which would assist the effort of governmental agencies involved in alcohol safety programs, it should be emphasized that these laws are most applicable, not towards the average social drinkers, who normally drink in moderation and drive, but rather towards those individuals with drinking problems who use alcohol excessively and then drive with a much higher degree of frequency.

This understanding is important if we are to have laws passed and enforced which will help to deal with the problem drinkers who account for most of the deaths due to alcohol on our highways. If we are asked to support sterner laws against armed robery, we will probably do so because we understand what armed robbery is, and we clearly know that we personally will never be involved in an armed robbery. In the area of alcohol safety, however, we have a much less clear understanding of the nature of the crime.

Since many persons are not familiar with the meaning of blood-alcohol concentration levels such as 0.10 percent and 0.15 percent, we can only presume that the individuals being apprehended for this crime are much like ourselves. They had one or two beers at the club and were unlucky enough to be stopped on their way home. In actual fact, from the research data available, it is clear that this is not the case at all. The people being arrested have had not one or two drinks, but more on the order of eight or ten drinks. For most social drinkers, a binge of eight, ten or more drinks is an infrequent event. Even more rare, is the time when he tries to drive after such drinking. Thus, the current laws applicable to anyone who uses alcohol excessively and drives will rarely be broken by the normal social drinker. Of course, they do apply when a normal social drinker goes out on an unusually heavy binge and then drives. When this happens the social drinker should of course be subject to the full penalties of the law. But, in comparison to the number of individuals who drink and then drive, this will be a rare event because generally only problem drinkers consume sufficient liquor regularly so that they will be out on the road with these high blood-alcohol-concentrations with any frequency.

Thus, the focus of an effective highway safety alcohol countermeasures program must be on the problem drinker who drives, who is the major contributor to fatal and serious highway accidents. In focusing on the major problems we will not overlook the social drinker. Many of the countermeasures which are primarily directed at the problem drinker will also have potential for reducing fatalities involving social drinkers. For example, if we increase the enforcement on the highways in an attempt to arrest more of the problem drinkers, we shall also apprehend those social drinkers who have used alcohol excessively.

An effective enforcement program will distinguish between these two types of individuals. It will make use of the full penalties provided by the law to punish and deter social drinkers who drive after excessive consumption of alcohol. The expected result of such a procedure should be to deter the social drinker from getting on the road after he goes on a binge. If apprehended and convicted, the social drinker should avoid making the same mistake again. The same powers of the court must be used in a slightly different fashion with the problem drinker. He also must be given the full penalties provided by law, but since fines and suspensions of licenses are not likely to be able to change his drinking behavior, which is out of control, probation of these penalties should be considered if the individual is willing to undergo a supervised program of treatment for his alcohol problem.

Thus, in developing a program of countermeasures aimed at the major source of the alcohol problem, the problem drinker, actions are also taken which will be effective in detering the social drinker. The National Highway Safety Bureau has developed a package of countermeasures, based on identifying the problem drinker on the road and through the records of courts and social agencies; and through the decisions of courts or licensing agencies, bringing that individual into an action program designed to help him with his drinking problem, and supervising his driving until such time as there is evidence that his drinking-driving problem has been reduced. The countermeasure program is being implemented on a nationwide basis through four major types of efforts:

1. The Bureau is sponsoring a research and development program to find and perfect new countermeasures. Equipment is being developed which will help police in detecting the intoxicated driver. Manuals and training programs are being developed which will help court personnel, enforcement specialists, and others deal with problem drinkers who drive.

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2. A National Public Education Program on the drinking-driving problem is being initiated to gain public support for the police, the courts, the licensing agencies, the alcoholism treatment agencies, driver education facilities and other groups involved in the alcohol safety problem.

3. Comprehensive alcohol safety action programs are being initiated in each state throughout the country to provide a demonstration of the effectiveness of the Bureau's countermeasure program in saving the lives which are presently lost as a result of abusive use of alcohol.

4. Finally, the National Highway Safety Bureau is assisting the states under Section 402 of the Highway Safety Act through matching grants to State Safety Programs. With this support, the states will be able to strengthen their own alcohol safety countermeasures programs.

Perhaps this thought is running through your mind, "What can I do as an individual to help in this effort to prevent needless loss of life on the highway?"

Here are four basic suggestions to answer this question and a way for you to render a valuable service to your neighbor and your community.

You CAN:

1. Help to form a local citizens' group on alcoholism where none exists. If one does -- join it.
2. Support the enforcement of laws against drinking and driving in cooperation with your police department.
3. Support your judges in their imposition of stiff penalties upon drunk drivers.
4. Demand that school driver-education programs include relevant material on alcohol in the curriculum.

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One of the first steps you can take as part of this four point program is to inquire of your police officials whether they have facilities to determine the blood alcohol content of a driver who is charged with driving while intoxicated. If the answer is "no," tell them they have your support for more stringent enforcement, and that you will encourage others to assure that this chemical test becomes available.

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Next, check the courts in your community. Try to learn from the judges whether they are using pre-sentencing investigative procedures for convicted drunken drivers -- or not at all. Ask about the sentences being passed upon the guilty -- including court supervised rehabilitative measures. Is the punishment imposed by the court adequate for the crime?

Is there support of a medical review board in your community? Ask the medical society what steps are being taken for rehabilitation of drunken drivers under medical supervision. Is there provision for review by medical authorities at the state level of applications by excessive drinkers for restoration of a driver's privilege?

Contact the following: Social agencies, hospitals, the local council on alcoholism, your mayor, legislators and governor's highway safety representatives. "What is my community doing to reduce the peril of the driver who drinks to excess?"

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There are numerous approaches to discussing the comprehensiveness of alcohol safety in driver education courses. A good way to start is by contacting four key persons within your school system: the chief school administrator responsible for driver education; the secondary school principals, the school counselors and the driver education supervisor.

Professionals in any field dislike being told how to run their business. But you may inquire with good grace whether students have ever seen alcohol testing devices...whether case studies of automobile accidents with alcohol involvement have been analyzed in cooperation with local police.

You may suggest that students debate the legal aspects of "implied consent" legislation, or suggest a topic for a brief written paper on an open ended question... "If I had driven to a party and an alcoholic drink was offered to me, I would ...??"

The principal approach is an affirmative offer. Tell your school people you would like to help in this area. Ask them how you can serve.

This is how you may help. If there is no evidence of concern, your citizens' group on alcoholism can light the fuse to an on-going effort with the support of your area's newspaper editors, radio and television outlets.

It can become a do-it-yourself alcohol safety countermeasures program. Identify the problem; decide what action is needed, and act.

The results in lowering fatalities and injuries on the highway may amaze you and your neighbors.

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