

Research Needs and Priorities in Alcohol-Impaired Driving Among Special Populations

SUSAN A. FERGUSON

Insurance Institute for Highway Safety

INTRODUCTION

Drinking and driving in the United States, although it has been declining in the last two decades is still a substantial problem with 30 percent of the drivers killed in motor vehicle crashes in 1997 having blood alcohol contents (BACs) in excess of 0.10 percent [Insurance Institute for Highway Safety (IIHS), 1998]. However, not all segments of the population are equally at risk of being in an alcohol-related crash. Differences have been noted among for example, male and female drivers, older and younger drivers, and first time and repeat offenders. For example, young drivers younger than 21 not only have shown the greatest decline in the last 15 to 20 years compared with older drivers, but fewer of these younger drivers who are killed in motor vehicle crashes have illegal BACs. Furthermore, among drivers aged 60 and older, very few fatally-injured drivers have BACs in excess of 0.10 percent. It is also recognized that there may be rather specific countermeasures that can be applied effectively to one group that are not applied to others. For example, both Minimum Purchase Age laws and zero-tolerance laws have been shown to be effective in reducing drinking and driving among drivers younger than 21.

More recent focus has pointed to other pervasive differences based on for example, gender, race/ethnicity, and geographic location, for example rural versus urban locations. The focus of this paper is to examine the research needs among special populations, which broadly defined could include different age groups, such as the young and the elderly, women versus men, different racial/ethnic groups, as well as repeat versus first-time offenders, pedestrians, bicyclists, and motorcyclists. Other participants will be addressing research needs among young drivers and repeat offenders and will not be addressed here. The following research proposals are aimed at lessening our gap in understanding of drinking and driving among other segments of the population with the ultimate goal being to devise appropriate countermeasures to address these areas.

RESEARCH PRIORITIES AMONG SPECIAL POPULATIONS

Why Are More Women Drinking and Driving? What Would Be Appropriate Deterrents?

Problem Area: The percentage of women who are drinking and driving has increased in recent years. Although the percentage of women with high BACs who are fatally injured in motor vehicle crashes is down more than that of men, women are accounting for a greater proportion of all drinking and impaired drivers involved in fatal crashes. In 1982, women accounted for 12.9 percent of drinking drivers, in 1997 they accounted for 16.9

percent. Similar increases among females are found for alcohol-impaired fatal crashes, and average BACs among fatally injured male and female drivers are not much different.

Data from a 1996 national breath survey reported a higher percentage of women than in 1986 now are driving with BACs of 0.05 percent and higher, while at the same time rates among men, although higher overall, are declining (Voas et al., 1998). Also of note in the 1996 survey, among drivers younger than 21, women were found to be drinking as much as men.

The question is, why are more women drinking and driving now than before? There is some evidence that women and men differ in their attitudes toward drinking and driving. For example, Stewart and Sole (1995), in a study of professed drinking drivers, reported differences among men and women ages 21-29 in their decision making regarding whether they would drink and drive. There is little understanding, however, of the underlying reasons for drinking and driving among women (not just those ages), and why this has changed in recent years.

Research Issue: Research is needed to discern the conditions under which drinking and driving occurs and doesn't occur for men and women. Are there certain situations that pose the greatest risk of resulting in drinking and driving for women? What factors are important in the decision to drink and drive? What are the deterrents to drinking and driving?

Likelihood of Success: Good for providing understanding of attitudes and motivation that lead to drinking and driving; reasonable for suggesting potential means of deterring drinking and driving.

Effects: Preliminary data suggest that women, if provided with more appropriate motivation and skills, might be more effectively influenced than men to avoid impaired driving.

Other: Currently, no distinction is made in terms of approaches to deterrence for men and women.

Gender Differences in DWI Arrest Rates and Recidivism

Problem Area: Although women have much lower rates of driving while intoxicated (DWI) arrest than men there is evidence that DWI arrests are increasing among female drivers both in the United States and around the world (Popkin et al., 1988; Puschel et al., 1989; Shore et al., 1988). Several studies have reported recidivism rates for female offenders that are lower than for men (see Waller and Blow, 1995, for summary), however a study in New York State suggests that not only are DWI arrests increasing for women in that state but more recently recidivism rates for women have come to parallel those of men (Yu et al., 1992).

Research Issues: It is clear that drinking and driving among women continues to increase (Voas et al., 1998), yet no recent studies have examined DWI arrest and recidivism rates for female drivers. Studies are needed to determine the incidence of DWI arrests for

women compared with men relative to their drinking and driving rates and alcohol-related crash rates. Also needed are studies to examine whether recidivism rates among women are now closer to those of males.

Likelihood of Success: Data may not be readily available in all states. Reasonable likelihood of success in determining recidivism rates if resources committed to tracking down the information.

Effects: There has been speculation, because women drinkers traditionally do not come to the attention of police or the courts, that women are able to hide their alcohol problems more effectively than men (Waller and Blow, 1995). Results of this research will have implications for deterrence, enforcement, and rehabilitation programs as they apply to women.

How Do Drivers Make Decisions About Drinking and Driving?

Problem Area: Anecdotal evidence, as well as the continuing large numbers of people who drink and drive while impaired, suggest that people do not understand the relationship between how much they drink and resulting BACs. Some research evidence suggests that people typically overestimate their BAC when on the ascending BAC curve, but in the descending phase they typically underestimate BAC (Martin et al., 1991). Thus people's decisions about whether to drink and drive could be affected by where they are in the absorption/elimination stages. It is not well known when the decision to drive is usually made and what cues drinkers are using to make that decision. Are people deciding to drive even though they know they may be impaired or is there a genuine lack of understanding about what BACs people are reaching in a social drinking setting?

There is a need for basic information on what women and men of different racial/ethnic groups believe in regard to alcohol consumption and driving, including what they know about BAC limits and how they judge BAC in relation to the decision to drink and drive. There is some evidence from the 1995 National Alcohol Survey (Caetano and Clark, 1999) that the number of drinks people judged necessary to affect their driving ability ranged from four to eight and were in general higher for Hispanics than others (unpublished data from an ongoing study conducted by SCRI and IIHS also support this finding). However, there is some indication that when asked how many drinks they can have before exceeding the legal limit, that number is much lower. For example, in a national survey conducted by NHTSA (Balmforth, 1998), about two-thirds of respondents reported that it would take three or fewer beers to reach the legal limit.

If there is a large discrepancy in people's judgment about the number of drinks that would render them illegal to drive and the number of drinks needed to be unsafe this may lead them to ignore DWI laws because they think they are safe enough to drive when they are not.

Research Issue: Studies are needed to determine how we can better educate the public about how to make responsible decisions about drinking and driving. There is a need for more naturalistic studies of the drinking environment to determine how individuals assess

BAC and what cues they use, recognizing that the cues regarding BAC change as a function of the time that has lapsed since the last drink.

Likelihood of Success: Reasonable for determining how people make the decision to drive; reasonable for designing public education efforts. Unclear how effective such efforts will be.

Effect: It may not be enough to provide drinkers with a basis to estimate how many drinks they can consume if in reality they base their decision to drive on how they feel at the time. The estimates of how much one can drink and still be legally fit to drive depends on a number of factors that are difficult to quantify, such as body weight, gender, effects of food, time over which drinking is done, and individual alcohol elimination rates. More complete information about how to judge BAC at different points in the absorption and elimination phases could provide the basis for more comprehensive guidelines for drinking drivers.

Unrestrained Children in Crashes: What is the Role of Drinking Drivers?

Problem Area: In 1997, more than half of the children younger than 15 years of age who were fatally-injured as passenger vehicle occupants were not using any restraint (NHTSA, 1999). There is evidence that many of these crashes involve drinking drivers. For example, Foss and Margolis (1997) reported that 19 percent of crashes in which a child younger than age 15 was killed involved a drinking driver; this rose to 26 percent when considering only child vehicle occupants. This percentage was even higher when the vehicle in which the child was traveling was older probably reflecting both the lesser crash protection afforded by older vehicles and lower socioeconomic status of those who drive older cars.

A recent study by Baker et al. (1998) reported a higher motor vehicle occupant death rate of children and teenagers per mile driven for Hispanics, and non-Hispanic African Americans compared with non-Hispanic Whites. The authors speculated that these higher death rates might reflect differences in driving behavior among these groups such as in the frequency of drinking and driving. There is also evidence that women, who more often transport children, are now drinking and driving more than before.

Research Issues: Studies are needed to understand the situations in which unrestrained children are killed in passenger vehicles. Risk factors that should be examined include the gender, age, and race/ethnicity of the driver in the crash, driver BAC, and number of passengers in the vehicle.

Likelihood of Success: Good for determining risk factors; good for designing counter-measures.

Effects: Extensive public education and enforcement efforts by NHTSA and the Airbag and Seat Belt Safety Campaign currently are directed toward getting children properly restrained in vehicles. A better understanding of driver behavior in crashes in which unre-

strained children are killed may point to additional enforcement opportunities, such as increased enforcement of DWI laws at the scene of a fatal crash.

Resolving the Basis for Differences in Fatal Crash Rates Among Different Ethnic/Racial Groups

Problem Area: Recent studies point to differences in alcohol-related fatalities among different ethnic/racial groups compared with Caucasian Americans. Voas et al., (1999) estimated that although Caucasian Americans comprise the majority of all alcohol-related deaths in the United States, within different ethnic/racial groups, when weighted for age and gender, there is evidence of overinvolvement among some groups and underinvolvement among others. For example, Caucasian and African Americans have similar proportions of alcohol-related crashes, whereas the percentage of Native Americans and Mexican Americans is much higher. Some groups, such as Asian-Pacific Islanders, and Cuban Americans had rates that were lower (Voas et al., 1999). Differences also were reported based on age and role in the crash, whether a driver, passenger, bicyclist, or pedestrian. Leaf and Preusser (1997) also has reported differences in pedestrian death rates among different racial/ethnic groups.

We Don't Know: Other factors unrelated to drinking or race/ethnicity may be underlying these findings. There are variations in socioeconomic status among different racial/ethnic groups; for example, Hispanics and African Americans have lower median incomes than non-Hispanic Whites. We know that lower income drivers and passengers wear belts less often and drive older and less safe vehicles. Other factors that may affect motor vehicle death rates include the number of passengers in a vehicle and driving exposure. In particular how far from home drinking occurs and where the driving is done, particularly rural versus urban locations can all have an effect on the findings.

Research Issue: Studies are needed that disentangle the effects of drinking and driving, other factors affecting crash outcomes, and social/cultural factors in order to understand what countermeasures might be appropriate. There is a need to look at risk factors for crash involvement as well as risk factors for fatal outcomes when crashes do occur.

Likelihood of Success: This is an easier undertaking in the case of fatal crashes as good data on driver BAC exist, but special studies will be needed to collect BACs for drivers in nonfatal crashes.

Effects: An examination of the role of factors other than race/ethnicity in motor vehicle crash overinvolvement will allow the design of interventions that are appropriately targeted.

Other: There is increasing emphasis on addressing the needs of different ethnic/racial groups when it comes to traffic safety initiatives. We need to be sure that we are addressing the right issue, for example, the extent to which these differences can be ex-

plained by SES rather than race/ethnicity might focus efforts on culturally-sensitive countermeasures directed more at lower income groups.

Drinking and Driving Among Mexican-American Males

Problem Area: A recent (as yet unpublished) study of Mexican American and Caucasian American male DWIs (and non-DWI Caucasians and Mexican American controls) has suggested that knowledge of DWI laws, and what is considered an appropriate amount of alcohol that may be ingested before impairment will occur may vary by ethnicity, even when controlling for SES (see also Caetano and Clark). These data also suggest that, at least for the sample in this study, there may be a discrepancy between what people believe the law allows one to drink and the amount that is considered necessary for impairment (see “How do drivers make decisions about drinking and driving?” above).

We Don’t Know: The study, which was undertaken in Long Beach, California, is not generalizable and should be replicated in other locations and with other ethnic/racial groups to understand whether these data are representative of Mexican American males throughout California and the United States, and whether similar patterns can be found among other racial/ethnic groups.

Research Issues: Are there differences based on race/ethnicity, among the population of DWI offenders and those not arrested for DWI in their knowledge and beliefs about drinking and driving?

Likelihood of Success: Replication of this study design should be relatively easy, but will need to be replicated in a number of different locations.

Effects: The disentanglement of factors underlying an individual’s decision to drive drunk, will allow programs to be designed that address the important issues. For example, if knowledge about the DWI law were worse among DWI offenders this would point to education as a possible countermeasure.

What Can Be Done About the Continuing Overinvolvement in Motor Vehicle Crashes Among Native Americans?

Problem Area: Native Americans have long been recognized as being at a much higher risk of alcohol-impaired crashes both as drivers and pedestrians, yet their overinvolvement remains (Baker et al., 1992; Grossman et al., 1997). Trend data suggest that at least for fatal crashes alcohol-related fatalities have been going down among most ethnic/racial groups but this trend is not as evident among Native Americans. Of concern is that in the last few years the trend seems to be upward (Voas et al., draft report).

Research Issue: What are the trends in alcohol-related motor vehicle crashes among Native Americans both fatal and nonfatal. How does this differ for drivers and pedestrians? According to Grossman et al. (1997) there are differences among Native American tribes in

frequency of drinking and motor vehicle crash rates so we need to ensure data collection allow segregation for different tribal groups.

Likelihood of Success: Complete data currently do not exist regarding the BAC of Native-American drivers and pedestrians in nonfatal injury crashes. Prospective studies will be needed to address this inadequacy.

Effects: Trend data for fatal and nonfatal crashes for both pedestrians and drivers will allow the development of appropriately targeted countermeasures.

Alcohol Abuse Assessment and Treatment: Should We Distinguish Among Different Populations?

Problem Area: Fatally injured drivers with very high BACs continue to be a problem in the United States. In 1995, 65 percent of fatally injured drivers in the United States had BACs at or above 0.15 percent. This has not changed much since 1988 with BACs among fatally injured drinking drivers averaging 0.17 and 0.18 percent in 1988 and 1995, respectively (Simpson et al., 1996). To deal effectively with drivers who are identified through the DWI arrest process as having very high BACs, Simpson et al., (1996) recommend assessment and treatment and rehabilitation as an essential need. There is research (Perrine et al., 1989; Simpson et al., 1996) to suggest that the DWI population is a heterogeneous one. There also is a wide array of options available to assess and treat the drinking driver. Lapham et al., (1998) using five alcohol screening instruments, reported that among first offenders there were significant differences in scores based on age, gender, ethnicity, education, and BAC as well as differences based on the type of screening instrument used.

Research Issues: Few studies have examined the extent to which differences exist among racial/ethnic groups and by gender in terms of the efficacy of various alcohol assessment and treatment approaches for rehabilitation. We need to establish, for a variety of widely used alcohol assessment instruments, whether there are distinct subgroups in the population that would benefit from a different approach to assessment, and treatment interventions.

Likelihood of Success: The choice of instruments used in the DWI assessment can greatly influence the finding that an individual has an alcohol-related problem (Lapham et al., 1997). The degree to which this interacts with gender and/or race/ethnicity is unknown.

Effects: If important differences do exist among subgroups of the population who typically drive after drinking with very high BACs there is an opportunity to develop more customized assessment and treatment programs that potentially could be more effective.

How Do Drinking Patterns Vary in Different Jurisdictions— Rural versus Urban Locations?

Problem Area: It is well understood that the majority of fatal crashes occur on rural roads, and recent research confirms that most of these crashes involve rural and small-town residents (Blatt and Furman, 1998). There are a number of reasons for overinvolvement in rural areas including road types, higher speed limits, types of vehicles driven, as well as differences in SES, lower belt use and drinking and driving. For example, Blatt and Furman (1998) found rural drivers were overinvolved in crashes in which a child 5 and younger died, were involved in more fatal crashes than any other group for every range of BACs examined from 0.08 to 0.15 percent and higher. And this overinvolvement held both for male and female drivers. Studies of young people suggest that alcohol use is more frequent in rural areas. However, even if alcohol use were no different among young people, the rural setting gives us more cause for concern given the greater distances that need to be traveled for work, entertainment etc, and the scarcity of transportation alternatives.

We Don't Know: How does drinking, and drinking and driving vary between rural and urban residents for example, in the frequency and amount of drinking, the location at which the drinking takes place, and miles driven to get home. Also not known is the role of such factors as age, gender, SES, and race/ethnicity in this pattern.

Research Issues: We need to investigate drinking and drinking and driving practices in rural and urban communities in the United States to include a sufficient sample of different racial/ethnic groups, including where drinking is usually done, and how drinkers get to and from home. A nighttime roadside survey design would target the most relevant population and allow estimates of BAC.

Likelihood of Success: National roadside surveys are an expensive undertaking, but would provide more valid answers to the questions we are asking than other alternatives such as a telephone survey.

Effects: An understanding of subgroup differences would allow us to better focus public education and enforcement efforts and suggest appropriate solutions in different communities.

Enforcement of DWI in Rural Areas: What Are the Impediments?

Problem Areas: As mentioned above, impaired driving is of particular concern in rural areas. Each year more people are arrested for DWI than for any other offense and DWI is more common in rural areas than among urban populations. According to the UCR, the rate of arrest for DWI in cities of 10,000 population is more than double that in cities of 250,000 or more, and the rates for both suburban and rural counties are much higher than in the larger cities. However, police resources and enforcement are likely to be very different in smaller-town, rural settings than in urban settings.

We Don't Know: How does DWI enforcement differ in rural versus urban settings? Are there certain factors that lead to enforcement difficulties and/or potential disincentives to enforcement? We need to know what works well in these settings and what are the disincentives to enforcement. Such disincentives might include for example, fewer police resources in rural areas; longer arrest times because of significant travel time to get to jail, breath, or blood sites; infrequent court schedules in any given court jurisdiction; police, prosecutors, and judges personally acquainted with many DWI offenders.

Research Issues: How do police departments in rural jurisdictions differ in their methods of enforcing DWI compared with more urban communities. Are there DWI enforcement methods in one jurisdiction that could be usefully applied in other communities? Studies would involve interviews with police departments in rural and urban communities across the United States.

Likelihood of Success: Reasonable in terms of fact finding; reasonable in terms of changing procedures among police officers within different jurisdictions.

Effects: Traditionally no distinction has been made regarding enforcement in rural compared with urban communities and guidelines that are developed do not distinguish between these settings. A better understanding of the special concerns regarding police resources and DWI enforcement in rural communities could lead to improved efficiency in DWI enforcement efforts in those communities.

RESEARCH PRIORITIES

Deciding priorities among such a diverse set of research possibilities was a daunting task. It was a difficult undertaking because the research projects suggested in this paper cover a very wide area including basic research to determine why people drink and drive and how we might affect their decision making, examination of differences in alcohol-related crashes among different racial/ethnic groups, enforcement issues, recidivism, and assessment and treatment of DWI offenders. They also examine different segments of the population. In the final appraisal I chose to rank the projects on three criteria

1. Size of the problem;
2. Whether there would be an obvious countermeasure; and
3. How much is already known in the area of interest.

Each proposal was ranked for each of these criteria and assigned a score of high (score of 1), medium (2), or low (3). Final ranking was based on the total score, with those scoring the lowest being accorded the highest priority. The proposals are listed in order of priority. Alongside each proposal is an indication of the scores.

1. Resolving the basis for differences in fatal crash rates among different ethnic/racial groups. (1, 1, 1)
2. Unrestrained children in crashes: What is the role of drinking drivers? (2, 1, 1)

3. Drinking and driving among Mexican American males? (2, 2, 1)
4. How do drinking patterns vary in different jurisdictions – rural versus urban locations? (1, 2, 2)
5. Why are more women drinking and driving? What would be appropriate deterrents? (3, 2, 1)
6. What can be done about the continuing overinvolvement in motor vehicle crashes among Native Americans? (3, 2, 1)
7. How do drivers make decisions about drinking and driving? (1, 3, 3)
8. Gender differences in DWI arrest rates and recidivism (3, 2, 2)
9. Enforcement of DWI in rural areas: What are the impediments? (1, 3, 3)
10. Alcohol abuse assessment and treatment: Should we distinguish among different populations? (2, 3, 3)

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