SUMMARY. Male motorists from the general driving population and male motorists convicted of DUI (driving under the influence of alcohol; both first and repeat offense) participated in an extensive interview. Analyses show significant differences between multiple offenders, first offenders, and the general driving population on: quantity frequency index, frequency of "getting very intoxicated" whenever they drink, blood alcohol concentration, driving after drinking, self-reported driving record, Mortimer-Filkins Scale, and Alcohol Dependence Scale. The multiple DUI offenders are somewhat different from most first DUI offenders, and very different from the general driving population on drinking patterns, drinking problems, and driving after drinking.

INTRODUCTION

To increase our understanding of the drunken driving problem, it is necessary to study drinking drivers who get into trouble with alcohol and to compare them with drinking drivers who do not. It is especially important that any such studies use the same data gathering and interview procedures across the above types of drinking drivers. The present study is one of the few that meet these methodological criteria. It was designed analytically to gain a more differentiated -- and thus more accurate -- understanding of motorists convicted of driving under the influence of alcohol (DUI) by comparing them with motorists from the general driving population (not convicted of drunken driving) using the same interview methods and the same questions.

As noted earlier (Perrine, 1987), the individuals most frequently examined in research on drunken drivers are convicted DUI offenders: they are essentially a captive audience and are readily available for study. Although clearly of value, the results of such studies do not permit generalization to all driving drivers. Thus, it is important to study the full spectrum of drivers, including the subset of convicted DUI offenders. In recent years, broad studies of the whole spectrum of drinking drivers and limited studies focused only on DUI offenders have been reviewed (Perrine, 1987; 1990), and several broader examinations of the research literature concerning drinking drivers have been published (Donelson, Beirness, & Mayhew, 1985; Donovan, Marlatt, & Salzberg, 1983; Perrine, Peck, & Fell, 1989; Vingilis, 1983).

The data analyzed for the present paper were selected from a larger-scale research program focused on determining the probabilities of drunken driving among the U.S. public and among convicted DUIs. This five-year research program involves extensive interviews with thousands of respondents from five different but interdependent segments of the American drinking and driving public: (1) the general driving population, (2) the nocturnal driving population, (3) the convicted first DUI offender population, (4) the convicted multiple DUI offender population, and (5) the population of those arrested for DUI, but not actually convicted of DUI. The basic rationale for this approach derives from analyzing the known characteristics of the drivers in these interrelated populations to determine similarities among those who "get into trouble with
alcohol," as well as the differences between those who do and those who do not. Our research program is designed to study these five selected segments of the American driving population using basically the same interview instruments, the same independent and dependent variables, and the same time frames. The main instrument is the "Survey of Health Attitudes and Practices" (HAP) which is described in the next section.

The present report is based on analysis of a small subset of data from this larger research program. These analyses were designed to examine differences between samples of the general driving population, first DUI offenders, and multiple DUI offenders on such variables as: (1) alcohol consumption (both usual and more than usual quantity-frequency of drinking, typical number of drinks consumed both Monday and Saturday nights), (2) drinking problems (proportion of social drinkers versus problem drinkers; how often one becomes very intoxicated when drinking; respondent reports having a "drinking problem"), (3) driving problems (number of crashes and violations after consuming alcohol; number of citations in lifetime for: DUI, reckless driving, violation of laws of road, refusal to take chemical test for alcohol, and number of license suspensions), (4) other life problems (number of arrests for non-traffic violations), and (5) personality characteristics (sensation seeking, social desirability, assaultiveness, resentment). Many additional variables are still being analyzed, including self-reported driving after using various drugs alone and in combination with alcohol.

METHODS

Respondents. The first DUI and multiple DUI offenders were convicted drunken drivers in Prince George's County, Maryland. Most of the 262 multiple DUI offenders interviewed were obtained from a special 60-bed, light-security facility especially built for convicted drunken drivers in order to avoid placing such individuals in the county jail with regular prisoners. The 285 first DUI offenders were obtained through the cooperation of the courts as these individuals were being referred to drunken driver programs. Participation in the interviews was not mandatory; all respondents were volunteers and signed informed consent agreements. The present analyses were limited to male DUI offenders, since relatively few females are convicted as multiple DUI offenders and thus the cell sizes in some of the analyses were too small to be useful at this time. Female DUI offenders will be analyzed separately and compared with male DUI offenders later when an adequate number for meaningful analysis have been interviewed.

The sample of the general driving population (n = 402) was recruited in the state of Vermont using random-digit-dialing procedures. Disproportionate sampling was used so that the gender distribution in our sample would correspond approximately to that obtained in roadside research surveys conducted at high-risk times (80% males and 20% females). In addition to being limited to male drivers, the present analyses were further restricted to include only those who reported in the interview that they had no previous drunken driving convictions. Thus, the 40 males who had reported a previous DUI were excluded from the present analyses in order to increase homogeneity by purifying the general driving population sample in terms of drunken driving offenses.
Instruments. A battery of five components is used for the face-to-face interview: (1) The Survey of Health Attitudes and Practices (HAP); (2) the Mortimer-Filkins Scale; (3) driving opinions and behavior; (4) general beliefs, attitudes, and behavior; and (5) the Alcohol Dependence Scale. The HAP is the main instrument and consists of 323 questions which are read to the respondent by the interviewer. This instrument includes questions on: demographic characteristics, health practices, drinking practices, drinking patterns, both parental and present family drinking patterns and attitudes, driving history, drinking-and-driving history, drug use, driving after drug use, and driving after combined drug and alcohol use. It should be noted that all questions concerning personal use of alcohol and drugs are presented in the past tense for DUI offenders and are specifically referred back to the point in time immediately preceding the individual’s arrest for drunken driving. For the general driving population, the corresponding items refer to the immediate past (e.g., during the past week, during the past month, etc.).

The computerized HAP (as described in Meyers, Fortini, Perrine, & Arce-Quinones, 1990) is supplemented by a shorter instrument which is self-administered and is completed by the respondent -- in the presence of the interviewer -- after finishing the HAP. This shorter instrument consists of 140 true-false/yes-no questions, plus a special section of 25 additional items designed for heavy drinkers (i.e., a person who typically consumes five or more drinks at one sitting). All these items were obtained from other investigators. First, the Mortimer-Filkins Scale, consisting of 55 items, has been used widely for many years in attempts to classify drivers as either "problem drinkers" or "social drinkers" for sentencing and referral purposes (Mortimer, Filkins, Kerlan, & Lower, 1976). Because of this widespread application, we are using the Mortimer-Filkins to serve as an indicator of concurrent validity for assessment of drinking problems among our respondents. Second, useful variables from the attitude, knowledge, and personality domains have been reported in a number of drinking-and-driving studies. One instrument of particular note for measuring these three domains was developed by Dr. Dennis Donovan (Donovan & Marlatt, 1982). The last two of the four sections of Donovan’s instrument are being used: the "Driving Opinions and Behavior" section and the "General Beliefs, Attitudes, and Behaviors" section. The number of scales available in his original instrument has been reduced on the basis of Donovan’s experience in his empirical studies (Donovan & Marlatt, 1982; Donovan et al., 1983). Finally, the "Alcohol Dependence Scale" consists of 25 items developed and validated by Dr. Harvey Skinner (1981). Skinner and Allen (1982) have found that the alcohol dependence syndrome can be assessed quite reliably by this brief self-report scale. They also found that the syndrome was correlated in predictable ways with clinic attendance, physical symptoms, and psychosocial problems. The Alcohol Dependence Scale is included in a special version of the self-administered supplement to the HAP for use with heavy drinkers.

Procedures. Each respondent was interviewed individually in a private room by a specially trained interviewer. The HAP was administered first, with the interviewer reading each relevant question to the respondent. Each question and its primary response options had been clearly printed on a card (14mm x 20mm), and each card was presented separately to the respondent. Thus, the respondent only saw -- and heard -- one question at a time, thereby minimizing distractions and facilitating focusing of attention.
When the general driving population sample was surveyed in 1986, the interviewer worked from a printed version of the HAP, from which each relevant question was read and on which each relevant response was recorded. During 1986, however, microcomputer software was loped for the HAP to replace the printed copy and subsequent key entry of responses (Meyers et al., 1990). Thus, with the computerized version of the HAP, the interviewer enters each response directly into a microcomputer, thereby eliminating the need for later data entry and reducing the likelihood of errors at each stage of data management. For example, the software does not accept an invalid, out-of-range response to a question. All logical skips are accomplished automatically by the software to include only the relevant questions for a particular respondent based upon his individual experiences and responses. This feature prevents the omission of relevant questions and reduces the number of inappropriate questions asked.

The supplement to the HAP includes the Mortimer-Filkins Scale and the Alcohol Dependence Scale, as well as the driving opinions and behavior, and the general beliefs, attitudes, and behavior items described above. After the respondent has departed, the interviewer enters the responses from the self-administered supplemental questionnaire as part of the same computer record that contains the individual's HAP responses. The total interview time for both instruments ranges from 1.5 to 2.5 hours, depending upon the complexity of the particular respondent's history of drinking, driving, and drug use.

RESULTS AND DISCUSSION

What are the major relevant differences between those drivers who get into trouble after drinking and those drivers who do not? In addressing this question, one of the major advantages of the present study stems from the fact that all respondents in all groups across the spectrum of drinking drivers were asked the same questions on the basis of the same interview instrument. The results reveal some striking differences between DUI offenders and the general driving population, as well as between first DUI offenders and multiple DUI offenders. The most compelling differences are found in drinking patterns and drinking problems; assumedly, these are antecedent to the subsequent driving problems.

Drinking Patterns. As a group, convicted DUI offenders are very heavy drinkers relative to the general driving population, although approximately 10% of the latter also qualify as heavy drinkers. A self-report of consuming five or more drinks at a sitting is generally taken as a criterion indicator of a heavy drinker. Approximately 40% of first DUIs and 60% of multiple DUIs reported consuming five or more drinks as their usual amount. Thus, six times as many multiple DUI offenders and four times as many first DUI offenders as general driving population respondents would qualify as heavy drinkers based upon their usual amount of alcohol consumption.

The proportions of heavy drinkers decreased slightly with specific reference to a particular day (i.e., last Saturday, last Monday) which may have been an easier task for respondents than estimating their usual amounts. Approximately four times more multiple DUI offenders than general driving population respondents reported consuming five or more drinks on both Monday and Saturday,
whereas approximately two-and-one-half times more first DUI offenders than general driving population respondents reported the same.

Thus, clear (and statistically significant) differences between DUI offenders and the general driving population were found in self-reported quantity of alcoholic beverages consumed in general (i.e., usual amounts) and on specific occasions (i.e., last Monday and last Saturday). By contrast, the relation between multiple DUI offenders and first DUI offenders remains relatively constant at approximately one-and-one-half times greater for multiple offenders on two of these comparisons: five or more drinks on Monday and on Saturday.

**Drinking Problems.** If such a relatively large proportion of DUI offenders qualify to be labelled as heavy drinkers, then one could the extent to which they are themselves aware of this situation. When asked to indicate whether they may have a drinking problem, proportionally three times as many first DUI offenders as general driving population respondents answered yes, whereas sixteen times as many multiple DUI offenders as general driving population respondents answered yes. Moreover, multiple DUI offenders were three times more likely than first offenders to indicate they might have a drinking problem. These differences in self-identification of a drinking problem are congruent with the results obtained on the two diagnostic instruments (i.e., the Mortimer-Filkins Scale and the Alcohol Dependency Scale). Thus, relative to the general driving population, proportionally more DUI offenders are heavy drinkers and proportionally more are aware that they may have a drinking problem.

**Drinking-Driving Problems.** Relative to the general driving population, DUI offenders had significantly more driving problems, especially those involving alcohol. For example, relative to the general driving population, three-and-one-half times more multiple DUI offenders reported two or more crashes after drinking, and twenty-two times as many multiple DUI offenders reported two or more citations for traffic violations after drinking. To what extent do the above results add to our understanding of the alcohol contribution to these differences in driving problems?

First, DUI offenders were much more likely than general driving population respondents to drive within an hour of their last drink. Second, when they do drink, proportionally many more of the DUI offenders consume five or more drinks. Third, when DUI offenders drink, they are much more likely than general driving population respondents to become very intoxicated. Fourth, DUI offenders report driving when they thought they probably were over the legal alcohol limit much more often than general driving population respondents. Thus, a clear pattern emerges such that, relative to the general driving population, DUI offenders are more likely to drink heavily, become very intoxicated when they drink, drive within an hour after their last drink, and drive when they believe they are probably over the legal alcohol limit. One obvious result: DUI offenders experience many more alcohol-related driving problems.

One variable in particular may provide a useful basis for further insight into these observed differences in drinking-driving problems: individual feelings of intoxication. The rating-scale values for the question regarding how often the respondent gets "very intoxicated" when he drinks were analyzed as though the numbers all referred to the same "thing" for each individual, even though
phenomenologically they may not. The label "very intoxicated" probably does not refer to the same feeling in heavy drinkers as it does in light or medium drinkers. Assumedly, heavy drinkers reach a higher BAC before they call it "very intoxicated." Further, there are probably differences in estimating when one is over the legal alcohol limit and has driven, and these differences may well be a function of experience with alcohol. Beirness (1987) reports data that corroborate this assertion, but he used an ad lib social drinking situation rather than a survey. His subjects provided estimates of their BAC, along with breath samples, at selected intervals throughout the drinking session. Three patterns of BAC estimation errors emerged: Underestimators, Overestimators, and Mixed Pattern estimators. Of greatest relevance for the present study, he found that Underestimators consumed more alcohol and attained higher BACs during the drinking session than the other two groups. Underestimators also rated their level of intoxication significantly lower than the other groups and were most likely to judge themselves fit to drive when their actual BAC was in excess of the statutory alcohol limit. Further research on such differences in subjective ratings of intoxication level, BAC, and willingness to drive appears to be both warranted and promising.

In conclusion, the present results have important implications for several interrelated issues which are simply outlined here without further elaboration. We need to determine the relation: (1) between actual and estimated BAC; (2) between perceived impairment and actual behavioral impairment; (3) between actual BAC, estimated BAC, and level of impairment; (4) between actual BAC, estimated BAC, perceived level of impairment, and willingness to drive; and (5) between actual BAC, estimated BAC, perceived level of impairment, willingness to drive, and subsequently crashing. Thus, one consequence of the present study is the call for additional research focused on those important variables which have been differentiated. We are currently in the initial phase of a new research program designed to investigate the first four issues listed above. This new research is designed to identify high-tolerant drinkers at bars and then to recruit them to serve as voluntary subjects in alcohol administration experiments. Thus, this new research program is expected to clarify many of the relations in the above list.

ACKNOWLEDGEMENTS

The writer gratefully acknowledges the generous help received from Dr. Mary-Ellen Fortini, Research Scientist; Dr. Robert D. Foss, Research Scientist; Ann Costanza, Senior Research Analyst; and Jay Weedon, Graduate Research Assistant, for data processing and data analysis; Dr. Robert B. Voas, Project Site Director for the DUI samples; and Dr. John K. Worden and Dr. Richard Musty for collaboration on the HAP survey instrument. This research program was supported by PHS Research Grants R01-AA06774 and R01-AA06926 from the National Institute on Alcohol Abuse and Alcoholism to M.W. Perrine, Principal Investigator.

REFERENCES


