Return to Mary Levy

DOT HS-803-400

STUDY OF SELF TEST DEVICES

John F. Oates, Jr.

Dunlap and Associates, Inc.
Darien, Connecticut 06820

Contract No. DOT HS- 5-01241
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FINAL REPORT

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16. Abstract

This study was conducted to determine whether individuals might change their drinking driving behavior if they are informed of their intoxication level and its implications relative to accident involvement and legal consequences. Individuals at public and private drinking situations voluntarily participated in breath testing and presentation of related information prior to departing from those situations. Findings disclosed that participants were no more likely to avoid driving under the influence of alcohol than were individuals not exposed to the breath test/presentation. Neither was there evidence that participants moderated their drinking on subsequent occasions.

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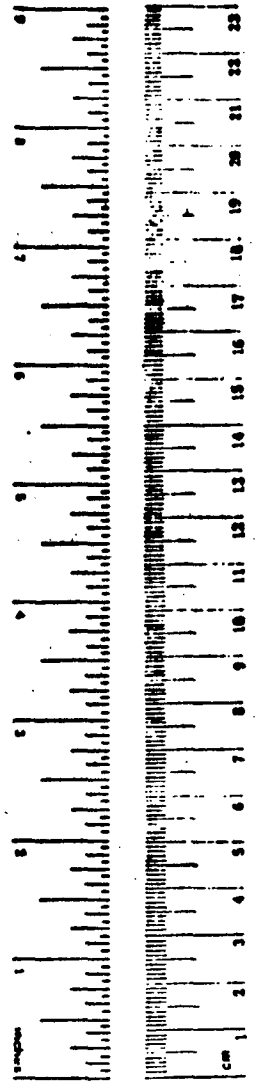
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

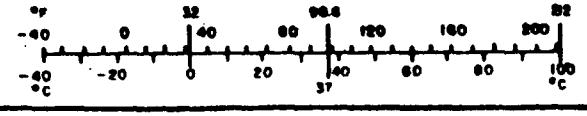
Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (exact)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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SUMMARY

This is the final report submitted under Contract No. DOT-HS-5-01241, entitled "Self Test Devices." The study was conducted to determine whether individuals might change their drinking-driving behavior if they were aware of their intoxication level and the implications of that intoxication level relative to accident involvement and legal consequences. The study was implemented at public and private drinking situations in Fairfield County, Connecticut, from December 1975 through May 1976. Individuals who were about to leave those situations voluntarily participated in a presentation of drinking-driving information, using verbal and graphic material, following which they were tested on a portable, quantitative breath alcohol measurement device. Upon departing from the situation, these individuals were observed and interviewed to determine their transportation mode and relevant background, demographic, and situational data, as well as the impact of the information presentation on their transportation decision. Observations/interviews also were conducted of individuals who elected not to participate in the presentations, as well as of individuals at comparable (control) situations where no presentations were implemented.

Analyses of the observation/interview data disclosed that individuals who participated in the information presentation were not significantly more likely to refrain from driving while under the influence of alcohol than were individuals who were not exposed to the information. Neither was there evidence that exposure to the information led to moderation of drinking on subsequent occasions. Further, these analyses showed that the impact on transportation and drinking behavior was not affected by the availability of public transportation or by repeated exposure to the information presentation.

It is concluded that the presentation of intoxication levels and related information--as implemented in this study--does not desirably affect drinking-driving behavior. However, recommendations are made concerning procedural modifications that might enhance the effectiveness of this concept.

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1. Introduction

This report, submitted to the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) under Contract No. DOT-HS-5-01241, describes procedures and results of a study of self test devices as a potential method of reducing drinking-driving incidents and alcohol related crashes. Self test devices are portable breath testing instruments capable of providing essentially instantaneous measurement of blood alcohol concentration (BAC). The instrument employed in this study was the Alcohol Screening Device (ASD) developed by the U.S. Department of Transportation, Transportation Systems Center.

This introductory section discusses the background and purpose of the study and enumerates the tasks performed. Section 2 describes experimental procedures. Section 3 presents the results of data analyses conducted to address the basic research questions. Section 4 presents the final conclusions and recommendations of the study.

1.1 Background and Purpose of the Study

The fundamental hypothesis of the study was that individuals might change their drinking-driving behavior if they were aware of their intoxication level (i.e., BAC), and the implications of that level relative to accident involvement and legal consequences. In a previous experiment (Borkenstein et al., 1971), three treatment conditions (lecture, pamphlet, and breath test) were evaluated to determine their effectiveness in increasing public and official awareness of drinking-driving laws. It was concluded that the breath test was most effective in producing a positive attitude change, given a minimal level of prior knowledge of general aspects of drinking-driving. Further, there were anecdotal observations that some individuals who knew they were above 0.10 BAC* changed their driving behavior while others did not.

The recent development, for law enforcement purposes, of relatively inexpensive and accurate breath alcohol testing devices provides a means of applying voluntary breath tests on a wide-spread basis. For example, bars, cocktail lounges, and other commercial drinking establishments could make these devices available so that their customers could test themselves before deciding whether to drive. Similarly, the devices could be loaned to hosts of private parties who might wish to extend this opportunity to their guests. The purpose of this study was to determine whether self test devices could be effective in changing the drinking-driving behavior of individuals in actual situations of these types.

*The presumptive level for operating under the influence of alcohol in most states.

The study was conducted at various public and private drinking situations in Fairfield County, Connecticut. Individuals who were about to leave these situations were approached and asked to participate in a drinking-driving information program which included an opportunity to take a breath alcohol test. Those agreeing to participate were presented with information concerning the legal consequences of driving after drinking, the relationship between drinking-driving and accident involvement, and suggestions for avoiding operation of motor vehicles while under the influence of alcohol. Following the presentation, the participant was tested to determine his BAC and the legal implications and accident likelihood associated with that BAC.

The types of changes in drinking-driving behavior that were sought were reflected in the suggestions presented for avoiding operating under the influence, and were three-fold:

1) Avoidance of immoderate drinking; participants were informed of the desirability of maintaining their BACs below 0.05--the level below which individuals legally are presumed to be not under the influence of alcohol in Connecticut and most other states. Consumption quantity guidelines for preserving low BAC were offered that were tailored to the participant's weight.

2) Planned avoidance of driving; participants were urged to avoid driving to situations at which they might engage in immoderate drinking and achieve BACs of 0,05 or more. Specific non-driving transportation modes were suggested, including public transportation, walking, and riding with a friend who could safely be expected to remain sober.

3) Change in transportation mode; in the event that a participant had driven to the drinking situation, and had attained a BAC considered "risky" (0.05-0.09) or "dangerous" (0.10 or more) for driving, he was urged to avoid driving from the situation. Alternate transportation modes that were suggested included allowing a sober friend to drive the car or to leave the car and ride with a sober friend, walk, or use public transportation.

Self test devices, coupled with the information presentation, could prove effective if significant behavioral changes were induced in any or all of the three areas listed above. Thus, to address the basic purpose of the study, data were collected and analyzed to determine:

- Whether there was a significant decrease in the incidence of immoderate drinking among persons exposed to the devices/information;

- Whether there was a significant decrease in the proportion of individuals at immoderate/high BACs who drove from the drinking situations, following exposure to the devices/information;

- Whether there was a significant increase in the frequency with which individuals at immoderate/high BACs changed to non-driving transportation modes upon departure from the drinking situations.

The specific requirements of the study were as follows:

- Selection of drinking situations; The types of situations to be employed were to be determined from a review of the drinking-driving/alcohol-crash literature. For each type chosen, both test and control sites would be selected. The test and control sites chosen to represent a given type of situation would be closely comparable with respect to appropriate demographic, situational, and other factors. The presentation of breath tests and related drinking-driving information would take place only at test sites, but data on transportation behavior would be collected at both test and control locations.

- Development of information content and format of presentation; The information presented to individuals electing to take the breath test was to include their BAC, the relationship between BAC and accident involvement, relevant drinking-driving laws, alternatives to driving while impaired by alcohol, and other relevant issues. An appropriate method for presenting the information was to be developed; this method was to include provisions for encouraging individuals to participate in the breath test, and provisions for ensuring that they would assimilate and retain the information.

- Development of a sampling plan; The sampling plan was to provide for the collection of both baseline and experimental (treatment period) data to permit identification of behavioral changes induced by the breath tests/information presentation. The plan also was to provide for multiple sampling at appropriate types of sites to determine if drinking-driving behavior would change with repeated exposure. Finally, the sampling plan was to define the days of week and times of day during which the experimental procedures were to be implemented.

- Determination of data requirements and collection procedures; At a minimum, the following types of data were to be obtained:
  - the transportation mode of individuals leaving the sites
  - their reasons for selecting the transportation mode
  - their BACs
  - relevant demographic, background, and situational variables.

  These types of information were to be obtained at both test and control sites during both the baseline and experimental periods. In addition, for those individuals who participated in the breath test/information presentation at test sites, data also were to be acquired concerning:
  - their behavior subsequent to participating
  - their attitude toward the breath test and information presented
  - the influence of the test/information on their transportation activity

  All such data were to be obtained through observations and interviews of individuals exiting the sites. This necessitated development of a questionnaire, assignment of an interviewer staff, and development of observation/interview procedures.

- Development of data analysis procedures; The data were to be analyzed to determine if differences in transportation behavior occurred:
  - between individuals who did and did not participate at test sites
  - between test sites and control sites
  - between the baseline and experimental periods
  - as a function of BAC level
  - as a function of repeated exposure to the breath test/information

  As a result of these and other analyses, answers were to be developed for the following research questions:
  1) Does an individual's knowledge of his BAC and the implication of that BAC relative to accident involvement and legal consequences alter his drinking/driving behavior?
  2) Will this approach work better in some drinking situations than in others?
  3) If a self breath test program were implemented, could it be effective in altering drinking/driving behavior?
  4) What characteristics should the test device have, and what drinking situations should be selected, to enhance utilization of the device?

The steps taken to satisfy each of the study's requirements are summarized below.

1.2 Selection of Drinking Situations

A review of the literature disclosed relatively little data that directly addressed the association between accident involvement and types of drinking situations. That is, few studies of motor vehicle crashes were found that investigated the involved drivers' focal drinking situations that immediately preceded the crashes. However, certain data were available that related situations to alcohol consumption quantity/frequency, from which useful inferences could be drawn.

Cahalan et al (1969) conducted a survey of American drinking practices in which they developed a quantity-frequency drinking classification for their respondents, and identified their most usual location of alcohol consumption. Their results, tabulated by type of beverage, were as follows:

	Most Usual Location for Distilled Spirits		
Drinking Classification	Own Home	Friends' Home	Bar/Restaurant
Light	47%	32%	22%
Moderate	48%	23%	32%
Heavy	49%	17%	38%

	Most Usual Location for Wine/Beer		
Drinking Classification	Own Home	Friends' Home	Bar/Restaurant
Light	74%	14%	13%
Moderate	65%	13%	24%
Heavy	60%	9%	35%

The home situations reported in Cahalan's data included private parties as well as solitary or small group drinking incidents. It was evident, and considered significant for this study, that drinking in these situations is the norm for all classes of drinkers and for all alcoholic beverages. Evidence also was found that these home situations contribute to drinking-driving events. Carlson (1972) conducted roadside surveys in Washtenaw County, Michigan, and ascertained that 264 of 748 drivers interviewed had been drinking prior to driving. The situations in which they had been drinking, tabulated as a function of BAC, were as follows:

Situation	BAC $<.05$	BAC $\geq .05$	Total
Own Home	32.3% (61)	28.0% (21)	31.1% (82)
Friends' Home	27.5% (52)	8.0% (6)	22.0% (58)
Bar/Club	24.9% (47)	41.3% (31)	29.5% (78)
Restaurant	7.4% (14)	13.3% (10)	9.1% (24)
Other	7.9% (15)	9.3% (7)	8.3% (22)

Slightly more than one of two drinking-drivers had been drinking in home situations prior to driving; however, these home situations accounted only for approximately one of three drivers whose BACs exceeded 0.05. And, while home drinking situations accounted for more than half of all drinking-drivers in Carlson's data, commercial situations (bars, clubs, restaurants) produced a majority of the drivers with moderate to high BACs.

Pollack et al.(1969) also compared drinking frequencies at commercial and private situations. In his study, members of two groups were asked to indicate how often they drank at commercial establishments and at parties away from home. One group of respondents consisted of a sample of individuals convicted of driving-while-intoxicated (DWI); the other group was a random sample of licensed drivers. Their findings were as follows:

	Commercial Establishments		Parties Away From Home	
Drinking Frequency	DWI	RANDOM	DWI	RANDOM
At least once every two weeks	49.1%	24.6%	18.2%	12.4%
Six-twelve times per year	19.1%	25.4%	31.5%	31.6%
Less than six times per year	29.4%	47.5%	49.1%	54.5%

The DWI and Random samples differ most clearly relative to drinking frequency at commercial establishments, which the DWI group is about twice as likely to partronize on at least a bi-weekly basis. But, the DWI group also appears to attend private parties more often than do the randomly selected drivers.

Two studies of motor vehicle crashes provided data suggestive of the relationship between drinking situations and crash involvement. Mill et al (1975) determined the usual drinking location of 89 drivers deemed responsible for fatal crashes in Oklahoma. Thirty-seven of these crashes were classified as alcohol-related, 52 as non-alcohol-related. Findings were as follows:

Location	A/R Drivers	Non-A/R Drivers
Own Home	15 (40.5%)	19 (36.5%)
Tavern	14 (37.8%)	0
Parties	1 (2.7%)	0
Family/Friends	0	1 (1.9%)
Abstainer	1 (2.7%)	24 (46.2%)
Other/Unknown	6 (16.2%)	8 (15.4%)

Sterling-Smith (1973) conducted a similar investigation of 50 fatal crashes in the Boston area. The usual drinking locations of these drivers were distributed as follows:

Own home	8 (16%)
Bar/lounge	15 (30%)
Friends' homes	18 (36%)
All of the above	5 (10%)
None/unknown	4 (8%)

Neither study determined the specific drinking situation--if any--that immediately preceded the fatal crash. But, home situations represented the most frequently cited usual drinking locations of all groups of accident-involved drivers, followed closely by commercial situations among the Boston drivers and the Oklahoma A/R drivers.

The conclusion of the literature review was that both home and commercial drinking situations are non-negligibly associated with drinking-driving. Accordingly, a decision was made to include both types of situations in this study. However, for logistical reasons, home drinking situations would be represented only by private parties with 20 or more guests: smaller groups, it was felt, would not provide sufficient data to justify the sampling costs. With respect to commercial situations a decision was made to include both bars and cocktail lounges in the study. No significant differences were found between these two types of establishments in the published literature--indeed, the literature typically treats bars and lounges as equivalent situations. However, by sampling both types of situations, it was hoped that data would be obtained from a wider cross-section of ages, races, socio-economic levels, etc., and that it would be possible to identify any distinctions that might impact on the effectiveness of the self test concept.

One other key variable was addressed in the site selection process, viz., the availability of public transportation, It was anticipated that, upon learning their BAC and its implications, some individuals might desire not to drive. The ability to satisfy that desire could depend on the availability of an acceptable alternate form of transportation. Thus, the concept might prove more effective at situations where cabs, buses, etc. were readily available. To test this hypothesis, a decision was made to select (for both commercial and party situations) sites that were served by public transportation, as well as sites where such transportation was absent.

In accordance with all of the parameters discussed above, a decision ultimately was made to select the following numbers and types of sites:

- one pair (test and control) of lounges, located in areas served by public transportation
- one pair of bars, located in areas served by public transportation
- one pair of bars, located in areas not served by public transportation
- sixteen pairs of private parties, to be divided equally between areas which were and were not served by public transportation

Within any given pair, the test and control sites were to be matched as closely as possible with respect to the number of patrons/guests served and their sex, racial, age and socio-economic distribution.

1.2.1 Specific Sites Chosen

Selection of commercial sites commenced in September 1975. During a period of approximately six weeks, the project staff contacted the managements of more than 40 candidate drinking establishments. Of these, approximately 75% were unwilling to cooperate with the study, fearing that their customers would object to the breath test/interview, and that their business would suffer. Several other sites were eliminated from consideration when it was learned that they typically served too few patrons to justify sampling. Among the relatively few sites that appeared suitable and willing to

consider participating in the study, it became evident that at least modest payment would be necessary to secure their cooperation. Accordingly, $40 per sampling event was offered.

By the close of October 1975, the necessary six sites had been selected. These were:

- Lounges
  Test Site--Cafe Scorpio (Broad Street, Stamford, Conn.)
  Control Site--The Lemon Tree Cafe (Summer Street, Stamford, Conn.)

- Bars Served by Public Transportation
  Test Site--The East Gate (Summer Street, Stamford, Conn.)
  Control Site--Coney Island Bar and Grill (Atlantic Street, Stamford, Conn.)

- Bars Not Served by Public Transportation
  Test Site--The Post Tavern (Boston Post Road, Darien, Conn.)
  Control Site--The Huddle (Iroquois Road, Stamford, Conn.)

Sampling commenced at those sites during the weekend of 12-13 December 1975, and continued through the weekend of 16-17 January 1976, by which time 5 sampling events had occurred at each site. On 23 January 1976, the management of the East Gate Bar abruptly withdrew its cooperation, claiming that several customers had complained about the interviews and the presence of the breath test devices. After consultation with the CTM, a decision was reached to cease sampling at the Coney Island Bar and Grill (the East Gate's control) and to select two new sites. During the following week, contacts were made with 46 candidate replacement sites, of which 4 were both willing to cooperate and suited to the study. The following two ultimately were selected:

Test Site--The Woodway Inn (Hope Street, Stamford, Conn.)
Control Site--Sharkey's Pub (Elm Street, Stamford, Conn.)

Sampling at those sites commenced during the weekend of 13-14 February 1976.

Detailed descriptions of all eight commercial sites are given in Appendix A.

Selection of private parties commenced in January 1976. Advertisements were placed in two relatively large circulation newspapers in Fairfield County, Connecticut. These advertisements indicated that the U.S. Department of Transportation was sponsoring a survey of parties and that Dunlap and Associates, Inc., would pay for the privilege of including a party in the survey. Neither the purpose of the survey nor any aspects of the experimental design were mentioned in the advertisement. The text of the advertisement also is shown in Appendix A.

Whenever an individual called in response to the advertisement, the project staff refrained from describing the elements/purpose of the survey until the following points were verified:

- definite plans for the party already existed. (Several callers suggested they would be willing to have a party provided the advertised payment was high enough; they were told simply that Dunlap could not consider their offer until the party's plans were definite.)

- the party was scheduled to occur on a Friday or Saturday night. (The rationale behind the restriction to Fridays and Saturdays is presented in Section 1.4.)

- A minimum of 20 guests were scheduled to attend the party.

- Alcoholic beverages would be available to the guests.

Whenever one or more of the above points were not satisfied, the caller was informed that his party could not be included in the survey. He then was thanked for his interest, but was given no information concerning the survey's purpose.

When a caller's party satisfied the four points listed above, he was asked to describe the location of the party and the age, race, sex, and socio-economic characteristics of the guests. He then was informed of the purpose of the survey, in the context of either a test or a control site. The decision as to which description would be given was in most cases determined by a coin toss. However, if one party already was scheduled to be sampled on a given date (as either a test or control), and a call was received for a comparable party to take place on the same date, the opposite (test or control) condition was described. The descriptions of the survey that were given callers also are presented in Appendix A.

If, after learning the study's purposes and procedures, a caller remained interested in having his party included in the survey, a decision concerning payment was reached. The caller initially was offered a figure that corresponded to approximately $0.75 per guest (e.g., $30 for a party scheduled to have 40 guests). In no case did the project staff agree to pay more than $1.00 per expected guest. Payment always was made by check, upon arrival by the survey team at the party.

Sampling of private parties commenced on the weekend of 30-31 January and concluded on 1 May 1976.

1.3 Content and Format of Information Presented to Subjects

The contract statement of work required that the information presented to subjects at test sites include:

- descriptive data on highway crashes and the contribution of drinking-driving to such crashes;
- discussion of laws pertaining to drinking-driving;
- descriptions of alternatives to driving while impaired by alcohol;
- the subject's BAC, and the implications of that BAC in terms of his probability of crash involvement and his status with respect to drinking-driving laws.

The content and format of presentation were to be as factual and objective as possible, and were to avoid "scare tactics" or any overstatement (or understatement) of the drinking-driving problem.

Two methods of information presentation initially were considered, viz:

- passive presentation, i.e., written material would be provided to the subject, which he would be requested to read prior to taking the breath test.
- verbal presentation, i.e., a staff member would talk to subjects (as individuals or small groups), using a prepared script.

The passive presentation approach was presumed to be the more realistic of the two for large-scale implementation of the self test con-

cept. However, it was also felt to be susceptible to numerous problems, such as:

- it would be difficult to ensure that all subjects actually would read the material; some perhaps would ignore it entirely, others would skim through it, and others might read it with considerable care. Thus, the information would be "presented" inconsistently.

- a person's willingness--and ability--to assimilate written information might be relatively more degraded by alcohol than his willingness and ability to participate in a conversation.

- subject's might be more reticent in asking clarifying questions of a passive staff member then they would be of one with whom they were engaged in conversation.

- in a passive approach, it might prove difficult to ensure that subjects had refrained from drinking prior to the breath test for a sufficient period of time (10-15 minutes) to ensure that the test result was not contaminated by residual mouth alcohol.

Because of these considerations, a decision was made to employ verbal presentations to convey the information to test subjects. Thus, this aspect of the study was conducted under more nearly ideal conditions than might be available for large-scale implementation of the concept.

A detailed outline of the information content is given in Exhibit I, which also indicates the sequence in which the constituent topics were discussed and the approximate time devoted to each topic. Exhibit I also makes reference to numerous "visual aids", e.g., charts, tables, figures, etc. that were used to enhance the presentation and, hopefully, the subject's assimilation of the information. A booklet containing all such visual aids was provided to the subject at the completion of the presentation, in the hope that this would improve his retention of the information. *

Appendix B of this report contains the presentation script and copies of all visual aids.

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*As discussed in Section 2, this booklet also was intended to signal the fact that the subject had participated in the breath test/information presentation, to ensure that his transportation behavior was determined by the observer/interviewer staff.

EXHIBIT I

INFORMATION PRESENTATION OUTLINE

A. ACCIDENT-RELATED DATA (time = 5 minutes)

1. Number of annual highway fatalities for the U.S. and Connecticut.

2. Incidence and degree of alcohol-involvement in these fatalities:
   - approximately 50% involve drivers who had been drinking
   - approximately 30% involve drivers who are presumed under the influence of alcohol (BAC 0.10).

[Visual Aid: Figure illustrating relative proportions of sober, had been drinking, and under the influence drivers in fatal crashes]

3. Alcohol consumption quantity associated with "under the influence."

[Visual Aid: Chart relating body weight and number of drinks required to attain BAC = 0.10].

4. Association between blood alcohol level and driving impairment/accident probability

[Visual Aid: Chart relating BAC to relative risk of accident]

B. DRINKING-DRIVING STATUTES (time = 5 minutes)

1. Definition and discussion of the offense of "operating under the influence," including:
   - elements of the offense
   - criminal nature of the charge
   - penalties that may be imposed

[Visual Aid: Summary of Connecticut's operating under the influence statute]

2. Definition and discussion of the implied consent statute, including:
   - concept of state regulation of the driving privilege
   - administrative revokation of driver's licenses for refusal of chemical test

[Visual Aid: Summary of Connecticut's implied consent statute]

3. Legal implications of chemical test results

[Visual Aid: Chart relating BAC levels to presumption of under the influence of alcohol]

C. ALTERNATIVES TO DRIVING UNDER THE INFLUENCE (time = 3 min.)

1. Guidelines for light-moderate drinking

2. Suggestions for "planning ahead," i.e., avoidance of driving prior to an evening's drinking: alternate forms of transportation

3. Suggestions for abandoning driving upon completion of an evening's drinking: alternate forms of transportation

[Visual Aid: Summary of guidelines and suggested transportation alternatives]

D. ADMINISTRATION OF BREATH TEST (time = 3 minues)

1. Breath Test Result

2. Implications for crash involvement (relative risk: refer to previous visual aid).

3. Implications for legal consequences (refer to previous visual aid)

4. Reinforce suggestions (if appropriate) for transportation alternatives

[Visual Aid: Summary of Test Result Implications

1.4 Sampling Plan

Key elements of the sampling plan included:

- the days of week on which sampling would occur
- the hours of day
- the number of sampling repetitions that would take place.

Like site selection, development of the sampling plan began with a review of relevant drinking-driving literature. Pollack et al. (1969) compared the crash day/time for 440 deceased drinking drivers and 375 deceased non-drinking drivers, and obtained the following results:

CRASH DAY	DRINKING DRIVERS	NON-DRINKING DRIVERS
Monday	10.0% (44)	11.3% (42)
Tuesday	9.1% (40)	14.9% (56)
Wednesday	9.8% (43)	15.7% (59)
Thursday	10.7% (47)	13.6% (51)
Friday	12.5% (55)	14.1% (53)
Saturday	22.9%(101)	16.8% (63)
Sunday	25.0%(110)	13.6% (51)

CRASH TIME	DRINKING DRIVERS	NON-DRINKING DRIVERS
6 am - 9 am	3.2% (14)	11.5% (43)
9 am - 12 noon	3.9% (17)	12.5% (47)
12 noon - 3 pm	3.6% (16)	13.8% (52)
3 pm - 6 pm	6.4% (28)	17.0% (64)
6 pm - 9 pm	15.2% (67)	14.3% (53)
9 pm - 12 mid	15.5% (68)	12.3% (46)
12 mid - 3 am	33.8%(149)	10.8% (41)
3 am - 6 am	16.6% (73)	6.7% (25)

Crashes in which drinking drivers were fatally injured clearly tend to cluster on weekends (60% on Fridays, Saturdays, and Sundays) and during the late evening-nighttime hours (66% from 9:00 pm - 6:00 am). Crashes in which non-drinking drivers were killed are much more uniformly distributed across the days and time periods. A recent study of young drivers (age 16-24) by Preusser et al. (1974) produced similar results. In that study, it was determined that 70% of the most recent alcohol-related (A/R) crashes reported by respondents had occurred on Friday, Saturday and Sunday while this was true of only 45% of their most recent non-alcohol-related crashes; further, 58% of these A/R crashes took place between 10:00 pm and 4:00 am while only 20% of the non-A/R crashes occurred during those hours.

It should be noted that Pollack's data indicate that Sundays account for the single largest proportion of drinking driver fatalities. However, it is very likely that many of these Sunday crashes were late night-early morning events (12:00 am - 5:59 am), i.e., that they followed Saturday night drinking. Similarly, many of the Saturday crashes reflect Friday night drinking. This is indicated in fatal crash data supplied by Cuyahoga County, Ohio, for 1973 (Gerber, 1973). These data were taken from 161 fatal crash-involved drivers on whom toxicological tests were conducted. Of these 71 were found to have been drinking, 90 to have not been drinking. The day of week, time of day distributions of these crashes were as follows:

	A/R CRASHES				NON-A/R CRASHES			
	DAY OF WEEK				DAY OF WEEK			
CRASH TIME	M-TH	FRI	SAT	SUN	M-TH	FRI	SAT	SUN
6 am - 12 noon	1	1	1	2	10	5	1	2
12 noon - 6 pm	1	1	5	2	13	5	3	4
6 pm - 12 mid	5	6	4	1	10	6	5	4
12 mid - 6 am	17	8	5	11	14	4	1	2

Across all times of day, alcohol-related (A/R) crashes accounted for 34% of the crashes during Monday through Thursday, and for 53% of the crashes during Friday, Saturday and Sunday. Of particular interest is the fact that 11 of the 16 A/R crashes on Sundays took place between midnight and 6:00 am, i.e., they almost certainly followed Saturday night drinking.

The time/day distributions of alcohol-related crashes generally are reflected in analogous distributions of drinking-driving events. For example, BAC measurements were obtained on 778 drivers in roadside surveys in Mecklenburg County (N.C.) during 1970, in support of the County's Alcohol Safety Action Program (Research Triangle Institute, 1971). These BACs were distributed as follows as a function of day of week and time of day:

		BAC		
Day	N	.00 - .01	.02 - .09	.10 or more
Friday-Saturday	364	70.2%	22.5%	7.3%
Sunday-Thursday	414	84.5%	14.2%	1.4%

		BAC		
Time Period	N	.00 - .01	.02 - .09	.10 or more
Evening	314	85.1%	12.9%	2.0%
Late Night	262	76.8%	19.7%	3.5%
Early Morning	202	67.7%	23.7%	8.6%

Clearly, the incidence of drinking-driving...especially at elevated BAC... is highest on weekends and during the late night-early morning periods.

In accordance with the findings cited above, a decision was made to restrict sampling to Friday and Saturday nights and, on those nights, to focus on late night-early morning time periods. For commercial sites (bars, lounges), sampling was to take place on Fridays and Saturdays from 9:00 pm to 2:00 am (the legal closing hour in Connecticut). For private parties, only Friday and Saturday events would be sampled, with the hours of sampling corresponding to the hours of the party.

The issue of sampling repetitions did not apply to private parties, since they were "once only" events not amenable to repeated exposure. For bars and lounges, it was desired to obtain data from multiple sampling events during both the baseline and experimental periods. The baseline period was designed to consist of 4 events at each site (two Fridays and two Saturdays), while 8 events (four Fridays and four Saturdays) would comprise the experimental period. This design offered what the project staff believed was the best apportionment of the study's resources between the experimental and baseline periods, given the need to:

- obtain a sufficiently large data base for both periods
- provide approximately equal representation of Friday and Saturday events
- provide sufficient experimental sampling events to identify the effects of repeated exposure.
- provide sufficient baseline sampling events to ensure stable, representative data (i.e., to minimize the distorting effects of a single "extraordinary" evening)

The sequence of Friday-versus-Saturday sampling events was counterbalanced among the six commercial sites as follows:

	BASELINE				EXPERIMENTAL							
SITE/PAIR	1	2	3	4	1	2	3	4	5	6	7	8
Post/Huddle	F	S	S	F	F	S	S	F	F	F	S	S
Scorpio/Lemon Tree	S	F	F	S	S	F	F	S	S	F	F	S
Woodway/Sharkey's	F	F	S	S	F	F	S	S	F	S	S	F

(Note: No site ever was sampled twice on the same weekend)

1.5 Determination of Data Requirements and Collection Procedures

The most important data item was the transportation mode of subjects leaving the sites. This was to be obtained--via direct observation--for all individuals, whether or not they participated in the breath test/information presentation and whether or not they consented to be interviewed upon exiting the site. Six categories of transportation mode were identified, viz:

- driver
- passenger (in a private motor vehicle)
- pedestrian
- cab
- bus
- other (bicycle, hitch-hike, etc.)

Of nearly equal importance was the subject's transportation mode employed to arrive at the site, since change in transportation behavior could be determined only by comparing the arrival and departure modes. The third most important variable was the subject's reason(s) for selecting his departure mode, especially whether this selection was in any way influenced by the self test program and/or the subject's perception of his state of alcohol impairment.

Other data of interest consisted of demographic, attitudinal, background, and situational variables that conceivably might influence the subject's transportation mode selection. These included:

Alcohol-Related Variables

- BAC
- Number of drinks consumed } with respect to the
- Type(s) of alcoholic beverages consumed } evening in question
- Time spent drinking
- Typical alcohol consumption frequency
- Typical alcohol consumption quantity

Driving-Related Variables

- Annual exposure (driving mileage)
- Frequency of driving-after-drinking
- History of driving accidents, arrests, citations
- History of drinking-driving accidents, arrests, citations

Demographic/Background Variables

- Sex, Age, and Race
- Marital status
- Employment status
- Occupation
- Income level

Situational Variables

- Other individuals travelling with the subject
- Destination upon leaving the site
- Distance to destination
- Origin of trip prior to arriving at the site
- Distance from origin to site
- Time of departure from site
- Degree of previous exposure to the self test program

Variables Related to Exposure to the Self Test Program

- Assessment of breath test accuracy
- Assessment of ease of operation of the breath test
- Willingness to use self test breath devices
- Reasons for using (or not using) self test devices
- Assessment of interest in the information presentation
- Ability to assimilate the facts conveyed in the presentation
- Degree of influence of breath test// information on transportation decision
- Reasons for influence (or lack of influence)

All of the above variables were incorporated in a questionnaire designed for simultaneous administration to multiple subjects. The questionnaire was submitted for the CTM's review during October 1975, and was employed in 5 pre-tests at commercial and private drinking situations during October - November 1975. Minor changes in the questionnaire format and content were implemented as a result of the pre-test experience.

The final version of the questionnaire is shown in Appendix C.

1.6 Development of Data Analysis Procedures

For all variables identified in Section 1.5 above, comparisons were made between:

- Test sites and the corresponding control sites
- Commercial and private situations

- Baseline and experimental periods at commercial sites
- Individuals who did and did not participate in the breath test/information

In addition, arrival and departure transportation modes and the mode change (if any) were cross-tabulated against all other variables. These comparisons and cross-tabulations served to disclose any significant differences among sites and groups of subjects, in particular those differences that were associated with transportation mode selection. Such differences in turn suggested additional cross-tabulations and comparisons of variables that were relevant to the research questions posed in Section 1.1 above.

Results of these analyses are presented and discussed in Section 3.

2. Experimental Procedures

Experimental procedures consisted of two general activities, viz., the conduct of breath tests/information presentations inside test sites during the experimental period and the conduct of observations/interviews of subjects outside all sites. Each of these is described below.

2.1 Breath Test/Information Presentation Procedures

The activities involved in conducting breath tests/information presentations inside test sites were as follows:

- At the beginning of the scheduled sampling event (9:00 pm for bars and lounges, and at various times for parties), a staff member approached the first person (or group of people obviously together) who appeared about to exit the site.

- The staff member invited the subject(s) to participate in the driving information program being sponsored by the U.S. Department of Transportation. The subject was informed that the program would require approximately 15 minutes of his time, and that it would include an opportunity to take a breath test through which he could learn the concentration of alcohol in his system. The staff member always emphasized that the program was totally anonymous and voluntary.

- If the subject declined to participate, he was nonetheless thanked for his interest and attention and handed a booklet containing copies of all visual aids employed in the information presentation. He was asked to take the booklet, to read it later at his convenience, and to pass it on to a friend when finished with it. This booklet was bound with plain white covers, and served as a signal to the observer/interviewer staff that the subject had declined to participate in the program.

- If the subject agreed to participate in the program, he immediately was escorted to the breath test/information station (typically, a table located as closely as possible to the site's exit.) There he was introduced to another staff member who commenced the presentation.

- For purposes of the presentation, the subject was issued the booklet of visual aids (in this case, bound with blue covers). Following the presentation text shown in Appendix B, the staff member discussed alcohol involvement in fatal crashes, drinking-driving laws, and alternatives to driving under the influence, instructing the subject to turn to appropriate visual aids at the proper times. Throughout this part of the presentation (which lasted approximately 13 minutes) the staff member took care to ensure that the subject consumed no additional alcohol.

- The subject then was presented with the self test device and a fresh mouthpiece, and was asked to read the operating instructions embossed on the back of the instrument. After signifying that he understood the instructions, the subject was permitted to take the breath test.

- When the test result was displayed on the device, it was viewed and discussed by the staff member and subject. The staff member then instructed the subject to turn in his booklet to the appropriate visual aid for his test result, and completed the presentation by explaining the legal consequences and relative accident likelihood implied by the subject's BAC, by repeating appropriate suggestions for transportation alternatives, and finally by thanking the subject for his time and interest and asking him to retain the blue booklet for future reference.

- Once the subject left the breath test/information station, he continued to be observed by the staff member to verify that he actually left the site, rather than remained for additional drinking. The staff member also recorded the time of the test, BAC obtained, and the subject's age, weight, race, sex, and physical description, using the form shown in Exhibit II (age and weight were obtained during the course of the presentation).

Individuals about to exit the site were approached and asked to participate in the program only if at least one staff member was free to make a presen-

EXHIBIT II

BREATH TEST/INFORMATION RECORD

Site_____
Date____/____/____
Tester_____
Page_____of_____

Subject No.	V/S Status	Specific Descriptors						General Descriptors: hair color, length; facial characteristics, clothing; other identifiers/Remarks
		BAC	Time	Race	Sex	Age	Weight	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

tation: at times, all staff members simultaneously were engaged in making presentations, and during such periods no exiting subjects were approached.*

It is important to emphasize that subjects were permitted to participate in the breath test/information presentation only if they were about to exit the site. On numerous occasions, individuals who intended to remain longer at the bar or party requested permission to take the test; they were politely informed that it could be given only to those who planned to depart immediately, and they were assured that they would have an opportunity to participate at the end of their evening. The restriction to exiting patrons/guests was intended to ensure that subjects would be exposed to the information when it was most relevant to their transportation mode selection. It was hoped that this procedure would maximize the incidence with which impaired drivers would change to non-driving modes upon departure. However, the restriction precluded the possibility that the information and breath test might induce a subject to drink less on the evening in question. Therefore, the procedures were designed to focus on changes in drinking-driving behavior involving alternate transportation modes rather than on changes involving moderation of drinking.

2.2 Observation/Interview Procedures

The observer/interviewer staff assigned to each sampling event typically included:

- one observer--his principal duty was to record each subject's exit from the site, i.e., the time of departure, the subject's race and sex, and the booklet (folder) carried by the subject (i.e., blue, white, or none). The observer also recorded the weather conditions and ambient temperature (at hourly intervals) to permit assessment of the impact of these factors on subjects' willingness to participate in the interview. The Observer Record is shown in Exhibit III.

- three to six interviewers--these individuals approached exiting subjects and administered the questionnaire shown in Appendix

*Typically, 3 members of the project staff members were assigned to conduct information presentations at commercial sites; at relatively large parties, as many as 5 staff members participated.

EXHIBIT III

OBSERVER'S RECORD

Site _____
Date ___/___/___
Observer _____
Page _____ of _____

Time	Whites		Non-Whites		Folder Status
	M	F	M	F	

C. The interviewers were instructed to delay their approach until the subject took some overt action that signalled his transportation decision (e.g., entered a car on the driver's side, etc.)

- one or two breath test operators--their sole duty was to administer breath tests to subjects at the close of their interviews. Each staff member serving in this role typically was assigned to assist 3 interviewers. The breath test operator, after verifying that one of his interviewers had an interview in progress, timed his approach to arrive at the interview scene as close to the completion of the questionnaire as possible. The operator independently recorded the breath test results, and subsequently transcribed them onto the completed questionnaire.

Shortly after commencement of private party sampling, it was learned, that the hosts were able to provide accurate counts of the total number and race/sex distribution of guests; accordingly, the observer function was dispensed with at parties. Also, at test sites during the experimental period it sufficed to assign a single breath test operator, since many subjects participated in the breath test inside the site.

Specific interviewing procedures were as follows:

- The interviewers were situated in parked cars located at positions providing clear view of the site's exits. The location of a car determined the zone of responsibility for the interviewers assigned to that position.

- When a subject (or group of subjects) exited the site, the direction in which he (they) headed determined which interviewer car would respond, the staff members assigned to that car decided among themselves which interviewer would approach the subject(s).

- The assigned interviewer recorded the subject's departure time, booklet (folder), race and sex on a questionnaire, and continued to observe the subject until a transportation decision was evident. When a single subject was involved, his entry into a parking lot was considered sufficient evidence of a transportation decision. However, when the situation involved multiple subjects entering a parking area, no approach was initiated until the group arrived

at a vehicle and the intended driver could be determined. If the subject(s) bypassed the parking area, the interviewer initiated his approach at that time.

- Upon approaching the subject(s), the interviewer introduced himself, and stated that he was an employee of Dunlap and Associates, Inc., conducting a transportation survey for the U.S. Department of Transportation. He assured the subject that the survey was entirely anonymous, and that the interview would require approximately 5 minutes.

- If the subject refused to be interviewed, the interviewer nonetheless thanked him for his time, and departed the scene. However, the interviewer continued (unobtrusively) to observe the subject to verify and record his transportation mode. The interviewer wrote the word "Refusal" on the questionnaire, and recorded any reason(s) for the refusal that were expressed by the subject.

- If the subject agreed to be interviewed, the interviewer immediately commenced posing the questions. Answers to each question were recorded for every member of the group, when multiple subjects were travelling together.

- The breath test operator delayed his approach until the interview had been in progress for approximately 3 minutes. Upon completion of the questions, the interviewer requested the subject(s) to take a breath test, and immediately introduced the operator. If the subject(s) agreed to be tested, the operator administered the test to each member of the group, always beginning with the driver (if any).

- It should be noted that, at test sites during the experimental period, the breath test operator did not approach the subject(s) if all members of the group were observed to carry blue booklets (signifying that they already had been tested inside the site). But, in that case the interviewer recorded a physical description of each subject on the last page of the questionnaire to ensure that the appropriate BAC could be associated with each subject. A physical description also was recorded for any subject with a blue booklet who refused to be interviewed.

. Upon completion of the interview/breath test, the interviewer and breath test operator thanked the subject for his time and cooperation and returned to their assigned car. The breath test operator then took the completed questionnaire and transcribed the test results on it.

Most subjects who took the outside breath test expressed a desire to learn the test result. However, they were told that the device was capable only of indicating whether or not a person had been drinking, and could not disclose the amount of alcohol consumed, nor determine whether a person was "drunk." At control sites, subjects generally accepted this explanation. However, at test sites some subjects objected that the same type of instrument was being used inside, and that people were being informed of their BACs. When this point was raised the subjects were informed that, when the device was operated from an alternating current power source it was indeed capable of indicating the concentration of alcohol, but when operated off its batteries it could indicate only the presence or absence of alcohol. In fact, the ASD always operates off self-contained batteries, but inside test sites it always was connected to a battery charger, thus giving the appearance of drawing on an independent power source. In any event, no subject ever was informed of the results of a breath test conducted outside a site.

3. Results

The data base of this study was obtained during 104 sampling events (72 at commercial establishments, 32 at private parties). A total of 9254 persons were observed to exit the sites during these events, of which 4037 (43.6%) were interviewed. Of the interviewees, 2913 (72.2%) submitted to breath tests either inside or outside the sites. At commercial test sites during the experimental period, 905 subjects were interviewed, 332 (36.7%) of whom had participated in the information. At test parties, 560 were interviewed, of whom 359 (64.1%) were participants in the information presentation. Table 1 depicts the distribution of subjects by type of site and study period. As can be seen in Table 1, individuals at private parties generally cooperated with the study; approximately 72% of those attending test parties and 84% of those at control parties consented to be interviewed. However, during the baseline period only 48% of the individuals exiting commercial test sites, and 42% of those exiting commercial control sites, agreed to be interviewed, and during the experimental period this was true of only 32% of those exiting commercial sites. The relatively high rate of cooperation at parties almost certainly reflects the fact that the hosts had alerted their guests that the study would take place and encouraged their cooperation. The decrease in cooperation at commercial sites from the base-

Table 1

Distribution of Subjects by Type of Site and Study Period

Site/Study Period	Total Persons Exiting Site	Interviewees	
		Participants	Non-Participants
Test Parties	780	359(343)	201(94)
Control Parties	684	N.A.	575(425)
Baseline--Commercial Test	1557	N.A.	755(590)
Experimental--Commercial Test	2820	332(324)	573(269)
Baseline--Commercial Control	1516	N.A.	642(471)
Experimental--Commercial Control	1897	N.A.	600(397)
TOTAL	9254	691(667)	3346(2246)

Note: figures in parentheses indicate the numbers of interviewees on whom BAC measurement was obtained.

line to experimental period probably can be attributed to the fact that many "regular" customers became increasingly reluctant to be interviewed after having cooperated on several previous occasions.

As can also be seen in Table 1, it was by no means uncommon for subjects to agree to be interviewed but refuse to take the breath test outside the site. At control parties, and at test and control commercial sites during the baseline period, approximately 26% of the interviewees declined to take the breath test. These subjects generally did not express any reasons for their refusal of the test, although in some cases there were indications that they feared possible legal consequences. At control commercial sites during the experimental period, the percentage of interviewees who refused to take the breath test exhibited a slight, non-significant increase (to 34%). However, at test sites (parties and commercial establishments) during the experimental period, outside breath tests were refused by approximately 53% of those interviewees who had not participated in the information presentation. This is not surprising in the view of the fact that many of these subjects already had declined to take a breath test when asked to do so inside the site. Unfortunately however, the relatively high rate of refusals of the outside breath tests is a possible contaminant of the comparison of the BAC distributions of subjects who did and did not participate in the information presentation.

The reader also will note that no BAC measurement is available for a small percentage of those subjects who participated in the information presentation (approximately 2% of those participating at commercial test sites, and 4% of those participating at test parties). In the majority of these cases, the lack of measurement resulted from the subject's inability to properly complete the breath test (despite repeated attempts), rather than a refusal to do so. It is perhaps of interest to note that two-thirds of the participating subjects who failed to supply a breath test were females, whereas females constituted only one-third of the total participants, which may suggest that females found the ASD relatively more difficult to use than did males.

Through the interviews numerous demographic, situational and background variables were recorded. Overall, these data disclosed that the subjects were almost exclusively caucasian (98%), predominately male (65%), and typically young (41% age 20 or less; 38% age 21-29). The vast majority (96%) at least occasionally drive motor vehicles, and 30% admitted to having at least one motor vehicle accident during the last 3 years, and 22% admitting to being ticketed or arrested for at least one driving violation during the same time period. More than two-thirds (67%) reported that they drink alcoholic beverages at least several times per week, and the majority

(58%) indicated that they drive after drinking at least once per week. Nearly half (48%) reported that they consume at least 6 drinks on a typical weekend evening when they are drinking, although most (74%) limit themselves to 3 or fewer drinks on weeknights; on the evening of their interview, approximately half (49%) admitted to having no more than 3 drinks, while an appreciable minority (19%) stated they had at least 8. About two-thirds (66%) presently were employed at least on a part-time basis; full-time students accounted for 2 out of 3 of those who were unemployed. Nearly half of the total (49%) had personal annual incomes of less than $6,000, while about 15% earned at least $15,000. However, 50% reported annual family (household) incomes of more than $20,000, and fewer than 1 in 10 (8%) indicated family incomes of less than $10,000.

Relatively few (19%) of the interviewees departed the sites alone; 50% were travelling with one other individual, and 16% with two others. Slightly less than half (49%) departed as drivers. Upon departure, the majority (51%) indicated that they were heading to their own homes, while 11% stated they were travelling to a friend's home. However, about 1 in 4 (26%) stated they were travelling to another drinking establishment or party. Among those who submitted to the breath test, approximately one-fifth (19%) exhibited BACs at or above the 0.10 level--and, one-quarter of those were at or above 0.16. About one-third (30%) of the group were in the 0.05 - 0.09 BAC range.

The remainder of this section of the report consists of the presentation of a series of analyses intended to determine the impact on transportation behavior of exposure to BAC and related information. These analyses address the three types of potential changes in drinking-driving behavior that were discussed in Section 1.1, and are intended to provide answers to the following questions:

1. Did exposure to the breath test/information presentation lead to a significant increase in the incidence of transportation mode changes?

2. Did exposure induce a significant decrease in BAC on subsequent drinking occasions?

As an introduction to these analyses, Tables 2 through 5 respectively depict:

- The distribution of arrival-departure transportation modes and mode changes

Table 2

Distribution of Arrival-Departure Transportation Modes

Subject Categories	Arriving Drivers Departing as		Arriving Non-Drivers Departing as	
	Drivers	Non-Drivers	Drivers	Non-Drivers
Test Party Participants	158 (92.9%)	12 (7.1%)	10 (5.3%)	179 (94.7%)
Test Party Non-Participants	75 (98.7%)	1 (1.3%)	2 (1.6%)	123 (98.4%)
Control Party All Subjects	256 (95.9%)	11 (4.1%)	8 (2.6%)	300 (97.4%)
Commercial Test Baseline	361 (96.8%)	12 (3.2%)	6 (1.6%)	376 (98.4%)
Commercial Test Exp. Participants	178 (96.2%)	7 (3.8%)	3 (2.0%)	144 (98.0%)
Commercial Test Exp. Non-Participants	304 (97.7%)	7 (2.3%)	6 (2.3%)	256 (97.7%)
Commercial Control Baseline	296 (98.7%)	4 (1.3%)	4 (1.2%)	338 (98.8%)
Commercial Control Experimental	308 (99.4%)	2 (0.6%)	1 (0.3%)	289 (99.7%)

Table 3

Reasons Expressed by Subjects who had Changed Transportation Mode
(Includes only those subjects who had arrived as drivers
and departed as non-drivers)

TEST PARTY PARTICIPANTS (12 mode changes)

- 10 indicated that their decision not to driver was based on the breath test result
- 1 stated that he was not under the influence of alcohol, but nevertheless did not wish to drive
- 1 refused to express a reason for the mode change

TEST PARTY NON-PARTICIPANTS (1 mode change)

- subject stated that he felt too drunk to drive

CONTROL PARTY SUBJECTS (11 mode changes)

- 9 indicated that they felt too drunk to drive
- 2 stated they were not under the influence of alcohol, but nevertheless did not wish to drive

COMMERCIAL TEST SITES--BASELINE (12 mode changes)

- 2 stated they felt too drunk to drive
- 3 stated they were travelling elsewhere (to another bar) with friends met at the site, and later would return for their vehicle
- 1 stated his car wouldn't start (and took a cab)
- 5 indicated they were not drunk, but nevertheless did not wish to drive
- 1 refused to express a reason for the mode change

COMMERCIAL TEST SITES--EXPERIMENTAL PARTICIPANTS (7 mode changes)

- 5 indicated that their decision not to drive was based on the breath test result
- 1 stated he was going elsewhere with friends met at the site, and later would return for his vehicle
- 1 refused to express a reason for the mode change

COMMERCIAL TEST SITES--EXPERIMENTAL NON-PARTICIPANTS (7 mode changes)

- 4 stated they felt too drunk to drive
- 1 stated he was not drunk, but nevertheless did not wish to drive
- 1 stated he was going elsewhere with friends met at the site, and later would return for his vehicle
- 1 refused to express a reason for the mode change

(Continued)

Table 3 (Continued)

COMMERCIAL CONTROL SITES--BASELINE (4 mode changes)

- 2 stated they felt too drunk to drive
- 2 stated they were not drunk, but nevertheless did not wish to drive

COMMERCIAL CONTROL SITES--EXPERIMENTAL (2 mode changes)

- 1 stated he felt too drunk to drive
- 1 stated he was going elsewhere with friends met at site, and later would return for his vehicle

Table 4

Distribution of BACs, All Subjects

Subject Categories	Blood Alcohol Concentration				
	Unknown	.00-.04	.05-.09	.10-.15	.16 or more
Test Party Participants	16	166 (48.4%)*	85 (24.8%)	67 (19.5%)	25 (7.3%)
Test Party Non-Participants	107	45 (47.9%)	33 (35.1%)	12 (12.8%)	4 (4.3%)
Control Party All Subjects	150	239 (56.2%)	95 (22.4%)	61 (14.4%)	30 (7.1%)
Commercial Test Baseline	165	319 (54.1%)	197 (33.4%)	57 (9.7%)	17 (2.9%)
Commercial Test Exp. Participants	8	120 (37.0%)	120 (37.0%)	59 (18.2%)	25 (7.7%)
Commercial Test Exp. Non-Participants	304	108 (40.1%)	93 (34.6%)	46 (17.1%)	22 (8.2%)
Commercial Control Baseline	171	270 (57.3%)	139 (29.5%)	48 (10.2%)	14 (3.0%)
Commercial Control Experimental	203	200 (50.4%)	121 (30.5%)	65 (16.4%)	11 (2.8%)

*Figures in parentheses are percentages of subjects with known BAC.

Table 5

Distribution of BACs, Subjects Departing as Drivers

Subject Categories	Unknown	.00-.04	.05-.09	.10-.15	.16 or more
Test Party	44	99 (49.3%)*	56 (27.9%)	33 (16.4%)	13 (6.5%)
Control Party	66	100 (50.5%)	53 (26.8%)	29 (14.6%)	16 (8.1%)
Commercial Test Baseline	81	156 (54.5%)	97 (33.9%)	24 (8.4%)	9 (3.1%)
Commercial Test Experimental	170	127 (39.6%)	114 (35.5%)	56 (17.4%)	24 (7.5%)
Commercial Control Baseline	72	122 (53.5%)	74 (32.5%)	24 (10.5%)	8 (3.5%)
Commercial Control Experimental	109	96 (48.0%)	68 (34.0%)	30 (15.0%)	6 (3.0%)

*Figures in parentheses are percentages of subjects with known BAC.

- Reasons cited by subjects for changing transportation mode
- The distribution of BACs among all subjects
- The distribution of BACs among subjects who departed as drivers.

Frequent references to these tables are made throughout the remainder of this section.

3.1 Effects of Exposure to the Information Presentation on Transportation Mode Changes

The data in Table 2 disclose that transportation mode changes were relatively rare events among all categories of subjects. The highest incidence of mode changes occurred among participants at test parties: 7.1% of those subjects who had arrived as drivers departed as non-drivers. The lowest incidence was found among patrons of commercial control sites, approximately 1% of whom made mode changes.

Comparisons of the distributions of mode change among arriving drivers disclosed the following:

1. There was no significant difference in the incidence of transportation mode changes by arriving drivers between:
   - Subjects at commercial test and control sites during the baseline period ($x^2 = 2.54$, 1 degree of freedom, $p > .10$); thus, prior to commencement of the experimental (treatment) period, the two groups of commercial establishments exhibited comparable mode change frequencies.
   - Participating and non-participating subjects at commercial test sites during the experimental period ($F = 0.13$, one-tailed); those drivers who were exposed to the presentation did not change mode significantly more (or less) often than did the drivers who were not exposed to the presentation.
   - The baseline and experimental periods at commercial test sites ($x^2 = 0.11$, 1 degree of freedom, $p > .90$); the frequency of mode changes at the test sites did not significantly increase (or decrease) once the experimental treatment (information presentation) was applied.

- The corresponding periods at commercial control sites ($F = 0.22$, one-tailed); no experimental treatment ever was applied at these control sites, and the incidence of mode change did not vary significantly with time.

- Test and control parties ($x^2 = 0.39$, 1 degree of freedom, $p > .50$); parties at which the information was presented did not produce significantly more (or fewer) mode changes than were found at parties where no presentation was made.

2. There were <u>significant differences</u> in the incidence of transtation mode changes by arriving drivers between:

   - Subjects at commercial test and control sites during the experimental period ($x^2 = 4.65$, 1 degree of freedom, $p < .05$); significantly more mode changes occurred at commercial sites where the treatment was applied than at commercial sites where the treatment was withheld.

   - Participating and non-participating subjects at test parties ($F = 0.04$, one-tailed); drivers at those parties who were exposed to BAC and related information made significantly more mode changes than did the drivers who were not exposed.

The preponderence of evidence appears to indicate that exposure to the breath test and related information had no effect on the incidence of mode changes. At test parties, despite the fact that approximately two-thirds (68%) of the arriving drivers who were interviewed had participated in the presentation, the incidence of mode change was no greater than was found at comparable parties where no presentations were made. At commercial test establishments, participants and non-participants made mode changes with comparable frequency, and the overall incidence of mode change was no greater than had been found during the baseline period. It <u>is</u> true that significantly more mode changes occurred at commercial test sites than at control sites during the experimental period; however, this finding may be an artifact of the very small samples of mode changes: had there been only <u>one additional</u> mode change at control sites, the difference would not have been statistically significant ($x^2 = 3.18$, 1 degree of freedom, $p > .05$).

The fact that participants at test parties made significantly more mode changes than did non-participants possibly reflects certain characteristic and situational differences that were found to exist between these two groups. These differences are discussed in detail subsequently in this report. For the present, suffice it to observe that:

Non-participants at test parties tended to exhibit lower BACs than did participants (17% of non-participants were at or above 0.10 BAC, as compared to 27% of participants), which may suggest that non-participants had relatively less need to make transportation mode changes.

Non-participants planned to travel shorter distances upon leaving the party than did participants. Of the participants, 31% were planning to travel at least 11 miles upon leaving the party, while this was true of only 21% of non-participants. Thus, the non-participants may have perceived less danger in driving after drinking.

The evidence presented thus far therefore does not support the hypothesis that exposure to BAC and related information will induce an increase in the frequency with which drivers change their transportation mode. However, it remains to determine whether:

- The effect of the presentation on transportation mode changes varies with the subject's BAC.
- Repeat exposure to the presentation increases the incidence of mode changes.
- The availability of public transportation affects the incidence of mode changes.

These issues are addressed separately below.

3.1.1 Association between BAC and Mode Change

Table 2 above depicted the numbers of arriving drivers who did or did not change transportation mode without reference to their BACs. The need for mode change obviously is related to BAC. Therefore, it is possible that significant differences in mode change frequency may have existed as a function of the interaction between BAC and exposure to the information presentation. To explore this possibility, Tables 6 and 7 respectively depict:

- The distribution of transportation mode changes of subjects at or above 0.10 BAC.
- The corresponding distribution of subjects with BACs in the 0.05-0.09 range.

Table 6

Distribution of Transportation Mode Changes among Subjects with BACs of 0.10 or More

Subject Categories	Arriving Drivers Departing as Drivers	Arriving Drivers Departing as Non-Drivers
Test Party Participants	40 (83.3%)	8 (16.7%)
Test Party Non-Participants	6 (100.0%)	0 (0.0%)
Control Party All Subjects	44 (86.3%)	7 (13.7%)
Commercial Test Baseline	33 (89.2%)	4 (10.8%)
Commercial Test Exp. Participants	44 (95.7%)	2 (4.3%)
Commercial Test Exp. Non-Participants	35 (97.2%)	1 (2.8%)
Commercial Control Baseline	31 (96.9%)	1 (3.1%)
Commercial Control Experimental	36 (100.0%)	0 (0.0%)

Table 7

Distribution of Transportation Mode Changes
among Subjects with BACs between 0.05-0.09

Subject Categories	Arriving Drivers Departing as Drivers	Arriving Drivers Departing as Non-Drivers
Test Party Participants	39 (97.5%)	1 (2.5%)
Test Party Non-Participants	13 (100.0%)	0 (0.0%)
Control Party All Subjects	51 (100.0%)	0 (0.0%)
Commercial Test Baseline	96 (99.0%)	1 (1.0%)
Commercial Test Exp. Participants	66 (94.3%)	4 (5.7%)
Commercial Test Exp. Non-Participants	46 (97.9%)	1 (2.1%)
Commercial Control Baseline	73 (100.0%)	0 (0.0%)
Commercial Control Experimental	68 (98.6%)	1 (1.4%)

The data of Tables 6 and 7 clearly include very small samples of mode change incidents, but were subjected to statistical analysis using Fisher's exact probability. Results were as follows:

1. Among subjects with BACs of 0.10 or more, there was no significant difference in the incidence of transportation mode change between:

   - Commercial test and control sites during baseline ($F = .19$)
   - Commercial test and control sites during the experimental period ($F = .33$)
   - The baseline and experimental periods at commercial test sites ($F = .10$)
   - The corresponding periods at commercial control sites ($F = .47$)
   - Participating and non-participating subjects at commercial test sites during the experimental period ($F = .42$)
   - Test and control parties ($x^2 = 0.025$, $p > .80$)
   - Participating and non-participating subjects at test parties ($F = .36$)

2. Among subjects with BACs between 0.05-0.09, there was no significant difference between:

   - Commercial test and control sites during baseline ($F = .57$)
   - Commercial test and control sites during the experimental period ($F = .22$)
   - The baseline and experimental periods at commercial test sites ($F = .13$)
   - The corresponding periods at commercial control sites ($F = .49$)
   - Participating and non-participating subjects at commercial test sites during the experimental period ($F = .26$)

- Test and control parties (F = .51)

- Participating and non-participating subjects at test parties (F = .75)

Thus, the findings were identical for subjects at high (.10 or more) or medium (.05-.09) BAC: in neither case was there any evidence that exposure to the information presentation had produced an increase in the incidence of transportation mode changes.

3.1.2 Effect of Repeat Exposure on Transportation Mode Changes

Repeat exposure to the information presentation occurred only at commercial test sites. Of the 185 arriving drivers who participated at those sites, 61 (33%) had done so at least once previously. Of those, 29 (47.5%) had exactly one previous exposure, and 32 (52.5%) had 2 or more previous exposures. For 8 of the participants, the degree of previous exposure could not be determined.

The incidence of mode changes as a function of the exposure to the information is indicated below:

	Arriving Drivers Departing As:	
	Drivers	Non-Drivers
Non-Participants	304 (97.7%)	7 (2.3%)
First-Time Participants	112 (96.6%)	4 (3.4%)
Repeat Participants	59 (96.7%)	2 (3.3%)

Based upon these data, there was no significant difference in the incidence of mode changes between:

- First-time participants and repeat participants (F = .33)

- Repeat participants and non-participants (F = .28)

Therefore there is no evidence that repeated exposure to the information presentation produced significantly more (or fewer) mode changes than did single exposure, or even that repeat participants were more (or less) likely to change transportation mode than were non-participants.

3.1.3 Effects of Available Transportation on Mode Changes

Two of the three commercial test sites and eight of the sixteen test parties were located in areas accessible to public transportation. The remaining test sites were located in areas where public transportation was not available. The association between mode change and availability of public transportation is indicated in Table 8. These data disclose that there was no significant difference in the incidence of mode changes between:

- Commercial sites with and without access to public transportation during the baseline period ($x^2 = 0.58$, 1 degree of freedom, $p > .30$)
- Commercial sites with and without access to public transportation during the experimental period ($x^2 = 0.59$, 1 degree of freedom, $p > .30$)
- The baseline and experimental periods at commercial sites with access to public transportation ($x^2 = 0.03$, 1 degree of freedom, $p > .80$)
- The baseline and experimental periods at commercial sites without access to public transportation ($x^2 = 0.1$, 1 degree of freedom, $p > .90$)
- Parties with and without public transportation ($x^2 = 2.03$, 1 degree of freedom, $p > .10$)

Thus, there is no evidence that the availability of public transportation affected the impact of the information presentation on the incidence of mode changes. Indeed, the use of public transportation was almost non-existent. There was only one instance where a subject used public transportation to arrive at a site; that occurred at Sharkey's Pub during the baseline period, and involved a subject who arrived and departed by bus. There were two other instances where subjects departed by public transportation, and both occurred at the Cafe Scorpio; in one of these cases, a baseline subject who had driven to the lounge departed by cab after his car failed to start; in the other case, a subject who had walked to the lounge from his place of business departed to his home by

Table 8

Association between Mode Change and Availability of Public Transportation (Test Sites Only)

	Arriving Drivers Departing as	
	Drivers	Non-Drivers
Baseline Commercial with Public Transportation	141 (95.9%)	6 (4.1%)
Baseline Commercial without Public Transportation	220 (97.3%)	6 (2.7%)
Experimental Commercial with Public Transportation	206 (96.3%)	8 (3.7%)
Experimental Commercial without Public Transportation	235 (97.5%)	6 (2.5%)
Parties with Public Transportation	119 (96.7%)	4 (3.3%)
Parties without Public Transportation	114 (92.7%)	9 (7.3%)

bus. No subject ever used public transportation to or from a private party. Thus, although public transportation was readily available at approximately half of the sites, it is evident that the vast majority of patrons and guests at those sites prefer private means of transportation.

To summarize this section, the findings indicated that the conduct of breath test/information presentations for subjects about to depart from commercial or private drinking situation did not induce a significant increase in the overall incidence of transportation mode changes. Further, when comparisons were made only for subjects at high (.10 or above) or medium (.05-.09) BAC, the incidence of mode changes among persons exposed to the presentations was not appreciably different from that of persons who were not exposed. Further, there was no evidence that either repeated exposure to the presentations or the availability of public transportation enhanced the effectiveness of the presentation in encouraging mode changes.

3.2 Effects of Exposure to the Information Presentation on Blood Alcohol Concentration

As stated previously, participation in the information presentation was restricted to subjects who were about to depart from the test sites. As a result, it was extremely unlikely that a subject's participation could have affected his BAC on that specific evening. However, it was hoped that exposure to the information would lead subjects to moderate their drinking on subsequent occasions, particularly if they planned to drive. Direct measurement of this effect would have required comparison of the BACs of the same subjects on different occasions, i.e., on their evening of participation versus subsequent sampling evenings. This direct measurement was precluded by the fact that names or other unique identifiers of subjects were not recorded. Therefore, assessment of the effects of the presentations on BAC relied solely on indirect measures, e.g.,:

- Comparisons of overall BAC distributions of the baseline and experimental periods.

- Comparisons of the BAC distributions of repeat participants and first-time participants.

- Comparisons of the BAC distributions during the first and second halves of the experimental period.

These comparisons were made both for all subjects and for those who departed as drivers. Findings are presented below.

3.2.1 BAC Distribution of the Total Subject Populations

The BAC distributions of all subjects, irrespective of their transportation modes, were presented in Table 4. These data disclosed that there was no significant difference between the BAC distributions of subjects:

- At commercial test and control sites during the baseline period ($x^2 = 1.83$, 3 degrees of freedom, $p > .30$); at both types of establishments during that period, approximately 13% of the subjects who took outside breath tests were at or above 0.10 BAC. Thus, the test and control establishments initially were comparable with respect to that important parameter.

- At test and control parties ($x^2 = 6.39$, 3 degrees of freedom, $p > .05$); at both types of parties, 21-25% of the subjects tested were at or above 0.10 BAC.

- Who did or did not participate in the information presentation at commercial test sites during the experimental period ($x^2 = 0.76$, 3 degrees of freedom, $p > .80$). Thus, the participants at those sites appear to be an unbiased sampled of the total patron population, relative to drinking behavior.

- Who did or did not participate in the information presentation at test parties ($x^2 = 5.81$, 3 degrees of freedom, $p > .10$). However, while the difference was not statistically significant, relatively fewer non-participants than participants were at or above 0.10 BAC (17% versus 27%, respectively).

These findings simply indicate that site selection procedures produced test and control situations whose patrons/guests had comparable drinking behavior, and that this behavior did not affect their decision to participate in the information presentation. Of perhaps greater importance, significant differences in subjects' BAC distribution were found between:

- The baseline and experimental periods at commercial test sites ($x^2 = 44.04$, 3 degrees of freedom, $p < .001$). However, the dif-

ference is due to the fact that BACs generally were higher during the experimental period than they had been during baseline; 26% of subjects at those sites during the experimental period were at or above 0.10 BAC, as compared to 13% during baseline.

- The corresponding periods at commercial control sites ($x^2 = 8.34$, 3 degrees of freedom, $p > .05$). Again, BACs were higher during the experimental period than they had been during baseline; while 13% of control site subjects had been at or above 0.10 BAC, this increased to 19% during the last 8 weeks of sampling.

- Commercial test and control sites during the experimental period ($x^2 = 20.95$, 3 degrees of freedom, $p > .001$). While BACs increased at both test and control sites during the experimental period, the increase was significantly greater at test sites than at control sites.

If these differences had been in the opposite direction, i.e., if there had been a significant decrease in BAC from the baseline to experimental periods at test sites and significantly lower BACs at test sites as compared to control sites, the evidence might have suggested that the information presentations had a desirable effect on drinking behavior. Clearly, however, the findings do not support such a conclusion. Moreover, these findings raise the possibility that the study's procedures had an undesirable effect on drinking behavior: it is conceivable that subjects drinak more than they otherwise would have precisely because they knew that breath tests were being conducted, and they wished to produce "impressive" results; this motive presumably would have carried greater weight at test sites, where subjects had an opportunity to learn their BACs. Alternatively, the significant increases in BAC might reflect a gradual reduction of the fear and suspision that some subjects may have felt toward the study. Despite the fact that staff members always assurred subjects that the sudy was not associated with the police or other regulatory agencies, some individuals undoubtedly feared that they would face legal consequences if they submitted to the breath test. During the initial weeks of the study, this may have caused some to refuse the test if they believed themselves to be under the influence of alcohol. As time went on, and no legal reprecussions occurred, such fears may have been dispelled. The net result could have been that the BACs of subjects tested during the experimental period may have been more representative of all patrons that had been the case during baseline. This effect, too, presumably would have been relatively stronger at test sites than control sites, since test site patrons were able to acquire a better understanding of the study's purposes. There is no evidence to support either of these conjectures. Suffice

it to say simply that the application of the experimental treatment clearly did not produce an overall decrease in BAC from that found during the baseline period.

Although the preceding comparisons disclose no evidence of a reduction in BAC following commencement of the experimental treatment, more sensitive measures of this possible effect are available. It must be recognized that on any given evening a relatively small percentage of the patrons of test sites were exposed to the information presentation; even assuming that these participants moderated their drinking behavior on subsequent evenings, the effect on the total population's BAC distribution might not be noticeable until appreciable time had elapsed. In particular, if the desired effect was produced, it presumably would be more noticeable near the end of the experimental period. To test this, comparisons were made of the BAC distributions over the first four and last four evenings of the experimental period. The data are shown below:

	BAC			
	.00-.04	.05-.09	.10-.15	.16 or More
1st half experimental test sites	124 (36.4%)	118 (34.6%)	66 (19.4%)	33 (9.7%)
2nd half experimental test sites	104 (41.3%)	95 (37.7%)	39 (15.5%)	14 (5.6%)
1st half experimental control sites	101 (45.1%)	74 (33.0%)	39 (17.4%)	10 (4.5%)
2nd half experimental control sites	99 (57.2%)	47 (27.2%)	26 (15.0%)	1 (0.6%)

These data indicate that the BAC distributions did not differ significantly between the first and second halves of the experimental period at test sites ($x^2 = 5.64$, 3 degrees of freedom, $p > .10$), but there was a significant difference at control sites ($x^2 = 9.62$, 3 degrees of freedom, $p > .05$). At both types of sites, relatively fewer subjects were at or above 0.10 BAC during the last four weeks as compared to the first four weeks (22% versus 29% at test sites, and 16% versus 22% at control sites). The reduction in BAC at test sites might be considered suggestive of a desirable effect of the information presentations, but the fact that a similar (and significant) reduction also occurred at sites where no presentation was made argues against such a conclusion.

One final comparison of relevance to this issue involves the BACs of repeat participants and first-time participants. The former group, having had previous exposure to the information presentation, presumably would be more likely to have moderated their drinking behavior. The data forming this comparison are shown below:

	BAC			
	.00-.04	.05-.04	.10-.15	.16 or more
First Time Participants	79 (39.7%)	81 (40.7%)	29 (14.6%)	10 (5.0%)
Repeat Participants	36 (33.3%)	38 (35.2%)	23 (21.3%)	11 (10.2%)

These distributions are not significantly different ($x^2 = 5.9$, 3 degrees of freedom, $p > .10$), and indeed it is evident that repeat participants exhibited somewhat higher BACs than did first-time participants at the commercial test sites: 32% of repeat participants, but only 20% of first-time participants, had BACs of 0.10 or more. This, too, might suggest that the experiment led to an undesirable increase in drinking. However, it may simply be that the repeat participants--because they presumably included more "regular" patrons who had a greater opportunity to participate on multiple occasions--were generally heavier drinkers than were the first-time participants.

The ideal measure of the effects of the presentation on drinking behavior would be a comparison of the BACs of repeat participants on their first and subsequent exposure. This measure cannot be applied since it was not deemed appropriate to attempt to record subject's names or other unique identifiers that would have permitted association of the sequence of breath tests taken by specific individuals.

The indirect measures that are available thus do not support the hypothesis that exposure to the information presentation will lead to a general moderation of drinking behavior among the total patron population. It remains to determine whether this effect was produced among subjects who drove from the sites.

3.2.2 BAC Distribution of Subjects who Departed as Drivers

The BAC distributions of departing drivers were presented in Table 5. These data disclosed that there was no significant difference in the distribution of drivers' BACs between:

- Commercial test and control sites during baseline ($x^2 = 0.78$, 3 degrees of freedom, $p > .80$); approximately 12% of the baseline drivers at test sites and 14% of those at control sites had BACs of 0.10 or more.

- Commercial test and control sites during the experimental period ($x^2 = 6.86$, 3 degrees of freedom, $p > .05$); however, 25% of the experimental period drivers at test sites had BACs of 0.10 or more, as compared to only 18% of those at control sites.

- The baseline and experimental periods at commercial control sites, ($x^2 = 2.49$, 3 degrees of freedom, $p > .30$).

- Test and control parties ($x^2 = 0.63$, 3 degrees of freedom, $p > .80$).

However, there was a significant difference in the drivers' BACs between the baseline and experimental periods at commercial test sites ($x^2 = 22.01$, 3 degrees of freedom, $p > .001$). As was the case with the total subject population, the experimental period drivers exhibited higher BACs than did the baseline drivers, and were approximately twice as likely (25% versus 12%) to have BACs of 0.10 or more.

These findings clearly do not indicate that the information presentations had the desired effect on the drinking behavior of drivers. The same is true of the following comparisons, which explore the effects of elapsed time:

	BAC	
	.00-.09	.10 or more
1st half experimental test site drivers	130 (71.0%)	53 (29.0%)
2nd half experimental test site drivers	112 (79.4%)	29 (20.6%)

(continued from previous page)

	BAC	
	.00-.09	.10 or more
1st half experimental control site drivers	91 (79.8%)	23 (20.2%)
2nd half experimental control site drivers	73 (84.9%)	13 (15.1%)

No significant difference in drivers' BACs existed between the first and second halves of the experimental period, either at test sites ($x^2 = 2.97$, 1 degree of freedom, $p > .05$) or control sites ($x^2 = 0.85$, 1 degree of freedom, $p > .30$). At both sites, there was a general decrease in the percentage of drivers with BACs of 0.10 or more, paralleling the decrease that was found among all subjects. But, this does not appear to be attributible to the effects of the experimental treatment.

Test site drivers' BACs also do not appear to be associated with degree of exposure to the information presentation, in that the distributions of first-time participant drivers and repeat participant drivers were not significantly different ($x^2 = 0.65$, 1 degree of freedom, $p > .30$). The data forming this comparison are shown below.

	BAC	
	.00-.09	.10 or more
First-time participant drivers	91 (79.1%)	24 (20.9%)
Repeat participant drivers	45 (73.8%)	16 (26.2%)

Thus, the available evidence does not suggest that the application of the experimental treatment affected drinking-driving behavior by inducing moderation of drinking among drivers.

To summarize this section, the findings indicated that the conduct of breath tests/information presentations for subjects about to depart from commercial drinking situations did not induce an overall decrease in BAC at those situations, either among the total subject population or among the subjects who

departed as drivers. In fact, significant increases in the BACs of all subjects and all drivers occurred at test sites following commencement of the information presentations.

Although there is no evidence that the desired effect on subjects' drinking behavior was produced, it must be kept in mind that:

1. The measures that were available to assess this effect were indirect, and may not have been sensitive to relatively small but possibly meaningful changes in the desired direction; perhaps more importantly,

2. The study's procedures precluded the possibility that exposure to the breath test and related information might have induced some subjects to moderate their drinking on the specific evening of their participation. Had subjects been permitted to participate whenever they so desired, rather than only when they were about to depart, some might have decided to cease drinking at an earlier point in time.

The ability of self test devices, coupled with relevant drinking-driving information, to induce moderation of drinking among persons at commercial and private situations thus remains an open issue. At this time, it is possible to conclude only that moderation of drinking apparently does not result if subjects are permitted access to the device/information only when they are about to depart from these situations.

3.3 Comparisons of Participating and Non-Participating Subjects

Participation in the information presentation was strictly voluntary. This raises the possibility that participants may not have been representative of the total subject population with respect to certain demographic or situational factors, and that these factors might have affected the subjects' need, willingness, and ability to make transportation mode changes or moderate their drinking behavior. To explore this issue, comparisons were made between participants and non-participants with respect to all background, demographic and situational variables identified in the observation/interview process. The data forming these comparisons are shown in Tables 9 and 10, respectively, for commercial test sites and test parties.

Table 9

Comparisons of Commercial Test Site Participants and Non-Participants relative to Background, Demographic, and Situational Variables

Variable	Participants	Non-Participants
Sampling Day - Friday	183 (55.1%)	285 (49.7%)
Saturday	149 (44.9%)	288 (50.3%)
Departure Time - 9 PM - 10:59 PM	94 (28.3%)	178 (32.0%)
11 PM - 12:59 PM	162 (48.8%)	223 (40.1%)
1 AM or later	76 (22.9%)	155 (27.9%)
Group Size - 1 (traveling alone)	92 (27.7%)	155 (27.1%)
2	162 (49.7%)	270 (47.3%)
3 or more	75 (22.6%)	146 (25.6%)
Booklet - Blue	312 (94.0%)	-
White	-	251 (43.9%)
None	20 (6.0%)	321 (56.1%)
Sex - Male	252 (75.9%)	405 (71.3%)
Female	80 (24.1%)	163 (28.7%)
Race - Caucasian	328 (98.8%)	557 (97.9%)
Other	4 (1.2%)	12 (2.1%)
Age - 20 or younger	180 (54.2%)	289 (50.5%)
21 - 29	102 (30.7%)	232 (40.6%)
30 or older	50 (15.1%)	51 (8.9%)
Drives - Yes	315 (95.2%)	545 (95.3%)
No	16 (4.8%)	27 (4.7%)
Annual Mileage - less than 5,000	63 (19.6%)	124 (22.3%)
5 - 10,000	110 (34.3%)	180 (32.4%)
11 - 15,000	62 (19.3%)	116 (20.9%)
16,000 or more	86 (26.8%)	135 (24.3%)
Arrival Mode - Driver	185 (55.7%)	311 (54.3%)
Non-Driver	147 (44.3%)	262 (45.7%)
Departure Mode - Driver	181 (54.5%)	310 (54.1%)
Non-Driver	151 (45.5%)	263 (45.9%)

(Continued)

Table 9 (Continued)

Variable	Participants	Non-Participants
Time Spent at Site - 1 hour or less	123 (37.5%)	311 (55.7%)
2 - 3 hours	139 (42.4%)	176 (31.5%)
4 hours or more	66 (20.1%)	71 (12.7%)
Origin - Own home	139 (42.1%)	256 (44.8%)
Friend's home	48 (14.5%)	82 (14.3%)
Other drinking situation	72 (21.8%)	129 (22.6%)
Work	27 (8.2%)	43 (7.5%)
Other	44 (13.3%)	62 (10.8%)
Destination - Own home	159 (49.7%)	226 (39.9%)
Friend's home	39 (12.2%)	60 (10.6%)
Other drinking situation	92 (28.8%)	197 (34.8%)
Work or other	30 (9.4%)	83 (14.7%)
Distance from Origin - 1 mile or less	62 (18.8%)	104 (18.4%)
2 - 3 miles	115 (34.8%)	168 (29.4%)
4 - 5 miles	66 (20.0%)	137 (24.0%)
6 miles or more	87 (26.4%)	161 (28.2%)
Distance to Destination - 1 mile or less	57 (18.0%)	88 (15.9%)
2 - 3 miles	107 (33.9%)	199 (36.1%)
4 - 5 miles	71 (22.5%)	116 (21.0%)
6 miles or more	81 (25.6%)	149 (27.0%)
Number of Drinks - 3 or fewer	124 (38.0%)	289 (51.1%)
4 - 7	116 (35.6%)	182 (32.2%)
8 or more	86 (26.4%)	95 (16.8%)
Beverage Type - Beer only	149 (48.1%)	262 (49.4%)
Whiskey only	115 (37.1%)	204 (38.5%)
Beer and whiskey	36 (11.6%)	50 (9.4%)
Other	10 (3.2%)	14 (2.6%)
Weight - 140 lbs. or less	90 (28.5%)	184 (33.9%)
141 - 160	82 (25.9%)	129 (23.8%)
161 - 180	74 (23.4%)	127 (23.4%)
181 or more	70 (22.2%)	103 (19.0%)
Marital Status - Never married	251 (77.0%)	485 (84.8%)
Currently married	57 (17.5%)	66 (11.5%)
Formerly married	18 (5.5%)	21 (3.7%)

(Continued)

Table 9 (Continued)

Variable		Participants	Non-Participants
Drinking Frequency -	Daily	77 (23.7%)	120 (21.1%)
	Several/week	154 (47.4%)	297 (52.1%)
	Once/week or less	94 (28.9%)	153 (26.8%)
Drinking-Driving Frequency -	Daily	44 (13.6%)	78 (13.7%)
	Several/week	130 (40.1%)	194 (34.0%)
	Once/week or less	150 (46.3%)	308 (54.0%)
Typical Quantity (Weekend) -	3 or fewer drinks	48 (14.9%)	113 (20.5%)
	4 - 5 drinks	63 (19.6%)	133 (24.1%)
	6 - 10 drinks	132 (41.0%)	214 (38.8%)
	11 or more drinks	79 (24.5%)	92 (16.7%)
Typical Quantity (Week night) -	0 or 1 drink	137 (42.5%)	290 (51.8%)
	2 - 3 drinks	88 (27.3%)	133 (23.8%)
	4 - 5 drinks	51 (15.8%)	68 (12.1%)
	6 drinks or more	46 (14.3%)	69 (12.3%)
Driving Tickets (last 3 years) -	None	234 (72.0%)	423 (75.1%)
	One	49 (15.1%)	70 (12.4%)
	Two or more	42 (12.9%)	70 (12.4%)
Drinking-Driving Tickets (last 3 years)			
- None		295 (90.5%)	526 (92.6%)
- One or more		31 (9.5%)	42 (7.4%)
Accidents (last 3 years) -	None	220 (68.3%)	382 (68.0%)
	One	57 (17.7%)	129 (23.0%)
	Two or more	45 (14.0%)	51 (9.1%)
Drinking-Driving Accidents (last 3 years)			
- None		288 (88.6%)	522 (91.9%)
- One or more		37 (11.4%)	46 (8.1%)
Number of Previous Interviews -	None	208 (64.4%)	398 (70.6%)
	One	60 (18.6%)	84 (14.9%)
	Two or more	55 (17.0%)	82 (14.5%)

Table 10

Comparisons of Test Party Participants and Non-Participants relative to Background, Demographic, and Situational Variables

Variable	Participants	Non-Participants
Sampling Day - Friday	99 (27.6%)	69 (34.3%)
Saturday	260 (72.4%)	132 (65.7%)
Departure Time - 11 PM - 12:59 AM	161 (46.3%)	112 (58.0%)
1 AM or later	187 (53.7%)	81 (42.0%)
Group Size - 1 (traveling alone)	44 (12.3%)	19 (9.5%)
2	199 (55.4%)	121 (60.2%)
3 or more	166 (32.3%)	61 (30.3%)
Booklet - Blue	302 (84.1%)	-
White	-	52 (25.9%)
None	57 (15.9%)	149 (74.1%)
Sex - Male	207 (58.3%)	88 (44.0%)
Female	148 (41.7%)	112 (56.0%)
Race - Caucasian	353 (99.4%)	201 (100.0%)
Other	2 (0.6%)	0 (0.0%)
Age - 20 or under	64 (17.9%)	51 (25.6%)
21 - 29	150 (41.9%)	83 (41.7%)
30 or over	144 (40.2%)	65 (32.7%)
Drives - Yes	353 (98.3%)	193 (96.0%)
No	6 (1.7%)	8 (4.0%)
Annual Mileage - less than 5,000	56 (15.9%)	68 (34.5%)
5 - 10,000	132 (37.5%)	69 (35.0%)
11 - 15,000	81 (23.0%)	35 (17.8%)
16,000 or more	83 (23.6%)	25 (12.7%)
Arrival Mode - Driver	170 (47.4%)	76 (37.8%)
Non-Driver	189 (52.6%)	125 (62.2%)
Departure Mode - Driver	168 (46.8%)	77 (38.3%)
Non-Driver	191 (53.2%)	124 (61.7%)

(Continued)

Table 10 (Continued)

Variable	Participants	Non-Participants
Time Spent at Party - 1 hour or less	55 (15.9%)	71 (37.0%)
2 - 3 hours	127 (36.8%)	72 (37.5%)
4 or more hours	163 (47.2%)	49 (25.5%)
Origin - Own home	214 (59.6%)	108 (53.7%)
Friend's home	69 (19.2%)	37 (18.4%)
Other drinking situation	42 (11.7%)	34 (16.9%)
Other	34 (9.5%)	22 (10.9%)
Destination - Own home	267 (74.3%)	120 (59.7%)
Friend's home	31 (8.6%)	21 (10.4%)
Other drinking situation	36 (10.0%)	33 (16.4%)
Other	25 (7.0%)	27 (13.4%)
Distance from Origin - 3 miles or less	138 (38.4%)	84 (41.8%)
4 - 10 miles	110 (30.6%)	81 (40.3%)
11 miles or more	111 (31.0%)	36 (17.9%)
Distance to Destination - 3 miles or less	135 (37.7%)	89 (44.5%)
4 - 10 miles	111 (31.0%)	69 (34.5%)
11 miles or more	112 (31.3%)	42 (21.0%)
Number of Drinks - 3 or fewer	135 (37.9%)	82 (41.0%)
4 - 7	126 (35.4%)	68 (34.0%)
8 or more	95 (26.7%)	50 (25.0%)
Beverage Type - Beer only	106 (32.1%)	83 (45.1%)
Whiskey only	129 (39.1%)	48 (26.1%)
Wine only	41 (12.4%)	27 (14.7%)
Beer and whiskey	30 (9.1%)	15 (8.2%)
Other	24 (7.3%)	11 (6.0%)
Weight - 120 lbs. or less	70 (20.0%)	49 (26.3%)
121 - 140	73 (20.9%)	43 (23.1%)
141 - 160	62 (17.7%)	28 (15.1%)
161 - 180	80 (22.9%)	39 (21.0%)
181 or more	65 (18.6%)	27 (14.5%)
Marital Status - Never married	167 (46.6%)	121 (60.5%)
Currently married	178 (49.7%)	69 (34.5%)
Formerly married	13 (3.6%)	10 (5.0%)

(Continued)

Table 10 (Continued)

Variable		Participants	Non-Participants
Drinking Frequency -	Daily	58 (16.3%)	22 (11.0%)
	Several/week	153 (43.0%)	102 (51.0%)
	Once/week or less	145 (40.7%)	76 (38.0%)
Drinking-Driving Frequency -	Daily - Several/week	112 (31.5%)	61 (30.5%)
	Once/week - several/month	108 (30.3%)	63 (31.5%)
	Once/month or less	136 (38.2%)	76 (38.0%)
Typical Quantity (Weekend) -	3 or fewer drinks	145 (41.9%)	70 (35.4%)
	4 - 5 drinks	58 (16.8%)	44 (22.2%)
	6 - 10 drinks	98 (28.3%)	55 (27.8%)
	11 or more drinks	45 (13.0%)	29 (14.6%)
Typical Quantity (Week night) -	None	145 (41.3%)	75 (37.9%)
	One	71 (20.3%)	36 (18.2%)
	2 - 3	73 (20.8%)	45 (22.7%)
	4 or more	62 (17.7%)	42 (21.2%)
Driving Tickets (last 3 years) -	None	292 (82.0%)	173 (86.5%)
	One	43 (12.1%)	17 (8.5%)
	2 or more	21 (5.9%)	10 (5.0%)
Drinking-Driving Tickets (last 3 years) -	None	340 (94.7%)	191 (95.5%)
	One or more	19 (5.3%)	9 (4.5%)
Accidents (last 3 years) -	None	263 (73.9%)	149 (74.9%)
	One	77 (21.6%)	36 (18.1%)
	2 or more	16 (4.5%)	14 (7.0%)
Drinking-Driving Accidents (last 3 years) -	None	343 (95.8%)	179 (89.9%)
	One or more	15 (4.2%)	20 (10.1%)

With respect to commercial test sites, the data of Table 9 disclosed that participants and non-participants differed significantly relative to:

- Age ($x^2 = 13.15$, 2 degrees of freedom, $p < .001$). Fewer participants than non-participants were of the 21-29 age range (31% vs. 41%), but participants included relatively more individuals of the 30-or-over range (15% vs. 9%) and relatively more of the 20-or-under range (54% vs. 51%).

- Departure time ($x^2 = 6.53$, 2 degrees of freedom, $p < .05$). Relatively fewer participants than non-participants had remained at the site until 1:00 a.m. or later (22% vs. 28%). That is, patrons who departed earlier in the evening were more likely to participate than than were those who departed near closing time.

- Amount of time spent at site ($x^2 = 28.16$, 2 degrees of freedom, $p < .001$). Participants tended to have been at the site for a greater portion of the evening than had non-participants; more than half (56%) of the non-participants had spent one hour or less at the site, while this was true of only about a third (38%) of the participants.

- Number of drinks consumed ($x^2 = 17.69$, 2 degrees of freedom, $p < .001$). Participants admitted to having had more drinks on the evening in question than did non-participants; 62% of participants but only 49% of non-participants, stated they had at least 4 drinks. This might be attributed to the fact that non-participants had spent less time at the establishment; however, the next finding suggests that it may reflect routine drinking behavior.

- Typical weekend drinking quantity ($x^2 = 11.97$, 3 degrees of freedom, $p < .01$). Participants indicated that they drink more on a typical weekend evening than do non-participants; 66% and 55% of the two groups, respectively, indicated an average consumption of at least 6 drinks on such evenings. The two groups did not differ significantly with respect to their typical weeknight drinking quantities ($x^2 = 7.32$, 3 degrees of freedom, $p > .05$), but participants tended toward greater quantities on those nights than did non-participants.

- Destination upon departure (x^2 = 11.73, 3 degrees of freedon, $p < .01$). Participants were more likely to be heading toward their own homes (50% vs. 40%), and less likely to be traveling to another drinking situation (29% vs. 35%) than were the non-participants. This finding likely is associated with the fact that non-participants tended to have been at the site fo a shorter period of time, i.e., the non-participants probably included relatively more individuals who were "bar hopping."

- Accident involvement (x^2 = 7.21, 2 degrees of feeedom, $p < .05$). Although 32% of both participants and non-participants admitted to having had a motor vehicle accident during the past 3 years, relatively more participants stated that they had been involved in multiple accidents; 14% of the participants, but only 9% of non-participants, indicated they had at least 2 accidents. Moreover, of the participants who had at least one accident, 36% admitted to having had an accident on an occasion when they were driving after drinking (37 of 102), while this was true of 26% of the non-participants who had been involved in accidents (46 of 180).

- Marital Status (x^2 = 8.54, 2 degrees of freedom, $p < .02$). Non-participants were more likely to have never been maried than were participants (85% vs. 77%). This might be attributible to the fact that participants included relatively more individuals who were at least 30 years old.

Therefore, in a number of potentially important respects the individuals who elected to participate in the information presentation at commercial test sites differed from those who declined to do so. The fact that the typical participant tended to drink more, and had a higher incidence of accident--and drinking/driving accident--involvement, than the typical non-participant suggests that the individuals who were exposed to the information generally were those who presumably would benefit most from that exposure. However, even given that exposure, these individuals did not change transportation mode significantly more often than did the lighter drinking, less accident-involved non-participants.

With respect to test parties, the data of Table 10 disclosed that participants and non-participants differed significantly relative to:

- Sex (x^2 = 10.52, 1 degree of freedom, $p < .001$). Females constituted 56% of non-participants, but only 42% of participants).

- Arrival mode ($x^2 = 4.73$, 1 degree of freedom, $p < .05$). Only 38% of non-participants had driven to the party, as compared to 47% of the participants. This probably reflects the sex difference discussed above, i.e., males were more liekly to drive to the parties than were females.

- Annual mileage ($x^2 = 28.83$, 3 degrees of freedom, $p < .001$). More than one-third of the non-participants (34.5%) indicated that they drive less than 5,000 miles per year, while this was true of only 16% of participants. Similarly, nearly one-quarter (23.6%) of the participants stated that they drive at least 16,000 annual miles, while only 13% of non-participants drive that much. Again, this may be related to the sex difference previously discussed.

- Departure time ($x^2 = 6.88$, 1 degree of freedom, $p < .01$). Fifty-eight percent (58%) of the non-participants left the parties prior to 1:00 a.m., as compared to 46% of participants. Apparently, the later-staying guests were more likely to consent to participate..

- Time spent at party ($x^2 = 38.03$, 2 degrees of freedom, $p < .001$). Seventy-four percent (74%) of the non-participants, but only 53% of the of the participants, spent 3 hours or less at the party. This would appear to reflect the departure time difference discussed above.

- Destination upon departure ($x^2 = 14.55$, 3 degrees of freedom, $p < .01$). Participants were more likely to be heading to their own homes than were non-participants (74% vs. 60%), and participants were less likely to be heading to other drinking situations (10% vs. 16%). Again, this may reflect the departure time difference.

- Distance traveled to the party ($x^2 = 12.20$, 2 degrees of freedom, $p < .01$). Participants were more likely to have traveled in excess of 10 miles to attend the party than were non-participants (31% vs. 18%).

- Distance traveled from the party ($x^2 = 6.88$, 2 degrees of freedom, $p < .05$). More participants than non-participants planned to travel in excess of 10 miles upon leaving the party (31% vs. 21%).

- Type of alcoholic beverage consumed ($x^2 = 12.08$, 4 degrees of freedom, $p < .02$). Nearly half (45%) of the non-participants stated that they drank beer exclusively at the party, while this was true of about

4 out of 10 (39%) participants had been drinking only whiskey at the party, as compared with one-quarter (26%) of the non-participants.

- Marital status (x^2 = 12.07, 2 degrees of freedom, $p < .001$). About half (49.7%) of the participants currently were married, but this was true only of one-third (34.5%) of non-participants.

- Drinking-driving accident involvement (x^2 = 7.46, 1 degree of freedom, $p < .01$). Participants were less likely to admit involvement in motor vehicle accidents following drinking than were non-participants (4% vs. 10%, during the last 3 years). This may be especially important in view of the fact (previously discussed) that non-participants admitted less driving exposure. Overall, participants and non-participants were about equally likely to have been involved in at least one accident (irrespective of alcohol-involvement) during recent years (26% vs. 25%). However, of the accident-involved non-participants, 40% (20 of 50) had at least one alcohol-related crash; this was true only of 16% (15 of 93) of the accident-involved participants.

In certain respects, then, the individuals who were exposed to the information presentations at parties faced relatively greater risks in driving-after-drinking than did the individuals who were not exposed: specifically, the participants tended to have higher BACs, and had longer distances to travel, than did the non-participants, and the participants were departing at a later point in time, and so may have been relatively more fatigued. However, these participants had better driving records, relative to self report of alcohol-related accident involvement, than did the non-participants--particularly when adjusted for their driving exposure. Therefore, it is possible that the participants included relatively more individuals who had a proper recognition of drinking-driving risks and who had acquired behavioral patterns that reduced these risks. In particular, some of the participants may have been predisposed to make transportation mode changes following attendance at a party.

One other issue concerning participation in the information presentation involves the subjects' attitude toward and appreciation of the breath test and related information. Data concerning this issue were obtained near the end of the interview with each participating subject. These data are presented in Table 11 for:

Table 11

Attitudinal Measures for Participating Subjects, by Type of Site and Degree of Exposure

Measure	Commercial Sites		Test Parties
	1st Participants	Repeat Participants	
Self Test Accuracy			
- Very accurate	58 (29.7%)	48 (46.2%)	128 (41.2%)
Fairly accurate	92 (47.2%)	45 (43.3%)	148 (47.6%)
Not very accurate	45 (23.1%)	11 (10.6%)	35 (11.3%)
Ease of Operation			
- Very easy to use	161 (81.7%)	94 (86.2%)	288 (85.7%)
Fairly easy	30 (15.2%)	12 (11.0%)	42 (12.5%)
Difficult	6 (3.0%)	3 (2.8%)	6 (1.8%)
Degree of Interest in Information			
- Very interesting	75 (36.9%)	42 (38.9%)	105 (33.1%)
Fairly interesting	83 (40.9%)	42 (38.9%)	147 (46.4%)
Not very interesting	45 (22.2%)	24 (22.2%)	65 (20.5%)
Previous Awareness of Information			
- Was aware of facts discussed	85 (42.3%)	49 (49.5%)	121 (36.8%)
Some facts were new to me	116 (57.7%)	50 (50.5%)	208 (63.2%)
Should Self Test Devices be Available to All Drinking Establishments			
- Yes	154 (77.8%)	82 (76.6%)	263 (80.9%)
No	44 (22.2%)	25 (23.4%)	62 (19.1%)
Would You Use the Device to Help Decide Whether to Drive			
- Yes	153 (75.0%)	67 (61.5%)	261 (77.7%)
No	51 (25.0%)	42 (38.5%)	75 (22.3%)

(Continued)

Table 11 (Continued)

Measure	Commercial Sites: 1st Participants	Commercial Sites: Repeat Participants	Test Parties
(If Yes) Would You Use It All, Most, or Some of The Time			
- All	55 (35.9%)	23 (34.3%)	108 (41.4%)
Most	44 (28.8%)	25 (37.3%)	56 (21.5%)
Some	54 (35.3%)	19 (28.4%)	97 (37.2%)
Reason for Using The Device			
- To determine if I should drive	37 (27.2%)	24 (42.1%)	54 (23.3%)
To determine if I am drunk	58 (42.6%)	19 (33.3%)	124 (53.4%)
To determine if I can drink more	4 (2.9%)	2 (3.5%)	0 (0.0%)
Curiosity	29 (21.3%)	9 (15.8%)	46 (19.8%)
Other reason(s)	8 (5.9%)	3 (5.3%)	8 (3.4%)
Reason for Not Using The Device			
- I never drive while intoxicated	8 (12.3%)	1 (2.1%)	14 (14.3%)
I will drive no matter how drunk I am	8 (12.3%)	6 (12.5%)	4 (4.1%)
Device is not accurate	22 (33.8%)	1 (2.1%)	18 (18.4%)
No machine can tell me not to drive	22 (33.8%)	26 (54.2%)	47 (48.0%)
Too embarrassing	5 (7.7%)	14 (29.2%)	15 (15.3%)
Did The Breath Test/Information Influence Your Decision to Drive or Not to Drive Tonight			
- Yes	18 (9.0%)	13 (12.0%)	38 (11.3%)
No	182 (91.0%)	95 (88.0%)	298 (88.7%)

(Continued)

Table 11 (Continued)

Measure	Commercial Sites: 1st Participants	Commercial Sites: Repeat Participants	Test Parties
Reason for Influence			
- Learned I was too risky/ dangerous to drive	2 (14.3%)	2 (18.2%)	10 (29.4%)
Decided to drive, learned I was safer than friend(s)	4 (28.6%)	2 (18.2%)	7 (20.6%)
Hypothetical--would not have driven if test showed I was drunk	8 (57.1%)	7 (63.6%)	17 (50.0%)
Reason for No Influence			
- Wasn't planning to drive regardless	68 (37.2%)	38 (40.4%)	153 (52.8%)
Knew I wasn't too drunk to drive	73 (39.9%)	21 (22.3%)	91 (31.4%)
Knew I was too drunk to drive	1 (0.5%)	1 (1.1%)	2 (0.7%)
Had to take my car regardless	17 (9.3%)	16 (17.0%)	24 (8.3%)
No machine can tell me not to drive	24 (13.1%)	18 (19.1%)	20 (6.9%)
Quality of Information Summary			
- None	64 (35.6%)	47 (44.8%)	177 (57.5%)
Poor	109 (60.6%)	47 (44.8%)	127 (41.4%)
Fair-good	7 (3.9%)	11 (10.5%)	3 (1.0%)

- First-time participants at commercial test sites
- Repeat participants at commercial test sites
- Participants at test parties.

In Table 12, these same data are tabulated as a function of the participant's BAC. Findings are discussed below.

- Accuracy of the self test device--

  The majority of all subjects who participated in the information presentation believed that the breath test device was very accurate (38%) or fairly accurate (47%). However, repeat participants at commercial sites were significantly more likely than first participants at those sites to rate the device as very accurate ($x^2 = 11.04$, 2 degrees of freedom, $p < .01$). Participants at test parties also were more likely to consider the device to be very accurate than were first participants at commercial establishments ($x^2 = 14.85$, 2 degrees of freedom, $p < .001$). Test party participants and repeat participants at commercial sites did not differ significantly relative to their assessment of ASD accuracy ($x^2 = 0.80$, $p > .50$). Apparently, guests at parties took a more favorable view toward accuracy than did patrons of commercial drinking establishments, and, at these commercial sites, an individual's assessment of device accuracy influenced whether or not he would participate more than once in the information presentation.

  Assessment of self test accuracy also differed significantly with BAC ($x^2 = 7.16$, 2 degrees of freedom, $p < .05$), and it appeared that individuals at or above .10 were somewhat more likely to rate the device as not very accurate. Their greater tendency to distrust the device might indicate an unwillingness to accept the fact that driving would be dangerous for them.

- Operability of the self test device--

  The vast majority of subjects (84%) rated the device as very easy to operate, and only 2% considered it difficult to operate. Attitude toward operability did not vary significantly between parties and commercial establishments, first and repeat participants, nor as a function of BAC.

Table 12

Attitudinal Measures for Participating Subjects, by BAC

Measure	BAC .00-.09	BAC .10 or more
Self Test Accuracy		
- Very accurate	170 (37.9%)	59 (40.1%)
Fairly accurate	219 (48.9%)	57 (38.8%)
Not very accurate	59 (13.2%)	31 (21.1%)
Ease of Operation		
- Very easy to use	402 (85.7%)	129 (80.6%)
Fairly easy	56 (11.9%)	27 (16.9%)
Difficult	11 (2.3%)	4 (2.5%)
Degree of Interest in Information		
- Very interesting	151 (33.1%)	67 (43.5%)
Fairly interesting	205 (45.0%)	60 (39.0%)
Not very interesting	100 (21.9%)	27 (17.5%)
Previous Awareness of Information		
- Was aware of facts discussed	172 (37.8%)	67 (43.5%)
Some facts were new to me	283 (62.2%)	87 (56.5%)
Should Self Test Devices be Available to All Drinking Establishments		
- Yes	381 (83.0%)	106 (68.4%)
No	78 (17.0%)	49 (31.6%)
Would You Use the Device to Help Decide Whether to Drive		
- Yes	361 (76.6%)	108 (67.9%)
No	110 (23.4%)	51 (32.1%)
(If Yes) Would You Use It All, Most, or Some of the Time		
All	140 (38.8%)	40 (37.0%)
Most	96 (26.6%)	27 (25.0%)
Some	125 (34.6%)	41 (38.0%)

(Continued)

Table 12 (Continued)

Measure	BAC .00-.09	BAC .10 or more
Reason for Using the Device		
- To determine if I should drive	95 (29.5%)	21 (23.1%)
To determine if I am drunk	147 (45.7%)	44 (48.4%)
To determine if I can drink more	5 (1.6%)	1 (1.1%)
Curiosity	61 (18.9%)	21 (23.1%)
Other reason(s)	14 (4.3%)	4 (4.4%)
Reason for Not Using the Device		
- I never drive while intoxicated	20 (14.5%)	2 (3.0%)
I will drive no matter how drunk I am	13 (9.4%)	4 (6.1%)
Device is not accurate	25 (18.1%)	16 (24.2%)
No machine can tell me not to drive	63 (45.7%)	29 (43.9%)
Too embarrassing	17 (12.3%)	15 (22.7%)
Did the Breath Test/Information Influence Your Decision to Drive or Not Drive Tonight		
- Yes	48 (10.3%)	21 (12.2%)
No	420 (89.7%)	138 (86.8%)
Reason for Influence		
- Learned I was too risky/dangerous to drive	6 (14.6%)	8 (44.4%)
Decided to drive, learned I was safer than friend(s)	13 (31.7%)	0 (0.0%)
Hypothetical--would not have driven if test showed I was drunk	22 (53.7%)	10 (55.6%)
Reason for No Influence		
- Wasn't planning to drive regardless	187 (44.8%)	61 (45.5%)
Knew I wasn't too drunk to drive	161 (38.8%)	21 (15.7%)
Knew I was too drunk to drive	2 (0.5%)	2 (1.5%)
Had to take my car regardless	33 (8.0%)	23 (17.2%)
No machine can tell me not to drive	33 (8.0%)	27 (20.1%)
Quality of Information Summary		
- None	181 (41.3%)	99 (64.3%)
Poor	221 (50.5%)	51 (33.1%)
Fair-good	36 (8.2%)	4 (2.6%)

- Interest in and awareness of the information presentation--

Most subjects found the information presentation to be very interesting (36%) or fairly interesting (43%), although approximately 1 out of 5 rated the presentation as not very interesting. These ratings were not significantly associated with BAC, the type of site, or degree of exposure. Overall, a substantial minority (39%) claimed that they had previously been aware of all of the facts discussed in the presentation. Participants at test parties were significantly less likely to claim prior awareness of these facts than were all (first and repeat) participants at commercial establishments (37% vs. 45%; $x^2 = 4.05$, 1 degree of freedom, $p < .05$), possibly because individuals at commercial sites had greater exposure to the information, either through previous participation or previous receipt of the white-bound booklets. However, among subjects at commercial sites, repeat participants did not claim prior awareness significantly more often than did first-time participants ($x^2 = 1.39$, 1 degree of freedom, $p > .20$). The extent to which subjects claimed prior awareness also was not significantly associated with their BACs ($x^2 = 1.57$, 1 degree of freedom, $p > .20$).

- Retention of the information presented--

Perhaps most importantly, subjects may not have assimilated or retained the information to the extent desired. At the close of their outside interviews, participants were asked to summarize the the facts that had been discussed. The quality of their responses was rated on a scale from 0 to 8 in accordance with their summary of the following topical areas:

1. Alcohol-involvement in crashes
2. Relative risk as a function of BAC
3. Laws governing driving-after-drinking
4. Ways to avoid drinking-driving risks.

In each area, the summation was rated as either 0 (i.e., no mention made of that topic), 1 (the topic was mentioned, but not all salient facts were reported), or 2 (the topic was summarized in detail). The subject's total score across all four topical areas provided the measure of his summation quality. Thus, in the event that a subject "summarized" the information presentation by simply saying "if you drink, don't drive" or some other common slogan, he received an overall rating of 0.

In requesting his summation, no attempt was made to refresh the subject's memory or to probe for more detail. Thus, leading questions such as "what do you recall about accidents or laws?" were completely avoided. Instead, he simply was asked "could you summarize the major facts discussed in the information you received tonight?", and his verbatim response was recorded.

Overall, nearly half of the subjects (47%) provided summaries that were rated as 0 (i.e., they mentioned none of the topics that were discussed). Another 46% provided "poor" summaries (ratings of 1 or 2), i.e., they mentioned no more than half of the topics; the remaining 7% provided fair to good summaries (ratings of 3-6). The quality of the summary was significantly lower among subjects with BACs of 0.10 or more ($x^2 = 25.49$, 2 degrees of freedom, $p < .001$) than among subjects with BACs below 0.10, and was also significantly lower at parties than at commercial establishments ($x^2 = 28.03$, 2 degrees of freedom, $p < .001$). Finally, summation quality differed significantly between first and repeat participants at commercial sites ($x^2 = 9.02$, 2 degrees of freedom, $p < .02$); however, although the repeat participants were more likely to provide fair to good summations (11% vs. 4%), they also were more likely to provide no summation at all (45% vs. 36%).

Admittedly, the "open response" technique that was used to measure the subjects' retention of the information may not have been sufficiently sensitive to determine whether they could recall the most important implications of their breath tests. However, the data suggest that the facts presented were not uppermost in the subjects' minds as they departed the sites, particularly among those at high BAC.

- Potential use of self test devices--

A majority of subjects (79%) stated that they believed self test devices should be made available to all drinking establishments. However, those with BACs of 0.10 or more were significantly less likely to favor wide spread dissemination of these devices (68% vs. 83%; x^2 15.10, 1 degree of freedom, $p < .001$). If the devices were available, a majority of subjects (74%) claim that they personally would use the device to help decide whether to

drive. Again, subjects at high BAC would be significantly less likely to use the instrument (68% vs. 77%; $x^2 = 4.75$, 1 degree of freedom, $p < .05$). Thus, while the concept of a self test device was generally favored by the participants in this study, it was viewed with relatively less favor by those individuals who would legally be presumed to be under the influence of alcohol.

Among those who stated they would not use the device, the most commonly expressed reason for its rejection was distaste for the notion of allowing a machine to control one's behavior. A response equivalent to "no machine can tell me not to drive" was received from nearly half (45%) of the participants who said they would not use the device, irrespective of their BACs. An additional 16% of these subjects indicated they would not use the device because they felt it was too embarassing, and 20% would reject it because they felt it was inaccurate.

- Perceived influence of the device--

Overall, approximately 1 of 10 participants (11%) indicated that self test device had exerted some influence on their decision whether or not to drive from the bar or party. Interestingly, subjects with BACs below 0.10 were about as likely to indicate that they had been influenced as were subjects with higher BACs. Of the subjects who claimed to have been influenced, more than half (54%) did not actually make a transportation mode change; these subjects indicated that the influence was hypothetical, e.g., "I would not have driven if the test showed I was drunk", or "I didn't plan to drive, and I certainly would not drive now that I know I'm drunk". Indeed, of the 19 participants (at parties and commercial sites) who had made a mode change, 4 stated that they had decided to do so prior to taking the breath test, and that therefore the test had not influenced their driving decision.

To summarize this section, evidence was found that participants differed from non-participants with respect to several background, situational, and demographic variables. At commercial test sites, participants tended to be heavier drinkers than did non-participants, both in general and on the evening of their interviews, and participants had a greater incidence of involvement in accidents. The participants also had spent a greater amount

of time at the bar or lounge on the evening of their interviews; however, upon departure from the site, participants were less likely to travel to another drinking situation than were non-participants. At test parties, participants also had spent a greater amount of time at the party than had the non-participants, and the participants were less likely to travel to another drinking situation upon leaving the party. However, participants at parties had a lower incidence of involvement in alcohol-related accidents than had the non-participants, despite the fact that participants claimed greater driving exposure. With respect to their attitude toward the self test concept, most participants generally were in favor of disseminating the devices to all drinking establishments, and claimed that they would use such devices if they were available. However, individuals at high BACs were significantly less favorable to the concept than were those at lower BACs.

3.4 Comparisons of Drivers who Did and Did Not Change Transportation Mode

Of the 4037 individuals who were interviewed in the course of this study, 1992 (49%) had driven to the sites. Across all sites and sampling events, 56 (2.8%) of these arriving drivers made transportation mode changes upon departure. Comparisons of the background, demographic, and situational variables of those who did and did not make mode changes were undertaken in an attempt to identify factors that might inhibit or foster mode change. The data forming these comparisons are shown in Table 13.

Significant differences existed between subjects who did and did not make mode changes with respect to:

- BAC ($x^2 = 25.79$, 3 degrees of freedom, $p < .001$). Fifty percent (50%) of those who made a mode change had BACs of 0.10 or more, but this was true of only 19% of those who did not change mode. Similarly, the mode changers admitted to having consumed significantly more drinks on the evening of the interview ($x^2 = 11.18$, 2 degrees of freedom, $p < .01$). Thus, as would be expected, the individuals who decided not to drive upon leaving the bars or parties were more likely to be under the influence of alcohol than were those who elected to drive.

- Departure time ($x^2 = 11.09$, 2 degrees of freedom, $p < .01$). Nearly half (47%) of the mode changers, but only 28% of those who did not

Table 13

Comparisons of drivers who did and did not make mode changes relative to Background, Demographic and Situational Variables

VARIABLE	MODE CHANGE	NO MODE CHANGE
Sampling Day--Friday	25 (44.6%)	884 (45.7%)
Saturday	31 (55.4%)	1052 (54.3%)
Departure Time--9 pm-10:59 pm	13 (24.5%)	480 (25.4%)
11 pm-12:59 am	15 (28.3%)	889 (47.1%)
1 am or later	25 (47.2%)	518 (27.5%)
Group Size--1 (traveling alone)	8 (14.5%)	669 (34.6%)
2	28 (50.9%)	945 (48.8%)
3 or more	19 (34.5%)	321 (16.6%)
Booklet--Blue	16 (28.6%)	320 (16.5%)
White	1 (1.8%)	134 (6.9%)
None	39 (69.6%)	1481 (76.5%)
Sex--Male	41 (74.5%)	1603 (82.9%)
Female	14 (25.5%)	330 (17.1%)
Age--20 or younger	16 (29.1%)	692 (35.9%)
21-29	25 (45.5%)	781 (40.5%)
30 or older	14 (25.5%)	457 (23.7%)
Annual Mileage--less than 5,000	8 (14.8%)	248 (13.0%)
5-10,000	16 (29.6%)	599 (31.5%)
11-15,000	9 (16.7%)	482 (25.3%)
16,000 or more	21 (38.9%)	574 (30.2%)
Time Spent at Site--1 hour or less	15 (28.9%)	919 (48.9%)
2-3 hours	16 (30.8%)	632 (33.6%)
4 hours or more	21 (40.4%)	329 (17.5%)
Origin--Own Home	35 (63.6%)	910 (47.1%)
Friend's home	6 (10.9%)	297 (15.4%)
Other Drinking Situation	6 (10.9%)	384 (19.9%)
Other	8 (14.5%)	343 (17.7%)
Destination--Own Home	33 (62.3%)	910 (47.1%)
Friend's Home	4 (7.5%)	190 (9.9%)
Other Drinking Situation	10 (18.9%)	479 (25.1%)
Other	6 (11.3%)	188 (9.8%)

Table 13 (Cont.)

VARIABLE	MODE CHANGE	NO MODE CHANGE
Distance from Origin--1 mile or less	10 (18.2%)	370 (19.2%)
2-3 miles	16 (29.1%)	544 (28.2%)
4-10 miles	17 (30.9%)	733 (39.1%)
11 miles or more	12 (21.8%)	260 (13.5%)
Distance to Destination--		
1 mile or less	14 (27.5%)	371 (19.7%)
2-3 miles	14 (27.5%)	517 (27.5%)
4-10 miles	13 (25.5%)	740 (39.4%)
11 miles or more	10 (19.6%)	252 (13.4%)
Number of Drinks--3 or fewer	14 (27.5%)	917 (47.7%)
4-7	18 (35.3%)	611 (31.8%)
8 or more	19 (37.3%)	394 (20.5%)
Beverage Type--Beer only	21 (41.2%)	790 (43.8%)
Whiskey only	21 (41.2%)	679 (37.7%)
Beer and Whiskey	6 (11.8%)	175 (9.7%)
Other	3 (5.9%)	158 (8.8%)
Marital Status--never married	26 (48.1%)	1313 (68.3%)
currently married	23 (42.6%)	476 (24.8%)
formerly married	5 (9.3%)	133 (6.9%)
Drinking Frequency--daily	13 (25.0%)	446 (23.2%)
several/week	22 (42.3%)	904 (47.0%)
once/week or less	17 (32.7%)	572 (29.8%)
Drinking-Driving Frequency--		
daily	9 (17.3%)	295 (15.4%)
several/week	16 (30.8%)	728 (38.0%)
once/week or less	27 (51.9%)	893 (46.6%)
Typical Quantity (weekend)--		
3 or fewer drinks	12 (23.1%)	500 (26.5%)
4-5 drinks	12 (23.1%)	423 (22.4%)
6-10 drinks	21 (40.4%)	648 (34.4%)
11 or more drinks	7 (13.5%)	316 (16.7%)
Typical Quantity (weeknight)--		
0 or 1 drink	25 (48.1%)	929 (49.0%)
2-3 drinks	16 (30.8%)	482 (25.4%)
4 or more drinks	11 (21.2%)	485 (25.6%)

Table 13 (Cont.)

VARIABLE	MODE CHANGE	NO MODE CHANGE
Drining Tickets (last 3 years)--		
none	37 (69.8%)	1435 (75.8%)
1 or more	16 (30.2%)	458 (24.2%)
Accidents (last 3 years)--		
none	41 (78.8%)	1283 (67.6%)
1 or more	11 (21.2%)	616 (32.4%)
Drinking-Driving Accidents (last 3 years)--none	52 (98.1%)	1750 (91.5%)
1 or more	1 (1.9%)	162 (8.5%)
Number of previous interviews--		
none	47 (88.7%)	1597 (83.3%)
1 or more	6 (11.3%)	321 (16.7%)
BAC--.00-.04	15 (32.6%)	578 (41.3%)
.05-.09	8 (17.4%)	452 (32.3%)
.10-.15	14 (30.4%)	194 (13.9%)
.16 or more	9 (19.6%)	75 (5.4%)
Participation in Information Presentation--Participant	19 (33.9%)	336 (17.4%)
Non-Participant	37 (66.1%)	1600 (82.6%)
Reason for Changing Transportation Mode--		
Breath test indicated I should not drive	15 (26.8%)	
Feel too drunk to drive (didn't take test)	19 (33.9%)	
Traveling elsewhere with friend(s), will return later for my car	6 (10.7%)	
Don't feel like driving but I'm not drunk	11 (19.6%)	
Car won't start	1 (1.8%)	
No reason given	4 (7.1%)	
Reason for Not Changing Transportation Mode--		
Traveling alone, in my car		688 (35.5%)
It's my car, so I'll drive it (with others)		1234 (63.7%)
My companion is unable to drive		11 (0.6%)
Breath test indicated I was not drunk		1 (0.1%)
No reason given		2 (0.1%)

change mode, had remained at the bar or party until 1:00 or later. The mode changers also had spent significantly more time at the bars or parties (x^2 = 18.45, 2 degrees of freedom, $p < .001$).

- Group Size (x^2 = 16.45, 2 degrees of freedom, $p < .001$). Eighty-five percent (85%) of the mode changers were traveling with at least one other companion, as compared with 65% of those who did not change mode. This is of course not suprising since the absence of a companion who could drive the vehicle would increase the difficulty of making a mode change.

- Participation in the information presentation (x^2 = 10.20, 1 degree of freedom, p .001). Approximately 1 out of 3 (34%) of the subjects who made a mode change had taken part in the information presentation; this was true of about 1 in 6 (17%) of those who did not change mode. This might be interpreted as suggesting that the presentation had a positive impact on the mode change decision. However, it is also true that the total group of participants had significantly higher BACs than did all subjects who were not exposed to the information, as shown in the following table:

	.00-.04	.05-.09	.10-.15	.16 or more
All participants	286 (42.9%)	205 (30.7%)	126 (18.9%)	50 (7.5%)
All non-participants	1181 (52.6%)	678 (30.2%)	289 (12.9%)	98 (4.4%)

(x^2 = 32.70, 3 degrees of freedom, $p < .001$)

Thus, individuals who were exposed to the information presentation had a greater need to make mode changes than did those who were not exposed.

No other statistically significant differences were found between those who did and did not make mode changes. In particular, the two groups had comparable drinking frequency (x^2 = 0.46, $p > .70$) and drinking-driving frequency (x^2 = 1.12, $p > .50$), and they consumed comparable quantities of alcohol on weekends (x^2 = 1.10, $p > .70$) and weeknights (x^2 = 0.96, $p > .50$). Also, they reported comparable annual driving mileage (x^2 = 3.07, $p > .30$). However, those who changed transportation mode tended to report lower

incidence of accident involvement ($x^2 = 2.95$, 1 degree of freedom, $p < .10$) and drinking-driving accident involvement ($x^2 = 2.94$, 1 degree of freedom, $p < .10$). Only one of the mode changers (1.9%) admitted that he had been involved in an accident following drinking during the past 3 years, while this was the case with 162 (8.5%) of those who made no mode change. Although not statistically significant, this difference may suggest that the mode changers include relatively more individuals who have developed practices for avoiding the risks of driving after drinking. In particular, these individuals may have been used to making mode changes prior to any exposure to this study.

To summarize this section, the principal difference between drivers who did and did not make mode changes was simply that the former group exhibited higher levels of intoxication than did the latter. However, there also was some evidence that the individuals who changed transportation mode had better driving records than did those who did not change mode, suggesting that avoidance of driving under the influence of alcohol may have been an established practice among these mode changers.

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4. Conclusions and Recommendations

Based upon the data and analyses discussed above, it cannot be concluded that the presentation of BAC and related information to individuals about to leave commercial or private drinking situations has a desirable impact on the drinking-driving behavior of those individuals. It was indeed true that some individuals with BACs indicative of alcohol impairment elected not to drive after being exposed to that information. But, they were no more likely to do so than were other, non-exposed, individuals at similar levels of intoxication. Further, there was no evidence that exposure to the information led these individuals to moderate their drinking behavior on subsequent occasions--in fact, drivers who departed the commercial test sites during the experimental period exhibited significantly higher BACs than had drivers at the same sites during the baseline period. However, it was possible to employ only indirect measures to assess the impact of the presentation on subsequent drinking behavior, and the procedures that were employed in the study precluded the possibility that exposure to the information might have induced some individuals to cease drinking at an earlier point on the evening of their exposure. Finally, there is some evidence that exposure to the information did not necessarily ensure assimilation and retention of that information, especially among individuals with relatively high BACs.

The findings do demonstrate that it is possible to solicit individuals at both commercial and private situations who will agree to participate in breath testing and information presentations, and that such participants apparently will be representative of the total population relative to their levels of intoxication. However, at both parties and commercial establishments the individuals who elected to participate remained later at those places, and were less likely to be traveling to another drinking situation upon departure, than were the individuals who did not participate. The participatns also were more likely to be married than were the non-participants. These facts suggest that social behavioral patterns affected an individuals willingness to participate.

The findings also demonstrate that some individuals at BACs indicative of alcohol impairment will make mode changes upon departing from drinking situations. This phenomenon appears to occur somewhat more frequently at parties than at commercial establishments: at parties, approximately 14% of the arriving drivers who exhibited BACs of 0.10 or more departed as non-drivers; the corresponding figure at commercial establishments was 4%. However, in neither case were individuals who participated in the information presentations more likely to make a mode change than were individuals who had not participated. Perhaps most importantly, the drivers who made mode changes tended to have better driving records than did those who did not change mode, suggesting that the mode changes that were observed may have reflected established practices rather than the effects of this study's activities.

In conclusion, then, it does not appear that the self test concept, as implemented in this study, will affect drinking-driving behavior by inducing transportation mode changes among alcohol impaired drivers. Therefore, it is not recommended that this implementation be replicated on a large scale basis. However, there are two procedural modifications that might enhance the effectiveness of the concept, and therefore might warrant additional study. These are discussed below.

1. Mass-Media Educational Campaign

   Data previously were cited that indicated that subjects who were exposed to their BACs and related information may not have assimilated or retained that information to the degree desired. In part, this may be due to the environment (noise, distractions, low lighting conditions, etc.) that often prevailed at the sites. However, it also may reflect the detrimental effects of alcohol

impairment on an individual's ability to assimilate information. In either event, a commercial or private drinking situation may not be very well suited to an individual's first exposure to such information. In addition, it is clear that very few individuals were willing to make a transportation mode change that would entail leaving their vehicles. Of the 56 mode changes that took place, 40 (71%) involved incidents where a companion took over the driving, and the individual who made the mode change was able to depart in his own vehicle. Thus, unless an alcohol-impaired driver has the good fortune to be traveling with a sober companion, it is extremely difficult to convince him to make a mode change.

In light of these two observations, it is recommended that consideration be given to conducting a self test experiment that is accompanied by a mass media educational campaign. The purpose of the campaign would be three-fold:

- To encourage individuals to use self test devices when patronizing participating establishments.

- To provide drinking-driving information on a wide-spread basis, permitting exposure to that information at a time when individuals are not under the influence of alcohol.

- To encourage individuals to travel to drinking situations in groups, thereby increasing the likelihood that at least one member of the group would remain capable of driving.

2. Unrestricted Access to the Self Test Device

In this study, no person was permitted access to the device until he was about to leave the site. Therefore, none were able to determine their BACs at an earlier point, when they might have been encouraged to cease drinking. With hindsight, this may have been the least desirable procedure to adopt. Certainly, it did not succeed in increasing the incidence of mode changes, and it precluded an immediate impact on drinking behavior. Therefore, consideration might be given to replicating this study without restricted access to the device. It still would be essential to stress to participants the desirability of making a mode change (when applicable), but the primary focus of the discussion would be on the desirability or need for cessation of drinking on that evening.

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APPENDIX A

Descriptions of Commercial Sites and Selection Procedures for Private Parties

In Section 1.2 of this report, 8 commercial drinking establishments were identified as test or control sites, and mention was made of the advertisement employed to solicit private party sites. This Appendix is intended to:

- describe in detail relevant characteristics of the commercial sites;
- present the text of the newspaper advertisement for parties
- describe the explanations of the study's purpose and procedures given to hosts of candidate parties.

A. Commercial Site Descriptions

1. Lounges

Test Site: Cafe Scorpio

This lounge is situated on the ground floor of a large, modern office building in the central business district of Stamford, Connecticut. The major intra-city bus route is located approximately one-half block from the lounge, and cruising cabs commonly are found in the area. The lounge itself is relatively spacious and well-furnished, and the lighting is subdued. Entertainment (guitarist and/or pianist) is provided on weekend nights.

On typical sampling evenings, the Cafe Scorpio served approximately 100-150 patrons. The patron population was roughly equally divided between males and females, and predominately was young (21-30 years) and of the upper middle socio-economic level.

During the experimental period, the breath test/information station was located in a foyer adjacent to the rear exit of the lounge, which opened into an enclosed parking garage. Although the majority of patrons exited through the rear, a staff member always remained near the front exit to solicit the participation of any who chose to leave through that door.

Control Site: The Lemon Tree Cafe

This lounge also is situated in the central business district of Stamford, Connecticut, approximately 3 block's distance from the Cafe Scorpio. Like the Scorpio, the Lemon Tree is relatively spacious and well-furnished, and provides similar entertainment on weekend nights.

On typical sampling evenings, the Lemon Tree served approximately 80-100 patrons. The patron population was about evenly divided between males and females, and was predominately of the upper middle socio-economic levels. Although the majority of patrons were of the 21-30 age range, they included relatively more older individuals than did the Cafe Scorpio.

A private parking lot for patrons of the Lemon Tree Cafe was located immediately adjacent to the lounge.

2. Bars Not Served by Public Transportation

Test Site: The Post Tavern

This bar is situated on the main street of Darien, Connecticut, a town having no intra-city bus lines. Cruising cabs virtually are non-existent in the town, although taxi service is available on call. The Post Tavern is relatively large, but nevertheless is typically very crowded. The ambient lighting is high--as is the noise level (due particularly to a juke box). Furnishings are spartan.

During typical sampling evenings, this bar served approximately 150-200 patrons. The patron population was almost exclusively young (18-25 years), and of middle to upper-middle socio-economic levels. Approximately 60% of patrons were males. Patrons typically parked their cars either on the street in front of the bar or in an unpaved parking area directly across the street.

The breath test/information station was located immediately adjacent one of two exits opening onto the street. The two exits were separated by a floor-to-ceiling partition that effectively divides the bar into two rooms. The breath test/information station was situated in the smaller, quieter, and less crowded room--however, these are relative terms; in absolute terms, the noise level was very high at the station.

The exit adjacent to the station was used by relatively few patrons. As a result, one or two staff members always remained near the other exit (in the other room) to solicit participation.

Control Site: The Huddle

This bar is located on a residential street in the Shippan Point section of Stamford, Connecticut, an upper-middle class area not served by public transportation. The bar is of medium size, and its furnishings, noise level, and "crowd density" are closely comparable to that of the Post Tavern. Its patrons also are almost exclusively young, but include relatively fewer females (approximately 30%) than did the Post. The Huddle's patrons also are predominately middle to upper-middle class.

Typically, the Huddle served 90-120 patrons during a given sampling event. Patrons usually parked their cars on the street in front of the bar, or in a parking area located approximately 75 yards from the bar.

3. Bars Served by Public Transportation

Test Site: The East Gate

This bar is located in the central business district of Stamford, Connecticut (approximately 2 blocks from the Lemon Tree Cafe). The bar itself forms one-half of the establishment's premises, the other half of which consists of a restaurant; the two halves are separated by a wall containing an open walkway. The restaurant business essentially is completed by 9:00 p.m. on weekend evenings. The bar is relatively small, moderately well-furnished, with subdued lighting and a low noise level.

On typical sampling evenings, the East Gate served approximately 50-70 patrons. The patron population was predominately middle-aged (30-50 years), male (75%), and of the lower-middle to middle socio-economic levels. Patrons tended to park their cars either in a municipal parking lot located approximately 50 yards from the bar or on the street in front of the bar.

The breath test/information station was situated in the bar, immediately adjacent to both the exit and the walkway to the restaurant.

Sampling continued at the East Gate until the first experimental period event had been completed. Upon their arrival for the second experimental event, the project staff was informed by the East Gate's management that it would no longer cooperate with the study. The management explained that, during the proceding week, several customers had complained about the presence of the breath test devices, and also that many customers objected to being approached by interviewers upon leaving.

Control Site: Coney Island Bar and Grill

This bar is located on the main inter-city bus route in Stamford, Connecticut (approximately 5 blocks from the East Gate), in a commercial neighborhood. The bar is of medium size, well-lighted, and moderately well-furnished, with a low noise level.

On typical sampling evenings, the Coney Island served approximately 70-90 patrons. The patrons were almost exclusively middle-aged (30-50 years), predominately male (80%), and of the lower-middle socio-economic level. Patrons tended to park their cars either on the street near the bar, or in a municipal parking lot located approximately 150 yards from the bar.

Sampling at the Coney Island terminated at the same time as at the East Gate.

Replacement Test Site: The Woodway Inn

This bar is located on one of the intra-city bus routes in Stamford, Connecticut, in a combined commercial/residential area that is also served by cruising cabs. The bar is relatively large, moderately well-furnished, with a medium noise level and medium lighting.

On typical sampling evenings, the Woodway served approximately 50-80 patrons. The majority of patrons were middle-aged (30-50 years), although representatives of both younger and older age groups were found. About 65% of the patrons were males, and most were of the lower-middle to middle socio-economic levels. Patrons generally parked their cars in either of two parking lots, located adjacent to and across the street from the bar, respectively.

The breath test/information station was located immediately adjacent to one exit from the bar. A staff member always remained by the other exit to solicit participants choosing to leave through that door.

Replacement Control Site: Sharkey's Pub

This bar is located approximately 2 blocks from two of the intra-city bus routes in Stamford, Connecticut, in a commercial neighborhood. The bar is of medium size, moderately well-furnished, with a medium level of lighting and a medium-to-high noise level.

On typical sampling evenings, Sharkey's Pub served approximately 50-70 patrons. Most of the patrons were middle-aged (30-50), but a fair percentage of younger individuals also were found. About 70% of the patrons were males, and virtually all were of the lower to middle socio-economic levels.

Patrons of Sharkey's Pub typically parked their cars in a private parking lot adjacent to the bar.

B. Newspaper Advertisement for Parties

The text of the advertisement was as follows:

WE'LL HELP PAY FOR YOUR PARTY !

The U.S. Department of Transportation is conducting a survey of partygoers in this area. The survey is administered by Dunlap and Associates, Inc., a private research firm based in Darien.

The survey is completely anonymous and totally confidential. Dunlap and Associates, Inc., will pay for the privilege of including your party in the survey.

For further information, call collect:
John F. Oates, Jr.
Dunlap and Associates, Inc.
655-3971
8:30 a.m. - 5:00 p.m. Monday-Saturday

The advertisement was placed in two relatively large-circulation newspapers in Fairfield County, Connecticut, viz., the Stamford Advocate and the Norwalk Hour, on a total of six days for each paper.

All parties ultimately selected for the study had been solicited through this advertisement.

C. Descriptions of the Study's Purposes and Procedures Conveyed to Candidate Party Hosts

Following procedures outlined in Section 1.2.1 of this report, each caller responding to the newspaper advertisement was given a description of the study that conformed either to the control or test site sampling procedures. The texts of these descriptions were as follows:

Description for Potential Test Sites

"The survey mentioned in the newspaper advertisement is associated with a public information program that also is sponsored by the U. S. Department of Transportation. The information program, and the survey, deal with driving-after-drinking. What we are hoping to do is to have an opportunity to come to the party to talk to the guests about certain facts concerning drinking-driving. The facts we discuss concern motor vehicle accident statistics that relate to alcohol, certain laws that pertain to drinking-driving, and ways to avoid the risks associated with drinking-driving. We also offer the guests an opportunity to take a breath test so that they can learn the concentration of alcohol in their system. Finally, we will ask the guests to give us their reactions to this information program so that we can learn how well it might be received by the general public.

"I'd like to emphasize that this program is completely anonymous--we never ask for the guest's name, or record his license plate number, or do anything else of that sort. The program is also entirely voluntary, so that if a guest doesn't wish to hear what we have to say, or doesn't wish to take a breath test, we certainly don't try to pressure him into doing so. Also, we try not to interfere with the party in any way: we will talk to any interested guests only when they are about to leave the party at the end of the evening."

Description for Potential Control Sites

"The survey that we are conducting deals with the transportation patterns of people who attend social drinking situations. We are hoping to learn something about the types of driving done by guests at parties, and also about their use of other forms of transportation, such as cabs and buses. We also ask the guests to tell us the types of beverages they drink and the number of drinks they may have had at the party.

"The way we conduct the survey is to station some interviewers outside the party. Then, as the guests leave, an interviewer will approach them, introduce himself, and ask for about 3 minutes of their time. If the guest does not wish to be interviewed, all he has to do is say so, and he won't be bothered further. We are hoping, however, that most guests will cooperate with the survey. At the end of the interview, we also will ask the guest to take a breath test, using a portable device that has been developed by the Department of Transportation as a research tool. The breath test device is designed to determine whether or not a person has been drinking, and we are trying to evaluate the device for the Department of Transportation.

"I'd like to emphasize again that the survey is totally anonymous and voluntary. We never ask for a guest's name, or record his license plate, or anything of that sort, and the guests are completely free to refuse the interview or the breath test."

APPENDIX B

Text of Information Presentation

In Section 1.3 of this report, a detailed topical outline was presented (see Exhibit I) of the information to be conveyed to test subjects during the experimental phase of the study. Following that outline, the text of the information presentation was developed, employed in pre-tests, and revised in accordance with pre-test findings. The final version of the text is shown in this Appendix, along with copies of all visual aids used in the presentation.

Introduction

We are conducting a driving information program for the U.S. Department of Transportation. The purpose of the program is to acquaint members of the public with certain facts concerning driving after drinking. We also want to give you an opportunity to take a breath test to determine the percentage of alcohol in your system. This program has absolutely nothing to do with the police, the courts, the department of motor vehicles, or any other agency of that type. It is solely for information purposes.

A. ACCIDENT FACTS

The first area we wish to discuss concerns motor vehicle accidents, especially fatal accidents. During 1973, approximately 55,500 died in the United States; about 550 of these deaths occurred in Connecticut. Research has shown that fatal accidents often involve drivers who had been drinking. Depending upon the part of the country where research has been conducted, and the types of crashes that were investigated, it has been learned that between 30% and 60% of fatal crashes involve at least one driver who had been drinking. In round numbers, many researchers say that alcohol is involved in about one out of every two fatal crashes.

Of course, in some crashes where alcohol was involved the driver may have had only one or two drinks. Of course, even this amount can be risky, especially if the driver has not had much experience driving or drinking. But, research has also shown that many of the drivers in fatal crashes had consumed enough alcohol that they were legally under the influence at the time of the crash. In fact, many researchers now believe that drivers who are legally under the influence of alcohol account for about 30% of all fatal crashes. Figure 1 illustrates these facts.

(show and discuss Figure 1)

In Connecticut and most other states a driver is considered legally under the influence if he has 0.10% [one-tenth of one percent] alcohol in his blood. In general, the larger a person is, the more blood he has, and the more he has to drink to reach 0.10% alcohol concentration. In Figure 2, we show the minimum number of drinks a person would have to have during a four hour period to just reach this 0.10% limit.

(show and discuss Figure 2)

Of course, many drivers who are legally under the influence have consumed much more than the minimum number of drinks indicated in Figure 2.

Alcohol can influence a person's ability to drive by affecting his senses, his judgment, and other important functions of his brain and body. The more a person drinks, the more these functions are affected, and the more likely he will be to have an accident.

From previous research, it is possible to estimate a driver's chances of being involved in an automobile accident if he has been drinking. These chances are shown in Figure 3.

(show and discuss Figure 3)

B. DRINKING-DRIVING STATUTES

The next area we wish to discuss concerns the laws relating to drinking-driving. In most States, including Connecticut, there are two basic laws that regulate drinking-driving. One of these defines driving under the influence as a crime and establishes penalties for that crime. The other law is the Implied Consent Law, which permits the State to request a blood or breath sample from the defendant to determine his blood alcohol level.

> The basic law states simply that it shall be "unlawful for any person to operate a motor vehicle while under the influence of intoxicating liquor."
>
> [show card containing this statement]

There are several key points involved in this simple statement:

No. 1 - A person does not have to be "drunk" or "intoxicated" to be arrested and convicted under this law. The term "under the influence" generally has been interpreted by the courts to mean that the person's ability to drive an automobile has been reduced to an unsafe degree.

No. 2 - The term "operate a motor vehicle" does not necessarily mean that the person physically drives his car along the road. He can also be considered to be operating the vehicle if he is simply sitting behind the wheel with the key in the ignition. And, in this state, he could be arrested for operating under the influence on certain private roads and in most parking lots as well as on public roads and highways.

No. 3 - Most importantly, operating under the influence is a criminal offense. It is not like getting a ticket for speeding, reckless driving, or other traffic infractions. It is an official arrest. The person is booked, fingerprinted, and spends at least several hours in jail. He must appear in court and, if he is convicted, he will

have a permanent criminal record. Also, the punishment upon conviction may include a jail sentence of up to six months as well as a fine of up to $500. Of course, conviction also will cause the driver's license to be revoked for six months or more.

The other law of concern to this criminal offense is the Implied Consent Law. It says the following:

"Any person arrested for operating under the influence is considered to have given his consent to a test of his blood or breath when requested to do so by the arresting officer.

[show card containing this statement]

The key part of this statement consists of the underlined words. The state issues its citizens a privilege to drive, but it restricts that privilege in many ways. In this case, the State is saying that in order to be permitted to drive a person must agree to take a blood or breath test if he has been arrested for operating under the influence. If a person should refuse to take the blood or breath test, he will not be forced to do so, but his license automatically will be revoked, even if he is found NOT guilty in court. And, a most important point to keep in mind is that he still can be convicted of operating under the influence even if he refuses to take the test. Refusing to take the test guarantees that the license will be lost, but does not always or even usually help to avoid being found guilty.

If the person does take the blood or breath test, its result will be used as evidence in court. If the test shows that his blood alcohol level is 0.10% or more--the so-called "legal limit"--it will be taken to indicate that he is under the influence and he probably will be convicted. If his level turns out to be less than 0.05%, it will be taken to indicate that he is NOT under the influence and almost certainly he will not be convicted. If the level is 0.05% to 0.09%, he may or may not be convicted, depending upon whether the court decides there is enough other evidence to support the charge.

(show Figure 4)

C. ALTERNATIVES TO DRIVING UNDER THE INFLUENCE

In a few moments, I will give you an opportunity to take a breath test to determine your own blood alcohol level. However, I would first like to review some of the steps that people can take to avoid the risk of driving under the influence.

(show page summarizing alternatives)

- First and most obviously, the safest thing is light to moderate drinking. For most people, the ability to drive will not be affected seriously if their blood alcohol level remains below 0.05%. By limiting himself to one drink per hour, the average person can spend several hours at a bar or party without exceeding the 0.05% level. Eating a meal befor or during drinking also would help to keep your blood alcohol level down.

- Second, it helps to plan ahead. If an individual is heading to a bar or party and he realizes that he may do a good deal of drinking, he might be able to leave his car at home and travel in some other way. For example, he might ride with a friend who is a pretty safe bet to stay sober; he might take a cab or bus; he might even walk, assuming the weather is good and the distance is reasonably short. Most of us probably don't realize it as well as we should, but we probably could get along without our cars on occasion without too much trouble.

- Lastly, it is essential to avoid the trap of driving under the influence simply because of a failure to plan ahead. Most of us probably feel that, if we have driven our car to a party or bar, we have no choice but to drive it home. So, if we drink more than we had planned, we run the risk of driving under the influence. But really, we almost always have a choice. We might have a friend drive our car, or we might simply leave the car and ride with a friend, take a cab or bus, or call home for a ride.

D. ADMINISTRATION/DISCUSSION OF BREATH TEST

Finally, we would like you to take the breath test. But let me first explain that, after you have taken the test, I will try to discuss the result in terms of what it means for your driving tonight. Please understand that we don't mean to preach at you, and no one associated with the project is going to try to stop you from driving. This breath test is strictly confidential, and it could not be used against you in any way. But, we do want to be sure that you fully understand the risks you might run if you were to drive at this time.

(verify that the device is ready for testing; explain the device to the subject; have the subject take the test; inform subject of the result)

Discuss as follows:

1. If a subject's BAC is 0.00% - 0.04%

Your blood alcohol level is within what is generally considered to be a safe range. Most individuals at this level drive pretty much

as well as they do when sober, and seem to have about the same chance of being involved in a crash as they would have if they had nothing to drink. However, some people . . . particularly if they are inexperienced drivers or inexperienced drinkers . . . might be affected by even this much alcohol. Usually, though, it is highly unlikely that someone at your level would be arrested for operating under the influence. Of course, all this assumes that the person is not under the influence of drugs or medication or anything else other than alcohol that might affect his driving.

There is one other factor that you should keep in mind. It is possible that some of the alcohol you have consumed is still in your stomach. If so, your blood alcohol level will continue to increase for the next half hour or so, and you might get up above this safe range.

To summarize, and speaking only statistically, your blood alcohol level indicates that you would not face very much increased risk if you were to drive a car. But, you are the only one who can say for certain whether you are feeling the effects of your drinks: if you feel that your ability to drive has been impaired, don't let your own best judgment be swayed by statistics.

[show page summarizing ".00-.04" level]

2. If subject's BAC is within 0.05 - 0.09%

Your blood alcohol level is within the grey area we discussed before. Most people at this level are about 5 times more likely to have a motor vehicle accident than they would be if they had not been drinking. And, if a police officer were to stop you because he felt you were driving improperly, you might be arrested and convicted for operating under the influence.

It is true that you have not yet reached the so-called "legal limit." However, it is quite possible that some of the alcohol you have consumed is still in your stomach. If so, within the next half hour your blood alcohol level will increase, and might possibly reach the "legal limit."

In short, if you operate a motor vehicle you face increased risk of being arrested and of having an accident. You may not feel that the alcohol is affecting you to any important degree, but your reactions may be slower than they usually are.

If you can possibly avoid driving, you certainly should consider doing so. If you absolutely must drive, you should exercise extreme caution.

[show page summarizing ".05-.09" level]
[Review alternatives to driving-after-drinking]

3. If subject's BAC is 0.10% or more

Your blood alcohol level is above the so-called "legal limit." Drivers at this level are at least 7 times more likely to have an accident than they would be if they were sober . . . in fact, the odds of causing a crash can easily be 25 to 30 times more likely. Also, if you were stopped by a police officer, chances are you would be arrested for operating under the influence.

You should also be aware that it is quite possible that some of the alcohol you have consumed is still in your stomach. If so, your blood alcohol level will continue to increase during the next half hour or more, and your chances of having an accident or being arrested will also increase.

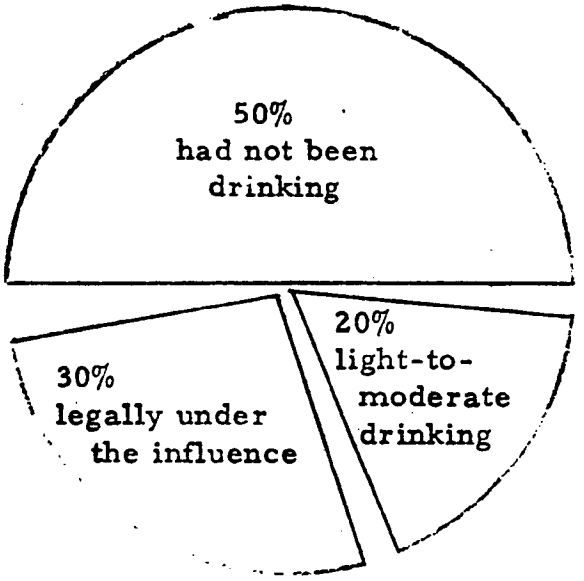
In short, at the present time you should not operate a motor vehicle. Even though you may feel that the alcohol is not affecting you very much, the law considers you to be under the influence, and your reactions, vision, and coordination may all be affected to some degree. If you were to drive a car, you would endanger yourself and other persons on the road.

[show page summarizing ".10" level]
[Review alternatives to driving-after-drinking]

[THANK SUBJECT FOR HIS TIME AND COOPERATION. HAND SUBJECT BOUND COPY OF INFORMATIVE MATERIAL, CONSISTING OF THE FIGURES ATTACHED TO THIS OUTLINE. DO NOT SOLICIT QUESTIONS, BUT ANSWER ANY UNSOLICITED QUESTIONS AS FACTUALLY AS POSSIBLE.]

Figure 1

Drivers in Fatal Crashes



During 1973, about 55,500 persons died in automobile crashes in America. Therefore, about 16,650 deaths were due to crashes involving a driver who was legally under the influence of alcohol.

Figure 2

Amount of alcohol that must be consumed . . . . during a four-hour period, and on an empty stomach . . . . to just reach the legal limit for "under the influence."

No. of Drinks (Shots of Whiskey or 12 oz. Bottles of Beer)	Person's Weight
5	100 - 120 lbs.
6	121 - 140 lbs.
7	141 - 160 lbs.
8	161 - 180 lbs.
9	181 - 200 lbs.
10	201 - 220 lbs.
11	221 - 240 lbs.
12	241 - 260 lbs.

NOTE:

If food is eaten before or during drinking . . . . or if drinking takes place over more than 4 hours . . . . more drinks would have to be consumed to reach the legal limit.

Figure 3

Chances of Being Involved in an Accident

When Driving after Drinking

Blood Alcohol Level	Type of Drinking	Relative Risk of Accident
0.04% or less	Light to Moderate. For most individuals, this would mean one to three drinks during a period of several hours.	1
0.05% - 0.09%	Moderate to Heavy. Several drinks in a short period of time, or four to six drinks over several hours, for most people.	3-6
0.10%	Heavy to Excessive. This is the "legal limit," reached by most people after seven to nine drinks during several hours.	7
0.11% - 0.15%	Excessive. Normally implies steady drinking for several hours.	10 - 25
0.16% or more	Excessive to Compulsive. Prolonged steady drinking for many hours.	30 - 100 or more

Relative Risk means the number of times more likely the driver is to cause a crash than he would be if sober. A driver at 0.10% blood alcohol level is 7 times more likely to cause a crash than he would be if he had nothing to drink.

Drinking-Driving Law No. 1

"Operating under the Influence"

It shall be unlawful for any person to operate a motor vehicle within this State while under the influence of intoxicating liquor.

1. "Operate" does not necessarily require driving or movement of the vehicle

2. "Within this State" includes all public roads, private roads on which a speed limit has been established, and parking areas for 10 or more cars.

3. "Under the influence" does not mean drunk or intoxicated.

If convicted, a person can be:

- Jailed, for up to six months
- Fined, from $150 to $500

And, he will lose his driver's license for at least 6 months.

Most Importantly:

"Operating under the influence" is a criminal offense, not merely a traffic violation. When arrested, the subject is booked, fingerprinted, and establishes a permanent police record.

Drinking-Driving Law No. 2

"Implied Consent"

Any person arrested for operating under the influence is considered to have given his consent to a test of his blood or breath when requested to do so by the arresting officer.

1. The State says that, when it agrees to allow you to drive, you agree to take a blood or breath test if you are arrested for operating under the influence.

2. If you refuse to take the test, your driver's license will be revoked automatically, And, even if you refuse the test you can be convicted of operating under the influence.

3. The test results will be used as evidence in court.

Figure 4

How Blood or Breath Test Findings are Viewed by the Courts

TEST RESULT (Blood Alcohol Level)	LEGAL IMPLICATIONS
Less than 0.05%	The defendant is considered to be NOT under the influence of alcohol. He will not be convicted unless there is evidence that he has also taken drugs, and that the drugs and alcohol in combination led to his unsafe driving.
0.05% - 0.09%	This is a "grey area" under the law. By itself, a blood alcohol level in this range is not considered to indicate that a person is or is not under the influence. He may or may not be convicted, depending upon the other evidence available.
0.10% or more	The so-called "legal limit." The defendant is considered to be under the influence. Usually, he will be convicted.

HOW TO AVOID THE RISKS OF DRINKING-DRIVING

There are at least three major steps that people can take to avoid becoming a drinking-driving "statistic"--that is, to avoid the risk of having an accident or being arrested.

Number 1 - If you plan to drive, limit yourself to light-to-moderate drinking. The goal here is to keep your blood alcohol level in the safe range, below 0.05%. If the average person limits himself to one drink per hour, he can spend several hours at a bar or party without getting above that level. Eating a meal before or during drinking will also help to keep the blood alcohol level down.

Number 2 - Plan ahead. If you are heading to a bar or party and you expect to do a good deal of drinking, try to arrange not to drive. You might be able to ride with a friend who is a pretty safe bet to stay sober; you might consider taking a cab or a bus; if the weather is good, and the distance is reasonably short, you might consider walking rather than driving. Most of us probably don't realize it as well as we should, but we probably could get along without our cars on occasion without too much trouble.

Number 3 - Don't let yourself get trapped into driving under the influence simply because you have your car with you. Most of us probably feel that, if we have driven our car to the bar or party, we have no choice but to drive it home. So, if we drink more than we had planned, we run the risk of an accident or an arrest. But, we often do have a choice. We might ask a friend to drive our car, or we might simply lock the car and leave it, and ride with a friend, take a cab or bus, or call home for a ride.

".01-.04" CARD

- Your blood alcohol level is below 0.05 percent
- Individuals at this level normally are <u>not</u> 'under the influence'
- For most people, the odds of having an accident at this level are no greater than when they are sober.

Conclusion: Your level usually is 'safe'

But, if <u>you</u> feel that your ability to drive has been reduced, use your own best judgment and avoid the risk by not driving.

".05-.09" CARD

- Your blood alcohol level is between 0.05 and 0.09 percent
- Many individuals at this level <u>are</u> 'under the influence'
- The odds of having an accident are about 3 to 6 times greater than they would be if you had nothing to drink
- You could be arrested for operating under the influence, if a police officer stopped you

Conclusion: Your level is 'risky'

Don't drive if you possibly can avoid it. Be extremely cautious if you must drive.

".10" CARD

- Your blood alcohol level is above 0.10 percent--above the 'legal limit'.

- All persons at this level are considered to be legally 'under the influence'.

- The odds of having an accident are at least 7 times greater than they would be if you had nothing to drink . . . and, the odds could easily be 30 times as great.

- Chances are you would be arrested for operating under the influence, if a police officer stopped you.

Conclusion: Your level is DANGEROUS: DON'T DRIVE

APPENDIX C

QUESTIONNAIRE

Site Code	_____ F(1-2)
Sampling No.	_____ F(3-4)

TRANSPORTATION SURVEY

Project 136
Interview Form

Location: _____

Date: ____/____/____ Day: F S F(5)

Interviewer: _____

Time: _____ F(6-7)

Number of Subjects in Group: _____ F(8)

	Sub 1	Sub 2	Sub 3	Sub 4	
UNIT NUMBER	____	____	____	____	F(9-12)
Folder: (0=none, 1=white, 2=blue)	____	____	____	____	F(13)
Sex: (m=male, f=female)	____	____	____	____	F(14)
Race: (W, B, L, O, other)	____	____	____	____	F(15)
1. What is your age?	____	____	____	____	F(16-17)
2. Do you drive a car? (1=yes, 0=no)	____	____	____	____	F(18)
[If no, skip to #4]					
3. About how many miles do you drive each year? (thousands)	____	____	____	____	F(19-20)
4. How did you arrive at (name of site) tonight? [1=driver, 2=passenger, 3=pedestrian, 4=cab, 5=bus, 6=other]	____	____	____	____	F(21)

5. How do you plan to travel from here tonight? [same response codes as in #4]

____ ____ ____ ____ F(22)

6. What made you decide to travel from here in this fashion? (record actual responses; indicate each subject's response)

_____

_____

_____

_____

_____

_____

_____

RESPONSE CODE ____ ____ ____ ____ F(23-24)

7. When did you arrive at (name of site) this evening? ____ ____ ____ ____

DURATION ____ ____ ____ ____ F(25-26)

8. Where did you come from before arriving at (name of site)?
[1=own home, 2=friend's home, 3=work, 4=other drinking establishment, 5=other]

____ ____ ____ ____ F(27)

9. How far away is that? (miles) ____ ____ ____ ____ F(28-29)

10. Where are you going now? [same response codes as in #8] ____ ____ ____ ____ F(30)

11. How far away is that? (miles) ____ ____ ____ ____ F(31-32)

12. How many drinks did you have this evening? ____ ____ ____ ____ F(33-34)

13. What were you drinking? (Record actual responses)

Sub #1_____ Sub #2_____

Sub #3_____ Sub #4_____

BEVERAGE CODE ____ ____ ____ ____ F(35)

14. What is your weight? ____ ____ ____ ____ F(36-38)

15. What is your current marital status? (0=never married, 1=married, 2=separated, 3=divorced, 4=widowed)

____ ____ ____ ____ F(39)

(If never married skip to #17)

16. How long have you been (married, separated, etc.)? ____ ____ ____ ____ F(40-41)

17. How often do you drink alcoholic beverages? (1=daily, 2=several days/week, 3=once/week, 4=several days/month, 5=once/month or less, 6=never)

____ ____ ____ ____ F(42)

18. How often do you drive after drinking? (1=daily, 2=several days/week, 3=once/week, 4=several days/month, 5=once/month or less, 6=never)

____ ____ ____ ____ F(43)

19. When you are drinking on <u>weekend</u> nights, how many drinks do you usually have? ____ ____ ____ ____ F(44-45)

20. When you are drinking on <u>weekday</u> nights, how many drinks do you usually have? ____ ____ ____ ____ F(46-47)

21. How many times during the past 3 years have you been ticketed or arrested for driving violations (exclude parking tickets)? ____ ____ ____ ____ F(48)

(If 0, skip to #23)

22. How many of these tickets or arrests occurred when you were driving after drinking? ____ ____ ____ ____ F(49)

23. How many accidents (reported or unreported) have you had as a driver during the past 3 years? ____ ____ ____ ____ F(50)

(If 0, skip to #25)

24. How many of these accidents occurred when you were driving after drinking? ____ ____ ____ ____ F(51)

25. Are you presently employed? (0=no, 1=yes) ____ ____ ____ ____ F(52)

26. What is your (present/usual) occupation? ____ ____ ____ ____ F(53)

OCCUPATION CODE ____ ____ ____ ____

27. Is your personal annual income?
(1) less than $6,000
(2) $6 - 10,000
(3) $10 - 15,000
(4) $15 - 20,000
(5) more than $20,000 ____ ____ ____ ____ F(54)

28. Is your family's annual income: (use above categories) ____ ____ ____ ____ F(55)

29. How many times have we interviewed you for this survey prior to tonight? ____ ____ ____ ____ F(56)

(NOTE: If this is a baseline or control site, skip to #41)

30. Were you asked to take the breath test inside (name of site) tonight? (0=no); if yes: Did you take the breath test tonight? (1=no, 2=yes) ____ ____ ____ ____ F(57)

[INTERVIEWER: THANK THE SUBJECTS FOR THEIR TIME AND TERMINATE THE INTERVIEW. RECORD GENERAL DESCRIPTIONS OF EACH SUBJECT WHO PARTICIPATED IN THE 'INSIDE' INFORMATION PRESENTATION]

	GENERAL DESCRIPTORS: Hair color, length; facial characteristics; articles of clothing; other useful identifiers/remarks
Sub #1	
Sub #2	
Sub #3	
Sub #4	