DWI OFFENDERS: DEMOGRAPHY, PERCEPTUAL DRIVING SKILLS AND RISK-TAKING BEHAVIOR

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF HEALTH, PHYSICAL EDUCATION,

RECREATION, AND DANCE

BY

JUDITH L. SEXTON, M.S.

DENTON, TEXAS

DECEMBER, 1988

TEXAS WOMAN'S UNIVERSITY
DENTON, TEXAS

October 12, 1988

To the Dean for Graduate Studies and Research:

I am submitting herewith a dissertation written by Judith L. Sexton entitled "DWI Offenders: Demography, Perceptual Driving Skills and Risk-Taking Behavior." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Health Education.

Ruth Tandy
Dr. Ruth Tandy, Major Professor

We have read this dissertation and recommend its acceptance:

Judith A. Baker

Department Chairperson

J. Ann Ellis

Dean of College

Accepted

Leslie M Thompson
Dean for Graduate Studies and Research

ACKNOWLEDGMENTS

I would like to thank all of the members of my committee: Dr. Ruth Tandy, Dr. Roger Shipley, Dr. Jean Tague, Dr. Leah Kaplan, and Dr. Judy Baker, for their assistance in this endeavor.

A special thank you to Dr. Ruth Tandy who provided more faith and support than anyone could have expected.

COMPLETED RESEARCH IN HEALTH, PHYSICAL EDUCATION, RECREATION, AND DANCE Texas Woman's University, Denton, Texas

A. Uhlir
Institutional Representative

SEXTON, J.L. DWI offenders: Demography, perceptual driving skills and risk taking behavior. PhD in Health Education, 1988, 77 pp. (R. Tandy)

Demography, perceptual driving skills and risk taking behavior were determined for 110 white, male, driving while intoxicated subjects enrolled in the Denton County Probation driver education program between April, 1987 and November, 1987. The average age of the subjects was 29 years and 49% were single. Seventy-nine subjects were blue collar workers (71.8%), and 21% did not complete high school. The majority of subjects reported yearly incomes of $15,000 or below (62.7%). The majority of subjects drove 6,000-18,000 miles per year, and had 13 years of driving experience. The average number of traffic tickets received was 5 (41.8%), and 52% reported 0-1 lifetime accidents. The majority of subjects reported zero alcohol-related accidents (71.8%), zero defensive driving courses

(58.2%), and zero previous DWI courses (90%). The majority of subjects had taken driver education (62.7%). The subjects were given two audiovisual tests to determine perceptual driving skill (DPT) and driving risk taking behavior (DRI). A Spearman correlation indicated that a significant inverse relationship existed (p=.044) between scores on the DPT and the DRI. A multiple regression analysis indicated that educational level (p=.0106), and yearly earnings (p=.0021), were significant predictors of negative risk taking. Increased years of driving experience correlated with higher risk taking scores (p=.0033). The only significant predictor of high DPT scores was education (p=.0001).

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

ORIENTATION TO THE STUDY

In the United States in 1985, alcohol was a factor in approximately 20,000 fatal accidents, 320,000 injury accidents, and 1.5 million dollars in property-damage accidents (Overend, 1986). Alcohol is involved in 55% of all fatal accidents, 18% to 25% of accidents resulting in injuries, and 8% of accidents involving property damage in the United States (U.S. Department of Transportation, 1984). Alcohol has been shown to be a factor frequently associated with traffic accidents in other countries as well. Studies conducted in Australia by West and Hore, and in New Zealand by Londsale and Stacey (both cited in Stacey, 1985), reported that post-accident surveys place the association of alcohol with fatal accidents at approximately 50%.

Among those variables classified as demographic, sex has been found to be one of the best predictors of drinking drivers. Males are consistently over represented in all kinds of drinking driver

populations, particularly among crashed drivers with blood alcohol levels that are greater than .08%. Studies in California (Waller, King, Nielson, & Turkel, 1970) and Michigan (Filkins, et al. (1970) found that about 90% of the fatally injured drivers who had been drinking were males.

Persons of lower occupational levels are also over represented among drinking drivers. Donovan, Queisser, Salzberg, and Umlauf (1985) and Farris, Malone, and Lilliefors (1977) found that individuals classified as blue collar workers and those reporting low educational levels were involved with greater frequency in injury crashes.

Another demographic variable to be considered in the drinking driver population is age. Drivers aged 20 to 44 represent approximately 70% of the alcohol involved fatal accidents (U.S. Department of Transportation, 1984).

Drivers with alcohol-related arrests have a higher incidence of crashes than other groups of the driving population. Driving while intoxicated (DWI) drivers have been found to have from four to seven times as many driving convictions of all types than non-DWI drivers (Moss, Dennis, & Duffield, 1986).

The prominence of alcohol as a primary factor that is frequently associated with fatal automotive accidents has led to the development of programs specifically designed for the drunk driver. These programs typically are designed to help DWI offenders identify their drinking and driving patterns, and to assist them in developing plans to reduce the probability of future DWI behavior. Information and activities are presented to enable the DWI offenders to learn about the effects of alcohol on driving ability. However, the DWI programs are not designed to evaluate or to improve behind-the-wheel skills.

Purpose of the Study

The purpose of this study was to compare the perceptual driving skills and risk taking behavior of driving while intoxicated (DWI) offenders and to determine if the demographic variables affect their test scores.

Statement of the Problem

The problem of this investigation was to determine if there was a significant relationship between the scores of 110 DWI's on the Driver Risk

Index and the Driver Performance Test and to determine the predictability of the scores by specific demographic variables. Offenders studied were those who were assigned by the Denton County Probation Office to DWI education classes, and who were enrolled at North Texas State University in the driver education laboratories during the spring, summer, and fall semesters of 1987.

Hypotheses

The three null hypotheses formulated for this study were tested at the .05 level of significance.

1. There is no significant relationship between the subjects' scores on the Driver Performance Test and the Driver Risk Index.

2. There are no significant predictors of risk taking among the subjects when grouped according to the following variables: race, age, sex, occupation, educational level, income, marital status, driving experience, annual miles driven, traffic accidents, traffic tickets, alcohol-related traffic accidents, DWI courses, defensive driving, and driver education.

3. There are no significant predictors of perceptual driving skill among the subjects when

grouped according to each of the following variables: race, age, sex, occupation, educational level, income, marital status, driving experience, annual miles driven, traffic accidents, traffic tickets, alcohol related traffic accidents, DWI courses, defensive driving, and driver education.

Delimitations

The study population was delimited to offenders assigned by the Denton County Probation Office to attend DWI education classes.

Limitations

The study was limited by the following factors:

1. Cooperation of the subjects in adherence to the study's protocol.

2. The degree to which the testing conditions were made equivalent for all subjects.

3. The Hawthorne effect.

Definition of Terms

For the purposes of clarification, the following definitions and/or explanations were established for this study:

1. Alcohol-Related Traffic Accidents. Motor vehicle crashes with or without other vehicles or persons involved while the driver was under the influence of alcohol, regardless of the amount of alcohol consumed (Stacey, 1985).

2. Annual Mileage. Number of miles the subject drives annually.

3. Defensive Driving Course. Eight hour traffic safety education course (National Safety Council, 1987).

4. Driver Education. State approved driver education course taught through the public schools or through a commercial driving school (Texas Education Agency, 1986).

5. Driver Performance Test. Audiovisual motor vehicle driver performance test designed to measure the driver's perceptual capabilities, and psychomotor responses (Weaver, 1982).

6. Driver Risk Index. Video recorded traffic scenes test to determine the driver's acceptance or rejection of risk when making a traffic decision (Weaver, 1986).

7. Driving Experience. Number of years the subject has been driving.

8. DWI Course. Eight hour alcohol-traffic safety education course (Moss et al., 1986).

9. DWI Offender. Person convicted of driving while under the influence of intoxicating liquor at .10% blood alcohol level (Moss et al., 1986).

10. Perceptual Driving Skills. Skills required to search, identify, predict, decide, and execute while in the driving environment (Weaver, 1982).

11. Traffic Accidents. Motor vehicle crashes with or without other vehicles or persons involved, regardless of fault.

12. Traffic Tickets. Citations for moving and/or non-moving traffic violations.

CHAPTER II

SURVEY OF THE RELATED LITERATURE

A review of available research in the field of DWI and traffic safety indicated that this study did not duplicate other known investigations. Published research which addresses actual behind-the-wheel risk taking behavior and perceptual driving skills of the DWI population is unavailable. Therefore, the following overview of the demographic characteristics and risk taking behavior of DWI offenders is reported in depth from a few related studies.

According to a literature review completed by Donovan, Marlatt, and Salzberg (1983) there are several variables that have been implicated in the production of high risk driving styles and in increasing the probability of accident involvement. The authors classified these variables into five broadly defined categories: demographic variables, excessive alcohol use, personality traits, emotional states and driving related attitudes.

Among demographic variables, Donovan and associates (1983) found men to be involved more frequently in accidents than women. Men drive more than women thus, they are exposed to greater risk. Driver age also was found to be a significant factor in accident causation. Men and women 16 to 24 years of age had significantly higher accident vulnerability than drivers of the same sex between the ages of 25 and 69.

Age and marital status exerted an interactive influence on accident risk among men. Single men aged 45 and older had more than twice the risk for accidents than married men in the same age bracket. The difference in accident risk between married and single men younger than 45 years of age was negligible. Widowed men were more likely to be involved in accidents than were married men. Divorced and separated men younger than 25 years or older than 44 years appeared to have a relatively high potential for accident risk. Donovan and associates (1983) concluded that stressful life events requiring psychological adaptation, including marital disruption, increase accident risk.

Education and occupational status are also

factors involved with driving risk. Donovan et al. (1983) found higher levels of education to be associated with decreased risk, with the cut-off point between those who had not completed high school and those who had. In the category of occupation, unskilled and semiskilled manual laborers demonstrated nearly twice the accident risk of white-collar and professional workers. Many of the above-mentioned demographic characteristics associated with increased risk are also associated with the DWI population. The individual most likely to be involved in DWI is male, probably under the age of 30, divorced or separated, and employed at a blue-collar job.

Concerning alcohol involvement in traffic crashes, Donovan and associates (1983) stated that there is an overemphasis on alcohol as the primary cause of accidents which obscures a variety of contributory human factors. Alcohol alone does not lead to accidents. Based on a review of literature on drinking and driving, 30% of all fatal crashes could be related directly to alcohol but in the other 70%, even though the driver may have been drinking, other factors such as personality, situational or environmental factors were more significant in contributing to the accident.

The authors stated that it is important to identify a more general group of high-risk drivers whose deviant behavior leads to crash involvement with or without alcohol.

Donovan and associates (1983) found that the presence of certain attitudes toward the driving task appears to influence the occurrence of traffic violations and accidents. One of the driving-related attitudes related to enhanced driving risk is "positive evaluation" of speed, risk taking and sensation seeking while driving.

Wilson and Jonah (1985) surveyed a random sample of 1,420 Canadian drivers who consume alcohol in order to identify predictors of impaired driving. The respondents were classified into one of three groups. Those who had not driven after drinking any alcohol within the previous month were classified as "non-drink drive" (NDD). Those who had driven after drinking on one or more occasions but were not impaired were classified as "drink-drive" (DD). The last group consisted of those drivers who thought they had been legally impaired but drove anyway (DWI).

Wilson and Jonah (1985) found the DWI group to be younger than the NDD group. The DD group had

higher levels of education and income than the NDD group, but no other group differences in education or income were significant. The NDD group drove fewer miles than the other two groups. The NDD and DD groups were similar with respect to seat belt use (buckling up more often) than the DWI group. Approximately 9% of the NDD group had had at least one violation in the previous year, compared with 15% of the DD group and 23% of the DWI group. The DWI's had been involved in at least one accident compared with 5% of the DD group and 3.7% of the NDD group. The DWI group drank more in total and drank greater amounts per drinking occasion than the other two groups.

Automobile accident causation often can be attributed to human error rather than vehicular or environmental defects. Treat et al. (1977) investigated a sample of 2,258 from a total of 13,568 accidents reported by police in Monroe County, Indiana in 1977. Causes of accidents were classified as being vehicular, environmental, or human. The researchers classified categories of human causes of accidents as perception or recognition, decision, and response errors, or a combination of categories.

Delayed recognition of potential danger, errors in decision making and the response to it, and incorrect response to emergency situations were found to be responsible for the inevitable accident. Response errors were least frequent (10% of accidents), while recognition errors accounted for 55% of accidents, and decision errors for 50% of accidents.

Donovan et al. (1985) compared DWI offenders and high-risk drivers (multiple, nonalcohol related violations and accidents) with each other and with a group obtained from the general driving population to determine risk taking behavior. The sample consisted of three groups of male drivers from the state of Washington. The first group was comprised of 172 DWI offenders; the second group consisted of 193 high risk drivers (HRD); and the third group represented 154 members of the general driving population (GDP).

Questionnaires containing four sections were sent to all subjects. In the first section, information concerning drinking behavior was requested. The second section requested demographic information. Six driving-related attitudes were assessed in the third section, and information

concerning personality variables was requested in the fourth section. The GDP subjects were significantly older and better educated with higher status in jobs and social position. In reference to driving-related attitudes, the DWI and HRD subjects had higher levels of general hostility and were not as well adjusted emotionally as GDP subjects. The HRD subjects had higher scores on measures of driving-related attitudes related to a "risky driving style" when compared with the DWI and GDP subjects. The authors concluded that alcohol use appeared to increase the driving risk associated with the risk-enhancing behavioral and affective traits found among the DWI's.

Persons arrested for driving while intoxicated generally have more prior driving convictions than the average driver and perhaps more prior crashes (Filkins, et al., 1970; Perrine, Waller, & Harris, 1971). Their driving records have been found to be similar to those of fatally injured drivers with high blood alcohol levels (BALs), but their prior convictions for driving offenses are more numerous than those of either fatally injured drinking drivers or noncrashed drinking drivers. The BALs of persons arrested for DWI are

nearly always at illegally high levels (Shupe & Pfau, 1966). DWIs are seldom female, very young, or very old. They usually are arrested during weekends and at night, and often are engaged in "low status" occupations (Filkins et al., 1970; Perrine, et al., 1971).

Richman (1985) reported that there are no data from controlled studies to provide a quantitative estimate of the alcohol crash risk of persons arrested for DWI. However, young drivers aged 16-25 experience a large number of traffic crashes. Older drivers also account for a disproportionately large number of accidents. Drinking drivers represent a small percentage of both young and old drivers.

Cameron (1982) stated that teenagers were less likely than drivers in their 20s or 30s to have been drinking prior to crash involvement. Men are over represented in the drinking driving population and frequently are found among drivers with high BALs who are crash involved.

Fell (1983) analyzed, for 11 age groups, the percentage of all licensed drivers, the percentage of total vehicle miles driven, and the percentage of involvement in alcohol-related fatal accidents in 1980.

His results showed that 18 year olds, who made up only 2.2 percent of the driver population and drove less than 2 percent of total miles traveled, were involved in 5.5 percent of alcohol-related accidents. In contrast, the 45 to 54 year old age group had six times as many drivers as the 18 year olds, drove nine times as many miles, yet had only one and a third as many alcohol involved fatal accidents.

Vingilis, Adlaf, & Chung (1982) reported that women who drink and drive are more likely than men to be involved in accidents. However, women seem to be stopped for traffic spot checks less frequently than men. Divorced or separated drivers who were fatally injured were more likely to have been drinking or legally intoxicated than married, single or widowed drivers. Persons of lower income groups are over represented among drinking drivers. Persons in this group were found to be over represented among nighttime drivers in a nationwide study, particularly at very high BALs (greater than 15%).

There is no convincing evidence, according to Jones and Joscelyn (1978), that occupational level, race, income or educational level are strongly related to risk or alcohol-related crashes at BALs

above .08%. Jones and Joscelyn also stated that drivers who are inordinately tense, depressed, fatigued and who are given to risk taking behavior may be especially likely to cause serious alcohol related crashes.

Bradstock et al. (1987) described the sociodemographic characteristics of self-reported drinking drivers based on 22,236 behavioral risk factor (BRF) surveys conducted between 1981 and 1983 in 28 states. They compared them with sociodemographic characteristics of drivers in alcohol-associated motor vehicle accidents and of persons arrested for DWI. Also, the association of drinking driving with other health-risk behaviors was discussed. Analysis of data collected in telephone interviews found that significantly more men reported drinking driving than women. Reports of drinking driving declined significantly with age. The 18-24 age group reported the highest rates of drinking driving and the lowest rates were found in the over 64 age category. Drinking driving did not vary significantly by racial group. Higher levels of education were associated with higher rates of drinking driving among those over age 24. Those who reported that they "never

almost never" use seatbelts were more likely to report drinking driving. Heavy smokers (more than 1 pack per day) were more than twice as likely to report driving after drinking than were nonsmokers. There was a strong association between drinking driving and both binge drinking and chronic heavy alcohol use. Concerning stress, respondents were significantly more likely to drink and drive if they drink or smoke in response to stress than if they exercise in response to stress. The authors concluded that drinking driving is associated with current smoking, with failure to use seatbelts, and with the use of alcohol in response to the perception of stress.

Alcohol use is correlated with a lower rate of safety belt use. Although only 7.2 percent of sober drivers involved in fatal accidents in 1984 were wearing safety belts, a significantly smaller proportion of the drivers who had been drinking (2.2 percent) wore such restraints (U.S. Department of Health and Human Services, 1987).

Peek, Farnworth, Hollinger, and Ingram (1987) collected data on 2,742 drivers from 1971 through 1974. Interviews were conducted with selected

drivers between 7:00 p.m. and 3:00 a.m. on Fridays and Saturdays at four different sites each night. The authors reported that 9 to 20 times more men than women drive after drinking. Female drinking drivers are more likely than male drinking drivers to claim that they have consumed no alcohol, to have lower blood alcohol levels, and to be more concentrated among the separated and divorced groups.

According to Peek and associates (1987) there are some similarities between male and female drinking drivers. The blood alcohol levels of female and male drinking drivers involved in accidents vary little. Reported higher levels of church attendance paralleled reduced blood alcohol levels for both male and female drinking drivers. The authors concluded that unlike either male nondrinking or drinking drivers, female drinking drivers have less previous role experience, both as general drivers and as drinking drivers. Female drinking drivers have driven fewer miles, have been involved in fewer traffic violations and accidents (both in general and when driving after drinking), and have had less experience in driving after drinking.

CHAPTER III

PROCEDURES FOLLOWED IN THE DEVELOPMENT OF THE STUDY

The purpose of this study was to compare the perceptual driving skills and risk taking behavior of DWI offenders and to determine if the demographic variables affect their test scores. In this chapter, the procedures developed for this study are described under the following headings: (a) Sources of Information, (b) Preliminary Procedures, (c) Description of the Instruments, (d) Selection and Description of the Subjects, (e) Collection of the Data, and (f) Organization and Treatment of the Data.

Sources of Information

Documentary and human sources were utilized in the development of this study. The documentary sources included books, periodicals, theses, dissertations, computer searches, and related research reports. The human sources included 110 DWI offenders attending the Denton County Probation

Office DWI education classes during the spring, summer, and fall semesters of 1987. Other human sources included selected authorities in the field of DWI education.

Preliminary Procedures

Prior to actual data collection, permission to conduct the study was obtained from the North Texas State University driver education department to use the DWI subjects in the study. A copy of each letter granting permission is shown in Appendix A.

Description of the Instruments

In-car testing was time and cost prohibitive so two audiovisual tests were selected to determine the driving ability of the subjects. The criteria for the selection of the tests were: (a) reasonable time requirement to administer the instrument, (b) availability of the instruments, and (c) administrative feasibility. The Driver Performance Test (DPT) and the Driver Risk Index (DRI) were selected for use in this study based on the criteria established.

The Driver Performance Test (DPT) is an audio

visual motor vehicle driver performance test. (An example is included in Appendix B.) It is designed to measure the driver's perceptual capabilities, and psychomotor responses. Time frame visuals photographed from the driver's point of view create a real world driving environment that requires drivers to: search for hazardous situations or conditions; identify real and potential hazards; predict the effect of the hazards; decide how to evade the hazards; and execute evasive driving actions.

The DPT was introduced to the traffic safety profession in 1982. It was developed by Weaver (1982) and the test validation procedures were developed by the Battelle Research Foundation. The motor vehicle DPT competency scales were developed from a test score/crash frequency data base of 8,000 randomly selected experienced automobile and light truck drivers with a mean annual driving exposure of 15,000 miles. Traffic crash data used to compute the DPT scales are unbiased data. All crashes, regardless of fault, extent of injuries, or value of property damage, are included in the crash frequency rates. Because of sampling and data stratification procedures, an indepth statistical

analysis of the data was not performed. However, it was observed that those drivers with above average DPT scores had the lowest mean traffic crash frequency. Those drivers with low (50-83) DPT scores had the highest mean crash frequency.

A t-test analysis showed that, on the DPT scores, with the exception of the excellent (165-200) and above-average (139 164) groups, a difference of statistical significance exists between the test performance groups. For example, the average (103 138) group could be expected to have significantly fewer traffic crashes than the below average (84-102) group. The DPT scales were developed from historical crash data, and the scale delimiters were arbitarily established. Therefore, the DPT scales should not serve as the only criteria for estimating the crash probability of a driver (Weaver, 1982). Refer to Appendix B for the DPT competency scales.

The Driver Risk Index (DRI) is a video oriented assessment of a driver's risk taking potential. The DRI is designed to determine the driver's risk acceptance or rejection decision. The DRI utilizes video recorded traffic scenes rather than personal and driver data to generate the required driver risk

profile. The DRI video traffic scenes require the drivers to make decisions relating to the time and space surrounding their vehicle. Each driving risk related concept, such as following distance, left turns, speed control, etc., is presented in a variety of traffic situations. The driver indicates acceptance or rejection of the traffic risk by agreeing or disagreeing with the traffic scene narration (see answer sheet in Appendix C).

The DRI was developed and validated by Weaver, and was field tested in 1986, with a sampling of truck, bus, and automobile drivers, and data analysis shows a statistically acceptable correlation between DRI scores and driver crash frequency. The DRI was field tested by several motor vehicle fleet operations including: Courier Dispatch, Cobb Company, The DeKalb Schools, Florida Transportation Department, CRST, Inc., and Schneider Transportation.

The DRI was developed through a comparison of the DRI scores and crash records of 600 randomly selected drivers with a minimum of five years and 100 thousand miles of driving experience. Statistical analysis of the DRI/crash record data shows a positive correlation between DRI scores and crash

frequency. The mean DRI score for drivers without a motor vehicle crash over the past five years is 15. Drivers with DRI scores of 30 or above have a mean crash record of 2 over the past five years. A driver with a score of 39 or above, predictably will have twice as many crashes as a driver with a score of 10 or below. All motor vehicle crash data, regardless of fault or magnitude, were computed in developing the DRI (Weaver, 1986).

A questionnaire was designed by this researcher to obtain demographic information on age, race, sex, occupational level, educational level, net earnings during the previous year, marital status, number of years the subject had been driving, number of miles driven per year, number of traffic tickets received since the subject started driving, number of traffic accidents the subject had been involved in since driving, number of alcohol-related traffic accidents, number of times the subject had taken defensive driving courses, number of DWI courses the subject had taken previously, and completion of high school driver education (see Appendix D). Anonymity of the subjects was ensured by a numerical code.

Selection and Description of the Subjects

The population consisted of those DWI offenders assigned by the Denton County Probation Office to DWI education classes and who were enrolled at North Texas State University driver education in the driver education laboratories between April and November of 1987. All subjects agreeing to participate in the study were tested on Tuesday evenings and Saturday afternoons.

Collection of the Data

The DWI classes were conducted twice a month in the driver education laboratories. All testing sessions were conducted by one instructor, and each testing session lasted approximately 2 1/2 hours. Each subject was given a demographic questionnaire to complete and the answer sheets for the DRI and the DPT.

To complete the DPT, subjects were seated in a driver education classroom facing a 6' by 10' wall screen. The subjects were instructed to view each of 40 traffic scenes presented via 35mm slide projector and listen to the accompanying question concerning each traffic scene. The subjects were instructed to

answer the question asked by the narrator by indicating their response on the answer sheet. There were 40 multiple-choice questions on the DPT.

To complete the DRI, subjects were seated in a driver education classroom facing a television monitor and video player hook-up. Each subject was given a DRI answer sheet and a pencil. The subjects were instructed by the monitor to circle the agree or disagree printed on their answer sheet for each traffic scene observed and the accompanying statement made concerning that traffic scene. There were 50 scenes on the DRI test.

Subjects were tested in groups of from 8 to 17. Each test took approximately 40 minutes to complete.

Organization and Treatment of the Data

A Spearman correlation procedure was utilized to determine if there was a significant relationship between the subject's scores on the DPT and the DRI. A multiple regression was performed on the DPT and the DRI scores to determine whether these scores could be predicted by demographic factors.

CHAPTER IV

PRESENTATION OF FINDINGS

The findings of the study are presented in this chapter. The purpose of the study was to compare the perceptual driving skills and risk taking behavior of DWI offenders and to determine if the demographic variables affect their test scores.

Description of the Demographic Data

Data were collected on 154 subjects for the following variables: age, sex, race, occupation, educational level, yearly earnings, marital status, number of years of driving experience, number of miles driven per year, number of traffic tickets received since the subject started driving, number of accidents the subject had been involved in, the number of alcohol-related accidents the subject had been involved in, the number of defensive driving classes taken, the number of DWI classes taken, and completion of a driver education course. Outliers (subjects with extreme scores) were found in the categories of race and sex that violated the

assumption of normality and were therefore removed from the study. In addition, the demographics of age, years of driving experience, number of tickets received, number of accidents, and number of defensive driving classes taken were changed when the outliers were eliminated. As a result, the study population consisted of 110 white, male, DWI subjects.

Analysis of the Demographic Data

Table 1 depicts the demographics of age, occupation and educational level. The mean for age was 29 years. The median for education was completion of 12th grade.

Data concerning yearly earnings, marital status, and years of driving experience are found in Table 2. The majority of subjects reported earnings in the under $15,000 per year category. The majority of the subjects were single or divorced and the mean for years of driving experience was 13.14.

Table 3 presents the data concerning the number of miles driven, the number of tickets received, and the number of accidents reported by the subjects. The majority of subjects reported driving 6,000 to 18,000 miles per year. The mean number of traffic tickets received was 5 and the majority reported 0-1 accidents.

Table 1

Age, Occupation, and Educational Level of Subjects

Characteristics	# of subjects (n=110)	%
Age		
17 - 24	38	34.5
25 - 32	43	39.1
33 - 42	20	18.2
43 - 54	09	8.2
Occupation		
white collar	31	28.2
blue collar	79	71.8
Educational level		
not high school graduate	23	20.9
high school graduate	38	34.6
business or trade school	04	3.6
some college	28	25.5
associate degree	05	4.5
college degree	12	10.9

Table 2

Subjects' Yearly Earnings, Marital Status, and Years of Driving Experience

Characteristics	# of subjects (n=110)	%
Yearly Earnings		
under $5,000	22	20.0
under 10,000	23	20.9
under 15,000	24	21.8
under 20,000	21	19.1
over 20,000	20	18.2
Marital Status		
married	29	26.4
single	54	49.0
divorced/separated	27	24.6
Years of Driving Experience		
2 - 8	37	33.6
9 - 15	40	36.4
16 - 37	33	30.0

Table 3

Miles Driven Per Year, Number of Tickets Received, and Number of Accidents by Subjects

Characteristics	# of subjects (n=110)	%
Miles Driven Per Year		
1,000 - 6,000	13	11.8
6,001 - 12,000	35	31.8
12,001 - 18,000	23	20.9
18,001 - 24,000	22	20.0
24,000+	17	15.5
Tickets		
0 - 3	43	39.1
4 - 7	46	41.8
8+	21	19.1
Accidents		
0 - 1	57	51.9
2 - 3	46	41.8
4 - 6	07	6.3

Table 4 reflects the data concerning the number of alcohol-related accidents and defensive driving courses taken. The number of alcohol-related accidents varied from 0 to 2 with a mean score of 0.29. The mean for the number of times a subject completed a defensive driving class was .5.

Table 4

Number of Alcohol-Related Accidents & Defensive Driving Courses Taken by Subjects

Characteristics	# of subjects (n=110)	%
# of Alcohol Accidents		
0	79	71.8
1-2	31	28.2
Defensive Driving		
0	64	58.2
1	30	27.3
2	10	9.1
3+	06	5.4

Table 5 reviews the number of previous DWI courses taken and the number of subjects who reported completion of high school driver education. In the category of previous DWI courses taken, the majority of subjects reported 0. The majority of subjects reported completion of high school driver education.

Table 5

Subjects' Previous DWI Courses Taken, & Completion of Driver Education

Characteristics	# of subjects (n=110)	%
DWI Classes		
0	99	90.0
1	10	9.1
2	01	0.9
Completion of Driver Education		
yes	69	62.7
no	40	36.4
no response	01	0.9

Analysis of the Test Data

Table 6 reviews the scores on the DRI. The mean score was 15.11 and the standard deviation was 3.72. The lowest DRI score was 6 and the highest was 25. The mean DRI score for drivers without a motor vehicle crash over the past five years was 15. Categories for the range of scores are included in the table (Weaver, 1986).

Table 6

Subjects' Driver Risk Index Scores

Driver Risk Index Test Score		# of subjects (n=110)	%
Categories	Scores		
Non-risk-taker	0-15	59	53.7
Risk-taker	16-25	51	46.3

Table 7 depicts the scores for the DPT. The mean DPT score was 124.48 and the standard deviation was 12.97. The lowest DPT score was 83 and the highest score was 152. Categories for the range of scores are included in the table (Weaver, 1982).

Table 7

Driver Performance Test Scores of Subjects

Driver Performance Test	# of subjects (n=110)	%
Categories	**Scores**	
Poor	50-83	01	0.9
Below Average	84-102	06	5.5
Average	103-138	89	80.9
Above Average	139-164	14	12.7
Excellent	165-200	0	0.0

To insure that the techniques used in this study were in accordance with generally accepted statistical procedures, certain variables were recoded to transform them to "dummy" variables. These variables were:

OCCUP The occupation of the respondent

M1 Whether or not the respondent was married

M2 Whether or not the respondent was divorced

M3 Whether or not the respondent was separated

DE Had the respondent taken driver education in high school

The variables were then classified as to measurement scale; i.e., nominal, ordinal, interval, and ratio. These classifications were:

Occupation of respondent	nominal
Was respondent married	nominal
Was respondent divorced	nominal
Was respondent separated	nominal
Prior driver education	nominal
Educational level	ordinal
Yearly earnings	ordinal
Miles driven per year	ordinal
Driver Performance Test	interval
Age of driver	ratio
Number of years driven	ratio
Number of tickets	ratio
Number of accidents	ratio
Number of alcohol accidents	ratio
Number of defensive driving courses	ratio
Number of DWI courses	ratio
Driver Risk Index	ratio

The first concern of the study was to determine which variables significantly determined the driver's risk, as measured by the DRI. To determine this, a

multiple regression using DRI as the dependent variable and the remaining variables as independent was utilized. Procedure STEPWISE was used as a variable entry method as this method guaranteed a minimum amount of multicollinearity. The full model has three independent variables significant at the .05 alpha level: educational level, yearly earnings, and years of driving experience. The multiple R square of the linear model was .21107, which indicated that the model explained 21.11% of the variation in driver risk. Using the F-test for model significance, an F of 9.45286 with 3 numerator and 106 denominator degrees of freedom was derived, which was significant at less than the alpha .0001 level. The linear model (DRI= -.53 EDUC - .8467 INCOME + .1355 YRDRV + 17.35) indicated that when education goes up one level, the driver risk index falls .530 units, when income goes up one level, driver risk index falls .8467 units, and for each additional year driven the driver risk index increases .1355 units.

The most significant variable was income, which was significant at the alpha .0021 level. Years of driving experience was significant at the alpha .0033 level. Education was significant at the alpha .0106 level.

The respondent's score on the DPT was utilized to determine which variables, if any, significantly predicted it. To guarantee a significant lack of multicollinarity, STEPWISE regression was used. Education was the only significant variable found. The R-square of the model was .19328, which indicated that 19.328% of the variation in the DPT score can be explained by the educational level of the respondent. An F of 25.96483 with 1 numerator and 108 denominator degrees of freedom was calculated, which was significant at less than the alpha level of .0001. The model was (DPT = 114.668 + 3.427 Education), which indicates that as educational level increases one level, the score on the DPT will increase approximately 3.427 points. Education was significant at less than the alpha .0001 level, which indicates that it is a very strong predictor of the DPT score.

Finally, the DRI and DPT were correlated, using Spearman correlation, to determine if a significant relationship existed between them. Spearman correlation was selected to guard against influential outliers biasing the data set. The correlation between DRI and DPT was -.1926 which was significant at the alpha .044 level. Therefore, there was a significant inverse

relationship between DRI and DPT, which indicates that the higher a person scores on the DPT, the lower should be his driving risk.

CHAPTER V

SUMMARY, RESULTS, FINDINGS, DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

Summary

The purpose of this study was to compare the perceptual driving skills and risk taking behavior of DWI offenders and to determine if the demographic variables affect their test scores. Demographic data, Driver Risk Index (DRI), and Driver Performance Test (DPT) scores were obtained from DWI offenders attending Denton County Probation Office DWI education classes from April to September of 1987. Data were collected on 154 DWI offenders but, because of outliers the study was confined to 110 white, male, DWI population subjects.

A multiple regression was performed on the DPT and DRI scores to determine the effects of the demographic factors on those scores. A Spearman correlation was utilized to determine if there was a significant relationship between the subject's scores on the DPT and the DRI.

Results

The results of hypotheses which were tested at the .05 level of significance are as follows:

1. There is no significant relationship between the subjects' scores on the driver performance test and the driver risk index. REJECTED

2. There are no significant predictors of risk taking among the subjects when grouped according to the following variables: race, age, sex, occupation, educational level, income, marital status, driving experience, annual miles driven, traffic accidents, traffic tickets, alcohol-related traffic accidents, DWI courses, defensive driving, and driver education. REJECTED

3. There are no significant predictors of perceptual driving skill among the subjects when grouped according to the following variables: race, age, sex, occupation, educational level, income, marital status, driving experience, annual miles driven, traffic accidents, traffic tickets, alcohol related traffic accidents, DWI courses, defensive driving, and driver education. REJECTED

Findings

Self reported data determined the average age of the subjects at 28, and 49% were single. The majority of the subjects were blue collar workers and did complete high school. The majority of subjects reported yearly incomes of $15,000 or below. The subjects drove 6,000-12,000 miles and reported an average of 13 years of driving experience. The average number of traffic tickets received was 5, and the majority of subjects reported 0-1 lifetime accidents. The majority of the subjects reported zero alcohol-related accidents, zero defensive driving courses, and zero previous DWI courses. The majority had taken driver education.

A multiple regression analysis indicated that educational level, yearly earnings, and years of driving experience affected the DRI scores. When education goes up one level, the driver risk index falls .530 units, when income goes up one level, driver risk index falls .8467 units, and for each additional year driven the driver risk index increases .1355 units.

A Spearman correlation indicated that a

significant inverse relationship existed between scores on the DPT and the DRI. As education increases one level, the score on the DPT will increase approximately 3.427 points.

Discussion

There was a significant inverse relationship found between the subjects' scores on the DPT and the DRI. As the DPT score increased, the DRI score decreased. This correlation between perceptual driving skill and risk taking behavior seems logical since risk taking behind the wheel is associated with the perceived risk of the particular task, for example, passing, tailgating, or speeding. If individuals have good perceptual driving skill it may be assumed that they will be less likely to take unnecessary risks because they perceive the inherent danger of the driving task and have the ability to react to it.

Educational level, income, and years of driving experience were the only significant predictors of risk taking among the subjects. Risk taking scores decreased as educational levels increased. Perhaps people with higher educational levels are better

"test takers" and therefore, demonstrate higher scores. Also, those individuals who have invested in their careers may be less willing to take risks while driving. We may assume that a person who has attained a higher educational level may also be in a higher income bracket. Higher income correlated with lower risk taking scores. Thus, this score differential could be due to the correlation between education and income. Also, those individuals who reported higher income levels may have more to lose materially. If they have worked hard to reach a higher income bracket, they may be less willing to risk their lives or limbs.

The data indicated that as the years of driving experience increased, the risk taking scores also increased. Driving skills are expected to improve with experience and as individuals age, they become more experienced behind the wheel. Therefore, as the number of years of driving experience increases, the skill and ability to judge the safety of specific driving tasks and to accept or reject the accompanying risk factors would also be affected. It would appear that as drivers gain confidence in this ability, they assume greater risks. The

risks perceived by inexperienced drivers may prevent them from attempting the more dangerous maneuvers that the experienced driver takes. As we gain experience behind the wheel, our driving habits change. Registered race car drivers have been found to be involved in more accidents than "regular" drivers even though their skill levels are assumed to be much greater (Shinar, 1978).

Education was the only significant predictor of positive scores on the DPT. Again, education may have correlated simply because educated individuals may be more experienced at taking tests. Also, just as educated individuals are unwilling to take unnecessary risks, they may also concentrate on attaining a higher level of performance.

Dr. Jack Weaver's (1986) research on the general population with the DRI determined that the probability of accident involvement increases as the DRI score increases (above 15). If a driver scored between 0 and 15, his accident record for the previous 5 years was probably clear. However, if a driver scored above 15, the probability of accident involvement was much greater. In the present study, less than 50% scored above 15. However, 51 subjects

(46%) did score above 15 indicating that the group came close to being classifed as risk takers. This would appear to be consistent with the make-up of the DWI group. According to Waller et al. (1970) and Filkins et al. (1970), males are consistently over represented in all kinds of drinking driver populations. The average age of the subjects in this study was 28 years and according to the U.S. Department of Transportation (1984), drivers aged 20 to 44 represent approximately 70% of the alcohol involved fatal accidents. The individual associated with increased risk and most likely to be involved in DWI is male, probably under the age of 30, divorced or separated, and employed at a blue collar job (Donovan, et al., 1983). The DWI population of the present study consisted of 60.9% who were under the age of 30, 73.7% who were unmarried (single, divorced or separated), and 71.8% who reported being blue collar workers. These demographics correlate with the findings of Donovan and associates.

The DRI appears to be a reliable instrument to be utilized in the determination of driving risk taking behavior of subjects, at least in relation to their education, income, and years of driving

experience. A DWI population is assumed to be risk takers as they drink and then drive with the knowledge that they are impaired. However, since 59 of the subjects (53.7%) did not score in the high risk category, other factors should be explored, such as personality or fatigue to account for the overall risk taking behavior of the DWI population.

The results of this study indicated that the DPT appears to be a valid instrument which determines the "good driver" as reflected by the subject's level of education. That is, the subject who reported a higher level of education earned a higher score on the DPT. As mentioned earlier, this may be a result of educated people being more experienced at test taking. Also, educated individuals may have a longer attention span and, as a result, have improved concentration. Educated individuals may also be more goal oriented and more interested in good test performance. All of these characteristics could be related to better driving performance itself.

Conclusion

There was a significant inverse relationship found between the subjects' scores on the DPT and the

DRI. There were three significant predictors of risk taking among the subjects. Educational level and income correlated with a lower risk taking score. As the years of driving experience increased, the DRI scores also increased. There was one significant predictor of positive scores on the DPT. Those individuals who reported higher levels of education also reported higher scores on the DPT.

Recommendations

As a result of this study, the investigator recommends the following for further study:

1. Studies which replicate this study using a more sensitive risk taking behavior instrument.

2. The replication of this study minus the introduction contained at the beginning of the DRI utilized in this study which alerts the test takers that their risk taking behavior is being evaluated.

3. On the road test designed to determine risk taking behavior.

References

Bradstock, M., Marks, J., Forman, M., Gentry, E., Hogelin, G., Binkin, N., & Trowbridge, F. (1987). Drinking-driving and health lifestyle in the U.S. Behavioral risk factors surveys. Journal of Studies on Alcohol, 48(2), 147-151.

Cameron, T.L. (1982). Drinking and driving among American youth: Beliefs and behaviors. Drug and Alcohol Dependence, 10, 1-33.

Donovan, D., Marlatt, G., & Salzberg, H. (1983). Drinking behavior, personality factors and high-risk driving. Journal of Studies on Alcohol, 44(3), 395-428.

Donovan, D., Queisser, H., Salzberg, H., & Umlauf, R. (1985). Intoxicated and bad drivers: Subgroups within the same population of high-risk men drivers. Journal of Studies on Alcohol, 46(5), 375-382.

Farris, R., Malone, T., & Lilliefors, H. (1977). A Comparison of alcohol involvement in exposed and injured drivers, phases I & II (Report No. DOT-HS 4-00954). Washington, DC: U.S. Government Printing Office.

Fell, J. (1983). Alcohol involvement in traffic accidents: Recent estimates from the national center for statistics and analysis (Report No. DOT-HS-806269). Washington, DC: U.S. Government Printing Office.

Filkins, L., Clark, C., Rosenblatt, C., Carlson, W., Kerlan, M., & Manson, H. (1970). Alcohol abuse and traffic safety: A study of fatalities, DWI offenders, alcoholics, and court-related treatment approaches (NHSB Contract No. FH-11-6555 & FH-11 77125). Michigan: University of Michigan Highway Safety Research.

Jones, R.K., & Joscelyn, K.B. (1978). Alcohol and highway safety 1978: A review of the state of knowledge (U.S. Department of Transportation Pub. No. DOT HS-803-714). Springfield, VA.: National Technical Information Service.

Moss, R.G., Dennis, M.E., & Duffield, R.K. (1986). Texas DWI education program administrator-instructor manual. Austin, Tx: Texas Commission on Alcoholism.

National Safety Council. (1987). Defensive Driving Course Guide. Chicago, Il: Author.

Overend, R.B. (Ed.) (1986). Traffic accident facts 1986 edition. Traffic Safety, 86(6), 12-15.

Peek, C., Farnworth, M., Hollinger, R., & Ingram, R. (1987). Gender roles and female drinking-driving. Journal of Studies on Alcohol, 48(1), 14-21.

Perrine, M.W., Waller, J.A., & Harris, L.S. (1971). Alcohol and highway safety: Behavioral and medical aspects. (National Highway Traffic Safety Administration Publication No. NTIS PB-205-030). Springfield, VA.: National Technical Information Service.

Richman, A. (1985). Human risk factors in alcohol related crashes. Journal of Studies on Alcohol, 10, 21-31.

Shinar, D. (1978). Psychology On The Road. New York: John Wiley & Sons.

Shupe, L.M., & Pfau, R.O. (1966). Who are these drinking drivers? Proceedings of the Fourth International Conference on Alcohol & Traffic Safety. Bloomington, IN.: Indiana University, Department of Police Administration.

Stacey, B. (1985). Drinking and driving: Alcohol association with traffic accidents. Journal of Alcohol and Drug Education, 30, 3-6.

Texas Education Agency. (1986). Driver Education Classroom and In-Car Instruction. Austin, Tx: Author.

Treat, J.R., Tumbas, N.S., McDonald, S.T., Shinar, D., Hume, R.D., Mayer, R.E., Stansifer, R.L., & Castellan, N.J. (1977). Tri-level study of the causes of traffic accidents (Report No. DOT-HS-034-3 535-77) (TAC). Bloomington, IN.: Indiana University.

United States Department of Health and Human Services. (1987). Alcohol and Health (Report No. ADM 281-85 0009). Washington, DC: U.S. Government Printing Office.

United States Department of Transportation. (1984). Alcohol and highway safety 1984: A review of the state of the knowledge (NHTSA Publication No. DOT-HS 806-569). Washington, DC: U.S. Government Printing Office.

Vingilis, E., Adlaf., E., & Chung, L. (1982). Comparison of age and sex characteristics of police-suspected impaired drivers and roadside-surveyed impaired drivers. Accident Analysis & Prevention, 14(6) 425-430.

Waller, J., King, E., Nielson, G., & Turkel, H. (1970). Alcohol and other factors in California highway fatalities. Proceedings of the Eleventh Annual Meeting of the American Association for Automotive Medicine. Springfield, IL.: Charles C. Thomas.

Weaver, J. (1982). Driver Performance Test. (Available from Safe Performance Associates, 3250 U.S. Highway 19, North, Suite 205 Clearwater, FL. 33575).

Weaver, J. (1986). Driver Risk Index. (Available from Safe Performance Associates, 3250 U. S. Highway 19, North, Suite 205 Clearwater, Florida 33575).

Wilson, J., & Jonah, B. (1985). Identifying impaired drivers among the general driving population. Journal of Studies on Alcohol, 46(6), 531-537.

APPENDICES

APPENDIX A

PERMISSION LETTERS

NTSU
NORTH TEXAS STATE UNIVERSITY
Denton, Texas 76203

Driver Education

January 21, 1987

Judith L. Sexton
2006 Bowling Green
Denton, Texas 76201

Dear Ms. Sexton:

It is with pleasure that I grant you permission to conduct research here on the DWI population. If I may be of assistance to you, please do not hesitate to contact me.

Sincerely,

Kenneth Bahnsen

Kenneth Bahnsen, Director
Driver Education

TWU Texas Woman's University
P.O. Box 22479, Denton, Texas 76204 (817) 898-3400, Metro 434-2863, Tex-An 341-3400
THE GRADUATE SCHOOL

May 19, 1987

Judith L. Sexton
P.O. Box 24144, TWU Sta.
Denton, TX 76204

Dear Ms. Sexton:

I have received and approved the Prospectus for your research project. Best wishes to you in the research and writing of your project.

Sincerely yours,

Leslie M. Thompson

Leslie M. Thompson
Provost

LMT:ccw

xc: Dr. Ruth E. Tandy
Dr. Roger Shipley
Dr. Ann Uhlir

APPENDIX B

DRIVER PERFORMANCE SAMPLE TEST AND COMPETENCY SCALES

DRIVER PERFORMANCE TEST

NAME (PRINT) _____ DATE ___/___/___ CODE _____

CIRCLE THE MOST CORRECT ANSWER

1. YOU ARE ENTERING A GRADUAL LEFT TURN AT 40 MILES PER HOUR. WHAT ARE YOU SEARCHING FOR IN THE 360 DEGREES DRIVING ENVIRONMENT THAT CIRCLES YOUR VEHICLE?

   A. DRINKING DRIVERS.
   B. VEHICLES ENTERING FROM THE SIDE ROAD.
   C. TAILGATING DRIVERS.
   D. APPROACHING VEHICLES THAT ARE RUNNING LEFT OF CENTER.

2. YOU ARE APPROACHING A SIGNAL CONTROLLED INTERSECTION AT 30 MILES PER HOUR, THE PAVEMENT IS WET. IDENTIFY THE MOST HAZARDOUS SITUATION OR CONDITION AT THE INTERSECTION.

   A. OIL OR GREASE ON THE PAVEMENT NEAR THE STOP LINES.
   B. PEDESTRIAN ENTERING THE CROSSWALK.
   C. TAILGATING DRIVER.
   D. APPROACHING VEHICLE TURNING LEFT AT THE INTERSECTION.

3. ROAD CONSTRUCTION IS BLOCKING THE LEFT LANE OF THE HIGHWAY. PREDICT WHAT THE DRIVERS TO YOUR LEFT AND AHEAD OF YOU WILL DO.

   A. DRIVER TO YOUR LEFT WILL ACCELERATE AND CUT QUICKLY INTO YOUR LANE.
   B. DRIVER IN THE VEHICLE AHEAD WILL BRAKE HARD.
   C. DRIVER IN THE VEHICLE TO YOUR LEFT WILL BRAKE HARD.
   D. DRIVER IN THE VEHICLE TO YOUR LEFT WILL REDUCE SPEED AND CHANGE LANES.

4. THE BICYCLIST IS PARTIALLY BLOCKING YOUR LANE, YOU ARE DRIVING 55 MILES PER HOUR, AND BEING TAILGATED. DECIDE THE MOST APPROPRIATE HAZARD AVOIDANCE ACTION.

   A. ACCELERATE AND PASS THE BICYCLE WHILE THE LEFT LANE IS CLEAR.
   B. REDUCE SPEED AND WAIT FOR A SAFE OPPORTUNITY TO PASS THE BICYCLE.
   C. MAINTAIN SPEED, SOUND HORN, AND PASS THE BICYCLE.
   D. REDUCE SPEED, CHECK ONCOMING TRAFFIC AND THE TAILGATER, ENTER LEFT LANE AND PASS THE BICYCLE.

5. YOU ARE UPGRADE NEAR THE CREST OF THE HILL TRAVELING AT 50 MILES PER HOUR. AN APPROACHING PASSING VEHICLE IS IN YOUR LANE. EXECUTE THE MOST APPROPRIATE EVASIVE ACTION.

   A. STEER QUICKLY TO THE RIGHT.
   B. BRAKE SOFTLY, GRADUALLY STEER TO THE RIGHT.
   C. HARD BRAKE, STAY IN RIGHT LANE.
   D. REDUCE SPEED, MOVE TO THE EXTREME RIGHT OF THE ROADWAY PAVEMENT.

DRIVER PERFORMANCE TEST COMPETENCY SCALES

TEST POINTS	%	MEAN ACCIDENT FREQUENCY RATE PER MILLION MILES	FUNCTIONAL SKILL SIGNIFICANCE
165 - 200	83 - 100	2.97	EXCELLENT
139 - 164	70 - 82	4.16	ABOVE AVG.
103 - 138	52 - 69	14.36	AVERAGE
84 - 102	42 - 51	36.79	BELOW AVG.
50 - 83	25 - 43	63.05	POOR

Accident frequency rate calculated from self reported accident/exposure data (600 subjects in the sample population). Weaver, 1982.

APPENDIX C

DRIVER RISK INDEX ANSWER SHEET

DRIVER RISK INDEX RESPONSE FORM

SUBJECT NUMBER_____ DATE_____ SCORE____

EXAMPLE QUESTION:__ AGREE DISAGREE

1.__	AGREE	DISAGREE	26.__	AGREE	DISAGREE
2.__	AGREE	DISAGREE	27.__	AGREE	DISAGREE
3.__	AGREE	DISAGREE	28.__	AGREE	DISAGREE
4.__	AGREE	DISAGREE	29.__	AGREE	DISAGREE
5.__	AGREE	DISAGREE	30.__	AGREE	DISAGREE
6.__	AGREE	DISAGREE	31.__	AGREE	DISAGREE
7.__	AGREE	DISAGREE	32.__	AGREE	DISAGREE
8.__	AGREE	DISAGREE	33.__	AGREE	DISAGREE
9.__	AGREE	DISAGREE	34.__	AGREE	DISAGREE
10.__	AGREE	DISAGREE	35.__	AGREE	DISAGREE
11.__	AGREE	DISAGREE	36.__	AGREE	DISAGREE
12.__	AGREE	DISAGREE	37.__	AGREE	DISAGREE
13.__	AGREE	DISAGREE	38.__	AGREE	DISAGREE
14.__	AGREE	DISAGREE	39.__	AGREE	DISAGREE
15.__	AGREE	DISAGREE	40.__	AGREE	DISAGREE
16.__	AGREE	DISAGREE	41.__	AGREE	DISAGREE
17.__	AGREE	DISAGREE	42.__	AGREE	DISAGREE
18.__	AGREE	DISAGREE	43.__	AGREE	DISAGREE
19.__	AGREE	DISAGREE	44.__	AGREE	DISAGREE
20.__	AGREE	DISAGREE	45.__	AGREE	DISAGREE
21.__	AGREE	DISAGREE	46.__	AGREE	DISAGREE
22.__	AGREE	DISAGREE	47.__	AGREE	DISAGREE
23.__	AGREE	DISAGREE	48.__	AGREE	DISAGREE
24.__	AGREE	DISAGREE	49.__	AGREE	DISAGREE
25.__	AGREE	DISAGREE	50.__	AGREE	DISAGREE

TOTAL THE CHECK MARKS AND ENTER THE TOTAL NUMBER IN THE SCORE BLANK AT THE TOP OF THIS FORM.

APPENDIX D

DEMOGRAPHIC INFORMATION SHEET

DEMOGRAPHIC INFORMATION SHEET

NAME_____ AGE_____

RACE: white__ black__ american indian__ hispanic__
asian or pacific islander__ other__
SEX: male__ female__
TYPE OF KIND OF WORK:_____
IF UNEMPLOYED, WHAT WAS YOUR LAST JOB?_____
EDUCATIONAL LEVEL: not high school graduate__
high school or ged diploma__
business or trade school__
some college but no degree__
associate degree__
bachelor's degree__
master's degree__
doctor's degree__
APPROXIMATE TOTAL NET EARNINGS DURING PAST 12 MONTHS:
under $5,000__ under $10,000__ under $15,000__
under$20,000__ over $20,000__
MARITAL STATUS: married__ single__ widowed__
divorced__ separated__
NUMBER OF YEARS YOU HAVE BEEN DRIVING_____
NUMBER OF MILES YOU DRIVE PER YEAR: 1 - 6,000__
6,001 - 12,000__ 12,001 - 18,000__
18,001 - 24,000__ 24,000+__ (note: 12,000 is
average per year)
NUMBER OF TRAFFIC TICKETS YOU HAVE RECEIVED SINCE
YOU STARTED DRIVING_____
NUMBER OF TRAFFIC ACCIDENTS YOU HAVE HAD SINCE YOU
STARTED DRIVING (REGARDLESS OF FAULT)_____
NUMBER OF ALCOHOL-RELATED TRAFFIC ACCIDENTS_____
NUMBER OF TIMES YOU HAVE TAKEN DEFENSIVE DRIVING
COURSES_____
NUMBER OF DWI COURSES YOU HAVE TAKEN PREVIOUSLY_____
DID YOU TAKE DRIVER EDUCATION IN SCHOOL?_____

APPENDIX E

RAW DATA

RAW DATA

AGES OF DWI SUBJECTS

AGE OF SUBJECT	# OF SUBJECTS	%	CUM %
17	01	0.9	0.9
18	02	1.8	2.7
19	03	2.7	5.5
20	04	3.6	9.1
21	07	6.4	15.5
22	07	6.4	21.8
23	07	6.4	28.2
24	07	6.4	34.5
25	05	4.5	39.1
26	05	4.5	43.6
27	06	5.5	49.1
28	05	4.5	53.6
29	08	7.3	60.9
30	04	3.6	64.5
31	04	3.6	68.2
32	06	5.5	73.6
33	06	5.5	79.1
34	01	0.9	80.0
35	02	1.8	81.8
36	03	2.7	84.5
37	04	3.6	88.2
39	01	0.9	89.1
40	02	1.8	90.9
42	01	0.9	91.8
43	02	1.8	93.6
44	01	0.9	94.5
45	01	0.9	95.5
47	01	0.9	96.4
49	01	0.9	97.3
51	01	0.9	98.2
52	01	0.9	99.1
54	01	0.9	100.0

n=	110
mean	28
median	28

RAW DATA

DWI OCCUPATIONAL CATEGORIES

CATEGORY	# OF SUBJECTS	%	CUM %
WHITE COLLAR	31	28.2	28.2
BLUE COLLAR	79	71.8	100.0

n = 110

RAW DATA

DWI EDUCATIONAL LEVELS

CATEGORY	# OF SUBJECTS	%	CUM %
NOT H.S. GRADUATE	23	20.9	20.9
HIGH SCHOOL GRADUATE	38	34.5	55.5
BUSINESS OR TRADE SCHOOL	04	3.6	59.1
SOME COLLEGE	28	25.5	84.5
ASSOCIATE DEGREE	05	4.5	89.1
BACHELOR'S DEGREE	11	10.0	99.1
MASTER'S DEGREE	01	0.9	100.0

n = 110
mode = high school graduates

RAW DATA

DWI YEARLY EARNINGS

CATEGORY	# OF SUBJECTS	%	CUM %
UNDER $ 5,000	22	20.0	20.0
UNDER $10,000	23	20.9	40.9
UNDER $15,000	24	21.8	62.7
UNDER $20,000	21	19.1	81.8
OVER $20,000	20	18.2	100.0

n = 110
median = under $15,000

RAW DATA

DWI MARITAL STATUS

CATEGORY	# OF SUBJECTS	%	CUM %
MARRIED	29	26.4	26.4
SINGLE	54	49.1	75.5
DIVORCED	21	19.1	94.5
SEPARATED	06	5.5	100.0

n = 110
mode = single

RAW DATA

DWI YEARS OF DRIVING EXPERIENCE

YRS OF DRIVING EXPERIENCE	# OF SUBJECTS	%	CUM %
02	03	2.7	2.7
03	03	2.7	5.5
04	02	1.8	7.3
05	06	5.5	12.7
06	05	4.5	17.3
07	09	8.2	25.5
08	09	8.2	33.6
09	03	2.7	36.4
10	09	8.2	44.5
11	05	4.5	49.1
12	04	3.6	52.7
13	04	3.6	56.4
14	06	5.5	61.8
15	09	8.2	70.0
16	05	4.5	74.5
17	06	5.5	80.0
19	03	2.7	82.7
20	04	3.6	86.4
21	03	2.7	89.1
23	01	0.9	90.0
24	01	0.9	90.9
25	01	0.9	91.8
26	02	1.8	93.6
29	02	1.8	95.5
32	01	0.9	96.4
35	02	1.8	98.2
36	01	0.9	99.1
37	01	0.9	100.0
32	01	0.9	96.4

n = 110
mean = 13.16
median = 12

RAW DATA

DWI NUMBER OF MILES DRIVEN PER YEAR

MILES PER YEAR	NUMBER OF SUBJECTS	%	CUM %
0001 - 6,000	13	11.8	11.8
6,001 -12,000	35	31.8	43.6
12,001-18,000	23	20.9	64.5
18,001-24,000	22	20.0	84.5
24,000+	17	15.5	100.0

n = 110
median = 12,001 - 18,000

RAW DATA

DWI NUMBER OF ALCOHOL-RELATED ACCIDENTS

NUMBER OF ACCIDENTS	NUMBER OF SUBJECTS	%	CUM %
0	79	71.8	71.8
1	30	27.3	99.1
2	01	0.9	100.0

n = 110
mean = 0.29
median = 0

RAW DATA

DWI NUMBER OF TRAFFIC TICKETS RECEIVED

# OF TICKETS	NUMBER OF SUBJECTS	%	CUM %
0	05	4.5	4.5
1	08	7.3	11.8
2	11	10.0	21.8
3	19	17.3	39.1
4	14	12.7	51.8
5	16	14.5	66.4
6	08	7.3	73.6
7	08	7.3	80.9
8	01	0.9	81.8
9	02	1.8	83.6
10	10	9.1	92.7
13	01	0.9	93.6
20	07	6.4	100.0

n = 110
mean = 5
median = 5

RAW DATA

DWI NUMBER OF DEFENSIVE DRIVING COURSES TAKEN

NUMBER OF COURSES	NUMBER OF SUBJECTS	%	CUM %
0	64	58.2	58.2
1	30	27.3	85.5
2	10	9.1	94.5
3	05	4.5	99.1
4	01	0.9	100.0

n = 110
mean = 0.5
median = 0

RAW DATA

DWI NUMBER OF DWI COURSES TAKEN PREVIOUSLY

NUMBER OF COURSES	NUMBER OF SUBJECTS	%	CUM %
0	99	90.0	90.0
1	10	9.1	99.1
2	01	0.9	100.0

n = 110
mean = 0
median = 0

RAW DATA

DWI NUMBER OF SUBJECTS REPORTING COMPLETION OF HIGH SCHOOL DRIVER EDUCATION

CATEGORY	NO. OF SUBJECTS	%	CUM %
COMPLETED H.S.	69	62.7	62.7
DID NOT COMPLETE H.S.	40	36.4	99.1
NO RESPONSE	01	0.9	100.0

n = 110
mode = completed high school

RAW DATA

NUMBER OF ACCIDENTS

NUMBER OF ACCIDENTS	NO. OF SUBJECTS	%	CUM %
0	28	25.5	25.5
1	29	26.4	51.8
2	32	29.1	80.9
3	14	12.7	93.6
4	03	2.7	96.4
5	02	1.8	98.2
6	02	1.8	100.0

n = 110
mean = 1
median = 1

RAW DATA

DRIVER RISK INDEX CORRELATIONS

VARIABLE	DRIVER RISK INDEX
OCCUPATION	.06497
EDUCATION	-.32862 *
EARNINGS	-.17974 *
MILES DRIVEN PER YEAR	.11616
DRIVER EDUCATION COURSE	-.05846
AGE	.16940
M 1	-.12019
M 2	.17036
M 3	.10462
YEARS OF DRIVING EXPERIENCE	.17099 *
NUMBER OF TICKETS	.15128
NUMBER OF ACCIDENTS	.07868
NUMBER OF ALCOHOL-RELATED ACCIDENTS	.09229
NUMBER OF DEFENSIVE DRIVING CLASSES	-.16210
NUMBER OF DWI CLASSES TAKEN	-.04677

* $p < .05$

RAW DATA

DRIVER PERFORMANCE TEST VARIABLE

CORRELATIONS

VARIABLE	Driver P. Test
OCCUPATION	.09197
EDUCATION	.44025 *
EARNINGS	.11146
MILES DRIVEN PER YEAR	-.03910
DRIVER EDUCATION COURSE	.00449
AGE	-.04965
M 1	-.02987
M 2	-.01730
M 3	.05826
YEARS OF DRIVING EXPERIENCE	-.01026
NUMBER OF TICKETS	.13733
NUMBER OF ACCIDENTS	.09684
NUMBER OF ALCOHOL-RELATED ACCIDENTS	-.05129
NUMBER OF DEFENSIVE DRIVING CLASSES	-.01975
NUMBER OF DWI CLASSES TAKEN	-.05936

* $p < .05$

RAW DATA

DRIVER RISK INDEX SCORES

NUMBER OF Q. MISSED	NO. OF SUBJECTS	%	CUM %
6	01	.9	.9
8	02	1.8	2.7
9	03	2.7	5.5
10	06	5.5	10.9
11	06	5.5	16.4
12	13	11.8	28.2
13	08	7.3	35.5
14	07	6.4	41.8
15	13	11.8	53.6
16	11	10.0	63.6
17	12	10.9	74.5
18	06	5.5	80.0
19	09	8.2	88.2
20	08	7.3	95.5
21	03	2.7	98.2
22	01	0.9	99.1
25	01	0.9	100.0

n = 110
mean = 15.06
median = 15

RAW DATA

DRIVER PERFORMANCE TEST SCORES

SCORE	# OF SUBJECTS	%	CUM %
83	1	0.9	0.9
92	1	0.9	1.8
95	1	0.9	2.7
96	1	0.9	3.6
98	1	0.9	4.5
101	1	0.9	5.5
102	1	0.9	6.4
103	2	1.8	8.2
104	1	0.9	9.1
105	1	0.9	10.0
106	1	0.9	10.9
107	1	0.9	11.8
111	1	0.9	12.7
112	3	2.7	15.5
113	2	1.8	17.3
114	2	1.8	19.1
116	3	2.7	21.8
117	4	3.6	25.5
118	5	4.5	30.0
119	1	0.9	30.9
120	2	1.8	32.7
121	4	3.6	36.4
122	1	0.9	37.3
123	5	4.5	41.8
124	6	5.5	47.3
125	1	0.9	48.2
126	2	1.8	50.0
127	5	4.5	54.5
128	2	1.8	56.4
129	6	5.5	61.8
130	1	0.9	62.7
131	5	4.5	67.3
132	3	2.7	70.0

Note. Continued on next page

DRIVER PERFORMANCE TEST SCORES CONTINUED

SCORE	# OF SUBJECTS	%	CUM %
133	4	3.6	73.6
134	4	3.6	77.3
135	5	4.5	81.8
136	3	2.7	84.5
137	2	1.8	86.4
138	1	0.9	87.3
139	2	1.8	89.1
140	2	1.8	90.9
141	3	2.7	93.6
142	1	0.9	94.5
144	1	0.9	95.5
145	1	0.9	96.4
146	2	1.8	98.2
148	1	0.9	99.1
152	1	0.9	100.0

n = 110
mean = 124.69
median = 126.50