Does The Use of Designated Drivers Promote Excessive Alcohol Consumption?1

Wayne M. Harding, Ph.D. and Barry D. Caudill, Ph.D.2

Although programs that promote the use of designated drivers (DDs) have been widely characterized as a very promising means of reducing alcohol-impaired driving (DeJong and Wallack 1992; Harding, Aspler, and Farrah 1994; Winsten 1992, 1994), they have also been criticized (Apsler 1989; Apsler, Harding, and Goldfein 1987, Harding 1991; Knight, Glascoff, and Rikard 1993; DeJong and Wallack 1992). Apart from a lack of rigorous evaluations of their effectiveness, probably the most common criticism is that Designated Driver Programs (DDPs) encourage excessive alcohol consumption. The supposition is that, because the drinkers in the designated driver's group know they have safe transportation home, they drink more (much more) than they otherwise would. The short term, potential negative outcomes for the DD's companions include alcohol-related injuries, such as falls or pedestrian traffic injuries, that might occur before or after they arrive home. It has also been suggested that use of DDs can contribute to the development of alcohol problems or abuse by the DDs' companions, though a direct link would require regular, long term use of a DD and corresponding excessive drinking. The usual argument is that promotion and use of DDs condones excessive drinking, reinforcing norms and attitudes that, in turn, contribute to alcohol abuse.

PREVIOUS STUDIES

Very few studies have addressed the question of whether use of a designated driver increases alcohol consumption. Two used samples of undergraduate college students. Galscoff, Knight, and Jenkins (1994) collected questionnaires from all 288 students enrolled in health education service courses at a "public university in the Southeast." They report that "among the most distressing findings of this study was that 55% of [all respondents] thought that passengers

1Preparation of this paper was supported by grant R01 AA10729-01, "A Community Health Service Alternative To Prevent DWI," from the National Institute on Alcohol Abuse and Alcoholism. The views expressed here are those of the authors and do not necessarily reflect the views of NIAAA.

2Wayne Harding is Director of Projects for Social Science Research & Evaluation, Inc., Burlington, Massachusetts and a Lecturer on Psychiatry, Harvard Medical School at The Cambridge Health Commission, Cambridge, Massachusetts. Barry Caudill is Director of the Center for Studies on Alcohol, Westat, Rockville, Maryland.
drank more when they had a designated driver than...when they had no designated driver." In some cases, this drinking was excessive: "About 19% of the students...said that more than two out of three times when they were a designated driver, they had to care for someone who had passed out."

In 1993, DeJong, Wechsler, and Winsten (1995) collected questionnaires from a random sample of 17,592 students in 140 colleges. Thirty-seven percent of students reported they had ridden with a DD in the past 30 days. Students were classified into three drinking categories based on the number of drinks they usually had during the past 30 days: (1) one drink, (2) 2-3 drinks for women and 2-4 drinks for men, and (3) binge drinkers defined as 4 or more drinks for women, and 5 or more for men. This classification was then compared to their classification based on the number of drinks they consumed the last time they used a DD during the past 30 days. The authors conclude that there is some increased drinking by students using DDs, "but to a far more limited extent than critics had feared." Only 22% of the students who use a DD, and did not usually binge drink, did binge the last time they used a DD. For sixty-seven percent of the students, drinking the last time they used a DD did not change their usual drinking classification.

To our knowledge, only one study (Harding and Apsler 1993) collected survey data from an adult, non-college population relevant to the question of whether companions of DDs drink more than they usually do. The data were collected as part of an evaluation of a community-based DDP in Haverhill, Massachusetts. The two data sources were: 379 questionnaires from self-selected patrons in 19 of 25 drinking establishments that were part of the DDP; and 144 questionnaires from self-selected citizens attending two events (health fairs at a local college and health club) at which the DDP was being promoted. Both samples included drinkers and non-drinkers. The questionnaires asked if "the companions of the designated driver usually drink more than they do when no designated driver is available." Forty-three percent of the patron sample (N=233, 146 missing) indicated that companions of DDs do not drink more, 24% indicated drinking increased "only slightly more," 17% "somewhat more," and 12% "a lot more" (3% were coded "other"). A smaller proportion, 34%, of the citizen sample (N= 95, 49 missing) indicated that no increase in drinking takes place when a designated driver is used. Forty percent indicated that consumption increases "only slightly more," 19% "somewhat more," and 5% "a lot more" (2% were coded "other"). The results for these items were not significantly different (Chi Squares) for those patrons or citizens who had, versus had not, used a designated driver in the previous 12 months (54% of patrons and 50% of citizens had used a DD). If the opinions of these respondents are accurate, it appears that excessive drinking by the companions of designated drivers is rare. The findings, however, were based on pilot data with serious limitations. The samples were small with many missing cases. The response rates were both unknown and estimated to be small. The degree to which the respondents represented
larger populations was unknown. The categories used to characterize drinking (only slightly more, somewhat more, a lot more) were imprecise. And, the relevant question did not ask about the direct experience of the respondents, namely whether they drink more when they use a designated driver.

This paper presents baseline survey findings from a five-year evaluation of a community-based alternative transportation program to prevent Driving While Intoxicated. Because it avoids the shortcomings of the pilot study by Harding and Apsler, this new study substantially advances understanding of whether the companions of DDs drink more than they otherwise would. Its features include the use of large representative samples of normal adult populations, the use of estimated BACs (Blood Alcohol Concentration) to measure the impact of DD use on drinking, and collection of data about subjects' drinking and BACs both when they use a DD and in other drinking situations.

**METHOD**

Data for this paper were collected in two Maryland State communities using Computer-Assisted Telephone Interviews (CATIs) and questionnaires administered to patrons in drinking establishments. Households called and individuals selected within households were randomly selected by computer and were required to meet the following criteria: lived within the city limits, or within one mile of the city limits, for each community; had lived in the respective counties for at least 12 months (therefore were available to be exposed to the planned intervention); be at least 21 years of age or older; had driven a motor vehicle at least once during the past 12 months; and had consumed an alcoholic beverage at least once during the past 12 months for other than religious purposes. CATI interviews, which lasted an average of about 30 minutes, were conducted with 1398 qualified subjects.

After the CATI interviews were completed, questionnaires were administered to drinkers sampled in 31 drinking establishments in the same communities. Candidates for this "barroom sample" were recruited on one (Saturday) evening when they first entered the establishments in order to limit the amount of pre-assessment drinking by respondents. Individuals in the barroom sample (N=1016) were required to meet the same screening criterion as CATI subjects with the following exceptions: they were not required to have lived within the city limits or within one mile of the city limits; they could not have participated in the barroom survey at another establishment; and they could not have participated in a CATI interview.
FINDINGS

Approximately 33% of respondents to the CATI survey indicated they used a designated driver in the past 12 months. These subjects were then asked on occasions when they used a DD during the past 12 months: "How many drinks\(^3\) did you usually have?" "Over how long a period of time, or for how many hours did you usually drink?" and ""How much time usually passed between the time you stopped drinking and the time you received a ride home?" Responses to these items, coupled with information collected about the respondents' gender and weights, were used to compute the subjects' estimated BACs when they were transported home. The formula we used is a refinement of Widmark's (1932) that incorporates the amount of body water for males and females and the range of metabolic rates found in the population (NHTSA 1994). The mean BAC when subjects were transported home was .043 (SD=.065), or about one half of the .10 BAC that defines the legal limit for driving in Maryland. The median BAC was .035. Only 16% of the subjects had BACs at or above .10. These data show that companions of the DD tended to have moderately low BACs, BACs well below the legal limit for driving. To address the question of whether companions of DDs drink more than they otherwise would, we calculated their usual BACs when they drank outside their home\(^4\) using the same procedures described above. Their BAC when they drank with a DD was significantly greater, by paired t-test, than their BAC when they drank outside their home: \(t(428)=2.26, p<.03\). Though statistically significant, these differences were very small. The mean BAC when drinking outside the home was .035 (SD=.069), and the difference in means between drinking with a DD and drinking outside the home was only .008. Using an analytical strategy similar to that used by DeJong, Wechsler, and Winsten (1995), we also calculated the number of instances in which subjects who had a usual BAC of less than .10 when drinking outside their home, increased their BAC when they used a DD. Only 10% of these subjects increased their BAC to equal or exceed the .10 legal limit when they drank with a DD.

The percentage of subjects who used a DD in the barroom sample was higher (49%) than in the CATI sample. Not surprisingly, the usual BAC reached when using a DD was also higher in the barroom sample: .086 (SD=.083), slightly under the legal limit. Still, only about a third (38%) had BACs at or above .10. The result for analyses that compared drinking outside the home and drinking with a DD, were similar to those for the CATI sample. Barroom subjects' BACs when they drank with a DD were significantly greater, by paired t-test, than their BACs

\(^3\)The survey defined a drink as "at least one 12-ounce beer, one 5-ounce glass of wine, one wine cooler, one mixed drink, or one 'shot' of liquor."

\(^4\)Questions concerning drinking outside the home, from which BAC was computed, included occasions when the drinker did not use a DD and occasions when they did.
when they drank outside their home: t(413)=2.61, p<.01. However, as with the CATI sample, the differences in these BACs were very small. The mean BAC when drinking outside the home was .076 (SD=.079). The difference in means between drinking with a DD and drinking outside was .010. Also, only 22% of the subjects who had a usual BAC of less than .10 when drinking outside, increased their BAC to .10 or greater when they drank with a DD.

DISCUSSION

Self-reported data from representative samples of drinkers in two Maryland communities, and from samples of patrons in drinking establishments in the same communities, indicate that many subjects drank moderately when they used designated drivers (during the past 12 months). This was especially true of the CATI sample, where the mean estimated BAC when subjects used a DD was .043, about half the legal limit of .10 for driving in Maryland. When they drank with a DD, only 16% of CATI subjects had BACs at or above .10. In the barroom sample, the mean BAC when using a DD was .086, higher than in the CATI sample. However, only 38% of the barroom subjects had BACs at or above .10. As might be expected, when the subjects were using a DD, their BACs were higher than when they were drinking outside the home in general. However, the differences in their mean BACs with and without a DD were very small: .008 in the CATI sample and .010 in the barroom sample. Additional analyses showed that a relatively small percentage of subjects who had a usual BAC of less than .10 when drinking outside the home reached or exceeded a BAC of .10 when drinking with a DD. Only 10% of the CATI sample and 22% of the barroom sample reached this level.

These analyses suggest that, in most cases, the use of designated drivers does not substantially increase drinking among the DD's companions. We will examine this issue further using data that will be collected in three more annual CATI and barroom surveys planned for the current study. However, more studies with different populations are needed that compare the BACs of drinkers with and without a designated driver. It would also be useful to conduct interviews and observations of DDs and their companions in drinking situations. Even without the benefit of additional studies, it is clear that some people drink enough to achieve BACs of .10 and higher when they use a DD, and, therefore, messages promoting the use of DDs should include cautions about excessive alcohol consumption.

REFERENCES


