DOT HS-800 614

THE PERCEPTION OF DWI LAWS: A STUDY OF THE GENERAL AWARENESS AND THE ATTITUDES OF PUBLIC AND OFFICIAL GROUPS TOWARDS THE DRINKING DRIVING LAWS

Center for Studies of Law in Action
Indiana University
405 South College
Bloomington, Indiana 47401

Contract No. DOT-HS-034-1-050
November 1971
Final Report

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
WASHINGTON, D.C. 20590

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the National Highway Traffic Safety Administration.

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 800 614		

4. Title and Subtitle	5. Report Date
THE PERCEPTION OF DWI LAWS: A STUDY OF THE GENERAL AWARENESS AND THE ATTITUDES OF PUBLIC AND OFFICIAL GROUPS TOWARDS THE DRINKING DRIVING LAWS	November 1, 1971
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Robert F. Borkenstein, Jere T. Joiner, Hans G. Klette, William G. Picton	

9. Performing Organization Name and Address	10. Work Unit No.
Center for Studies of Law in Action Indiana University 405 S. College Bloomington, Indiana 47401	11. Contract or Grant No. DOT-HS-034-1-050

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D. C. 20591	Final Report for period January 1 to June 30, 1971
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

"The Perception of DWI Laws: A Study of the General Awareness and the Attitudes of Public and Official Groups toward Drinking Driving Laws" includes two tasks. The first is a survey of the perception of laws dealing with driving while under the influence of alcohol by selected public and official groups. The second is an experiment to study the best means of increasing the awareness of DWI laws among those members of selected public and official groups and of improving their attitude toward these laws. The survey of the public was accomplished by means of a questionnaire. Most of the questions focused on the subjects' awareness of and attitudes toward the drinking driving situation and the laws governing it. Approximately half of the public group were unaware of the definition of the drinking driving laws. Awareness of penalties was even lower. All groups, public and official, showed a minimal knowledge of the actual drinking driving situation as it would relate to the legal definition. The experiment, designed to improve awareness and attitudes toward these laws and the situation of drinking driving, exposed the public and official groups to one of three educational treatments: a lecture, a pamphlet, or a breath test. A combination of the treatments used in this experiment spread over a long period of time could succeed in educating the public to the concept of blood alcohol concentration and to the attendant drinking driving behavioral factors.

17. Key Words	18. Distribution Statement
PERCEPTION OF LAWS DRINKING DRIVING LAWS ATTITUDES TOWARD LAWS	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price

Form DOT F 1700.7 (8-69)

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Foreword

The following report is the result of several years of international liaison between Swedish workers in the field of alcohol and traffic safety as represented by the project director, and U.S. research in this field as represented by the principal investigator. The assumption that control of this factor of traffic safety is a socio-legal process inevitably led to the question of the efficacy of the form of current laws dealing with the subject and how various segments of the public and official groups view these laws.

The authors wish to express their deep gratitude to Professor David Cavers and Mr. Edward Selig of the Council on Law Related Studies of the Harvard Law School for making possible a planning meeting at Indiana University, bringing together legal scholars and social scientists to discuss the proposed research.

Very special appreciation must be expressed to the Board of Public Safety of Shreveport, Louisiana for releasing Officer Jere T. Joiner and to the Royal Canadian Mounted Police for making S/Sgt. William G. Picton available for field data collection.

Other members of the team who contributed very significantly are Paula Pearce, graduate student in Forensic Studies at Indiana University, and Tadamichi Hoshi, National Police Research Institute of Japan, and also Miss Julia Longley, who

learned a whole new jargon while typing this report, which would never have been written without her help and advice.

Invaluable advice was proffered during the execution of this project by those we called upon as consultants: Professor M. W. Perrine of the University of Vermont, Professor Robert Force of Tulane University Law School, and Colonel James Peva of the Indiana State Police.

The fact that we received almost 100% cooperation from all groups and individuals approached indicates the high level of public interest. This project would not have been possible without such cooperation. We gratefully acknowledge the contribution of each of our many subjects to the cause of traffic safety.

We also must give our thanks and appreciation to Marjorie Borkenstein and Tove Klette for being so patient and understanding.

1. Summary and Conclusions

1.1 The Research Project

"The Perception of DWI Laws: A Study of the General Awareness and the Attitudes of Public and Official Groups toward Drinking Driving Laws" includes two main tasks. The first is a survey designed to describe the perception among selected public and official groups of laws dealing with driving while under the influence of alcohol. The second is an experiment to study the best possible means of increasing the awareness of DWI laws among those members of selected public and official groups and of making their attitude toward these laws more positive.

1.2 The Survey

1.2.1 Population

The total population of the survey is 896. It is divided into two parts, public and official groups. In turn, each of the two parts is subdivided.

Part I. Public Groups

1. 342 students between the ages of 18 and 24 who drive and drink alcohol.
2. 244 active service club members between the ages of 25 and 64 who drive cars daily.

Part II. Official Groups

1. 150 police officers involved in traffic law enforcement in Indiana

who have not attended a course of instruction in breath testing equipment.

2. 81 justices of the peace attending an Indiana traffic court conference.
3. 74 lawyers dealing with DWI cases in Indiana in all parts of the court system.
4. 5 Indiana state legislators from the 97th session of the General Assembly, 1971-1972.

1.2.2 Methodology

The Questionnaire. The survey of the public was accomplished by means of an 18-item questionnaire. Most of the questions focused on the subjects' personal awareness of and attitudes toward the drinking driving situation and toward the laws governing it. The official questionnaire had 12 items. The main difference between the two measuring instruments was that the public group was asked to define the drinking driving laws. The officials were not asked to define the laws, but rather to gauge the effectiveness of the enforcement and execution of these laws on the part of components of the criminal justice system.

There were only two other important methodological considerations guiding the design of the survey.

Both groups were specifically chosen because the research team assumed that their awareness of the drinking driving problem would be much higher than that of the general public. Second, every effort was made to preserve the natural settings of the groups. The questionnaire was administered as a normal part of their usual gatherings.

1.3 Summary of the Survey Results.

Approximately half of the public group contacted were unaware of the definition of the drinking driving laws. The level of awareness of the penalties for those laws was even lower. All groups, public and official, showed a minimal knowledge of the actual drinking driving situation as it would relate to the legal definition. Both the public and official groups could successfully parrot, at least to a degree, the terms of the law when asked about them directly; but they all drastically underestimated the amount of alcohol it would actually be necessary for them to drink to reach .10% BAC. They also felt that they would be unfit to drive a car at BACs far below the legal limits. In general, almost everyone included in the survey thought the DWI laws were enforced too leniently.

1.4 Conclusion.

The significance of these results is that if most people think the legal limit is much lower than it actually is, we can assume that a fairly large proportion

of the public thinks it is violating the law when it is not. This lack of understanding of the drinking driving situation perpetuates the "there but for the grace of God go I" attitude toward enforcement of the legal limits. Public demand for strict enforcement of DWI laws is slight because both the public and officials think of themselves as at least occasional DWI law violators. The public and the officials are not pressuring for more vigorous prosecution of the "out group" of DWI law violators because they all think of themselves, to one degree or another, as members of that group.

1.5 The Experiment

The experiment, designed to improve the awareness and attitudes of the groups toward these laws and the situation of drinking driving, exposed the public and official groups to one of three main educational treatments: a lecture, a pamphlet, or a breath test. There were also two other treatments which were not part of the main experimental design, a fact-sheet and the Canadian film on drinking driving, Point Zero Eight. The subjects were tested before and after exposure to the treatments by means of the questionnaire. The posttest was generally administered between one and two weeks after the treatment. The main hypothesis is that breath testing would prove to be the most effective means of altering both awareness and attitude in the direction of greater social responsibility.

1.6 Discussion of Experiment

An overview of the experiment shows that the lecture, pamphlet, and fact sheet approaches were effective techniques for increasing the public awareness of relatively simple information about the laws and the situation of driving while intoxicated. The awareness of the meaning of DWI, implied consent, and of the penalties attached to the DWI laws were increased by these methods, especially within the student groups tested. Even when we tried to convey information which was a bit more complex, related to the amount of liquor a specified individual would have to drink before reaching .10% BAC, the same approaches seemed to have a positive effect on the students exposed to them.

The breath test approach increased awareness in both public and official groups, especially for the students and attorneys tested, but also, at least to a degree, for the members of the service clubs. This was not, however, the case for the police groups. When asked, as a part of the posttest, to re-estimate the amount of alcoholic beverage a specified individual would have to drink before reaching .10% BAC and also before becoming unfit to drive, an unduly large number of this group gave answers which were unacceptably high.

Even though the film approach was only tried on one group of students within the experimental design, it

proved highly effective in precipitating strong and very desirable shifts in their attitudes toward the maximum amount of whiskey it is possible for a specified individual to drink without becoming unfit to drive and also toward the .10% BAC case.

The breath test approach seems to be the most effective treatment for changing the attitudes of both the public and official groups. This is especially true for students and attorneys, but it also applies to service club members. In relation to the attitude toward the amount of whiskey or beer it is possible to drink without becoming unfit to drive, a generally desirable shift was detected within the student groups tested, there was a strong desirable shift in the attorney group, and a mildly desirable shift for the service club members. The breath test did not, however, effect an attitude change for the police group. After experiencing the breath test treatment the attitude toward the maximum amount of liquor the members of this group thought it possible to drink before becoming unfit to drive shifted undesirably toward BACs which were too high.

The main hypothesis, that breath testing is a more effective means than either of the other influence techniques, seems to be verified in relation to attitudes. But there is at least one necessary qualification; there must be a minimal level of prior knowledge about general aspects of drinking driving before a positive change in

attitude can occur. On the whole, the greater the level of prior knowledge about general aspects of drinking driving, the more successful the breath test treatment. The film approach seems to match the breath test in effectiveness as a technique of attitude change; however, it is impossible for us to generalize from this result, because it was tested on only one small group of students.

The main hypothesis does not appear to be borne out in relation to public awareness of DWI laws. In this instance the lecture, pamphlet, and fact sheet approaches are more effective than the breath test for these groups. In relation to the amount of liquor it would be necessary to drink in order to attain .10% BAC, the breath test seems to be the most effective for officials and at least as effective as any of the other techniques for the public. Prior knowledge is an important factor in this situation as well.

All of the influence techniques have been most successful when administered in an educational setting. This is true for both public and officials. For students and policemen in the classroom attention and motivation to learn have been high. This seems to hold true for the social gatherings with breath-tested students and attorneys in which attention was focused exclusively on the breath test. At social service club meetings and police roll calls, when our activity had to compete

1.7 OVERVIEW OF THE EXPERIMENTAL DESIGN

Subjects	Pretest-Posttest Control Group Design					Posttest-Only Control Group Design		
	Treatment					Treatment		
	Lecture	Pamphlet	Breath Test	Film	Control	Lecture	Fact Sheet	Control
Students	37	46 (31)+(15)	22	30	39	19	76	74
Service Clubs	25	32	24		27			
Police	36	46	50		27			
Attorneys			31		22			

All groups except the film, fact sheet, and one pamphlet group experienced experimental treatment with pretest immediately before treatment and posttest one to two weeks after treatment.

The film, fact sheet, and one student pamphlet group experienced experimental treatment with posttest immediately after treatment.

Also tried but failed was a posttest-only control group design with a fact sheet group and a control group at the driver license bureau.

1.8 Summary of Experimental Results

	Breath Test				Lecture			Pamphlet-Fact Sheet			Film
	Students	S. Clubs	Police	Attys	Students	S. Clubs	Police	Students	S. Clubs	Police	Students
Awareness											
Meaning of DWI Laws					s.s.			s.s.			
Implied Consent					s.s.	Support		s.s.	Support		
Penalties DWI					s.s.			s.s.			
.10% BAC Amount to Drink				s.s.	s.s.			s.s.			
Individual Change	s.s.	Support	s.s.	s.s.	s.s.					s.s.	
Attitude											
Fit-Unfit Whiskey											
Individual Change	generally desirable but mild	mildly desirable	undesirable shift to high BAC	very desirable and strong							very desirable shift
Beer											
Individual Change	as above	generally desirable but mild	undesirable shift	as above							
.10% BAC Case											s.s.
Individual Change		s.s.									s.s.
.13% BAC Case	s.s.	Support									
	s.s.										

with many others, both social and professional, the attention and motivation were lowered.

The relatively successful attitude change with the breath test treatment seems to depend upon the following factors: high credibility and attractiveness, factual appeal, direct experience, and active group participation.

We have been limited to measuring the short-term effectiveness of these influence techniques. We would expect the effects to wear off as time goes on. The active involvement in the breath test gives us some hope that the attitude change effected by this technique will be longer-lasting than that of the lecture or pamphlet groups in which participation was not as great as in the breath test approach; there is, then, for these approaches, less hope for persistent change.

To understand the difficulties involved in effecting long-lasting changes in attitudes toward drinking and driving, the function of attitudes, their motivation, and the main value system of our society in relation to this activity must be taken into account. Otherwise, the effects of any manipulation of attitudes will soon disappear.

1.9 Recommendation

We now assume that the influence technique most effective for the general public, which is highly ignorant of the

legal definition of DWI, would be slower and more complicated than was allowed for in our "one shot" experiment. A combination of the treatments used in this experiment--for instance a film, pamphlet, lecture, and finally, the actual breath test experience--spread over a longer period, might succeed in educating the public first to the concept of blood alcohol concentration and then to the idea that, if they drink moderately, below .05% BAC, they can safely drink and safely drive. Only when the general public is aware, with a much greater degree of sophistication than it now has, of the actualities and complications of driving while under the influence of alcohol, can we have anything approaching public acceptance of adequate enforcement of the DWI laws.

The general public should be exposed to as many as possible of the different influence techniques as often as possible in the socialization process and at least in the following way:

(1) In the last grade of the public school system in connection with driver education a combined approach with lecture, film, fact sheet, and group discussion should be used. If drunk driving can be simulated this should also be added.

(2) In the driver license manual two pages on drinking and driving should be added. This information should be similar to our fact sheet which is attached to this report. In every driver license

test there should be at least one question on drinking and driving. Possible questions can be found in our driver license test questionnaire which also is attached to this report.

(3) In the military service the combined approach recommended under (1) should be used.

In the mentioned approaches examples should not only cover hard liquor but also beer, as many persons and especially young people drink beer. Our own fact sheet must be supplemented on this point.

(4) The breath test approach should be provided as often as possible in social gatherings. A minimum educational setting must always be provided. If an automatic Breathalyzer is used, the person must be provided with a fact sheet automatically after testing. If an ordinary breath test instrument is used, the operator must give a short introduction, hand over a fact sheet after testing and see that this is taken home, and provide feedback to the tested person.

In relation to the officials, a combined approach should also be used. This should be in the following order: lecture, film, group discussion, fact sheet, and breath test. Especially in relation to the police, it is important that all approaches are provided in an educational setting, e.g., a training course of some sort.

For attorneys, a bar association meeting seems to be efficient. All the approaches can follow in order in the same meeting. For the police the lecture, film, group discussion, and fact sheet can follow in one educational setting. Before the breath test approach, the police must be ascertained to have at least minimum knowledge in the actual problem area.

2. Theoretical and Practical Background

2.1 Introduction

Most Americans over the age of 18 drink alcohol to some extent and most Americans in this category drive automobiles. Inevitably, these two activities coincide at one time or another, as do alcohol and other forms of human activity at home, at work, and at play. The manifestation of alcohol as a factor affecting the human performance of a particular task is certainly not unique to automobile driving. It is the indication of a much larger social phenomenon affecting not just the driving task, but human behavior as a whole.

The use of alcohol is deeply ingrained in most cultures of the world. Because the consumption of alcohol has been a part of human activity since the dawn of time, it has become surrounded by a tremendous aura of folklore which persists in spite of efforts to inject scientific evidence into the substance of the mass communications designed to neutralize the negative effects of folklore. Thus informal social norms that tend to control the drinking driver are based on generally inaccurate tradition, folklore, and individual personal experience, usually at variance with the more objective and correct findings of scientific research on the effects of alcohol. It would, therefore, be desirable to offer a means for each individual to experience the impact of quantitative scientific methods on his own habits and style of drinking in order to displace the emotionalism of tradition and folklore.

Nowhere in the United States is drinking and driving totally prohibited. Under the conditions of Standard #8 of the National Highway Traffic Safety Administration, the blood alcohol concentration /BAC/ above which alcoholic impairment is presumed is .10%. In most states, there is a presumption of non-impairment below .05%. Surveys of attained BACs from various social settings provide convincing evidence that the overwhelming majority of people who drive after drinking have blood alcohol concentrations within the legally accepted limits. However, since no means is provided to measure their own blood alcohol concentrations, they do not know this and, therefore, might develop an irrational fear of the law. Conversely, those who do drink excessively and drive have no way of being aware of this fact, creating a possible ostrich-like comfort.

2.2 General Outline on Social Control of the Highway Traffic System

The highway traffic system, a component of the larger social system, consists of the driver, the vehicle, the environment, and their interaction. The main function of the highway traffic system is to provide physical communication through transportation. The most important demands on the system are that it function efficiently, and that it provide transportation which is readily available, comfortable, inexpensive, and rapid, while maintaining an acceptable degree of safety. These aims and demands are often in conflict, internally as well as with other components of the social system.

This broader outlook has particular relevance to the driver's position in the social system and has the greatest importance when one studies the social control factors

in relation to highway traffic offenses. If the criteria for the most acceptable behavior in one of the other sub-systems do not match those of the highway traffic system, offenses and crashes occur. If meeting the criteria of the highway traffic system is inconvenient, resulting crashes and offenses are more likely to occur.

The most important area of social control of the highway traffic system, from the standpoint of traffic safety, is the interaction between the driver and his environment. This is a complex relationship of the driver's interaction with the physical environment, the legal environment, and the social environment.

2.3 The Macro Approach - a Conceptual Scheme

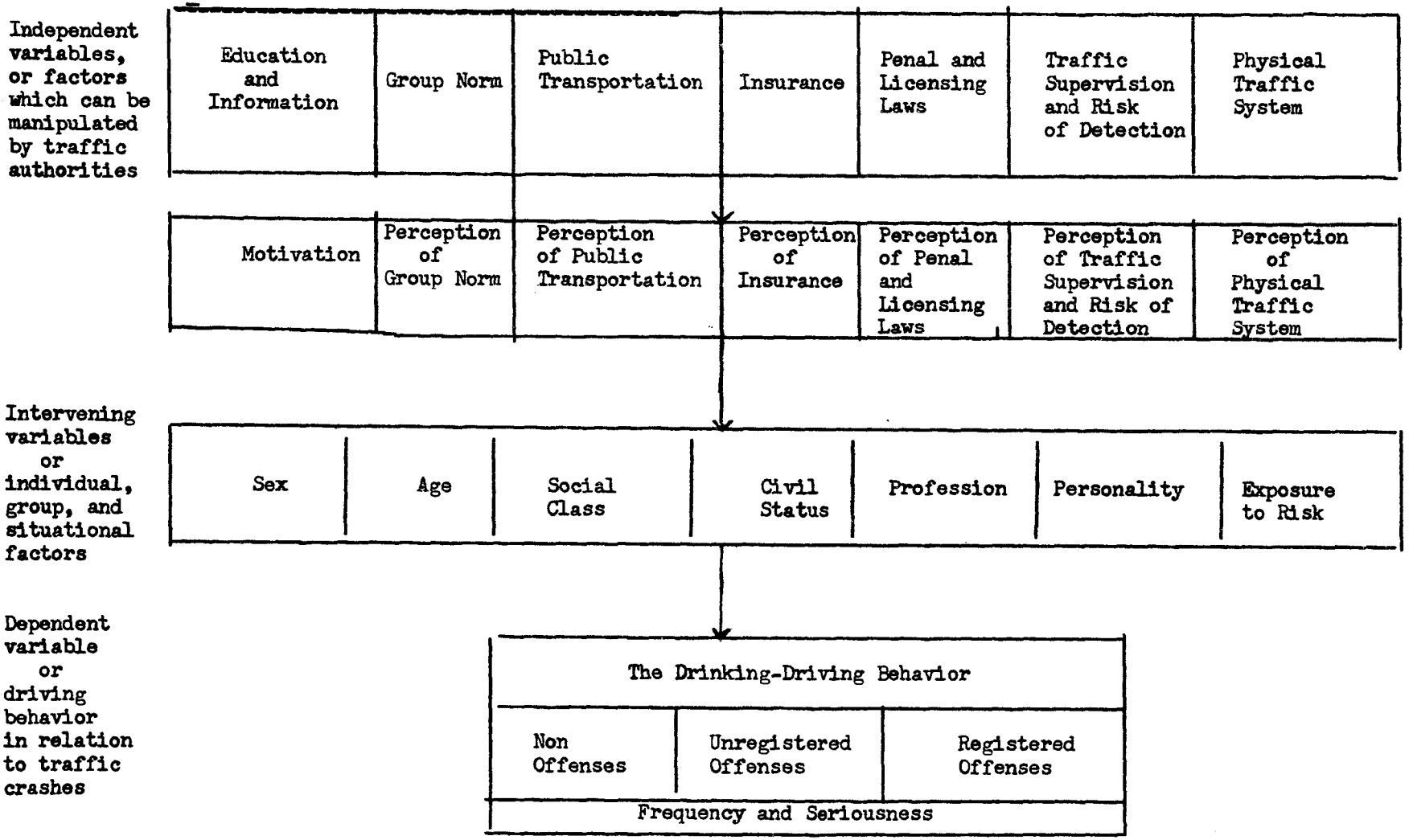
The theoretical framework for research on social control of drinking driving offenses can be summarized in the following conceptual scheme which clarifies the research problem on the macro level with reference to the literature of social control and to empirical observations which have been derived from many descriptive studies. (See Table 1, p. 17).

In addition to the factors mentioned in the scheme, the main goals and values of the socio-political system must be studied. These have a profound influence on the relative weight assigned to the independent factors.

Table 1

The Macro Approach

A conceptual scheme for research on social control of drinking-driving offenses in relation to the social, legal, and physical environment



There would seem to be a complicated feedback among the factors in the scheme. Here only the main influences are noted.

2.4 The Perception of Law and its Importance

2.4.1 In General. Ideally, a law is a codified social norm while a moral norm in a society is uncodified and informal. Both must be directed toward the same goals, but they may differ in intensity. Generally, the law must be more liberal than the uncodified and informal norm to which it is related; otherwise, through perceived over-control, the law may become democratically unacceptable and therefore unenforceable because of public, official, or jury negative response. Laws are not yokes strictly controlling behavior; they must be light reins regulating behavior.

In a democratic society it is of the greatest importance, from the viewpoint of social control, that there be general public support of the law. In order to attain such support, knowledge and understanding of the law are crucial. By attaining a high level of understanding and knowledge, fear and distrust of the law can be minimized, resulting in a condition of freedom under law through knowledge with a minimization of the need to control through fear because of ignorance of the intent of law.

That the goal of the individual's freedom under law has the highest priority can be seen in the report of the President's Commission on National Goals, where the following main goals for the U.S. in the 60s were stated: (1) improving the status of the individual, (2) promoting equality, (3) insuring the democratic process, (4) upgrading education, (5) supporting the arts and sciences, (6) bolstering the democratic economy, (7) maintaining satisfactory economic growth, (8) continuing the process of aiding technological change, (9) aiding agriculture, (10) improving living conditions, and (11) safeguarding health and welfare.

In relation to the first goal, improving the status of the individual, the commission stated:

> The status of the individual must remain our primary concern. All our institutions--political, social and economic--must further enhance the dignity of the citizen, promote the maximum development of his capabilities, stimulate their responsible exercise, and widen the range of effectiveness of opportunities for individual choice.
>
> From this concern springs our purpose to achieve equal treatment of men and women, to enlarge their incentives, and to expand their opportunities for self-development and self-expression. From it comes our insistence on widely distributed political and economic power, on the greatest range of free choice in our economy, and on the fair and democratic exercise of public and private power. It

> underlies the value we put on education. It guides the pursuit of science. It is the source of our interest in the health and welfare of every citizen.
>
> The great ideas that have moved the world have sprung from unfettered human minds. The spirit of liberty, in which we thrive, makes one man hesitate to impose his will on another. It relies on the conviction that the truth will emerge from free inquiry and exchange of views (p.3).

2.4.2 In Specific to Drinking and Driving. The very best current example of the effects of ignorance of the law is public response to the body of laws dealing with alcoholically impaired drivers. These laws are divided into three categories: (1) those proscribing the operation of motor vehicles while the driver is impaired by alcohol, (2) those setting the criteria for driving while under the influence of alcohol in terms of BAC, and (3) those dealing with compulsory cooperation in obtaining samples of body material for analysis (implied consent).

The peculiar characteristic of this set of laws is that the basic offense is defined in numerical terms--BACs. However, few drivers who drink, and who sometimes combine drinking and driving, seem to have any idea what these numbers mean. This lack of knowledge can result in a feeling of unnecessary strictness and of the over-control of a common activity, resulting in resentment and distrust.

3. Methodology

3.1 Introduction

This chapter on the methodology common to both the survey and the experiment phase of our research has three important functions: to describe the earlier American studies on the perception of DWI laws; to review the general theories of attitude and attitude change; and to outline the actual methods employed in the design of the project.

3.2 Previous Studies on the Perception of Drinking Driving Laws

3.2.1 Introduction. The available literature on the awareness of drinking driving laws by both public and official groups is extremely limited. We know of only four previous American research efforts, only one of which was published before the planning stage of this project was completed. The second and third studies appeared during the first month of our research, while the fourth, published in April 1971, came to our attention after we started the process of data collection. In general these studies reinforce our own research because they, too, indicate that general awareness of DWI laws is extremely low.

3.2.2 Insurance Institute for Highway Safety Symposium. The first study, dealing with the awareness level of people judged to be "experts" in the field of traffic safety, was conducted during a 1968 symposium sponsored by the Insurance Institute for Highway Safety. Since the symposium itself was specialized and technical, it was assumed that the 320 attendees, administrators, politicians, insurance people, and researchers, were knowledgeable in the field of

alcohol and traffic safety. During the course of the meeting a 19-item questionnaire on the problems of alcohol and traffic safety was distributed to the participants. The response level was a little less than 50%. Since the sub-groups existing within the superstructure of the conference were not identified, the 175 respondents, like their colleagues who failed to respond, were also assumed to be well informed in the field of traffic safety.

In general the questionnaire dealt with knowledge of the meaning of blood alcohol concentration in relation to drinking driving laws, and with levels of impairment of driving functions at various BACs. Three questions and responses were particularly interesting to us because of their implications about the concept of blood alcohol concentration. The research team asked the participants to specify how many ounces of 80 proof liquor a 200 lb. man would have to drink in a one to two hour period after an average meal in order to reach .05% BAC, .10% BAC, and .15% BAC. The answer for .05% BAC is 7 ounces. Only 8% of these so-called experts answered correctly. Forty-eight % said it would take only one ounce to attain this BAC, while another 43% placed their estimates slightly higher, but were still low by 3 ounces.

Only 13% of the respondents replied, correctly, that it would take their 200 lb. hypothetical man, under the same circumstances existing for the first question, 10 ounces of liquor to reach a BAC of .10%. Eighty-two % of the subjects maintained that it would only take between 4 and 7 ounces of alcohol. Only 5% of the sample thought it would be more than 10 ounces. In response to the question about reaching .15% BAC under the same conditions, 88% of the supposedly knowledgeable group were too low. In general there is a clear underestimate, even among experts, of how much one would have to drink to reach BACs of .05%, .10%, and .15%. It is evident that specialists, working in the field of traffic safety, have only a vague idea of the relationship between the amount of alcohol consumed and the presumptive limit.

3.2.3 California Survey. The second study is important because it deals with the general public's knowledge about implied consent and presumptive limits in relation to DWI laws. The sample was a 1,135 subject cross-section of California adults aged 18 and over. They were interviewed during October 1970 in their homes. In answer to a question concerning the implied consent law, which had been recently enacted, 44% of the

group said it would be possible to refuse a chemical test determining BAC without incurring legal sanction; 6% did not know. Age and education were significant factors when the responses were analyzed in light of the social background information elicited during the course of the interview. The people who were above a certain age classification and below a certain educational level indicated that they would submit to the demand for a chemical test more readily than would the group of people in which these factors were reversed.

The self-identified group of people who indicated either that they would refuse to take the chemical test or that they did not know were questioned further by the research team on the sanctions for refusing. They were given five alternatives: The person who refuses to take the test will go free but will have to appear later in court to answer a drunk driving charge; his license will be suspended for six months, regardless of the outcome of the drunk driving charge; his driver's license will be suspended pending the outcome of his drunk driving charge--if he is found guilty it will be suspended for six months, otherwise not; the subject does not know. Only 20% of the sample recognized that refusal to take a chemical test for alcohol under the implied consent law meant

automatic suspension of their driving licenses. Forty-three % of the sample population thought that a sanction would be imposed only if they were found guilty of the drinking driving charge. Twenty-four % of this cross-section of the California public thought that the first alternative, no sanction for refusing to undergo a chemical test after being stopped for a drinking driving charge, was correct. Only 2% of the sample thought that the most severe penalty, automatic, permanent revocation of the driving license upon refusal to take a chemical test, would be imposed upon them if they refused. Eleven % of the population had no idea of the correct response. Age and education were significant determining factors in the choice of alternatives. People who were younger or better educated or both tended to think that their licenses would be revoked upon refusal of the test only if they were convicted of the drinking driving charge.

3.2.4 Little's Michigan Study. Joseph W. Little conducted an exploratory study in Michigan in 1968 on questions relating to deterrence of drinking while driving. The only principle of selection for the sample was to ensure that a disproportionately large number of young, male drivers was included.

The questions asked were designed to test the drivers' knowledge of the legal controls of drinking driving.

In reply to a question on how well they knew the drinking driving laws, 42% of the drivers said they knew the laws well; 28% thought their knowledge was average; 15% admitted to less than average knowledge; and another 15% did not know. This survey indicates that a substantial percentage of drivers considered themselves ignorant of the DWI laws. The answers given in response to the remaining questions, dealing with the penalties which might result from violation of the DWI laws, indicate that the consequences of these laws are often underrated.

The results of this study generally bear out the conclusions of the California study: public awareness of all aspects of drinking driving laws is low.

3.2.5 Zylman's New Jersey Safety Council Survey. The participants in four symposia, conducted by the New Jersey State Safety Council during November 1970, were informally surveyed by Richard Zylman in an effort to determine the amount of liquor they believed it would take them to reach the .15% BAC New Jersey presumptive limit, and then to determine the amount of liquor they thought they

would have to drink before they would be unfit to drive. The subjects were 112 policemen, of whom 20% were Breathalyzer technicians, and 69 others, among whom were 12 driver education teachers, an assortment of industrial safety directors, and representatives from government and civic organizations.

Zylman asked the subjects to answer questions concerning the quantity of liquor it would be possible for them to drink before exceeding the presumptive limit. Because of the difficulties in presenting a precise BAC based on body weight, time, and proof of liquor, any answer within 20% of the "correct" figure was accepted.

The main results were that 60% of the policemen and 68% of the others thought they could be arrested for driving after drinking amounts from 20% to 85% below what would actually be needed to attain a BAC of .15%. Six % of the policemen and 9% of the others gave estimates that were more than 20% high. Of the 63 persons who thought they knew the amount of liquor they would have to drink before exceeding the presumptive limit, only 6 were actually correct. One of the 12 driver education teachers was more than 20%

high in his estimate of what he would have to drink to reach .15% BAC; 4 gave estimates that fell within 20% of the "correct figure"; and 7 gave estimates varying from 25% to 75% low.

On the questions dealing with personal estimations of driving fitness, 32% of the policemen and 39% of the others estimated their own capacities for safe driving equal to or higher than their estimate of what the law would permit them to drink in order to reach the presumptive level of .15% BAC.

3.3 General Theories of Attitude and Attitude Change

3.3.1 Introduction.

Once we discovered, from our survey of the literature of the field, that the general level of public and official awareness and attitude was low, we recognized that the primary task of the experiment would be to determine if by educating these two groups to the realities of drinking driving we could change their awareness and attitude toward these laws.

We have been limited to measuring the short-term effectiveness of these influence techniques. We would expect the effects to wear off as time goes on.

The active involvement and participation in the breath test gives us some hope, however, that the attitude change precipitated by this technique will be longer lasting than that of the lecture or pamphlet groups. We cannot predict whether the long-term effect of the lecture, pamphlet, and fact sheet approaches on awareness will be similar to the short-term effect. The active involvement was not as great as in the breath test approach; there is, then, less hope for a persistent change.

To understand the difficulties involved in effecting long-lasting changes in attitudes toward drinking and driving, the function of attitudes, their motivation, and the value system of our society in relation to this activity must be taken into account. Otherwise, the effects of manipulation of attitudes will soon disappear.

If an understanding of the nature of attitudes and the conditions for their change depends upon a knowledge of their functional basis, as is presumed by the functional theories, then it is of prime importance to attempt to identify the

underlying motivational patterns of persons involved in the drinking driving situation.

Abraham Maslow has developed a frame of reference which helps to explain the relative strength of certain motives or needs. According to him there seems to be an hierarchy into which human needs arrange themselves. He suggests that man has a number of primary, instinctive motives ranging from lower to higher. These are arranged in an hierarchy that corresponds to the assumed evolutionary level of the motive. Physiological motives such as hunger must be satisfied first of all; second come safety or security motives, such as fear; third the affiliation or acceptance motive, related to the individual's role within the structure of the group; fourth the esteem motives, both self-esteem and recognition from others; and fifth the motive of self-actualization, or the need to maximize one's potential.

It is not Maslow's intent to say that this hierarchy applies universally, but he feels it to be a typical pattern. His most important point is that a higher motive does not usually appear until the ones below it are

satisfied. One level of need does not necessarily have to be totally satisfied before the next level can be met. In reality, most people in our type of society tend to be partially satisfied at each level and partially unsatisfied, with greater satisfaction tending to occur at the physiological and safety levels than at the affiliation, esteem, and self-actualization levels. In a conflict between two motives from different levels in the hierarchy, the motive from the lower level will usually win, but there are individual differences depending, for instance, upon the characteristics of the personality involved.

Motivationally, driving seems to fulfill a limited range of needs. Its principal function is to provide a change of location; much driving serves only this function. But driving can also satisfy other needs, which can be related to Maslow's hierarchy of motives.

Within the category of safety or security motives, perhaps the most essential is the need to be free from fear of physical danger. Few people seem to worry very much about traffic crashes and physical danger. If there is a fear of crashes it is usually an assimilated, conscious reaction based on analysis of news in mass media, for instance. Subconsciously it is usually assumed that it is the other person who will have the crash, just as in war it is always the other man who will be killed.

The need to belong and to be accepted by various groups is the defining characteristic of the acceptance

or affiliation category. A person strives to have meaningful relationships with others. The car often gives young people their first opportunities to be away from home and meet with peers. Within the confines of an automobile they can be their own group and create meaningful in-group relationships.

The need for esteem, both self-esteem and recognition from others, is very important for the individual. Satisfaction of these needs produces feelings of self-confidence, prestige, status, power, and control. Driving is a very important factor in this relation--it gives a feeling of freedom, power, a sense of superiority, being master of all, the pleasure of moving anywhere.

In addition to all these basic human needs, driving a car and the satisfaction it gives should be seen, as opposed to public transportation, in relation to some further factors: (1) privacy, (2) comfort, (3) orientation, and (4) convenience (Stone, pp. 98-99).

Two kinds of privacy are relevant. One is physical privacy, the need of human beings to be separated spatially from each other. The actual distance by which one person wants to be removed from another varies relative to the situation and individual social characteristics. The second kind of privacy is cultural privacy, the individual's need and desire to be among people who share his values, norms, beliefs, and standards of behavior, and to exclude from his presence individuals with different norms and standards.

The great mixture of economic and ethnic backgrounds represented in regional commuter patterns is made tolerable by the physical isolation provided by the automobile. There need be no physical or social contact with people in other cars. The individual retains the right to select his fellow passengers.

The automobile also offers many amenities for personal comfort such as adjustable seats, temperature control, and radio. The driver can seal himself off from contact with the world outside his car and be entertained as well.

The automobile user, because he must navigate his car, rarely has disorientation problems; he is continually aware of his route and the distance to his destination.

Our primary convenience requirement is to be picked up close to our departure point and dropped of as close as possible to our destination point. Second, we wish to accomplish this with a minimum of inconvenience: the least possible discomfort and confusion caused by necessary transfers, the least possible exposure to inclement weather. The automobile approximates a door-to-door service, since the suburbanite usually has his car parked at hand and can drive to his job without having to transfer from one vehicle to another. If he lives in a high-density city his chances of parking near his destination are becoming increasingly small, but for those who live in low-density areas, the car is the optimum, and often the only means of reliable transportation.

Motivationally, drinking alcohol seems to fulfill a

limited range of needs. Most drinking is closely associated with social functions; drinking to fulfill an individual need usually seems to be in addition to this. These motives are easily related to Maslow's hierarchy.

On the physiological level, alcohol satisfies the taste and adds calories to the diet. On the safety and security level, alcohol can help the individual to feel free from fear of physical danger, deprivation of the basic physiological needs, and concern for the future.

On the affiliation and acceptance levels, alcohol very often plays the important role of making relations among people in different groups easier. On the esteem level, alcohol is often used to produce feelings of self-confidence, prestige, power, and control.

If we combine the motivational aspects of driving and of drinking, we can perhaps begin to understand the situation of the drinking driver. The rewards associated with drinking before driving seem to be more compelling for most drivers than the rewards for not drinking, or at least the existence of rewards for not drinking has not been made sufficiently apparent to most people who drink and drive.

Realistic alternatives to basic satisfactions provided by driving a car might be free, convenient public transportation, residential gathering places for teenagers, or the conveyance of feelings of power, status,

and freedom through other means. But when alcohol is added, there is always the danger that the perception and desirability of these alternatives disappear. An individual can lose his ability to gauge the alternate advantages of the situations when under the influence of alcohol.

In spite of characteristic differences in the strengths of needs and motives we cannot predict attitude change solely on the basis of measures of need. We must also have measures of related attitudes. Knowledge of the need-state indicates the type of goal toward which the individual is striving. But the means for reaching this goal may vary considerably, and for this reason, we need to know the attitudes which reflect the evolution of the various means.

According to Rokeach, the value-expressive function of an attitude is superordinate to all other functions of attitudes; all personal attitudes are instrumental to the satisfaction of one value--self-regard. Therefore, it is imperative to look at the possibility of changing the attitudes of the drinking driver with respect to this function of attitude.

According to Katz, dissatisfaction with old attitudes which are inappropriate to one's values can lead to change. People are much less likely to find their values uncongenial than to find some of their attitudes

inappropriate to their values. The discomfort with one's old attitude may stem from relevant new experiences or from the suggestions of other people. In the case of the drinking driver, this could be the experience of breath testing and the lecture on alcohol and traffic. These outside influences on people often show them that their present mode of expressing values is inappropriate for their over-riding desire to confirm a particular self-concept and to realize a particular central value (Katz, Public Opinion Quarterly, 1961, pp. 163-204).

The role of values is central to the formation of attitudes from the very early years of life. But attitude formation is a continual process and other influences are being brought to bear. This suggests that new attitudes can be important for implementing existing values. One method is to make a pre-existing central value such as "virile man" consistent with a new attitude by showing that a relatively new form of behavior can be consistent with the image.

What has been said about the change of the value-expressive function of attitude can also be related to Kelman's notion that the change-condition necessary for the internalization of an attitude is a change in the perceived conditions necessary for value maximization.

The knowledge function of attitude in relation to

drinking driving can presumably be changed with relative ease by giving the public more meaningful information about the problems of alcohol and traffic. This idea is also consistent with the theories of Smith, Bruner, and White, according to whom an attitude change in which the object appraisal function predominates is most likely to develop in response to new information. But in their theory, knowledge of the main function underlying a given attitude is the key to a successful change. This knowledge can usually be attained only by extensive clinical investigation.

The utilitarian attitudes in relation to drinking driving can be changed, at least partially, by getting persons to anticipate the harmful consequences of drinking driving and the unpleasant experience of being apprehended by the police. To attain this attitude change the probable risk of detection should be greatly increased.

To get adequate perspective on the drinking driving problem we must look at the values related to the automobile in American society on the macro level.

Mobility is one of the most essential values in all industrialized societies and the automobile is the bête noire of mobility. Many values are clustered about the automobile. The values upgraded by the automobile are: individual pleasure, economic security, convenience of life style, self-fulfillment, self-reliance, power, freedom

from interference (liberty), privacy, novelty, and human dignity. Most of them seem good enough until we discover which values are downgraded by the automobile. They are: love and affection, friendship, reasonableness and rationality, prudence, devotion to the family, conscientiousness, law and order, freedom from interference (liberty), service to others, natural beauty, culture, and reverence for life. The value of freedom from interference (liberty) has intentionally been included in both the upgraded and downgraded categories of values. The reason is that the automobile has so vastly enlarged the average man's capacity to implement his personal liberty that the value is either sharply upgraded or sharply downgraded, depending upon whether the instrumentality is possessed or not, and upon how it is used (Hazard, pp. 324-325).

The American society has currently decided in favor of the values upgraded by the automobile unlimited however the automobile may be used and whatever values are downgraded. Overwhelming evidence of the negative social consequences caused by overuse of the automobile in the American society of today is: the nonenforcement of parking and moving traffic regulations, the pre-emption of public streets and property for private, daytime, and overnight parking,

the failure to curb highway billboards, roadside automobile junkyards, the nearly 60,000 automobile deaths per year, and the fiction that the users of automobiles pay their own way. On the positive side is the fact that the entire American economy is heavily supported by the automobile, its manufacture, and its use.

As long as upgraded values associated with various human activities do not come into conflict with each other, they can be expanded ad infinitum. However, when a stubborn conflict develops between two upgraded value systems such as drinking alcohol and driving automobiles, it may become necessary to attempt to modify attitudes toward the values in the interest of public safety.

No project dealing with attitudes and attitude change can afford to proceed blindly without a glance at the theories of attitude and attitude change as defined by the literature of the field. We were guided in developing the

methods for the project by these theories. A short description of the theoretical background is a necessary methodological aid to better understand why we proceeded as we did; this foray into the theory of attitude might also serve as an ipso facto hypothesis of effectiveness. Most important, we assume, as we have learned from these outlined theories, that attitudes are not innate, but learned. By attempting to change attitudes toward drinking driving we also assume that attitudes can be unlearned, and then re-formed in a manner which would seem to be more socially desirable.

The first theory of attitudes described is that of their function and formation. Following that is a discussion of the nature of attitude, its relationship to behavior, the structure of attitude, its formation, and the basic theories of attitude change.

According to J. D. Halloran in Attitude Formation and Change, attitudes represent "our major equipment for dealing with reality, /they/ reflect our style of operation, our way of coping with and dealing with problems. If we know something about an individual's social attitudes, then not only do we have a brief summary of what has gone before in the individual's experience that may affect his behavior, but we may also be able to say something

useful about his aspirations, his motivations, his striving toward his goals, and to know something about why, along the way, he deals as he does with a great variety of social objects and values" (Halloran, p. 28). Despite its limitations, attitude is probably the best criterion for the prediction of individual response yet discovered.

3.3.2 Attitudes and Behavior. Rokeach postulates in Beliefs, Attitudes, and Values that a person's social behavior must always be mediated by at least two types of attitude, one of which is activated by an object and the other by a situation (Rokeach, p. 126). Krech, Crutchfield, and Bellachey think that behavior is determined by a complex of attitudes, wants, and situational conditions rather than by a single attitude (Krech et al. p. 163). According to Rokeach, the relation between attitudes and behavior can be simply formulated: At the minimum, behavior is a function of the interaction between two attitudes, attitude-toward-object and attitude-toward-situation (Rokeach, pp. 127-128). He further defines the formulation:

> The recognition that the two kinds of attitudes will cognitively interact with one another implies that they will have differing degrees of importance with respect to one another, thereby resulting in behavior that will be differently

> influenced by the two kinds of attitudes. In one case, an attitude object may activate relatively more powerful beliefs than those activated by the situation, thereby accounting for the generality of behavior with respect to the attitude object; on the other hand, the situation may activate the more powerful beliefs, thereby accounting for the specificity of behavior with respect to the attitude object. (Rokeach, p. 128)

In pointing to "different situational thresholds," Campbell in "Social Attitudes and Other Acquired Behavior Dispositions," ed. Sigmund Koch, Psychology: A Study of Science, suggests that certain situations, because of the greater social pressures inherent in them, consistently activate discriminatory behavior patterns toward a specific attitude object more than do other situations (Campbell, 1963).

3.3.3 The Structure of Attitudes. According to McGuire, attempts to divide attitudes into components and to describe their structure fall into two categories. In the first approach, which he calls instrumentality, value, or means-end analysis, "attitude toward an object is defined as a composite of the perceived instrumentality of that object to the person's goals, weighted by his evaluation of those goals" (McGuire, p. 153). The second approach he calls the cognitive-affective-connotative analysis. The cognitive component of attitudes, which also could be called perceptual, informational, or stereotypical, "refers to how the attitude object is

perceived, its conceptual connotation" (McGuire, p. 155). The connotative component, which encompasses action or behavior, refers to the person's gross behavior tendencies regarding the object (McGuire, p. 156). The basic question to determine is the degree of relationship between the three components. Research indicates, according to McGuire, that they are so highly interrelated that theorists, insisting on distinguishing between them, should have to prove the distinction worthwhile (McGuire, p. 157).

3.3.4 The Formation of Attitudes. Krech, Crutchfield, and Ballachey conceive of attitudes as learned in relation to need or want satisfaction, the individual's group affiliations, the information to which he is exposed, and his personality (The Individual in Society, pp. 180-213). If attitudes are a special case of the more general category "acquired behavioral dispositions," Campbell thinks there are six different ways in which such dispositions can be acquired: blind trial-and-error locomotion exploration, perception, perceptual observation of the outcome of another's explorations, verbal instruction about responses to

stimuli, and verbal instructions about the characteristics of objects. He also argues that dispositions acquired by these modes are psychologically equivalent and that the modes increase arithmetically to result in stronger dispositions (Campbell, 1963, pp. 197-211). According to Brewster Smith, however, convincing evidence of the equivalence of these different modes is lacking (B. Smith, p. 460).

The basic question about how attitudes are learned is closely connected to the theory of the formation and development of attitudes. A survey of the literature reveals that theorists posit three main sources of attitudes: direct experience with the objects and situations; explicit and implicit learning from others; and personality development. The social environment and the social structure also seem to be of major importance in the formation of attitudes (Halloran, p. 29). Two factors in the process of attitude formation are particularly important to this study:

First, motivation and attitude are two closely related concepts. Sarnoff, in Psychoanalytic Theory and Social Attitudes," Public Opinion Quarterly, Vol. 24, p. 261, has presented a psychoanalytic theory of attitude. He first describes the

mechanisms of ego-defense which serve to protect the individual against external and internal threats, then he defines attitude as "a disposition to react favorably or unfavorably to a class of objects." He continues, "since attitudes are inferred from overt responses and since overt responses are made in order to reduce the tension generated by motives, we may assume that attitudes are developed in the process of making tension-reducing responses to various classes of objects." He further stresses that "an individual's attitude toward a class of objects is determined by the particular role those objects have come to play in facilitating responses which resolve particular conflicts among motives."

Second, the influence of groups on attitude formation must be considered. The group affiliations of the individual help to determine the formation of his attitudes. Here the reference group concept and reference group theory are of great importance. These two concepts remind us that individuals may orient themselves to groups other than their own; they are not necessarily limited to the attitudes adopted by those groups most closely identified with themselves. The

impact of immediate stimulus situations is thus lessened. It then becomes relevant for individual attitude formation to study attitudes and behavior in relation to values, goals, and norms that are not necessarily related to immediate group situations (Halloran, p. 41).

Many authors maintain that attitudes must be studied in relation to the individual's reference group. Shibutani defines a reference group as "that group whose presumed perspective is used by an individual as the frame of reference in the organization of his perceptual field" (Shibutani, Reference Groups and Social Control, p. 132). A reference group usually has comparative and normative functions. The comparative involves self-appraisal through comparison with a standard, that of the group; and the normative involves the assimilation of the attitudes and values of that particular group.

The role of reference individuals has been neglected in most studies. It is of greatest importance to reinstate the idea of reference individual as common practice within the field of attitude formation. Adoption of a reference individual or an "idol" by an individual is one important way in which attitudes are formed; they are adopted wholesale from the reference individual (Halloran, p. 43).

The formulation of attitudes in relation to the socialization process can be simply outlined: Attitudes are learned; they develop through interaction, through relationships with other people, particularly those who are felt to be highly significant. The early years in the process are of greatest importance, as is the group affiliation of the individual. Furthermore, selectivity also works in relation to the individual's needs and wants. The individual will refer to many groups, resulting in conflict and cross-pressures (Halloran, p. 47).

3.3.5 The Function of Attitudes. It then becomes necessary to determine the function of attitudes within the individual personality. There is a slow but steady advance toward more and more comprehensive formulations of the function of attitudes (Rokeach, p. 129). From The Authoritarian Personality and other studies, the proposition became widely accepted that attitudes have mainly an irrational, ego-defensive function.

Brewster Smith and Daniel Katz were among the first to recognize explicitly that attitudes can also function in a positive manner (Rokeach, pp. 129-130). Leaning heavily on the work of the last of

these theoreticians, four types of functions performed by attitudes can be distinguished. They are listed in the order of increasing subtlety: (1) the utilitarian or adaptive function, (2) the economy or knowledge function, (3) the value-expressive or self-realizing function, and (4) the ego-defensive function (McGuire, p. 158).

According to Katz's theory the four functions of attitude can be further explained: (1) The instrumental, adjustive, or utilitarian function means the utility of the attitudinal object in satisfying basic needs, maximizing external rewards, and minimizing punishments; that is, the individual adjusts his attitudes to conform to the context of the societal or group attitudes around him. (2) The knowledge function implies the need for understanding, for meaningful cognitive organization, for consistency and clarity; in this case the individual formulates attitudes based on knowledge and information. (3) The value-expressive function allows the individual to maintain his self-identity, to enhance his own favorable self-image, to allow for self-expression, and to ensure self-determination; as a part of this function the individual formulates attitudes based on his need to bolster his own self-image by judging the world around him. (4) The ego-

defensive function means protecting the self against internal conflicts and external dangers; the individual then formulates attitudes consistent with his own mental and physical well-being (Katz, "The Functional Approach to the Study of Attitudes," Public Opinion Quarterly, 1960, pp. 24, 163-204).

These four functions are not meant to be mutually exclusive or exhaustive. Some attitudes can serve one function, while others serve different functions (McGuire, p. 160) or all four of the positive functions (Rokeach, p. 134).

According to Rokeach, the value-expressive function is superordinate to all other functions of attitude; given this theory, all personal attitudes are in the service of, or instrumental to, the satisfaction of one or another pre-existing, often conflicting, value. The function that seems to be served by all the values within any value system is the enhancement of the sentiment of self-regard (Rokeach, p. 132).

There is no reason to assume that these four functions are limited to attitudes. The same functions might also be assumed to hold for beliefs, ideologies, belief systems, or all levels of belief broader than attitudes (Rokeach, pp. 130-131).

Even though the conceptual isolation of these four functions is an important step forward, there is not yet an objective procedure with which to determine the precise function served by a specific attitude within a specific individual.

3.3.6 Theoretical Approaches to Attitude Change. The first step in the process of attitude change is to identify and understand the process underlying the modification of attitudes. There are four outstanding contemporary theoretical approaches to attitude change. These include the learning theory, perception theory, consistency theory, and functional theory. No one of these four approaches provides an adequate explanation for all the relationships observed in the study of attitude change. They are largely supplementary to each other rather than contentious. Typically they do not make

contradictory predictions, but rather predictions dealing with different independent variables and different mediating processes (McGuire, pp. 265 and 271). The first three approaches will be mentioned briefly and we will present an overview of the functional theory, which applies most directly to our study.

a. The Learning Theory. The learning theory of attitude change focuses on principles and explanations derived from general experimental psychology. The main proponent of this orientation, Hovland, et al, makes predictions about attitude development and change on the basis of principles of learning psychology. The essence of this approach is prediction of the relationship between a given independent variable and the desired attitude change in terms of the relationships of that independent variable to learning. The approach lacks a clear, concise statement of its basic tenets.

b. The Perception Theory. The perception theory approach to attitude change concerns the individual's perception of the object, person, or idea he is evaluating. The major proponents of this orientation, Asch and Sherif, suggest that attitude change is primarily a reinterpretation or redefinition of the object of the attitude.

Persuasion does not necessarily involve changing the believer's opinion about a given object, but rather changing his perception of the actual object about which he is giving his opinion.

c. The Consistency Theory. The basic notion of the consistency theory approach to attitude change is that a person adjusts his attitudes and behavior in order to maintain a maximum degree of internal harmony within his belief system, between his beliefs and his overt actions. He does not tend toward a strictly logical consistency, but toward a more demanding "psycho-logic" containing axioms not included within the structure of strict logic (McGuire, pp. 268-269).

d. The Functional Theory.

The basic difference between the functional theory and the learning, perception, and consistency theories is the relative absence of stress put upon the relationship between the attitude toward the object and the information about it, the perception of it, or the resultant behavior. Attitudes are determined by the believer's needs in ways that might have little to do with the particular object toward which the attitude is directed. Attitude change is mainly achieved by changing the believer's underlying motivational and personality needs (McGuire, p. 270). Attitudes develop and change as they serve

or support goals of the individual; they are instrumental to the personal satisfaction of need.

The functional approach attempts a relatively comprehensive account of the functions that a person's opinions and attitudes serve in the on-going economy of personality, assuming that knowledge of the motivational basis of attitudes should point to the conditions under which change can be expected (B. Smith, p. 465).

There are three major attempts to present a functional explanation of attitude change. These are the theories developed by Smith, Bruner, and White 1956, Katz 1960, and Kelman 1961.

(1) Smith, Bruner, and White's Theory

This theory attempts to state and assert three types of functions that opinions and attitudes serve for the personality: object appraisal, social adjustment, and externalization. The object appraisal function is an opinion's usefulness in orienting the individual to objects in his environment. The social adjustment function refers to an opinion's function in facilitating, maintaining, or disrupting social relationships. Opinions serve the externalization function when they are formed in such a way as to defend the ego from anxiety generated by internal stresses.

Attitudes are changed by a shift in one or more of the three functional purposes which they serve, altering the balance of all the three functions. It is theoretically possible to identify the change procedure that is likely to be most effective. An attitude change in which the object appraisal function predominates is most likely to develop in response to new information or rational arguments. An attitude in which the social adjustment function predominates is most likely to change in response to prestige suggestions, group pressure, testimonials, or information discrediting the social support of opposing views. An attitude in which the externalization function predominates is most likely to change in response to reassurance and permissiveness. Knowledge of the main function underlying a given attitude is thus the key to a successful change (See Opinions and Personality Spec., pp. 275-279).

(2) Katz's Theory

Katz developed a theory very similar to that of Smith, Bruner, and White. His analysis indicates that knowing the functional basis and dynamics of an attitude would suggest the procedure most likely to precipitate a change in that attitude. His main contribution to the functional theory of attitude change is an investigation of the determinants of attitude arousal and attitude change.

Attitude arousal depends upon exciting some need in the individual or some relevant cue in the environment. The conditions conducive to attitude change are situations in which the expression of the old attitude or its anticipated expression no longer give satisfaction to its related need state. It no longer serves its purpose, causing the individual to feel blocked or frustrated. Modifying an old attitude or replacing it with a new one is a process of learning; learning invariably starts by being thwarted in coping with a situation. Such blocking is a necessary, but not entirely sufficient, condition for attitude change. The process of attitude change will vary in effectiveness depending upon the function of the attitude involved.

The arousal conditions necessary for changing a utilitarian attitude are activation of needs, and salience of cues associated with need satisfaction. There are four change conditions for utilitarian attitudes: need deprivation, creation of new needs and new levels of aspiration, shifting reward and punishment, and emphasis on new and better paths for need satisfaction.

Ego-defensive attitudes have four arousal conditions: posing of threats, appeals to hatred and

repressed impulses, rise in frustrations, and the use of authoritarian suggestion. The change conditions are removal of threat, catharsis, and the development of self-insight.

There are three value-expressive attitude arousal conditions: salience of cues associated with values, appeals to the individual for reassertion of self-image, and ambiguities which threaten self-concept. There are three change conditions: some degree of dissatisfaction with self; greater appropriateness of new attitudes for the self; and control of all environmental supports as an aid to undermining old values.

The arousal condition for attitudes which serve the knowledge function is reinstating cues associated with old problems, or the old problems themselves. There are two change conditions: ambiguity created by new information or change in environment, and more meaningful information about problems (See Public Opinion Quarterly, 1960, 24, 163-204).

(3) Kelman's Theory

Kelman specifies the functional basis of attitude change not in terms of motivation alone but also in terms of antecedent social influence conditions. He distinguishes three processes of social influence: compliance, identification, and internalization. Each of these social influence processes

leads to a different type of opinion or attitude. Compliance occurs when an individual is influenced by another person or group because he hopes to receive a favorable reaction in that person or group. Identification occurs when an individual adopts a behavior pattern derived from another person or group because this behavior is associated with a satisfying relationship of self-definition to this person or group. Internalization occurs when an individual accepts influence because the induced behavior is congruent with his value system. The three processes are not mutually exclusive, seldom occurring in isolation.

Kelman distinguishes a specific set of antecedents and consequents for each of these three processes. Three general classes of antecedents are distinguished: the motivational basis for influence, the power of the influencing agent, and the manner in which the influence occurs.

The motivational basis for compliance is concern for the social effect of behavior; the motivational basis for identification is concern for the social anchor of behavior; and the motivational basis for internalization is concern for values congruent with behavior.

Three general classes of consequents are distinguished:

the conditions by which the opinion or attitude will be expressed; the conditions by which the opinion or attitude can be changed; and the type of behavior system by which the opinion or attitude exists. The condition of change for a compliance opinion or attitude is a changed perception of the conditions necessary for social rewards; the condition of change necessary for an identification opinion or attitude is a new perception of the necessary conditions for satisfying self-defined relationships; and the condition of change for an internalization opinion or attitude is a changed perception of conditions necessary for value maximization. The consequents of compliance, identification, and internalization result from the three antecedents. If an opinion or attitude has certain antecedents it will by necessity have certain consequents (See "Processes of Opinion Change," Public Opinion Quarterly, 1961, 25, 57-77).

Insko, in his evaluation of the functional theories, finds that one of the difficulites lies in deciding just how attitudes should be classified. Another is that all three functional theories are still largely untested (Insko, pp. 333, 337, 344).

3.4 General Methods of Research

3.4.1 Introduction. Based on the background material discussed, the resulting experimental design was divided into two parts: the first, a survey to determine the profile of the existing public and official awareness of and attitude toward DWI laws, using large, pre-selected groups; and the second, an attempt to manipulate the general levels of awareness and attitude in these groups. The general methods of research used in both halves of this project are outlined below.

3.4.2 Overview of Planning and Execution of the Survey and Experiment. The initial phase of this project began in April 1970 when the principal investigator and the project director developed the preliminary idea which was discussed at a conference sponsored by the Council on Law Related Studies.

The actual execution of the study under contract by the NHTSA began in January 1971. In accordance with the theoretical framework described in Chapter I, a questionnaire was devised in the second half of January and the first half of February. Pilot interviews were conducted during that period by both the principal investigator

and the project director. The questionnaire and the design of the experiment were presented to the NHTSA in Washington on February 1. Further planning and the selection of sample groups took place during the second half of February.

The great bulk of the data was collected during March, April, and May 1971. The members of the public groups filled in questionnaires at meetings and in classes for the survey and for the experimental pretest. The officials filled in questionnaires at police roll calls or at meetings for the survey and the experimental pretest. The experimental posttest with the public consisted primarily of telephone interviews conducted by two research associates, who had previously met the groups in person during the test situation. The student components of the public group, except for those who were breath tested, were given questionnaires to fill out as their experimental posttest. The experimental posttest interview situation with the officials followed the pattern set up for the public posttest telephone interviews. When it was not possible to follow up the experiment with a telephone interview, a

questionnaire was mailed to the participants. This was the usual case for the police posttesting situation. Most often the chief of police cooperated by administering the posttest form to the police subjects. In some cases the official groups received a second questionnaire which was administered directly by the research group.

The coding was done in May by one of the research associates. The cards were punched at the Indiana University Research Computing Center. The card sorting and computing of percentages was done by two research associates and the project director.

3.4.3 Basic Definitions. By perception of laws relating to drinking driving, we mean the general awareness of and the main attitudes toward the DWI laws. Attitudes are defined as "a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner" (Rokeach, p. 113). This concept is elaborated in Rokeach, "The Nature of Attitudes," International Encyclopedia of the Social Sciences, 1967, Vol. 1, pp. 449-458, and in Rokeach, Beliefs, Attitudes, and Values, 1968, pp. 109-132.

The concept of attitudes must be carefully distinguished from closely related concepts such as belief systems, ideology, opinion, values, and value systems. According to Rokeach, a belief system represents "the total universe of a person's beliefs about the physical world, the social world, and the self," and "an attitude is one of the subsystems of beliefs" (Rokeach, p. 123). Ideology is defined as "an organization of beliefs and attitudes, religious, political, or physical in nature, that is more or less institutionalized or shared with others, deriving from external authority (Rokeach, pp. 123-124). An opinion is defined by Rokeach as "a verbal expression of some belief, attitude, or value." One can stress that an opinion "typically represents a public belief, attitude, or value, but it may come closer to a private one when verbally expressed under increasing conditions of privacy" (Rokeach, p. 125). A value system is, given these definitions,

"an hierarchical organization, a rank ordering, of ideals or values in terms of importance" (Rokeach, p. 124).

3.4.4 Development of the Main Measuring Instrument, the Questionnaire. The process of devising the main measuring instrument, the questionnaire, was begun at a very early stage in the research. The principal investigator had tested the effectiveness of five questions about attitudes toward the DWI laws on "experts" prior to the project. The project director used about 20 questions on awareness and attitude toward the Swedish DWI laws as a part of two previous studies, one in 1963 and the second in 1968.

Five drafts of the questionnaire were tried in pilot studies with various members of the general public, including students at the Department of Forensic Studies, Indiana University.

The final version of the questionnaire will be discussed question by question as they appear in the public questionnaire. The means by which the questions were coded will also be discussed question by question. The public and official questionnaires are appended to this report.

The basic awareness of DWI laws was measured by two openended questions on the general meaning of "driving

under the influence of alcohol" and the "implied consent law," and two questions concerning the penalties attached to those laws.

Question 1. "What is the meaning of 'driving under the influence of alcohol' as expressed by the law?" Since this question could be interpreted by the respondent to relate either to the statute or to the subjective interpretation of the statute, those answers were considered correct which (a) indicated an awareness of the statute current at the time in Indiana as expressed in percentages (.15% BAC); or (b) indicated a perception of the new law, setting .10% BAC as the presumptive limit, even though it was not yet widely known; or (c) implied that a person is driving illegally when in an impaired condition. The third factor has as its key word the term "impaired," which was acceptable if stated or implied.

Question 3. "What is the 'implied consent law?'" The research team arbitrarily decided that the following factors must be present in the response to this question for it to be coded as correct: a driver, when obtaining an operator's license, gives his implied consent to submit to a breath test for blood alcohol concentration if requested to do so by a police officer. The key words which must appear in this response are "license," "implied consent," and "breath test."

Question 2. "What does the term '.10% BAC' mean to you?" was another attempt to determine general awareness. The researchers gave credit to those respondents who indicated some knowledge of either .10% or the meaning of the term BAC. All other responses were marked incorrect. The data obtained from this question has not been included in the report because of the ambiguous nature of the question.

Question 5. "What is the penalty for 'driving under the influence of alcohol?'" This question had four fixed-response alternatives: (a) fines (b) jail (c) suspension (d) revocation. At the minimum, there must appear some combination of the first two alternatives and the second two. This was the first question in which it was necessary to make more than one alternative for the response to be considered correct. This necessity was not mentioned in the instructions. Most groups inquired about the possibility of a multiple answer; the research associate administering the questionnaire told them that a compound answer was possible. Most subjects did fill in two alternatives.

Question 6. "What is the penalty for violating the implied consent law?" This question also had four fixed-response alternatives. If the respondent marked suspension or revocation it was coded as correct. It was not considered necessary for the subject to know the difference between suspension and revocation. Instead, it was considered sufficient if he knew that his driver's license was "disqualified" for a period of time.

The more specific awareness of .10% BAC and the amount of alcohol it would be necessary to consume under specific circumstances to reach that concentration was measured in the following question:

Question 7. "What is the maximum number of ounces of whiskey that you could drink in two hours, on an empty stomach, without getting above .10% alcohol in your blood?" In the pilot study questionnaire, this question was quite general; it had as few specifics attached to it as possible. The respondents frequently asked for more information about the circumstances. Generally they wanted to know if there was a condition of a full or empty stomach implied in the question. A drinking situation involving two hours on an empty stomach was chosen as the circumstance specified

in the questionnaire because it reflects cocktail party drinking practice. Some qualification in relation to food was warranted, since many subjects in the pilot study inquired about this factor. In the pilot study Question 7 included quantities of wine and beer as well as whiskey. These additions were felt to be repetitious and boring, and interfered with the respondents' motivation for answering the questionnaire. They were subsequently abandoned.

The correct answer to this question about the amount of alcohol the subject would have to drink to reach .10% BAC was correlated with body weight: 100 lbs., 4 ozs.; 125 lbs., 5 ozs.; 150 lbs., 6 ozs.; 175 lbs., 7 ozs.; 200 lbs., 8 ozs.; 225 lbs., 9 ozs.; 250 lbs., 10 ozs.; 275 lbs., 11 ozs.; and 300 lbs., 12 ozs. These figures were extrapolated from a chart provided by the U.S. Department of Health, Education, and Welfare. Answers $\pm$ 2 ozs. of the chart's figures were considered correct. This allowed for differences of up to 25 lbs. and for metabolic differences from the average, upon which the chart was based.

Three questions, 8-10, measured the attitude toward fitness-unfitness to drive after drinking.

Question 8. "What is the maximum number of ounces of whiskey you think you could drink in two hours on an empty stomach without becoming unfit to drive a car?"

The same experience from the pilot study mentioned as a circumstance of the final formulation of Question 7 led to the ultimate phrasing of Questions 8 and 9. The amount of alcohol mentioned was transferred into % BAC according to a table which was extrapolated from the HEW chart, Table 1, p. 69.

Question 9. "What is the maximum number of ordinary bottles or cans of beer that you think you could drink in two hours on an empty stomach without becoming unfit to drive a car?"

The next question followed the situation from impairment to recovery:

Question 10. "How many hours do you think it would take for you to be fit to drive after drinking 10 ozs. of whiskey?"

The drinking situation was not given for Question 10. It was assumed that the party setting mentioned in the last three questions, drinking over a period of two hours on an empty stomach, would be implied here as well. Those few subjects who asked about it were informed that the drinking situation was the same as before. If some subjects thought of a longer period of drinking, it can perhaps be assumed that they were thinking of how long they would have to wait

Table 1

	Body Weight							
Lbs.	100	125	150	175	200	225	250	275
No. of ounces 1	0	0	0	0	0	0	0	0
of 80-proof 2	.03	.02	.00	.00	.00	.00	.00	.00
liquor 3	.06	.04	.03	.02	.01	.01	.00	.00
estimated 4	.09	.07	.05	.04	.04	.03	.03	.02
to reach 5	.12	.09	.08	.06	.05	.05	.04	.03
approximate 6	.14	.12	.10	.08	.07	.06	.05	.05
levels of 7	.19	.14	.12	.10	.09	.08	.07	.06
blood alcohol 8		.16	.14	.12	.10	.09	.08	.07
during a two- 9		.19	.16	.13	.12	.10	.09	.08
hour period 10			.18	.15	.13	.11	.10	.10
on an empty								
stomach								

after finishing their last drink before being fit to drive.

The attitude toward leaving a party with a drinking driver was measured by Questions 11 and 12.

Question 11. "A friend, known to you as a good driver, offers you a ride home from a party. You know that he has consumed 10 ounces of whiskey (8 average drinks) with some food during the last two or three hours, but he doesn't show any recognizable signs of intoxication. Would you (a) go with him without hesitation, (b) hesitate, but go with him anyhow, or (c) refuse to go with him?"

Question 12. "In your opinion, what would most people do in such a case? (a) Go with him without hesitation, (b) hesitate, but go with him anyhow, or (c) refuse to go with him?"

Question 11 presumably shows the respondent's public attitude, the view he gives to the researcher when he tries to live up to perceived expectations. Question 12 was aimed at uncovering a much truer picture of the social reality; that is, what the subject really thinks he would do when he is not trying to satisfy the perceived expectations of the researcher.

These questions imply that the respondent has been drinking along with his friend the driver, which is

a normal party situation. In the pilot study no problem occurred in relation to the absence of this implication. In the main study, some respondents asked if it were implied that they also had been drinking, and were told that this was indeed the case. The questions do not mention anything about the driving distance involved. The intention was that the question would relate to driving from an ordinary party, where the participants usually do not live too far from each other.

The attitude toward arrest, prosecution, and conviction of .10% BAC and .13% BAC cases in general was gauged in the next two questions.

Question 13. "Do you believe that all drivers with a BAC of .10% should be arrested and prosecuted?"

Question 14. "Would you, as a member of a jury, vote for conviction of a driver with a BAC of .13% resulting from a well-conducted test?"

The three fixed-response alternatives for both questions were (a) yes, (b) no, and (c) no opinion. These questions were intended as measurements of the general attitude in the two cases. The pilot study did not reveal any problems with the questions. There were no difficulties with this sequence, except in the case of a few attorneys who

wanted more concrete information about the .13% BAC case.

Question 15. "Do you have any specific rules for yourself that you generally try to follow with regard to driving and drinking?"

This question is an attempt to elicit any self-imposed rules the respondent might try to follow when drinking before driving. Alternative responses are (a) no rules, (b) never drink and drive, (c) do not have more than a certain number of drinks if driving, (d) if drinking, have someone else drive or use public transportation, (e) if impaired, have someone else drive or use public transportation, (f) take precautions before driving, (g) take precautions while driving, or (h) other answers.

When this question had been posed in an openend manner in an earlier Canadian study, it involved no difficulties for the respondents. More than one alternative was marked in about one-fourth of the cases. The lack of specific instruction about the possibility of multiple answers did not seem to cause difficulties for the respondents in this study either. If three or more alternatives were marked, this was coded as if the respondent had several rules. If two alternatives were marked, the latter alternative was considered most significant,

as alternatives are mentioned in order of situational time sequence. Alternative 6 is presumed to include other precautions before driving than those mentioned in Alternatives 3, 4, and 5.

The officials were asked three questions on the overall effectiveness of the DWI laws; the last two were not included in the public questionnaire.

Question 4. "Do you think the police are enforcing these /DWI/ laws (a) too strictly, (b) strictly enough, or (c) too leniently?"

This question measured the general attitude toward DWI law enforcement. It was Question 2 in the official questionnaire.

Official Question 3. "Do you think the courts are supporting police action regarding DWI arrests (a) adequately, or (b) inadequately?"

This question, on the officials' questionnaire, measured the attitude among officials toward court support of police DWI action.

Official Question 1. "What do you think could be done to make the DWI laws more effective?" This openend question examined the attitude among officials toward increasing the effectiveness of DWI laws by various means.

Because Question 1 of the official questionnaire is

in openend form, it was coded by choosing certain key words used by the respondents in their answers. These words became the code categories. In those few instances in which the key words did not appear, the answer was interpreted by the research associates to determine the general intent of the answer. It was then fitted into the proper code category.

There were few cases in which the respondents gave multiple suggestions. In this event the researcher selected the first suggestion as the primary one, unless there was a great deal of elaboration on another point. In this situation the latter was chosen because the respondent's feelings were strongest on this point.

The question was coded separately and independently by the two research associates in an effort to achieve the most accurate categorization possible. The officials' response to Question 1 was broken down into 10 categories:

1. Public Education
    a. In elementary and secondary schools on the effect of alcohol on driving
    b. By means of advertising and educational campaigns through mass media
    c. Through informative meetings with service clubs such as the Lions and Jaycees
2. Increased Penalties
    a. Higher fines
    b. Mandatory jail sentences

c. Automatic license suspension, with longer period of suspension for subsequent convictions

3. Professionalization of police

4. Greater enforcement of present laws

5. Improvement of the court system

   a. Improve procedure

      (1) Eliminate defense loopholes

      (2) Have prosecutors who are better prepared to try DWI cases

   b. Restructure the judicial system by eliminating jury trials of DWI cases

   c. Establish lower courts as courts of record

6. Make a greater effort to rehabilitate DWI offenders and give them more individual attention upon conviction

7. Nothing more, laws are adequately enforced

8. There should be more support of the police by the courts. Courts are too lenient

9. Other Opinions

   a. Install special devices which prevent operation of a car by an impaired driver

   b. Have a mandatory breath test requirement

   c. Develop more satisfactory alternative means of transportation

   d. Keep better records of offenders

   e. Require establishments serving liquor to provide some good method for determining intoxication

   f. Lower the fines, but ensure certain conviction

9. Have well-conducted chemical tests which would be conclusive evidence

10. No opinion

This was coded when the respondent left the answer space blank or when he wrote "no opinion."

The remaining questions in both the public and official questionnaires concern ordinary social background information, information on general driving behavior, and general drinking behavior. These questions, which are appended, seemed to cause no difficulties except in the case of Question 24--"How much alcoholic beverage do you usually drink at one time?" Many respondents know only how many drinks or shots or cans or bottles of beer they drink. It is well known from earlier studies that the reliability of answers in interviews about the amount of alcohol consumed is very low. This study is probably not an exception (Cf. Christie, Quarterly Journal in Studies in Alcohol, 1971, pp. 1064-66).

3.5 Reliability of the Results

3.5.1 Introduction. The reliability of the results depends on the research team's awareness of the existence of sources of possible error affecting the various aspects of the project and on the effectiveness of the measures taken to control these sources of error. These will be discussed in the order in which they appeared during the process of investigation:

(1) measuring-instrument errors, (2) sampling errors, including non-response errors, (3) interviewer errors, (4) respondent errors, and (5) data processing errors. Errors which might have resulted from the specific wording of each item in the questionnaire will be left to the discussion of the main results.

Our attempts to discover the existence of these various errors and our efforts to limit their manifestation are crucially important factors of which the reader must be aware if he is to assess the reliability of the results.

3.5.2 Measuring-Instrument Errors. Measuring-instrument errors are caused by ambiguous or awkward wording in the measuring instrument. The use of language and the level of abstraction in the various questions constitute one important area of difficulty. Both the public and official groups seemed to comprehend the fundamental terminology of driving and drinking alcohol sufficiently so that no special difficulties arose from this error. In some cases the attorneys wanted more information on the situational questions to help them formulate their opinions. The choice of wording and implication in the measuring instrument is often the result of compromises. The instruments are necessarily less than ideal. It is most important to attempt to make this type of

error as rare as possible, to consider the possible existence of these errors when interpreting the results, and to account for them by subjectively evaluating the data.

3.5.3 Sampling Errors Including Non-Response Errors. Sampling errors result in faulty estimations and conclusions because a non-representative portion of the population is studied. To avoid this kind of error, random sampling is often used. In this study, however, the various samples were not chosen at random. The sample of the public groups consists of members present at service club meetings when alcohol and traffic problems were on the program, and students present in class in ordinary university-level courses when alcohol and traffic problems were discussed. On the average, about three-quarters of the service club membership were present at the meetings. This figure is an estimate by the presidents of the clubs; we had no opportunity to check the accuracy of the estimate against membership rosters. On the average, between 85% and 90% of the students were present in the classes. This figure is an estimate by the regular professor and was checked against the official rolls of the classes by the project director. It is unlikely that any systematic principle of selection exists within the two public samples. According to the

presidents of the clubs and the professors the non-attendance was not unusual in any way.

The possibility of a systematic selection error among the members of the official groups is somewhat greater, but it is also unlikely. Officials of four counties were chosen because their counties were similar with respect to population; accident experience, both fatal and non-fatal; miles of state and federal highways; total police officers available for traffic law enforcement; and average annual income of residents.

On the other hand, the justice of the peace and the attorney elements of the official group attending a traffic court conference in the state capitol might be self-selected groups because their participation in such a conference indicates a higher degree of interest in their work than non-participating colleagues. The police officers at the Indiana Law Enforcement Academy are unlikely to be a self-selected group, since they are admitted on request of their police chiefs as a part of their routine training; their attendance at the academy is also mandated by law.

Non-response errors exist because questionnaires from some individuals in the original samples were not completed or returned. The only non-response

in either the public or the official groups was from the attorneys and justices of the peace at the traffic court conference. The level of non-response from the attorneys was about 40%, and 20% from the justices of the peace. There was no opportunity to determine whether non-response could be attributed to some of the people present in the room at the time of the program failing to fill in the questionnaire or to the fact that they simply were not present at that particular meeting. It is common for some participants to register for only one day of the conference. It is very likely that the non-response in this case is a combination of these two possibilities. We had no opportunity to assess the various social background factors among the non-respondents.

3.5.4 Interviewer Errors. Interviewer errors occur when the interviewer consciously or unconsciously asks a question in a manner that is not intended, or when the interviewer does not maintain a neutral stance toward the subject.

An interview is a give-and-take collaboration between the respondent and the interviewer, in which both parties have certain expectations. The interviewer attempts to encourage the respondent to relate his actual feelings on the matter, not to

say what he thinks the interviewer would like to hear; the interviewer must, at the same time, do everything possible to avoid influencing the answer denoted by the respondent on the questionnaire.

The respondents gained a general impression of the size of the problem of alcohol and highway safety during the introduction given by the research workers. The personal opinions of the members of the research staff were not revealed. Thereafter the respondents were asked to help the researchers by suggesting solutions to the problem. They were told that the quickest and easiest means of recording their responses was for them to fill out a questionnaire. However, when some of the officials began answering the questions they appeared to suspect that there was an unstated motive for this inquiry. Every effort was made to keep the individuals being tested or interviewed from being aware that their responses would be part of a research project on attitude, because we feared this knowledge might bias their answers.

Everything possible was done to avoid those situations in which the interviewers might develop an unconscious bias for or against the subject. If such a situation should occur, despite all efforts to the contrary, the data obtained would be tainted.

In this instance the use of the objective questionnaire and the adherence to certain pointed questions as independent tools seemed to minimize the possibility of this particular kind of error. In addition, the interviewer was instructed not to delve too deeply into the background of the individual or to discuss any unrelated topics.

The actual interviewing pattern used during the project was developed by a research associate. A second research associate copied the interviewing technique as precisely as possible. Both associates attempted to suppress idiosyncracies which might affect the information obtained during this phase of the research project. The interview approach was used for posttesting members of service clubs, breath-tested students, and attorneys.

We feel that faithful adherence to criteria standardizing the interviews minimized the possibility of most biases. The actual occurrence of this type of error would seem to be relatively rare because of our continuous efforts to control and to neutralize the interview situation.

3.5.5 Respondent Errors. Respondent errors occur when consciously incorrect answers to the questions are given by the respondents. This special error is the most important problem affecting the reliability of the results.

The respondent's motivation for giving these misleading answers may be a result of the desire to avoid legal, economic, and normative sanctions on his own behalf or on the part of other individuals and groups he would like to protect. The spectre of the more severe legal and economic sanctions conjured up by the questionnaire might be stricter traffic control and traffic law enforcement, which would imply increasing the risk of detection, and more severe penalties, or increase economic or other negative social consequences. The fear of loss of prestige in relation to the interviewer or to a group of peers might motivate the respondent to answer in a manner which he presumes is desired.

A related problem is that some people have basic personality traits which lead them to give answers in a direction either for or against that which they think is indicated. These people are yea sayers or nay sayers. The former is characterized as impulsively over-expressive. They have a tendency to answer yes, to agree readily, to be enthusiastic and uncritical. The nay sayers are characterized as cautiously under-expressive. They are more moderate in their answers, careful, conservative, give "no" answers more often than "yes" ones, avoid extreme alternatives, and give answers only when they

know the problem area. These tendencies are valid in general, for all kinds of questions whatever their content; the phenomenon has been described by Couch and Keniston in their article in The Journal of Abnormal and Social Psychology, 1960.

3.5.6 Data Processing Errors. Data processing errors result from code categories which misinterpret the data or from unrectified mistakes in the tabulation of the material. The questionnaires were specifically designed to be self-coding, with the exception of the openend questions. Such coding as was necessary was done by the research associates and was checked by the project director. The punch cards were sorted by the project director in collaboration with a research associate.

The punching of the cards referring to half the data for the survey was done at the Indiana University Research Computing Center. This part of the data was then control-punched to a criterion of 100% accuracy by the center staff. The other half was punched by the research associates. It was also repunched to the same control criterion. The results of the second part of the survey do not differ in accuracy from the results of the first part.

All counting in the experiment was calculated by two research associates and was always checked by the project director.

3.6 Posttest Interview Techniques

3.6.1 Introduction.

All subjects, except the police and the non-breath-tested student groups, were contacted by telephone one to two weeks after the pretest. The telephone postinterview was scrutinized carefully from the beginning of the experiment to determine the most effective technique for sensing any change in awareness and attitude; but only after a good insight into the responses of the subjects had been gained was it possible to finalize the most effective method.

The telephone postinterview technique was developed by the research associates who actually carried out the postinterviews throughout the data collection. In order to maintain uniformity in substance and sensitivity, no other member of the research group was allowed to perform these interviews.

3.6.2 The First Step - Reminder of Situation.

The first step was for the research associate to introduce himself and to remind the subject of the occasion on which the pretest took place, in the following manner: "Mr. Jones, you probably remember filling out the questionnaire at the XYZ meeting two weeks ago in which you gave us your ideas on the DWI laws." At this point, the general public participants usually responded both affirmatively and favorably,

since they felt they were the ones who were giving help.

3.6.3 Lead-in to Posttest. The introduction was followed by a lead-in to the posttest:"I wonder if I might have four or five minutes more of your time to get some additional information to help us in our work, or would it be more convenient for you to call me back?" Again the desire to please usually brought a favorable and immediate response.

3.6.4 Posttest

Phase I. This was the behavioral section on alcohol frequency habits. Questions 19 and 20 were asked first: "How often do you drive?" and "What is your annual mileage?" At this point, the interviewer skipped to Question 23, since beginning an interview with an intimate question on drinking frequency sometimes provoked hostility.

It was more successful to ask next: "What type of beverage do you drink--cocktails, beer, or wine?" This tended to put the subject at ease by giving him the impression that most people drink. If the participant said wine, he was next asked if he meant fortified wine or table wine. If he answered cocktails, we would attempt to determine the type of cocktail in order to differentiate between cocktails and straight liquor drinks. Because the subjects had

a tendency to consider all drinks as the same, including complex cocktails, highballs, and on-the-rocks drinks, at a cocktail party, the distinction was dropped.

The interviewers found it useful to make rapport-building statements to encourage easy communication between the subject and the interviewer. Some statements about the interviewer's drinking habits were casually dropped in at this point. The interviewers next skipped to another non-behavioral question on occupation or marital status so they would not seem to be pushing the taboo area of alcohol habits too hard or too continuously.

After this interlude they returned to Question 22: "Where do you usually drink--at your home, at the home of friends, or in restaurants?" The words "bar" and "tavern" were not used because they conjured up cheap, lower-class places in the minds of some of the subjects. The interviewer would then judge from the subject's responses at this point whether or not he was offended by these terms. If the subject indicated "restaurants," the interviewer would casually inquire "lounges?" It could be inferred that frequenting cocktail lounges would indicate occasional visits to bars or taverns.

After still another non-behavioral question, the

behavioral section was completed with Question 21: "How often do you drink?" If any hesitation was detected and the questioner felt some encouragement was needed, he inserted a statement loaded in the heavy drinking direction such as "Many people have a drink or two before meals, and perhaps a few later in the evening." This usually elicited either agreement or outright rejection of such behavior. We felt that the respondent would be more likely to give an honest answer if he were forced to scale his answer downward rather than upward.

Phase II. This was a review of pretest answers. The posttest was continued by asking the subject about his answers to the pretest questions. This phase always began by covering the subject's previous answers in this order: (a) no opinion answers, (b) blank answers, (c) wrong answers, and (d) correct answers. The interviewer would begin by saying: "Mr. Jones, I notice on your questionnaire you indicated no opinion about the question concerning whether or not all drivers with a .10% BAC should be arrested and prosecuted. After hearing the lecture by the policeman two weeks ago, do you have an opinion now?" or "Mr. Jones, I notice you left blank the question 'What does .10% BAC mean to you?' After hearing the lecture, do you know what these figures mean?"

If the participant answered incorrectly on the pre-test he would be asked: "Mr. Jones, I see that you thought it would take two ounces of whiskey to cause you to reach .10% BAC. After hearing the policemen lecture two weeks ago, do you have any reason to change your answer, or would you prefer to leave it as it is?" The questions answered correctly would be covered in a similar manner.

The questions asked of the control group subjects were posed more simply: "Mr. Jones, you indicated the implied consent law means such and such. Has anything occurred since I last spoke to you which would cause you to change your answer in any way?"

The most desirable method of posttesting would have been to ask the subject to answer the question without indicating what his previous response was. However, a large number of subjects asked the interviewer to refresh their memories about their previous responses. The researchers detected hostility on the part of the subject if he were not told his previous answer. They seemed to feel that the interviewer was questioning the truth of their original answer. Since the alleged purpose of both the pre-test and the posttest was to seek help from the respondent, to refuse to divulge the previous answer might damage the carefully created rapport and make

the subject aware of the experimental situation. It was decided to give all respondents their previous answers in an effort to keep the interviews constant. In order to avoid leading the subject in a particular direction he was very casually given the alternatives and asked to respond.

Phase III. The third phase, on spontaneous suggestions for improving DWI laws, was begun by asking for any specific ideas the respondent had which might make the laws more effective. A friendly discussion usually followed. In many cases the subject attempted to please the interviewer with flattering remarks. If constructive comments were made they were recorded on the back of the form. The posttest interviews were terminated at the conclusion of this phase.

3.6.5 Posttest Interview Techniques for Breath-Tested Students. While the posttest telephone interviews with all four service club groups and both attorney groups were conducted by the research associates, the posttest telephone interviews with the breath-tested students were done by the project director. This procedure was followed because he alone was involved in the pretesting of all the student groups. If the interview had been conducted by a research associate, as was the case with the other groups, it would have destroyed the natural setting of the group and revealed the experimental design.

Because the breath-tested students, like all student groups, had filled in the questions on driving, drinking, and social background characteristics as a part of the pretest, the interview started naturally by asking four questions on the knowledge gained as a result of the breath test, which were asked of all breath-tested groups in the experiment. (1) "After having had your breath analyzed, do you feel that any other experience would give you a better understanding of the figures .10% BAC?" (2) "Do you feel you have a better understanding of how many drinks a person must have in order to reach .10% BAC?" (3) "Do you feel this knowledge could have been more adequately communicated to you by an informative pamphlet?" and (4) "Do you feel this knowledge could have been more adequately communicated to you by your attendance at a lecture on the subject?"

After these four questions, the interview continued with the same questions on awareness and attitude that were asked before as a part of the pretest. The order in which the pretest answers were covered was the same as for the other posttests: (1) no opinion answers, (2) blank answers, (3) wrong answers, and (4) correct answers. The pretest answers were not supplied to the respondents, even though the interviewer was asked directly. This aspect of the procedure differs from that used by the research

associates, but it is consistent with the procedure used for the other student groups who were not able to determine their pretest answers during the posttest. This difference in procedure was undertaken at the risk of destroying the natural setting and perhaps revealing the experimental design. The procedure was followed in the case of the students because risk was judged to be very low. This procedure was not followed in the case of the service club and attorney groups because the risk was believed by the researchers to be too high.

3.7 Statistical Methods

The statistical significance of within-group and between-group differences in the following text was assessed with a confidence-limit technique developed by Wilks (1940) to determine the critical differences between percentages.

4. The Survey

4.1 Introduction

None of the four American studies, which precede this particular project, reveal the precise nature of the public and official awareness and attitude toward the body of drinking driving law. We found ourselves proposing, at the beginning of this project, to manipulate levels of awareness and attitude toward a complex social problem when we had no clear idea of the actual degree of awareness or the nature of attitudes as they now exist. Therefore, before we could properly begin the experimental phase of the research, we had to survey a carefully selected segment of both public and official groups to determine the existing baseline of awareness and attitude toward drinking driving. We found, as we were led to suspect from the previous studies, that the public and official awareness both of the actual situation of drinking and driving and of the general legal meaning of driving while under the influence of alcohol is, at best, hazy and confused.

All individual and group differences reported in comments on the tables in the survey are statistically significant at the 1% level.

We cross-tabulated the background factors of sex, age, education, and drinking habits. The findings in which there are statistically significant differences in the cross-tabulation are reported.

4.2 Population and Sample

4.2.1 The Public Groups - General Sample.

Two groups, students from Indiana University and members of service clubs from Bloomington, Indiana, are included in the survey as the public groups. These two components of the public were chosen because it is presumed that they have a high degree of social consciousness. The underlying conclusion behind this presumption is that of all the members of the public it would have been possible to study, these two groups should have the greatest awareness of the laws concerning drinking and driving.

Group I. The Students

1. Population. The population of the first public survey group is defined as students of Indiana University, Bloomington, between the ages of 18 and 24, who drive and who also drink alcohol. The population was limited in this way primarily because: (1) The age group between 18 and 24 is the most crash-involved segment of the driving public; (2) this age group contains the most socially conscious members of the young generation; and (3) students are more socially conscious than non-students.

2. Sample. The sample consists of 205 students taking courses in the Department of Forensic Studies; 68 students in a course in criminology and 69 students taking a course on social control given by the Department of Sociology. The total number of students in the sample is 342. These students were enrolled from April through May 1971.

3. General Background Characteristics. Nearly a third of the student group surveyed are females. The average member of this group drives daily. There are no non-drinkers included in this part of the sample. In the most usual drinking situation they consume about four bottles of beer at least once weekly, but most of them also drink an alcoholically equivalent amount of hard liquor, on the average. Ninety % are single and they have attended the university for approximately two years. Nearly all have ordinary drivers' licenses; fewer than 5% have professional licenses; 5% have been stopped by police and told they

have been drinking too much

Group II. Members of Service Clubs

1. Population. The population of the second public survey group is defined as active male members of the Bloomington, Indiana, service clubs, between 25 and 64 years of age, who drive motor vehicles. The population was limited in this way because: (1) Those members between the ages of 25 and 64 belong to the most socially conscious adult group; and (2) members of service clubs are presumed to be more socially conscious than the general population.

2. Sample. The sample is composed of 220 active members of the following service clubs: three Exchange Clubs, a Junior Chamber of Commerce, two Kiwanis Clubs, three Lions Clubs, an Optimist Club, and a Sertoma Club. In addition, 24 attendees of the Bloomington City Council meeting of March 4, 1971, when alcohol and traffic problems were on the agenda, are included in this sample. About half of these attendees are service club members. All are males

betweem 25 amd 64 years of age. Thus, about 5% of the members of this particular sample are not members of service clubs. They are, however, presumed to be at least as socially conscious as the members of the clubs because they were present at the city council meeting and took part in the discussion. The name of the sample, "members of service clubs," is then not inappropriate. The total number of the service club members in the sample is 244.

3. General Background Characteristics. The average age of the service club members surveyed is about 45. All are males. All drive a car daily. Ninety-seven % have ordinary drivers' licenses. They drink at least once weekly; they consume three or four ounces of hard liquor or three to four bottles of beer at the average sitting. Eleven % are non-drinkers. About 95% are married; most have at least some years of college. Only 2% have ever been stopped by the police and told they have been drinking too much.

4.2.2 The Official Groups - General Sample. Three groups of official decision makers who deal with DWI cases within the structure of the criminal justice system are included in the survey--police, justices of the peace, and attorneys (judges, prosecutors, and lawyers). One group of officials--Indiana state legislators--who deal with DWI laws within the legislative process, is also included in the survey.

Group I. The Police

1. Population. The population of the first official survey group is defined as police officers involved in traffic law enforcement in Indiana who have not attended a course of instruction in breath testing equipment. We limited the population of this part of the sample in order to include the ordinary traffic law enforcement officer who does not have a large body of specialized knowledge about drinking and driving personally available.
2. Sample. The sample consists of 73 policemen from 5 counties of average population in Indiana--Bartholomew, Grant, Howard, Johnson, and Wayne. All of

the men were present at roll calls in the police departments of the following cities: 22 from Columbus, 19 from Marion, and 8 from Richmond, as well as 11 police officers from Franklin and 11 from Kokomo who attended law enforcement association meetings in their respective cities. The period of time of this part of the sample is between March and April 1971. The second segment of the police survey sample consists of 77 police officers from all over the state in classes at the Indiana Law Enforcement Academy during May and June 1971. The same general background characteristics apply to this sub-group of the police survey as to the main group of policemen in the sample; the total sample was 150.

3. General Background Characteristics. All are males with the average age between 25 and 34 years. Their average mileage is between 20,000 and 25,000 miles. They usually drink three to four ounces of hard liquor or three to four bottles of beer at a sitting, which occurs at least once weekly.

Fourteen % never drink alcohol. Over 90% are married and they have, generally, a high school education.

Group II. Justices of the Peace

1. Population. The population of the second official survey group is defined as justices of the peace in Indiana.
2. Sample. The sample consists of 101 justices of the peace participating in the Indiana Traffic Court Conference in Indianapolis April 12-14, 1971, of whom 81 responded. The sample is presumed to be self-selected, since only those JPs with more than an average interest in traffic cases attended the conference.
3. General Background Characteristics. About a quarter of the JPs are female; the average age of the group is approximately 50. They drive about 10,000 miles a year. Most of them drink alcohol at least once weekly, but nearly one-quarter of them are non-drinkers. They usually consume between two and three ounces of hard liquor at an average sitting. About 80% of them are married and they have, generally a high school education.

Group III. Attorneys

1. Population. The population of the third official group is defined as attorneys dealing with DWI cases in Indiana.
2. Sample. The sample consists of 12 judges and prosecutors from three counties of average population in Indiana--3 from Bartholomew, 6 from Johnson, and 3 from Howard--who held office during March and April 1971; included in this part of the survey, as well, are 59 judges and prosecutors participating in the Indiana Traffic Court Conference in Indianapolis, April 12-14, 1971, of whom 35 responded, and 27 members of the Monroe County Bar Association, May and June 1971. Participants in the Traffic Court Conference were presumed to be self-selected, since only those judges and prosecutors with a special interest in traffic cases attended the conference.
3. General Background Characteristics. The average age of the attorney survey group is between 35 and 40. Less than 10% are female. They usually drive between 10,000 and 15,000 miles a year. They drink, on the average, about three or

four ounces of hard liquor at least several times a week. Eighty-five % are married.

Group IV. Indiana State Legislators

1. Population. The population of the fourth official survey group is defined as Indiana state legislators from the 97th session of the Indiana General Assembly, 1971-72. There are 99 representatives and 50 senators.

2. Sample. The sample consists of three representatives and two senators who participated in a drink-in at a restaurant in Indianapolis in February 1971. The sample is presumably self-selected, since only those legislators with a special interest in alcohol and traffic safety participated in the drink-in. One of the representatives is chairman of the house committee responsible for new DWI legislation. The two senators who attended co-sponsored new DWI legislation in the appropriate committee of the Indiana Senate.

4.2.3 Non-Response

There is no instance of non-response in the two public groups or from the police, except for one chief who

absolutely refused to cooperate. His department was replaced by a department in another county. Non-response among the JPs and attorneys at the Traffic Court Conference was 20% and 40% as mentioned earlier. The total number of JPs and attorneys studied thus becomes 81 and 74 respectively.

4.3 Results

4.3.1 Awareness of the DWI Laws

1. Meaning. Awareness of the precise meaning of "driving under the influence of alcohol" as expressed by the law (Question 1), of what the term ".10% BAC" means (Question 2), and of the "implied consent law" (Question 3, among the two public groups (students and service club members) is shown in percentages in Table 1, p. 104.

   Approximately half of the students and service club members are aware of the general legal meaning of driving while under the influence of alcohol. There are no differences either within the groups or between the groups on Question 1.

   Over three-quarters of the students, but less than two-thirds of the service club members, are aware of the meaning of the term ".10% BAC." On this question there are differences both within and between the groups; the students know more than do the service club members about the term.
   Only 15% of the members of both public groups are aware of the meaning of the implied consent law.

Table 1

	Question 1		Question 2		Question 3	
	Students	Service Clubs	Students	Service Clubs	Students	Service Clubs
Know	50	43	80	62	18	15
Don't Know	50	57	20	38	82	85
(N)	(254)*	(244)	(254)*	(244)	(254)*	(244)

*Two student groups did not have time to answer these three questions.

Table 2

	Question 5		Question 6	
	Students	Service Clubs	Students	Service Clubs
Know	30	33	36	44
Don't Know	70	67	64	56
(N)	(342)	(244)	(342)	(244)

Table 3

	Public Groups		Official Groups		
	Students	Service Clubs	Police	JPs	Attorneys
Acceptable	34	25	33	28	41
Unacceptable	66	75	67	72	59
(N)	(342)	(244)	(150)	(81)	(74)

2. Penalties. The awareness of the penalty for "driving under the influence of alcohol" (Question 5) and the penalty for violating the "implied consent law"(Question 6) among the two public groups (students and service club members) is shown in percentages in Table 2, p. 104.

About a third of both students and service club members have a general awareness of the penalty for driving while under the influence of alcohol. Only 36% of the students know the penalty, as opposed to 44% of the service club members who know. The female students are less aware of both the penalties than their male counterparts. In relation to the penalty for driving while under the influence of alcohol, 15% of the female students are aware as compared to 38% of the males. In relation to the penalty for violating the implied consent law, 24% of the females are aware versus 41% of the males who are aware.

3. .10% BAC. The awareness of the maximum number of ounces of whiskey that public and official groups thought they could drink in two hours on an empty stomach without getting above .10% BAC is shown in percentages in Table 3, p. 104.

A small segment of the students, the service club members, the police, and the justices of the peace are aware of the maximum number of ounces of whiskey it would be possible to drink without getting above .10% BAC. There is a clear difference between the awareness and the non-awareness of this distinction in every group except the attorneys. In the service club group and the JPs, approximately one-quarter have an acceptable level of awareness. Among the students and the police, one-third have an acceptable level. Nearly all of the subjects who gave unacceptable answers underestimated the amount of alcohol necessary. Between 5-10% of the police and student groups overestimated, while only 1% of service club, attorneys and JPs overestimated.

4.3.2 Attitudes toward Object

1. Fit-Unfit to Drive after Drinking. The attitude toward the amount of whiskey and beer respectively that public and official groups thought they could drink in two hours on an empty stomach without becoming unfit to drive in terms of BAC is shown in percentages in Table 4, p. 107.

The service club members, the JPs, and the attorneys have a median BAC of .03%-.04%. Students and police have a median of .05%-.06% BAC in relation to whiskey. The JPs have the lowest median for beer, .00%-.02% BAC. The service club members and the attorneys are in the middle with .03%-.04% BAC. Students and police are

Table 4

Whiskey

	Public Groups		Official Groups		
	Students	Service Clubs	Police	JPs	Attorneys
BAC %					
.00-.02	27	33	23	36	18
.03-.04	14	24	22	26	38
.05-.06	10	11	14	9	19
.07-.08	11	7	13	5	12
.09-.10	8	5	9	2	7
.11-.12	7	2	4	2	0
.13-.14	4	1	3	1	4
.15-	13	5	5	2	1
Don't Know	6	13	5	16	3
(N)	(342)	(244)	(150)	(81)	(74)
BAC Median	.05-.06	.03-.04	.05-.06	.03-.04	.03-.04

Beer

.00-.02	16	28	10	42	14
.03-.04	23	36	22	22	36
.05-.06	11	8	19	11	20
.07-.08	15	9	19	8	14
.09-.10	12	6	12	1	7
.11-.12	7	1	4	1	3
.13-.14	2	1	3	0	1
.15-	11	1	5	0	1
Don't Know	3	10	5	15	4
(N)	(342)	(244)	(150)	(81)	(74)
BAC Median	.05-.06	.03-.04	.05-.06	.00-.02	.03-.04

again highest, with a median BAC for beer of .05%-.06%. There are no differences between the groups regarding whiskey, but differences do exist in regard to beer between the JPs on one hand and the students and police on the other hand. Comparing beer and whiskey among the different groups, we see no differences except in the case of the JPs, who have .00% to .02% BAC for beer and .03%-.04% BAC for whiskey. The difference, however, is small both for whiskey and for beer. The median among female students is .03%-.04% BAC and for male students .05%-.06% BAC.

2. Hours Necessary to Regain Fitness to Drive. The attitude toward how many hours public and official groups thought it would take to be fit to drive after drinking 10 ounces of whiskey is shown in Table 5, p. 109.

   The students, police, and attorneys have the smallest median with 5-6 hours, while the service club members and JPs have the greatest with 7-8 hours. The median for the female students is also 7-8 hours, while male students have a median of 5-6 hours. The youngest service club members, those between 25 and 34, mentioned 7-8 hours as an acceptable interval compared to the older service club

Table 5

	Public Groups		Officials		
	Students	Service Clubs	Police	JPs	Attorneys
Hours					
0 - 2	13	11	10	5	11
3 - 4	21	14	27	12	14
5 - 6	18	14	19	20	24
7 - 8	12	16	19	17	16
9 - 10	8	13	3	6	12
11 - 12	8	9	8	5	11
13 -	16	18	8	11	4
Don't Know	4	7	5	23	9
(N)	(342)	(244)	(150)	(81)	(74)
Hours Median	5-6	7-8	5-6	7-8	5-6

members, who thought it would take them 9-10 hours before becoming fit to drive again. These differences are small; but if we compare students, police, and attorneys on one side with the older service club members on the other, there are important differences.

3. Specific Self-Imposed Rules in Relation to Drinking Driving. The specific self-imposed rules public and official groups generally try to follow regarding drinking driving are shown in percentages in Table 6, p. 111.

The main impression gleaned from this table is that the JPs are most moralistic, the criterion being, in their case, that they will never drink and drive; the attorneys the least moralistic, with the other groups ranging between. The highest percentage for all groups occurs within the category "certain number of drinks." Most people in all the groups surveyed will take this particular precaution when drinking before driving. The second highest percentage for all groups, except the JPs, is in the category "if impaired another drives or uses public transportation." The greatest difference is in the category "take precautions while driving." The percentage of students who would choose this alternative is more than twice

Table 6

	Public Groups		Official Groups		
	Students	Service Clubs	Police	JPs	Attorneys
No Rules	7	8	3	4	11
Several Rules	5	7	1	1	7
Never Drink	0	11	14	23	4
Never Drink and Drive	17	16	11	28	8
Certain Number of Drinks	19	23	25	28	31
If Drinking, Another Drives or Uses Public Transportation	16	11	19	8	8
If Impaired, Another Drives or Uses Public Transportation	16	17	20	6	23
Takes Precautions Before Driving	6	3	2	0	3
Takes Precautions While Driving	13	4	6	2	6
(N)	(342)	(244)	(150)	(81)	(74)

that of any other group. This probably reflects the perception of the male sexual role expectations in this youngest group.

4.3.3 Attitudes toward the Situation.

1. Riding with a Drinking Driver. The attitude among public and official groups toward the drinking driver who offers them a ride home from a party is shown in percentages in Table 7, p. 113.

Half of the students would "hesitate but go" with the drinking driver regardless, while about a quarter would either "go without hesitation" or "refuse to go." Approximately half of the service club members would "refuse to go with him" categorically; more than a third would "hesitate but go anyhow." Within the police and attorney groups there are no significant differences between these two possibilities. Approximately 40% of the members of both groups would either hesitate or refuse to go. But within the JP group there are significantly more people who would "refuse to go" than there are who would "hesitate but go anyhow," 66% compared with 25%. There is also an important difference between the JPs on one side and the police and attorneys on the other, both in relation to those who would refuse and those who

Table 7

	Public Groups		Official Groups		
	Students	Service Clubs	Police	JPs	Attorneys
Go with him without hesitation	26	12	18	9	15
Hesitate, but go with him anyhow	52	38	44	25	39
Refuse to go with him	22	50	37	66	46
(N)	(342)	(244)	(150)	(81)	(74)

Table 8

	Public Groups	
	Students	Service Clubs
Most People		
Go with him without hesitation	40	34
Hesitate, but go with him anyhow	59	64
Refuse to go with him	1	2
(N)	(342)	(244)

would hesitate. The non-drinkers within the service club group have a higher proportion of refusals than do the drinkers--81% as opposed to 50%. They also have a lower number of "hesitate but go anyhow" answers than to their drinking counterparts--19% versus 38%. The only noticeable difference that exists between any official and any public group is that between the JPs and the students. A significantly higher percentage of the JPs would "refuse to go" than of the students; conversely, the students have a greater proportion of people who would "hesitate but go anyhow" or who would "go without hesitation" than do the JPs.

2. Attitude toward the Drinking Driver. The attitude among most people toward the drinking driver who offers them a ride home from the party according to the public is shown in percentages in Table 8, p. 113.

There are hardly any members of the public who marked the refusal category as a designation of what they think most people would do; there is, however, a greater percentage in both groups who think most people would "hesitate but go anyhow" than there are who think most people would "go without hesitation." Approximately 60% of the members of both groups think most people would

"hesitate but go anyhow," compared to 35-40% of this segment of the sample who say most people would "go without hesitation." If Tables 7 and 8 are compared in relation to the public groups, some important differences are revealed. The only non-significant difference is in the category of "hesitate but go anyhow" among the students. All other comparisons have components which differ enough to be statistically significant.

3. .10% and .13% BAC Cases. The attitude toward the arrest and prosecution of .10% BAC drivers and the conviction of .13% BAC drivers respectively is shown in percentages in Table 9, p. 116.

There are no important differences either within or between the groups in the .10% BAC case.

A significantly greater number of persons within the two public groups answered "yes" in the .13% case than did those who said "no" or "no opinion." There is no real difference between the two public groups on this point. A larger part of the police and the JPs have "yes" answers compared with "no" or "no opinion" answers, however. Within the attorney group there is no difference between

Table 9

	.10% BAC Cases		.13% BAC Cases				
	Public Groups		Public Groups		Official Groups		
	Students	Service Clubs	Students	Service Clubs	Police	JPs	Attorneys
Yes	35	44	56	60	78	70	55
No	45	31	12	12	5	6	24
No Opinion	20	25	32	28	18	24	20
(N)	(342)	(244)	(342)	(244)	(150)	(81)	(74)

Table 10

	Public Groups		Official Groups		
	Students	Service Clubs	Police	JPs	Attorneys
Police Enforcement					
Too Strict	2	0	0	0	4
Strict Enough	42	31	45	49	68
Too Lenient	56	69	55	51	28
(N)	(342)	(244)	(150)	(81)	(74)

the "yes," "no," and "no opinion" answers. There is a greater proportion of the policemen, on one side, than of students and service club members on the other side, who would answer "yes" to the .13% BAC case. There are more "yes" answers and fewer "no" answers in the two public groups concerning the .13% BAC case than there are in relation to the .10% BAC case.

4.3.4 Attitudes toward the Criminal Justice System

1. Police DWI Law Enforcement. The attitudes toward the enforcement of the DWI laws among the public and official groups is shown in percentages in Table 10, p. 116.

Almost no one in any group thinks that the level of police enforcement is "too strict." There are more people within the service club group who think police enforcement is "too lenient" compared with those who think it is "strict enough." There is no such difference within the student group. There are more students than service club members who think the level of enforcement is "strict enough" than "too lenient."

There are interesting differences within the attorney group. More of them think police enforcement is "strict enough" than think it is "too lenient." There is no meaningful difference

in this respect within either the JP or police groups. A difference does exist when the police and the attorneys are compared.

The only significant difference that occurs in Table 10 across the two major categories of groups, public and official, is that between the attorneys on the one hand and the two public groups on the other. A higher percentage of the lawyers think that police enforcement is "strict enough" compared with the corresponding number within the public groups.

2. Court Support of Police DWI Arrests. The attitude among official groups toward court support of police action regarding DWI arrests is shown in percentages in Table 11, p. 119.

   Within the police and JP groups a greater proportion think that the court support is "inadequate" than "adequate." Within the attorney group the situation is just the opposite. A higher percentage think that court support is "adequate" compared to those who deem it "inadequate." The difference between the attorneys on one side and the JPs and police on the other in relation to court support is significant.

3. Suggestions for Increasing Effectiveness of DWI Laws. The attitude among official groups toward

Table 11

	Official Groups		
	Police	JPs	Attorneys
Court Support			
Adequate	14	28	70
Inadequate	85	71	30
(N)	(150)	(81)	(74)

Table 12

	Official Groups		
	Police	JPs	Attorneys
Education	4	20	18
Higher Penalties	25	19	16
Professionalization of Police	4	4	4
Stricter Enforcement	13	7	7
Improved Court System	4	1	10
Courts too Lenient	29	2	0
Individual Rehabilitation	0	2	4
Other Opinions	5	10	15
No Opinion	15	33	24
(N)	(150)	(81)	(74)

increasing the effectiveness of DWI laws by various means is shown in percentages in Table 12, p. 119.

The greatest difference within the official group is the high figure for "courts too lenient" among the police and the low figure in the same category for the JPs and attorneys. Another great difference is within the category of education, with the figure for the JPs and attorneys being high and the police having a low figure.

Approximately 10% of the police, 20% of the JPs, and fewer than 20% of the attorneys have more than one response. These responses are mainly in relation to "stricter enforcement" and "courts too lenient" among the police, and "stricter enforcement" for the JPs and attorneys. This does not change the main impression of the results that are seen in Table 12, p. 119.

5. The Experiment

5.1 Experimental Background and the Main Problem

5.1.1 Background.

The survey section of the report shows that the general level of awareness of the meaning of the laws relating to drinking driving within the two groups surveyed is minimal. The underlying attitudes do not seem to be strongly guided by consideration for the social fabric. In order to gain public support for a better program of social control in this area, it will be necessary to increase awareness and to alter attitudes to conform with a more realistic social situation. These principles seem applicable not just to the public groups surveyed, but also to the members of official groups who are responsible for enforcing and administering these laws.

5.1.2 The Main Problem.

The main task of the experiment is to attempt to change the awareness and attitude toward DWI laws of public and official groups by using three main influence techniques: lecture, pamphlet, and breath test, plus a film and fact sheet. The experimental study has as its second task to investigate which of these three influence techniques is most effective in changing the perception of DWI laws among the public and official groups. The main hypothesis is that breath testing is more effective than either of the other two techniques.

5.2 Methodology

The general methodological approach to the experiment was based on the four previous American studies of the perception of alcohol laws and on the general theories of attitude and attitude change. When field studies are based on psychological and sociological theories, it is necessary to translate the theoretical material into more practical, pragmatic terms. The short section that follows is a listing of the "rules of the road" for attitude change as derived from the more general theories of the field. These more pragmatic rules were, in turn, translated into the actual methods and influence techniques used as the main means of manipulating attitude in the experiment.

5.2.1 Factors in the Attitude Change Process. One descriptive scheme for categorizing the many known factors in the process of attitude change depicts the essential sequence as "who said what to whom, how, and with what effect." Such an approach leads to an organization of knowledge under the following five headings: communicator or source; communication or message; audience receiver or target population; channel or medium; and response dimension or destination.

1. Source. The source factor is defined as the perceived characteristics of the source of the message. According to current theory, there

are three components of source valence: credibility, attractiveness, and power (McGuire, p.79). These three factors lead to attitude change by three separate psychological modes: internalization, identification, and compliance.

2. Message. Message factors include the content and structure of what is said. Four classes of message factors have been denoted and defined, according to McGuire: different types of persuasive appeals, inclusions and omissions from the message, order of presentation within the message, and source-receiver discrepancy (McGuire, p. 200). Some of the most important specific message factors studied are: a. the order of presentation of arguments; b. primacy-recency effectiveness; c. one-sided or two-sided presentation; d. explicit or implicit conclusion-drawing; and e. content characteristics, for instance, rational or emotional appeals, fear-stimulating properties, verb forms, and other linguistic aspects (Zimbardo-Ebbesen, p. 17).

3. Channel. Channel factors are related to the media by which the persuasive message is communicated. According to McGuire only a few of the possible classes of channel factors have been studied. The most important ones are: a. direct experience with the object of the attitude; b. effects of communication modality between the written and spoken word; c. mass media effect-

iveness; and d. mass media versus face-to-face communication.

4. Receiver. Receiver factors deal with the characteristics of the person receiving the message. According to McGuire, the most important factors in this area are: a. the degree of active participation, b. homogeneity of influenceability, c. genotypical principles of influenceability, and d. specific individual difference variables such as age, sex, and self-esteem (McGuire, p. 235).

5. Destination. Destination factors have to do with the target or destination of the message. The most important factors deal with the temporal dimension such as long versus short-term effects and delayed-action effects (McGuire, p. 252).

The scheme discussed so far is a static, purely descriptive framework of classification. A quite different formulation for helping us to understand the attitude change sequence describes some of the primary psychological processes involved by positing that the different factors interact differently at various stages of the sequence. Zimbardo-Ebbesen has formulated such a process model, proposing that attitude change is a combined function of a. the individual's initial position, b. his attention to

the communicator and the message, c. his comprehension of the arguments, examples, appeals, and conclusions, and d. his general and specific motivation for accepting the position (Zimbardo-Ebbesen, p. 18).

McGuire has provided us with a general framework or "matrix of persuasive communication." The five components of the communication process described above are the independent variables. The dependent variable of attitude change is logically analyzed into a series of successive steps. Attitude change is regarded as a stochastic process, which involves at least five behavioral steps: a. attention, b. comprehension, c. yielding, d. retention, and e. action. The receiver must go through each of these steps if communication is to be ultimately effective, and each depends on the occurrence of the preceding step (McGuire, p. 173).

5.2.2 Pragmatic Rules for Attitude Change. The organization and presentation of the material on the research findings on attitude change are taken from Karline and Abelson, Persuasion: How Opinions and Attitudes Are Changed, 2 ed., 1970; and Zimbardo-Ebbesen, Influencing Attitudes and Changing Behavior, 1970. Support of these propositions, as well as additional findings, can be found in W. J. McGuire, The Nature

of Attitudes and Attitude Change.

1. The Source, Communicator, or Persuader.

   a. There will be a greater attitude change in the desired direction if the communicator has high credibility than if he has low credibility.

   b. The credibility of the communicator is less of a factor in attitude change later than it is immediately after exposure.

   c. The persuasiveness of a low-credibility communicator can be enhanced when he argues against his own best interest or when he is identified after, rather than before, the presentation of his appeal.

   d. A communicator's effectiveness is increased if he initially expresses some views that are also held by his audience.

   e. What an audience thinks of a communicator may be directly influenced by what they think of his message.

   f. The more extreme the attitude change the high credibility communicator asks for, the more actual change he is likely to get.

   g. People are more likely to be persuaded by a communicator they perceive to be similar to themselves.

2. The Message, or How to Present the Issue.

a. There is a greater attitude change in the preferred direction if the conclusions are stated explicitly than if the audience is allowed to draw its own conclusions.

b. The impact of a persuasive appeal is enhanced by requiring active, rather than passive, participation by the listeners.

c. If one side of the argument is presented when the audience is generally friendly, or when the desired position is the only one that will be presented, immediate, albeit temporary, attitude change will result.

d. Both sides of the argument should be presented when it is probable that the audience will hear the other side from someone else.

e. Arguments presented at the beginning or at the end of a communication will be remembered better than arguments presented in the middle.

f. Information by itself almost never changes attitudes.

g. Whether the appeal should be primarily emotional or primarily factual depends upon the content of the message and the situation

of the audience.

3. The Audience

   a. Women are more persuadible than men.

   b. Successful persuasion takes into account the reasons underlying attitudes as well as the attitudes themselves.

   c. The individual's personality traits affect his susceptibility to persuasion.

4. The Influence of Others

   a. A person's attitudes are strongly influenced by those groups to which he would like to belong--his reference groups.

   b. The individual is rewarded for conforming to the standards of the group and punished for deviating from them.

   c. People who are most attached to a group are probably least influenced by communications which conflict with group norms.

   d. Attitudes which people make known to others are harder to change than attitudes which people hold privately.

   e. Audience participation (group discussion and decision making) help to overcome resistance.

5. The Persistence of Attitude Change

   a. As time goes on the effects of persuasive communication tend to wear off.

b. More of the desired attitude change may be measurable some time after exposure to the communication than immediately after the exposure (the sleeper effect).

c. Attitude change is more persistent over a period of time if the persuasive appeal is repeated or if it requires active rather than passive listener participation, or both.

5.2.3 Subjects. There are two public and two official groups who served as subjects for the experiment. The public groups are students and members of service clubs, and the official groups are police officers and attorneys, including judges and prosecutors. The subjects were not chosen at random. Natural social settings have been preserved throughout the experiment. The students in the experiment all took courses in the Department of Forensic Studies, Indiana University, Bloomington, during April 1971. They are all between the ages of 18 and 24. All drive and all drink. Twenty % of the student sample is female. All other general background characteristics are the same as for the students described on page 95.

The students in the experiment are matched

according to sex. They are not matched by age because it did not prove to be a factor of any importance for the responses given by the members of this group in the survey.

The number of subjects in each of the student groups in the experiment is shown in the chart on page 8.

The service club members in the experiment are all active members of the following Bloomington service clubs: two Exchange Clubs, one Junior Chamber of Commerce, two Kiwanis Clubs, two Lions Clubs, one Optimist Club, and one Sertoma Club. They all attended ordinary meetings during March and April 1971 when an alcohol and traffic safety presentation was given by members of the research team. In addition, 17 attendees of the Bloomington City Council meeting of March 4, 1971, when alcohol and traffic problems were on the agenda, are included in this experimental group. About half of these people are service club members. Thus about 7% of the subjects in this experimental group are not members of service clubs. They are, however, presumed to be at least as community conscious as the members

of the clubs because they were present at the city council meeting and took part in the discussion, indicating a greater than usual interest in public affairs. The name of this experimental group, "members of service clubs," does not therefore seem inappropriate.

The service club members in the experiment are all males between 25 and 64 years of age. All drive cars daily. They usually drink alcohol weekly. The other general background characteristics of the service club members in the experiment are the same as those of the service club members in the survey described on page 97.

The service club members in the experiment are matched according to age, even though this factor did not prove to be a determining factor of any importance in the responses given by the service club members in the survey. There are also four non-drinkers in each group, except for the breath-tested group.

The number of subjects in the different service club groups in the experiment is shown in the chart on page 8.

The police in the experiment are all involved in traffic law enforcement in Indiana, but have not attended a course of instruction in breath-testing equipment. Those members of the police experiment group who attended the Law Enforcement Academy are from all over Indiana; the other half of this experimental group, who come from specially selected counties, were present at roll calls attended by members of the research team. They are all males; most of them are between the ages of 25 and 34; they all drink alcohol. The other background characteristics of the police in the experiment are the same as those of the policemen in the survey described on pages 99 and 100.

The police pamphlet and breath test groups are made up solely of officers from all over Indiana who attended sessions of the Law Enforcement Academy at Indiana University in Bloomington during either May or June. The lecture group consists of policemen from one large county--Allen--and one small county--Grant--present at roll

calls in the police departments of Fort Wayne (20) and Marion (15) on April 1 and June 21, 1971, respectively. The control group consists of police officers from one large county--Vanderburgh--and one small county--Bartholomew--present at roll calls in the police departments of Evansville (11) and Columbus (16) on March 26 and June 17, 1971, respectively.

The number of subjects in the different police groups in the experiment is shown in the chart on page 8.

The attorneys in the experiment all deal with DWI cases in various parts of the criminal justice system in Indiana. About half of them are judges and prosecutors and the other half are defense lawyers. Approximately 10% of the attorney group is female. The average age is between 35 and 40. Other general background characteristics of the attorneys in the experiment are the same as those of the attorneys in the survey described on pages 101 and 102.

There are only two attorney groups in the experiment. The breath test group consists

of 22 members of the Monroe County Bar Association present at an ordinary meeting in May 1971; 5 participants in the Indiana Traffic Court Conference in Indianapolis April 12 to 14, 1971; and 4 attorneys present at a law enforcement association meeting in Franklin on April 15, 1971. The control group consists of 15 members of the Monroe County Bar Association; 4 attorneys from Columbus; 3 from Franklin; and 3 from Bedford, all in active practice between March and June 1971.

The number of subjects in the two attorney groups in the experiment is shown in the chart on page 8.

2. Design and Procedure. The research team made every possible effort to ensure that the natural settings of the subject groups were preserved. We were especially concerned about this in relation to the public groups because we were inquiring about the subjects' drinking and driving habits; this particular activity is surrounded by an aura of social taboo. Therefore, instead of randomizing subjects and groups, we chose two

segments of the population known for their high levels of community consciousness: students attending Forensic Studies classes, and members of service clubs. We pinpointed these two elements in particular because we assumed that their knowledge about the drinking-driving problem would be greater than that of the general public. If there were any systematic procedure of selection operant in the formation of these groups, it has been impossible for us to discover it. In the case of the student group, an implicit principle of selection seems unlikely because there is no particular sequence to the courses in the Department of Forensic Studies. Most students go through the classes in an order of their own choice, not one outlined by department prerequisite. By the same token, there does not appear to be any principle of self-selection among the members of the various service clubs used in the experiment. The principle by which the composition of the public and official groups was determined was deliberate. We chose segments of the larger society whom we thought would be particularly socially conscious, on the assumption that their level of awareness of the

laws relating to drinking driving would be higher than that of the population at large. There is not, however, an operant principle of selection determining the various experimental treatments administered to each group. This part of the design was determined randomly.

If these assumptions are valid, then our experimental design more than meets the minimum conditions for the quasi design as it is outlined by Campbell-Stanley in Experimental and Quasi-Experimental Designs for Research. The pretest-posttest control group design was used in general, but the posttest-only control group design was used on some of the students in the experiment (cf. Campbell-Stanley, pp. 13 and 25).

The student groups, except for the breath-tested group, were studied while they attended their usual classes. The pretest was administered by the project director, a visiting professor in the Department of Forensic Studies. He started the class by discussing general problems of social control, especially in relation to drinking driving, in a manner exactly like that of an ordinary

lecture. The students were asked to suggest methods of combatting the DWI problem, which they knew was the subject of a research project in the department. The lecturer then told them they could do this most efficiently by recording their suggestions in questionnaire form. In the lecture approach, the project director then gave the lecture; in the pamphlet group, he handed out the pamphlet, which he asked them to read. There was a short discussion of DWI problems in all the classes in the experiment. After the experimental treatment was administered, the project director said he would come back later for more discussion. In one of the pamphlet groups the pamphlet was read in class and the posttest followed immediately. The student breath-tested group filled in the pretest questionnaire at a social gathering which took place outside the university in a student apartment complex where alcohol was consumed under ordinary social conditions and where breath tests were given.

The posttest with the students, except for the breath-tested group, took place two weeks after the pretest, when the project director

returned to the classroom and asked the students if their opinions on the DWI problem had changed during the interval. The student breath-tested group was telephone interviewed two weeks after the pretest by the project director.

The students had one additional experimental treatment which was not repeated with any other group, either public or official. It was a film experiment in which the students watched the Canadian movie on drunk driving, Point Zero Eight. In this situation the student group was asked to fill in the pretest just before they saw the film. They were given the posttest just after a group discussion on the film.

The posttest-only control design was used on the three student groups--the fact sheet, lecture, and control. They were approached in the same manner as the first three student groups in the pretest-posttest control design. The project director discussed general problems of social control, using DWI as an example. The fact sheet group

then read a two-page information handout on alcohol and traffic. After discussing various prison problems in two countries for two hours, the students were asked to give their opinions on DWI by filling in the questionnaire. The lecture group and the control group filled in the posttest questionnaire in the same way that the first three student groups filled in the pretest.

The members of service clubs were studied when members of the research team were on the program discussing alcohol and traffic problems as a part of their regular meetings. This also is a natural setting in which the team had to compete for the attention of the members along with other activities on the agenda of the meeting. Club members were asked for help just as the students were. The research team was aided in the lecture approach by a uniformed Bloomington policeman who gave a lecture on alcohol and driving. In the pamphlet treatment, the pamphlet was handed out at the end of the program. There was group discussion about the problem of drinking and driving in all groups.

It was mentioned during the course of the meeting that the club members would be contacted some weeks later by telephone for a short, individual discussion of the subject.

The pretesting of the service club breath-tested groups occurred at meetings of the service clubs after the drinking of alcohol had begun. Breath tests were given as a part of the program.

The posttest with the service club members took place two weeks after the pretest, when a research associate conducted telephone interviews.

Neither public group seemed to have any idea that they had participated in an experiment. This was especially true of the service clubs. The students were informed of the experiment after they had filled in the posttest.

The official groups were tested in their indigenous social surroundings. They, too, were asked for help in alleviating the problems brought on society by driving under the influence of alcohol.

The police breath-tested and pamphlet groups were encountered first in the classroom of the Indiana Law Enforcement Academy when the pretest was administered. The drink-in took place in a hotel, where these police subjects were given breath tests. The pamphlet was handed out in class. Posttests for these groups were administered in their classrooms. The lecture group and the control group were pretested at roll calls, when one of the research associates handed out the questionnaires. The lecture was given by the principal investigator at roll calls. The posttest was sent by mail and administered by the chiefs of police. The attorney breath-tested group was pretested at a meeting before the social drink-in began at a restaurant where, later in the evening, breath tests were also given. The posttest, conducted by telephone interview one week later, was performed by a research associate who had been present at the drink-in. Members of the attorney control group filled in the pretest individually and sent it in by mail. A research associate conducted

the telephone posttest one week later.

None of the official groups seemed to have any idea that they, too, were taking part in an experiment. The actual purpose of the tests was never revealed to them.

A note on an experimental treatment that failed with material from the Monroe County Licensing Bureau: The posttest-only control design was also attempted with persons applying for or renewing their drivers' licenses in Monroe County during the month of May 1971. A two-page fact sheet on alcohol and traffic problems was inserted in the Indiana Driver's Manual at the licensing bureau in Bloomington. The bureau itself was the experimental site. Nothing was inserted in the manuals distributed by the Elletsville office of the bureau, which served as the control site. Drivers at the two experimental sites were given an addendum to the usual driver's test concentrating on questions involving alcohol and traffic. We felt there would be a strong impetus for the experimentally treated drivers to study the insert in the manual, since it is necessary to pass the

test in order to obtain a new license. Unfortunately, an unforeseen principle of self-selection among the drivers destroyed the experiment. A great percentage of the drivers in Bloomington did not read the manual with the insert, and a great percentage of drivers in Elletsville did read the insert. Some of the people in the experimental group picked up their manuals in Bloomington, but took their test in Elletsville. We assume the reverse also occurred frequently. In addition, some of the subjects, who already had manuals, did not pick up new ones, and some of them simply took the test without having read any manual. The principle of self-selection was so great in so many ways that we have no idea if the groups were similar from the beginning. There was thus no experimental situation.

3. The Independent Variables or Influence Techniques. The lecture to the service clubs was given by a uniformed Bloomington policeman who is a sergeant and a Breathalyzer operator. The audience seemed to think his credibility in relation to alcohol

and traffic safety was relatively high. His credibility was reinforced by the presence of the research team at the meeting in which he lectured. The project director lectured to the student treatment group; he was received by them as being a highly credible source. The lecture to the officials was given by the principal investigator, who was received as a highly credible source.

The message of the lecture was similar in all three situations, except for the lecture to the students in the pretest-posttest control group design, in which nothing was mentioned about implied consent. The ideas conveyed were directly derived from the content of the insurance pamphlet, which is appended. In the public lecture groups a large chart, showing the amount of whiskey needed to reach different BACs, especially .10%, was used as a visual aid.

The Allstate insurance pamphlet, "The Drunk Driver May Kill You," served as the pamphlet treatment for all groups. The subjects who did in fact read the pamphlet seemed to accept the statements made within this context as having a relatively high

level of credibility. The credibility of this particular treatment can be independently assessed by the reader because the pamphlet is attached to the body of this report as an appendix.

The breath test instrument used was the Breathalyzer, which the subjects seemed to feel was a highly credible source. The result communicated by the machine was the subject's BAC in percentages. This could be related to the amount of alcohol consumed and to the subjective symptoms of impairment experienced by the subject. The highest average BAC attained by an experimental group at a drink-in was .07-.08% BAC for both the students and the police. The attorney group was in the middle, with .05% BAC, while the service club members were lowest, with a range between .02% and .03% BAC.

The 27-minute film, Point Zero Eight, was made in Canada by a private Canadian TV company, with a known TV commentator as the narrator, with Dr. Ward Smith and his research group at the Centre for Forensic Science, and with the most famous

Canadian rally drivers. The source seemed to have a high level of credibility. The main message is that even .08% BAC is too high a level. This is demonstrated by having the drivers go through a test course before and after drinking alcohol up to BACs of .08%. Their comments are recorded as a part of the film.

The information sheet on alcohol and traffic safety for the driver's license manual was perceived as having high credibility. The message, which was also derived from the insurance pamphlet, was the same as in the lecture and pamphlet treatments, but it was shorter. This sheet is attached to the report as an appendix.

Group discussion followed in all groups after the pretest had been administered and returned. The audience used this as an opportunity for eliciting facts about the effects of alcohol on traffic safety, except for the film group; in this situation the students had a group discussion after having seen the film.

4. Natural Settings of Groups. What was eventually lost by not having randomized groups was presumably gained by restricting the process of experimentation on the groups to their natural social settings and by ensuring that the groups were

ignorant of the experimental design while they were actually participating in the experiment.

5.3 Main Results

In general, only those questions which have obvious relevance to the impact of the influence techniques on the awareness and attitudes of the subjects will be discussed in the following tables.

Unless otherwise noted, the changes detailed in the comments are statistically significant at either the 1% or 5% level.

5.3.1 Meaning of Laws

1. DWI. The distributions in percent of the meaning of "driving under the influence of alcohol" among students in the posttest-only control group design according to the treatment are shown in Table 1, p. 148.

   Significantly more students in both the experimental groups than in the control group show an awareness of the meaning of the DWI law ($p<.01$).

2. Meaning of Implied Consent

   1. Students. The changes in awareness of the meaning of "implied consent law"

Table 1

	Lecture	Fact Sheet	Control
Know	84	84	49
Don't Know	16	16	51
(N)	(19)	(76)	(74)

Table 2

	Pamphlet		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %
Know	3	65	14	37	28	48
Don't Know	97	35	86	63	72	52
(N)	(31)		(22)		(39)	

Table 3

	Lecture		Pamphlet		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Know	22	44	19	32	25	33	19	30
Don't Know	76	56	81	68	75	67	81	70
(N)	(25)		(32)		(24)		(27)	

for the students in the pretest-posttest control group design are shown in Table 2, p. 148.

The greatest change toward an increased awareness of "implied consent" occurs in the pamphlet group ($p < .01$). The other groups do not show any statistically significant changes. The increase in the control group is probably a result of the curiosity stimulated by filling in the pretest as this information has already been provided in the driver license manual. That the pamphlet has a great impact in changing the awareness can also be seen from a 15-member student group, which was pre- and posttested during the same hour in which they read the pamphlet. Three-quarters of these students became aware of the actual law by means of this influence technique ($p < .01$).

No mention of the lecture group is made in this table because the lecturer did not mention the implied consent law during the course of his talk. However, in the posttest-only strategy, the lecturer who talked to the group specifically mentioned this aspect of the drinking driving law; and in this case, the lecture seems to have had a great impact on the awareness

level. Fifty-eight % of this group have adequate knowledge about the law compared to 15% who were aware of it in the control group ($p < .01$).

2. Service Club Members. The changes in awareness of the meaning of the implied consent law for the service club members in the experiment are shown in Table 3, p.148.

There is an increase in the awareness of the meaning of this law in all groups including the control group. The greatest increases are in the lecture group, which is nearly 100%, and in the pamphlet group, which is over 66%. This is consistent with the results of the student experiment.

3. Awareness of Penalties

1. Students. Among the students, the greatest change in awareness of the penalty for driving while under the influence of alcohol was precipitated by the lecture approach. Awareness of the penalty after the lecture in the posttest-only control group design is 63% compared to 36% in the control group ($p < .05$).

The greatest change in awareness of legal sanctions of the implied consent law is

shown by one student pamphlet group. In this student group, which was pre-and-posttested in the same hour in which they read the pamphlet, three-quarters of the original half of the sample who were not aware of the penalty at the time of the pretest were aware when they were post-tested ($p < .01$).

5.3.2 Attitudes toward the Object

1. Amount of Whiskey Necessary to Attain .10% BAC

1. Students. The change in awareness of the maximum number of ounces students in the pretest-posttest control group design think they could drink in two hours on an empty stomach without getting above .10% BAC is shown in Table 4, p. 153.

The greatest increase in awareness of the number of ounces of whiskey it would take to reach .10% BAC is in the lecture group with 44% compared to 15% in the control group ($p < .01$) The pamphlet group experienced relatively large increases in awareness, but not enough to be statistically significant. The increase in the breath test group is relatively high, considering

that the original level of awareness for this group was much higher than it was for other groups at the pretest stage. The increase in the control group is probably a result of the curiosity stimulated by filling in the pretest.

That the pamphlet had a great impact is further shown in the 15-subject student group which was pre-and-posttested in the same hour in which they read the pamphlet Half of them did not comprehend the .10% BAC before reading it, and all but one answered adequately afterward.

The distribution in percent of the awareness of the maximum number of ounces of whiskey the students in the posttest-only control group design thought they could drink in two hours on an empty stomach without getting above .10% BAC according to treatment is shown in Table 5, p. 153.

There are significantly more students in both the experimental groups than there are in the control group aware of the amount they would have to drink to attain .10%BAC.

2. Service Club Members. The changes in awareness of the maximum number of ounces of

Table 4

	Lecture		Pamphlet		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Know	27	71	32	64	59	77	39	54
Don't Know	73	29	68	36	41	23	61	59
(N)	(37)		(31)		(22)		(39)	

Table 5

	Lecture %	Fact Sheet %	Control %
Know	68	59	41
Don't Know	32	41	59
(N)	(19)	(76)	(74)

Table 6

	Lecture		Pamphlet		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Know	28	36	22	28	38	46	19	15
Don't Know	72	64	78	72	62	41	81	85
(N)	(25)		(32)		(24)		(27)	

whiskey the service club members think they could drink in two hours on an empty stomach without getting above .10% BAC are shown in Table 6, p. 153.

The greatest increase, over 50%, occurs in the breath test group. This is especially interesting because the original awareness is much higher than for other groups at the pretest stage and because the median BAC at the drink-in is .02% for this group, below the threshold level. The increase is consistent with results of the students.

3. Officials. The changes in awareness of the maximum number of ounces of whiskey the officials think they could drink in two hours on an empty stomach without getting above .10% BAC are shown in Table 7, p. 155.

   The greatest increase in awareness in the official group occurs in the attorney breath-tested group with 35% compared to 0% in the attorney control group ($p < .05\%$). There are no changes in the police groups.

4. Individual Changes in All Groups. If we register changes in more than $\pm$ 2 ounces, the individual changes in the amounts of alcohol mentioned on the pre-and-posttest

Table 7

	Police								Attorneys			
	Lecture		Pamphlet		Breath Test		Control		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Know	34	28	39	39	40	48	33	29	49	84	45	45
Don't Know	66	72	60	60	60	52	66	70	51	16	55	55
(N)	(36)		(46)		(50)		(27)		(31)		(22)	

in the four student groups in the main design are, in percentages, as follows:

	+	-	No Change
Lecture	38	14	48
Pamphlet	26	7	67
Breath Test	32	9	59
Control	18	13	69

The changes are statistically significant for the lecture approach ($p < .01$) and the breath test approach ($p < .05$). All changes, except for a few cases, are in the desirable direction, toward a realistic position.

The individual changes in awareness of the amount of whiskey it is possible to drink without getting above .10% BAC, which are small within the service club groups, are shown in the following chart:

	+	-	No Change
Lecture	16	8	76
Pamphlet	12	0	88
Breath Test	21	0	79
Control	0	4	96

The changes are about half those of the students. All changes are in the desired direction.

The individual changes in the officials' awareness of the amount of whiskey it is possible to drink without exceeding .10% BAC are shown in percentages in the following chart:

	+	-	No Change
Police			
Lecture	6	22	72
Pamphlet	34	0	66
Breath Test	30	10	60
Control	7	11	82
Attorneys			
Breath Test	52	0	48
Control	5	0	95

The changes are statistically significant for the breath test approach for both police and attorneys ($p < .01$) and for the police pamphlet group ($p < .025$).

All changes in the breath test group for the attorneys are in the desired direction. This is also true for the police pamphlet group, with

a single exception. In the police breath test group, however, there are nearly as many changes in the negative direction as there are in the desired direction.

2. Fit-Unfit to Drive after Drinking

1. Students. The changes in the attitude toward the amount of whiskey and beer that students think they could drink in two hours on an empty stomach without becoming unfit to drive in terms of BACs in the four groups in the main design and the film approach are shown by the median BAC in Table 8, p. 159 • There are clear changes in the actual attitude, especially in relation to the film, the lecture, and the breath test in that order. In situations in which there is a high median BAC to start with, approximately .10%, on the pretest, there is a readjustment downward by .01-.02% on the posttest. When there is a low median BAC, or about .06%, on the pretest, there is a readjustment upward by .01-.02% on the posttest. The exception to this general readjustment is the film group. They change downward from .07-.08% to .05-.06% BAC. However, the posttest was administered to this group immediately after exposure to the film.

The only significant difference between whiskey and beer is in the pamphlet group. There is a

Table 8

Whiskey

	Lecture		Pamphlet		Breath Test		Control		Film	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Median % BAC	.05-.06	.07-.08	.09-.10	.07-.08	.11-.12	.09-.10	.05-.06	.07-.08	.07-.08	.05-.06

Beer

	Lecture		Pamphlet		Breath Test		Control	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Median % BAC	.05-.06	.07-.08	.05-.06	.07-.08	.11-.12	.09-.10	.05-.06	.07-.08

readjustment downward in relation to whiskey and upward in relation to beer. The posttest median % BAC is, however, the same for both whiskey and beer.

2. Service Club Members. There are no changes at all in the median of the amount of whiskey and beer service club members think they could drink in two hours on an empty stomach without becoming unfit to drive, expressed in terms of BAC. In this respect the service clubs differ from the students, for whom changes occurred in all groups.

3. Officials. The changes in the attitude toward the amount of whiskey and beer the officials think they could drink in two hours on an empty stomach without becoming unfit to drive is shown by the median BAC in Table 9, p. 161.

   There is a general readjustment upward in the groups treated in relation to whiskey. The largest change is in the attorney breath-tested group, with about .04%. The other changes are .01-.02% BAC. In relation to beer there is a change only in the two breath test groups, upward for the attorneys and downward for the police. In both cases the change is .01-.02%.

Table 9

Whiskey

	Police								Attorneys			
	Lecture		Pamphlet		Breath Test		Control		Breath Test		Control	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Median % BAC	.07-.08	.05-.06	.07-.08	.09-.10	.05-.06	.07-.08	.05-.06	.05-.06	.03-.04	.07-.08	.04-.05	.04-.05

Beer

	Lecture		Pamphlet		Breath Test		Control		Breath Test		Control	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Median % BAC	.05-.06	.05-.06	.07-.08	.07-.08	.07-.08	.05-.06	.07-.08	.07-.08	.05-.06	.07-.08	.05-.06	.05-.06

4. Individual Changes for all Groups

The individual changes for the students in the amounts of alcohol mentioned on the pre-and-posttest are important to notice. Again only changes of more than $\pm$ 2 ounces are registered. The individual changes in the four groups in the main design and the film are as follows:

	Whiskey			Beer		
	+	-	No Change	+	-	No Change
Lecture	22	11	67	3	11	86
Pamphlet	0	13	87	3	3	91
Breath Test	4	32	64	0	23	77
Control	26	5	69	5	8	87
Film	0	33	67	n/a	n/a	n/a

There are no statistically significant changes in this table, given a 1% criterion when the change is computed with a leeway of $\pm$ 2 ounces of alcohol. If we register individual changes using $\pm$ .02% BAC as the standard, there are statistically significant differences in the whiskey category for the film group, with 50% down and 0% up ($p < .01$), and in the breath test group with 41% down and 4% up ($p < .05$). All changes except one are in the desired direction.

The individual changes for the service club groups are small, about half those of the students.

All changes except one in the breath test approach are in the desired direction. The individual changes in the amounts of alcohol each of the official groups think they could drink without becoming unfit to drive are important. Again, only changes of more than $\pm$ 2 ounces are registered. The individual changes in percentages are as follows:

	Whiskey			Beer		
	+	-	No Change	+	-	No Change
Police						
Lecture	6	22	72	6	3	91
Pamphlet	19	11	70	11	11	78
Breath Test	42	18	40	28	26	46
Control	22	0	78	7	0	93
Attorneys						
Breath Test	23	3	74	10	0	90
Control	5	0	95	5	0	95

The breath test influence technique precipitated statistically significant changes in the police group for both the whiskey and beer categories. However, nearly as many of these changes are in the undesired direction as in the desired.

All changes for the attorney breath test group are in the desired direction.

5.3.3 Attitude toward .10% and .13% BAC Cases

1. Students

The changes in the attitude of students toward the arrest and prosecution of all .10% BAC drivers and the conviction of .13% BAC drivers in the four groups in the main design and the film approach are shown in Table 10, p. 165.

There are clear changes in the attitudes of the breath test and film groups in both cases compared with the other groups. The film has the highest impact in the .10% BAC case and the breath test in the .13% BAC case. The increase is statistically significant in both groups ($p < .01$).

2. Service Club Members

The changes in the attitude of service club members toward the arrest and prosecution of all .10% BAC drivers are shown in Table 11, p. 166.

The actual attitude increases toward the positive direction in the lecture group and the breath test group. The increase in "yes" answers is about 100% in both groups with a corresponding decrease, especially in the "no" category in the breath test group and the "no

Table 10

.10% BAC Cases

	Lecture		Pamphlet		Breath Test		Control		Film	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
	%	%	%	%	%	%	%	%	%	%
Yes	30	40	29	43	36	54	28	36	36	80
No	59	41	43	41	46	23	51	49	40	10
No Opinion	11	19	28	16	18	23	21	15	24	10
(N)	(37)		(31)		(22)		(39)		(30)	

.13% BAC Cases

	Lecture		Pamphlet		Breath Test		Control		Film	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
	%	%	%	%	%	%	%	%	%	%
Yes	56	64	45	65	45	91	62	59	73	91
No	21	8	3	6	14	0	13	8	6	0
No Opinion	23	31	52	29	41	9	25	33	21	9
(N)	(37)		(31)		(22)		(39)		(30)	

opinion" and "no" categories in the lecture group. The increase in the breath test group is consistent with the results of the student experiment.

Table 11

.10 % BAC Cases

	Lecture		Pamphlet		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Yes	32	64	44	53	38	71	41	49
No	40	28	19	22	41	8	26	22
No Opinion	28	8	37	25	21	21	33	29
(N)	(25)		(32)		(24)		(27)	

Table 12

.13% BAC Cases

	Lecture		Pamphlet		Breath Test		Control	
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Yes	48	76	50	56	46	76	70	74
No	8	12	13	16	21	4	7	7
No Opinion	44	12	37	28	23	21	23	19
(N)	(25)		(32)		(24)		(27)	

The changes in attitude among service club members in the experiment toward the conviction of .13% BAC drivers are shown in Table 12.

There is a positive increase in the attitude of the lecture group and the breath test group, as in the .10% BAC cases. The increase is about the same, over 50%, in the "yes" category in both groups; there is a corresponding decrease, especially in "no" in the breath test group, and "no opinion" in the lecture group, as is essentially the case in the .10% BAC cases.

The increase in the breath test group is consistent with the student results.

3. Individual Changes in Student and Service Club Groups

The individual changes in the attitudes of students toward the two cases are also important to notice and are shown in percentages in Tables 13 and 14, p. 168.

There are great changes toward the positive in all groups in both cases. The changes toward the negative are very small. The greatest change in the .10% BAC case is in the film group; the greatest change in the .13% BAC case is in the breath test group. These changes are statistically significant ($p < .01$).

The individual changes in the attitude of members of the service clubs toward these two cases are

Table 13

.10% BAC Cases

	Desirable			Not Desirable			Not Desirable	Desirable	Neutral
	No-Yes	No Op-Yes	No-No Op	Yes-No Op	No Op-No	Yes-No	Yes-Yes	No-No	No Op-No Op
Lecture	16	0	5	3	0	3	34	38	11
Pamphlet	9	3	0	0	9	0	29	32	13
Breath Test	18	0	5	0	0	0	36	23	18
Control	5	8	5	0	3	5	23	41	10
Film	30	0	20	6	0	0	30	10	3

Table 14

.13% BAC Cases

	Desirable			Not Desirable			Not Desirable	Desirable	Neutral
	No-Yes	No Op-Yes	No-No Op	Yes-No Op	No Op-No	Yes-No	Yes-Yes	No-No	No Op-No Op
Lecture	5	5	8	8	3	0	51	5	14
Pamphlet	0	16	3	3	6	0	42	0	23
Breath Test	14	32	0	0	0	0	45	0	9
Control	5	0	3	5	0	3	54	5	26
Film	6	17	0	6	0	0	67	0	3

Table 15

.10% BAC Cases

	No-Yes	No Op-Yes	No-No Op	Yes-No Op	No Op-No	Yes-No Op	No Change
Lecture	8	24	4	0	0	0	64
Pamphlet	3	9	0	3	6	0	79
Breath Test	25	8	8	0	0	0	59
Control	4	4	0	0	0	0	92

Table 16

.13% BAC Cases

	No-Yes	No Op-Yes	No-No Op	Yes-No Op	No Op-No	Yes-No Op	No Change
Lecture	0	28	0	0	4	0	68
Pamphlet	0	9	0	3	3	0	85
Breath Test	13	17	4	0	0	0	66
Control	0	4	0	0	0	0	96

shown in Table 15 and Table 16.

There are great positive changes, especially in the breath test group but also in the lecture group, in both cases. There are no changes in the negative direction in the breath test group. The results from the breath test group are consistent with the results from the students. In the .10% BAC case the change is statistically significant ($p < .05$).

5.3.4 Spontaneous Suggestions for Improving DWI Laws

Spontaneous suggestions from the public for improving DWI laws made up the last phase of the posttest interview. In many cases no valuable ideas were obtained. However, in those situations in which the respondent answered thoughtfully and purposefully the ideas were recorded on the back of the posttest form. This listing is included in the experimental results at this point because the information is not of the sort that can be easily translated into terms that will fit into a table or other mathematical form. The suggestions are valuable for two reasons. First of all, since the DWI problem affects the society as a whole it is important to know what the public thinks should be done about it, indicating which countermeasures are likely to gain widespread public support. Second, these solutions provide, by implication, a thumbnail sketch of the public's idea of the magnitude and extent of the problem. If their ideas were scant or trivial, we can assume they might have a low assessment of the importance of the problem.

Spontaneous responses during the postinterview were discouraged until all the required questions had been answered by the respondent. We then asked each subject whether he had any ideas about possible solutions for the drinking driving problem. The most usual

comments were designed to flatter the interviewer who had, by this time, established a rapport with the subject. Their most well-meaning statements related directly to the survey and the individual interviewer:

"Surveys of this type will improve the general awareness of DWI laws;" "Keep up the good work;" or "I appreciated the treatment and I think all drivers should have the same experience," etc. Some of the subjects, however, proceeded beyond this level of mild conversational sycophancy. Many people obviously thought hard about the problem and contributed worthwhile ideas:

(1) People should take care of their drinking friends. Slogans should be developed to encourage everyone to watch out for their friends who have drunk enough to become unsafe drivers.

(2) Advertising campaigns should encourage drivers who have had too much to accept aid when it is offered them.

(3) The number of ounces of liquor that is inconsistent with traffic safety, not the blood alcohol concentration, should be stressed to the public.

(4) The meaning of the implied consent law should be explained when a driver's license is issued.

(5) If the public were presented with the available scientific knowledge in a readily digestible form, they would behave with greater responsibility toward drinking and driving.

(6) The legal presumptive limit, which is .10% BAC in most states, is too high to be consistent with traffic safety.

(7) The perceived risk of detection should be great enough to deter those who habitually drive when they exceed the presumptive limit.

(8) Non-drinkers need to know nothing about impaired driving levels and laws because those factors apply to others and not to them.

(9) Information about the effects of alcohol on the ability to drive should be taught to the 11-to-14-year age group. This age level child would discourage his parents from drinking and driving in the same way that children deterred their parents from smoking as a result of the anti-cigarette campaign.

(10) Impaired drivers should be the focus of a study to uncover the reasons why they commit the offense. Why do they drink excessively, and why do they drive after excessive drinking? The answers to these questions may provide a more effective method of dealing with the problem at its source.

(11) Signs should be erected to tell drivers how much they can drink and still drive with safety.

(12) Use the term "shot" in place of "ounce." Many drinkers do not know the number of ounces in a shot but they are aware of the effects of a shot.

(13) The courts are not effective in dealing with DWI cases and should be improved.

(14) The police and courts should be more lenient with first offenders.

(15) The police should deal with all impaired drivers equally instead of arresting some and releasing others.

(16) Recidivists should be dealt with more severely than first offenders.

(17) Answering the questionnaire used in the study causes the respondent to consider the problem by calling attention to his lack of knowledge.

(18) The information campaign against the drinking driver should be directed at 18-21-year-old males.

(19) A lecture and a demonstration similar to that in the project should be broadcast on local television.

(20) Police morale, which has suffered because charges of DWI have often been delayed and dismissed, would be bolstered if the judicial process were streamlined. This action would increase

the probability that impaired drivers will be apprehended. Once the public realizes that the police are trying to enforce the impaired driving laws more effectively, they might consider the need to drive carefully after drinking.

5.4 Case Observations on Changes in Awareness and Attitude in Public and Official Groups

5.4.1 Introduction. One of the most valuable aspects of this research is our subjective impressions of the reactions of members of the public and official groups toward their experience with breath testing and with other forms of experimental treatment.

These impressions are impossible to communicate in tables or in any conceivable mathematical form. They are the result of six months of participant observation by four members of the research team, who were chosen specifically because they all were experienced in dealing with alcohol problems on both the public and official levels.

On the whole, the greater the level of prior knowledge about general aspects of drinking driving, the more successful the breath test treatment. People who had at least some idea of the scientific meaning of blood alcohol concentration reacted in a most impressive manner. The lawyers, judges, prosecutors, and members of the Indiana Restaurant Association showed the most positive increase in awareness and attitude toward the drinking driving laws

and the actual situation. The two groups who were least prepared--a service club control group and the guests at a service club dance--reacted in the most negative manner. The experience, at best, was a novelty; at worst it precipitated an anxiety reaction. Many of the breath-tested policemen, who were selected because they did not have any special knowledge of DWI law, reacted negatively. Some of them seemed to conceive of the breath-testing instrument as some kind of a new-fangled slot machine against which they felt compelled to compete. For people with at least a general awareness of chemical testing, the breath-testing experience has proved to be an extremely valuable influence technique. For people who have little or no knowledge of the field it has been too sophisticated an approach. People who have no idea of the existence or the meaning of a numerical quantity of blood alcohol concentration are not enlightened by being shown their personal concentration.

5.4.2 Case Observations at a Breath Test Experimental Site with a Service Club. At first these service club members seemed to feel we were exaggerating the seriousness and the extent of the DWI problem. Once the breath testing began, the audience became visibly more attentive. They were greatly interested

in relating their own alcohol concentrations to the amount of liquor actually consumed. Most appeared relieved to find their BACs lower than they had originally feared.

One subject, who had previously refused to fill out a test form, took a breath test which read only .02% after three drinks. He weighed about 250 lbs. After the test his attitude changed and he was noticeably more cooperative.

At the end of the meeting the group as a whole expressed their appreciation for our efforts toward them individually and toward the DWI problem in general.

5.4.3 Case Observations at a Service Club Control Site. A service club control group, exposed to a pre and posttest but no treatment, showed no such posttest change in attitude toward breath testing. Our experience with this group is indicative of the general public's ignorance of the problem of drinking driving.

The research team appeared on the program of a regular service club business meeting attended by about 30 members. After dinner there was a short discussion of club problems, followed by a member of the volunteer

fire department who announced plans for a new fire station. The membership seemed very interested in this development; one member volunteered $500 in light fixtures for the building. As the meeting continued more and more evidence of a general attitude of public concern was revealed. The men seemed to be willing to give generously of their time and money for worthwhile projects.

During the discussion with the project director the members agreed that much must yet be done to make drinking drivers aware of the significance of BACs. After discussing several means of accomplishing this goal, it was suggested that the best method would be for them to drink and test themselves, in order for them to relate to the numbers in a meaningful way. Everyone seemed to accept this procedure as the best probable method of teaching the required information. When the project director suggested that he would test them at some later social occasion the members, who were shocked at first, found reasons not to get involved. They also showed great reluctance to fill in the questionnaires with the requested personal data.

The obvious high level of social responsibility which they felt toward parks, Little League baseball, and new fire stations did not extend to educating themselves about drinking driving.

5.4.4 Case Observations at a Service Club Dance. The third group observed did not show hostility toward the instrument, but neither did they learn anything.

Two of the researchers went to a dance at the invitation of a service club president, who wanted the guests to have the chance to be tested during a party and as they left for home, as a means of teaching the subjective meaning of BAC.

Four instruments were strategically placed where they were in full view during the dance and where all guests would have to pass them on the way out. They were one of the major attractions of the evening. There were very few minutes when the instruments were not surrounded by a group of curious people, interested in being tested or in finding out how the machines operated. Most people had heard of the instrument, few had actually seen one, and even fewer had any

idea of the meaning of blood alcohol concentrations.

As the levels of intoxication began to rise, several women, whose BACs indicated that they were over the presumptive BAC, became embarrassed. A husband of one of these women said he was glad his wife had seen her actual BAC because he had maintained that she drank too heavily. He said she did not think of herself as a heavy drinker but that since she had been tested at such a high concentration, perhaps she would drink less in the future.

When a husband and wife were tested together and both were over the presumptive BAC, they did not select an alternative method of transportation from the party. Instead, they tried to determine who was the less intoxicated as shown by the BACs, and that partner became the driver. Their attitude seemed to be that someone had to drive; nobody found an alternative means satisfactory. The thought of having to return the next day for their car seemed quite unattractive and the perceived risk of detection was apparently quite low since no one mentioned the fear of arrest as a determining factor.

About two-thirds of the group volunteered to be tested. The increased awareness of BAC did not, however, seem to be of great importance as a deterrent to drinking driving.

It seems curious that this group, which was interested in and receptive to the experience of breath testing, made no good use of the knowledge gained by their experience. It seemed to be a phenomenon which did not actually relate to their subsequent drinking driving behavior. Part of the explanation for this peculiar reaction might be that they had no preparation for their experience. The party was not part of the regular breath test public group. The president of the club sponsoring the dance had been a part of one of the service club experimental groups. He asked the research team to be present at the dance as a favor to him. The reaction of this group should be compared to that of the restaurant association board, which will be discussed later in the report. The breath testing situation for that group arose in a similar manner. The secretary of the association had been a member of an experimental group. He thought it would be beneficial for

his colleagues to have the same experience. The difference in the results in these two cases might be credited to the association's prior experience with breath testing and its members' greater knowledge of the law in general.

5.4.5 Observations of Official Attitudes. The members of the official group who must routinely deal with drunk drivers and DWI problems as a part of their jobs show an awareness of the laws but a paltry knowledge of their subjective and objective meaning. What is worse is that, on the whole, their attitude is clothed in a paralyzing sort of despair. Everyone in the criminal justice system complains about the disposition of DWI cases, pointing the finger at someone else. Police blame prosecutors. Prosecutors blame judges. Judges talk about the problem in generalities. No one has a solution.

5.4.6 Case Observations at a Site Used as an Experimental Control Group. Members of the criminal justice system interviewed in a control group reveal the existing depressed attitude toward the disposition of the DWI charge within the legal system. All comments were provoked by

asking the officials what they thought would make DWI laws more effective.

The police officers were virtually unanimous that *something* was wrong with the way in which their court system handled drivers charged with DWI. Their feelings echo the general sentiment in the law enforcement field that judges are too lenient and prosecutors too ready to accept a plea of guilty to a lesser charge.

The situation, as the officers of the court saw it, was not quite so obvious. The prosecutor originally thought he was handling DWI cases in an expedient manner in light of the already overloaded dockets. If the accused appeared in court with counsel he would accept a plea of guilty to a lesser charge, usually reckless operation, and thereby dispose of the case immediately.

The prosecutor then decided that there were not enough DWI convictions. He tried a new tack. When the defendent appeared in city court with counsel, the prosecution would refile the case in a superior court where a jury was required. The defense then considered whether it was willing to spend the

time and money required for a jury trial. More often than not the accused changed the plea to guilty.

The prosecutor in this case also seemed to be the source of another problem in the disposition of DWI cases. He was a tee-totaler. He had no conception of the subjective physiological implications of the numbers of a blood alcohol concentration. Consequently, when the defense wanted to bargain for a plea of guilty to a lesser charge he was ill prepared to make a decision consistent with the best interests of the community.

Another prosecutor, who primarily served the superior court, had a variation on the theme of overloaded court dockets. He said DWI offenders were of secondary importance on the judicial priority list because the charges against them were less heinous than robberies, burglaries, and assaults. He said that if the prosecutor allowed it to happen, he could spend all his time on DWIs alone.

One of the judges in this city felt that prosecution of DWI offenders was lax because the prosecutor's job did not pay enough. Prosecu-

tion was lax because the people were paying poorly and getting what they paid for.

Only the superior court judge had concrete ideas about improving the effectiveness of the DWI laws. He suggested making the city court a court of record for DWI and eliminating jury trials in these cases because of the time involved, the apathy of the jurors, and the overburdened court docket.

5.4.7 Case Observations on Attitude Change in an Official. An attorney, who is a deputy prosecutor for one of the counties studied, sent the project director two letters commenting on his experience with DWI laws. His initial feelings on the subject of DWI arrest, as expressed in his first letter, are typical of the despairing attitude widespread among those members of the criminal justice system who try to cope with the tangle of problems caused by the drinking driver:

> DWI trials have had little success in /this/ county. Forgetting for the moment that this crime is usually considered of less importance than felonies and the defense attorneys' concept that a first offense should be automatically reduced to a lesser charge--juries themselves don't seem to be interested in the trial.

Prior to the Indiana Supreme Court rule allowing third year students to try cases, the prosecutor was often too busy with felonies and change of venue cases to try every DUI offense. However, it should be noted that when a jury trial was held, the results were disappointing. For instance, /the prosecutor/ tried one in which the defendant was all over the road, finally stopped and tested .23% /BAC/. The trial tied up several days in court and the result was a conviction of DUI with a minimum fine and costs requested by the jury.

Yet this would appear to be a great victory after considering the results of my latest jury DUI case. In that case, the officer stopped the defendant for loud mufflers and noticed the odor of alcohol. The defendant failed several coordination tests and refused to take a breatholizer /sic/. At the conclusion of the case, which resulted in a not-guilty verdict, I spoke with several of the jurors. They indicated that refusal of the breatholizer meant nothing to them--that was some sort of an administrative procedure which had nothing to do with his guilt. They gave a lot of weight to the evidence that the defendant was not driving in any unusual manner--apparently indicating that if a person is driving in town with a police car behind them and driving in a straight line, that the person cannot be under the influence. Finally, the jurors seemed quite put out that they were called in for a DUI case. They felt that it should have been settled without a jury.

Thus, the problem exists. I am not saying this because I have any dislike or distrust for the jury system. Rather, I feel that people need to recognize the dangers involved with a driver who is under the influence. One of the problems must be that everyone, on the jury and on both

> sides of the counsel table, have driven after having had several drinks. This is what we think of when a DUI case is tried. Unfortunately, the percentage points on the breatholizer do not relate to anything which we can readily understand. Therefore, unless the driver is all over the road or involved in an accident, it is very easy to place ourselves in the place of the defendant--only we made it home without being stopped.
>
> I believe there are many problems involved in getting drivers to understand the potential danger of drinking and driving. I do not profess to know the answers or solutions. But I do feel that with attitudes as they are today, that getting a conviction for DUI will be difficult and a verdict with extended executed time will be an illusion.

This same attorney wrote again after he had experienced breath testing and the posttest. The change in his awareness of the meaning of BAC, and particularly his own understanding of the term is quite impressive:

> In regard to your question concerning my reactions to the breatholizer, I feel certain that I can speak for everyone and say that we were quite surprised by the readings. As your records will reflect, at the time of the test, I tested .08 /% BAC/. At that time I personally felt that my reaction time was slowed to the point that I would have felt uncomfortable driving an automobile. This type of experience is exactly what all law enforcement officers need to experience in that I now can realize that if a case comes into our office in which the driver tests .20 /% BAC/,

> that the person should not have been outside his house, let alone driving an automobile. Based on these readings, I have quit drinking at parties long before I would have tested to be under the influence.
>
> The only problem that I have in answering your questionnaire is that at the time of the demonstration I was drinking beer from a keg. As you might well imagine, I did not take time to note the capacity of the cup nor did I note the number of refills in considering my own capacity. Therefore, I am able to relate to a reading of .08 /% BAC/, but I am uncertain as to the exact amount of beer consumed in order to reach this reading.
>
> Unfortunately, I am unable to suggest a possible method of informing the public as to the amount of alcohol required to become legally under the influence. I feel that your ideas concerning the pamphlets and the lectures would be of some help, but hasten to point out that only the actual experience of being tested would make an impression on a person which would permanently remain. Perhaps with the cooperation of the State Police, it would be possible to set up a road block and to test all drivers who pass that point. Naturally, this should be done on some "spirited holiday." I feel that any resulting arrests could be legally upheld if all drivers were stopped, and that such a program would bring to mind the dangers of the drunken driver.

The positive change in subjective awareness and subsequent change of attitude experienced by this deputy prosecutor was duplicated by a

municipal court judge from the same county. In general the research group discovered that the more a person was aware of chemical testing from the beginning of his experience, the more receptive he was to the experimental breath test.

5.4.8 Case Observations at a Breath Test Experimental Site with a Law Enforcement Association. The members of the research team attended a social gathering sponsored by a county law enforcement association. The subjects were pretested and began drinking as usual. The party became quite "spirited." The most significant events of the evening were a series of participant observations between members of the research team and this group of official party-goers.

One of the judges present at this party got into an extended conversation with a member of the research team. They discussed DWI disposition in his court and the accuracy of subjectively judging degrees of impairment in people. The research associate turned the conversation into an object lesson for the judge. Three different "cases" were put before him. He turned out to be a willing and apt pupil.

A federal agent, who originally appeared to be

quite restrained, began to show some manifestations of intoxication, such as hyperactivity, animated behavior, swaying, excessive laughing, and bleary eyes. His BAC was .09%, but he had had only four drinks containing 1½ ounces of 100 proof bourbon each. He admitted feeling quite impaired. The municipal judge, who had not had any alcohol up to that point, was asked to observe the federal agent and to assess his level of impairment. He said that the agent was under the influence and could not safely drive a car.

The conversation drifted into a discussion of the disposition of DWI cases within the courts. A research associate asked the judge about people who were charged with DWI when they were below the presumptive limit of .10% BAC. He said there would have to be a great deal of corroborative evidence to substantiate such a conviction and that even with such evidence he would hesitate in finding a person guilty who was below the presumptive limit.

The situation of the federal agent was then brought up again. The judge guessed that the agent's BAC would be between .15 and .20%. When he was told that it was actually only .09%,

he seemed dismayed that anyone could exhibit such obvious symptoms of impairment and still be on the safe side of the presumptive limit, which is .10% BAC in Indiana.

The judge then decided to experience subjectively what a certain number of drinks would do to him compared with the numerical BAC. He had two drinks, of the same strength as the agent's, over a 30-minute period. He described his condition as being relaxed, but not impaired in any way. He tested at .04% BAC. He said that if two drinks only put his BAC at .04%, he felt safe in having one more before driving home. He tested himself a second time and was found to be at .06% BAC. He said he felt a little glow and that one more drink would impair him to such an extent that he could not drive a car safely.

We introduced the judge to a police officer to see if the judge could assess alcoholic influence correctly this time. He thought the man was sober and fit to drive. The policeman tested .13% BAC after six or seven drinks. He seemed steady on his feet and spoke coherently, but said he did not feel competent to drive a car because his vision and judgment of distance were distorted. The judge was amazed that the officer could be legally impaired without

obviously manifesting it.

One of the two prosecutors present at the drink-in, a large man of over 200 lbs., gained awareness of the subjective meaning of impairment. After six drinks of scotch and water over a two-hour period he tested .07% BAC and claimed he felt little or no impairment. He returned an hour and a half later and said he felt a definite measure of intoxication. He had had about 13 drinks. He was tested at .11% BAC.

There were several policemen present at the party who did not increase their awareness from their experience at the drink-in. They had concentrations between .10% and .13% BAC when they started to compete with the machine.

They felt the jackpot would be .20% BAC. When the party started to break up, these men wanted to go to a cocktail lounge and have a few more. They were prevented from getting behind the wheels of their cars only by the repeated admonitions of some of their more prudent friends.

5.4.9 Case Observations at a State Law Enforcement Academy Cocktail Party with Breath Testing. Our next experience with policemen who were

breath tested was somewhat more positive. But again, we did not attain results that were as impressive with this group as we did with those groups which were better prepared for the experience from the beginning.

The research group was present at a cocktail party for 60 experienced policemen attending a state law enforcement academy session. The party, which was purely social, was held in a large cocktail lounge at a local hotel. There was a tab bar and plenty of chips and dips. The men seemed to enjoy themselves thoroughly. These officers shared with other policemen tested the tendency to drink beyond the cocktail norm. However, only one of the 60 drank to the point of nausea and collapse. BACs averaged about .08%, with a high near .18%. The abnormally high BACs can be justified, at least to some extent, because each of these men knew that he would be driven back to his quarters in a bus provided by the research team.

Most of the officers were quite surprised by their first readings. They expected them to be much higher. A few of the men were observed keeping notes on their condition, documenting the results of the corresponding time of each

test. One research associate overheard a conversation among the officers in which they stated that they would more closely observe those drivers below the presumptive limit. They seemed to feel a driver could easily be impaired before he reached .10% BAC.

5.4.10 Case Observations at a Breath Test Experimental Site with a County Law Enforcement Association. Approximately 40 men associated with law enforcement in the county used as an experimental breath test site attended a combined business and social meeting at a country club. After the scheduled activities, a keg of beer and a bar were made available.

Several prosecutors were present and all seemed disconcerted by their low BACs. One who attained .08% BAC commented that a defense lawyer, who had called him earlier about a client charged at .24% BAC, tried to convince him that this level was not very high. As a result of how he felt at .08% BAC, there would be no deal.

The reading given by the instrument provoked one patrolman into competition. He felt disappointed when his measurement proved to be only .12% BAC. He became determined to rise above

.15% BAC. He drank 4½ ounces of rum in 10 minutes. He collapsed a short time later and was taken home by his brother.

Our experience at this cocktail party confirms our hypothesis that those people who are most educated in general, and about drinking drivers in particular, benefit most from the experience of the breath test.

5.4.11 Observations on the Effectiveness of Breath Testing with both Public and Official Groups. The first in this series of observations on the effectiveness of breath testing took place at an apartment complex cocktail party. Attendees were 60 residents of the predominantly student off-campus apartment complex. The occasion was a "get acquainted" gathering for one of the members of the research group who lived in the complex.

5.4.12 Case Observations at a Breath-Tested Student Party. A second year law student, closely observed throughout the evening by the research team, proved to be one of the most receptive and attentive subjects. He started by damning the validity of breath testing, implying that the instrument and the results were rigged against the person being tested. He attempted to prove his contentions to his fellow guests.

He inquired about the operation of the instrument and proceeded in his attempt to ridicule the concept of breath testing. After consuming two drinks with 1½ ounces of 86 proof scotch in each, he waited the prescribed 20-minute period and was tested. He was disappointed that his concentration was only .04% BAC and said he would drink until he felt a definite impairment. He thought his BAC would then be about .20% or above.

He returned an hour later with all the symptoms of alcoholic impairment: slurred speech, glassy eyes, and unsteady gait. He said if he were not drunk at this point he would never defend a drunk driver in court. After the usual 20-minute waiting period he tested just short of .09% BAC. The subject then continued to drink with abandon. He returned to the instrument once more and tested .14% BAC.

This experience seemed to have a sobering effect, since the law student recognized his own degree of impairment and persuaded a friend to drive him home when the party was over. During the posttest interview when he was asked about his previous driving

behavior he indicated that he had driven in a similarly intoxicated condition numerous times but he had never been able to connect his degree of impairment with the legal definition as stated in terms of BACs. He thought all law students and current members of the bar should be required to attend a drink-in in which they would be given the chance to relate their own subjective feelings of impairment to the numerical BAC.

Several of the other party-goers, when asked at a point in the evening when their attained BACs were between .08% and .10% whether they thought they personally would be able to drive home safely answered yes. But when the question was rephrased to ask whether they would let their children ride home with someone in a similar condition, the answer was no. These people thought that anyone who had consumed as much alcohol as they had would be impaired as a driver, but they thought of themselves as being quite capable of handling the driving situation. During post-interviews under more sober circumstances these same people had different attitudes toward their former condition; they realized that they, too, along with other

people, had been potentially impaired drivers.

5.4.13 Case Observations at a Restaurant Association Board Meeting. Our next observations on the effectiveness of breath testing took place at a meeting of the state restaurant association. Three members of the research group met with 17 members of the Indiana Restaurant Association Executive Board who wanted an opportunity to see and feel subjectively what a certain number of drinks meant when correlated with BACs.

The researchers were introduced and briefly stated their procedure. The initial level of hostility was high. The association, which represents and is composed of the state's major restaurateurs, lobbied against the new Indiana DWI law lowering the presumptive limit of impairment from .15% to .10% BAC. The hostility toward the validity of chemical testing in general had been compounded because the members had been involved in a previous breath testing demonstration in which participants had abnormally high readings. One member said that at that demonstration a secretary had tested at .11% BAC after only one or two drinks. There was general disagreement with our contention that few drinkers exceed .10% BAC and there was general hostility toward the instrument.

The researchers asked whether those tested at the previous meeting had waited the prescribed 20 minutes between their latest drink and the test, which ensures that mouth alcohol will not contaminate the results. The members thought that the waiting period had been properly monitored. We emphasized the crucial nature of this waiting period; the members seemed to understand that a test would be automatically invalid if it were not observed.

Our explanation of the previous failure convinced some of the participants, but the degree of skepticism remained high as the test phase began. Several members tested their consumption against the machine, seemingly with the idea of proving to themselves how inaccurate chemical testing was. Two instruments were placed on opposite sides of the room so that the members could be tested on either or both. A 220-lb. member who had consumed three martinis within an hour tested at .052% BAC on one instrument and .054% BAC on the other. Another person was tested who had had nothing, and the instrument bore out this fact. Still another requested a test;

the machine registered a trace. He said he had had one drink over an hour before. These three accurate test results bolstered the credibility of the instrument, but there were still members who would not believe the results. One skeptical man went out, washed his mouth with alcohol, and returned for a test immediately. The reading, .40% BAC, indicated that he should have been unconscious. He waited 20 minutes and was tested again. He was surprised when the instrument detected no trace of alcohol in his system.

All of these tests were observed with great interest by the rest of the membership. There was a consensus that the prior tests had given them a wrong impression. They agreed that the tests were fouled because of individual failure to enforce the abstention period.

One of the board members voluntarily called for discussion to determine if the restaurant owners would like to have the instruments available for their customers in their places of business. Several people present declined to comment because they did not serve alcohol in their establishments. The discussion focused

on the question "Why do you want or not want an instrument in your establishment?" The proponents said they would like to try it for two reasons: (a) To offer a service to their customers; and (b) to render what aid they could to help lower the national death rate from impaired driving. The dissenters said quite frankly that they feared their customers would test themselves and then go home for their last drink. These people did not want to lose the business.

The president then said the association would give its stamp of approval in the event any instruments were placed in restaurants on an experimental basis. He said the association could not, of course, force the owners to accept the instrument, but that they would encourage members to participate and assist us on an experimental basis to determine if the public would respond positively to such an opportunity. The board members emphasized that the instruments should be located in some private place where one could be tested without being embarrassed or encouraged to enter into a drinking contest with a friend or with a machine; and adequate measures must be taken to ensure observation of the period of abstention.

The restaurant owners, who had been both strongly opposed to lowering the presumptive BAC and more than mildly hostile to the process of breath analysis, after seeing and feeling the percentage figures subjectively reversed their stand and supported properly conducted experimental programs to inform the public of the meaning of the percentage figures and the dangers of drinking excessively before driving.

5.4.14 Case Observations at a County Bar Association Meeting. Next the research team attended a party of a county bar association. By this time we knew that the most usual reaction in these breath-tested official groups, all of whom had at least some prior knowledge of chemical testing, was surprise that their own readings were so low. These people learned how to correlate the readings with their feelings of impairment and with the BACs they dealt with as lawyers and judges. For them, the breath testing experience was valuable professionally and personally.

The bar association party had all the accouterments of success: hors d'oeuvres, a pretty, female bartender, and an atmosphere of gaiety. The attorneys were given a

brief lecture on the nature of the breath testing instrument and then were encouraged to drink as they normally would on such a social occasion. Most of them were quite curious about the instruments and seemed fascinated by the chance to relate subjectively to the percentage figures they had dealt with before only in a courtroom.

A few attorneys were reluctant to accept the validity of the test. One man secretly used mouth spray to obtain an abnormally high reading on a low consumption of alcohol. Several of the skeptical ones maintained that the breath testing instruments we used were deliberately calibrated lower than those used by the police. In fact all instruments used during the experiment were calibrated according to the standard prescribed for such instruments used in law enforcement in the state of Indiana. Generally, as the party proceeded, everyone seemed surprised but convinced by the readings.

During the post-interviews the researchers found that the majority of these lawyers learned they had been quite low in their estimate of how many drinks one must consume in

order to reach .10% BAC. One of them, who was a candidate for city judge, said his reading of .11% BAC had given him much valuable insight into the problem which could aid his deliberations in the future. Another lawyer, who was at .10% BAC, said he did not feel "particularly" affected and that safe driving would not have been impossible for him even if he were over the presumptive limit.

One of the interesting sidelights revealed during the post-interviews was that there had been a second party the next night attended by many of the lawyers present during the bar association breath test gathering. Contrary to their previous behavior, many of these attorneys remained in a reasonably sober condition and discussed their BACs of the night before. One man, in a moment of levity, blamed the researchers for "spoiling" the second party by changing the attorneys' attitudes toward heavy drinking and driving.

5.4.15 Case Observations at a Traffic Court Conference. Fourth in this series was an Indiana Traffic Court Conference cocktail party where the research group administered breath tests. Several of the judges and justices of the peace present appeared astonished at the low blood alcohol concentrations

they attained and remarked that the BACs they had encountered on the bench must have been related to far greater impairment than they had preceived at the time.

We again encountered difficulties making the subjects wait at least 15 minutes before being tested. Many JPs were surprised at this necessity, even though they had tried cases of DWI. Some insisted upon ignoring the waiting period although they knew the results would be abnormally high.

5.4.16 Case Observations at a Drink-in for Legislators.

Next the research team attended a drink-in for a group of Indiana state legislators, held in an Indianapolis hotel during the 1971 session. The three state representatives and two senators present were all members of the house and senate committees which were then involved in the process of drafting and amending DWI legislation. This small group of official decision makers were highly self selected. Originally all of the state legislators from these committees were invited to the drink-in. Unfortunately, the evening selected for the event conflicted with an important political dinner. The lawmakers who attended the drink-in were all highly

interested in and well informed on DWI problems.

The chairman of the Indiana State Safety Committee was particularly impressed with the effectiveness of the drink-in as an educational tool for teaching the subjective meaning of .10% BAC, the level which was, at that time, being proposed as the new Indiana presumptive limit. The senator had six highballs during the cocktail hour and with dinner. She tested .04% BAC. When a member of the research team asked her to describe how she felt at this point, she said she could definitely feel the effects of that amount of alcohol in her own system. We then asked her how she thought she would feel with a blood alcohol concentration twice as high. She threw up her hands and had no answer. She did say that she thought the drink-in is the only truly effective way of teaching the relationship between the numerical BAC and the feeling of impairment. For this particular lawmaker, who had been bombarded during the entire legislative session with information, propaganda, and testimony on the problems and solutions of alcohol and traffic safety, the drink-in seemed to be

enormously and immediately effective. The actual number of the presumptive BAC, instead of being an arbitrary numerical abstraction determined by legislative fiat, became a subjective notion of impairment which this woman could relate directly to her own feelings of the effect of alcohol. The variable which differentiated the experience of this legislator from that of many of the members of other groups for whom the drink-in remained a mystifying or even frightening experience, was education. This woman was saturated with objective facts about the scientific principles of BAC. All that she lacked was the subjective knowledge of relationship between the numbers of the BAC and a feeling of impairment.

Several of the legislators present who were attorneys showed a technical interest in the instrumentation. Two breath-testing devices were used at the drink-in: an ordinary Breathalyzer, requiring an operator, and a prototype model of the Auto-Breathalyzer, requiring only that the subject blow into the machine and then wait for the breath to be automatically analyzed and the result registered. These legislators felt that the completely automatic approach would eliminate the possibility that the breath

test operator might deliberately manipulate the answer to get a high or low reading. This would prevent, they felt, any charges of police revenge toward defendants who were overtly hostile. An arresting officer would not have a chance to "give the knob an extra twist" if, for instance, the person arrested called him a pig.

5.4.17 Case Observations at a Law School Drink-in

The last drink-in was not part of the main experimental design. It was sponsored at an out-of-state university law school by the research team. Those attending were professors and people involved in the local Alcohol Safety Action Program. This group had a relatively sophisticated level of understanding of the meaning of BAC and what it implied for the law. What they gained through the drink-in was an awareness of the subjective meaning of blood alcohol concentration, the level of the group as a whole, and the social pressures aroused when the group norm is greatly exceeded.

The most usual BAC for the group was .05-.06%. This drink-in was, in this respect, normal. The BACs of virtually everyone in attendance clustered around these concentrations. The exceptions were a faculty member and his wife,

who tested .12% and .15% BAC respectively. None of the professors present were particularly surprised by the high BACs attained by the couple. Most people had felt and commented previously that they thought this particular couple often drank too much, far exceeding the normal cocktail party practice. But no one had realized how much "drinking too much" actually implied in numerical terms. When it became obvious that the couple registered almost twice as high as anyone else present in the room, an air of censure developed immediately. They were treated somewhat coldly and distantly by the group.

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Facts about Drinking and Driving

LAST YEAR, 35,000 AMERICANS WERE KILLED IN CRASHES WHERE ALCOHOL WAS INVOLVED

★ More than one half of all fatal highway crashes and nearly half of all injury crashes involve drivers who have been drinking alcohol excessively.

★ Heavy drinkers make up the largest part of the drunk-driving problem.

★ About one driver out of every 100 on the road is heavily impaired by alcohol.

★ America's economic loss due to alcohol-related crashes exceeded eight billion dollars last year.

★ Accurate, scientific chemical tests are used to measure the percentage of alcohol in the breath or blood. The results are expressed in percentage terms.

★ Research into the effects of alcohol on driving has demonstrated that a driver with 0.10% is seven times more likely to become involved in a crash than when sober. Everyone, regardless of body weight or drinking experience, is physically and mentally unfit to drive a motor vehicle by the time the blood-alcohol concentration reaches 0.10%.

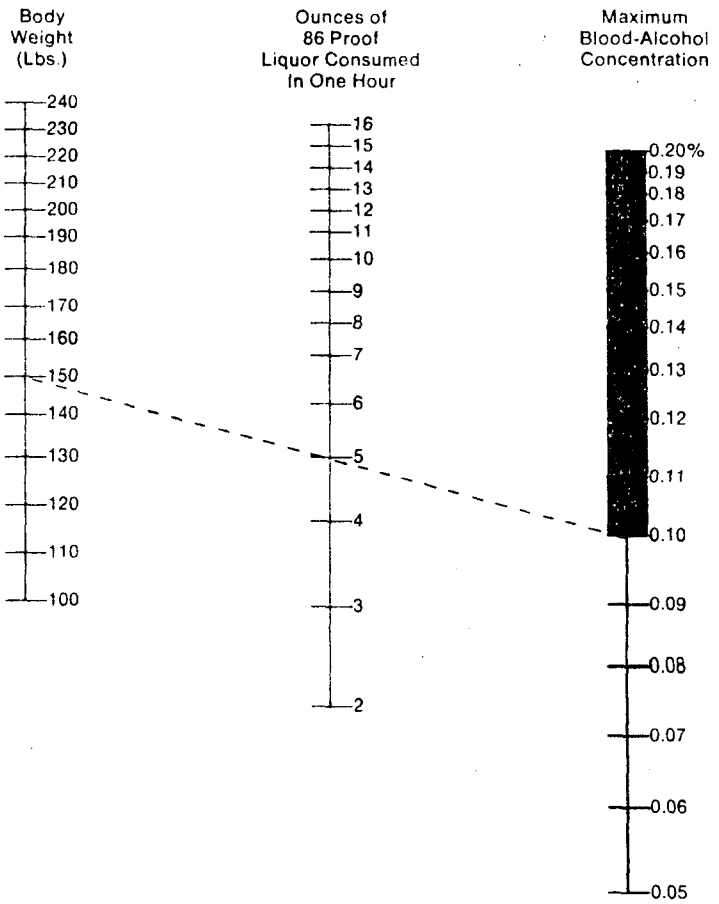
★ Even 0.10% is considered too high by many authorities who believe that most persons are impaired before they reach 0.10%. The following chart shows how much alcohol you must consume to attain various blood-alcohol concentrations on an empty stomach.
To determine the average number of ounces of 86 proof liquor needed in a one-hour period to reach 0.10%, draw a line from your BODY WEIGHT to 0.10%. The line will cross the average number of ounces needed to produce 0.10%. The line on the chart illustrates how to do this for a 150-pound person. Follow the same procedure to determine the amount of liquor needed to reach other blood-alcohol concentrations, such as 0.05%, etc.

★ Alcohol disappears from the body at about the rate of 1 oz. of liquor per hour. Subtract .015% from blood-alcohol concentration indicated on the chart for each hour after the start of drinking.

★ The resulting blood-alcohol concentration accurately reflects the degree of impairment in any person since it measures only the accumulated alcohol, not how much has been consumed. It is this accumulated alcohol that causes impairment.

★ Remember, as your blood-alcohol concentration increases, your chances of being involved in a serious crash increase dramatically.

CONTROL YOURSELF



For data purposes only

19. Some study manuals had an insert entitled "Facts about Drinking and Driving." Indicate if your manual had the enclosure.

☐ Yes ☐ No

20. Approximately how many people are killed in alcohol-related traffic crashes each year?

☐ 1,000 ☐ 17,000 ☐ 35,000 ☐ 70,000

21. What is the maximum number of ounces of whiskey that you think *you* can drink in two hours on an empty stomach without getting above 0.10% alcohol in your blood?

☐ 3 oz. ☐ 5 oz. ☐ 9 oz. ☐ 12 oz.

22. What is the maximum number of ounces of whiskey that you think *you* can drink on an empty stomach in two hours without becoming unfit to drive a car?

☐ 3 oz. ☐ 5 oz. ☐ 9 oz. ☐ 12 oz.

23. How many hours do you think it would take for the average person to be fit to drive after drinking 10 ounces of whiskey?

☐ 2 Hrs. ☐ 5 Hrs. ☐ 8 Hrs. ☐ 15 Hrs.

24. Which of the following rules do you consider the most *practical* with regard to driving and drinking?

☐ No rules.

☐ Never drink and drive.

☐ Do not have more than certain number of drinks if driving.

☐ If drinking, have some one else drive or use public transporation.

25. Age ☐—19 ☐ 20-24 ☐ 25-34 ☐ 35-44
☐ 45-54 ☐ 55-64 ☐ 65—

26. Sex ☐ male ☐ female

27. Weight ☐ 100 ☐ 125 ☐ 150 ☐ 175
☐ 200 ☐ 225 ☐ 250 ☐ 275

Addendum to Driver License Examination