# A CRITICAL ANALYSIS OF THE COLLECTION AND PUBLIC REPORTING OF DATA ON DRINKING DRIVERS

by

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A THESIS

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# A CRITICAL ANALYSIS OF THE COLLECTION AND PUBLIC REPORTING OF DATA ON DRINKING DRIVERS

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A Thesis

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the Faculty of the Institute of Contemporary Corrections and the Behavioral Sciences

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by

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ABSTRACT

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Purpose

The purpose of this study was two-fold. First, to present a report published by a policing agency and some possible conclusions that could be drawn from this report. Second, and more important, to demonstrate why descriptive statistics alone present a major problem in an endeavor to answer the question of how alcohol is involved in traffic crashes.

Most importantly, it will show the need for some different types of analysis of the data collected in order to more accurately and dramatically illustrate the full impact of the drinking and driving problem.

Methodology

The methodology used in this study was to present a set of statistical data gathered by a law enforcement agency and their report, using this data, that purported to depict some of the drinking-driver problems. The statistical data was then presented in a different form and critically analyzed to point out conclusions and misconceptions that could be reached due to the incompleteness

of the data.

Findings

1. For each of the eight variables considered with the blood alcohol level of drinking drivers, a very large majority had a BAL equal to or greater than the presumptive level of intoxication.

2. Males were greatly over-represented in the drinking drivers suspected of DWI and administered a blood-alcohol test.

3. Most of the drinking drivers suspected of DWI and administered a blood-alcohol test were, what is thought by many to be, middle-aged (ages 25 through 54).

4. A small number of drivers involved in traffic crashes were given a BAL test.

5. The evening hours from 9:00 P.M. until 2:59 A.M. had over one-half the BAL tests administered.

6. Over one-half the BAL tests were administered on Saturday and Sunday.

Recommendations

1. Legislation be enacted to support, permit, and/or require research to be made to determine extent and the degree of alcohol involvement in traffic crashes.

2. Mandatory participation in treatment programs by alcoholics who drink and drive.

3. Improve the adjudication process and the

corrections process to place emphasis on the concept that drunk driving is not approved behavior.

4. Minor changes be made in the data collection procedure in order to gather additional pertinent data on drinking drivers.

5. Fuller use be made of available information to initiate programs to combat the drinking-driver problem.

6. Academicians, medical personnel, police and other persons, with expertise to contribute, work together to design programs to study the extent and degree of the drinking-driver problem.

7. Countermeasure programs be constructed from the findings and proposed solutions set out in the preceeding recommendation.

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# CHAPTER I

## INTRODUCTION

The principal means of transportation for Texans is the automobile. Over seven million Texans are licensed by the State of Texas to drive motor vehicles on the streets and highways of the state and many more thousands drive without being licensed by the state. In addition, there are over 7½ million motor vehicles registered in Texas. According to the Texas Highway Department, the agency responsible for the registration of vehicles, motor vehicles were driven some 76,690,000,000 miles during the calendar year 1972 by Texans and those from outside Texas who came into or drove across the state. These miles are computed according to a formula and are determined from the quantity of gasoline and other motor vehicles fuels purchased in Texas during the year.[1]

A great majority of Texans use caution and drive in a prudent manner. However, some are less skillful than others, some display a lack of social responsibility once they are seated behind the wheel of an automobile. Both groups tend to create a problem for traffic safety personnel. They, the traffic safety personnel, must contend with each in their efforts to improve the control of traffic congestion

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[1]Texas Department of Public Safety, Motor Vehicle Traffic Accidents, 1972, p. 7.

and their attempts to reduce traffic crashes. Each group creates similar problems but due to each group having different causative factors, they demand different control practices and methods. It is expedient therefore, for the traffic safety personnel to be familiar with not only the scope of a problem but, if possible, the nature of its existence.

During the calendar year 1972, it was reported that there was an average consumption of five quarts of liquor and twenty-two gallons of beer for every man, woman and child in Texas. Texans also consumed nine million gallons of wine and five million gallons of malt liquor.[2] When over seven million people drink that much alcoholic beverage and drive over 76 billion miles, it is inevitable that there will be those who combine the two and drive after and/or while drinking some alcoholic beverage.

Driving a motor vehicle after the consumption of alcohol has become a major problem in our society. It becomes even a more serious problem when it is aggravated by the excessive use of alcohol. By excessive use of alcohol, it is meant those who drink a sufficient amount of alcoholic beverages to cause their Blood Alcohol Concentration to reach the point where they lose some or all of their reasoning processes and/or their physical skills.

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[2] The Houston Post, Editorial, Nov. 29, 1973.

According to the American Medical Association, these mental and/or physical faculties begin to become impaired when the Blood Alcohol Concentration (BAC) reaches 0.04% weight/volume (W/V) and these faculties begin to deteriorate very rapidly when the BAC reaches 0.08% weight/volume (W/V). Blood Alcohol Concentration (BAC), sometimes referred to as Blood Alcohol Level (BAL), are terms which represents the level or concentration of alcohol in the blood. It is expressed in numbers to represent the per cent of alcohol by weight/volume (W/V) in the blood. It is expressed as milligrams of alcohol to milliliters of blood. Thus a reading of 0.15% W/V would be the equivalent of 150 milligrams of alcohol in 100 milliliters of blood.[3]

It would appear that people in general, and automobile drivers in particular, would be more skeptical of drinking and placing themselves in a position where impairment, due to use of alcohol, could be degrading or even dangerous. Unfortunately this does not seem to be part of reality. About 40 per cent of the drinkers blamed social pressures for their drinking according to I.H. Cisin. He alleged in a paper presented to the National Conference on

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[3]Committee on Medicolegal Problems, American Medical Association, Alcohol and the Impaired Driver, A Manual on Medicolegal Aspects of Chemical Tests for Intoxication, 1970, p. 58.

Alcohol and Traffic Safety entitled, "Driver Intoxication as a Social, Psychological Problem," that we have three types of drunken drivers: (1) the alcoholic who drives, whose problem is alcoholism; (2) the psychopath who drives, whose problem is psychopathic driving; and (3) the normal driver who is a normal drinker and sometimes does both simultaneously.[4] The Committee on Medicolegal Problems of the American Medical Association said it appeared that a major proportion of alcoholic beverages were consumed by males, but actually the drinking of alcoholic beverages was about equally divided between males and females. According to them about two-thirds (2/3) to three-fourths (3/4) of Americans drink at one time or another. About 40 per cent of them drink beer and about 25 per cent of them drink whiskey once a week. It appears that drinking among Americans peaks out at the age of about thirty-five to forty and that week-end drinking far exceeds mid-week drinking.[5]

Ross Rommell, Co-ordinator for Traffic Safety for the Governor of Texas said:

> A drinking driver is involved in at least 50% of all fatal accidents. At least one out of 50 vehicles is piloted by someone who has been drinking.[6]

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[4] Alcohol and the Impaired Driver, 1970, p. 5.

[5] Ibid., p. 4.

[6] Ross Rommell, "Funding of Traffic Safety Programs in Texas," Texas Police Journal, July 1974, pp. 17-18.

Colonel Wilson E. Speir, Director, Texas Department of Public Safety, in the same police publication said: "Our records reflect that drinking drivers are involved in 40% to 50% of the fatal accidents in Texas each year."[7]

In October of 1970, the Texas Safety Association made the following statement:

> In the next ten years 2,840,000 Texans will be hurt in traffic crashes and 44,700 other Texans will be killed ... We know at least 50% of these traffic crashes can be prevented ... Half of all Texans killed in traffic crashes were probably drunk when they died ... or were killed by a drunken driver.[8]

In a speech to the Texas Alcohol Safety Action Project, Colonel Wilson E. Speir said in part:

> A drunk driving a two-ton automobile should be considered as dangerous as one waving a loaded pistol ... . Unfortunately most juries don't believe it is time that people stop viewing drunk driving as a petty offense, and start looking at it as a dangerous violation which claims far too many lives. ... Only a very small per cent of DWI charges result in a final conviction and automatic suspension of drivers license.[9]

According to a study of 208 drivers killed out of 320 accidents in Bexar County, Texas, Dr. Robert Hausman, Medical Examiner for Bexar County, found that 65 per cent of them had been drinking. These were drivers who were

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[7]Wilson E. Speir, "The Great Challenge," Texas Police Journal, July 1970, p. 14.

[8]"The Texas Safety Association Says--," Texas Police Journal, October 1970, p. 15.

[9]Houston Post, News Release, Nov. 24, 1973.

dead on arrival at the hospital or died within a short period of time after arrival. The same study revealed that 76 pedestrians, who were dead on arrival or died a few hours after admission into the hospital, out of 140 who were killed in traffic accidents had been drinking.[10]

R. A. Neilson, in his paper "Alcoholic Involvement in Fatal Motor Vehicle Accidents," presented to the California Traffic Safety Foundation in 1965, revealed that a study in California of 1,721 motor vehicle fatalities showed that 55 per cent of the drivers held responsible were under the influence of alcohol. This study showed 84.2 per cent of these had a BAL of 0.10% W/V or more and 66.8 per cent of these were in excess of 0.15% W/V. They concluded that there was an increasing risk of accident involvement for drinking drivers.[11]

Numerous studies are briefly summarized in the publication of the American Medical Association, Alcohol and the Impaired Driver. These studies were made mostly from data obtained about drivers killed in traffic crashes and give emphasis to the problem of the drinking driver.

A group of 1,715 suspected drunk drivers were studied in Australia and reported by J. H. W. Birrell in the Medical Journal of Australia in an article entitled, "Blood Alcohol

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[10]Robert Haussman, Eleven Year Study of Fatal Accidents in Bexar County, Annual Report of Bexar County Medical Examiners Office, San Antonio, Texas (1968).

[11]Alcohol and the Impaired Driver, op. cit., p. 46.

Level in Drunken Drivers, Drunk and Disorderly Subjects and Moderate Social Drinkers." They found that the drunk drivers had an average BAL of 0.22% W/V. An interesting side study in this research was that the "drunk and disorderly persons" had an average of only 0.20% W/V. They concluded in this study that the drunken driver consumed more alcohol than the ordinary social drinker who normally did not exceed 0.08% W/V.[12]

The results of a questionnaire mailed out to randomly selected householders, of whom 810 responded, was revealed in an article, "Behavior and Americans" that was published in the American Journal of Public Health, 1957, 47:541. It showed that 42 per cent of those responding admitted to driving after drinking and that those who drove 6,000 miles per year or more and drank had a far greater number of accidents than the non-drinkers.[13]

A twenty-year study (1941-1960) of 2,294 fatalities from motor vehicle crashes showed alcohol to be present in 60 per cent of the drivers who survived less than one hour after the crash. More than half of them had a BAL in excess of 0.20% W/V. Of those killed, 40 per cent were killed in one-car crashes and had a BAL sufficient to show legal impairment. They suggested that special attention be given

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[12] Ibid., p. 37.

[13] Ibid.

to drivers in the age brackets 25 to 29 and 60 to 64.[14]

A study of drivers involved in "serious" motor vehicle crashes in New York City found 73 per cent of the drivers had been drinking and 46 per cent of those drivers held responsible had a BAL in the range of 0.25% W/V.[15] Just what the range of 0.25% W/V included was not stated but the study included the overall range of 0.00% to 0.25% W/V. J. R. McCarrell made a report of this study in "A Controlled Study of Fatal Automobile Accidents in New York City," and published in J. Chron Dis 15:811, 1962.

M. Vamosi published the results of a study of 418 drivers involved in an accident along with a like number of drivers selected at random on the same street and at the same hour. This report in Alcohol and Road Traffic, 1963 called "Experiences with Non-Alcohol Road Traffic in Czeckoslavakia" was an effort to determine accident probability of drinking drivers. It was reported that in the BAL range of 0.03% to 0.099% W/V the risk ratio was 6 to 1. From 0.10% W/V to 0.149% W/V the risk ratio increased to 31 to 1. Those with a BAL of 0.15% W/V and greater, the risk ratio rose to 128 to 1. They concluded in this study that there is no safe limit for drinking and

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[14] S.R. Berber, Vehicular Accidents in Cuyahoga County U.S.A., Twenty Years Experience, B.M.A. House, London, (1965), pp. 38-44.

[15] Alcohol and the Impaired Driver, op. cit., p. 45.

driving and that alcohol has its effects at all measurable levels.[16]

Three controlled studies were carried out in 1958 and used in American Medical Association's manual Alcohol and the Impaired Driver. The first was a study in Germany called "Speed Performance of Automobile Drivers Under the Influence of Alcohol" and reported by G. Abels in the German Medical Journal. There were thirty-three male professional drivers involved in the study with BALs from 0.10% W/V to 0.17% W/V. The decision reached in their study was that performance decreased up to 12 per cent as the blood alcohol level increased and at the lower levels there was a 6 per cent below "control values" performance. Driving speed was erratic, acceleration and braking were more frequent and position changes at the steering wheel increased by 24 per cent. These differences were particularly evident on long straight stretches of road. The conclusion was drawn that impairment occurs in all subjects due to alcohol and the impairment increases as the BAL increases. The second study was made on "highly experienced bus drivers" in Great Britain. "The Risk Taken in Driving Under the Influence of Alcohol," printed in the British Medical Journal, by J. Cohen, E. J. Dearnaly and C. E. M. Hansel was the report of this study. A BAL range of 0.04% W/V to 0.06 W/V was used

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[16] Ibid., p. 49.

in the study of the bus drivers. They were given tests that permitted them to assume increased risks. There was faulty judgement noted at even the lower blood alcohol levels. There was no particular indication of a willingness to take ever-increasing risks as the BAL increased but there was a greater amount of confidence exhibited in the performance of the more difficult tasks. The reactions to alcohol varied among the drivers but the performance and judgement of the drivers deteriorated as they consumed more alcohol. The conclusion was reached that the trustworthiness of a man's judgement of his driving skill is impaired with a BAL as low as 0.04% W/V. The third study was of fifty subjects whose drinking habits ranged from light to heavy. Under control conditions, dosages of alcohol were given to cause BALs to range from 0.03% W/V to 0.15% W/V. When the subjects were given road tests and parking tests an impairment of driving skills was evident even at a BAL of 0.03% W/V. At the BAL of 0.05% W/V, 70 per cent of the drivers were impaired. Those classed as heavy drinkers had 80 per cent to be impaired at levels of 0.05% W/V to 0.12% W/V. There were none of the drivers who maintained their non-drinking driving skills when his BAL approached 0.15% W/V. Statistically at 0.08% W/V, half of the drivers showed a significant impairment. The conclusion was that there is an excellent correlation between clinical evaluation of impairment and other determinants of

impairment. All the subjects, regardless of their previous drinking history exhibited a deterioration of their driving skills.[17]

By taking the percentage, 50%, that appears to be about a median, and applying it to a three-year period (1970-1971-1972) of fatal rural traffic accidents in Texas, we find that 2,630 of them had alcohol reported as a causative factor. These 2,630 accidents killed 3,317 Texans and injured 46,019 more. An almost identical number was killed during the same time period inside the limits of cities and towns in Texas.[18]

An unsigned article in the Medico-Legal Bulletin (a reprint through permission of the Highway Safety Research Institute) states that there is reputable scientific evidence to establish that the misuse of alcohol is the largest single factor contributing to highway crashes. Three points are made to justify this statement: (1) all individuals are impaired when the BAC reaches 0.10% W/V and higher and many are impaired at a BAL of 0.05% W/V and lower; (2) the statistical probability of being in a crash is six times greater at 0.10% W/V than at 0.00% W/V and increases rapidly as the BAL increases; and (3) problem

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[17] Ibid., pp. 50-51.

[18] Texas Department of Public Safety, Motor Vehicle Accidents, 1972, p. 7 and p. 27.

drinkers, particularly those in the 0.15% W/V and higher range are highly overrepresented in the drinking drivers found in accidents.[19]

Drinking and driving appears to be a part of the American culture and no matter how dangerous it may be, the combining of the two (drinking and driving) seems inevitable.

## Statement of the Problem

One problem encountered in dealing with statistical information available on alcohol and its involvement with driving is the lack of valuable information for aiding traffic personnel in alleviating the problem. We have an abundance of data showing that alcohol is involved but little showing how it is involved. In order to answer this question adequately, several steps seem apparent. There is a need for the rapid development of personnel to collect, interpret and present statistical data. In addition, more and better research on the question of "how" alcohol is involved needs to be conducted. Robert F. Borkenstein expressed this dilemma well when he said:

> Historically, few social scientists have been interested in the problem of traffic safety. The police are caught in a stagnating process of traffic

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[19] Medico-Legal Bulletin, v. 217, 1-5, (May, 1971). Reprint from Status Report, Highway Safety Research Institute, The University of Michigan (1970).

> law enforcement because deliberate methodological principles of thought have never been applied to update the process and bring it into line with modern methods. ... The result is a closed system in which the police continue to apply threadbare methods because they do not have access to new ones.[20]

Historically, research into the involvement of alcohol in traffic and traffic crashes have followed mostly three general channels.

1. Laboratory experimentation in the processes of motor vehicle operation by psychological testing of psychomatic and psychosensory processes. These are standard experimental procedures where certain factors can be isolated and examined under laboratory conditions. They include efforts to simulate certain driving conditions in the laboratory.

2. Experiments involving the ingestion of measured amounts of alcohol in drivers to produce the desired BAL and comparing differences in driving behavior before and after the ingestion of alcohol. These experiments are a little more difficult to control but are probably more impressive on the public.

3. Surveys made to determine how often alcohol appears in traffic crashes where 100 per cent reporting is available. The results of these surveys are used to show

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[20]Robert F. Borkenstein, "A Panoramic View of Alcohol, Drugs and Traffic Safety," Police, July 1972, pp. 6-7.

the frequency of alcohol involvement. On occasion, there has been "at risk" sampling of the driving population to show the frequency of alcohol in drivers at large.[21]

Most agencies charged with the responsibility of gathering, analyzing and reporting statistical data concerning alcohol's involvement in traffic and traffic crashes use the latter of the methods in reporting traffic statistics. Descriptive statistics appear to be the most predominate method used in making this data known to the public.

## Purpose of the Study

Therefore, the purpose of this study was threefold. First, to present a set of data collected and presented by an agency who, as a part of their efforts in traffic safety, collects, analyzes and reports traffic data and some possible conclusions that could be drawn from these reports. Second, to demonstrate why descriptive statistics alone present a major problem in an endeavor to answer the question of how alcohol is involved in these crashes. Third, it will show the need for some different types of analysis of the data collected in order

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[21]Robert F. Borkenstein, et al. The Role of the Drinking Driver in Traffic Accidents, Department of Police Administration, Indiana University, (1962), p. 10.

to more accurately and dramatically illustrate the full impact of the drinking and driving problem.

## Methodology

The methodology used in accomplishing the purpose of this study was relatively simple and very much subjective. It is with full awareness that this approach is open to criticism. However, it is an acceptable approach if a high degree of objectivity is maintained by allowing criticism to be guided by knowledge of accepted research procedures and statistical interpretation.

The format followed was to present a set of statistical data gathered by a law enforcement agency which reports in some manner the problem of drinking and driving. The data was to be presented in exactly the same manner as it was released by the agency. Apparent conclusions that could be drawn from the data will be discussed and then critically analyzed to indicate areas where misconceptions might be formulated. Second, the original set of data was to be subjected to a method of analysis which is common to drinking and driving data. Again some possible conclusions will be demonstrated and critically analyzed.

# CHAPTER II

# POLICE METHODS OF DATA COLLECTION AND ANALYSIS

## Introduction

Every police officer with every agency that engages in traffic control activity collects information concerning drinking drivers and helps determine if there is alcohol involvement in traffic crashes. The amount of activity of a given agency is dependent upon several factors. Policy statements of either the head of the agency or the governing body of each political sub-division establishes for the police officers of that political sub-division the degree of control and data collection for the agency. Policy, training, and emphasis placement by administrators determines the emphasis officers place on collection of valid data as well as the initiative and innovation the officers employ in their task of data collection.

## Data Collection

Some agencies recognize that alcohol probably is a contributing factor in the traffic accident problem and make a diligent effort to collect data to support their belief. The administrator endeavors to have his traffic and patrol officers to collect valid data but for several reasons his efforts fall short. First, each officer

possesses different levels of skills in the detection process so that many are unable to recognize the presence of alcohol in drivers. Secondly, the value systems about the use of alcohol by drivers will vary from officer to officer. Some believe strongly that alcohol usage by drivers is a serious problem and act accordingly. Others are more liberal in their viewpoint and they act in a much more lenient manner toward drinking drivers. Thirdly, supervisors and middle management views are typically held by the individual officers thereby influencing his decision making process. Fourthly, the courts in their findings of guilt or innocence and sentencing processes has an impact on the patrol and traffic officers. If the court is believed to favor the accused, and the officers feel that too many charges are dismissed, or that too many defendents are found not guilty, given probation time and again, or the sentence, if any, is thought to be too light for the seriousness of the offense, this too influences the officers to be less diligent. Fifth, legislation that restricts fact gathering or lack of legislation that would permit gathering significant data has a far reaching effect upon the fact gathering personnel.

Police officers, when they observe erratic driving, stop the driver and interrogates and observes for more indicators of the drivers being under the influence of

alcohol. If in his judgement, the officer believes the individual is under the influence of alcohol sufficiently to cause him to lose his ability to properly operate his car, then an arrest decision is made. Then, and generally only then, will a written record be made and submitted for statistical analysis. Generally also, a breath test, or other test, for BAC is made only of those arrested and the results of the BAC reported for statistical analysis. Sometimes even the BAC, if it is below the legal presumptive level of 0.10% W/V, is not reported.

The data collection process in traffic crashes requires more initiative, innovation, and investigative skill than does the regular traffic arrest for DWI. In the traffic crash, the officer rarely observes the driver. Therefore, he has to use some investigative process to determine who in fact was the driver. Then through the use of the same senses (hearing, observation and smell) he decides if the driver had been drinking and if so makes a judgement if he has had enough alcohol to impair his ability to drive. A higher degree of skill is required to make a proper decision of a driver involved in a traffic crash because of the traumatic effects crash involvement creates. In the regular traffic arrest for DWI the officer can testify that he saw the accused driving. Before a DWI arrest decision can be made, where the driver has been involved in a traffic crash, the officer must, through

investigation and interviews, determine that the suspect was, in fact, the driver. As a result, many and possibly a very large percentage of drinking drivers involved in accidents are not arrested nor are they administered a test to determine their BAC. Without a blood-alcohol test, we have only judgement decisions that are influenced by many variables (known and unknown) about the involvement of alcohol in a large number of accidents and no information about the degree of involvement. In fatal crashes where one or more of the drivers are killed, the investigating officer has a more difficult time determining if the dead driver was drinking or if he was intoxicated. The odor of gasoline, oil, blood and anti-freeze reduces drastically the ability of the sense of smell to isolate the odor of alcohol. There is no opportunity at all to observe the driver's behavior or to hear him speak. Mostly a BAL test is the only means whereby it can be determined with any real accuracy if the driver was intoxicated. In some areas an order by a magistrate is needed to obtain a blood sample from a decreased person and this at times presents another problem. A magistrate may not be accessable or he may even refuse to order a sample to be taken.

## Data Analysis

Nearly all of the analyses performed on information

gathered about drunken drivers either involved in traffic crashes and not involved in traffic crashes results in descriptive data. Generally some sort of table is prepared to visually demonstrate the number of drivers arrested for DWI. The information on drivers arrested is broken down into several descriptive classifications such as race, sex, age, and the BAL of the drivers. This provides data on the number and/or percentage of drivers who are in each of these classifications.

Table 1 illustrates the type of presentation normally made by agencies. It may be seen that the data in Table 1 reflects information where DWI (Driving While Intoxicated) was reported as a contributing factor.

The table reveals several important facts. DWI is involved in collisions between two or more motor vehicles in almost half the accidents where DWI was a factor contributing to the accident. Collisions between motor vehicles was followed by collision with a fixed object, ran off the road and collision with a parked car. Collisions with animals is shown as occurring the least number of times where DWI was a contributing factor in the accident. It also shows that the hours between 6:00 P.M. and Midnight had almost half the accidents where DWI was a contributing factor in the accidents with DWI as a contributing factor was from 6:00 A.M. to Noon. An explanation of this data as to what it means and to what use is made of it is

TABLE 1

DWI Reported as a Contributing Factor in Accidents

| Type of Accident | Total | Time Period Mid 6AM | 6 AM Noon | Noon 6 PM | 6PM Mid |
|---|---|---|---|---|---|
| Collision with Pedestrian | 139 | 28 | 6 | 24 | 81 |
| Other Motor Vehicle | 10052 | 1752 | 417 | 2674 | 5209 |
| Railroad Train | 55 | 19 | 1 | 2 | 33 |
| Parked Car | 2948 | 833 | 93 | 431 | 1591 |
| Bicycle | 44 | 1 | 3 | 18 | 22 |
| Animal | 34 | 13 | 0 | 1 | 20 |
| Fixed Object | 4663 | 1879 | 178 | 635 | 1971 |
| Other Object | 67 | 23 | 2 | 11 | 31 |
| Overturned in Road | 278 | 89 | 13 | 40 | 136 |
| Ran off Road | 3254 | 1151 | 134 | 525 | 1444 |
| Other Non-Collision | 23 | 7 | 1 | 5 | 10 |
| Total | 21557 | 5795 | 848 | 4366 | 10548 |

Source: Texas Department of Public Safety, Motor Vehicle Traffic Accidents, 1972, p. 35.

lacking.

## Summary

A discussion of the practices employed in gathering data relative to drinking drivers reveals that it could be viewed as somewhat of a hit and miss procedure. The enormity of the problem and the multitude of tasks requiring the immediate attention of the officer working traffic makes it difficult for him to devote the time and attention that data collection on drinking drivers requires. Many other factors, including the lack of uniformity in data collection, inhibit the data collection process.

In the next chapter, an attempt will be made to present some data collected on drivers in custody under suspicion of DWI. The data will be discussed in relation to conclusions that may be drawn from the data and why some of the conclusions drawn may be misleading.

## CHAPTER III

## DATA SAMPLE, CONCLUSION, AND MISCONCEPTIONS

During the calendar year 1972, the reporting traffic control agency that provided the data in this study, reported that there were 37,518 BAL tests administered to determine the Blood Alcohol Level of drivers who were in custody suspected of drunk driving on the rural roads and highways. These 37,518 BAL tests included 37,337 Breathalyzer tests and the remainder were blood and urine samples tested for BAL. The results of the Breathalyzer tests are shown in Table 2 exactly as it was published by the reporting agency. (In order to maintain some degree of anonymity, Table 2, and the short note accompanying it, are not footnoted in this study.)

The following summary of Breath Tests administered to drivers suspected of DWI is some measure of the problem on the highways, even though these tests did not necessarily involve drivers in accidents.

The following table indicates the total number of Breathalyzer tests that were administered and analyzes them by separating them into six groups of BAL levels. These six groups are shown in the left hand column. Those having a negative BAL (below .01) are in the top group followed by the groups containing those with a BAL of 0.01-0.04; 0.05-0.09; 0.10-0.14; 0.15-0.24; and those over

TABLE 2

Summary of Breath Test Administered to Drivers Suspected of DWI

| Test Results | Rural | Statewide |
|---|---|---|
| Negative | 184 | 576 |
| 0.01-0.04 | 868 | 1,638 |
| 0.05-0.09 | 3,178 | 5,450 |
| 0.10-0.14* | 10,034 | 16,201 |
| 0.15-0.24 | 20,291 | 38,544 |
| Over 0.24 | 2,782 | 6,781 |
| Total | 37,337 | 69,190 |

*Note: 0.10 or over is presumptive evidence that the driver was intoxicated.

0.24 at the bottom. The center column shows the total number of drivers who were taken into custody in the rural areas of the state that registered a BAL on the Breathalyzer within the limits of the respective BAL group shown in the left hand column. The column on the right shows the drivers statewide who were suspected of DWI and administered a BAL test on a Breathalyzer. They too, were placed in their respective BAL group as shown in the left hand column.

The numerical value applied indicates the Blood

Alcohol Level expressed in miligrams of alcohol found in 100 mililiters of blood. For example, the BAL shown as 0.10 in the table means 100 miligrams of alcohol in 100 mililiters of blood, and is scientifically expressed as 0.10% W/V (weight/volume).

It can be seen from Table 2 that there were 33,107, or 88.67 per cent, of the drivers tested who had a BAL of 0.10 or above. The drivers with a BAL of 0.10 and above are presumed to be intoxicated. There were 23,073, or 61.79 per cent who had a BAL of 0.15 or above. There were 4,230, or 11.33 per cent with a BAL of 0.09 or less who did not meet the presumptive level. Of these, 184 had a negative BAL, and 3,178, 8.51 per cent, of the drivers administered a Breathalyzer test fell in the 0.05-0.09 BAL group.

Four of the possible conclusions that could be drawn from the data in Table 2 will be analyzed. First, one may conclude that there are relatively more drivers with high BAL's on the rural highways and statewide than drivers with low BAL's. Second, arresting officers are good discriminators when making decisions about persons who are intoxicated to the point of satisfying the legal presumptive level of 0.10. Third, by looking at the frequency in the lower levels of BAL, negative and 0.01-0.04, it could be concluded that the officers are poor discriminators of intoxicated persons to the extent that they

arrested and tested drivers with negative and low BAL's. Fourth, the drinking-driver problem in rural areas is an accurate representation of the problem statewide.

When analyzing possible conclusions that may be drawn from any group of data, there is one point that should always be given consideration. Are all the facts or data pertinent to the issues being analyzed known?

The first conclusion that could be drawn from the data in Table 2 is that there are relatively more drivers with high BAL's than with low BAL's. This conclusion is accurate as long as it is applied only to those drinking drivers included in the table. In all probability, the drivers arrested for suspicion of DWI and administered a Breathalyzer test do not accurately represent the drinking drivers population on the rural highways. This cannot be stated as fact to both these questions due to the lack of data on the drinking-driver population. So until more information is available concerning this population, only more or less educated and knowledgeable speculation can be made as to whether there are relatively more drinking drivers in rural areas with a high BAL than with a low BAL. There were more rural drivers, who were given a Breathalyzer test, with a BAL of 0.10 (the presumptive level of intoxication) and higher than there were with a BAL of 0.09 or less.

A second conclusion that may be drawn is that

officers were good discriminators when making decisions about driver intoxication to the point of satifying the presumptive level of 0.10. This would certainly appear to be applicable to the drivers selected for a Breathalyzer test. Table 2 reveals that they were correct in their judgement of intoxication when 88.67 per cent of those tested met the criteria of presumptive level for intoxication of 0.10 or more. But this conclusion is based only on those drivers who were administered a Breathalyzer test. Experience in the field of traffic control provides a basis for stating that an unknown number of drinking drivers also had a discretionary decision applied but were not administered a Breathalyzer test. This unknown number was considered by the officers to not be under the influence of intoxicating beverage to such a degree that they would meet the presumptive level of 0.10, or in other words, they did not appear impaired enough by the consumption of alcohol to justify taking them into custody in order to administer a Breathalyzer test. The officers were shown to be correct 88.67 per cent of the time for those who were given a Breathalyzer test. The percentage of the drinking drivers stopped but, through a discretionary decision, not given a Breathalyzer test, might reveal errors in judgement also. If the officers were wrong by having 11.33 per cent of the drivers tested to be below the presumptive level, it would

not seem to be presumptious to conclude there were errors in judgement that released a group of drivers who were actually 0.10 or above, unless one had the information indicating that the entire population of drivers stopped because of suspected DWI were administered a Breathalyzer test. To be able to say positively that the officers were good discriminators about the degree of intoxication of drinking drivers, some data would need to be collected on the number of drinking drivers who were stopped and released and their BAL.

The third conclusion that might be drawn was that the frequency of the lower levels of negative and 0.01-0.04 BAL's could indicate the officers were poor discriminators of intoxicated drivers to the extent that they arrested and tested persons with a negative or low BAL. A number of reasons might be advanced to explain this phenomena. Apparently the drivers provided clues or indicators of some sort to cause the officers to suspect that the drivers might be under the influence of alcohol. His driving behavior and appearance in the vehicle evidently aroused enough suspicion to cause the officer to stop the driver. In many cases, however, the poor driving might be related to some physical or mental condition or the influence of drugs. The discretionary decision the officer makes is also influenced by the value system of the officer as it relates to the offense of DWI. The value system of his immediate

supervisor, his middle and upper echelon managers, will also influence the officer to cause him to be more alert and innovative in his enforcement efforts toward DWI, or their value systems might influence the officer to be more lenient and less effective in the enforcement of the DWI law. Community standards and the value system displayed by judges, prosecutors and jurors will also influence the officer's discretionary decision-making as he attempts to enforce the DWI statute as it appears to him that his superiors, the courts, and the community wish it enforced.

A fourth conclusion that could be drawn is that the drinking driver problem in rural areas is an accurate representation of the drinking driver problem statewide. Using only the data in Table 2, this conclusion might be the most valid and accurate of the four. Statewide, there were 88.92 per cent of the drivers given a Breathalyzer test with a BAL of 0.10 or above, which was .25 per cent more than the 88.67 per cent of the rural drivers. Other statistics disclose that 18.18 per cent less fatal accidents statewide had DWI as a contributing factor with 20.00 per cent less drivers being intoxicated. (This statistic is not footnoted in order to maintain some degree of anonymity.) Both the drinking driver, in general, and the driver whose drinking contributes to fatal accidents (as well as all other accidents) is a problem. The Breathalyzer statistics indicate the rural Breathalyzer tests to be a reasonably

accurate representation of the drinking-driver problem statewide. However, the fatal accident statistic of 18.18 per cent more fatal accidents in the rural area than statewide having DWI as a contributing factor, and with 20.00 per cent more rural drivers in fatal accidents than statewide, the rural fatal accidents with DWI as a causative factor would not appear representative of the fatal accidents statewide.

The data used in this study consisted of the 37,518 blood-alcohol tests administered to drivers on rural roads and highways. The tests were reduced to the Blood Alcohol Level for each driver and analyzed by: (1) the race of each driver; (2) the sex of each driver; (3) the age group of each driver; (4) the accident involvement of each driver; (5) the geographical area where the driver was tested; (6) the time of day each driver was taken into custody for testing; and (7) the day of week each driver was tested. Another group of data showing the age group of males and females licensed to drive was used to obtain some idea of the potential driving population.

The race of each driver suspected of DWI and given a blood-alcohol test is shown in Table 3. Three conclusions seem readily apparent: (1) there are relatively more drivers on rural highways in all racial categories with high BAL's than with low BAL's; (2) the officers are good discriminators when making decisions about drivers

TABLE 3

Summary of Chemical Tests Administered to Rural Drivers Suspected of DWI by Blood Alcohol Level and Race

| | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|
| WHITES | | | | | | | |
| OF | 191 | 691 | 2,677 | 8,677 | 11,039 | 8,712 | 31,987 |
| PC | 83.77 | 79.24 | 84.31 | 86.30 | 86.30 | 83.79 | - |
| PR | 0.60 | 2.16 | 8.37 | 27.13 | 34.51 | 27.23 | 100.00 |
| PT | 0.51 | 1.84 | 7.13 | 23.13 | 29.43 | 23.22 | 85.26 |
| BLACKS | | | | | | | |
| PF | 37 | 181 | 498 | 1,377 | 1,752 | 1,676 | 5,521 |
| PC | 16.23 | 20.76 | 15.69 | 13.70 | 13.70 | 16.21 | - |
| PR | 0.67 | 3.28 | 9.02 | 24.94 | 31.73 | 30.36 | 100.00 |
| PT | 0.10 | 0.49 | 1.32 | 3.67 | 4.67 | 4.46 | 14.71 |
| OTHER | | | | | | | |
| OF | 0 | 0 | 0 | 0 | 1 | 9 | 10 |
| PC | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.09 | - |
| PR | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 | 90.00 | 100.00 |
| PT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.03 |
| TOTAL | | | | | | | |
| OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | - |
| PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percent of Column; PR=Percent of Row; PT=Percent of Total

who are intoxicated to the point of satifying the legal presumptive level of 0.10; and (3) the officers are poor discriminators due to the taking so many drivers into custody in order to administer a blood-alcohol test and the test results showed a BAL of less than 0.10.

The first conclusion that there are more drivers on rural highways with a high BAL than with a low BAL cannot be substantiated. The total drivers given a blood-alcohol test amounts to only 0.53 per cent of the potential driving population. How many of the 7,035,068 licensed drivers plus the unlicensed drivers, drive on the rural highways and how the number of times each would do so is unknown. Undoubtably, the number would be quite large. By like token, the total number of drivers that drive on the rural highways after drinking an alcoholic beverage is unknown. Until data is available on the total driving population and the sub-group of drinking-driver population, the conclusion that there are more drivers on rural highways with a high BAL than with a low BAL could be misleading. The only conclusion that can be drawn is that more of the drivers on rural highways that were given a BAL test had a higher BAL than those with a low BAL.

The second conclusion, that the officers were good discriminators of drinking drivers because of the high number and percentage who met the legal presumptive level of 0.10 is both a good and bad conclusion. It is good in

that those selected for a blood-alcohol test did, in fact, show a BAL of 0.10 or more in 88.61 per cent of the tests. With no standards for comparison, it would appear that this is an acceptable ratio. It is a bad conclusion when an analysis is attempted and there is no data to indicate the population from which the drinking-drivers tested were selected. It is unknown if this population is great or small, or if in this drinking-driver population there were a large number (determined by research and a generalization made as to what proportion of the drinking-driver population is of the overall driving population) who were not identified and tested.

The third conclusion infers the officers were poor discriminators because they took so many drivers into custody for a BAL test whose results showed a BAL of 0.09 or less. Support for this conclusion would be from those who considered 11.39 per cent of those tested and having a BAL below the presumptive level of intoxication as being excessive. However, of this 11.39 per cent, which amounted to 4,275 drivers, 3,175 or 74.26 per cent were in the BAL group that many researchers have found to be marginal. Some people in the 0.05 to 0.09 BAL group would be impaired to the extent that they could not safely operate a motor vehicle. Another unknown, that could influence the validity of the conclusion, is the number of drinking drivers who were stopped and investigated by officers, and the decision

was made that their impairment was such that their BAL would not reach the presumptive level. This conclusion could be a valid or invalid conclusion dependent upon additional data from research efforts to determine the extent of the driving population that are drinking drivers.

Additional conclusions that might be made of the summary by BAL and race are: (4) the number of whites who drink and drive far exceeds the number of blacks and "other"; (5) the percentage of those whites who drink and drive is much greater than the "other" races; (6) the percentage of blacks suspected of DWI appears to be greater in the 0.20 and above BAL group as well as in the groups with a BAL of 0.09 or less; and (7) the group labeled "others" is ambiguous and has a very low representation among those drivers suspected of DWI and given a blood-alcohol test.

The fourth conclusion, which stated that the whites have a greater number of drinking drivers than the remainder of the races would appear to be well taken. The whites had 31,987 drinking drivers given BAL tests to only 5,531 in all the remaining races. This is almost six times as many drinking drivers of the white race being given BAL tests than for the remaining races combined. This conclusion on the surface appears valid until consideration is given to the racial breakdown of the driving population.

There was, as of December 31, 1972, a total of 62.86 per cent (7,038,307 out of 11,196,730) of the total population licensed to drive and legally made up the potential driving population.[22] The proportion of the actual driving population that are of the white race, or for that matter, any other race is unknown. Until data is available on the actual driving population, the drinking-driver population and the proportion of that population that fall within the several variables considered in this study, no meaningful or accurate conclusions can be drawn about the frequency in which a driver, who is a member of any one race, is taken into custody and administered a chemical test for the BAL of the driver's blood. One may take data from the Texas Almanac about the population in Texas or data in other reports about the number of licensed drivers and portray in some manner the potential driving population. It may or may not be indicative of the size of the driving population or of its proportionate distribution according to the variable considered.

The fifth conclusion drawn was that the white race had a higher percentage of drivers who drink and drive than the black race and the race classified as "other."

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[22]Texas Highway Department, Planning Survey Division, A Report to the Federal Highway Administration for the Calendar Year 1972 (Report form PR-562).

The percentage of white drivers suspected of DWI and given a blood-alcohol test to verify intoxication and the degree of intoxication is 85.26 per cent of the total number of rural drivers given a BAL test. The white race, which includes Mexican-Americans, make up 86.60 per cent of the total population. The total population of Texas in 1972 was 11,196,730; of these 9,696,569 were shown to be white and 1,419,677 were shown to be black which is 12.67 per cent of the total population.[23] If the total population could be considered as being racially representative of the driving population, or drinking-driver population, then the white race would be under-represented by 1.34 per cent and the black race would be over-represented by 2.04 per cent. On the surface the over-representation percentage-wise of the blacks and the under-representation of the whites percentage-wise do not appear significant. Without data to indicate the percentage of each race in the driving population and in the drinking-driver population, any conclusion drawn about the percentages of differences would be speculative.

The sixth conclusion considered was that blacks had a higher percentage of drivers tested to appear in the 0.20 and over, as well as in the BAL groups with a 0.09 BAL or lower. However, the racial group classed as

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[23]The Dallas Morning News, Texas Almanac, 1972, p. 156.

"other" had 90.00 per cent of those tested to show 0.20 or above. The black race, even though they have a higher percentage in the 0.20 and above BAL group, it is only 3.13 per cent higher than the white race. This does not appear significant because in the 0.10 to 0.14 and the 0.15 to 0.19 BAL groups the whites have several percentage points more than the blacks. The difference between the whites and blacks of only 0.65 per cent is not great enough to justify a conclusion that the officers were either poor or good decision-makers in either the 0.05 to 0.09 BAL group or the 0.20 and above BAL group.

The seventh conclusion brought out was that the race category called "others" is ambiguous and has a very low representation. The term "other" as a racial group is not defined. The encyclopedia includes Orientals, American Indians and Eskimos in this category and calls them Mongoloids.[24] They comprise a very small proportion of the population of Texas. After deducting the whites and blacks from the total population there are only 80,484 left to make up this racial group. They are only 0.71 per cent of the total population.

The next variable studied was the sex of the drinking drivers taken into custody on the rural highways and given a BAL test to determine their degree of

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[24]Field Enterprises Educational Corporation, The World Book Encyclopedia, Q-R, Volume 15, 1961, pp. 50-59.

intoxication. Each of these drivers was placed in a group that was determined by their blood-alcohol test as well as sex. Table 4 reveals that there was an excessively larger number of males given BAL tests than there were females. A total of 35,726 out of 37,518 or 95.22 per cent of the BAL tests administered were administered to males. Only 1,792 females were administered BAL tests for 4.78 per cent of the total. It also discloses that a higher percentage of the females who were given BAL tests had a negative BAL than did the males. There was also a slightly higher percentage of females in the 0.20 and above BAL group than there were males. The table shows that 88.58 per cent of the males tested had a BAL of 0.10 or more while 89.01 per cent of the females tested had a BAL of 0.10 or more.

Several possible conclusions could be reached from the groupings based on BAL and sex of the driver tested: (1) the officers discriminated against the males and were more lenient toward females as demonstrated by the excessively greater number of males tested than females; (2) the officers were poor discriminators in their selection of women drinking drivers because of the higher percentage of women in the negative BAL group; (3) the officers were good discriminators of drinking drivers as demonstrated by so many of those tested having a BAL of 0.10 or above and thereby meeting the

TABLE 4

Summary of Chemical Tests Administered to Rural Drivers Suspected of DWI by Blood Alcohol Level and Sex

| | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|
| MALES | | | | | | | |
| OF | 196 | 842 | 3,040 | 9,605 | 12,214 | 9,829 | 35,726 |
| PC | 85.97 | 96.56 | 95.75 | 95.53 | 95.48 | 94.54 | |
| PR | 0.55 | 2.36 | 8.51 | 26.88 | 34.19 | 27.51 | 100.00 |
| PT | 0.52 | 2.25 | 8.10 | 25.60 | 32.56 | 26.20 | 95.23 |
| FEMALES | | | | | | | |
| OF | 32 | 30 | 135 | 449 | 578 | 568 | 1,792 |
| PC | 14.03 | 3.44 | 4.25 | 4.47 | 4.52 | 5.46 | |
| PR | 1.79 | 1.67 | 7.53 | 25.06 | 32.25 | 31.70 | 100.00 |
| PT | 0.09 | 0.08 | 0.35 | 1.20 | 1.54 | 1.51 | 4.77 |
| TOTAL | | | | | | | |
| OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percent of Column; PR=Percent of Row; PT=Percent of Total

presumptive level of intoxication; (4) the officers were poor discriminators as shown by the number of drivers tested who had a negative BAL or were in a BAL group of 0.09 which is less than the presumptive level of intoxication; and (5) the officers were poor discriminators of women drinking drivers because of a higher percentage of women in the 0.20 BAL group than were the men.

The first conclusion alleges that traffic officers, in their enforcement efforts toward drinking drivers, discriminated against male drinking drivers and demonstrated a bias in favor of female drinking drivers. The males make up 54.55 per cent of the licensed drivers in Texas,[25] but only 48.94 per cent of the total population in Texas.[26] (See Table 6). Drinking is more or less equally divided among the sexes although it appears that the males consume more alcohol than females.[27] Two unsubstantiated hypotheses concerning male and female relationship will be presented in regards to this conclusion. First, experienced observation in traffic enforcement advances some justification for the position that when both a male(s) and female(s) are in a vehicle traveling together, generally the male will be driving. The second is that there may be some of the attitude of the cavalier or gentlemanly

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[25] Texas Highway Department (Report form PR-562), 1972.

[26] The Dallas Morning News, Texas Almanac, op. cit.

[27] Alcohol and the Impaired Driver, op. cit., p. 4.

gallantry left. Officers may truly be biased and/or hesitant to take the action against a woman that must be taken with intoxicated drivers. However, until some reliable knowledge is available concerning the frequency of drinking and driving of each of the sexes, no positive and accurate conclusion can be reached as to whether there is bias in favor of the female drinking driver.

The second conclusion assumed the officers to be poor discriminators of women suspected of DWI due to a greater percentage of females having a negative BAL than did males suspected of DWI. There was a higher percentage (1.79%) of the females tested that showed a negative BAL than the males who only showed 0.55 per cent to have a negative BAL. This difference in the negative BAL group might be due to two factors. First, females have a tendency to become nervous and even frightened and upset when confronted by a traffic officer who is both a stranger and an authoritative figure. This condition might cause women to be fidgity and uncoordinated to the degree that they would display one or more of the clues or symptoms of a person impaired by alcohol. The first, coupled with the second, which is the clue of odor emitted from the several cosmetics, such as perfume and cologne, normally used by women. Many of these have some alcoholic content which would produce the disguised alcoholic odor. Therefore, the

behavior induced by the nervous and/or frightened condition plus the disguised odor of alcohol, the officer could easily make the decision, even though it would be an erroneous decision, that such females were impaired from the use of an alcoholic beverage. The purpose of the blood-alcohol test is to make corrections for such errors in judgement. The BAL test will make the officer's decision valid and assist in the conviction of the guilty. Just as importantly, and maybe even more so, it will reveal errors in judgement and protect the innocent.

The third conclusion inferred that the officers were good discriminators in that a high number of those tested did meet or surpass the presumptive level of 0.10. There were 88.61 per cent of those tested who were 0.10 or above. A BAL of 0.10 or more provides a presumptive conclusion that a driver is intoxicated. The percentage of males and females who were above the presumptive level was almost the same with only 0.43 per cent difference. This would indicate that the officers were good discriminators, even to the point of non-discrimination between the sexes. However, to be able to conclude with an acceptable degree of accuracy, data is needed about the general driving population, the proportion of that population that drinks and drives, and some knowledge of the degree of impairment or intoxication that is reached by

those who do drive after and/or while drinking. As to the officers being good discriminators, it would depend upon the value placed upon the word good.

The next conclusion assumed the opposite position and expressed the opinion that the officers were poor discriminators of intoxicated persons due to their taking so many drivers into custody for a BAL test that did not have sufficient alcohol in their blood to have a BAL high enough to register 0.10 or more, the presumptive level of intoxication. There were 11.39 per cent, or 4,275 drivers in this category, with either a negative BAL or 0.09 or less. But of these 4,275, there were 3,175 or 74.26 per cent who were in the 0.05 to 0.09 BAL group and could be classed as borderline. These possible borderline drivers made up 8.46 per cent of the total drivers tested and if these are added to the 88.61 per cent that were intoxicated, it would equal 97.07 per cent of the total tested which would indicate the officers made good decisions. Another observation would be that the population from which these drinking drivers were selected could be such that the officers really only selected this group out of many drinking drivers to test. Many of those released, with the belief they were not sufficiently intoxicated to meet the presumptive level, could have been more highly intoxicated than some of those tested. Without sufficient pertinent data on the drinking driver population, it cannot be said

conclusively that the officers were poor or good discriminators of drinking drivers.

The final conclusion to be discussed about Table 4 indicates that the officers were poor discriminators of women drinking drivers because there were so many that had to have a BAL of 0.20 or better before the officers took them into custody and tested their BAL. There was a total of 568 women drivers with a BAL of 0.20 or more. This amounted to 31.70 per cent of all the women tested, whereas the men tested only had 27.51 per cent of their drivers in the BAL group of 0.20 or above. This is a difference of 4.19 per cent. It may be that a woman must be a little more intoxicated than a man before officers place them under arrest and submit them to the allegedly degrading experience of incarceration. Personal experience would indicate that this might be an explanation for women being judged a little more leniently than males. Admittedly, no favortism should be displayed but so long as discretionary decisions are made, the human element of values will have an influence.

The chronological age of drivers suspected of DWI was examined by age groups to determine which age groups had the highest and lowest BAL, and which age groups had the greater number of intoxicated drivers. Examination of Table 5 shows that the age group with the most drivers at or above the presumptive level of 0.10 per cent is the age

TABLE 5

Summary of Chemical Tests Administered to Rural Drivers Suspected of DWI by Blood Alcohol Level and Age

| | | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|---|
| AGE 19 or LESS | OF | 23 | 74 | 260 | 648 | 449 | 141 | 1,595 |
| | PC | 10.08 | 8.49 | 8.19 | 6.44 | 3.51 | 1.36 | |
| | PR | 1.44 | 4.64 | 16.30 | 40.63 | 28.15 | 8.84 | 100.00 |
| | PT | 0.06 | 0.20 | 0.69 | 1.73 | 1.20 | 0.37 | 4.25 |
| AGE 20 to 24 | OF | 63 | 220 | 696 | 1,911 | 1,966 | 924 | 5,780 |
| | PC | 27.64 | 25.23 | 21.92 | 19.01 | 15.37 | 8.89 | |
| | PR | 1.09 | 3.81 | 12.04 | 33.06 | 34.01 | 15.99 | 100.00 |
| | PT | 0.17 | 0.59 | 1.85 | 5.10 | 5.24 | 2.46 | 15.41 |
| AGE 25 to 34 | OF | 35 | 194 | 818 | 2,605 | 3,252 | 2,446 | 9,350 |
| | PC | 15.35 | 22.25 | 25.76 | 25.91 | 25.42 | 23.52 | |
| | PR | 0.37 | 2.08 | 8.75 | 27.86 | 34.78 | 26.16 | 100.00 |
| | PT | 0.09 | 0.52 | 2.18 | 6.94 | 8.67 | 6.52 | 24.92 |
| AGE 35 to 44 | OF | 28 | 120 | 531 | 1,854 | 2,824 | 2,838 | 8,195 |
| | PC | 12.28 | 13.76 | 16.72 | 18.44 | 22.08 | 27.30 | |
| | PR | 0.34 | 1.46 | 6.48 | 22.63 | 34.46 | 34.63 | 100.00 |
| | PT | 0.08 | 0.32 | 1.41 | 4.94 | 7.53 | 7.57 | 21.85 |
| AGE 45 to 54 | OF | 37 | 120 | 460 | 1,687 | 2,557 | 2,667 | 7,528 |
| | PC | 16.23 | 13.76 | 14.49 | 16.78 | 19.99 | 25.65 | |
| | PR | 0.49 | 1.59 | 6.11 | 22.41 | 33.97 | 35.43 | 100.00 |
| | PT | 0.10 | 0.32 | 1.23 | 4.50 | 6.81 | 7.11 | 20.07 |
| AGE 55 to 64 | OF | 23 | 88 | 278 | 1,033 | 1,375 | 1,167 | 3,964 |
| | PC | 10.08 | 10.09 | 8.76 | 10.28 | 10.75 | 11.22 | |
| | PR | 0.58 | 2.22 | 7.01 | 26.06 | 34.69 | 29.44 | 100.00 |
| | PT | 0.06 | 0.23 | 0.74 | 2.75 | 3.67 | 3.11 | 10.56 |
| AGE 65 PLUS | OF | 19 | 56 | 132 | 316 | 369 | 214 | 1,106 |
| | PC | 8.34 | 6.42 | 4.16 | 3.14 | 2.88 | 2.06 | |
| | PR | 1.72 | 5.06 | 11.94 | 28.57 | 33.36 | 19.35 | 100.00 |
| | PT | 0.05 | 0.15 | 0.35 | 0.84 | 0.98 | 0.57 | 2.94 |
| TOTAL | OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| | PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| | PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percent of Column; PR=Percent of Row;
PT=Percent of Total

group for drivers 25-34 years old. This group also had the highest percentage of drivers.

The ages of the drivers were separated into seven different age groups. The youngest grouping included those nineteen years of age and younger. The remaining groups were: 20-24; 25-34; 35-44; 45-54; 55-64; 65 and over. The chronological age of licensed drivers was also separated into similar age groups for comparison purposes. The age groups of the licensed drivers provide only a rough indication of the possible number and percent of the driving population that might be in each age group. It may or may not be an accurate representation of either the driving population or the drinking driver population. Table 5 shows the results of categorizing the subjects by age and BAL. Table 6 is also included to show the number of licensed drivers by sex and age so as to demonstrate how the age-BAL data may be compared to other similar data. The sixty-five and over age group had the lowest number and the lowest percentage of drivers tested. The nineteen and under age group had the second lowest number and percentage of drivers tested and also the lowest percentage of drivers with a BAL of 0.10 or above. The nineteen and under age group had the most drivers tested that had a BAL of 0.09 or less, followed by the sixty-five and over age group. The 45-54 age group had the highest percentage of drivers tested to be 0.10 or above, followed closely by

TABLE 6

Summary of Drivers Licenses Issued December 31, 1972
By Sex and Age

| | | Males | Females | Total |
|---|---|---|---|---|
| AGE 19 or Less | | | | |
| | OF | 384,111 | 320,998 | 705,109 |
| | PC | 10.01 | 10.04 | |
| | PR | 54.47 | 45.53 | 100.00 |
| | PT | 5.46 | 4.56 | 10.02 |
| AGE 20-24 | OF | 525,184 | 440,947 | 966,131 |
| | PC | 13.69 | 13.79 | |
| | PR | 54.36 | 45.64 | 100.00 |
| | PT | 7.47 | 6.27 | 13.74 |
| AGE 25-34 | OF | 861,917 | 741,519 | 1,603,436 |
| | PC | 22.46 | 23.19 | |
| | PR | 53.75 | 46.25 | 100.00 |
| | PT | 12.25 | 10.54 | 22.79 |
| AGE 35-44 | OF | 640,248 | 548,115 | 1,188,363 |
| | PC | 16.89 | 17.14 | |
| | PR | 53.88 | 46.12 | 100.00 |
| | PT | 9.10 | 7.79 | 16.89 |
| AGE 45-54 | OF | 586,290 | 503,996 | 1,090,286 |
| | PC | 15.28 | 15.76 | |
| | PR | 53.77 | 46.23 | 100.00 |
| | PT | 8.34 | 7.16 | 15.50 |
| AGE 55-64 | OF | 447,497 | 368,085 | 815,582 |
| | PC | 11.66 | 11.51 | |
| | PR | 54.87 | 45.13 | 100.00 |
| | PT | 6.36 | 5.23 | 11.59 |
| AGE 65 Plus | | | | |
| | OF | 391,910 | 274,251 | 666,161 |
| | PC | 10.21 | 8.57 | |
| | PR | 58.83 | 41.17 | 100.00 |
| | PT | 5.57 | 3.90 | 9.47 |
| TOTAL | OF | 3,837,157 | 3,197,911 | 7,035,068 |
| | PC | 100.00 | 100.00 | |
| | PT | 54.55 | 45.45 | 100.00 |

OF=Observed Frequency
PC=Percent of Row
PC=Percent of Column
PT=Percent of Total

the age group 35-40, then the age group 55-64. The nineteen and under age group had the largest percent of their age group in the borderline group of 0.05-0.09 followed by the age group sixty-five and over.

There are several conclusions that could be formulated from the data in Table 5. These conclusions are: (1) the allegation that the younger generation is wilder and more deviant than the remainder of our society is not substantiated by these data; (2) the officers were good discriminators throughout all age groups since 75 per cent or more of all age groups had BAL's equal to or greater than the presumptive level of 0.10; and (3) the three groups composed of drivers between the ages of 35-64 were heavier drinkers than the drivers younger and older than they.

The first conclusion was that the allegations about the wildness and deviant behavior of the younger generation is not substantiated by this data. This age group represented 10.02 per cent of the licensed drivers in the state, but only 4.25 per cent of the drinking drivers arrested on rural highways and given a BAL test. As mentioned before, the licensed driver population may or may not be proportionate to either the actual driving population or the drinking driver population. There is a smaller percentage of the drivers tested in the nineteen years old or less age group than any other group except

those sixty-five years old and above as well as a smaller percentage with a BAL equal or greater than 0.10, the presumptive level of intoxication. There also is a significantly larger percentage of the youngest group with a BAL below the presumptive level.

The second conclusion would lead one to believe that the officers were good discriminators throughout all age groups because 75 per cent or over of the rural drivers tested in each age group registered a BAL equal or above the presumptive level of intoxication of 0.10. There was 88.61 per cent of all the drivers tested that had a BAL of 0.10 or more. Four of the seven age groups had more than the 88.61 per cent, with three of them having over 90 per cent of the drivers tested above the BAL of 0.10. Table 5 standing alone might support such a conclusion, but there are so many factors and variables, for example, the drinking-driver population, that we have no data available to analyze. With reliable data about the total driving population and the drinking-driver population, this conclusion might take a complete reversal. Is each age group shown representative of that age group in these other two populations? If this question could be answered in the positive, then a more acceptable analysis and evaluation of the conclusion could be made.

The third conclusion alleges that the three groups that contain those drinking drivers between 35 and 64

years of age were heavier drinkers than those under 35 and 65 years old or more. The three age groups referred to are those drinking drivers where age is from 35 to 44, from 45 to 54, and from 55 to 64. Each one of the age groups had over 90 per cent of the drinking drivers in the group to have a BAL of 0.10 or above. There are several factors that could account for more drivers in these age groups having BAL's of 0.10 or greater. Some of the factors are: (1) the age groups listed might have been able to conceal or disguise the symptoms of an intoxicated driver so as not to arouse the suspicions of traffic officers; (2) they might have drunk more frequently and had learned to adjust to the effect of alcohol so that their impairment did not become noticeable until they reached a higher BAL; and (3) they could actually have been heavier drinkers who drove than the other age groups, because they were approaching or had passed the half-way point in life (the prime of life) and the goals they had set were just as far away as when they began. So that the pressures of both their business world and their social/psychological world were pressing down on them, and they drank more and more to escape reality.

The analysis of the conclusions analyzed is limited to the data revealed in Tables 5 and 6. These conclusions might not have been reached or new conclusions might have been made if additional research data were

available about the proportion of each age group in each BAL group that is present in the total driving population and the total drinking driver population.

The drinking of alcohol before and while driving a motor vehicle impairs the driver's mental and physical capabilities to operate the vehicle with the highest degree of skill that each driver has at his or her command. A significant by-product of this loss of physical and mental capability is that the drinking driver will drive his vehicle into a position where it will become involved in a collision. Or, someone else drives his vehicle into an accident-causing situation and the drinking driver, due to his loss of mental and physical capabilities, is unable to make the necessary driving manuevers to prevent the collision. Drinking drivers get themselves into collision situations frequently enough to cause researchers, and other experts in the traffic control arena, to allege that about 50 per cent of the fatal crashes had a drinking driver to cause or contribute to the fatal crash.

The number of drinking drivers who were arrested while driving on rural roads and administered a BAL test are divided into: (1) those who were involved in an accident; and (2) those who were not involved in an accident. Table 7 shows the number and percentage of the drinking drivers tested by BAL group and accident involvement. Table 7 reveals that almost eight times as many drivers

TABLE 7

Summary of Chemical Tests Administered to Rural Drivers
Suspected of DWI by Blood Alcohol Level and Accident Involvement

| | | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|---|
| ACCIDENT | | | | | | | | |
| | OF | 81 | 108 | 317 | 1,024 | 1,358 | 1,342 | 4,230 |
| | PC | 35.53 | 12.38 | 9.98 | 10.19 | 10.62 | 12.91 | |
| | PR | 1.92 | 2.55 | 7.49 | 24.21 | 32.10 | 31.73 | 100.00 |
| | PT | 0.22 | 0.29 | 0.84 | 2.73 | 3.62 | 3.57 | 11.27 |
| NON-ACCIDENT | | | | | | | | |
| | OF | 147 | 764 | 2,858 | 9,030 | 11,434 | 9,055 | 33,288 |
| | PC | 64.47 | 87.62 | 90.02 | 89.81 | 89.38 | 87.09 | |
| | PR | 0.44 | 2.29 | 8.59 | 27.13 | 34.35 | 27.20 | 100.00 |
| | PT | 0.39 | 2.04 | 7.61 | 24.07 | 30.48 | 24.14 | 88.73 |
| TOTAL | OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| | PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| | PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percentage of Column; PR=Percentage of Row; PT=Percentage of Total

were tested that were not involved in an accident than there were drinking drivers who were involved in an accident. The higher BAL groupings (0.10 and above) made up 88.04 per cent of the drinking drivers involved in an accident and 88.73 per cent of the drinking drivers not involved in an accident. The drinking driver, who was involved in an accident, and 31.73 per cent of those tested to have a BAL of 0.20 or more, while the non-accident drinking drivers only had 27.20 per cent.

Some of the conclusions that could be made concerning the data in Table 7 are: (1) that only a small portion of those who drink and drive are involved in accidents; (2) investigating officers tend to suspect alcohol involvement in accidents more so than in non-accident situations; and (3) there is no significant difference in percentages of those in higher BAL levels when comparing accident versus non-accident; therefore, higher BAL's do not increase accident processes.

The first conclusion which concerns a small portion of drinking drivers being involved in accidents is definitely misleading. For one reason, all persons involved in traffic accidents are not administered a BAL test or any other chemical test. In many cases of injury, the person is rushed to emergency treatment and therefore cannot be evaluated in any manner so that BAL can be determined. Also, in cases of death the deceased is not investigated to determine alcohol involvement.

The data reported only reflects those drivers tested.

The second conclusion deals with investigating officers suspecting alcohol involvement more so in accidents than when an accident is not involved in the investigation. This may detect their precautionary and investigation skill more so than their suspicion. Where an accident is involved, more legal ramifications surround the officer and less discretionary power is allowed.

The third conclusion is erroneous because possibly the figures could represent good detection and apprehension skills of the officer. In other words, his action probably preceded disaster.

The next variable considered was the enforcement region of the state, or the geographical location where the drinking driver was arrested. The agency that provided the data for this study is responsible for traffic control and traffic enforcement of the rural highways statewide. In order to better carry out the responsibility of enforcement, the state is divided into six regions. The boundaries of the several regions are determined by a formula that places certain values on such variables as general population, estimated miles driven annually, miles of rural highways, the rural accident frequency, and other variables. Personnel are assigned to each region according to this formula. However, because of

some other factors, the regions are not the same size geographically and some have more personnel than others. A general description of the portion of the state assigned to each region is as follows: Region 1 is Northcentral and Northeast Texas; Region 2 is Southeast Texas; Region 3 is South Texas and the Rio Grande Valley; Region 4 is West Texas; Region 5 is the Plains and Panhandle; and Region 6 is Central Texas. Table 8 shows the six regions and the number and percentage of BAL tests administered in each region.

Region 2, although not the largest geographically, probably has the largest proportion of the population and also the greatest number of traffic officers assigned within its boundaries. It also had the greatest number of the BAL tests administered; 25.94 per cent of the total BAL tests administered to drivers suspected of DWI on rural highways. Regions 4 and 5 had the least number of BAL tests administered to suspected DWI's on rural highways. These two regions cover a large geographical area but they are sparsely populated. Also, many of the counties in these two regions are "dry" counties and do not legally permit the sale of alcoholic beverages. Region 3 had the highest percentage of those tested to register 0.10 or above with 90.25 per cent followed closely by Region 2, with 89.44 per cent. Region 4 had more tested in the lower BAL group of 0.00 to 0.09. It

TABLE 8

Summary of Chemical Tests Administered to Rural Drivers Suspected of DWI by Blood Alcohol Level and Enforcement Region of the State

| | | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|---|
| REGION 1 | OF | 25 | 149 | 466 | 1,448 | 1,789 | 1,515 | 5,392 |
| | PC | 10.97 | 17.09 | 14.68 | 14.40 | 13.98 | 14.57 | |
| | PR | 0.46 | 2.76 | 8.64 | 26.86 | 33.18 | 28.10 | 100.00 |
| | PT | 0.07 | 0.40 | 1.24 | 3.86 | 4.77 | 4.04 | 14.38 |
| REGION 2 | OF | 70 | 198 | 760 | 2,592 | 3,244 | 2,872 | 9,736 |
| | PC | 30.70 | 22.71 | 23.94 | 25.78 | 25.36 | 27.62 | |
| | PR | 0.72 | 2.03 | 7.81 | 26.62 | 33.32 | 29.50 | 100.00 |
| | PT | 0.18 | 0.53 | 2.02 | 6.91 | 8.65 | 7.65 | 25.94 |
| REGION 3 | OF | 30 | 133 | 491 | 1,730 | 2,555 | 1,773 | 6,712 |
| | PC | 13.16 | 15.25 | 15.46 | 17.21 | 19.97 | 17.05 | |
| | PR | 0.45 | 1.98 | 7.32 | 25.77 | 38.07 | 26.41 | 100.00 |
| | PT | 0.08 | 0.35 | 1.31 | 4.61 | 6.81 | 4.73 | 17.89 |
| REGION 4 | OF | 42 | 136 | 566 | 1,470 | 1,734 | 1,235 | 5,183 |
| | PC | 18.42 | 15.59 | 17.83 | 14.62 | 13.56 | 11.88 | |
| | PR | 0.81 | 2.63 | 10.92 | 28.36 | 33.45 | 23.83 | 100.00 |
| | PT | 0.11 | 0.36 | 1.51 | 3.92 | 4.62 | 3.29 | 13.81 |
| REGION 5 | OF | 21 | 111 | 432 | 1,285 | 1,573 | 1,394 | 4,816 |
| | PC | 9.21 | 12.73 | 13.60 | 12.78 | 12.30 | 13.41 | |
| | PR | 0.44 | 2.31 | 8.97 | 26.68 | 32.66 | 28.94 | 100.00 |
| | PT | 0.06 | 0.30 | 1.15 | 3.43 | 4.19 | 3.71 | 12.84 |
| REGION 6 | OF | 40 | 145 | 460 | 1,529 | 1,897 | 1,608 | 5,679 |
| | PC | 17.54 | 16.63 | 14.49 | 15.21 | 14.83 | 15.47 | |
| | PR | 0.71 | 2.55 | 8.10 | 26.92 | 33.40 | 28.32 | 100.00 |
| | PT | 0.11 | 0.39 | 1.22 | 4.07 | 5.06 | 4.29 | 15.14 |
| TOTAL | OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| | PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| | PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percent of Column; PR=Percent of Row; PT=Percent of Column

showed 14.36 per cent of the rural drivers tested with a BAL of less than the presumptive level. Region 4 had 10.92 per cent in the 0.05 to 0.09 BAL group, which is considered as borderline by many authorities. Some conclusions that could be made concerning Table 8 are: (1) the officers in Region 2 were more alert and better enforcers of the traffic law that prohibits driving while under the influence of intoxicating beverages because of the greater number and percentage of arrests of rural drinking drivers and tests administered; (2) the officers in Region 5 were poor enforcers of the DWI law because of the small number of arrests and BAL tests administered to drinking drivers on the rural highways; (3) the officers in Region 4 were more alert, more suspicious and more strict on drinking drivers by having a larger percentage of the drivers tested to show a BAL of 0.09 or less; and (4) the officers in Region 3 were good discriminators due to having the greater percentage of the drivers tested to equal or surpass the presumptive level of 0.10.

A few questions raise considerable doubt of the first conclusion. These are: (1) what was the drinking-driver population for each region from which the drivers tested were selected; (2) what was the number of officers assigned to each region for enforcement of the DWI law; (3) what was the attitude of the traffic officers, the supervisory personnel, the court personnel and the public

about enforcement of the DWI law; and (4) what was the social and political mores in the area on drinking and driving? A very brief statement concerning these questions would be: this region was the most densely populated part of the state and most likely had the greatest driving population. The dense population, the traffic density and congestion precipitates more traffic officers being assigned to this region than any other region. The political and social mores in this area would be considered as being compatible with drinking and driving. The officers did arrest more drivers for suspicion of DWI and gave more BAL tests because there were more traffic officers and probably a larger drinking driver population. As to the officers being more alert and better traffic officers, maybe they were and maybe they were not.

The second conclusion is that the officers in Region 5 were poor enforcers of the DWI law because of the smaller number of arrests of suspected DWI's and BAL tests administered to drinking drivers on rural highways. The same factors influence this statistic that influenced the previous conclusion. Region 5 is probably the second most sparsely populated region in the state so the driving population would probably be less than most of the other regions. A possible major factor would be that there are many "dry" counties in this region where

alcoholic beverages are not sold legally. The inhabitants of this region as a result do not have the same drinking and drinking-driver mores as some of the other regions of the state. Because of these factors, the officers may really have had to be more alert and work harder.

The third conclusion states that the officers in Region 4 were more alert, more suspicious and more strict on drinking drivers due to their having a greater percentage of the drinking drivers tested in the BAL group of 0.09 or less. The mores and cooperation of the people and the courts in this region could contribute to this statistic as in Region 4. It includes the area called by many as the "Bible Belt" of Texas.

The fourth and last conclusion drawn from the data in Table 8 was that the officers in Region 3 were good discriminators because the greatest percentage of drinking drivers tested had a BAL equal to or above the presumptive level of 0.10. A good discriminator would appear to be an officer who is able to identify and test only those drivers with BAL's of 0.10 and above. In this light there should be available data on the drinking-driver population or at least the population of "stopped" drivers. Thus, there could be some determination made of the number of "misses", those that were above the presumptive level and were released by the officer. As

in all the conclusions, there are variables for which there is no data available, so, no real decisive argument can be made favoring or disapproving any of the conclusions.

The time of day when rural drinking drivers were apprehended and tested for their BAL was dominated by the late evening and early morning hours. There were 34.99 per cent of the rural drinking drivers apprehended and tested during the hours 9:00 P.M. to 12:00 Midnight and another 28.66 per cent apprehended and tested from 12:00 Midnight to 2:59 A.M. So, 63.65 per cent or almost two-thirds of the rural drinking drivers who were tested had their BAL taken in the six-hour period from 9:00 P.M. to 2:59 A.M. Table 9 reveals also that the period of the day from 12:00 Noon until 2:59 P.M. had the greatest percentage of heavy drinkers, those with a BAL of 0.20 or more, apprehended and given a test, than any other time period of the day; followed closely by the time period 9:00 A.M. to 11:59 A.M. The time period 6:00 A.M. until 8:59 A.M. has the highest percentage of low BAL's of any time period. Almost 90.00 per cent (88.20%) of the rural drinking drivers were apprehended and given a BAL test during the time period from 6:00 P.M. until 5:59 A.M. which is generally considered as the nighttime hours.

From the data shown in Table 9 some conclusions could be formulated about the time of day suspected DWI's

TABLE 9

Summary of Chemical Tests Administered to Rural Drivers Suspected of DWI by Blood Alcohol Level and Time of Day

| | | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|---|
| 12MN to | OF | 40 | 192 | 962 | 3,137 | 3,911 | 2,513 | 10,755 |
| 2:59 AM | PC | 17.55 | 22.02 | 30.30 | 31.20 | 30.57 | 24.17 | |
| | PR | 0.37 | 1.78 | 8.95 | 29.17 | 36.36 | 23.37 | 100.00 |
| | PT | 0.11 | 0.51 | 2.56 | 8.36 | 10.42 | 6.70 | 28.66 |
| 3:00AM | OF | 4 | 13 | 47 | 180 | 175 | 109 | 528 |
| to | PC | 1.75 | 1.49 | 1.48 | 1.79 | 1.37 | 1.05 | |
| 5:59AM | PR | 0.76 | 2.46 | 8.90 | 34.09 | 33.14 | 20.65 | 100.00 |
| | PT | 0.01 | 0.04 | 0.12 | 0.48 | 0.47 | 0.29 | 1.41 |
| 6:00AM | OF | 8 | 5 | 21 | 47 | 43 | 64 | 188 |
| to | PC | 3.51 | 0.57 | 0.66 | 0.47 | 0.34 | 0.62 | |
| 8:59AM | PR | 4.26 | 2.66 | 11.17 | 25.00 | 22.87 | 34.04 | 100.00 |
| | PT | 0.02 | 0.01 | 0.06 | 0.13 | 0.12 | 0.17 | 0.51 |
| 9:00AM | OF | 14 | 27 | 41 | 116 | 162 | 262 | 622 |
| to | PC | 6.14 | 3.10 | 1.29 | 1.15 | 1.27 | 2.52 | |
| 11:59AM | PR | 2.25 | 4.34 | 6.59 | 18.65 | 26.05 | 42.12 | 100.00 |
| | PT | 0.04 | 0.07 | 0.11 | 0.31 | 0.43 | 0.70 | 1.66 |
| 12 Noon | OF | 21 | 37 | 114 | 219 | 348 | 578 | 1,317 |
| to | PC | 9.21 | 4.24 | 3.59 | 2.18 | 2.72 | 5.96 | |
| 2:59PM | PR | 1.59 | 2.81 | 8.66 | 16.63 | 26.42 | 43.89 | 100.00 |
| | PT | 0.05 | 0.10 | 0.30 | 0.58 | 0.93 | 1.54 | 3.50 |
| 3:00PM | OF | 41 | 109 | 268 | 763 | 1,168 | 1,403 | 3,752 |
| to | PC | 17.98 | 12.50 | 8.44 | 7.59 | 9.13 | 13.49 | |
| 5:59PM | PR | 1.09 | 2.91 | 7.14 | 20.34 | 31.13 | 37.39 | 100.00 |
| | PT | 0.11 | 0.29 | 0.71 | 2.04 | 3.11 | 3.74 | 10.00 |
| 6:00PM | OF | 41 | 197 | 593 | 1,798 | 2,348 | 2,252 | 7,229 |
| to | PC | 17.98 | 22.59 | 18.68 | 17.88 | 18.35 | 21.66 | |
| 8:59PM | PR | 0.57 | 2.73 | 8.20 | 24.87 | 32.48 | 31.15 | 100.00 |
| | PT | 0.11 | 0.53 | 1.58 | 4.79 | 6.26 | 6.00 | 19.27 |
| 9:00PM | OF | 59 | 292 | 1,129 | 3,794 | 4,637 | 3,216 | 13,127 |
| to | PC | 25.88 | 33.49 | 35.56 | 37.74 | 36.25 | 30.93 | |
| 11:59PM | PR | 0.45 | 2.22 | 8.60 | 28.90 | 35.33 | 24.50 | 100.00 |
| | PT | 0.16 | 0.78 | 3.01 | 10.11 | 12.36 | 8.57 | 34.99 |
| TOTAL | OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| | PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| | PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percent of Column; PR=Percent of Row; PT=Percent of Total

are picked up on the rural highways and the BAL's of the drivers tested. These are: (1) the officers were good discriminators during the evening hours and early morning hours, from 6:00 P.M. until 2:59 A.M., because they apprehended and tested such a large number of the total drivers tested; (2) the officers were more alert for, identified more and administered more BAL tests from 9:00 P.M. until 11:59 P.M. than any other group of hours during a twenty-four-hour period; and (3) the officers were more suspicious and critical of drinking drivers in the early daylight hours from 6:00 A.M. to 8:59 A.M. because they arrested and tested a larger percentage of the drinking drivers during this period who had a BAL just under the presumptive level of 0.10.

The first conclusion indicates the officers were good discriminators of drinking drivers between the hours of 6:00 P.M. and 2:59 A.M. There were 31,111 or 82.92 per cent of the drivers detained and given a BAL test during this nine-hour period. There were 27,606, or 88.73 per cent, out of the 31,111 who had a BAL of 0.10 or above. This could indicate that the officers were good discriminators because 88.73 per cent of the drivers tested had a BAL equal to or above the presumptive level of 0.10. However, if the fact that 18,877 or 60.67 per cent of the 31,111 that tested 0.10 or above then had a BAL in excess of 0.15, then the officers'

ability as discriminators might be subject to question. Everyone's ability is grossly impaired when their BAL reaches 0.15. Another factor to consider is the number of drinking drivers there were on the road that were never identified, and how many were suspected of DWI but released. These two pieces of data would have a great influence in determining if the officers were good discriminators.

The second conclusion alleges the officers were more alert for, identified more and administered more BAL tests from 9:00 P.M. until 11:59 P.M. than for any of the other three-hour time groups in the twenty-four-hour period. The officers did identify more drinking drivers and administer more tests during this three-hour time period than any of the others. As to their being more alert, that is a matter of conjecture. To say the officers were more alert would imply that they were equaling or exceeding some standard or goal. Certainly no standard or goal is stated in this study nor has any standard for alertness been established that is known to this writer. It might well be that the reason so many drinking drivers were identified and given a BAL test during the time period 9:00 P.M. to 11:59 P.M. is that more drinking drivers were about during this time. Most drinking, social and otherwise, is done during the early evening hours, after work and before retiring.[28] A large portion of the

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[28] Alcohol and the Impaired Driver, 1970, p. 4.

drinking is done away from home which causes the person to have to change locations after drinking in order to retire. It is difficult to say, with any degree of certainty, that officers were any more or any less alert in their apprehension of drinking drivers from 9:00 P.M. to 11:59 P.M.

The third and final conclusion considered about Table 9 was that the officers were more suspicious and critical of drinking drivers in the early daylight hours because a greater percentage of drivers tested during the period 6:00 A.M. to 8:59 A.M. were in the BAL group 0.05 to 0.09 or just below the presumptive level of 0.10. There were 11.17 per cent of the drivers tested between 6:00 A.M. and 8:59 A.M. that had a BAL in the group from 0.05 to 0.09. There were only 188 drivers tested during this time period and accounted for only 0.51 per cent of the total tests given. Two factors that might influence the officers to have such a high percentage of drinking drivers in this BAL group so early in the morning could be an attitude about drivers having the odor of alcohol and other symptoms of intoxication. This attitude could cause the officers to perceive: (1) any driver displaying the symptoms of intoxication at such an early hour must be a habitual drinker and as such maintains a BAL at all hours of the day equal to or greater than the presumptive level; or (2) any driver, who has the odor of

alcohol and his driving behavior is such that the officer suspects him of DWI at such an early hour, must have been out drinking all night and is still intoxicated enough that his BAL will equal or surpass the presumptive level. Many antiseptics used for oral hygiene contain some alcohol that will cause the odor of alcohol to be present. However, unless the antiseptic is swallowed so that it can get into the blood, it will evaporate so that it will not be distinguishable in about 15-20 minutes. Therefore, the use of an oral hygiene would not affect the BAL when a blood test or urine test is given and a waiting period from the time of apprehension until the test is given on a Breathalyzer would also negate the effect of an oral antiseptic on the resulting BAL. The perceptions mentioned and the low BAL's registered on the blood alcohol test could justify the conclusion that the officers were more critical of drinking drivers during the early morning hours from 6:00 A.M. to 8:59 A.M.

The final variable considered, with the blood alcohol level of drivers stopped and suspected of DWI, was the day of the week that the drinking drivers were given the test to determine their BAL. Table 10 shows the days of the week beginning with Monday at the top of the left hand side of the table, and going down the column in order through Sunday at the bottom of the page and the several BAL groups across the top of the table.

TABLE 10

Summary of Chemical Tests Administered to Rural Drivers Suspected of DWI by Blood Alcohol Level and Day of Week

| | | 0.00 | 0.01-0.04 | 0.05-0.09 | 0.10-0.14 | 0.15-0.19 | 0.20+ | Total |
|---|---|---|---|---|---|---|---|---|
| MON | OF | 24 | 68 | 172 | 619 | 819 | 760 | 2,462 |
| | PC | 10.53 | 7.80 | 5.41 | 6.16 | 6.40 | 7.31 | |
| | PR | 0.97 | 2.76 | 6.99 | 25.14 | 33.27 | 30.87 | 100.00 |
| | PT | 0.07 | 0.18 | 0.46 | 1.65 | 2.18 | 2.02 | 6.56 |
| TUES | OF | 16 | 51 | 163 | 448 | 691 | 595 | 1,964 |
| | PC | 7.02 | 5.85 | 5.14 | 4.46 | 5.40 | 5.72 | |
| | PR | 0.82 | 2.60 | 8.30 | 22.81 | 35.18 | 30.29 | 100.00 |
| | PT | 0.04 | 0.14 | 0.43 | 1.19 | 1.84 | 1.58 | 5.22 |
| WED | OF | 30 | 52 | 163 | 505 | 645 | 571 | 1,966 |
| | PC | 13.16 | 5.96 | 5.14 | 5.02 | 5.04 | 5.49 | |
| | PR | 1,53 | 2.64 | 8.29 | 25.69 | 32.81 | 29.04 | 100.00 |
| | PT | 0.08 | 0.14 | 0.43 | 1.35 | 1.72 | 1.52 | 5.24 |
| THURS | OF | 20 | 54 | 227 | 611 | 756 | 686 | 2,354 |
| | PC | 8.77 | 6.19 | 7.15 | 6.08 | 5.91 | 6.60 | |
| | PR | 0.85 | 2.29 | 9.64 | 25.96 | 32.12 | 29.14 | 100.00 |
| | PT | 0.05 | 0.14 | 0.60 | 1.63 | 2.02 | 1.83 | 6.27 |
| FRI | OF | 36 | 168 | 596 | 1,785 | 1,990 | 1,507 | 6,082 |
| | PC | 15.79 | 19.27 | 18.77 | 17.75 | 15.56 | 14.50 | |
| | PR | 0.59 | 2.76 | 9.80 | 29.35 | 32.72 | 24.78 | 100.00 |
| | PT | 0.10 | 0.45 | 1.59 | 4.76 | 5.30 | 4.02 | 16.22 |
| SAT | OF | 53 | 236 | 936 | 3,161 | 4,138 | 3,270 | 11,794 |
| | PC | 23.24 | 27.06 | 29.48 | 31.44 | 32.35 | 31.45 | |
| | PR | 0.45 | 2.00 | 7.93 | 26.80 | 35.09 | 27.73 | 100.00 |
| | PT | 0.14 | 0.63 | 2.49 | 8.43 | 11.03 | 8.72 | 31.44 |
| SUN | OF | 49 | 243 | 918 | 2,925 | 3,753 | 3,008 | 10,896 |
| | PC | 21.49 | 27.89 | 28.91 | 29.09 | 29.34 | 28.93 | |
| | PR | 0.45 | 2.23 | 8.43 | 26.84 | 34.44 | 27.61 | 100.00 |
| | PT | 0.13 | 0.65 | 2.45 | 7.79 | 10.01 | 8.02 | 29.05 |
| TOTAL | OF | 228 | 872 | 3,175 | 10,054 | 12,792 | 10,397 | 37,518 |
| | PC | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | |
| | PT | 0.61 | 2.33 | 8.45 | 26.80 | 34.10 | 27.71 | 100.00 |

OF=Observed Frequency; PC=Percentage of Column
PR=Percentage of Row; PT=Percentage of Total

Saturday is shown to be the day that has the greatest number of drivers arrested and given a BAL test. There were 11,794 of the 37,518 administered a blood alcohol test, which was almost one-third (31.44%) of the total number of BAL tests administered. The week-end, Friday, Saturday and Sunday, had 28,772 BAL tests given which left only 8,746 for the other four days of the week. Saturday and Sunday both had more drinking drivers to be administered a BAL than all four, Monday, Tuesday, Wednesday and Thursday, of the mid-week days combined.

Several conclusions could be drawn from the data shown in Table 10 such as: (1) the officers were better discriminators of drinking drivers suspected of DWI on week-ends, especially on Saturday, than on other days of the week; (2) the officers were poor discriminators of drinking drivers suspected of DWI during the mid-week days, especially Tuesday and Wednesday; and (3) the officers were more critical of drinking drivers on Friday than on the other days of the week.

From the statistics given in Table 10, the first conclusion, that presumes the officers were better discriminators on week-ends, especially Saturday, would appear to be a good conclusion. There are several factors that could influence the conclusion and possibly cause it to be a poor conclusion. Other statistics show that more

fatal accidents occur on Saturday than on any other day of the week. Probably more accidents of all kinds occur in the rural areas on Saturday also. Saturday is generally a day when more traffic is using the rural roads than other days. Many city dwellers use Saturday to go to resort areas for fishing, boating and other recreational activities. The recreational activities often involve the use of alcoholic beverages, and after a full day of recreation and drinking, they drive the rural roads under the influence of alcohol on the return journey home. The result is a higher ratio of drinking drivers on Saturday than any other day of the week on the rural roads. The preceeding factor is known by traffic supervisors and administrators so they make their schedules and assignments accordingly. Nearly all of their traffic enforcement personnel are assigned to patrol the rural roads on Saturday and more are generally assigned to patrol the late afternoon and evening hours. Rural taverns and dance halls generally draw larger crowds on Saturday also and the traffic officers are encouraged to patrol these areas to try to prevent accidents and remove the drinking drivers from the road. Therefore, with more drinking drivers using the rural highways and more officers patrolling the rural roads in search of drunk drivers, it is logical to assume that more drinking drivers will be apprehended and administered a BAL test. These factors would influence

the conclusion that the officers were better discriminators of drinking drivers on Saturday than any other day of the week. Due to the knowledge of the drinking and driving population on Saturday the officers might have been more alert and might have been more discriminatory than on other days. The statistics to show the actual driving and the drinking driving populations must be known in order to formulate a conclusion, that would stand up under critical analysis, concerning the degree of discriminatory ability the officers displayed in selecting drinking drivers for BAL tests.

The second conclusion takes the position that the officers were poor discriminators of drinking drivers during the mid-week days, especially Tuesday and Wednesday. There are only 1.34 percentage points separating Monday, when the highest percentage of BAL tests were administered for a mid-week day, and Tuesday, when the lowest percentage of BAL tests were administered for a mid-week day. The factors affecting the second conclusion are almost the opposite of the factors affecting the first conclusion. Most city dwellers work five days a week, Monday through Friday, and do not drive on rural roads as frequently as on the week-end. This factor causes less personnel to be assigned to work during the mid-week. Most officers have their days off assigned to them on Monday through Thursday. Another factor, although not as great as

the days assigned off factor, is various special assignments such as meetings and court appearances are generally during mid-week. These factors would cause the number of drinking drivers arrested on a mid-week day to be less than on a week-end day. Whether or not the officers were poorer discriminators on mid-week days of drinking drivers would have depended on the population of drinking drivers on mid-week days from which the officers could have selected suspects whom they wished to give a BAL test.

The third conclusion advanced on Table 10 was that the officers were more critical of drinking drivers on Friday than on the other days of the week. The officers administered tests to a small percentage more drinking drivers, who were just under or just over the presumptive level for intoxication, on Friday than for any other day of the week. The percentage was so small that it was not considered significant. There was a 2.81 percentage point difference between Friday and Monday in the BAL group 0.05 to 0.09. The difference in the 0.10 to 0.14 BAL group was 6.54 percentage points between Friday and Tuesday. The average for the two BAL groups was only 4.64 percentage points less than Friday. Whether or not the officers were more critical on Friday than on any other day is dependent upon other variables such as driving population and drinking-driving population.

# CHAPTER IV

# RECOMMENDATIONS

The full extent of the drinking driver problem in Texas is unknown. There were approximately 37,518 chemical tests administered to drivers who were suspected of DWI on rural roads and an unknown number, probably in the thousands, of drinking drivers that were not given a blood-alcohol test. Some of these drinking drivers that were not given a blood-alcohol test, refused to take a blood-alcohol test. Others were not given a test due to injury or confinement in a hospital. Many of the reasons for the lack of data and information to develop and implement effective countermeasures for the drinking-driver problem fall under the umbrella of legal and political restrictions. Some recommendations will be made to remove some of these restrictions. Some of the recommendations may create controversy and some may even create hostility. These recommendations are presented in the three categories as follows: (1) legislative recommendations; (2) recommendations for police collection, analysis, and reporting of drinking-driver data; and (3) research recommendations.

## Legislative Recommendations

A number of the recommendations in the other two categories must have legislative action in the form of

revising a law or enacting new legislation before the recommendations will be implemented. Therefore, the legislative recommendations are presented first.

Recommendation Number 1

It is recommended that enabling legislation be enacted to: (1) permit; (2) support; and/or (3) require that programs, surveys, and/or research be conducted to determine the extent and degree of the drunk-driving problem, not only on the rural highways of the State of Texas, but on all streets and highways statewide. The program, surveys, and/or research projects may be prepared and presented to an appropriate committee composed of representatives of the police profession, social scientists in state universities devoted to research with an interest in the drinking driver problem, and representatives of other organizations interested in the problems created by the drunk driver.

Any programs or projects developed, and the enabling legislation, should give special attention to three factors. First, alcohol is a drug and its victims should be treated accordingly. Secondly, drunk driving is mostly a by-product or result of alcoholism and efforts should be directed not only to the result but to alcoholism itself. Thirdly, in order to obtain the information and data needed to develop countermeasure programs, more emphasis and attention must be given the concept that the

driving of a motor vehicle on public streets and public highways is a privilege granted through the licensing of drivers by the state and not one of the inalienable rights granted under the Constitution. Therefore, information relative to a driver's operation of a motor vehicle, obtained and to be used for developing traffic safety programs, and not to be used as evidence in a court of law, is not privileged information and is not protected by the Fifth Amendment to the United States Constitution.

Recommendation Number 2

It matters little how good the data is for study or how many innovative programs are implemented to study the problem, if there are no legal sanctions applied to the problem itself it will continue and even grow. Nearly all the statutes pertaining to drunk driving need to be changed in order to remove the "loop holes" that presently exist. The implied consent law needs to be improved so that refusal to take a breath test, the only test the implied consent law permits, can be used against the accused rather than for him. The implied consent needs to be expanded to include blood tests to determine the BAL of suspected DWI's. The United States Supreme Court has held that the taking of a blood sample without consent does not violate the defendant's right of self-incrimination. Neither is it a violation of the search and seizure

exclusionary rule because it was obtained as a part of a legal arrest.[29] The use of probation needs to be limited. Probation is a good correctional tool when properly applied and administered. Indiscriminate use of probation can breed disrespect for both the law and the criminal justice system. The granting of probation over and over and over to the same convicted drunk driver contributes nothing toward the solution of the problem. It most likely compounds the problem.

## Police Data Collection, Analysis, and Reporting

### Recommendation Number 1

The police probably have the greatest data and information gathering network in the state. With little additional effort and a few changes in the reporting forms in present use, an enormous amount of data could be accumulated about drinking drivers. The data collected could, with little additional work, be computerized, and the information on drinking drivers could be studied as it relates to a number of variables. The data is already collected on nearly all these other variables. Through the implementation of this more or less simple recommendation, the important unknown factor encountered throughout this study, a great deal of knowledge could be gained concerning

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[29]Schmerber vs. State, 86 Sct 1826, 1966

the drinking-driver population on the rural highways.

Recommendation Number 2

The analysis of the data collected on drinking drivers could easily be expanded, since the computer does all the computing, to provide information for better enforcement, better education of the public and better driver training. These expanded analyses could also provide the basis for additional study and research into the drinking driver problem.

Recommendation Number 3

Changes need to be made in the reporting procedures relative to the use of alcohol by drivers involved in traffic crashes. It is difficult for an officer, who arrives on the scene after a traffic crash, to conclude that the use of alcohol by one or more drivers was a contributing factor in the causation of the crash. Some effort needs to be directed toward improving this judgement decision relative to whether or not alcohol was a contributing factor. The number of drivers reported as having been involved in an accident and administered a BAL test was only 5.87% of the total rural accidents. Findings in fatal accidents show alcohol as a causative factor approximately ten times this percentage. Other data relative to the presence of alcohol in all traffic crashes could provide the spark for research in this area.

Recommendation Number 4

Possible policy and/or procedural changes need to be reviewed in order to get more accurate and honest reporting by officers. Officers are hesitant to report the presence of alcohol in either a traffic crash or a traffic stop. The hesitancy is based on the attitude that the officer's supervisors and commanding officers may accuse him, and even reprimand him, for being too lenient or of not being able to distinguish a driver who is just drinking from a driver who is intoxicated. Policy statements that require accurate reporting as the officer views the situation supported by DWI identification training and supervisory practices would allow for more accurate and honest reporting.

## Research Programs

Research projects into the extent and degree of alcoholism, or the use of alcohol in the driving population and its impact on the lives and economy of Texas is virtually non-existent. The reported economic loss in damage to property statewide in 1972 was $1,035,000,000.00. The economic loss due to injuries and deaths are unknown, but there were 3,688 people killed and some 128,158 injured. Both social/behavioral scientists and medical scientists should pool their expertise in search of solutions for the drinking-driver problem.

Recommendation Number 1

It is recommended that a coordinated and standardized research program be designed and implemented to study the extent of the drinking-driver population. This program could be conducted on two levels. One would employ students in criminal justice programs, in cooperation with local county or state officers to set up sites to count the traffic volume and stop all or a randomly selected sample to determine if the driver is drinking. If he is not drinking he could be released and allowed to proceed. If the driver is drinking, some few pertinent pieces of information such as race, sex, age, occupation and approximate distance to the driver's home could be gathered in about one minute. The sites selected would be from high accident areas, high DWI experience areas and some sites selected at random. From this data some generalization could be made of the drinking-driver population. The second level would be the traffic officers gathering the same information during the course of their more or less normal practice of conducting driver-license checks.

Recommendation Number 2

It is recommended that research social scientists, in cooperation with local and state officers, design and implement coordinated and standardized research projects

for the purpose of studying the degree of alcohol involvement in the driving population and especially the drinking-driver population. There are several programs sponsored and financed by the National Highway Traffic Safety Administration, Department of Transportation that could act as a guide in designing such a program. The Criminal Justice Council of Texas, The Texas Safety Association, and the Texas Department of Public Safety could provide valuable assistance and support in making their expertise, manpower, and equipment available in both the design and implementation of such programs. The Department of Public Safety has trained manpower for administering breath tests and the equipment to administer the tests.

Recommendation Number 2

Social/behavioral scientists and medical scientists should coordinate their efforts toward designing a program for treatment of alcoholics and especially those found driving while drunk. Too many alcoholics or habitual drunkards are a part of the drinking and driving population. It should not take very much investigation to identify a large percentage of the habitual drinkers who drive and prescribe a treatment process.

## Summary

The recommendations advanced are not specific in

nature. They are general recommendations for programs. The specifics to be designed by researchers and experts in the police, social/behavioral scientists, medical scientists, legal technicians (other than defense or civil liberty attorneys), and any other profession having an interest and knowledge pertaining to the drinking-driver problem. None are thought to be beyond the realm of possibility and none are believed to be politically or legally unsound.

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