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A STUDY TO EXAMINE THE RELATIONSHIP BETWEEN
TRAFFIC ARRESTS AND DRIVING WHILE INTOXICATED
USING GRAND FORKS AIR FORCE BASE PERSONNEL AS CASES

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An Independent Study
Submitted to the Graduate Faculty
of the
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for the degree of
Master of Public Administration

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This independent study submitted by James M. Hughes in partial fulfillment of the requirements for the Degree of Master of Public Administration from the University of North Dakota is hereby approved by the Faculty Advisor under whom the work has been done.

(Advisor)

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CHAPTER I

THE PROBLEM AND ITS SETTING

The Statement of the Problem

In 1982, there were 140 driving while intoxicated incidents involving military members stationed at the Grand Forks Air Force Base. In 1983, there were 174 resulting in a 24 percent increase.

Intoxicated driving is incompatible with the maintenance of high standards of performance, military discipline (of department of defense personnel), reliability, and readiness of military units and supporting activities.¹ Driving while intoxicated can also lead to traffic accidents, which in turn leads to property damage, personal injuries and, in some cases, the loss of human life.

The problem is how to keep intoxicated people from driving and, for the purposes of this research, how to keep air force personnel from driving while intoxicated.

At the present time efforts to solve the problem have been directed toward identifying those drivers that are in actual operation of a vehicle while intoxicated, and physically stopping, arresting, and removing them from the roadway.

If the potential drinking driver could be identified prior to the intoxicated driving event taking place, then the resources now being used to educate all drivers on the hazards of drinking and driving could be specifically directed towards those drivers who may need it.

The question this research will attempt to answer is whether or not the airman most likely to be arrested for driving while intoxicated can be identified, based on his previous driving record.

The pages to follow will include a brief description of my experience in the related field, a description of the present situation, and a review of the related literature. The remainder of the report will focus on the research conducted to include the research design, the selection of subjects, the data gathering methodology, a summary of the findings, the conclusions and recommendations.

I am a North Dakota Highway Sergeant and have been an officer since November of 1973. In the ten years as a patrol officer I have received extensive training in the area of accident investigation and traffic management. My training began at the North Dakota Highway Patrol Academy and was expanded and updated during the year I attended the Northwestern University Traffic Institute, Chicago, Illinois. This formal training, combined with my ten years of experience investigating accidents and detecting and apprehending drivers operating while under the influence of alcohol, has given me the insight I feel is needed to research this topic.

In July of 1980 I was assigned to the Grand Forks district of the Highway Patrol. As of that time I have held the rank of District Sergeant. My duties include patrolling the roads and supervision of the patrolmen stationed in this district.

As a supervisor, I am also responsible for the scheduling of the patrolmen in the district. At the present time we have 15 officers in the district and of the 15, we have six men assigned out of

the District Headquarters which is the City of Grand Forks. The other men are assigned to patrol other counties surrounding the county of Grand Forks. With only six officers available to work a county as large and as populated as the Grand Forks County, it becomes impossible to patrol all the highways, on all the days of the week, and at all hours of the day. Scheduling, therefore, is an activity that is carefully planned. In an effort to use our manpower effectively and efficiently, the schedule is based on two considerations. First, the amount of traffic on a given highway at a given time and on given days of the week and second, past accident experience.

For the purposes of this research we have selected July 1, 1982 through June 30, 1983. During this time period we investigated about 520 accidents in this district. About 294 of those accidents occurred in Grand Forks County and of these 294, about 98 occurred between the City of Grand Forks and the Grand Forks Air Force Base. These figures were arrived at by a manual check of accident files but should be relatively accurate for that time frame. As a result of general patrol and accident investigation, this area of the county has also produced a high percentage of driving while intoxicated arrests. The mere existence of the Grand Forks Air Force Base has added to this traffic situation.

The Grand Forks Air Force Base (GFAFB) is located about 14 miles straight west of the City of Grand Forks. The GFAFB employs approximately 5,437 military and 500 civilian personnel. Overall, the base population is more than 13,000. Not all personnel are military, and not all personnel live at the base. Of the total base population, about 4,000 military personnel and 5,200 dependents live on base.

Another 1,400 military and 1,700 dependents live off base in the surrounding area and the City of Grand Forks.

Just the fact that 3,100 people live off base and derive their livelihood from working at the base will indicate the volume of traffic generated on the roads between the city and the base. Also to be considered is the traffic generated by the other 9,200 people that live on the base but shop and socialize in Grand Forks. The most recent traffic count in North Dakota was conducted in 1981. It was reported that during any 24-hour time period 8,200 passenger vehicles travel between the City of Grand Forks and the Grand Forks Air Force Base. In comparison to all other sections of highway where these surveys are conducted, this section of the North Dakota rural highway system is the heaviest traveled. The second highest traveled section of roadway was between the City of Minot and the Minot Air Force Base. About 7,700 passenger vehicles were counted in each 24-hour period surveyed.²

There are 53 counties in the State of North Dakota. In 1982 Grand Forks County had the fourth highest number of reportable traffic accidents with 1,283. These accidents left 564 persons injured and left nine persons dead. These numbers were high enough to put Grand Forks County the third highest for injury accidents and the fourth highest in the state for fatalities.³

In 1979, Grand Forks County reported 499 personal injury and five fatal accidents. In 1980 there were 504 personal injury and six fatal accidents; in 1981 there were 570 injury accidents and seven people killed.⁴

Let us now examine how drinking and driving has played a role in traffic accidents. In 1967 the North Dakota legislature enacted a bill which requires county coroners to collect blood samples from traffic fatality victims and submit them to the state toxicologist for analysis. All the blood samples received, with the exception of the few contaminated or broken, were analyzed to determine the concentration of alcohol.

In the period from July 1967 to December 1982, there were 2,800 traffic deaths. Of those who died, 2,614 of the victims were 14 years of age or older. There were 1,706 blood samples analyzed which is 77 percent of the total traffic deaths. The results indicated in Table 1 in the appendix of this report shows that of all drivers who died, 65 percent had a measurable BAC. It also shows that 53 percent were over 0.10 percent BAC, the amount at which a driver is presumed to be legally intoxicated in North Dakota.

Since accidents are related to the use of alcohol and fatal accidents are definitely related to the use of alcohol, the effort to keep people who have been drinking from driving is a primary objective of the Highway Patrol and the U. S. Air Force. The higher number of airmen being arrested for the violation of driving while intoxicated in this county is cause for concern and must be addressed in an attempt to change the present situation, or , if nothing else, to stabilize it.

Research has established the cause and effect relationship between alcohol consumption followed by driving and the combination resulting in traffic accidents. The research clearly shows that persons driving automobiles while under the influence increase their chances of being

involved in traffic accidents. Table 2, found in the appendix, indicates that as your blood alcohol content increases, so do your chances of having a traffic accident. With a BAC of .10 percent, the chances are six times greater than if you had no alcohol in your blood. And, with a BAC of .15 percent, the chances are 25 times greater. At .14 percent, your chances are about 20 times greater.⁵

A random selection of airmen from the Grand Forks Air Force Base described in Chapter III of this report as Group A had a mean BAC of 0.146 percent.

Hypothesis

A motor vehicle operator that has been arrested for a number of driving violations is also likely to be arrested for driving under the influence of alcohol.

Delimitations

Because of rapid rise in concern and interest surrounding the drinking and driving problem, this study will deal with current DWI rates of arrest of personnel stationed at the Grand Forks Air Force Base. The study will deal with the DWI arrest generated over a one year period starting with July 1, 1982 and ending with June 30, 1983. The study will not deal with nor discuss questions of value such as rightness or wrongness in drinking, nor will it attempt to evaluate problems caused as a result of DWI arrests, such as job loss or insurance rates.

Definition of Terms

Arrest - traffic violation, moving or non-moving, which causes an entry to be made on an operator's driving record.

BAC - Blood alcohol concentration. Maximum level before arrest in most states and North Dakota is .10 percent.

D.L. - Drivers license

Driver/Operator - member of the U.S. Air Force stationed at the Grand Forks Air Force Base, Grand Forks, North Dakota.

D.W.I. - Driving while intoxicated and over .10 percent blood alcohol concentration.

Dependent Variable - an arrest of an operator for driving while intoxicated.

G.F.A.F.B. - Grand Forks Air Force Base, Grand Forks, North Dakota.

Independent Variable - prior traffic arrests, reflected on an operator's driving record.

Record - driving record of a member in the sample group but limited to three years prior to the date of request.

Subject - member of sample group; member of the U.S. Air Force stationed at the Grand Forks Air Force Base, Grand Forks, North Dakota.

Assumptions

The first assumption is that airmen from the Grand Forks Air Force Base will continue to consume alcohol and drive automobiles.

The second assumption is that if no effort is made to change the first assumption, then the chances for alcohol related traffic accidents, injuries, and deaths will not be reduced.

CHAPTER II

THE REVIEW OF THE RELATED LITERATURE

A Study of Traffic Arrests and Alcohol Use

A study of the problem of traffic deaths in Karlsruhe, Germany compared the personal histories of 1,000 drivers convicted of drunken driving with 1,000 drivers convicted of offenses while not under the influence of alcohol. The group which had been drinking all had one or more convictions. Fifty-eight percent of the alcohol group had committed previous offenses, while under the influence of alcohol, while only 3.5 percent of the alcohol-free drivers had convictions of any sort recorded against them and 2.2 percent of the drinking group had between five and thirty-five previous convictions.⁶

A Study of Alcohol and Driving Errors

A study conducted in Canada involving 542 drivers involved in personal injury motor vehicle accidents reported that blood alcohol concentrations in the range of 0.03 percent to 0.05 percent often contributed to errors in a driving situation. All drivers were affected at a concentration of 0.15 percent. From these findings this study concluded that blood-alcohol concentrations of 0.05 percent and higher, together with evidence of driving error, is sufficient to identify drivers who may be presumed to be affected by alcohol.⁷

Alcohol Affects Judgement of Performance

A study using experienced bus drivers as subjects with BAC levels reaching .04 to .06 percent were administered tests permitting assumptions of increasing risk. Faulty judgement was noted at low doses. There was no indication of the willingness to take ever-increasing risks as blood alcohol increased, but there was greater confidence about the performance of the more difficult tasks. In all driver's performance as well as judgement deteriorated as they consumed more alcohol. This study concluded that the trustworthiness of a man's judgement of his driving skill is impaired at a blood-alcohol concentration as low as .04 percent.⁸

Accidents Related to Drinking and Driving

Over 55,000 people are killed on our highways each year. Half of the fatal accidents involve the use of alcohol--twenty-five to forty percent of injury accidents involve the use of alcohol. Economic costs are huge, with alcohol-related crashes, estimated at \$2 billion per year, equivalent to two percent of the gross national product.

The odds of being involved in an accident are formidable from the viewpoint of the individual. During his lifetime, the average driver has one chance in two of being involved in an accident with an alcohol-impaired driver. He also has one chance in ten during his lifetime of being in an accident that will kill either him or the drinking driver.⁹

A study of Wayne County, Michigan, traffic fatalities from July, 1967, to January, 1968, listed 177 fatalities in 160 separate

crashes. Of the 177 killed, 84 were drivers, 38 were passengers, and fifty-five were pedestrians. Of the 84 drivers, 27 (32.1%) had BACs ranging from .15 percent to .24 percent. Fourteen (16.7%) had BACs of .25 percent. Thus, a total of 41 drivers (48.8%) had BACs at or over .15 percent. Further analysis in the study indicates that 79 percent of the deceased responsible drivers had BACs above .10 percent. Also the drivers involved in fatal vehicle accidents had generally inferior driving records in comparison with a normal population sample.¹⁰

Drunk driving is a national epidemic--what one reformer calls America's "socially accepted form of murder." More Americans have died at the hands of drunk drivers during the past two years than were killed in Viet Nam; on average, about three Americans are killed and 80 are injured by drunk drivers every hour of every day.

The drunken slaughter over the past decade is a staggering one-quarter of a million Americans--equal to the entire population of Rochester, New York. Safety experts say that one out of two Americans will be victimized by a drunk driver in his lifetime, hardly surprising when the National Highway Traffic Safety Administration (NHTSA) contends that up to ten percent of all drivers on weekend nights are legally intoxicated.¹¹

Literature Review in Relation to This Research

All the literature reviewed made reference to alcohol and in what ways it impairs driving. The studies cited here make reference to driver's past habits concerning arrests, driver error, and alcohol content and driver ability and judgement in relation to alcohol content.

If a driver's habits reflect that he does obey the traffic laws when he is sober and is not a habitual violator, then alcohol alone will, to some degree, affect his driving behavior. This study concerns itself with the fact that if a driver's habits reflect that he does not obey the traffic laws (based on his driving record which shows past driving arrests) then alcohol in conjunction with his driving practices will have a synergistic effect when he drives when under the influence of alcohol.

A research study in Wayne County, Michigan, revealed that drivers involved in fatal accidents had not only high blood alcohol concentrations but also had inferior driving records. Table 3 found in the appendix of this report shows the results of that research. The table clearly shows that only eleven of the fatalities or 15.2 percent had no previous driving records.

In this research only the last three years on the driving records of subjects will be examined in a search for violations, but the research data mentioned above lends validity to my research study. The goal of the Highway Patrol is to reduce the number of traffic accidents and resulting injuries and deaths.

The goal of the U.S. Air Force is to reduce the number of alcohol related incidents involving military personnel. Both goals have the same objective, to reduce the number of incidents of drivers operating motor vehicles while under the influence of alcohol, since studies have established that alcohol, drivers, and accidents are related.

All concerned would like to see the objective reached by drivers themselves making the decision not to drive after drinking to excess; however, some people will continue to drink until intoxicated and then

drive. In these cases, it is up to law enforcement officers to remove the alcohol impaired drivers to make the highways safe for all drivers.

Through training methods, law enforcement officers, including the military police, are taught how to detect, apprehend and help convict these law violators. Officers patrol the highways and during a shift will make visual contact with many vehicles and operators. Prior to stopping a motorist, an officer must have a reason or probable cause, as it is called. That reason can be a moving violation such as speeding or running a stop sign or it can be an equipment violation such as one headlight out or not working at night.

Persons driving while intoxicated may commit one of many violations. Some of the most common are driving too fast or too slow, driving over the center line and not stopping for signals such as stop signs. After observing a violation and stopping the motorist, the officer is alert for the odor of alcoholic beverages, how the driver shows his drivers license, if he has problems getting his license out, and general physical observations such as slurred speech and/or bloodshot eyes. The officer then would most likely ask the person to submit to a roadside physical test to include the walking of a straight line test, the balance test, the finger-to-nose test, and others. The officer will then, based on his observations and the results of these tests, either arrest the driver for DWI or he will let the driver go.

Going back to the beginning of this process, it must be remembered that the violation the driver committed while the officer observed him driving was the starting point that ultimately lead to the DWI arrest.

As stated before, a patrol officer comes in contact with many vehicles and drivers per shift. The time he observes each separate

vehicle and driver is brief--sometimes a few seconds. If, during this time, a driver commits no violations then the officers would have no reason to stop the vehicle. Therefore, if a person is driving and is under the influence of alcohol but commits no traffic violations, then a law enforcement officer, even if observing this driver and vehicle, would not stop the driver nor would the officer even suspect the driver was under the influence of alcohol. The result is that many people can drive while intoxicated and because they are good drivers as a general rule and do not ordinarily violate the traffic laws even when sober, they will go undetected when they drive after drinking. These drivers should, therefore, have a good driving record, one with few if any violations as opposed to drivers arrested for D.W.I. who should have prior violations--maybe the same violations that they were stopped for at the time they were intoxicated--that first observed event that lead to the D.W.I. arrest.

CHAPTER III

THE IMPORTANCE OF THE STUDY

In the past two years the drinking and driving issue has become a national issue. The public interest in this issue has given birth to groups like Mothers Against Drunk Drivers (MADD), Remove Intoxicated Drivers (RID), and Students Against Drunk Drivers (SADD). These groups have focused their attention on courtroom events and on laws and the punishment of D.W.I. drivers. Because of the media attention and the fact that life savings is a moral issue, it is difficult to oppose the movement. Politicians, businessmen and law enforcement people have been forced to respond to this public issue.

The federal government has responded to this issue by making money available to states willing to place special emphasis on enforcing drinking and driving laws.

On December 1, 1981, the North Dakota Highway Patrol initiated a special selective enforcement program. By taking advantage of the federal money available, operation R.A.I.D. (Remove Alcohol Impaired Drivers) began. The mission simply stated is that by strict enforcement efforts and the utilization of alcohol related safety programs, the public will become aware of the magnitude of the drinking driver problem and a deterrent effect will occur regarding this serious life threatening situation.¹²

Patrol officers participated on a voluntary basis and could work a maximum of sixteen overtime hours per month. The federal overtime hours, even though voluntary, would be worked during those times and at those locations where the potential for apprehension of persons driving while intoxicated appeared greatest. As expected, more arrests were made for the violation of driving while intoxicated by Highway Patrol officers. Arrest results for years 1979, 1980, 1981, 1982 and 1983 were 1191, 1522, 2010, 2839, and 2354, respectively. Total arrests made by all law enforcement agencies for 1979, 1980, 1981, 1982 and 1983 were 3848, 5190, 5304, 6016, and 7596, respectively. Fatalities in North Dakota for years 1979, 1980, 1981, 1982 and 1983 were 128, 151, 167, 148 and 115, respectively. North Dakota recorded the lowest number of fatalities in 1983 of all the states and received recognition in the February issue of U.S. News and World Report. North Dakota was number one on the list with a 22.3 percent decrease.

One must be careful that we don't attribute a drop in fatalities to an increase in arrests, because many other factors impact on the results, but the figures are presented here to emphasize the results of the RAID program. The RAID program is still in operation at the present time and the federal government is still contributing the funds to support its operation.

The Department of Defense has recently updated its procedures in the handling of military personnel who have been arrested for D.W.I. The Department of Defense has established programs to educate military personnel on the effects of alcohol and the dangers involved if it is misused. Prior to this time all efforts in this area have been reactive

in nature. The problem was dealt with after the incidents of drunk driving had already taken place. The new approaches deal more in a pro-active way. New, tougher, D.W.I. laws, education and public awareness campaigns aimed at prevention are used.

This study is aimed at an even newer approach to the problem. If, through the use of driving records, it could be established that driving habits and patterns lead to that ultimate D.W.I. arrest, then organizations could narrow down the population in an effort to concentrate programs of defensive driving, and the effects of alcohol and driving to that population. These awareness programs, aimed directly at the right people, may reduce the number of people driving drunk. Since these programs are being conducted now anyway, this type of targeting would be an even more pro-active approach.

It was pointed out in previous pages that it is necessary for a driver to commit a moving violation or be involved in an accident before the law enforcement is alerted and stops the driver. It is logical to assume that if a person commits violations when sober, that he will, based on studies of driving ability when under the influence, commit these same violations when driving under the influence of alcohol and thus be apprehended.

drinking habits by observing bar room behavior is another approach to this problem, but also requires much time.

The survey research approach could also be effective in establishing drinking and driving habits which may lead to arrest, but honesty in answering the questions may be a problem. Judging from the impact of a D.W.I. arrest on one's military career, I felt that complete cooperation and honesty in answering a questionnaire could jeopardize the results.

To study this problem in the way described, that is by looking at arrests, times of arrest, etc., would require access to arrest records. Because of my position as a law enforcement officer I have that capability.

Variables

Independent Variables

1. Previous traffic related arrests
 - A. Administrative traffic
 1. speeding
 2. drove over center line
 3. stop sign
 4. traffic accident (driver involved)
 5. all other violations not requiring an appearance.¹³
 - B. Criminal violations of traffic code
 1. reckless driving
 2. fleeing a police officer
 3. all other violations requiring bond be posted and appearance in court.¹⁴

Dependent Variables

1. Driving while intoxicated arrest¹⁵

Selection of Subjects and Group Assignments

This research will collect data on two groups of subjects. Group A will consist of drivers that have been arrested for D.W. I. Group B will consist of drivers who have not been arrested for D.W.I.

Selection of Subjects For Group A

Group A consists of 25 Grand Forks Air Force Base drivers who have been arrested for D.W.I. by the State Patrol between July 1, 1982 and June 30, 1983. Every time a State Patrol Officer arrests a person for D.W.I. a record is made at the District Patrol Office. Grand Forks is the District Office in this area and all patrol officers who patrol the Grand Forks area to include the Grand Forks Air Force Base are assigned and report to supervisors of this district. Each officer makes a report after each D.W.I. arrest and keeps that report for court purposes.

From these files I randomly selected 50 D.W.I. arrests of military personnel from the Grand Forks Air Force Base. I then assigned each a number from one through 50 and, by using a table of random numbers, further selected the 25 cases for the study. Each subject had an equal chance of being selected from the total group (July 1, 1982 through June 30, 1983) and of the 50, each member than had an equal chance of being selected for the final group.

state in which the driver was licensed. I also must mention that driving records are only released for a three-year period, starting with the date of request and ending three years prior to that date. This, however, will reveal current data and should reflect current driving behavior.

Each entry made on each driver's record will receive a numerical value resulting in a total score for each case in Group A and Group B.

Violations will be scored based on North Dakota State Law Statutes to ensure equal values to violations committed outside the state. Since I have no way of knowing how each state classified violations of traffic law, this will be an effort to add to the validity of the scoring technique I am implementing.

I. All violations such as speeding, running a stop sign, illegal passing, and all other violations for which a driver may be released without bond will receive a score of one (1) point per entry.

II. All reportable accidents that a driver was involved in will receive a score of two (2) points per entry.

III. All violations that require an appearance in court and for which a bond cannot be forfeited will receive a score of three (3) points per entry; these violations include reckless driving, driving when license is suspended, fleeing a police officer, etc.

CHAPTER V

SUMMARY OF THE FINDINGS

<u>Mean</u>		<u>Non-Criminal</u>	<u>Criminal</u>	<u>ACC</u>	<u>Total Score</u>
Group A	=	1.28	0.28	0.20	2.28
Group B	=	0.64	0.00	0.00	0.76

<u>Median</u>		<u>Non-Criminal</u>	<u>Criminal</u>	<u>ACC</u>	<u>Total Number</u>
Group A	=	1	2	0	1
Group B	=	0	0	0	0

<u>Range</u>		<u>Non-Criminal</u>	<u>Criminal</u>	<u>ACC</u>	<u>Total Number</u>
Group A	=	0-7	0-1	0-2	0-17
Group B	=	0-3	0-1	0-1	0-3

Standard Deviation

Group A = 3.65

Group B = 1.39

T-test = 3.027

one point for the non-criminal variable and two points for the accident variable and three points for the criminal variable, the total mean value for Group B indicates that individually each member of Group B would not score high enough to equal one violation to any of the three possible categories.

In addition to the mean values reported the median measure of central tendency is also reported. The data collected for Group A contained an extreme score in one case of 17. This extreme score would affect the mean. Without using this extreme score the mean value would have been 2.08. The range of values reported indicates that extreme score as the total range for Group A of 0-17.

The standard deviation for Group A was 3.65 but I also must mention that without the one extreme score this figure would have changed to 2.21, a dramatic difference. I could have left this extreme value out of the computations but I felt in all honesty I would keep it and explain how it has affected the outcome.

For a test of significance I used the T-test. The T-test value was 3.027. This value was obtained using a critical value at the .05 level, with a one-tail test and 24 degrees of freedom. In this case the "T" statistic must be at least 1.711, or larger, to reject the null hypothesis. The T-test was used because the sample size was small and since the value of 3.027 obtained is larger than 1.711 we know the finding is significant. We know that in less than five percent of the samples could we have found a difference in means this large solely by chance. Therefore, we can reject the null hypothesis.

The findings include the mean age of the subjects in Groups A and B and also marital status was reported in percentages. The actual

age in years was available for all subjects but marital status which was available for Group A only. Therefore data were obtained on marital status for the entire GFAPB making a comparison possible, based on percentages.

Additional information dealing with the D.W.I. arrest was collected for Group A only. Since Group B did not have a known D.W.I. arrest and were selected and assigned to Group B for that reason, information is not available as to day of arrest, time of arrest, and the BAC result for those subjects. A comparison will be made of the data obtained regarding age, marital status and Group A's arrest facts in Chapter VI on conclusions and recommendations.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The research indicates that alcohol impaired driving is a significant contributing factor in causing traffic accidents. As long as the alcohol impaired driver continues to operate a motor vehicle, he poses a threat to other highway users. The problem has been and continues to be how to keep those drivers who are intoxicated from driving. Several methods are now used to try and solve this problem. They include the educating of drivers on the hazards of drinking and driving, the enforcement of alcohol laws by law enforcement officers, and tougher laws dealing with the punishment of offenders apprehended. In spite of these efforts, the problem still exists.

The approach taken by this writer is based on the hypothesis that a driver who has been arrested for a number of driving violations is also likely to be arrested for driving under the influence of alcohol.

The Grand Forks Air Force Base, located in Grand Forks County, North Dakota, was the geographical setting for the research conducted. Personnel stationed at the Air Force Base were randomly assigned to groups. Airmen with a known D.W.I. arrest were assigned to Group A and Airmen with no known D.W.I. arrest were assigned to Group B.

A point value was assigned to each of three driving violation categories, and the independent variable was comprised of these violations.

The dependent variable was a driving while under the influence arrest. Driving record checks for the three previous years were obtained for each of the two groups. The data were compiled and the results reported in Chapter V of this report. Based on the data it would seem to this writer that drivers who have previous driving violations are the same drivers most likely to be arrested for D.W.I. Therefore, the data does tend to support the hypothesis tested. In two of the three categories that made up the independent variable, Group B, that group of airmen with no known D.W.I. arrest had a mean value of 0.00. In the only remaining category, Group B had a mean value equal to one-half that obtained for Group A.

If this is true, then of what value is this information and how can it be used?

For any problem solving technique to be effective, it must be assured that all efforts and resources are directed toward the problem. Of the methods used to solve this problem, the law enforcement approach is only as good as the detection methods necessary to identify those drivers operating while under the influence of alcohol. The educational methods used should also be directed towards solving the problem. Alcohol seminars and traffic safety programs aimed at deterring drinking and driving may be more successful and the resources expended on them put to better use, if the drivers receiving the information were the ones who could most benefit by it. The question then becomes, How can we target and zero in on those drivers?

The hypothesis tested and the research conducted by this writer tends to support the fact that prior driving violations do precede a

D.W.I. arrest. Additional research on this question is needed and could help to validate the hypothesis. However, if past driving violations could be used to accurately predict which drivers would most likely be arrested for D.W.I., then by obtaining that information an organization's efforts could be directed towards those drivers.

Resources allocated to training are used efficiently if those who need the training are the ones receiving it. It does not make sense to educate all employees on driver safety and alcohol programs when some may not drive and others may not even drink.

In the process of collecting information on driving violations, the age and marital status of each subject was also recorded. After careful examination of the data it would appear that the marital status and age of airmen were also significant factors for those drivers arrested for D.W.I. The mean age of subjects in Group A was 21.5 years and in Group B it was 26.5 years. The mean age of the enlisted personnel at the GFAFB is 26.0 years, for officers 34.0 years, and for all personnel together, 29.8 years. Therefore, the age of the subjects in Group A is five years less than Group B, 4.5 years less than the enlisted personnel, 12.5 years less than officers and 8.3 years less than the mean age of all personnel stationed at the GFAFB.

Seventy-two percent of the subjects in Group A were single. GFAFB records indicate that of the total base population about 42 percent of all military personnel stationed there are single. Therefore, the D.W.I. group studied had 30 percent more single subjects than the base average would support. It would seem, therefore, that marital status is significant.

When all the data collected is examined it would support a composite profile of the airman that is arrested for D.W.I. stationed at the GFAFB to be as follows: single, about 21 years old, arrested on Saturday between 11:00 and 12:00 p.m., with a BAC of 0.14 percent, and a driving record that includes at least two moving violations or one accident in which he was a driver. The data would indicate that the airman not likely to be arrested for D.W.I. would be married, 26 years old, and has a clear driving record.

I would recommend that the programs aimed at reducing the number of alcohol related incidents at the GFAFB be evaluated. The purpose of this evaluation would be to determine the age, marital status, and driving habits of the personnel receiving the benefits of such programs. The research does not support the fact that all people who drive will be arrested for D.W.I. nor that all people who drink and drive will be arrested either. The research does, however, indicate that military personnel about 21 years old and single with previous driving violations have been the drivers who have been arrested.

I realize that this is but one report on this research approach. More research is needed in this area and that will serve to prove or disprove the hypothesis. Additional research is needed to answer other questions such as: Where do the airmen stationed at the GFAFB do their drinking? How often do they drink? How does Minnesota's drinking age of 19 relate to the number of airmen arrested for D.W.I. in North Dakota?

The primary concern of this writer is to make the highways safe for all motorists and their families. I hope this research can be beneficial in helping to solve the drinking and driving problem.

FOOTNOTES

¹32 CFR Part. 62b, Federal Register, Vol. 48, No. 70, Monday April 11, 1983. Proposed Rules, page 15486.62b3 Policy.

²Traffic Flow Map, North Dakota State Highway Department, Highway Data and Special Programs Division, Capitol Grounds, Bismarck, North Dakota, 1981.

³North Dakota Vehicular Accidents Facts, North Dakota State Highway Department, Planning Division, Capitol Grounds, Bismarck, North Dakota, 1979-1980-1981-1982.

⁴Ibid.

⁵R. F. Borckenstein and others. "Role of the Drinking Driver in Traffic Accidents," Indiana University, March 1964, p. 166.

⁶Handel, von K. Proceedings of the Third International Conference on Alcohol and Road Traffic, op. cit., pp. 61-65 (1963).

⁷Smith, H. W., and Popham, R. E. Blood Alcohol Levels in Relation to Driving, Canada Med. Ass. J. 65:325 (1951).

⁸Cohen, J.; Dearaley, E. J.; Hansel, C.E.M. The Risk Taken in Driving Under the Influence of Alcohol, Brit. Med. J. 1:1438 (1958).

⁹Lyle Felkins and Cheryl Clark. "Wayne County Traffic Fatality Study," Alcohol Safety Project, Vol. I, Highway Safety Research Institute, University of Michigan, February 1969, p. 56.

¹⁰Cohen, J.; Dearaley, E. J.; Hansel, C.E.M. The Risk Taken in Driving Under the Influence of Alcohol, Brit. Med. J. 1:1438 (1958).

¹¹"The War Against Drunk Drivers," Newsweek, September 8, 1982, p. 34.

¹²North Dakota State Patrol Operations Order, No. 3-81, December 1, 1981.

¹³North Dakota Century Code, Title 39, Sections 39-06.1-06, 39-06.1-08, 39-06.1-09, pp. 101-103.

¹⁴North Dakota Century Code, Title 39, Section 39-08-09, p. 125.

¹⁵North Dakota Century Code, Title 39, Section 39-06.1-05, p. 101.