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Volume I

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September 1976
Final Report

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16. Abstract

The final report of the Multidisciplinary Accident Investigation Team of the Maryland Medical-Legal Foundation, Inc. is presented. The report describes the methodology, results, discussions, conclusions and recommendations pertaining to the investigation of 50 fatal and non-fatal vehicular accidents occurring in the Greater Baltimore metropolitan area from June 28, 1974 to June 30, 1975. Twenty-five fatal and twenty-five non-fatal accidents were investigated. Particular emphasis was placed upon the human factors aspect of the vehicle accident. The investigation included vehicle and scene examinations, autopsy findings on fatal victims, injury reports on non-fatal victims, toxicological data on all fatal victims and psychosocial evaluations of the "at fault" driver population. Significant findings are compiled in this report concerning a three year period of investigations, totaling 84 fatal and 71 non-fatal vehicular collisions relating to the accident, vehicle and environment. Evaluations and recommendations regarding the current Federal Highway Safety Program Standards and Federal Motor Vehicle Safety Standards are included.

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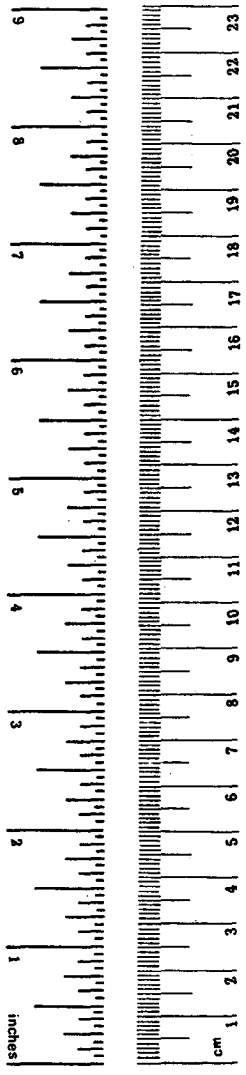
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

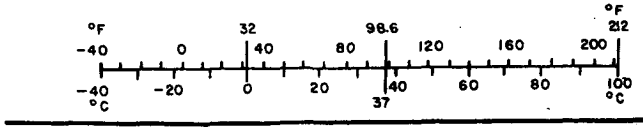
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2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

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



Approximate Conversions from Metric Measures

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



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SUMMARY

A prospective one year study of automobile accidents within the Baltimore metropolitan area was effected so as to establish:

a. Human factors causation in vehicular accidents
b. Occupant injury patterns relative to vehicle design
c. Mechanical and environmental factors related to accident causation
d. The effectiveness of current vehicle and highway safety standards
e. The possible role of vehicle malfunction or design defect in accident causation.

A total of 50 vehicular accidents were investigated; 25 were fatal accidents and 25 represented non-fatal accidents.

Sixty per cent of the 25 fatal accidents were multiple vehicle accidents; all culpable drivers in the accidents, with the exception of one, were males. The median age bracket for the fatally injured driver was 16-20 years. Saturday, Sunday and mid-week revealed the highest incidence of fatal accidents per day of week; 68% of the fatalities occurred between 4:00 p.m. and 4:00 a.m.

Ten of the 25 fatal accidents were vehicle/fixed object, nine were vehicle/vehicle/intersection; five were vehicle/vehicle/median crossover and one was a vehicle/train impact.

The consumption of alcohol and its effect upon the vehicle operator was regarded as a primary factor in the causation of 44% of the fatal accidents. Decision error by the driver was considered responsible for 20% of these accidents. Excessive speed and perception/comprehension error by the driver were cited as the most frequent contributory factors in the accident causation. In the 25 non-fatal accidents investigated, perception error by the driver (32%) and decision/action error by the driver (28%) ranked as the most frequent primary causative factors. Alcohol was considered as a contributing accident causation factor in 28% of the non-fatal accidents.

Specifically regarding alcohol involvement, 14 of 25 (56%) of the culpable drivers involved in the fatal accidents had consumed alcohol at the time of the accident. The blood alcohol range in these 14 individual drivers was .01% to .27% with a mean blood alcohol level of .16%. In the 25 non-fatal accidents, 11 of the 30 involved drivers were consuming or were suspected of consuming alcohol or drugs at the time of the accident.

In the group of 25 fatal accidents involving 31 drivers and passengers killed, restraints were not utilized by any of the 26 drivers or five passengers fatally injured. Restraints (lap, upper torso, or both) were installed in all of the vehicles where a fatality occurred, with the exception of one vehicle. It was concluded that the lives of at least 14 of the 26 drivers and three of the five passengers would have been saved if restraints would have been utilized.

The head, chest and abdomen represented the anatomic regions of the body wherein the majority of the fatal injuries were located. Steering mechanisms, instrument panels and side interiors represented the primary areas of impact between the body of the occupant and the vehicle interior. In six of the 25 fatal collisions and one of the 25 non-fatal collisions, the non-restrained occupants were ejected thereby sustaining their injuries from ground impact and other external objects.

Of the current Federal Safety Standards, Alcohol in Relation to Highway Safety, Highway Design, Construction and Maintenance, Driver Licensing and Periodic Motor Vehicle Inspection were mentioned as primary areas of negative citation.

Condensed Highlights of Human Factors Findings:

Task II for the 1975 contract year consisted of sophisticated and detailed multivariate statistical analyses of all usable psychosocial and related data collected on male drivers since the inception of this series of contracts in 1968. In view of the scope and complexity of both the data and the analyses employed, the findings do not particularly lend themselves to brief summarization. However, description of major highlights will be attempted under the assumption that the interested reader will consult the main report for further details.

To begin, the bulk of the evidence collected over a seven-year period seems to support the view that responsible male drivers (RMD's) involved in fatal or potentially fatal automobile crashes are not representative of the general population of male drivers. Rather, they appear on the average to be characterized by a number of distinguishing features, usually, but not always, of an undesirable sort. For example, they are more likely to drink while driving and seem to have a much greater incidence of alcohol-related problems than does the male driving population at large. However, extrapolation of these findings to non-legally-responsible male drivers (or to female drivers of any sort) should probably be avoided.

Interestingly enough, significant differences between fatally-injured and non-fatally-injured RMD's could not be discerned -- in fact, the two groups were remarkably comparable. This finding seems supportive of the point of view that those psychosocial factors associated with the occurrence of fatal accidents are of equal relevance to the occurrence of non-fatal ones. Thus it would seem that whether or not a fatality occurs in these instances is primarily a matter of luck and circumstance (including the wearing of seat belts) and is not systematically related to any special personal characteristics of the driver.

With respect to the role of alcohol in the production of fatal or serious automobile crashes, it would appear that while alcohol abuse (including heavy ingestion prior to driving) is strongly associated with the occurrence of serious automobile accidents, its role as a causative factor remains to be demonstrated or is weak at best. Rather, abuse of alcohol (and, probably, other drugs as well) appears to be but one facet of a syndrome which embraces a wide variety of deviant and/or anti-social behaviors including poor

or dangerous driving habits. The point is that a syndrome appears to be involved, and any single symptom or symptom-complex of the syndrome may be absent in the individual case. However, the more components that happen to be present, the stronger or more blatant the syndrome will appear to be.

Finally, several conclusions and recommendations are made. The two with the greatest likelihood of having any ameliorating effect on the current traffic safety situation are: 1) design automobiles with sufficient safety features so as to preclude the possibility of serious injuries occurring; and 2) provide better enforcement of existing traffic regulations and institute increased surveillance of persons identified as being at increased risk of serious accident.

COMPILED SIGNIFICANT DATA RELATING TO THE ACCIDENT, VEHICLE AND ENVIRONMENT

Significant findings from the investigation of 84 fatal accidents and 71 non-fatal accidents during the period from January 1, 1972 through June 30, 1975 are presented below.

During the investigations of the 84 fatal collisions, there was a total of 97 vehicles involved which included 74 passenger vehicles, 20 trucks, two trains and one motorcycle. During the investigations of the 71 non-fatal collisions, there was a total of 83 vehicles involved, all of which were passenger vehicles, with the exception of three trucks.

The fatal investigations experienced 52.8% (44 of 84) as single-vehicle collisions and 38% (32 of 84) as two-vehicle collisions. The non-fatal investigations experienced 66% (47 of 71) as single-vehicle collisions and 32.3% (23 of 71) as two-vehicle collisions.

The most significant nature of the fatal collisions, 58% (49 of 84), were collisions involving vehicles which left the roadway, impacted fixed objects and/or rolled over. The second most significant nature of fatal collisions, 50% (42 of 84), were vehicles colliding within intersections.

During the investigations of the 71 non-fatal collisions, 59.2% (42 of 71) represented the most significant nature of the accidents whereby a vehicle left the roadway and impacted fixed objects. The second most significant nature of the non-fatal accidents represented 21% (15 of 71) involving vehicle to vehicle/rear end impacts.

In the 84 fatal collisions investigated involving vehicles which were not equipped with restraining devices, it was revealed that 6.3% (6 of 95) of the fatally injured occupants would not have been killed in the collisions if properly restrained. In vehicles which were equipped with restraints, 45.3% (43 of 95) of the occupants would not have been fatally injured during the collision had they been utilizing the available restraints. During the investigations of the 84 fatal collisions, there were 3.2% (3 of 95) of the fatally injured occupants which were utilizing lap restraints only and sustained fatal injuries.

From the results of the investigations of the 71 non-fatal collisions, it was concluded that 79.5% (66 of 83) of the injured victims, who were occupying vehicles equipped with restraints, would have had their injury severity reduced had restraints been utilized. There were 13% (11 of 83) of the injured victims who were utilizing lap restraints thereby reducing their injury severity.

The evaluation of the Federal Highway Safety Program Standards during the investigations of the 155 fatal and non-fatal accidents revealed that Standard #8 - Alcohol in Relation to Highway Safety, was predominantly relevant. This standard was cited in 48.4% (75 of 155) of the accidents investigated where alcohol was considered a factor. The second most relevant standard was Standard #15 - Police Traffic Services, which was cited in 43.8%

(68 of 155) of the accidents investigated. This standard performed well in 92.6% (63 of 68) of the investigations. The third most relevant standard was Standard #11 - Emergency Medical Services, which was cited in 41.2% (64 of 155) of the investigations and was considered to perform well. Standard #12 - Highway Design, Construction and Maintenance, was considered the fourth most relevant standard and was cited in 34.1% (53 of 155) of the investigations and performed well. The fifth most relevant standard was Standard #16 - Debris Hazard Control and Cleanup, which was cited in 24.5% (38 of 155) investigations and performed well in 92.1% (35 of 38) of the investigations. Standard #5 - Driver Licensing, was cited in 28.3% (44 of 155) of the investigations and was not considered to perform. Standard #1 - Periodic Motor Vehicle Inspection, was considered not to perform in 12.9% (20 of 155) of the investigations as there is no PMVI within the State of Maryland. Standard #13 - Traffic Engineering Services, and Standard #9 - Identification and Surveillance of Accident Locations, were considered not to perform in less than 1% of the accidents investigated in this series.

The evaluation of the Federal Motor Vehicle Safety Standard during the investigations of the 155 fatal and non-fatal accidents revealed that Standard #208 - Occupant Crash Protection, was predominantly relevant. This standard was cited in 92.3% (143 of 155) of the accidents investigated and was considered non-performing (restraints not utilized) in 88.1% (126 of 143) of the accidents involving vehicles equipped with restraint systems. The second most relevant standard was Standard #113 - Hood Latch Systems, which was cited in 57.4% (89 of 155) of the accidents investigated. This standard performed well in 66.3% (59 of 89) of the investigations. Standard #206 - Door Locks and Door Retention Components, was considered the third most relevant standard and was cited in 48.3% (44 of 75) of the investigations. The fourth most relevant standard was Standard #201 - Occupant Protection in Interior Impact, which was cited in 41.9% (65 of 155) of the investigations and was considered to perform. Standard #212 - Windshield Mounting, which was cited in 32.3% (50 of 155) of the accidents and performed well in 68% (34 of 50) of these accidents. Standard #203 - Impact Protection for Driver from Steering Control, was cited in 16.1% (25 of 155) of the accidents and performed well in 56% (14 of 25) of these accidents. Standard #205 - Glazing Material, was cited in 16.1% (25 of 155) of the accidents and considered to perform in 88% (22 of 25) of these accidents.

FINAL REPORT 1974

TABLE OF CONTENTS

TABLE OF CONTENTS

I. Introduction

A. Prologue

During the year 1974, the State of Maryland experienced 128,333 total traffic accidents. Included in this figure were 665 fatal accidents responsible for 737 lives. In addition, a total of 61,262 persons were injured as a result of traffic accidents in the State. These tragedies on the highways represented an estimated economic loss of millions of dollars to the victims and their families. The City of Baltimore, the primary geographic area of concern in this study, accounted for 12.5% (83) of the total fatal accidents, including 30 driver fatalities.

The above data portrays the magnitude of the traffic accident problem so common to our advanced motorized societies of today. The following study deals with a small segment of the above population; a study designed as an in-depth exploration as to traffic accident causation. The primary goal of such a study is to provide information which, hopefully, will eventually culminate in the prevention, or in the reduction of morbidity and mortality of the future accident.

B. Contract Notes

This is the final report representing the multidisciplinary investigation of highway accidents as performed by the Accident Research Team of the Maryland Medical-Legal Foundation, Incorporated. This report, the third and final report (1972, 1973, 1974), concerns the study effected under Contract #HS 198-3-770, United States Department of Transportation, National Highway Traffic Safety Administration, Washington, D. C.

The report covers the investigation, findings, conclusions and recommendations derived from the multidisciplinary investigation of automobile accidents within a defined geographic area for the period from June 28, 1974 to June 30, 1975. The geographic area selected for case data includes the entirety of the municipal boundaries of the City of Baltimore as well as segments of neighboring Anne Arundel and Baltimore Counties as defined by the Baltimore Beltway (Interstate 695) which circumscribes Baltimore City (See Figure 1). A total of 50 accidents were investigated. Twenty-five of these investigations involved fatal accidents; 25 accidents investigated involved non-fatal driver and passenger injuries.

C. Objectives

1. To identify mechanical and environmental factors related to the traffic accident:

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* Maryland State Police National Safety Council Report - March 23, 1975

a. to conduct on-site investigations of the accident scene so as to reconstruct the accident sequence and to detect possible deficiencies in highway design and markings, traffic control mechanisms, and other related environmental factors.

2. To evaluate vehicle occupant injury patterns in relation to vehicle design.

3. To evaluate the effectiveness of current vehicle safety features in the reduction of morbidity and mortality.

4. To recognize the possible role of vehicle mechanical malfunction or design defect in accident causation.

5. To develop information from the above studies so as to enable an evaluation of the Federal Motor Vehicle Safety Standards and the Federal Highway Safety Program Standards.

6. To effect psychological examination of the involved driver so as to analyze the role of psychological factors in accident causation.

   a. to evaluate the role of alcohol and/or other drugs of abuse or medication as causative agents to the accident

   b. to report the findings of multivariate statistical analysis of data collected since 1968 and provide a summary of Katz Adjustment Scale scores pertaining to responsible male drivers

   c. to develop and compare driver profiles of responsible drivers in fatal and non-fatal traffic accidents

   d. to report two year findings of human factors related to accident causation

   e. to develop a set of standard bivariate tables regarding alcohol/accident relationships.

7. To summarize and interpret the statistical analysis of human factors and psychological variables as they relate to traffic accident causation - a cumulative four year report.

D. Experimental Design

A matched, two group design was employed in this study. The non-fatal sample of accidents were selectively matched with collision characteristics of the fatal accidents such as time and day of accident, culpability, alcohol, and type of collision, i.e., single/mul-

tiple car accidents. In many instances the degree of matching was less than perfect due to natural circumstances beyond the control of team members. However, considering this difficulty, the team was quite successful in their overall attempt to obtain samples of non-fatal accidents which matched the fatal accidents as closely as possible.

II. Methodology

So as to implement the above listed objectives, the following two primary tasks were established.

A. Task I

1. Part A

This aspect of the overall study was concerned with all fatal driver collisions occurring within the geographic area enclosed by and including the Baltimore Beltway (Interstate 695). A "fatal driver collision" was defined as a motor vehicle highway collision in which at least one of the involved drivers died within 24 hours of the accident. A total of 25 fatal accidents involving 26 dead drivers and five dead passengers were investigated.

The Office of the Chief Medical Examiner, State of Maryland is the official investigative agency charged with the responsibility of establishing the cause and manner of death in motor vehicle fatalities. The Medical Examiner's Office established jurisdiction over the bodies of the victims and vehicles involved and the team was notified. Contact between team members and the investigating law enforcement officers was established and the accident scene and involved vehicles were surveyed. The team investigators reconstructed the mechanics of the accident, took the necessary photographs of both scene and vehicle, and recorded the vehicle examination on the appropriate forms.

A consultant traffic engineer was also utilized by the team to evaluate the highway conditions at the accident scene for roadway factors such as: superelevation, gradient, cross section dimensions, alignment and curvature, sight distance, visibility, traffic control and warning devices, average daily traffic and accident history. Upon evaluation of these factors, the traffic engineer consulted with the team members to discuss the particular accident and reported his findings on the environmental and highway factors.

When indicated, the team also utilized the service of a consultant mechanical engineer who served to make an in-depth mechanical analysis of the vehicle(s) involved.

Concurrent with the accident site and vehicle investigation, the post-mortem examination and toxicological studies upon the deceased victims were carried out by the medical and toxicology members of the team. Complete autopsy examinations were effected on the 26 fatal drivers involved. The toxicology studied included:

1. blood alcohol - all fatal drivers

Methodology (con.)

2. blood carboxyhemoglobin (carbon monoxide) - on 26 fatal drivers

3. analysis of urine (and/or bile or blood) by thin layer chromatography screening for barbiturates, Doriden, phenothiazines, salicylates, narcotics and other common drugs of abuse including amphetamines. If the foregoing screening methods were positive, further confirmative qualitative and quantitative studies were performed using the appropriate sample and analytical method. (Twenty-four of the 26 fatal drivers were screened for drugs.)

2. Part B

Data were collected on two groups of drivers involved in vehicular accidents occurring within the geographic confines of Interstate 695 (Baltimore Metropolitan Area). The data consisted of standardized psychological, sociological and demographic information with specific attention paid to alcohol and drug factors present at the time of each accident. The two groups of drivers consisted of:

1. all legally culpable drivers involved in fatal vehicular collisions in which at least one driver was killed, and

2. a matched sample of legally culpable drivers involved in non-fatal vehicular accidents. These non-fatal accidents were selectively matched, as close as possible, on a set of factors which were present in the fatal accidents, i.e.:

    a. the same approximate day of the week
    b. the same approximate hour of the day
    c. the same approximate degree of culpability
    d. the same approximate degree of alcohol present
    e. the same approximate type of collision, i.e., single/multiple.

Along with the "matched" restrictions placed on non-fatal accidents, only drivers involved in non-fatal collisions sustaining an Abbreviated Injury Scale (AIS)* rating of one to three were included in this study. All non-fatal accidents and non-fatal human factors data were collected from accidents occurring in the same calendar months as the fatal accidents. At times,

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* Developed by the American Medical Association Committee on Medical Aspects of Automotive Safety

however, this constraint of identical calendar months was beyond our control. Upon the occurrence of any fatal or selectively matched non-fatal accident within the Baltimore Metro Area, the accident case record was forwarded to the members of the accident investigation team. An immediate, on the scene investigation was conducted. Interviews were arranged with either the responsible driver or his family in each accident case. Each driver or family member who consented to the interview was paid a fixed rate of money ($10.00) in order to compensate for their lost time. This was done so as to enhance the interviewers co-operativeness and thus maximize our chance for obtaining complete information on each driver. In each instance the Katz Adjustment Scale (Katz 1963) was administered to the family or friend of both the non-fatal and fatally injured drivers.

The Katz Adjustment Scales - R Form (KAS) consists of 205 scaled items which permit a retrospective quantitative description, through an informant, of a subject's individual and social behavior. All items have been worded so as to focus on specific behaviors and thereby reduce the necessity for inference or judgment. Following brief, neutral directions by the interviewer, the informant rates the subject in terms of the 204 behavioral items comprising the scales. Originally designed to measure the prehospital and posthospital adjustment of psychiatric patients, the KAS provides scores on 18 analytically derived dimensions pertaining to psychiatric symptomatology as well as social activities. The availability of normative data obtained from a systematic random sample of male and female residents from a nearby Maryland county has greatly increased this instrument's general utility.

In each case, the KAS was completed by an informant who was in close contact with the subject during the weeks and months prior to his death. This was usually a spouse, parent, sibling, or other close relative. In accordance with standard instructions, informants were asked to objectively describe the subject as he appeared to them during the final weeks of his/her life. The task of completing the KAS was presented early during the period of investigative contact in order to avoid any bias or guidance which the interviewer's subsequent questioning might inadvertently provide.

After the Katz Adjustment Scale was administered to the respondent, a psychosocial interview was conducted which involved family members of the victim and in the case of a non-fatal accident, the victim himself. The psychosocial investigation utilized the Psychological Autopsy Basic Questionnaire (see Appendix). This basic questionnaire consists of 230 items covering demographic, educational, military and employment

history of the subject and, in addition, focuses on medical, legal and driving histories of the subject under study. Respondents and victims were asked to describe the victim's pre-accident activities, habits, attitudes and life style. This test is administered verbally and constitutes a structured clinical evaluation. It provides a comprehensive pool of data on each individual from birth up to the time of the accident. Immediately upon notification of the accident, the concerned victim's name and place of residence as well as that of his closest kin were obtained from the records of the Chief Medical Examiner and the police. Approximately four days were allowed to elapse in each case for the completion of the funeral arrangements and/or other personal matters before the initial contact was made. This procedure was instituted in all cases except those where the victim's residence was not in the immediate vicinity. In these cases, the contact was made at once. An appointment was made by the psychologist, usually by telephone, and the initial interview was conducted ordinarily within the first seven days following the victim's death or injury. Subsequent interviews followed with appropriate persons (other kin, friends, co-workers, etc.). The number of interviews was based on the rater's subjective evaluation of the completeness of the information obtained.

The clinical interview lasted two and one-half to three hours. Interviews were usually conducted in the informant's home and on an individual basis. Where several members of a family became involved in an interview, it was counted as a single interview. The inventory was administered subsequent to the clinical interview except in those cases where it was given to another individual simultaneously with the interview. The length of time required for the administration of the Katz varied from 45 minutes to one and one-half hours.

The above format applied to the fatal and non-fatal driver sample (Task I).

3. Part C

This section consists of the minimum human factors data required from the study and includes a driver profile and a set of 14 standardized bivariate tables developed at the request of the contract technical manager. The human factors minimal data set consists of statistical comparisons between fatally injured and non-fatally injured drivers as well as a demographic summary of variables thought to be related to accident causation. Specific emphasis was placed on alcohol factors.

The driver profile was developed after examining differences and similarities existing between drivers who had been drinking and drivers who had not been drinking at the time of their accident involvement.

Methodology (con.)

The standardized bivariate tables were created from the data emanating from this study and emphasizes the "alcohol" component in relation to a number of other relevant factors.

B. Task II

This aspect of the contract refers to computerized statistical analysis and interpretation of psychological and other human factors related to traffic accident causation. This task interprets data which was collected over a seven year period of time. The method of collection for this data was essentially the same as that of Task I, Part B and includes the current 1974-1975 contract year data. In addition, similar data was obtained through research via Contract Numbers HS-800-782, HS-800-692, HS-801-141 and for the years 1969 through 1974. For a specific discussion of the statistical methodology used in Task II please refer to Volume II of present report.

III. Results and Discussion

Part A

1. General Accident Statistics

Table #1 shows the number of fatal accidents (25) and the non-fatal accidents (25) and the number of passengers and drivers killed or injured in the accidents investigated.

Table #2 gives the manufacture year of all vehicles involved in the fatal and non-fatal accidents investigated.

Table #3 describes the number of vehicles involved in 25 fatal and 25 non-fatal accidents investigated. Forty per cent (10) of the 25 fatal accidents involved single vehicles. Seventy-two per cent (18) of the 25 non-fatal accidents involved single vehicles.

Tables #4 and #5 present categorization of all drivers and passengers who were killed or injured in 25 fatal accidents and categorization of all drivers and passengers who were injured and 25 non-fatal accidents. It is noteworthy that, of the 26 drivers killed, (19) or 73.1% were males. Of these 26 drivers killed, 18 (69%) were considered responsible for the accidents and 14 (77.8%) were males.

Tables #6, #7 and #8 indicate calendar month, day of week and time of day in fatal and non-fatal accidents investigated.

The months of August and December (Table #6) represented the months with the highest frequency of driver fatalities (six and five accidents, respectively). October through February, the winter months, accounted for 16 of the 25 accidents investigated.

In consideration of the number of accidents investigated per day of week (Table #7), Wednesday disclosed the highest frequency, claiming six of the 25 fatal accidents (24%). Saturday and Sunday revealed the next highest frequency with five fatal accidents each.

Regarding the hour of occurrence of the fatal accidents (Table #8), within 4:00 p.m. to 12 midnight, 12 of 25 accidents (48%) occurred during this period. The next highest hour category was 12:00 midnight to 8:00 a.m., when eight of the 25 fatal accidents (32%) occurred.

2. Nature of Fatal and Non-Fatal Accidents, Vehicle Collision Deformation Classification and Estimated Speeds

Table #9 shows the nature of 25 fatal accidents investigated, Vehicle Collision Deformation Classification and Estimated Impact Speed. The most common type of fatal accident in this series of investigation was that of a single vehicle leaving the roadway and impacting

a fixed object(s). Such vehicle/fixed object collisions accounted for 10 of the 25 fatal accidents investigated (40%). The average estimated speed for all fatal accidents was 44.2 m.p.h. In general, the highest estimated impact speeds occurred in accidents wherein vehicles departed from the roadway resulting in fixed object impacts. In seven of the above cases, the vehicles impacted unprotected steel or wooden non-breakaway utility and traffic signal poles. The drivers of eight of these 10 single vehicle fixed object collisions were alcohol related. In these eight collisions the drivers had blood alcohol levels ranging from .11% to .25%. Of these 10 fatal cases involving vehicles departing from the roadway, six collisions occurred during the hours of 12:00 noon to 11:00 p.m. and four of these collisions occurred between the hours of 1:00 a.m. and 8:00 a.m.

Table #10 shows the nature of 25 non-fatal accidents investigated, Vehicle Collision Deformation Classification and estimated speed of impact. The most common type of non-fatal accidents investigated in this series were vehicles which left the roadway, impacting fixed objects. Such accidents accounted for 17 of the non-fatal accidents. In seven of these accidents, steel traffic signal support poles and overhead steel light poles or wooden utility poles represented the most frequent objects impacted. The remaining 10 collisions involved impacts with trees, guard rails, bridge abutments and retaining walls. The impacts involving the steel and wooden poles in all cases were not barrier protected and were not installed with breakaway features.

3. Primary and Contributing Causative Factors and Determination of the Most Responsible Driver

Vehicular accidents are caused by a combination of several factors, the most important of which are human behavior, vehicular condition and environmental elements. Accident causation is generally dependent upon a combination and interaction of simultaneous and sequential circumstances involving these factors. A combination of circumstances or factors rather than any single circumstance, usually prevails in accident causation.

The above is presented so as to provide some insight into the judgment utilized by the investigating team concerned with isolating primary and contributing factors to a particular accident. The determination of the most responsible driver in the accidents studied in this series was established by consideration of the total accident situation inclusive of reconstruction of the circumstances of the accident and the environmental conditions. In addition, the level of alcohol at the time of the accident was included in any determination as to factors responsible for accident causation. In almost all of the accident cases included in this study, it was possible to establish the primary and contributing factors related to accident causation. Similarly, the

culpable driver was thereby determined. Such determinations as to causative factors and responsible driver were made by a joint discussion of the relevant factors in any accident as reviewed by all members of the team.

Tables #11 and #12 present primary and contributing factors in the 25 fatal accidents investigated. Alcohol was considered a primary factor in 44% (11 cases) of these fatal accidents; decision error by a driver was considered to be responsible for 20% (five cases); action error, fatigue and perception/comprehension error were considered responsible for a total of eight accidents. The contributing factors cited most frequently in the 25 fatal accidents were excessive speed in 28% (seven cases) and perception/comprehension error by a driver in 16% (four cases). When the blood alcohol level was .10% and above, alcohol was considered a primary factor in the accident causation if other elements could be dismissed.

Tables #13 and #14 present primary and contributing factors in 25 non-fatal accidents investigated. Perception error by a driver was considered a primary factor in 32% (eight cases), decision/action error by a driver in 28% (seven cases) and alcohol was considered a primary factor in 12% (three cases). Alcohol was considered a contributing factor in 28% of the non-fatal accidents. Blood alcohol levels were established in only two of the non-fatal cases which was significant in both cases. In the remaining cases where alcohol was considered a contributing factor, the basis for this determination was based upon information obtained from the drivers during an interview in conjuction with other relevant factors. In most of the instances involving drinking drivers, the drivers themselves readily admitted to the team that alcohol was a factor in their particular accident causation.

4. Use of Occupant Restraints, Causes and Mechanisms of the Most Serious Injuries of the Fatally Injured Occupants and the Most Serious Injuries in the Non-Fatal Accidents

Table #15 reveals that in 25 fatal accidents (involving 42 drivers and 22 passengers), 25 drivers were in vehicles equipped with restraining device systems. The available restraints were not utilized by any of these 26 drivers at the time of the accident. From the evaluation of the fatal injuries and the reconstruction of the crash kinematics, it is the opinion of the team that 14 of these 26 drivers, who failed to use the available restraints, would probably have survived the crash had the restraints been employed at the time of the accident. Eight of these "probable survivors" were involved in collisions where the estimated impact speeds were 40 m.p.h. or less. The remaining six "probable survivors" had estimated impact speeds of greater than 40 m.p.h.; three of these cases were driver ejection (74-53, 74-57 and 75-20).

Results and Discussion (con.)

There were five passengers killed in four of the 25 fatal accidents investigated who were not utilizing the available restraints. One unrestrained passenger (Case # 74-41), who was occupying the right front seat of a passenger vehicle which under-rode the rear of a tractor and trailer, most probably would not have survived the collision even if restraints were utilized. In another case (75-10) the unrestrained right front passenger of a pick-up truck most probably would not have survived the collision even if restraints had been utilized. This collision involved a lateral impact on the right side by a tractor and trailer which invaded the right front passenger compartment of the pick-up truck. Case # 74-53 involved an unrestrained right front passenger who most probably would have survived a head-on type collision had restraints been utilized. In the remaining case (74-56), there were two unrestrained passengers (right front and right rear) who would have most probably survived a head-on impact with a steel traffic signal support pole had they been restrained. The unrestrained right rear passenger in this collision was thrown forward, loading the seatback of the front seat during impact. This movement contributed to the injury severity of the unrestrained right front passenger.

Table #16 reveals the use and effectiveness of occupant restraints during the investigation of 25 non-fatal accidents. There were five drivers in four non-fatal accidents investigated (74-46, 75-14, 75-21 and 75-23) where available restraints were being utilized; three of these accidents (74-46, 75-14 and 75-21) involved multiple-vehicle collisions. In Case #74-46 both of the drivers were utilizing the available lap and upper torso restraints. One of these drivers sustained a very minor injury and the other driver sustained no injury. In Case #75-14 one driver, who was utilizing the lap and upper torso restraints, sustained a minor abrasion of the chest from the upper torso restraint. In Case #75-21 one driver was utilizing the lap restraint only and sustained minor abrasions of the arm and hand. In the remaining accident (75-23), the driver, who was utilizing the lap and upper torso restraints, permitted the vehicle to drift off the roadway and impact a wooden utility pole. The injury severity of this driver was greatly reduced by restraint usage. It is concluded that injury severity would have been reduced in 14 of the 25 non-fatal accidents investigated had available restraints been utilized. In some cases it is possible that the use of restraints would have prevented the occupants from sustaining any injury. In only one case (75-02), it was concluded that the usage of available restraints by the driver most probably would have increased the severity of his injuries. This collision involved a 09 o'clock principle impact force of a steel light pole which invaded the driver's compartment. It is interesting to note that there was only one accident (74-50) of the 25 non-fatal investigations where a vehicle involved was not equipped with restraints. There also were no passengers involved in the non-fatal accidents who were utilizing restraints.

Results and Discussion (con.)

Tables #17 and #18 describe the areas of the most serious fatal non-fatal injuries and the mechanisms responsible for these injuries in the 25 fatal and 25 non-fatal accidents investigated. The head, chest and abdomen were the anatomic regions of the body which sustained the most injuries in the fatal accidents. The steering mechanisms, side interiors, instrument panels and windshields were the four mechanisms responsible for the occupant injuries. Six of the fatalities (74-53, 74-57, 75-01, 75-05, 75-09 and 75-20) involved unrestrained drivers who were ejected from their vehicle, five of whom sustained fatal injuries from the ground impact. The head, chest and extremities were the areas of the body which sustained the most injuries in the non-fatal accidents. The steering mechanisms, instrument panels, side interiors and windshields were the four mechanisms most responsible for the injuries sustained by the occupants. There was one accident (75-22) where the occupants were ejected and sustained their injuries from ground impact.

5. Blood Alcohol

Table #19 presents the blood alcohol levels of 39 drivers killed in the 25 fatal accidents investigated. The alcohol determinations were obtained from post mortem blood samples of the victims by the Office of the Chief Medical Examiner. The entire groups of dead drivers were classified according to (1) survival time after the accident (died within one hour or more than one hour after the accident), (2) blood alcohol level above or below .10% or negative, and (3) driver culpability as to accident causation. Of the 26 driver fatalities, 18 represented the culpable driver. There were three of the eight "not at fault" drivers who had blood alcohol levels of .01%, .03% and .04%, respectively. Twelve of the 18 "at fault" drivers had consumed alcohol as determined at autopsy. All 18 of these "at fault" drivers died within 2½ hours of the accident occurrence, with exception of one driver, who survived for 23 hours and revealed a negative blood alcohol level at autopsy. Five of the 12 positive blood alcohol levels were noted in persons surviving from 1½ hours to 2½ hours, having blood alcohol levels ranging from .01% to .20%. The remaining culpable drivers who survived for less than one hour disclosed blood alcohol levels ranging from .11% to .27%. The mean alcohol level of this group was .18%. In summary, the data shows that in 18 "at fault" drivers with no or short survival (so that blood alcohol level is meaningful), positive blood alcohol levels were noted in 12. The estimated mean blood alcohol level of this group was .15%. There were no drugs detected in any of the fatally injured drivers tested.

Table #20 presents the age and sex of the 41 total drivers of the 25 fatal accidents. The 17 positive blood alcohol levels noted represents the total number of drivers involved in the fatal accidents that had consumed alcohol. Fourteen of the positive blood

alcohol levels noted represents responsible drivers, two of whom survived the accident. The remaining three drivers were not responsible for the accident. Sixteen of the 17 positive blood alcohol levels were in the 16 to 50 year age range.

Table #21 indicates proven or suspected alcohol involvement at the time of the accident of the 30 drivers involved in 25 non-fatal accidents investigated. A total of 11 drivers were proven or suspected of consuming alcohol or drugs at the time of the accident and were considered as culpable to the accident causation. Two of these drivers were administered chemical tests and had blood alcohol levels of .26% and .14%, respectively. The investigating police placed Driving While Under the Influence of Alcohol (DWI) charges against two drivers who did not submit to any chemical test. There were two drivers who admitted to the team that they were taking therapeutic dosages of Valium for their angina conditions. It was concluded that both of these drivers momentarily passed out at the wheel while driving their vehicles. The five remaining drivers readily admitted to the team that they had consumed a significant amount of alcohol prior to their accident. It was assumed from their own admission and the accident circumstances, that alcohol was a factor in the accident causation. In these cases alcohol was not suspected, or possibly ignored, by the investigating police and no chemical test for blood alcohol level was administered.

Table #22 presents the age and sex of the nine drivers which the team determined had consumed alcohol prior to their accident and two drivers who had consumed drugs. This information was determined by (1) chemical test, (2) being charged by police with DWI without test, and (3) admission of alcohol or drugs during interview and clinical evaluation. Of the nine drivers cited for consuming alcohol or drugs, all were males, with the exception of one. Five were in the 16-25 age group, four were in the 36-45 age group and the remaining two were in the 46-55 age group. Two drivers were charged with DWI after a chemical test was administered (blood alcohol levels .14% and .26%, respectively). Two drivers were cited for DWI without a chemical test administered based upon the observations of the investigating police and the circumstances surrounding the accident. Five of the 30 drivers involved in the 25 non-fatal collisions admitted to the team that they had consumed a significant amount of alcohol prior to their accident. Drugs were a significant factor in two single car accidents where the drivers admitted to the team that they consumed prescribed doses of Valium for their heart conditions.

6. Current and Proposed Federal Safety Standards

Table #23 indicated the Federal Highway Safety Program Standards which were cited in 25 fatal accidents. A total of 96 occurrences were so cited, 45 of which were negatively cited referable to

seven standards. Alcohol in Relation to Highway Safety was related to 14 of the 45 failures (31.1%). Highway Design, Construction and Maintenance received 10 negative citations (22.2%). Driver Licensing received eight negative citations (17.8%) and Periodic Motor Vehicle Inspection received four negative citations (8.9%) Identification and Surveillance of Accident Locations, Traffic Engineering Services, Debris Hazard Control and Cleanup were cited once each negatively. The positive citations referred to Standard #11 wherein Medivac (Helicopter) evacuation to a specialized shock-trauma center and/or rapid ground transportation of the accidents victims is a recognized procedure in the reduction of motor vehicle mortality and morbidity. The geographic area where this study was conducted had extremely effective trained medivac personnel who administered emergency medical treatment to the victims before and during their transportation to a local hospital. Standard #15 was cited as a positive factor in 24 occurrences whereby the services of the police were considered highly effective. The remaining Standard #16 was cited positive 13 times when the accident scene was restored to a safe condition after the accident in a minimal amount of time, and the purpose of this standard was executed.

Table #24 indicated the Federal Highway Safety Program Standards and presents the data for the 25 non-fatal accidents investigated. Standard #8 - Alcohol in Relation to Highway Safety, was cited in 10 of the 34 failures (29.4%) covering six negative standards. Standard #12 - Highway Design, Construction and Maintenance, was also cited in 10 of the 34 failures (29.4%). Driver Licensing, Periodic Motor Vehicle Inspection, Traffic Engineering Services, and Identification and Surveillance of Accident Locations comprised the remaining occurrences.

Tables #25 and #26 indicated the Federal Motor Vehicle Safety Standards and presents that Standard #208 - Occupant Crash Protection, Standard #206 - Door Locks and Retention, Standard #113 - Hood Latch System, and Standard #201 - Occupant Protection in Interior Impact, were the most relevant standards noted, both positively and negatively.

The Federal Motor Vehicle Safety Standards and Federal Highway Safety Program Standards evaluations represent the opinion and judgment of the team members. In many instances the standard function is very obvious, while in other instances the effectiveness of a specific standard was controversial and not easily determined. A standard was considered positive when it was effective in contributing to the prevention or reduction in the severity of an accident. Conversely, when a standard was considered negative, it was established that the standard did not perform as designed.

The specific standards relevant in the accidents investigated will be discussed below.

Results and Discussion (con.)

a. Evaluation of Federal Highway Safety Program Standards

1. Standard #1 - Periodic Motor Vehicle Inspection

This standard was cited eight times in the study, each time resulting in a failure. There is no Periodic Motor Vehicle Inspection program within this state and it is noteworthy to mention the following cases. Cases # MMF 74-35, 75-01, 75-04 and 75-07 involved fatal injuries to four drivers and one passenger. The drivers responsible for the accidents were operating vehicles which were equipped with tires that lacked sufficient tread. The drivers lost control of their vehicles on a wet roadway surface and the vehicles impacted fixed objects and/or other vehicles in opposing lanes of traffic. Case # MMF 74-52, a non-fatal collision, involved a driver who lost control of his vehicle which impacted a concrete bridge retaining wall. The vehicle was being driven with inadequate brakes. Cases # MMF 75-02 and 75-16 were non-fatal collisions involving vehicles which were being operated on wet roadways with tires which lacked sufficient tread. The vehicles skidded out of control and impacted fixed objects. Case #MMF 75-22 involved the operation of a vehicle which had a faulty door latch. The door released during a right turn movement and ejected the driver and a front passenger onto the roadway surface.

The previously mentioned vehicle defects were not necessarily considered as the sole causative factor. However, they were considered to be a contributing factor in the accident causation. It was concluded by the team that a PMVI program would most probably encourage vehicle owners to better maintain the condition of their vehicle. The present inspection law within this state applies only to used passenger vehicles and small trucks for resale or vehicles being registered within this state from a foreign state.

2. Standard #5 - Driver Licensing

In the 50 fatal and non-fatal accidents investigated, there were 13 cases (74-31, -34, -35, -37, -40, -49, -52, -53, -57, 75-10, -12, -14, and -17) involving drivers who were considered responsible for the accident and who: (1) had attained the age of 70 years, (2) continued to drive after their driving privileges had been revoked, (3) had extensive driving records, (4) were mentally or physically unfit to drive, or (5) lacked sufficient driving experience. In one accident (74-31), the fatally injured culpable driver was 70 years of age and failed to yield the right-of-way at a stop sign. This driver had obtained his license 35 years prior to the accident and had never been re-examined to determine his driving ability. In Case # MMF 74-35, the

fatally injured culpable driver had a revoked license in the State of Maryland for a DWI conviction and had thereafter obtained a valid license in a neighboring state. At the time of his fatal collision, the driver had a blood alcohol level of .11%. In a non-fatal accident (74-34), the culpable driver had two revocations for DWI convictions and was re-issued his license. At the time of his accident the driver admitted to the team that he had consumed alcohol. Case # MMF 74-37 involved a fatally injured driver who was mentally unstable at the time of the accident and in Case # MMF 74-40 the fatally injured driver experienced a seizure. In Case # MMF 75-12, a non-fatal collision, the driver continued to operate his vehicle with a known heart disease which was a probable cause for his accident. In Cases # MMF 74-49, 74-57 and 75-10, the fatally injured culpable drivers had extensive driving records and in Case # MMF 74-52, the non-fatally injured culpable driver also had an extensive driving record. In another fatal accident (74-53), the culpable driver had a previous DWI revocation and at the time of his accident his blood alcohol level was .20%. The remaining two non-fatal accidents (75-14 and 75-17) involved drivers who lacked sufficient driving experience.

3. Standard #8 - Alcohol in Relation to Highway Safety

This standard was cited 25 times during the investigation of 25 fatal and 25 non-fatal accidents. Of the 25 fatal accidents, alcohol was considered the primary factor in 11 fatal accidents (44%) (74-33, -35, -36, -37, -39, -45, -53, -54, -57, 75-01 and 75-06) and a contributing factor in two accidents (8%) (74-49 and 75-09).

In the 25 non-fatal accidents investigated, alcohol was considered a primary factor in three accidents (12%) (74-43, -53, and 75-18) and a contributing factor in seven accidents (28%) (74-34, -42, -48, 75-03, -07, -08 and -23). Determination of the role of alcohol in an accident causation was determined upon the presence of blood alcohol of .10% or greater, circumstances surrounding the accidents and other factors present. When there was no established blood alcohol level, alcohol involvement was evaluated by clinical evaluation as well as other factors surrounding the accident circumstances.

There were 26 drivers killed in the 25 fatal accidents investigated. Of the 26 drivers killed, 18 were considered at-fault and responsible for the accident. Twelve of these drivers had consumed alcohol.

Three of the 18 responsible drivers survived longer than one hour after the accident. One of these drivers possessed

a blood alcohol level of .20% and in terms of post-accident survival time had a higher blood alcohol at the time of the accident. The two remaining drivers had blood alcohol levels of .14% and also would have had higher levels at the time of the accident.

4. Standard #9 - Identification and Surveillance of Accident Locations

This standard was cited in three accidents (74-32, -53, 75-04). One accident (74-32) occurred at an intersection which experienced a high frequency of accidents. It was suggested that a survey be conducted to determine the reason for such a high occurrence of accidents. In Case # MMF 74-53 a pick-up truck operated by an intoxicated driver crossed over a median into opposing lanes of traffic fatally injuring three persons. In the remaining case (75-04), the fatally injured culpable driver lost control of his vehicle which crossed a median into opposing lanes of traffic at approximately the same area of occurrence as the accident of Case # MMF 74-53. A request was submitted to the highway administration to install median barrier protection along this area of the median where these two fatal collisions occurred to prevent future accidents of this type.

5. Standard #11 - Emergency Medical Services

In previous accident investigations conducted by this organization, this standard has performed well in the majority of the cases. The ambulance services in the area in which the study was conducted are under the control of the fire department ambulance services. Most of these ambulances are manned by para-medics in conjunction with the availability of police Medivac helicopters. Both of these units have greatly contributed to the reduction of injury severity and mortality of many accident victims by performing adequate emergency treatment and rapidly transporting the victims to hospital facilities. A specially equipped shock-trauma unit within the Baltimore area has performed an outstanding service to the severely injured accident victims. During the investigation of the accidents in this series, there were no known incidents where the emergency transportation of the victims endangered a life.

6. Standard #12 - Highway Design, Construction and Maintenance

This standard was relevant in 21 cases (74-33, -37, -40, -42, -43, -44, -45, -48, -50, -53, -55, -56, -57, 75-04, -07, -08, -11, -19, -20 and -21). One accident (74-33) involved a fatality which occurred on a bridge that was in the process of being widened. The temporary bridge barrier protection was

inadequate to protect the out-of-control vehicle from leaving the bridge and falling onto the train tracks below the bridge. Three accidents (74-40, -53 and 75-04) occurred on limited access highways where out-of-control vehicles crossed over the unprotected median into opposing traffic lanes. Two of these accidents (74-53 and 75-04) occurred on the same roadway at the same median location. These collisions occurred within 40 days of one another and took the lives of four persons. Three accidents (74-42, -56 and -57) involved collisions with steel traffic signal support poles which lacked barrier protection or energy absorbing features. Two accidents (74-50 and 75-21) occurred on slippery roadway surfaces which had very low coefficents of friction due to wet conditions. One non-fatal accident (75-08) involved an impact with a "W" type guard rail which was improperly installed. The blunt end of the barrier was exposed to traffic and was located very close to the edge of the highway. A passenger vehicle drifted off the edge of the roadway and impacted the exposed end of the rail, which penetrated the right passenger compartment of the vehicle. There was one accident (75-20) where a properly installed "W" type guard rail prevented the impacting vehicle from traversing an embankment. However, the driver was fatally injured due to ejection from the vehicle. The remaining 11 accidents involved the following design defects: lack of curbing or guard rails to prevent out-of-control vehicles from traversing embankments, vision obstruction at intersections, lack of median barriers to prevent median crossovers, need of left turn lane at a median crossover and roadway depression within an intersection. In an effort to have necessary improvements instituted, the local authorities were advised of most of these conditions by the team.

7. Standard #13 - Traffic Engineering Services

This standard was cited four times during this series of investigations (74-44, -51, 75-08 and -21). In one accident (74-44), the roadway surface lacked a center line on an extremely sharp curvature. Case # MMF 75-08 involved a roadway which had a four foot in width offset which was not properly marked with lane markings or signs to pre-warn motorists of this condition. Case # MMF 74-51 involved a fatal collision which occurred at a shopping center driveway controlled by an automatic signal. This accident occurred on a Sunday when the automatic signal is converted to a flashing warning light. The team felt that the signal should have remained on its normal signal operation as the traffic flow within the shopping center area is relatively heavy at all times. Case # MMF 75-21 involved slippery road conditions near an intersection controlled by an automatic signal. The team felt that the roadway surface should

be improved and/or proper signing erected to warn motorists of the slippery roadway surface during wet conditions.

8. Standard #15 - Police Traffic Services

This standard was cited 45 times during the investigation of the 50 fatal and non-fatal accidents. In all incidents the police traffic services relative to the investigations in this series of accidents has been exceptionally good.

9. Standard #16 - Debris Hazard Control and Cleanup

This standard was cited 27 times, one of which was negative (75-05). In this accident the tow truck operator, who is responsible for clearing the highway of accident debris, failed to remove broken glass, mouldings and other parts of the involved vehicles from the roadway at the accident scene. In the remaining cases, this standard was performed satisfactorily.

b. Evaluation of Federal Motor Vehicle Safety Standards

1. Standard #111 - Rear View Mirrors

This standard was cited in three investigations (74-38, -47 and 75-05). In two accidents (74-38 and 74-47) the rear view mirror was impacted by the drivers but the mounting failed to separate thereby causing additional injury to the occupants. These two cases involved a 1970 Dodge Dart and a 1970 Buick Electra. The remaining accident (75-05) involved a 1971 Ford Mustang whereby the driver impacted the rear view mirror which separated from its mounting as designed.

2. Standard #113 - Hood Latch System

This standard was cited 23 times during the investigation of the 50 fatal and non-fatal accidents. The standard performed in 12 accidents. There were 11 accidents (74-36, -40, -41, -46, -47, -49, -53, -56, -57, 75-03, and 75-05) whereby the standard was not considered to have performed. Six of the negative performances involved vehicles where the hood released permitting the rear edge to contact and penetrate the windshield. The remaining five accidents involved hood latching systems which merely released without any windshield penetration.

3. Standard #201 - Occupant Protection in Interior Impact

This standard was positively cited 29 times and the team concludes that the energy absorbing materials installed within

Results and Discussion (con.)

the interior components of vehicles performed well and contributed to the reduction of the injury severity of the occupants.

4. Standard #202 - Head Restraints

This standard was cited in one multipe vehicle accident (74-49) whereby the culpable driver was fatally injured. The team concludes that the head restraint most probably prevented neck and back injuries to the non-fatally injured driver in this collision.

5. Standard #203 - Impact Protection for Driver from Steering Control System

There were eight accidents wherein this standard was relevant (74-37, -45, -49, -55, -56, 75-05, -12 and -13). The standard performed as designed in seven of these accidents. The remaining accident (74-37) involved a 1971 Toyota which impacted a wooden utility pole. The driver's body impacted the steering wheel assembly and the energy absorbing features on the steering shaft failed to compress as designed. The unrestrained driver contacted the steering wheel with his chest at an angle and sustained fatal injuries. In such instances of tangential contact, the direction of force upon the column reduces the effectiveness of the compression features.

6. Standard #204 - Steering Control Rearward Displacement

This standard was cited three times (74-51, -56 and 75-03) and performed as designed in one accident (75-03). In Case # MMF 74-51 the vehicle involved was a 1967 Volkswagen which was not equipped with the rearward displacement feature. However, it was felt that this accident is worthy of mention as the shaft moved rearward during impact and the steering assembly was responsible for the driver's fatal injuries. The remaining accident (74-56) involved a vehicle which was equipped with the feature. The steering shaft moved rearward into the drivers compartment during a head-on collision with a steel traffic signal support pole causing fatal injuries to the driver.

7. Standard #205 - Glazing Materials

This standard was cited seven times (74-36, -37, -45, -52, -53, -55 and -56) during the series of accidents investigated and performed well in five accidents. One non-fatal accident (74-52) involved a pre-1968 model vehicle. The driver's head penetrated the windshield during a frontal impact with a concrete bridge retaining wall causing head

and facial injuries to the driver. The remaining accident (74-53) involved a 1974 Ford pick-up truck which impacted a passenger vehicle and the unrestrained driver was ejected through the right front door side glass. This driver was fatally injured from ground contact.

8. Standard #206 - Door Locks and Door Retention Components

This standard was cited 19 times in this study and performed as designed in 13 investigations. The six negative performances of door locks and retention components (74-35, -37, -39, -53, 75-05 and -20) involved one vehicle which was a pre-1968 model (74-35). Four of these accidents (74-35, -39, 75-05 and -20) involved vehicles where the doors released during impact, ejecting the occupants from the vehicle. In one accident (74-53) the left front door released during impact, however, the driver was not ejected. The remaining accident (74-37) involved the collision of a vehicle with a wooden utility pole. This vehicle sustained severe frontal damage causing the right front door to jam which delayed the extrication of the driver.

9. Standard #207 - Anchorage of Seats

This standard was cited 10 times (74-35, -36, -39, -41, -42, -44, -47, -56, -57 and 75-02) and performed well in six accidents. One fatal accident (74-35) involved a pre-1968 model vehicle which laterally impacted a wooden utility pole. The front seat of the vehicle separated at the adjusters. One fatal accident (74-39) involved two vehicles colliding at right angles. The other fatal accident (74-41) involved a passenger vehicle which under-rode the rear of a tractor and trailer. In both of these fatal accidents the front seats of the passenger vehicles separated at the seat tracks during impact. The remaining non-fatal accident (74-42) involved a lateral impact with a steel pole and during impact the seatback lock released.

10. Standard #208 - Occupant Crash Protection

The evaluation of this standard during the investigations of the 25 fatal accidents revealed there were no fatalities involving drivers or passengers who were utilizing restraints. During this series of investigations it was concluded by the team that 12 of the fatally injured drivers and two of the fatally injured passengers most probably would have sustained fatal injuries even if restraints were worn (74-31, -33, -35, -40, -41, -47, -53, -55, -56, 75-01, -06, -10, and -11). Restraints were available to all the occupants within the vehicles involved with the exception of one accident

(74-35). These collisions had estimated impact speeds of 40 m.p.h. and involved vehicle/vehicle impacts, vehicle/fixed object impacts, vehicle/fixed object impact/rollover and vehicle/truck under-ride impacts.

The team concludes that there were 14 drivers and three passengers which most probably would have survived the collisions had they been utilizing the available restraints (74-36, -37, -39, -45, -49, -51, -53, -54, -56, -57, 75-04, -05, -09, -10 and -20). These accidents involved nine vehicle/vehicle impacts and six vehicle/fixed object impacts. Five of the fatally injured drivers were ejected (74-53, -57, 75-05, -09 and -20). During these five deaths, the drivers would most probably have survived the accident had they remained in their vehicle during impact. (See Table #15)

In the series of the 25 non-fatal accidents there were four accidents (74-46, 75-14, -21 and -23) where five drivers were utilizing the available lap and upper torso restraints and one accident (75-21) where the driver was utilizing the lap restraint only. The injury severity of all five of these drivers was most probably reduced by the utilization of the available restraints. There were 19 drivers (74-32, -34, -38, -42, -43, -44, -48, -52, 75-03, -07, -08, -12, -13, -15, -16, -17, -18, -19 and -22) and 10 passengers (74-34, -44, -46, 75-03, -07, -14, -16, -17, -19 and -22) who were occupants of vehicles which were equipped with restraints. These drivers and passengers were not utilizing the available restraints and it was concluded that their injury severity would have been reduced had they been restrained. One non-fatal accident (74-50) involved a vehicle which was not equipped with restraints. It was concluded that this driver's injuries would have been reduced had the driver been restrained at the time of the accident.

In summary, during the investigation of the 50 fatal and non-fatal accidents, the team concludes that 14 of the 26 fatally injured drivers and three of the five fatally injured passengers would most probably have survived the collision had they been restrained at the time of the accident. The injury severity of 20 of the 26 non-fatally injured drivers and 10 of the 11 non-fatally injured passengers would have been reduced had they been restrained at the time of their accident.

11. Standard #212 - Windshield Mounting

This standard was cited nine times and failed to perform in six accidents (74-40, -41, -47, -56, -57 and 75-03). One fatal accident (74-41) involved a pre-1970 model passenger vehicle which under-rode a tractor and trailer and the windshield separated 100%, however, the standard did not apply

to this vehicle. One fatal accident (74-40) involved a passenger vehicle which impacted the left front of a flat-bed truck. The passenger vehicle continued along the side of the truck and under-rode the truck body causing 100% separation of the windshield. Another fatal accident (74-47) involved two vehicles which impacted at right angles within an intersection. The windshield of the impacted vehicle separated approximately 20% from the mounting. Two fatal single-vehicle accidents (74-56 and 74-57) involved collisions with fixed objects (steel poles). The windshield of these vehicles separated (60% and 80%, respectively) from their mountings during impact. The remaining non-fatal accident (75-03) involved a front end impact of two passenger vehicles. The windshield of one of the vehicles separated 100% from the mounting during impact. There were no incidents in this series where the separation of the windshield was caused by occupant contact.

12. Standard #214 - Side Door Strength

This standard was cited negatively in three accidents (74-35, -53 and -57). Two of the fatal collisions (74-35 and -53) involved pre-1973 vehicles whereby the standard did not apply. One accident (74-35) involved a 1963 Chrysler which impacted a wooden utility pole with the left side thereby causing invasion of the driver's compartment. The other fatal accident (74-53) involved the over-ride and invasion of the left side of a 1972 Chevrolet Vega by a 1974 Ford pick-up truck. The remaining fatal accident (74-57) involved a 1974 Chevrolet Chevelle which impacted a steel pole with the left side. The left front door of the vehicle was severely damaged and the driver was partially ejected.

13. Standard #215 - Exterior Protection

This standard was cited in three accidents (74-33, -48 and 75-14) in a positive manner. From the investigations of these three collisions, the team concludes that the energy absorbing bumpers on the vehicles involved performed as designed. It is further concluded that the damage of the vehicles and the injury severity of the occupants were most probably reduced to some degree by the energy absorbing bumpers.

14. Standard #216 - Roof Crash Protection

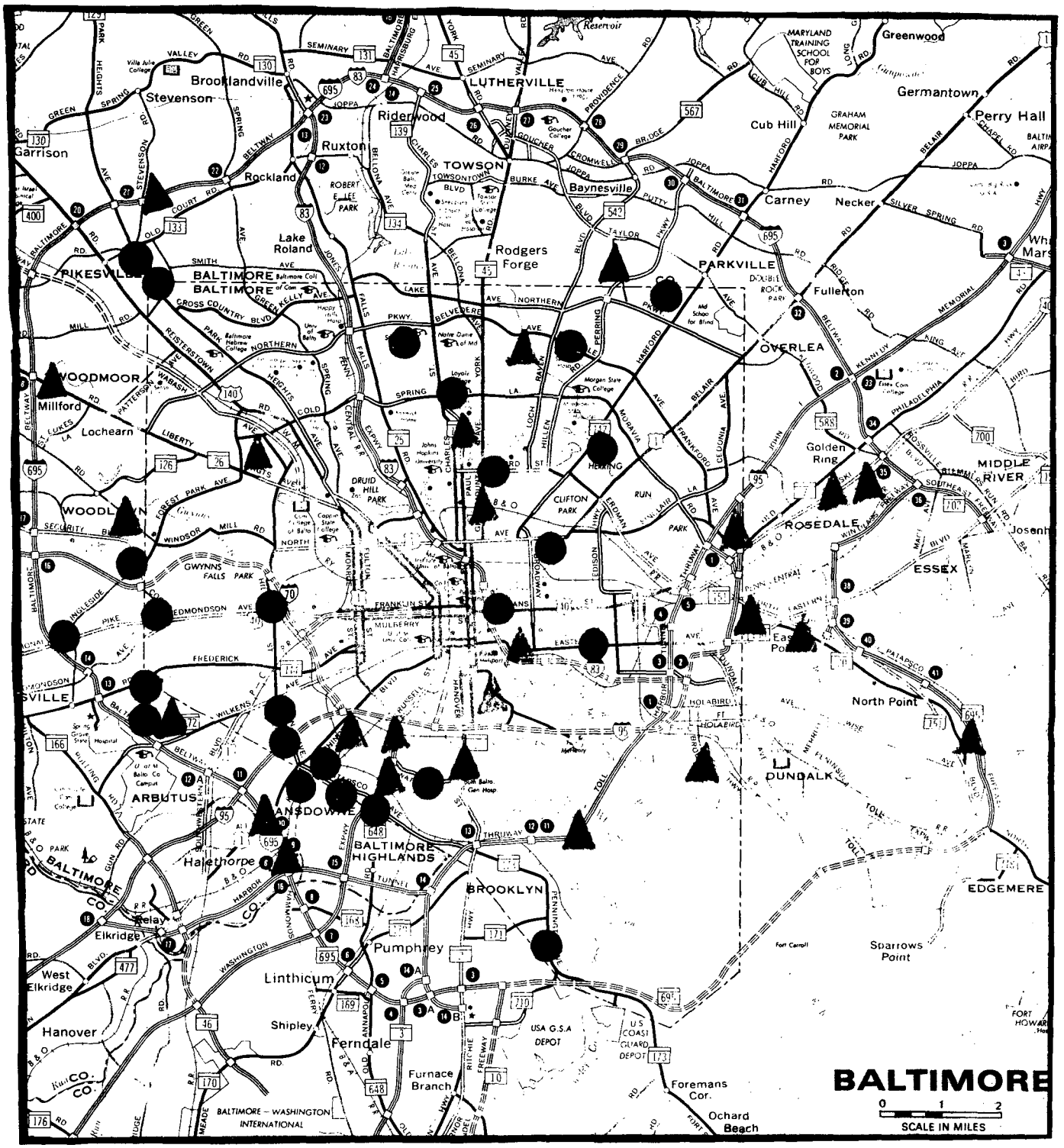
This standard was cited in one fatal accident (74-33) where the roof compressed on a 1973 Ford after the vehicle had dropped end-over-end from a bridge onto a stationary steel railroad car and the ground surface.

Results and Discussion (con.)

15. Standard #302 - Flammability of Interior Materials

This standard was cited in one fatal accident (74-33) when a fire ensued within the vehicle after the vehicle had traveled off a bridge impacting a stationary steel railroad car and the ground surface. The interior of the vehicle completely burned in a very short period of time causing fatal burns to the driver.

FIG 1: GEOGRAPHIC STUDY AREA DESIGNATING LOCATIONS OF ACCIDENTS INVESTIGATED



State Highway System Prepared By Department of Transportation, State of Maryland

TABLE #1

DRIVERS INVOLVED IN 25 FATAL ACCIDENTS INVESTIGATED

KILLED	26
INJURED	12
NOT INJURED	4
TOTAL	42

PASSENGERS INVOLVED IN 25 FATAL ACCIDENTS INVESTIGATED

KILLED	5
INJURED	11
NOT INJURED	6
TOTAL	22

DRIVERS INVOLVED IN 25 NON-FATAL ACCIDENTS INVESTIGATED

KILLED	26
NOT INJURED	4
TOTAL	30

PASSENGERS INVOLVED IN 25 NON-FATAL ACCIDENTS INVESTIGATED

INJURED	11
NOT INJURED	4
TOTAL	15

TABLE #2

MANUFACTURE YEAR OF VEHICLES INVOLVED IN
25 FATAL ACCIDENTS INVESTIGATED

1942 - *1	(One Train Included)	1967 - *4	(One Bus Included)
1960 - *1	(One Truck Included)	1968 - 3	
1961 - 0		1969 - 3	
1962 - 0		1970 - 3	
1963 - *2	(One Truck Included)	1971 - *8	(Two Trucks Included)
1964 - 0		1972 - *3	(One Truck Included)
1965 - 3		1973 - *3	(One Truck Included)
1966 - 2		1974 - *4	(Two Trucks Included)
		1975 - 1	

TOTAL NUMBER OF VEHICLES 41

* Eight Trucks, One Train and One Bus Included

MANUFACTURE YEAR OF VEHICLES INVOLVED IN
25 NON-FATAL ACCIDENTS INVESTIGATED

1963 - 1	1969 - 3
1964 - 3	1970 - 6
1965 - 4	1971 - 2
1966 - 0	1972 - 3
1967 - 1	1973 - 3
1968 - 0	1974 - 6
	1975 - 0

TOTAL NUMBER OF VEHICLES 32

TABLE #3

NUMBER OF VEHICLES INVOLVED IN 25
FATAL ACCIDENTS INVESTIGATED

Single Vehicle Train Accident	1
Single Vehicle Accident	9
Two Vehicle Accident	14
Three Vehicle Accident	1
Total	25

NUMBER OF VEHICLES INVOLVED IN 25
NON-FATAL ACCIDENTS INVESTIGATED

Single Vehicle Accident	18
Two Vehicle Accident	7
Total	25

TABLE #4

AGE-SEX CLASSIFICATION OF 41* DRIVERS INVOLVED IN 25 FATAL ACCIDENTS INVESTIGATED

	Drivers Involved		Killed		Injured		No Injury	
Age/Yrs	Male	Female	M	F	M	F	M	F
0-15								
16-20	7	3	5	2	2	1		
21-25	7	1	4	1	3			
26-30	3		2		1			
31-35	6		2		3		1	
36-40	1	2	1	2				
41-45	3		2		1			
46-50	2	1	1	1			1	
51-55								
56-60	1	1	1			1		
61-65	1						1	
66-70	1		1					
71-75								
76-80		1		1				
TOTALS	32	9	19	7	10	2	3	0

AGE-SEX CLASSIFICATION OF 22 PASSENGERS INVOLVED IN 25 FATAL ACCIDENTS INVESTIGATED

	Passengers Involved		Killed		Injured		No Injury	
Age/Yrs	Male	Female	M	F	M	F	M	F
0-15		1				1		
16-20	2	2		2	2			
21-25	6	2	1		2	2	3	
26-30								
31-35	2				1		1	
36-40	1				1			
41-45								
46-50	1						1	
51-55	1						1	
56-60	1	1		1	1			
61-65	1		1					
66-70								
71-75	1				1			
76-80								
TOTALS	16	6	2	3	8	3	6	0

* One Driver Left the Scene and is Not Included in this Table.

TOTAL DRIVERS INVOLVED 41

TOTAL DRIVERS KILLED 26

TOTAL PASSENGERS INVOLVED 22

TOTAL PASSENGERS KILLED 5

TABLE #5

AGE/SEX CLASSIFICATION OF 30 DRIVERS INVOLVED IN 25 NON-FATAL ACCIDENTS INVESTIGATED							AGE/SEX CLASSIFICATION OF 15 PASSENGERS INVOLVED IN 25 NON-FATAL ACCIDENTS INVESTIGATED					
AGE	DRIVERS INVOLVED		DRIVERS INJURED		DRIVERS NOT INJURED		PASSENGERS INVOLVED		PASSENGERS INJURED		PASSENGERS NOT INJURED	
	M	F	M	F	M	F	M	F	M	F	M	F
0-15	-	-	-	-	-	-	3	1	2	1	1	-
16-20	7	2	7	2	-	-	2	1	1	1	1	-
21-25	5	1	4	1	1	-	-	2	-	2	-	-
26-30	-	-	-	-	-	-	1	-	1	-	-	-
31-35	1	1	1	1	-	-	4	-	2	-	2	-
36-40	4	-	3	-	1	-	1	-	1	-	-	-
41-45	2	1	2	-	-	1	-	-	-	-	-	-
46-50	2	-	2	-	-	-	-	-	-	-	-	-
51-55	-	1	-	1	-	-	-	-	-	-	-	-
56-60	-	-	-	-	-	-	-	-	-	-	-	-
61-65	1	1	-	1	1	-	-	-	-	-	-	-
66-70	1	-	1	-	-	-	-	-	-	-	-	-
TOTALS	23	7	20	6	3	1	11	4	7	4	4	0

TOTAL DRIVERS INVOLVED 30

TOTAL DRIVERS INJURED 26

TOTAL PASSENGERS INVOLVED 15

TOTAL PASSENGERS INJURED 11

TABLE #6

INCIDENCE OF ACCIDENT
BY CALENDAR MONTH

MONTH	FATAL	NON-FATAL
JANUARY	4	2
FEBRUARY	3	2
MARCH	0	8
APRIL	1	3
MAY	0	0
JUNE	0	0
JULY	2	1
AUGUST	6	2
SEPTEMBER	0	3
OCTOBER	2	1
NOVEMBER	2	2
DECEMBER	5	1
TOTALS	25	25

TABLE #7

INCIDENCE OF ACCIDENT
BY DAY OF WEEK

DAY	FATAL	NON-FATAL
SUNDAY	5	5
MONDAY	4	4
TUESDAY	0	8
WEDNESDAY	6	3
THURSDAY	4	2
FRIDAY	1	2
SATURDAY	5	1
TOTALS	25	25

TABLE #8

TIME OF DAY OF FATAL AND NON-FATAL ACCIDENTS INVESTIGATED

HOURS	FATAL	NON-FATAL
0000/0400	5	4
0400/0800	3	5
0800/1200	2	3
1200/1600	3	3
1600/2000	4	5
2000/2400	8	5
TOTALS	25	25

TABLE #9

NATURE OF 25 FATAL ACCIDENTS INCLUDING *CDC OF VEHICLES AND ESTIMATED IMPACT SPEEDS

VEHICLE/VEHICLE/INTERSECTION LATERAL IMPACT (6)

Case #	CDC	Est. Impact Speed
74-31	1	25
74-36	4	50
74-39	3	40
74-47	3	35
74-51	3	35
74-55	3	30

VEHICLE/LEFT ROADWAY/FIXED OBJECT IMPACT (8)

Case#	CDC	Est. Impact Speed
74-33	5	40
74-35	3	40
74-37	2	35
74-45	3	35
74-56	4	40
74-57	3	50
75-01	9	70
75-06	9	80

VEHICLE/REAR END UNDER-RIDE IMPACT (1)

Case#	CDC	Est. Impact Speed
74-41	8	60

VEHICLE/VEHICLE/INTERSECTION UNDER-RIDE IMPACT (1)

Case#	CDC	Est. Impact Speed
75-11	9	40

VEHICLE/LEFT ROADWAY/FIXED OBJECT IMPACT/EJECTION (2)

Case#	CDC	Est. Impact Speed
75-09	1	40
75-20	2	55

VEHICLE/VEHICLE/MEDIAN CROSS-OVER HEAD ON IMPACT (3)

Case#	CDC	Est. Impact Speed
74-49	4	40
74-53	3	50
75-04	3	50

VEHICLE/TRAIN HEAD ON IMPACT (1)

Case#	CDC	Est. Impact Speed
74-54	6	45

VEHICLE/VEHICLE/INTERSECTION LATERAL IMPACT/EJECTION (1)

Case#	CDC	Est. Impact Speed
75-05	3	30

VEHICLE/VEHICLE/VEHICLE/MEDIAN CROSSOVER HEAD ON IMPACT (1)

Case#	CDC	Est. Impact Speed
74-40	7	55

VEHICLE/VEHICLE/CENTER OF HIGHWAY CROSSOVER LATERAL IMPACT (1)

Case#	CDC	Est. Impact Speed
75-10	4	35

The Average Estimated Impact Speeds for the 25 Fatal Accidents Investigated was 44.2 m.p.h.

* - CDC = Collision Deformation Classification (Society of Automotive Engineers J224A)

TABLE #10

NATURE OF 25 NON-FATAL ACCIDENTS INCLUDING CDC* OF VEHICLES AND ESTIMATED IMPACT SPEED

VEHICLE/PARKED VEHICLE/REAR END IMPACT (2)

Case #	CDC	Est. Impact Speed
74-34	1	45
75-21	1	20

VEHICLE/LEFT ROADWAY/FIXED OBJECT IMPACT (17)

Case #	CDC	Est. Impact Speed
74-32	1	30
74-42	1	45
74-43	1	25
74-48	1	20
74-50	2	30
74-52	2	30
75-02	3	35
75-07	3	35
75-08	2	30
75-12	2	30
75-13	2	25
75-15	2	35
75-16	2	25
75-17	1	25
75-18	1	30
75-19	1	25
75-23	2	35

VEHICLE/VEHICLE/INTERSECTION/LATERAL IMPACT (3)

Case #	CDC	Est. Impact Speed
74-38	1	25
74-46	2	25
75-14	1	20

VEHICLE/VEHICLE/LEFT ROADWAY/FIXED OBJECT/PARKED VEHICLE IMPACT (1)

Case #	CDC	Est. Impact Speed
74-44	1	25

VEHICLE/VEHICLE/LEFT ROADWAY/FIXED OBJECT IMPACT/EJECTION (1)

Case #	CDC	Est. Impact Speed
75-22	1	25

VEHICLE/VEHICLE CENTER OF HIGHWAY CROSSOVER/HEAD ON IMPACT (1)

Case #	CDC	Est. Impact Speed
75-03	4	40

The Average Estimate of Impact Speeds for 25 Non-Fatal Accidents was 29.4 m.p.h.

* Collision Deformation Classification (Society of Automotive Engineers J224A)

TABLE #11

COMBINATION OF PRIMARY FACTORS AND THE *PROGRAM MATRIX FOR HIGHWAY SAFETY WHICH WERE SIGNIFICANT IN 25 FATAL ACCIDENTS INVESTIGATED

MATRIX CELL	PRIMARY FACTOR	CASE NUMBER	TOTAL
1	Alcohol	74-33, -35, -36, -37, -39, -45, -53, -54, -57, 75-01, -06	11
1	Perception/Comprehension Error	74-31, -55	2
1	Decision Error	74-41, -47, -51, 75-09, -11	5
1	Action Error	75-05, -10, -20	3
1	Driver Fatigued (Dozed at Wheel)	74-49, -56, 75-04	3
1	Driver Experienced Seizure	74-40	1

Alcohol was a primary factor in 44%
Decision Error was a primary factor in 20%
Action Error was a primary factor in 12%
Fatigue was a primary factor in 12%

*DOT HS-820-094
Program Matrix for Highway Safety Research
James C. Fell
Scott N. Lee

TABLE #12

COMBINATION OF CONTRIBUTING FACTORS AND THE PROGRAM MATRIX FOR HIGHWAY SAFETY WHICH WERE SIGNIFICANT IN 25 FATAL ACCIDENTS INVESTIGATED

MATRIX CELL	CONTRIBUTING FACTOR	CASE NUMBER	TOTAL
1	Alcohol	74-49, 75-09	2
1	Speed	74-41, -45, -47, -53, -57, 75-01, -06	7
1	Driver Inattention	74-31, -55, 75-05	3
1	Driver Fatigue	74-49, -56, 75-04	3
1	Driver Dozed at Wheel	74-37	1
1	Perception/Comprehension Error	74-33, -36, -54, 75-11	4
1	Driver Failed to Take Proper Evasive Action	74-39, -51	2
1	Traveling Wrong Way on Interstate	74-40	1
4 - 7	Bald Tires-Wet Roadway	74-35, 75-01	2
7	High Wind Gusts	75-20	1

Speed Contributing Factor in 28%
Perception/Comprehension Contributing Factor in 16%
Inattention Contributing Factor in 12%
Fatigue Contributing Factor in 12%

TABLE #13

COMBINATION OF PRIMARY FACTORS AND THE PROGRAM MATRIX FOR HIGHWAY SAFETY WHICH WERE SIGNIFICANT IN 25 NON-FATAL ACCIDENTS INVESTIGATED

MATRIX CELL	PRIMARY FACTOR	CASE NUMBERS	TOTAL
1	Alcohol	74-43, -53, 75-18	3
1	Decision Action Error (Speed)	74-32, -44, -50, 75-03, -14, -16, -22	7
1	Action Error (Over steered, Drove over Roadway Center, Improper Turn)	75-17, -19	2
1	Perception (Dozed at Wheel, Under Medication, Inattention)	74-34, -42, -48, 75-07, -12, -13, -15, -23	8
1	Perception/Comprehension	74-38, -46, 75-02, -08, -21	5

Perception Primary Factor in 32%
Decision Action Error Primary Factor in 28%
Perception/Comprehension Primary Factor in 20%
Alcohol Primary Factor in 12%

TABLE #14

COMBINATION OF CONTRIBUTING FACTORS AND THE PROGRAM MATRIX FOR HIGHWAY SAFETY WHICH WERE SIGNIFICANT IN 25 NON-FATAL ACCIDENTS INVESTIGATED

MATRIX CELL	CONTRIBUTING FACTORS	CASE NUMBERS	TOTAL
1	Alcohol	74-34, -42, -48, 75-03, -07, -08, -23	7
1	Speed	74-52, 75-18	2
4	Vehicle Defects (Bald Tires, Faulty Door Locks)	74-50, 75-16, -22	3
7	Wet-Icy Roadway	74-32, -50, 75-02, -16, -21	5
7	Vision Obscured	74-38	1
1	Under Medication	75-12, -13	2
1	Inexperience	75-14, -17	2
1	Failed to Yield Right of Way	74-46	1
1	Fatigue	74-43, 75-15	2
7	Roadway Design	74-44, 75-19	2

Alcohol Contributing Factor in 28%
Wet-Icy Roadway Contributing Factor in 20%
Vehicle Defects (Bald Tires, Faulty Door Locks) Contributing Factor in 12%

TABLE #15

USE AND EFFECTIVENESS OF RESTRAINING DEVICES IN 25 FATAL ACCIDENTS INVOLVING 31 FATALITIES

	RESTRAINING DEVICE NOT INSTALLED	RESTRAINING DEVICE INSTALLED, NOT IN USE	
	INJURIES PROBABLY FATAL EVEN IF WORN	INJURIES PROBABLY FATAL IF WORN	*PROBABLY WOULD HAVE SAVED LIVE IF WORN
DRIVER	74-35	74-31, -33, -40, -41, -47, -53, -55, -56, 75-01, -06, -11	74-36, -37, -39, -45, -49, -51, -53, -54, -57, 75-04, -05, -09, -10, -20
TOTALS	(1)	(11)	(14)
FRONT SEAT PASSENGERS	0	74-41, 75-10	74-53, -56
REAR SEAT PASSENGERS	0	0	74-56
TOTALS	(0)	(2)	(3)

* Review of total injury and accident characteristics indicate probable survival if restraints utilized

Note - There were no fatalities involving victims who were restrained

TABLE #16

USE AND EFFECTIVENESS OF OCCUPANT RESTRAINTS IN 25 NON-FATAL ACCIDENTS

RESTRAINING DEVICES INSTALLED BUT NOT IN USE

	INJURY MAY HAVE BEEN LESS SEVERE IF WORN	INJURY MAY HAVE BEEN MORE SEVERE IF WORN
DRIVER	74-32, -34, -38, -42, -43, -44, -48, -52, 75-03, -07, -08, -12, -13, -15, -16, -17, -18, -19, -22	75-02
	(19)	(1)
PASSENGER	74-34, -44, -46, 75-03, -07, -14, -16, -17, -19, -22	0
	(10)	(0)

RESTRAINING DEVICE INSTALLED AND IN USE

	INJURY REDUCED BY USAGE OF LAP RESTRAINTS	INJURY REDUCED BY USAGE OF LAP AND UPPER TORSO RESTRAINTS
DRIVER	75-21	74-46, 75-14, -23
	(1)	(3)

RESTRAINTS NOT INSTALLED WOULD HAVE REDUCED INJURY

DRIVER 74-50

(1)

TABLE #17

MOST SERIOUS CAUSES AND MECHANISMS OF FATALLY INJURED DRIVERS AND PASSENGERS INVOLVED IN 25 FATAL ACCIDENTS

AREA OF BODILY INJURY

Head - 74-31, -33, -35, -36, -37, -39, -40, -41, -41P, -45, -47, -49, -51, -53, -53P, -54, -57, 75-01, -04, -05, -06, -10, -10P, -11, -20

Neck - 74-33, -35, -39, -40, -41, -41P, -47, -51, -53P, 75-04

Chest - 74-31, -35, -36, -37, -39, -40, -41P, -45, -47, -49, -51, -53P, -54, -55, -57, 75-01, -04, -05, -06, -09, -10, -10P

Abdomen - 74-31, -36, -39, -40, -47, -49, -51, -54, -55, -57, 75-04, -06, -09

Extremities - 74-31, -36, -39, -40, -41, -41P, -45, -49, -51, -53, -53P, -55, -57, 75-01, -04, -06, -10P

P - Passenger

RESPONSIBLE MECHANISMS

Steering Assembly - 74-31, -35, -36, -37, -39, -40, -41, -45, -47, -49, -51, -53, -54, -55, -57, 75-01, -04, -06

Windshield - 74-36, -37, -41, -41P, -45, -49, -51, -53P, -54, 75-01

Side Interior - 74-31, -35, -39, -47, -53, -55, 75-01, -04, -05, -06, -10, -10P

Instrument Panel - 74-36, -37, -41, -41P, -45, -49, -51, -53P, -54, 75-04

Pillars - 74-31, -39, -47, -49, -53, 75-04, -06, -10, -10P, -11

Roof - 74-31, -33, -40

Intrusion - 74-31, -40, -41, -41P, -47, 75-06, -10, -10P, -11

Other Occupant - 74-53P, 75-01

Ejection - 74-53, -57, 75-01, -05, -09, -20

TABLE #18

MOST SERIOUS CAUSES OF INJURIES AND MECHANISMS OF INJURED DRIVERS AND PASSENGERS INVOLVED IN 25 NON-FATAL ACCIDENTS

AREA OF BODILY INJURY

Head - 74-32, -38, -42, -43, -48, -50, -52, 75-03, -03P, -07, -07P, -12, -13, -14P, -16, -16P, -18, -19P, -22, -22P, -23

Chest - 74-42, -44, 75-03, -03P, -08, -12, -14, -15, -17, -17P, -22, -22P

Abdomen - 75-03

Extremities - 74-32, -34, -42, -43, -44, -46, -46P, -48, -50, -52, 75-02, -03, -03P, -07, -07P, -08, -13, -16, -17, -19, -21, -22, -22P, -23

RESPONSIBLE MECHANISM

Steering Assembly - 74-42, -43, -44, -48, -50, -52, 75-02, -03, -07, -08, -12, -13, -15, -16, -17, -18, -23

Windshield and Side Glass - 74-42, -52, 75-03P, -07, -16

Instrument Panel - 74-32, -34, -42, -43, -46P, 75-03, -03P, -07, -07P, -14P, -16P, -17, -17P, -19, -19P, -23

Side Interior - 74-42, -44, -50, 75-02, -03, -08, -21

Pillars - 75-02

Floor Pan - 75-13

Inside Rear View Mirror - 74-38

Upper Torso Restraints - 74-46, 75-14

Hood Penetration - 75-07P

Ejection - 75-22, -22P

P - Passenger

TABLE #19

BLOOD ALCOHOL LEVEL OF 26 DRIVERS KILLED WITH SURVIVAL TIME AND DRIVERS RESPONSIBLE IN ACCIDENT CAUSATION OF 26 FATALITIES INVESTIGATED

	BLOOD ALCOHOL .10% and Above		S.T.*	BLOOD ALCOHOL Below .10%		S.T.*	BAL NEGATIVE	S.T.*
AT FAULT DRIVERS (WHO DIED WITHIN ONE HOUR OF THE ACCIDENT)		N=7			N=2			N=6
	74-33	.11%		74-49	.01%	2½ hours	74-31	3/4 hour
	74-37	.25%		75-04	.05%		74-40	
	74-53	.20%					74-55	2/3 hour
	74-54	.27%					74-56	3/4 hour
	75-01	.18%	½ hour				75-10	3/4 hour
	75-06	.19%					75-20	23 hours
	75-09	.11%	½ hour					
AT FAULT DRIVERS (WHO DIED MORE THAN ONE HOUR AFTER THE ACCIDENT)		N=3						
	74-35	.14%	2½ hours					
	74-45	.14%	1½ hours					
	74-57	.20%	1¼ hours					
NOT AT FAULT DRIVERS					N=3			N=5
				74-39	.03%		74-36	2¼ hours
				74-41	.04%		74-47	½ hour
				75-05	.01%	2/3 hour	74-51	½ hour
							74-53	
							75-11	6 hours

* Survival Time

Note - No drugs detected of any driver tested

TABLE #20

AGE GROUPING OF 41* TOTAL DRIVERS INVOLVED IN 25 FATAL ACCIDENTS INVESTIGATED, WHERE 26 DRIVERS WERE KILLED, 18 OF WHOM WERE CONSIDERED RESPONSIBLE, 17 OF WHOME HAD CONSUMED ALCOHOL

AGE	TOTAL MALES	TOTAL FEMALES	TOTAL DRIVERS	ALCOHOL CONSUMED BY MALE	FEMALE	PERCENT OF DRIVERS IN AGE GROUP WHO CONSUMED ALCOHOL
16 - 20	7	3	10	**.04%, .01%, .20%	.19%	40%
21 - 25	7	1	8	**.18%, 18% **.03%, .11%, .24%	0	62.5%
26 - 30	3	0	3	**.18%	0	33.3%
31 - 35	6	0	6	.11%, .27%	0	33.3%
36 - 40	1	2	3	.20%	0	33.3%
41 - 45	3	0	3	.14%	0	33.3%
46 - 50	2	1	3	.14%, .05%	0	66.6%
51 - 55	0	0	0	0	0	0
56 - 60	1	1	2	**.01%	0	50%
61 - 65	1	0	1	0	0	0
66 - 70	1	0	1	0	0	0
71 - 75	0	0	0	0	0	0
76 - 80	0	1	1	0	0	0
TOTALS	32	9	41	16	1	41.4%

* One Non-Responsible Driver who failed to remain at the accident scene is not included in the 41 total

** Three Non-Responsible Male Drivers Killed had blood alcohol levels of .01%, .03%, and .04%. Two Surviving Responsible Male Drivers each had blood alcohol levels of .18%.

Note - 41.4% indicates the Percentage of 17 of 41 Total Drivers involved in the 25 Fatal Accidents who had consumed alcohol.

TABLE #21

THE FOLLOWING TABLE INDICATES ALCOHOL/DRUG INVOLVEMENT OF ELEVEN RESPONSIBLE DRIVERS OUT OF A TOTAL OF 30 DRIVERS INVOLVED IN 25 NON-FATAL ACCIDENTS. THESE DRIVERS ADMITTED TO DRINKING OR CONSUMING THERAPEUTIC DOSAGES OF DRUGS AT THE TIME OF THE ACCIDENT, AND/OR WERE CHARGED WITH DWI* BY THE INVESTIGATING POLICE.

CHEMICAL TEST ADMINISTERED AND CHARGED BY POLICE WITH DWI (2)

Case #	Results
74-52	.26%
75-18	.14%

CHARGED BY POLICE WITH DWI; NO CHEMICAL TEST ADMINISTERED (2)

Case #	74-42
Case #	74-43

ADMITTED DRINKING TO TEAM; NOT CHARGED WITH DWI (5)

Case #	74-48
Case #	75-03
Case #	75-07
Case #	75-08
Case #	75-23

ADMITTED CONSUMING THERAPEUTIC DOSAGE OF DRUGS TO TEAM; NOT CHARGED

Case #	75-12
Case #	75-13

* Driving While Intoxicated

TABLE #22

ALCOHOL/DRUG INVOLVEMENT IN 25 NON-FATAL ACCIDENTS INVOLVING 30 DRIVERS INVESTIGATED BY AGE, SEX AND BLOOD ALCOHOL LEVEL

AGE	TOTAL IN GROUP	SEX/BAL	SEX/NO BAL	TOTAL
16-20	9	1 male .14%	2 males not charged admitted drinking to team	3
21-25	6	0	1 male charged with DWI by police no test 1 male not charged admitted drinking to team	2
26-30	0	0		0
31-35	2	0		0
36-40	4	0	2 males not charged admitted drinking to team	2
41-45	3	0	2 males not charged admitted to team had consumed therapeutic doses of Valium	2
46-50	2	1 male .26%		1
51-55	1	0	1 female charged DWI by police no test	1
56-60	0	0		0
61-65	2	0		0
66-70	1	0		0
TOTAL	30	2		11

Two male drivers out of 30 drivers charged by police with DWI after chemical test
One male and one female driver out of 30 drivers charged by police with DWI without a chemical test
During the interview, five drivers out of 30 drivers admitted they had consumed a significant amount of alcohol.
Two drivers admitted to consuming therapeutic doses of Valium for medical purposes
These drivers were undetected by the police at the time of the accident

TABLE #23

CURRENT FEDERAL HIGHWAY SAFETY PROGRAM STANDARDS CITED IN 25 FATAL ACCIDENTS INVESTIGATED

STANDARD	TITLE	NUMBER OF OCCURRENCES	CASE NUMBER
1	Periodic Inspection	4	74-35, 75-01, -04, -10
5	Driver Licensing	8	74-31, -35, -37, -40, -49, -53, -57, 75-10
8	Alcohol in Relation to Highway Safety	14	74-33, -35, -36, -37, -39, -41, -45, -49, -53, -54, -57, 75-01, -06, -09
9	Identification and Surveillance of Accident Location	1	75-04
11	Emergency Medical Services	23	74-31, -33, -35, -36, -37,-39, -40, -41, -45, -47, -49, -51, -53, -54, -55, -56, -57, 75-04, -05, -09, -10, -11, -20
12	Highway Design, Construction and Maintenance	11	74-33, -37, -40, -45, -53, -55, -56, -57, 75-04, -11, -20
13	Traffic Engineering Services	1	74-51
15	Police Traffic Services	24	74-31, -33, -35, -36, -37, -39, -40, -41, -45, -47, -49, -51, -53, -54, -55, -56, -57, 75-01, -04, -05, -09, -10, -11, -20
16	Debris Hazard Control and Clean Up	14	74-33, -41, -47, -49, -54, -55, -56, -57, 75-01, -05, -06, -10, -11, -20

TABLE #24

CURRENT FEDERAL HGIHWAY SAFETY PROGRAM STANDARDS CITED IN 25 NON-FATAL ACCIDENTS INVESTIGATED

STANDARD	TITLE	NUMBER OF OCCURRENCES	CASE NUMBER
1	Periodic Inspection	4	74-50, -52, 75-02, -16, -22
5	Driver Licensing	5	74-34, -52, 75-12, -14, -17
8	Alcohol in Relation to Highway Safety	10	74-34, -42, -43, -48, -52, 75-03, -07, -08, -18, -23
9	Identification and Surveillance of Accident Location	1	74-32
11	Emergency Medical Services	10	74-38, -42, -48, -52, 75-02, -03, -12, -13, -22, -23
12	Highway Design, Construction and Maintenance	10	74-38, -42, -43, -44, -48, -50, 75-07, -08, -19, -21
13	Traffic Engineering Services	3	74-44, -08, -21
15	Police Traffic Services	21	74-34, -38, -42, -43, -46, -48, -52, 75-02, -03, -07, -08, -12, -13, -15, -16, -17, -18, -19, -21, -22, -23
16	Debris Hazard Control Clean-Up	13	74-43, -52, 75-07, -08, -12, -13, -15, -16, -17, -18, -19, -21, -23

TABLE #25

CURRENT FEDERAL MOTOR VEHICLE SAFETY STANDARDS CITED IN
25 FATAL ACCIDENTS INVESTIGATED

STANDARD	TITLE	NUMBER OF OCCURRENCES	CASE NUMBER
111	Rear View Mirror	2	74-47, 75-05
113	Hood Latch Systems	14	74-31, -36, -39, -40, -41, -47, -47, -49, -53, -55, -56, -57, 75-05, -10
201	Occupant Protection in Interior Impact	8	74-39, -40, -45, -47, -49, -51, -55, -57
202	Head Restraints	1	74-49
203	Impact Protection for Driver from Steering Control System	6	74-37, -45, -49, -55, -56, 75-05
204	Steering Control Rearward Displacement	2	74-51, -56
205	Glazing Materials	6	74-36, -37, -45, -53, -55, -56
206	Door Locks and Retention	23	74-31, -35, -36, -37, -39, -40, -41, -47, -49, -53, -53, -56, 75-05, -05, -10, -20
207	Anchorage of Seats	7	74-35, -36, -39, -41, -47, -56, -57
208	Occupant Crash Protection	23	74-36, -37, -39, -39, -40, -41, -45 -47, -49, -49, -51, -53, -54, -55, -56, -57, 75-04, -05, -06, -09, -10, -11, -20
212	Windshield Mounting	8	74-37, -40, -41, -47, -47, -49, -56, -57
214	Side Door Strength	3	74-35, -53, -57
215	Exterior Protection	1	74-33
216	Roof Crash Protection	1	74-33
302	Flammability of Interior Materials	1	74-33

TABLE #26

CURRENT FEDERAL MOTOR VEHICLE SAFETY STANDARDS CITED IN
25 NON-FATAL ACCIDENTS INVESTIGATED

STANDARD	TITLE	NUMBER OF OCCURRENCES	CASE NUMBER
111	Rear View Mirror	1	74-38
113	Hood Latch Systems	9	74-38, -43, -46, -48, 75-03, -12, -13, -17, -23
201	Occupant Protection in Interior Impact	16	74-32, -34, -42, -44, -46, -48, 75-02, -03, -12, -13, -14, -17, -18, -19, -21, -23
203	Impact Protection for Driver from Steering Control System	2	75-12, -13
204	Steering Control Rearward Displacement	1	75-03
205	Glazing Materials	1	74-52
206	Door Locks and Retention	3	74-32, -42, 75-02
207	Anchorage of Seats	3	74-42, -44, 75-02
208	Occupant Crash Protection	25	74-32, -34, -38, -43, -44, -46, -46, -48, -52, 75-02, -03, -07, -08, -12, -13, -14, -14, -15, -16, -17, -18, -19, -21, -22, -23
212	Windshield Mounting	1	75-03
215	Exterior Protection	2	74-48, 75-14

Results and Discussion (con.)

Parts B and C

1. Human Factors Minimal Data Set

Introduction

The data which will be presented in this section emanates from a three year study period (1972 - 1975). Comparisons were made between fatally and non-fatally injured drivers within the Baltimore Metropolitan area. The non-fatal accidents were matched as closely as possible to the fatal accidents using the criterion which is discussed in Volume I, Task I, "Methodology" of this final report.

The tables which follow display the data in matrix form along with the type of statistical test performed. Both the "F" and Chi Square inferential tests were performed when appropriate. The level of Alpha was set at .05.

Results

Our data was comprised of 79 non-fatally injured drivers (NFID) and 76 fatally injured drivers (FID) for a grand total of 155 combined accidents.

(1) 96.2% of the NFID's were culpable while 97.4% of the FID's were similarly responsible.
(2) 75.9% of the NFID's and 84.2% of the FID's were male.
(3) Average age of NFID's was 32.59 and for FID's was 36.25.
(4) Average height for NFID's was 68.69 inches and 69.26 inches for FID's.
(5) A significant difference was noted between the average weight of FID and NFID groups. FID's were significantly heavier.
(6) For NFID's 46.2% were married, 37.2% were single and 5.1% were separated. For FID's the percentages are 34.2%, 44.7% and 13.2% respectively.
(7) 34.7% of NFID's completed high school, 2.8% college and 22.2% junior high while FID's percentages were 30.2%, 9.4% and 17% repsectively.
(8) 30.3% of NFID's werc unskilled workers while 25.8% of the FID's fell in the same category.
(9) The majority of NFID's (56.3%) and FID's (65.4%) were in the lower middle socio-economic category (Hollingshead).
(10) 60.8% of the NFID's were Caucasian, 38.0% Negro, while FID's were 75% Caucasian and 25% Negro.
(11) 60.3% of NFID's earned between $7,600 and $15,000 per year while the figures for FID's were 56.3%.
(12) 41.9% of NFID's were first born and 33.3% of FID's were also first born.
(13) 19.2% of NFID's and 24% FID's reported drinking greater than one drink per day.

Results and Discussion (con.)

(14) 13.2% of NFID's at one time or another took drugs while drinking while only 7.1% of FID's did the same.
(15) 36.7% of the NFID's were known or believed to be drinking at the time of the accident while 56.4% of the FID's were known to be drinking when their accident occurred.
(16) 69% of NFID's did not drink in their home as did 57.6% of FID's.
(17) 62.2% of NFID's drove themselves to their place of drinking while only 58.3% of the FID's did the same.
(18) 9.9% NFID's and 10.6% FID's had previously been arrested for drinking.
(19) Only 1.4% NFID's were known drug abusers or alcoholics while the percentage for FID's was 2.1%.

Summary

We were not surprised to observe that many similarities existed between FI and NFI drivers in 44 of the 45 comparisons made since the NF injured drivers were selectively "matched" (see "Methodology", Volume I, Task I). In comparing the variable of weight we did find a significant difference at the .01 level. FI drivers weighed significantly more than NF drivers - due primarily to the higher frequency of females in the NF category. Ninety-six per cent of all NF and FI drivers we looked at (N=155) were responsible, 80% were males, 72% were under 30 years of age and 40.9% were single. Interestingly, 54% did not complete high school and 72.0% were employed in blue collar jobs.

Ninety-six per cent were in the lower middle income class (Hollingshead) or lower and 67.7% were Caucasian. Thirty-eight and four tenths per cent were first born and 63% drove their vehicles to the place where they usually drank. Ten and two tenths per cent had previously been arrested for drinking but only 2.4% were alcoholics. Fourteen and one tenth per cent reported marital difficulty due to drinking, which is one Department of Transportation indication of problem drinking.

Although we expected to see a higher incidence of drug related accidents, such was not the case: only two of 155 cases (1.7%) were drug related. Thirty and five tenths per cent of all drivers lived in the core of an urban area and 94% had telephones. Forty-eight and four tenths per cent of the drivers who drank (101 of 155) did so in places other than their homes and 60.5% drove their own car to their place of drinking. Eighty-nine per cent, N=65, did their drinking on the weekends and 84% stated they drank at night (after 6:00 p.m.).

After examining all the items listed in the tables, we feel that much of the information, since obtained via verbal reports, should be viewed as supplementary and not as hard, completely objective data. We found many similarities between our matched drivers and fatally injured as expected. Volume II, Task II, will present a further discussion.

Of the non-fatally injured drivers (N=53) who responded to question

Results and Discussion (con.)

S115, (see Tables), 13.2% admitted using drugs while drinking while only 7.1% of the respondents of fatally injured drivers (N=55) who responded said "yes" to the question. This discrepancy may possibly be explained by looking at the age distributions of the NFI drivers. There were higher percentages of young people below 30 years of age in this group when compared with the fatally injured drivers, although the mean age difference was not significant. Since younger people are more apt to be smoking marijuana, this result is not surprising.

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S19 CULPABILITY IN CURRENT ACCIDENT

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NOT RESPONSIBLE	3	3.8	2	2.6	0	0.0	0	0.0	5	3.2
RESPONSIBLE	76	96.2	74	97.4	0	0.0	0	0.0	150	96.8
TOTAL RESPONSES	79	100.0	76	100.0	0	0.0	0	0.0	155	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

Q4 SEX

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
MALE	60	75.9	64	84.2	0	0.0	0	0.0	124	80.0
FEMALE	19	24.1	12	15.8	0	0.0	0	0.0	31	20.0
TOTAL RESPONSES	79	100.0	76	100.0	0	0.0	0	0.0	155	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
2 X 2 CHI-SQUARE = 1.176 FOR 1 DF

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q8 AGE AT TIME OF ACCIDENT

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
15 YRS OR LESS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
16-20	18	22.8	11	14.5	0	0.0	0	0.0	29	18.7
21-25	19	24.1	19	25.0	0	0.0	0	0.0	38	24.5
26-30	7	8.9	9	11.8	0	0.0	0	0.0	16	10.3
31-35	9	11.4	5	6.6	0	0.0	0	0.0	14	9.0
36-40	5	6.3	7	9.2	0	0.0	0	0.0	12	7.7
41-45	5	6.3	6	7.9	0	0.0	0	0.0	11	7.1
46-50	4	5.1	3	3.9	0	0.0	0	0.0	7	4.5
51-55	4	5.1	2	2.6	0	0.0	0	0.0	6	3.9
56-60	2	2.5	5	6.6	0	0.0	0	0.0	7	4.5
61-65	4	5.1	2	2.6	0	0.0	0	0.0	6	3.9
66-70	1	1.3	1	1.3	0	0.0	0	0.0	2	1.3
71-75	1	1.3	4	5.3	0	0.0	0	0.0	5	3.2
76-80	0	0.0	2	2.6	0	0.0	0	0.0	2	1.3
81-85	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
86-90	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MORE THAN 90	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	79	100.0	76	100.0	0	0.0	0	0.0	155	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		32.59		36.25		0.00		0.00		34.39
S D		14.48		17.47		0.00		0.00		16.02

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 153) = 2.018

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q2 HEIGHT (INCHES)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
60 IN. OR LESS	0	0.0	2	2.6	0	0.0	0	0.0	2	1.3
61-62	5	6.7	2	2.6	0	0.0	0	0.0	7	4.6
63-64	3	4.0	2	2.6	0	0.0	0	0.0	5	3.3
65-66	10	13.3	11	14.5	0	0.0	0	0.0	21	13.9
67-68	19	25.3	13	17.1	0	0.0	0	0.0	32	21.2
69-70	17	22.7	14	18.4	0	0.0	0	0.0	31	20.5
71-72	9	12.0	20	26.3	0	0.0	0	0.0	29	19.2
73-74	10	13.3	8	10.5	0	0.0	0	0.0	18	11.9
75-76	1	1.3	4	5.3	0	0.0	0	0.0	5	3.3
77-78	1	1.3	0	0.0	0	0.0	0	0.0	1	0.7
79-80	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MORE THAN 80	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	75	94.9	76	100.0	0	0.0	0	0.0	151	97.4
NO RESPONSE	4	5.1	0	0.0	0	0.0	0	0.0	4	2.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		68.69		69.26		0.00		0.00		68.98
S D		3.43		3.62		0.00		0.00		3.51

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 149) = 0.992

****

Q3 WEIGHT (POUNDS)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
100 LBS OR LESS	2	2.7	1	1.3	0	0.0	0	0.0	3	2.0
101-120	4	5.3	8	10.5	0	0.0	0	0.0	12	7.9
121-140	18	24.0	12	15.8	0	0.0	0	0.0	30	19.9
141-160	26	34.7	15	19.7	0	0.0	0	0.0	41	27.2
161-180	16	21.3	17	22.4	0	0.0	0	0.0	33	21.9
181-200	7	9.3	9	11.8	0	0.0	0	0.0	16	10.6
201-220	2	2.7	7	9.2	0	0.0	0	0.0	9	6.0
221-240	0	0.0	3	3.9	0	0.0	0	0.0	3	2.0
241-260	0	0.0	2	2.6	0	0.0	0	0.0	2	1.3
261-280	0	0.0	1	1.3	0	0.0	0	0.0	1	0.7
281-300	0	0.0	1	1.3	0	0.0	0	0.0	1	0.7
MORE THAN 300	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	75	94.9	76	100.0	0	0.0	0	0.0	151	97.4
NO RESPONSE	4	5.1	0	0.0	0	0.0	0	0.0	4	2.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		153.89		167.38		0.00		0.00		160.68
S D		24.24		38.94		0.00		0.00		32.96

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 149) = 6.511

****

Q33 MARITAL STATUS

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
MARRIED	36	46.2	26	34.2	0	0.0	0	0.0	62	40.3
COMMON-LAW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SINGLE	29	37.2	34	44.7	0	0.0	0	0.0	63	40.9
WIDOWED	5	6.4	3	3.9	0	0.0	0	0.0	8	5.2
SEPARATED	4	5.1	10	13.2	0	0.0	0	0.0	14	9.1
DIVORCED	4	5.1	3	3.9	0	0.0	0	0.0	7	4.5
TOTAL RESPONSES	78	98.7	76	100.0	0	0.0	0	0.0	154	99.4
NO RESPONSE	1	1.3	0	0.0	0	0.0	0	0.0	1	0.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
2 X 2 CHI-SQUARE = 0.623 FOR 1 DF (3)

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

HOLLINGSHEAD EDUCATIONAL SCAL

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
GRADUATE PROFES	0	0.0	1	1.9	0	0.0	0	0.0	1	0.8
COLLEGE GRAD	2	2.8	5	9.4	0	0.0	0	0.0	7	5.6
PARTIAL COLLEGE	15	20.8	7	13.2	0	0.0	0	0.0	22	17.6
HIGH SCH GRAD	25	34.7	16	30.2	0	0.0	0	0.0	41	32.8
PARTIAL HIGH SC	11	15.3	15	28.3	0	0.0	0	0.0	26	20.8
JUNIOR HIGH SCH	16	22.2	9	17.0	0	0.0	0	0.0	25	20.0
LESS THAN 7 YRS	3	4.2	0	0.0	0	0.0	0	0.0	3	2.4
TOTAL RESPONSES	72	91.1	53	69.7	0	0.0	0	0.0	125	80.6
NO RESPONSE	7	8.9	23	30.3	0	0.0	0	0.0	30	19.4
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.048 FOR 1 DF (1, 4)

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

HOLLINGSHEAD OCCUPATIONAL SCALE

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NONE	1	1.3	1	1.5	0	0.0	0	0.0	2	1.4
EXECUTIVE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MANAGER	5	6.6	3	4.5	0	0.0	0	0.0	8	5.6
ADMINISTRATIVE	2	2.6	10	15.2	0	0.0	0	0.0	12	8.5
CLERICAL	7	9.2	10	15.2	0	0.0	0	0.0	17	12.0
SKILLED MANUAL	22	28.9	11	16.7	0	0.0	0	0.0	33	23.2
SKILLED OPERATR	16	21.1	14	21.2	0	0.0	0	0.0	30	21.1
UNSKILLED	23	30.3	17	25.8	0	0.0	0	0.0	40	28.2
TOTAL RESPONSES	76	96.2	66	86.8	0	0.0	0	0.0	142	91.6
NO RESPONSE	3	3.8	10	13.2	0	0.0	0	0.0	13	8.4
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.166 FOR 1 DF (1, 7)

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

HOLLINGSHEAD SOCIO-ECONOMIC-STATUS

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
UPPER CLASS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
UPPER MIDDLE	1	1.4	4	7.7	0	0.0	0	0.0	5	4.1
MIDDLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
LOWER MIDDLE	40	56.3	34	65.4	0	0.0	0	0.0	74	60.2
LOWER	30	42.3	14	26.9	0	0.0	0	0.0	44	35.8
TOTAL RESPONSES	71	89.9	52	68.4	0	0.0	0	0.0	123	79.4
NO RESPONSE	8	10.1	24	31.6	0	0.0	0	0.0	32	20.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		4.39		4.12		0.00		0.00		4.28
S D		0.57		0.76		0.00		0.00		0.67

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 121) = 5.411

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q5 RACE

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
CAUCASIAN	48	60.8	57	75.0	0	0.0	0	0.0	105	67.7
NEGRO	30	38.0	19	25.0	0	0.0	0	0.0	49	31.6
ASIAN(ORIENTAL)	1	1.3	0	0.0	0	0.0	0	0.0	1	0.6
AMERICAN INDIAN	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OTHER	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	79	100.0	76	100.0	0	0.0	0	0.0	155	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 2.972 FOR 1 DF (1)

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q55A SUBJECT'S YEARLY GROSS INCOME

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
$0-3000	4	5.9	1	2.1	0	0.0	0	0.0	5	4.3
3100-5000	8	11.8	6	12.5	0	0.0	0	0.0	14	12.1
5100-7500	12	17.6	12	25.0	0	0.0	0	0.0	24	20.7
7600-10000	24	35.3	14	29.2	0	0.0	0	0.0	38	32.8
11000-15000	17	25.0	13	27.1	0	0.0	0	0.0	30	25.9
16000-25000	3	4.4	2	4.2	0	0.0	0	0.0	5	4.3
26000-50000	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ABOVE 50000	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	68	86.1	48	63.2	0	0.0	0	0.0	116	74.8
NO RESPONSE	5	6.3	26	34.2	0	0.0	0	0.0	31	20.0
NOT APPLICABLE	6	7.6	2	2.6	0	0.0	0	0.0	8	5.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.076 FOR 1 DF (1, 3)

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q55B ACTUAL DOLLAR AMOUNT- GROSS INCOME

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
$2500 OR LESS	3	5.3	1	2.8	0	0.0	0	0.0	4	4.3
2501-5000	6	10.5	5	13.9	0	0.0	0	0.0	11	11.8
5001-7500	12	21.1	8	22.2	0	0.0	0	0.0	20	21.5
7501-10000	22	38.6	11	30.6	0	0.0	0	0.0	33	35.5
10001-12500	8	14.0	5	13.9	0	0.0	0	0.0	13	14.0
12501-15000	4	7.0	4	11.1	0	0.0	0	0.0	8	8.6
15001-17500	1	1.8	0	0.0	0	0.0	0	0.0	1	1.1
17501-20000	1	1.8	2	5.6	0	0.0	0	0.0	3	3.2
20001-22500	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
22501-25000	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MORE THAN 25000	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	57	72.2	36	47.4	0	0.0	0	0.0	93	60.0
NO RESPONSE	18	22.8	38	50.0	0	0.0	0	0.0	56	36.1
NOT APPLICABLE	4	5.1	2	2.6	0	0.0	0	0.0	6	3.9
TOTALS	79		76		0		0		155	
MEAN	8410.88		9020.50		0.00		0.00		8646.86	
S D	3606.48		4273.92		0.00		0.00		3846.38	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 91) = 0.546

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Q12A BIRTH RANK

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
1ST	31	41.9	17	33.3	0	0.0	0	0.0	48	38.4
2ND	12	16.2	13	25.5	0	0.0	0	0.0	25	20.0
3RD	13	17.6	9	17.6	0	0.0	0	0.0	22	17.6
4TH	2	2.7	8	15.7	0	0.0	0	0.0	10	8.0
5	7	9.5	1	2.0	0	0.0	0	0.0	8	6.4
6	2	2.7	1	2.0	0	0.0	0	0.0	3	2.4
7	2	2.7	1	2.0	0	0.0	0	0.0	3	2.4
8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
9	1	1.4	0	0.0	0	0.0	0	0.0	1	0.8
10	0	0.0	1	2.0	0	0.0	0	0.0	1	0.8
MORE THAN 10	4	5.4	0	0.0	0	0.0	0	0.0	4	3.2
TOTAL RESPONSES	74	93.7	51	67.1	0	0.0	0	0.0	125	80.6
NO RESPONSE	5	6.3	25	32.9	0	0.0	0	0.0	30	19.4
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
2 X 2 CHI-SQUARE = 0.608 FOR 1 DF (1)

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Q12B NUMBER OF CHILDREN IN FAMILY

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
1 CHILD(REN)	6	8.1	2	3.8	0	0.0	0	0.0	8	6.3
2	10	13.5	5	9.6	0	0.0	0	0.0	15	11.9
3	12	16.2	12	23.1	0	0.0	0	0.0	24	19.0
4	13	17.6	10	19.2	0	0.0	0	0.0	23	18.3
5	7	9.5	7	13.5	0	0.0	0	0.0	14	11.1
6	7	9.5	7	13.5	0	0.0	0	0.0	14	11.1
7	4	5.4	3	5.8	0	0.0	0	0.0	7	5.6
8	4	5.4	3	5.8	0	0.0	0	0.0	7	5.6
9	1	1.4	1	1.9	0	0.0	0	0.0	2	1.6
10	1	1.4	2	3.8	0	0.0	0	0.0	3	2.4
11	2	2.7	0	0.0	0	0.0	0	0.0	2	1.6
MORE THAN 11	7	9.5	0	0.0	0	0.0	0	0.0	7	5.6
TOTAL RESPONSES	74	93.7	52	68.4	0	0.0	0	0.0	126	81.3
NO RESPONSE	5	6.3	24	31.6	0	0.0	0	0.0	29	18.7
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		5.22		4.60		0.00		0.00		4.96
S D		3.57		2.16		0.00		0.00		3.06

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 124) = 1.248

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S114 EXTENT OF DRINKING (REVISED ALCOHOLIC CLASSIFICATION 7/73)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
ABSTAINER	15	20.3	7	13.7	0	0.0	0	0.0	22	17.6
MILD SOCIAL	23	31.1	16	31.4	0	0.0	0	0.0	39	31.2
MODERATE SOCIAL	17	23.0	14	27.5	0	0.0	0	0.0	31	24.8
MOD/HEAVY SOC	9	12.2	9	17.6	0	0.0	0	0.0	18	14.4
HEAVY SOCIAL	7	9.5	3	5.9	0	0.0	0	0.0	10	8.0
SPORADIC BINGE	1	1.4	1	2.0	0	0.0	0	0.0	2	1.6
ALCOHOLIC	2	2.7	1	2.0	0	0.0	0	0.0	3	2.4
TOTAL RESPONSES	74	93.7	51	67.1	0	0.0	0	0.0	125	80.6
NO RESPONSE	5	6.3	25	32.9	0	0.0	0	0.0	30	19.4
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		2.74		2.84		0.00		0.00		2.78
S D		1.46		1.33		0.00		0.00		1.40

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 123) = 0.151

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q38D MARITAL DIFFICULTY- HANDLING ALCOHOL

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	59	92.9	22	75.9	0	0.0	0	0.0	61	85.9
YES	3	7.1	7	24.1	0	0.0	0	0.0	10	14.1
TOTAL RESPONSES	42	53.2	29	38.2	0	0.0	0	0.0	71	45.8
NO RESPONSE	7	8.9	24	31.6	0	0.0	0	0.0	31	20.0
NOT APPLICABLE	30	38.0	23	30.3	0	0.0	0	0.0	53	34.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 2.810 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q32H ALCOHOL OR DRUG ABUSE

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	69	98.6	46	97.9	0	0.0	0	0.0	115	98.3
YES	1	1.4	1	2.1	0	0.0	0	0.0	2	1.7
TOTAL RESPONSES	70	88.6	47	61.8	0	0.0	0	0.0	117	75.5
NO RESPONSE	9	11.4	29	38.2	0	0.0	0	0.0	38	24.5
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q126 WAS SUBJECT EVER ARRESTED FOR DRINKING

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	64	90.1	42	89.4	0	0.0	0	0.0	106	89.8
YES	7	9.9	5	10.6	0	0.0	0	0.0	12	10.2
TOTAL RESPONSES	71	89.9	47	61.8	0	0.0	0	0.0	118	76.1
NO RESPONSE	8	10.1	29	38.2	0	0.0	0	0.0	37	23.9
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.030 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q86F DRINK WHEN ILL

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NEVER	54	98.2	37	90.2	0	0.0	0	0.0	91	94.8
OCCASIONALLY	1	1.8	1	2.4	0	0.0	0	0.0	2	2.1
FREQUENTLY	0	0.0	3	7.3	0	0.0	0	0.0	3	3.1
TOTAL RESPONSES	55	69.6	41	53.9	0	0.0	0	0.0	96	61.9
NO RESPONSE	9	11.4	28	36.8	0	0.0	0	0.0	37	23.9
NOT APPLICABLE	15	19.0	7	9.2	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	
MEAN		1.02		1.17		0.00		0.00		1.08
S D		0.13		0.54		0.00		0.00		0.37

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 94) = 4.019

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q86E DRINK WHEN UNABLE TO SLEEP

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NEVER	51	91.1	38	92.7	0	0.0	0	0.0	89	91.8
OCCASIONALLY	3	5.4	1	2.4	0	0.0	0	0.0	4	4.1
FREQUENTLY	2	3.6	2	4.9	0	0.0	0	0.0	4	4.1
TOTAL RESPONSES	56	70.9	41	53.9	0	0.0	0	0.0	97	62.6
NO RESPONSE	8	10.1	28	36.8	0	0.0	0	0.0	36	23.2
NOT APPLICABLE	15	19.0	7	9.2	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	
MEAN		1.13		1.12		0.00		0.00		1.12
S D		0.43		0.46		0.00		0.00		0.44

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 95) = 0.001

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q86D DRINK WHEN ANGRY

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NEVER	44	75.9	29	72.5	0	0.0	0	0.0	73	74.5
OCCASIONALLY	10	17.2	7	17.5	0	0.0	0	0.0	17	17.3
FREQUENTLY	4	6.9	4	10.0	0	0.0	0	0.0	8	8.2
TOTAL RESPONSES	58	73.4	40	52.6	0	0.0	0	0.0	98	63.2
NO RESPONSE	6	7.6	29	38.2	0	0.0	0	0.0	35	22.6
NOT APPLICABLE	15	19.0	7	9.2	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	
MEAN		1.31		1.38		0.00		0.00		1.34
S D		0.60		0.67		0.00		0.00		0.62

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 96) = 0.252

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q86C DRINK WHEN HAPPY AND EXCITED

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NEVER	12	20.3	11	26.8	0	0.0	0	0.0	23	23.0
OCCASIONALLY	38	64.4	25	61.0	0	0.0	0	0.0	63	63.0
FREQUENTLY	9	15.3	5	12.2	0	0.0	0	0.0	14	14.0
TOTAL RESPONSES	59	74.7	41	53.9	0	0.0	0	0.0	100	64.5
NO RESPONSE	5	6.3	28	36.8	0	0.0	0	0.0	33	21.3
NOT APPLICABLE	15	19.0	7	9.2	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	
MEAN		1.95		1.85		0.00		0.00		1.91
S D		0.60		0.61		0.00		0.00		0.60

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 98) = 0.601

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

V86B DRINK WHEN DEPRESSED AND DOWN IN THE DUMPS

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NEVER	38	65.5	27	65.9	0	0.0	0	0.0	65	65.7
OCCASIONALLY	15	25.9	10	24.4	0	0.0	0	0.0	25	25.3
FREQUENTLY	5	8.6	4	9.8	0	0.0	0	0.0	9	9.1
TOTAL RESPONSES	58	73.4	41	53.9	0	0.0	0	0.0	99	63.9
NO RESPONSE	6	7.6	28	36.8	0	0.0	0	0.0	34	21.9
NOT APPLICABLE	15	19.0	7	9.2	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	
MEAN		1.43		1.44		0.00		0.00		1.43
S D		0.65		0.67		0.00		0.00		0.65

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 97) = 0.004

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q86A DRINK WHEN ANXIOUS AND UPSET

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NEVER	41	71.9	30	75.0	0	0.0	0	0.0	71	73.2
OCCASIONALLY	13	22.8	7	17.5	0	0.0	0	0.0	20	20.6
FREQUENTLY	3	5.3	3	7.5	0	0.0	0	0.0	6	6.2
TOTAL RESPONSES	57	72.2	40	52.6	0	0.0	0	0.0	97	62.6
NO RESPONSE	7	8.9	29	38.2	0	0.0	0	0.0	36	23.2
NOT APPLICABLE	15	19.0	7	9.2	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	
MEAN		1.33		1.32		0.00		0.00		1.33
S D		0.58		0.62		0.00		0.00		0.59

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 95) = 0.005

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q79E HISTORY OF ALCOHOLISM- CHILDREN

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	59	96.7	43	97.7	0	0.0	0	0.0	102	97.1
YES	2	3.3	1	2.3	0	0.0	0	0.0	3	2.9
TOTAL RESPONSES	61	77.2	44	57.9	0	0.0	0	0.0	105	67.7
NO RESPONSE	9	11.4	25	32.9	0	0.0	0	0.0	34	21.9
NOT APPLICABLE	9	11.4	7	9.2	0	0.0	0	0.0	16	10.3
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q79D HISTORY OF ALCOHOLISM- SPOUSE

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	62	98.4	44	100.0	0	0.0	0	0.0	106	99.1
YES	1	1.6	0	0.0	0	0.0	0	0.0	1	0.9
TOTAL RESPONSES	63	79.7	44	57.9	0	0.0	0	0.0	107	69.0
NO RESPONSE	8	10.1	25	32.9	0	0.0	0	0.0	33	21.3
NOT APPLICABLE	8	10.1	7	9.2	0	0.0	0	0.0	15	9.7
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

379C HISTORY OF ALCOHOLISM- SIBLING(S)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	64	94.1	50	98.0	0	0.0	0	0.0	114	95.8
YES	4	5.9	1	2.0	0	0.0	0	0.0	5	4.2
TOTAL RESPONSES	68	86.1	51	67.1	0	0.0	0	0.0	119	76.8
NO RESPONSE	9	11.4	25	32.9	0	0.0	0	0.0	34	21.9
NOT APPLICABLE	2	2.5	0	0.0	0	0.0	0	0.0	2	1.3
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 5

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q79B HISTORY OF ALCOHOLISM- FATHER

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	65	92.9	48	94.1	0	0.0	0	0.0	113	93.4
YES	5	7.1	3	5.9	0	0.0	0	0.0	8	6.6
TOTAL RESPONSES	70	88.6	51	67.1	0	0.0	0	0.0	121	78.1
NO RESPONSE	9	11.4	25	32.9	0	0.0	0	0.0	34	21.9
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.009 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q79A HISTORY OF ALCOHOLISM- MOTHER

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	68	97.1	50	98.0	0	0.0	0	0.0	118	97.5
YES	2	2.9	1	2.0	0	0.0	0	0.0	3	2.5
TOTAL RESPONSES	70	88.6	51	67.1	0	0.0	0	0.0	121	78.1
NO RESPONSE	9	11.4	25	32.9	0	0.0	0	0.0	34	21.9
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q91C DRINK AT NIGHT

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	6	14.0	6	18.2	0	0.0	0	0.0	12	15.8
YES	37	86.0	27	81.8	0	0.0	0	0.0	64	84.2
TOTAL RESPONSES	43	54.4	33	43.4	0	0.0	0	0.0	76	49.0
NO RESPONSE	20	25.3	37	48.7	0	0.0	0	0.0	57	36.8
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
2 X 2 CHI-SQUARE = 0.033 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q918 DRINK DURING AFTERNOON-EVENING

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	24	55.8	13	40.6	0	0.0	0	0.0	37	49.3
YES	19	44.2	19	59.4	0	0.0	0	0.0	38	50.7
TOTAL RESPONSES	43	54.4	32	42.1	0	0.0	0	0.0	75	48.4
NO RESPONSE	20	25.3	38	50.0	0	0.0	0	0.0	58	37.4
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 1.140 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q91A DRINK IN MORNING

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	41	95.3	30	93.8	0	0.0	0	0.0	71	94.7
YES	2	4.7	2	6.3	0	0.0	0	0.0	4	5.3
TOTAL RESPONSES	43	54.4	32	42.1	0	0.0	0	0.0	75	48.4
NO RESPONSE	20	25.3	38	50.0	0	0.0	0	0.0	58	37.4
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q90B DOES SUBJECT DRINK WEEKENDS (FRI. EVENING -- SUN. EVENING)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	5	11.9	3	9.7	0	0.0	0	0.0	8	11.0
YES	37	88.1	28	90.3	0	0.0	0	0.0	65	89.0
TOTAL RESPONSES	42	53.2	31	40.8	0	0.0	0	0.0	73	47.1
NO RESPONSE	21	26.6	39	51.3	0	0.0	0	0.0	60	38.7
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.006 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

G90A DOES SUBJECT DRINK WEEKDAYS (MON. MORNING -- FRI. AFTERNOON)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT					TOTAL N	TOTAL PCT
NO	31	77.5	23	74.2	0	0.0	0	0.0	54	76.1
YES	9	22.5	8	25.8	0	0.0	0	0.0	17	23.9
TOTAL RESPONSES	40	50.6	31	40.8	0	0.0	0	0.0	71	45.8
NO RESPONSE	23	29.1	39	51.3	0	0.0	0	0.0	62	40.0
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
2 X 2 CHI-SQUARE = 0.001 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S113 FORM OF TRANSPORTATION TO AND FROM DRINKING LOCATION

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
DRINKS AT HOME	13	28.9	12	33.3	0	0.0	0	0.0	25	30.9
WALKS	2	4.4	0	0.0	0	0.0	0	0.0	2	2.5
MASS TRANSIT	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TAXI-CHAUFFEUR	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SPOUSE/FRIEND	2	4.4	3	8.3	0	0.0	0	0.0	5	6.2
DRIVES SELF	28	62.2	21	58.3	0	0.0	0	0.0	49	60.5
TOTAL RESPONSES	45	57.0	36	47.4	0	0.0	0	0.0	81	52.3
NO RESPONSE	18	22.8	33	43.4	0	0.0	0	0.0	51	32.9
NOT APPLICABLE	16	20.3	7	9.2	0	0.0	0	0.0	23	14.8
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
2 X 2 CHI-SQUARE = 0.016 FOR 1 DF (1, 5)

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q88C DRINK WITH BUSINESS ASSOCIATES

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	24	58.5	18	54.5	0	0.0	0	0.0	42	56.8
YES	17	41.5	15	45.5	0	0.0	0	0.0	32	43.2
TOTAL RESPONSES	41	51.9	33	43.4	0	0.0	0	0.0	74	47.7
NO RESPONSE	22	27.8	37	48.7	0	0.0	0	0.0	59	38.1
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.011 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q88B DRINK WITH FRIENDS

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	22	50.0	15	44.1	0	0.0	0	0.0	37	47.4
YES	22	50.0	19	55.9	0	0.0	0	0.0	41	52.6
TOTAL RESPONSES	44	55.7	34	44.7	0	0.0	0	0.0	78	50.3
NO RESPONSE	20	25.3	36	47.4	0	0.0	0	0.0	56	36.1
NOT APPLICABLE	15	19.0	6	7.9	0	0.0	0	0.0	21	13.5
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.082 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q88A DRINK WITH FAMILY

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	9	20.5	3	9.1	0	0.0	0	0.0	12	15.6
YES	35	79.5	30	90.9	0	0.0	0	0.0	65	84.4
TOTAL RESPONSES	44	55.7	33	43.4	0	0.0	0	0.0	77	49.7
NO RESPONSE	20	25.3	37	48.7	0	0.0	0	0.0	57	36.8
NOT APPLICABLE	15	19.0	6	7.9	0	0.0	0	0.0	21	13.5
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 1.067 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q89 WHERE DOES SUBJECT DRINK MOST OF THE TIME

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
IN THE HOME	13	31.0	14	42.4	0	0.0	0	0.0	27	36.0
NOT IN THE HOME	29	69.0	19	57.6	0	0.0	0	0.0	48	64.0
TOTAL RESPONSES	42	53.2	33	43.4	0	0.0	0	0.0	75	48.4
NO RESPONSE	21	26.6	37	48.7	0	0.0	0	0.0	58	37.4
NOT APPLICABLE	16	20.3	6	7.9	0	0.0	0	0.0	22	14.2
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.616 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.
ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I
POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

K BLOOD ALCOHOL LEVEL

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
0 (BAC)	48	63.2	33	43.4	0	0.0	0	0.0	81	53.3
.01-.05	1	1.3	2	2.6	0	0.0	0	0.0	3	2.0
.06-.10	0	0.0	11	14.5	0	0.0	0	0.0	11	7.2
.11-.15	2	2.6	9	11.8	0	0.0	0	0.0	11	7.2
.16-.20	2	2.6	14	18.4	0	0.0	0	0.0	16	10.5
.21-.25	1	1.3	3	3.9	0	0.0	0	0.0	4	2.6
.26-.30	0	0.0	2	2.6	0	0.0	0	0.0	2	1.3
.31-.35	0	0.0	1	1.3	0	0.0	0	0.0	1	0.7
.36-.40	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
.41-.45	0	0.0	1	1.3	0	0.0	0	0.0	1	0.7
.46-.50	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ADMITTED DRINK	22	28.9	0	0.0	0	0.0	0	0.0	22	14.5
TOTAL RESPONSES	76	96.2	76	100.0	0	0.0	0	0.0	152	98.1
NO RESPONSE	3	3.8	0	0.0	0	0.0	0	0.0	3	1.9
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

NO SIGNIFICANCE TESTS PERFORMED

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

5115 USE OF OTHER DRUGS WHILE DRINKING

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	46	86.8	39	92.9	0	0.0	0	0.0	85	89.5
YES	7	13.2	3	7.1	0	0.0	0	0.0	10	10.5
TOTAL RESPONSES	53	67.1	42	55.3	0	0.0	0	0.0	95	61.3
NO RESPONSE	15	19.0	27	35.5	0	0.0	0	0.0	42	27.1
NOT APPLICABLE	11	13.9	7	9.2	0	0.0	0	0.0	18	11.6
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.384 FOR 1 DF

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S112 NUMBER OF DRINKS PER SITTING

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT					TOTAL N	TOTAL PCT
0 DRINKS	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1	11	35.5	11	40.7	0	0.0	0	0.0	22	37.9
2	9	29.0	5	18.5	0	0.0	0	0.0	14	24.1
3	3	9.7	6	22.2	0	0.0	0	0.0	9	15.5
4	3	9.7	1	3.7	0	0.0	0	0.0	4	6.9
5	2	6.5	0	0.0	0	0.0	0	0.0	2	3.4
6 OR MORE	3	9.7	4	14.8	0	0.0	0	0.0	7	12.1
TOTAL RESPONSES	31	39.2	27	35.5	0	0.0	0	0.0	58	37.4
NO RESPONSE	32	40.5	42	55.3	0	0.0	0	0.0	74	47.7
NOT APPLICABLE	16	20.3	7	9.2	0	0.0	0	0.0	23	14.8
TOTALS	79		76		0		0		155	
MEAN		2.52		2.48		0.00		0.00		2.50
S D		1.67		1.74		0.00		0.00		1.67

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 56) = 0.006

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MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S111 TIME SPENT DRINKING PER SITTING (HOURS)

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
0 HOURS	0	0.0	3	18.8	0	0.0	0	0.0	3	8.1
1	11	52.4	7	43.8	0	0.0	0	0.0	18	48.6
2	6	28.6	5	31.3	0	0.0	0	0.0	11	29.7
3	4	19.0	1	6.3	0	0.0	0	0.0	5	13.5
4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6 OR MORE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	21	26.6	16	21.1	0	0.0	0	0.0	37	23.9
NO RESPONSE	42	53.2	53	69.7	0	0.0	0	0.0	95	61.3
NOT APPLICABLE	16	20.3	7	9.2	0	0.0	0	0.0	23	14.8
TOTALS	79		76		0		0		155	
MEAN		1.67		1.25		0.00		0.00		1.49
S D		0.80		0.66		0.00		0.00		0.83

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 35) = 2.332

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q80 DID THE SUBJECT DRINK ALCOHOLIC BEVERAGES

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NONE	16	21.9	6	12.0	0	0.0	0	0.0	22	17.9
LT 1/WEEK	9	12.3	6	12.0	0	0.0	0	0.0	15	12.2
ONE PER WEEK	4	5.5	3	6.0	0	0.0	0	0.0	7	5.7
FEW PER WEEK	12	16.4	10	20.0	0	0.0	0	0.0	22	17.9
LT 4/WEEK	6	8.2	2	4.0	0	0.0	0	0.0	8	6.5
GE 4 PER WEEK	12	16.4	11	22.0	0	0.0	0	0.0	23	18.7
GE 1 PER DAY	14	19.2	12	24.0	0	0.0	0	0.0	26	21.1
TOTAL RESPONSES	73	92.4	50	65.8	0	0.0	0	0.0	123	79.4
NO RESPONSE	6	7.6	26	34.2	0	0.0	0	0.0	32	20.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	
MEAN		4.06		4.54		0.00		0.00		4.24
S D		2.25		2.12		0.00		0.00		2.19

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL
F(1, 121) = 1.615

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q9 DOES THE SUBJECT HAVE A TELEPHONE

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT	N	PCT	N	PCT	TOTAL N	TOTAL PCT
NO	2	3.5	4	9.3	0	0.0	0	0.0	6	6.0
YES	55	96.5	39	90.7	0	0.0	0	0.0	94	94.0
TOTAL RESPONSES	57	72.2	43	56.6	0	0.0	0	0.0	100	64.5
NO RESPONSE	22	27.8	33	43.4	0	0.0	0	0.0	55	35.5
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 5

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S110 DRIVER RESIDENCE

RESPONSE	NON-FATAL N	NON-FATAL PCT	FATAL N	FATAL PCT					TOTAL N	TOTAL PCT
URBAN (CORE)	23	29.1	24	32.0	0	0.0	0	0.0	47	30.5
URBAN(OUTSKIRT)	30	38.0	29	38.7	0	0.0	0	0.0	59	38.3
SUBURBAN	23	29.1	15	20.0	0	0.0	0	0.0	38	24.7
RURAL	2	2.5	6	8.0	0	0.0	0	0.0	8	5.2
OTHER	1	1.3	1	1.3	0	0.0	0	0.0	2	1.3
TOTAL RESPONSES	79	100.0	75	98.7	0	0.0	0	0.0	154	99.4
NO RESPONSE	0	0.0	1	1.3	0	0.0	0	0.0	1	0.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	79		76		0		0		155	

TESTS OF SIGNIFICANCE

NON-FATAL VS. FATAL

2 X 2 CHI-SQUARE = 0.093 FOR 1 DF (1, 2)

****

Results and Discussion (con.)

2. Driver Profile

On the basis of a combined three year study period (1972 - 1975) a descriptive driver profile was created at the request of ASAP officials and members of NHTSA (NHTSA Conference Report, June 1974). The data used in this profile emanated from fatal and non-fatal accident involved drivers. The methodology and experimental design are discussed elsewhere in this final report (see Volume I, Task I).

The tables which follow show comparisons between fatally injured drivers (FID's) and non-fatally injured drivers within alcohol and non-alcohol related categories on the basis of these variables.

1. age
2. sex
3. marital status
4. occupations
5. education
6. income
7. race
8. residence
9. drug involvement
10. type of drinker
11. yearly mileage
12. place of drinking
13. year of vehicle
14. number of passengers
15. type of collision
16. time of collision

The tables for items 13, 15 and 16 are presented under the section titled "Required Tables".

Results

After examining 76 NFID's and 76 FID's, our total sample size for this section was 152. Statistical tests were performed when appropriate using either the F or Chi square statistic. The criterion for significance was an Alpha level of .05.

1. Alcohol involved (AI)[1] FID's[2] were found to be significantly younger than non-alcohol involved (NAI)[3] FID's. Mean ages were 31 and 42 years respectively.

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1. Alcohol Involved
2. Fatally Injured Drivers
3. Non-Alcohol Involved

Results and Discussion (con.)

2. 41% of the males, combining FID's and NFID's[4] were drinking while only 3% of the females indulged in pre-accident drinking behavior

3. 50% of the AIFID's were single, 33% married and 14.3% separated. For AINFID's the figures were 38.5% single, 46.2% married and 7.7% separated.

4. We found no significant differences between AIFID's and AINFID's with regard to occupation.

5. The NAIFID's appeared to have, on the average, more formal education exposure than the AIFID's.

6. See family income profile in the tables.

7. 69% of the AIFID's were Caucasian, 31% Negro, 82% of the NAIFID's were Caucasian and 17.6% Negro. 55.6% of the AINFID's were Caucasion, 44.4% Negro and 63% of the NAINFID's were Caucasian and 34.7% Negro. There was one Oriental involved in our study and no Indians.

8. 34.1% of the AIFID's lived in a fringe urban area and 34.1% lived in the core of the city. Only 22% lived in a suburban area.

9. AIFID's were found to have been intoxicated more frequently in the past prior to their accident than either NAFID's or NAINFID's.

10. AIFID's and NAINFID's drove more miles per year than NAIFID's or AINFID's.

11. AI drivers (64%) drank in places other than their own home.

12. 34.4% of the AIFID's had passengers at the time of their accident, as did 35% of the NAIFID's. 43.4% of the AINFID's had passengers and 37.7% of the NAINFID's had one or more passengers also.

Drugs did not seem to play any major roll in accident causation.. Only one AINFID was found to be drinking and taking drugs at the same time, hence we did not construct any table for this factor.

With regard to the type and time of collision, you will find this information under the section labeled "Required Tables".

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4. Non-Fatally Injured Drivers

Results and Discussion (con.)

Brief Discussion

Since the non-fatally injured drivers were selectively "matched" (see Methodology, Task I) with characteristics of the fatally injured drivers, there may exist an "alcohol" bias. That is to say, the proportion of AI drivers in the non-fatal group may be over represented in our sample. This may account for the similarities we found to exist between the AIFID's and AINFID's. We were able to observe some rather interesting and important differences between NAIFID's and AIFID's. These differences and an in-depth discussion of a possible theoretical explanation will be presented in Volume II, Task II of this final report. Additionally, we found the AIFID to have had more prior moving violations when compared to NAIFID's.

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

HOLLINGSHEAD EDUCATIONAL SCALE (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
GRADUATE PROFES	0	0.0	0	0.0	0	0.0	1	3.1	1	0.8
COLLEGE GRAD	2	4.4	0	0.0	4	19.0	1	3.1	7	5.7
PARTIAL COLLEGE	9	20.0	5	20.8	4	19.0	3	9.4	21	17.2
HIGH SCH GRAD	19	42.2	6	25.0	7	33.3	9	28.1	41	33.6
PARTIAL HIGH SC	4	8.9	6	25.0	3	14.3	12	37.5	25	20.5
JUNIOR HIGH SCH	9	20.0	6	25.0	3	14.3	6	18.8	24	19.7
LESS THAN 7 YRS	2	4.4	1	4.2	0	0.0	0	0.0	3	2.5
TOTAL RESPONSES	45	91.8	24	88.9	21	61.8	32	76.2	122	80.3
NO RESPONSE	4	8.2	3	11.1	13	38.2	10	23.8	30	19.7
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 2.019 FOR 1 DF (1, 4)

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NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.010 FOR 1 DF (1, 4)

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.013 FOR 1 DF (1, 4)

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 2.882 FOR 1 DF (1, 4)

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

HOLLINGSHEAD OCCUPATIONAL SCALE (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
NONE	1	2.1	0	0.0	0	0.0	1	2.7	2	1.4
EXECUTIVE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MANAGER	4	8.5	1	3.8	3	10.3	0	0.0	8	5.8
ADMINISTRATIVE	2	4.3	0	0.0	5	17.2	5	13.5	12	8.6
CLERICAL	1	2.1	5	19.2	6	20.7	4	10.8	16	11.5
SKILLED MANUAL	14	29.8	7	26.9	1	3.4	10	27.0	32	23.0
SKILLED OPERATR	10	21.3	5	19.2	7	24.1	7	18.9	29	20.9
UNSKILLED	15	31.9	8	30.8	7	24.1	10	27.0	40	28.8
TOTAL RESPONSES	47	95.9	26	96.3	29	85.3	37	88.1	139	91.4
NO RESPONSE	2	4.1	1	3.7	5	14.7	5	11.9	13	8.6
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.026 FOR 1 DF (1, 7)

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.217 FOR 1 DF (1, 7)

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.001 FOR 1 DF (1, 7)

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.000 FOR 1 DF (1, 7)

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q55A FAMILY INCOME (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
$0-3000	4	9.5	0	0.0	1	5.6	0	0.0	5	4.4
	4	9.5	4	17.4	3	16.7	3	10.0	14	12.4
	9	21.4	3	13.0	5	27.8	7	23.3	24	21.2
	12	28.6	11	47.8	3	16.7	11	36.7	37	32.7
	10	23.8	5	21.7	6	33.3	7	23.3	28	24.8
16000-25000	3	7.1	0	0.0	0	0.0	2	6.7	5	4.4
26000-50000	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ABOVE 50000	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	42	85.7	23	85.2	18	52.9	30	71.4	113	74.3
NO RESPONSE	2	4.1	3	11.1	15	44.1	11	26.2	31	20.4
NOT APPLICABLE	5	10.2	1	3.7	1	2.9	1	2.4	8	5.3
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.284 FOR 1 DF (1, 3)

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.158 FOR 1 DF (1, 3)

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.005 FOR 1 DF (1, 3)

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.702 FOR 1 DF (1, 3)

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q5 RACE (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
CAUCASIAN	31	63.3	15	55.6	28	82.4	29	69.0	103	67.8
NEGRO	17	34.7	12	44.4	6	17.6	13	31.0	48	31.6
ASIAN(ORIENTAL)	1	2.0	0	0.0	0	0.0	0	0.0	1	0.7
AMERICAN INDIAN	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OTHER	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	49	100.0	27	100.0	34	100.0	42	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.170 FOR 1 DF

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 2.689 FOR 1 DF

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.776 FOR 1 DF

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 1.135 FOR 1 DF

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S110 PLACE OF RESIDENCE (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
URBAN (CORE)	11	22.4	12	44.4	10	29.4	14	34.1	47	31.1
URBAN(OUTSKIRT)	20	40.8	10	37.0	15	44.1	14	34.1	59	39.1
SUBURBAN	15	30.6	5	18.5	6	17.6	9	22.0	35	23.2
RURAL	2	4.1	0	0.0	2	5.9	4	9.8	8	5.3
OTHER	1	2.0	0	0.0	1	2.9	0	0.0	2	1.3
TOTAL RESPONSES	49	100.0	27	100.0	34	100.0	41	97.6	151	99.3
NO RESPONSE	0	0.0	0	0.0	0	0.0	1	2.4	1	0.7
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 1.941 FOR 1 DF (1, 2)

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.552 FOR 1 DF (1, 2)

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.856 FOR 1 DF (1, 2)

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.058 FOR 1 DF (1, 2)

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

611 TIME LIVED AT LAST (CURRENT) ADDRESS (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
0-6 MONTHS	7	15.6	3	12.5	2	9.5	6	18.8	18	14.8
7-12	6	13.3	1	4.2	1	4.8	3	9.4	11	9.0
13-18	1	2.2	2	8.3	0	0.0	1	3.1	4	3.3
19-24	5	11.1	2	8.3	1	4.8	3	9.4	11	9.0
25-30	1	2.2	1	4.2	0	0.0	0	0.0	2	1.6
31-36	4	8.9	0	0.0	2	9.5	3	9.4	9	7.4
37-42	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
43-48	1	2.2	2	8.3	0	0.0	1	3.1	4	3.3
49-54	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
55-60	3	6.7	1	4.2	2	9.5	2	6.3	8	6.6
61-66	1	2.2	0	0.0	0	0.0	1	3.1	2	1.6
67-72	1	2.2	1	4.2	1	4.8	1	3.1	4	3.3
73-78	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
79-84	1	2.2	1	4.2	1	4.8	0	0.0	3	2.5
85-90	1	2.2	0	0.0	0	0.0	0	0.0	1	0.8
91-96	1	2.2	1	4.2	1	4.8	0	0.0	3	2.5
MORE THAN 96	12	26.7	9	37.5	10	47.6	11	34.4	42	34.4
TOTAL RESPONSES	45	91.8	24	88.9	21	61.8	32	76.2	122	80.3
NO RESPONSE	4	8.2	3	11.1	13	38.2	10	23.8	30	19.7
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	
MEAN		81.93		102.00		123.95		91.47		95.61
S D		96.55		101.85		101.50		115.89		103.15

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 67) = 0.651

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 64) = 2.626

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 54) = 0.125

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S114 EXTENT OF DRINKING - ALCOHOLIC CLASSIFICATION (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
ABSTAINER	15	31.9	0	0.0	7	35.0	0	0.0	22	18.0
MILD SOCIAL	19	40.4	3	12.5	9	45.0	7	22.6	38	31.1
MODERATE SOCIAL	9	19.1	6	25.0	3	15.0	11	35.5	29	23.8
MOD/HVY SOCIAL	4	8.5	5	20.8	1	5.0	8	25.8	18	14.8
HEAVY SOCIAL	0	0.0	7	29.2	0	0.0	3	9.7	10	8.2
SPORADIC BINGE	0	0.0	1	4.2	0	0.0	1	3.2	2	1.6
ALCOHOLIC	0	0.0	2	8.3	0	0.0	1	3.2	3	2.5
TOTAL RESPONSES	47	95.9	24	88.9	20	58.8	31	73.8	122	80.3
NO RESPONSE	2	4.1	3	11.1	14	41.2	11	26.2	30	19.7
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	
MEAN		2.04		4.13		1.90		3.45		2.79
S D		0.93		1.42		0.65		1.23		1.42

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 69) = 54.933

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 65) = 0.345

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 53) = 3.522

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 49) = 24.112

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

G108 MILES DRIVEN PER WEEK (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
0-25 MILES	6	14.0	4	17.4	4	21.1	2	7.7	16	14.4
26-50	4	9.3	3	13.0	4	21.1	3	11.5	14	12.6
51-75	6	14.0	3	13.0	1	5.3	0	0.0	10	9.0
76-100	8	18.6	4	17.4	1	5.3	7	26.9	20	18.0
101-125	3	7.0	2	8.7	1	5.3	0	0.0	6	5.4
126-150	2	4.7	0	0.0	2	10.5	2	7.7	6	5.4
151-175	2	4.7	0	0.0	0	0.0	0	0.0	2	1.8
176-200	4	9.3	3	13.0	4	21.1	4	15.4	15	13.5
201-225	0	0.0	1	4.3	0	0.0	0	0.0	1	0.9
226-250	1	2.3	1	4.3	0	0.0	2	7.7	4	3.6
251-275	0	0.0	0	0.0	1	5.3	0	0.0	1	0.9
276-300	2	4.7	0	0.0	0	0.0	2	7.7	4	3.6
301-325	0	0.0	0	0.0	1	5.3	0	0.0	1	0.9
326-350	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MORE THAN 350	5	11.6	2	8.7	0	0.0	4	15.4	11	9.9
TOTAL RESPONSES	43	87.8	23	85.2	19	55.9	26	61.9	111	73.0
NO RESPONSE	5	10.2	4	14.8	15	44.1	16	38.1	40	26.3
NOT APPLICABLE	1	2.0	0	0.0	0	0.0	0	0.0	1	0.7
TOTALS	49		27		34		42		152	
MEAN		244.70		127.52		116.95		227.19		194.45
S D		456.68		123.67		94.29		239.73		315.46

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 64) = 1.448

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 60) = 1.447

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 47) = 3.213

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 43) = 3.593

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q89 PLACE OF DRINKING (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
IN THE HOME	9	42.9	4	19.0	6	60.0	8	34.8	27	36.0
NOT IN THE HOME	12	57.1	17	81.0	4	40.0	15	65.2	48	64.0
TOTAL RESPONSES	21	42.9	21	77.8	10	29.4	23	54.8	75	49.3
NO RESPONSE	12	24.5	6	22.2	18	52.9	19	45.2	55	36.2
NOT APPLICABLE	16	32.7	0	0.0	6	17.6	0	0.0	22	14.5
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 1.782 FOR 1 DF

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.258 FOR 1 DF

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.691 FOR 1 DF

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.928 FOR 1 DF

Q107 NUMBER OF PASSENGERS AT TIME OF ACCIDENT (PROFILE)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
0 PASSENGERS	28	62.2	13	56.5	13	65.0	21	65.6	75	62.5
1	12	26.7	4	17.4	5	25.0	5	15.6	26	21.7
2	2	4.4	3	13.0	2	10.0	2	6.3	9	7.5
3	2	4.4	3	13.0	0	0.0	4	12.5	9	7.5
4	1	2.2	0	0.0	0	0.0	0	0.0	1	0.8
5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6 OR MORE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	45	91.8	23	85.2	20	58.8	32	76.2	120	78.9
NO RESPONSE	4	8.2	4	14.8	14	41.2	10	23.8	32	21.1
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	
MEAN		0.58		0.83		0.45		0.66		0.62
S D		0.94		1.11		0.69		1.07		0.97

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 66) = 0.934

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 63) = 0.297

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 53) = 0.327

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 50) = 0.593

Results and Discussion (con.)

3. Set of 14 Required Multi-Variate Tables

These tables were developed in order to accommodate the minimal final report requirements and to provide a common means for comparing and combining data for the four special study areas, (NHTSA Conference Report, 1974). The tables presented represent two groups of drivers - fatally injured and non-fatally injured. One hundred and forty-seven of 152 combined drivers were legally culpable for the accidents which were investigated. Table 1 shows that the alcohol involved fatally injured driver was involved more frequently in single car accidents as compared to non-alcohol involved fatally injured drivers or drivers involved in non-fatal collisions regardless of the alcohol factor. Table 2 indicates that the heavy social drinker was found most often involved in fatal single car accidents. This is also where we found all of the problem drinkers as well. Table 3 indicates that a significant difference existed between alcohol and non-alcohol involved drivers in non-fatal accidents with regard to time of collision. The alcohol involved driver was found to be driving between the hours of 12:00 midnight and 4:00 a.m., much later than the non-alcohol involved driver. Table 4 indicates that the alcohol involved, fatally injured driver was more frequently found driving on a revoked license when compared to non-alcohol fatals or non-fatals regardless of alcohol category. Table 5 shows that alcohol involved drivers of both fatal and non-fatal collisions had been arrested more frequently in the past than their respective non-alcohol involved driver counterparts. (See Tables 4 and 5). Table 6 is self explanatory. As Table 7 shows, women were involved significantly less than males in alcohol related fatal and non-fatal accidents. Table 8 shows that the drinking driver involved in a fatal crash is significantly younger than the non-drinking driver similarly involved. Tables 9 - 14 are self explanatory.

The purpose of this commentary has been to guide the reader to specific details in the tables presented. An interpretation and further inspection of these tables is strongly suggested to the reader. A more comprehensive and detailed analysis of similar multi-variate tables using data taken from a six year study period is presented in Volume II, Task II of this final report.

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

NUMBER OF VEHICLES (STATUS BY ACCIDENT TYPE) (TABLE 1)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
1 VEHICLE	27	62.8	18	72.0	16	40.0	30	68.2	91	59.9
2	16	37.2	7	28.0	21	52.5	11	25.0	55	36.2
3	0	0.0	0	0.0	3	7.5	3	6.8	6	3.9
4 OR MORE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	43	100.0	25	100.0	40	100.0	44	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	43		25		40		44		152	
MEAN		1.37		1.28		1.68		1.39		1.44
S D		0.49		0.46		0.62		0.62		0.57

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 66) = 0.587

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 81) = 6.205

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 67) = 0.563

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 82) = 4.587

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

NUMBER OF VEHICLES (NON-FATAL ACCIDENTS) (TABLE 2)

RESPONSE	NON-ALCHOL SOCIAL DRK N	NON-ALCHOL SOCIAL DRK PCT	NON-ALCHOL PROBLEM N	NON-ALCHOL PROBLEM PCT	ALCOHOL SOCIAL DRK N	ALCOHOL SOCIAL DRK PCT	ALCOHOL PROBLEM N	ALCOHOL PROBLEM PCT	TOTAL N	TOTAL PCT
1 VEHICLE	17	63.0	0	0.0	11	78.6	5	83.3	33	70.2
2	10	37.0	0	0.0	3	21.4	1	16.7	14	29.8
3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4 OR MORE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	27	100.0	0	0.0	14	100.0	6	100.0	47	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	27		0		14		6		47	
MEAN		1.37		0.00		1.21		1.17		1.30
S D		0.49		0.00		0.43		0.41		0.46

TESTS OF SIGNIFICANCE

NON-ALCHOL SOCIAL DRK VS. NON-ALCHOL PROBLEM
F(1, 25) = 0.000

NON-ALCHOL SOCIAL DRK VS. ALCOHOL SOCIAL DRK
F(1, 39) = 1.012

NON-ALCHOL PROBLEM VS. ALCOHOL PROBLEM
F(1, 4) = 0.000

ALCOHOL SOCIAL DRK VS. ALCOHOL PROBLEM
F(1, 18) = 0.054

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

NUMBER OF VEHICLES (FATAL ACCIDENTS) (TABLE 2)

RESPONSE	NON-ALCHOL				ALCOHOL				TOTAL	
	SOCIAL DRK		PROBLEM		SOCIAL DRK		PROBLEM			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
1 VEHICLE	5	27.8	0	0.0	18	69.2	3	50.0	26	52.0
2	11	61.1	0	0.0	6	23.1	2	33.3	19	38.0
3	2	11.1	0	0.0	2	7.7	1	16.7	5	10.0
4 OR MORE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	18	100.0	0	0.0	26	100.0	6	100.0	50	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	18		0		26		6		50	
MEAN		1.83		0.00		1.38		1.67		1.58
S D		0.62		0.00		0.64		0.82		0.67

TESTS OF SIGNIFICANCE

NON-ALCHOL SOCIAL DRK VS. NON-ALCHOL PROBLEM
F(1, 16) = 0.000

****

NON-ALCHOL SOCIAL DRK VS. ALCOHOL SOCIAL DRK
F(1, 42) = 5.401

****

NON-ALCHOL PROBLEM VS. ALCOHOL PROBLEM
F(1, 4) = 0.000

****

ALCOHOL SOCIAL DRK VS. ALCOHOL PROBLEM
F(1, 30) = 0.863

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

TIME OF DAY (MEANS, STD DEVS IN MILITARY TIME) (ACCIDENTS) (TABLE 3)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
12.01-4.00 AM	7	16.3	12	48.0	7	17.5	20	45.5	46	30.3
4.01-8.00 AM	4	9.3	3	12.0	7	17.5	2	4.5	16	10.5
8.01AM-12.00PM	5	11.6	1	4.0	4	10.0	0	0.0	10	6.6
12.01-4.00 PM	8	18.6	1	4.0	8	20.0	2	4.5	19	12.5
4.01-8.00 PM	11	25.6	1	4.0	6	15.0	5	11.4	23	15.1
8.01PM-12.00AM	8	18.6	7	28.0	8	20.0	15	34.1	38	25.0
TOTAL RESPONSES	43	100.0	25	100.0	40	100.0	44	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	43		25		40		44		152	
MEAN	1349.30		921.76		1219.05		1118.39		1177.86	
S D	683.75		937.68		707.07		939.94		816.57	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 56) = 4.682

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 81) = 0.728

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 67) = 0.699

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 82) = 0.303

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q103 STATUS OF DRIVER'S LICENSE (TABLE 4)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
VALID	45	95.7	21	91.3	20	100.0	28	90.3	114	94.2
NONE	2	4.3	0	0.0	0	0.0	0	0.0	2	1.7
REVOKED	0	0.0	1	4.3	0	0.0	3	9.7	4	3.3
SUSPENDED	0	0.0	1	4.3	0	0.0	0	0.0	1	0.8
TOTAL RESPONSES	47	95.9	23	85.2	20	58.8	31	73.8	121	79.6
NO RESPONSE	2	4.1	4	14.8	14	41.2	11	26.2	31	20.4
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q126 HAS SUBJECT EVER BEEN ARRESTED FOR DRINKING (TABLE 5)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
NO	44	95.7	17	77.3	19	95.0	23	85.2	103	89.6
YES	2	4.3	5	22.7	1	5.0	4	14.8	12	10.4
TOTAL RESPONSES	46	93.9	22	81.5	20	58.8	27	64.3	115	75.7
NO RESPONSE	3	6.1	5	18.5	14	41.2	15	35.7	37	24.3
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.116 FOR 1 DF

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S14 NUMBER OF DRIVING WHILE INTOXICATED CONVICTIONS (LIFETIME) (TABLE 5)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
0 DWI CONVICTS.	48	98.0	25	92.6	34	100.0	39	92.9	146	96.1
1	1	2.0	1	3.7	0	0.0	3	7.1	5	3.3
2	0	0.0	1	3.7	0	0.0	0	0.0	1	0.7
3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
6 OR MORE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	49	100.0	27	100.0	34	100.0	42	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	
MEAN		0.02		0.11		0.00		0.07		0.05
S D		0.14		0.42		0.00		0.26		0.24

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 74) = 1.877

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 81) = 0.691

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 67) = 0.233

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 74) = 2.547

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

S19 DRIVER CULPABILITY FOR CRASH (TABLE 6)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
NOT RESPONSIBLE	3	6.1	0	0.0	2	5.9	0	0.0	5	3.3
RESPONSIBLE	46	93.9	27	100.0	32	94.1	42	100.0	147	96.7
TOTAL RESPONSES	49	100.0	27	100.0	34	100.0	42	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 3

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q4 SEX OF DRIVER (TABLE 7)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
MALE	32	65.3	25	92.6	26	76.5	38	90.5	121	79.6
FEMALE	17	34.7	2	7.4	8	23.5	4	9.5	31	20.4
TOTAL RESPONSES	49	100.0	27	100.0	34	100.0	42	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 5.533 FOR 1 DF

****

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.717 FOR 1 DF

****

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
NOT PERFORMED - EXPECTED FREQUENCY LESS THAN 5

****

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 1.618 FOR 1 DF

****

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q8 AGE OF DRIVER (TABLE 8)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
20 YRS OR LESS	11	22.4	7	25.9	4	11.8	7	16.7	29	19.1
21-25	12	24.5	6	22.2	8	23.5	11	26.2	37	24.3
26-30	4	8.2	3	11.1	2	5.9	7	16.7	16	10.5
31-35	5	10.2	3	11.1	1	2.9	4	9.5	13	8.6
36-40	2	4.1	3	11.1	3	8.8	4	9.5	12	7.9
41-45	4	8.2	0	0.0	3	8.8	3	7.1	10	6.6
46-50	3	6.1	1	3.7	1	2.9	2	4.8	7	4.6
51-55	2	4.1	2	7.4	1	2.9	1	2.4	6	3.9
56-60	1	2.0	1	3.7	2	5.9	3	7.1	7	4.6
61 OR OVER	5	10.2	1	3.7	9	26.5	0	0.0	15	9.9
TOTAL RESPONSES	49	100.0	27	100.0	34	100.0	42	100.0	152	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	
MEAN		33.10		31.67		42.56		31.14		34.42
S D		15.09		14.16		21.14		11.79		16.14

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
F(1, 74) = 0.164

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
F(1, 81) = 5.663

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
F(1, 67) = 0.028

FATAL NON-ALCHOL VS. FATAL ALCOHOL
F(1, 74) = 8.863

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

G33 MARITAL STATUS OF DRIVER (TABLE 9)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL		ALCOHOL		NON-ALCHOL		ALCOHOL			
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
MARRIED	22	44.9	12	46.2	12	35.3	14	33.3	60	39.7
COMMON-LAW	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SINGLE	18	36.7	10	38.5	13	38.2	21	50.0	62	41.1
WIDOWED	4	8.2	1	3.8	3	8.8	0	0.0	8	5.3
SEPARATED	2	4.1	2	7.7	4	11.8	6	14.3	14	9.3
DIVORCED	3	6.1	1	3.8	2	5.9	1	2.4	7	4.6
TOTAL RESPONSES	49	100.0	26	96.3	34	100.0	42	100.0	151	99.3
NO RESPONSE	0	0.0	1	3.7	0	0.0	0	0.0	1	0.7
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.010 FOR 1 DF (3)

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.008 FOR 1 DF (3)

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.459 FOR 1 DF (3)

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.629 FOR 1 DF (3)

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

G118 DRIVER RESTRAINT USAGE (TABLE 10)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	NON-ALCHOL N	NON-ALCHOL PCT	ALCOHOL N	ALCOHOL PCT	N	PCT
NO	37	77.1	19	76.0	29	87.9	37	90.2	122	83.0
YES	11	22.9	6	24.0	4	12.1	4	9.8	25	17.0
TOTAL RESPONSES	48	98.0	25	92.6	33	97.1	41	97.6	147	96.7
NO RESPONSE	0	0.0	2	7.4	1	2.9	1	2.4	4	2.6
NOT APPLICABLE	1	2.0	0	0.0	0	0.0	0	0.0	1	0.7
TOTALS	49		27		34		42		152	

TESTS OF SIGNIFICANCE

NON-FATAL NON-ALCHOL VS. NON-FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.035 FOR 1 DF

NON-FATAL NON-ALCHOL VS. FATAL NON-ALCHOL
2 X 2 CHI-SQUARE = 0.879 FOR 1 DF

NON-FATAL ALCOHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 1.468 FOR 1 DF

FATAL NON-ALCHOL VS. FATAL ALCOHOL
2 X 2 CHI-SQUARE = 0.002 FOR 1 DF

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

BAC BLOOD ALCOHOL CONCENTRATION (FATAL DRIVERS) (TABLE 11 PART 1)

RESPONSE	ABSTAINER N	ABSTAINER PCT	SOCIAL DRK N	SOCIAL DRK PCT	PROBLEM N	PROBLEM PCT	ALCOHOLIC N	ALCOHOLIC PCT	TOTAL N	TOTAL PCT
0 (BAC)	7	100.0	12	30.8	0	0.0	0	0.0	19	37.3
.01-.04	0	0.0	1	2.6	0	0.0	0	0.0	1	2.0
.05-.09	0	0.0	5	12.8	0	0.0	0	0.0	5	9.8
.10-.14	0	0.0	6	15.4	0	0.0	1	100.0	7	13.7
.15-.19	0	0.0	10	25.6	1	25.0	0	0.0	11	21.6
.20-.24	0	0.0	1	2.6	2	50.0	0	0.0	3	5.9
.25 AND UP	0	0.0	4	10.3	1	25.0	0	0.0	5	9.8
TOTAL RESPONSES	7	100.0	39	100.0	4	100.0	1	100.0	51	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	7		39		4		1		51	

NO SIGNIFICANCE TESTS PERFORMED

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

BAC BLOOD ALCOHOL CONCENTRATION (FATAL DRIVERS) (TABLE 11 PART 2)

RESPONSE	HVY SOCIAL N	PCT	SPOR BINGE N	PCT	EXTENT UNK N	PCT	N	PCT	TOTAL N	PCT
0 (BAC)	0	0.0	0	0.0	14	56.0	0	0.0	14	48.3
.01-.04	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
.05-.09	0	0.0	0	0.0	4	16.0	0	0.0	4	13.8
.10-.14	0	0.0	0	0.0	3	12.0	0	0.0	3	10.3
.15-.19	1	33.3	0	0.0	3	12.0	0	0.0	4	13.8
.20-.24	1	33.3	1	100.0	1	4.0	0	0.0	3	10.3
.25 AND UP	1	33.3	0	0.0	0	0.0	0	0.0	1	3.4
TOTAL RESPONSES	3	100.0	1	100.0	25	100.0	0	0.0	29	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	3		1		25		0		29	

NO SIGNIFICANCE TESTS PERFORMED

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q6 AGE OF DRIVER VS. EXTENT OF DRINKING (TABLE 12)

RESPONSE	NON-FATAL				FATAL				TOTAL	
	ABST,SOC N	ABST,SOC PCT	PROBLEM N	PROBLEM PCT	ABST,SOC N	ABST,SOC PCT	PROBLEM N	PROBLEM PCT	N	PCT
20 YRS OR LESS	15	23.4	2	25.0	9	19.6	0	0.0	26	21.3
21-25	18	28.1	1	12.5	10	21.7	2	50.0	31	25.4
26-30	3	4.7	1	12.5	7	15.2	0	0.0	11	9.0
31-35	8	12.5	0	0.0	3	6.5	1	25.0	12	9.8
36-40	3	4.7	2	25.0	4	8.7	0	0.0	9	7.4
41-45	5	7.8	0	0.0	2	4.3	0	0.0	7	5.7
46-50	3	4.7	1	12.5	2	4.3	0	0.0	6	4.9
51-55	2	3.1	1	12.5	0	0.0	0	0.0	3	2.5
56-60	1	1.6	0	0.0	2	4.3	1	25.0	4	3.3
61 OR OVER	6	9.4	0	0.0	7	15.2	0	0.0	13	10.7
TOTAL RESPONSES	64	100.0	8	100.0	46	100.0	4	100.0	122	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	64		8		46		4		122	
MEAN		32.25		32.50		35.59		33.25		33.56
S D		14.76		13.04		16.85		15.82		16.18

TESTS OF SIGNIFICANCE

NON-FATAL ABST,SOC VS. NON-FATAL PROBLEM
F(1, 70) = 0.002

NON-FATAL ABST,SOC VS. FATAL ABST,SOC
F(1, 108) = 1.083

NON-FATAL PROBLEM VS. FATAL PROBLEM
F(1, 10) = 0.008

FATAL ABST,SOC VS. FATAL PROBLEM
F(1, 48) = 0.058

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

68 AGE OF DRIVER VS. BLOOD ALCOHOL CONCENTRATION(FATALS)(TABLE 13 PART 1)

RESPONSE	ZERO		.01-.04		.05-.09		.10-.14		TOTAL	
	N	PCT	N	PCT	N	PCT	N	PCT	N	PCT
20 YRS OR LESS	3	9.1	1	100.0	1	11.1	1	10.0	6	11.3
21-25	8	24.2	0	0.0	1	11.1	3	30.0	12	22.6
26-30	2	6.1	0	0.0	5	55.6	0	0.0	7	13.2
31-35	1	3.0	0	0.0	0	0.0	1	10.0	2	3.8
36-40	3	9.1	0	0.0	1	11.1	1	10.0	5	9.4
41-45	3	9.1	0	0.0	0	0.0	2	20.0	5	9.4
46-50	1	3.0	0	0.0	1	11.1	1	10.0	3	5.7
51-55	1	3.0	0	0.0	0	0.0	1	10.0	2	3.8
56-60	2	6.1	0	0.0	0	0.0	0	0.0	2	3.8
61 OR OVER	9	27.3	0	0.0	0	0.0	0	0.0	9	17.0
TOTAL RESPONSES	33	100.0	1	100.0	9	100.0	10	100.0	53	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	33		1		9		10		53	

NO SIGNIFICANCE TESTS PERFORMED

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION STUDY (1974-1975) FINAL REPORT TASK I

POOLED DATA CASES 72-01 THROUGH 75-23 INCLUSIVE

Q8 AGE OF DRIVER VS. BLOOD ALCOHOL CONCENTRATION(FATALS)(TABLE 13 PART 2)

RESPONSE	.15-.19 N	.15-.19 PCT	.20-.24 N	.20-.24 PCT	.25 AND UP N	.25 AND UP PCT	N	PCT	TOTAL N	TOTAL PCT
20 YRS OR LESS	4	28.6	1	25.0	0	0.0	0	0.0	5	21.7
21-25	5	35.7	0	0.0	2	40.0	0	0.0	7	30.4
26-30	2	14.3	0	0.0	0	0.0	0	0.0	2	8.7
31-35	1	7.1	1	25.0	1	20.0	0	0.0	3	13.0
36-40	1	7.1	1	25.0	0	0.0	0	0.0	2	8.7
41-45	1	7.1	0	0.0	0	0.0	0	0.0	1	4.3
46-50	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
51-55	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
56-60	0	0.0	1	25.0	2	40.0	0	0.0	3	13.0
61 OR OVER	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL RESPONSES	14	100.0	4	100.0	5	100.0	0	0.0	23	100.0
NO RESPONSE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NOT APPLICABLE	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTALS	14		4		5		0		23	

NO SIGNIFICANCE TESTS PERFORMED

IV. Conclusions and Recommendations

A. Human Factors

1. Alcohol

Alcohol was considered as the primary factor responsible for 44% (11 cases) of the 25 fatal accident cases investigated. In an additional two fatal accidents, alcohol consumption represented a contributory factor in accident causation. In summary, of 25 fatal accidents, the consumption of alcohol exercised a primary or causative role in 52% of these instances. Among the non-fatal group of 25 accidents, alcohol was considered a primary or contributory factor in 40% of these cases. The blood alcohol levels of 12 of the 18 culpable drivers involved in fatal accidents ranged from .01% to .27% with a mean blood alcohol level of .15%. The above data represents a repetition noted in previous years with similar investigations performed by the team, namely, that alcohol exercises a significant role in approximately one-half of all the fatal accidents studied.

The above facts once again emphasize the role of alcohol in both fatal and non-fatal motor vehicle accident causation. Continued effort must be expended toward education of the public regarding the deleterious effect of alcohol upon the ability of man to operate the motor vehicle. It is believed that more stringent and punitive measures should be enforced against the discovered "drinking driver". The establishment of mandatory chemical alcohol testing of drivers suspected of operating under the influence of alcohol is suggested as a step in the right direction. A further discussion and statistical analysis of "alcohol factors" between fatally and non-fatally injured responsible drivers is presented in the following sections labeled "Driver Profile".

2. Excessive Speed

The investigation of 50 fatal and non-fatal accidents disclosed that excessive speed was considered as a primary or a contributing factor in the causation of 32% of these accidents. The current energy crisis has been responsible for the reduction of the maximum speed limit to 55 m.p.h. This program, along with the rigid enforcement of the speed laws, has contributed greatly to the reduction of fatal collisions. Efforts are still needed to continue the rigid enforcement and to educate the motoring public to emphasize the role of speed in highway accident causation and the relationship of speed to increased severity of injury and damage.

3. Restraints

The evaluation of restraint usage and their effects has been previously discussed in Section III, D, Tables #15 and #16. There were no instances of restraint usage by any of the 26

drivers or five passengers fatally injured. It is estimated that a 55% fatality reduction would have resulted if restraints had been utilized. Most of the occupants killed or injured and not using restraints sustained injuries to the head and chest portions of the body from contact with the steering assemblies, instrument panels and/or ground impact during ejection.

It is obvious that mortality and morbidity reduction would be achieved by the use of restraints. The fact still remains that most people who believe restraints are useless will not make any effort to use them. It appears that legislation will be necessary to encourage the usage of restraints until a mandatory system such as the air bag is installed as standard equipment within vehicles. There are many programs throughout the state which emphasize the value of restraint usage, however, these helpful suggestions do not seem to adequately convey the message to the public.

The team feels that particular attention regarding the value of restraint systems be incorporated into new vehicular manuals. It is also suggested that a standard design for seat belt devices be constituted. The present varying designs for the seat belt systems assembly in use by the numerous automobile manufacturers, from our personal driving experiences, serves as a possible deterrent to the use of seat belts.

4. Driver Licensing

The team concludes that when drivers attain the age of 70 years, they should be re-examined to determine their ability to adequately operate a motor vehicle. A periodic re-examination of all drivers would possibly discover mental and physical disabilities which could affect their driving ability. The drivers of motor vehicles who have previously been revoked for DWI convictions should be dealt with more stringently regarding the reissuing of their driving privileges.

B. Vehicle

1. Rear View Mirrors

Ths usage of the breakaway rear view mirror has been performing with the exception of two cases, and the team feels that this improvement has reduced many injuries to the head portion of the body when contact is made to the inside rear view mirror by an occupant.

2. Hood Latching System

The hood latching system performed well in most instances during the investigations of the 50 fatal and non-fatal accidents. There

were six vehicles whereby the hood latches released and the rear edge of the hoods penetrated the windshield. There has been great improvement to the latching system of vehicles, however, the team concludes that the sharp rear edges of hoods should be redesigned. The hoods of most vehicles are designed with sharp edges which can easily penetrate the windshield during frontal-type impacts.

3. Occupant Protection During Interior Impacts (Energy Absorbing Materials)

During this series of investigations the energy absorbing materials which are attached to the instrument panels, sun visors, steering assemblies, seatbacks, door arm rests and interiors have performed well and contributed greatly to the reduction of injury severity in passenger cars. This type of energy absorbing material is also needed on the A-pillars and the lower section of the instrument panel which in most cases is constructed of rigid plastic material and has a tendency to fracture leaving jagged edges which result in severe laceration when impacted.

4. Head Restraints

The data collected in this series revealed that head restraints had not contributed significantly to the reduction of injury during impact. In one case, a head-on collision, it was felt that the head restraints performed as designed and possibly reduced neck and back injury. One factor observed regarding the position of the head restraints was that, in most instances, the restraints were in the down position and would afford minimal protection for the occupant. It is felt that the high seatbacks (integral restraints) on some model vehicles protect the occupants more readily as they have a permanent height adjustment. Again, as with seat belt usage, specific mention regarding proper positioning of the head restraint should be noted in the vehicle owner manual.

5. Energy Absorbing Steering Columns

There were seven vehicles wherein the column did compress sufficiently to reduce the injury severity of the drivers. In one fatal accident the energy absorbing steering column failed to compress after being impacted by the driver's body. It is assumed that the driver of this vehicle contacted the steering assembly at a glancing angle. In such instances of tangential contact, the direction of force upon the column tends to bind the telescoping components and does not allow sufficient compression of the column. The team feels that the energy absorbing column has, in overall circumstances, benefited drivers during impact and reduced injury severity in most instances.

Conclusions and Recommendations (con.)

It is believed that the steering wheel rim and column could be developed so that it would yield more readily when impacted from oblique occupant contact.

6. Steering Control Rearward Displacement

In one fatal accident, which involved a front impact with a steel pole, the rearward displacement of the steering shaft of the vehicle failed to perform satisfactorily. One other fatal collision involved a frontal impact of a vehicle which was not equipped with this component. The steering shaft moved into the drivers compartment and was responsible for the driver's fatal injuries. The team concludes that, during this series of investigations, the rearward displacement components performed in most instances on vehicles which were so equipped.

7. Glazing Materials

The windshield glazing materials in the majority of the cases prevented serious head and face injuries to those occupants who made contact during impact. There were no instances where an occupant was ejected through the windshield. However, one driver was ejected during impact through the right side window glass.

8. Door Locks and Retentions

In five instances the doors of the vehicles involved released during impact and during four of these accidents, an occupant was ejected. One of these instances involved a pre-1968 model vehicle and therefore the standard did not apply. The remaining accident involved a frontal collision wherein the door released, but the occupant was not ejected. In all the accidents where the doors released, the collision was considered to be severe in nature. In most instances, the door latching systems performed as designed.

9. Anchorage of Seats

The seat anchorage of most of the vehicles involved within this series of investigations performed well. There were four accidents which were significant regarding the separation of seats. Of these four cases, one vehicle was a pre-1968 model and the standard did not apply. The remaining cases involved severe lateral invasion-type impacts and the front seats separated at the adjustors during impact.

10. Windshield Mounting

During this series of investigations, it was revealed that the

windshield glazing which separated from its bond was caused by severe-type impacts and underride-type collisions. In no instance was the windshield glazing separation caused by occupant contact or were there any ejections via the windshield area. The separation of the windshield glazing was contributed by the deformation of the A-pillars and the windshield header area of the roof. Although the standard performed well, it is suggested that these areas, particularly in the compact model vehicles, be strengthened to reduce a potential area for ejection of occupants.

11. Side Door Strength

During the evaluation of the barrier protected door guard installed in post-1973 vehicles, there was one incident where the side structure was damaged on a vehicle which was so equipped with the guard barrier. This fatal accident involved a 1974 Chevrolet Chevelle that laterally impacted a steel pole which invaded the left door partially ejecting the driver. The team concludes that the side door barrier protection was a significant step in reducing passenger compartment invasion, however, it is felt that there is a continued need for further strengthening of this area of passenger vehicles.

12. Exterior Protection (Energy Absorbing Bumpers)

There were three cases in which the team feels that the energy absorbing bumpers contributed to the reduction of injury and damage during impact. These three collisions involved low speed impacts and the team feels that the energy absorbing bumper seemed to perform as designed.

13. Roof Crash Resistance

There was one fatal accident which the team concludes is worthy of mentioning regarding roof crash resistance. This collision involved a 1973 Ford two door hardtop which traveled end-over-end off an overhead bridge onto a stationary railroad car located below the bridge. The roof of this vehicle was severely compressed onto the tops of the seats during the rollover impact. The passenger compartment was severely reduced in size. It is recommended that further strengthening of the A-, B- and C-pillars be instituted on passenger vehicles to improve roof support structures.

14. Fuel System

There was one fatal accident in this series where the fuel tank ruptured causing the vehicle to completely burn. The driver of

this vehicle sustained fatal burns. This accident was a roll-over-type collision where the vehicle traveled end-over-end off a bridge onto a stationary railroad car. The team recommends that the packaging of fuel tanks be improved in order to reduce tank ruptures due to exterior intrusion.

15. Miscellaneous Mechanical Defects

During the investigation of the 25 fatal and 25 non-fatal accidents in this series, there were four vehicles involved in the fatal collisions which were being operated with tires that lacked sufficient tread. In the non-fatal investigations, there were two vehicles which had tires that lacked sufficient tread. In all of the investigations involving the six vehicles, it was determined that the absence of sufficient tread on the tires contributed to the vehicles skidding on wet roadway sufaces at the time of the accident. There was one non-fatal accident which involved a vehicle that was being driven with inadequate brakes. The team feels that these defects were due to poor maintenance of the vehicles by their owners and were contributing factors to the accident causation. Such factors should be considered in an effort to establish a Periodic Motor Vehicle Inspection program within this state. It is concluded that an inspection program would encourage motorists to better maintain their vehicles.

C. Environment

1. Highway

During the investigation of the accidents in this series, the team has observed several factors involving the highway which could be attributed to the accident severity and, in some instances, a contributing causative factor. In one fatal accident a passenger vehicle was traveling on an inadequately marked traffic lane. The vehicle impacted a temporary barricade which was protecting an approach lane for a bridge which was under repairs. The barricades were not sufficiently constructed to prevent the impacting vehicle from traversing the barrier and traveling off the opening of the bridge. It is recommended by the team that such construction sites should be closely supervised to ensure that the repairing contractor is maintaining the necessary safety precautions to prevent such tragedies during the construction period. There were three fatal collisions involving out-of-control vehicles which crossed over the grass median of an interstate highway into the opposing traffic lanes. Two of these collisions occurred at the same location during wet roadway conditions. The area in question was in need of median barrier protection and possible drainage improvement. The highway administration was requested to survey this location for possible improvements. In another fatal collision, a truck,

which was in the process of crossing a median at a crossover, extended into the traveled portion of the highway. A passenger vehicle under-rode the truck bed and the driver of the passenger vehicle was fatally injured. The area at this median crossover was in need of a left turn lane to provide more storage area for the heavy truck/vehicular traffic utilizing this median crossover. Several collisions occurred after drivers lost control of their vehicles on wet roadway surfaces which were highly polished and therefore extremely slippery during wet conditions. The team feels that some type of warning signs installed or roadway resurfacing would most probably pre-warn motorists of the existing condition and possibly prevent a collision. There was one non-fatal collision which occurred on a very sharp curvature of a highway. The curvature was not adequately marked by either a pre-warning sign or roadway markings. In another non-fatal accident, a four foot offset of the roadway lacked sufficient markings in the area where the roadway began to narrow. There was a need to have signs erected and lane markings painted on the roadway surface in order to pre-warn motorists of this condition.

2. Traffic Signals

One fatal collision occurred at the intersection of a shopping center driveway and an arterial route which was normally controlled by an automatic traffic signal. During the time of the collision, the signal was converted to a flashing warning light. The signal is converted every Sunday to the flashing operation. The team recommended that the signal should remain on its normal operation on Sunday as traffic flow within the area is relatively heavy at all times.

3. Roadside Hazards

During the investigation of the accidents in this series, there were several instances where overhead steel light poles, utility poles and traffic signal support poles lacked guard barrier protection and/or breakaway features. Many of these poles were presumed to be unnecessary hazards to motorists who may lose control of their vehicles and leave the highway at such locations. One non-fatal accident involved a passenger vehicle which slightly drifted off the roadway edge and impacted the blunt end of a "W" type guard rail which was exposed to oncoming traffic. The guard rail penetrated the engine compartment, entered the passenger compartment and exited through the backlight window. This damaged guard rail was replaced by the highway authorities in the same hazardous condition, with the blunt end exposed to traffic. The team feels that when damage and/or injury severity of an accident is increased due to hazardous roadside structures, the highway authorities should re-install such strucutres in a manner which would eliminate any hazardous condition.

Conclusions and Recommendations (con.)

4. Debris and Hazard Control After Accident

Within this series of investigation, the accident debris from damaged vehicles was removed from the roadway satisfactorily with the exception of one accident. The tow truck operator failed to adequately remove mouldings, broken glass and other parts of the damaged vehicle from the accident scene. Within this state it is the responsibility of the person/s who remove the damaged vehicles to also remove all vehicle debris. The team feels that the investigators who are responsible at the scene should enforce the clean-up regulations to ensure that the scene is not left in a hazardous condition for other motorists.

Appendix I

Team Correspondence for Highway Improvements

RUSSELL S. FISHER, M.D.
CHIEF MEDICAL EXAMINER
RONALD N. KORNBLUM, M.D.
DEPUTY CHIEF MEDICAL EXAMINER
PETER LIPKOVIC, M.D.
ASSISTANT MEDICAL EXAMINER
WILLIAM F. MULLOY, M.D.
ASSISTANT MEDICAL EXAMINER
MARVIN S. PLATT, M.D.
ASSISTANT MEDICAL EXAMINER
PAUL SCHWEDA, PH.D.
TOXICOLOGIST
YALE H. CAPLAN, PH.D.
ASSISTANT TOXICOLOGIST

STATE OF MARYLAND
DEPARTMENT OF POST MORTEM EXAMINERS
OFFICE OF THE CHIEF MEDICAL EXAMINER
111 PENN STREET
BALTIMORE, MARYLAND 21201

January 24, 1975

Mr. Harry Hughes, Secretary
Maryland Department of Transportation
Box 8755 Elm Road
Baltimore-Washington International 21240

Dear Mr. Hughes:

Our Multidisciplinary Accident Investigation Team recently conducted the investigations of two separate fatal collisions which occurred on Interstate 695 between the Nursery Road and Baltimore-Washington Parkway overpasses. Both of these accidents involved vehicles that crossed over the grass median into opposing traffic lanes, resulting in head-on type collisions and taking the lives of a total of four persons.

One of these fatal accidents occurred on December 7, 1974 which was responsible for three deaths and the second fatality occurred on January 19, 1975 taking the life of one driver. During the time of both of these accidents it was raining and the highway was wet.

We would appreciate if you could have your organization initate a survey of this area to correct any possible drainage or slippery condition which may be present under wet conditions. It is also suggested that a median barrier be installed at this location to prevent these type of median cross overs.

I am certain you are interested in any improvements to our highway system which could prevent accidents and/or their severity.

Thank you for your co-operations in this matter. I remain

Sincerely,

Russell S. Fisher, M.D.

Russell S. Fisher, M.D.

Maryland Department of Transportation
Office of the Secretary

Marvin Mandel
Governor
Harry R. Hughes
Secretary

March 3, 1975

Dr. Russell S. Fisher
Chief Medical Examiner
Maryland Department of Post Mortem Examiners
111 Penn Street
Baltimore, Maryland 21201

Dear Dr. Fisher:

Thank you for your January 24, 1975, letter regarding two separate fatal collisions which occurred on the Baltimore Beltway between Nursery Road and the Baltimore/Washington Expressway.

The State Highway Administration is designing an improvement project in the area to which you refer to prevent the collisions you describe and to increase traffic capacity. The project will include widening of the beltway bridges over the Expressway, completing the third lane in both directions on the beltway, and adding a median barrier from the Patapsco River Bridge to the existing median guardrail south of the Expressway.

Barring unforeseen delays or other problems, the project should be advertised by mid June 1975. The advertisement for comments regarding the Draft Negative Declaration was published in the local news media as follows:

Morning Sun	February 13, 1975
News American	February 13, 1975
Maryland Gazette	February 13, 1975
Arbutus Times	February 12, 1975

Interested parties have thirty days in which to comment. The Final Negative Declaration will then be written including all comments. We must then await approval of the Final Negative Declaration by the Federal Highway Administration.

Post Office Box 8755, Baltimore-Washington International Airport, Maryland 21240, Telephone: 301 768-9520

Even though the project is tentatively scheduled for advertisement in mid June, it will be advertised as soon as the required approvals are received.

Thank you for your interest.

Sincerely,

Harry R. Hughes
Secretary

HRH:eer

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THE MARYLAND POST MORTEM EXAMINERS COMMISSION
COL. THOMAS S. SMITH, CHAIRMAN
ROBERT E. FARBER, M.D.
ROBERT H. HEPTINSTALL, M.D.
JEAN R. STIFLER, M.D.
BENJAMIN F. TRUMP, M.D.

STATE OF MARYLAND
DEPARTMENT OF POST MORTEM EXAMINERS
OFFICE OF THE CHIEF MEDICAL EXAMINER
111 PENN STREET
BALTIMORE, MARYLAND 21201

February 11, 1975

Mr. Eugene Clifford
Department of Traffic Engineering
Baltimore County Maryland
Jefferson Building
Towson, Maryland 21204

Dear Mr. Clifford:

This office conducted a fatal accident investigation on December 25, 1974 at the entrance of Lorraine Park Cemetery, 5800 Block of Windsor Mill Road. The fatally injured driver was entering Windsor Mill Road from the cemetery property and was impacted broadside by a vehicle traveling eastbound on Windsor Mill Road.

The area in question is a driveway exiting from the cemetery property onto Windsor Mill Road. On each side of the driveway there are stone gate pillars and a six foot in height chain, link-type fence. The view is obstructed by the fencing when you are attempting to enter Windsor Mill Road from the driveway. We have suggested to the management of the cemetery that they relocate the fencing in an effort ot improve the view for motorists using this exit. There has been non-fatal accidents which have occurred at this location also.

It would be appreicated if you could have your office check this location for the installation of hidden entrance signs on Windsor Mill Road in advance of the cemetery entrance. Perhaps your department may also have other recommendations to improve this hazardous condition.

Thanking you in advance for any assistance you may render in this matter, I remain

Sincerely yours,

W C Masemore

William C. Masemore
Chief Traffic Investigator

WCM/slb

BALTIMORE COUNTY, MARYLAND
JEFFERSON BUILDING TOWSON, MARYLAND 21204

DEPARTMENT OF TRAFFIC ENGINEERING

EUGENE J. CLIFFORD, P.E. — DIRECTOR
WM. T. MELZER — DEPUTY TRAFFIC ENGINEER

February 14, 1975

Mr. William C. Masemore
111 Penn Street
Baltimore, Maryland - 21201

Dear Mr. Masemore:

This is in response to your letter regarding the Lorraine Cemetery exit into Windsor Mill Road.

This investigation you conducted on the fatality corresponds with ours. The preventative measures would be to remove the pillars and relocate the fence at least at the entrance and each approach.

In an effort to correct this problem, this Department will contact the responsible party in an effort to relocate the fence, and will install the necessary signs as you have suggested.

Your interest and concern in matters of this nature is sincerely appreciated.

Yours very truly,

William T. Melzer
Deputy Traffic Engineer

WTM/EFB/bza

Appendix II

Maryland Medical-Legal Foundation

Basic Psychological Questionnaire

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

ACCIDENT INVESTIGATION

1 [1]

PSYCHOSOCIAL QUESTIONNAIRE

Case Number_____ [| | | | |]

1. Date of interview_____ [| | | | | |]

DEMOGRAPHIC DATA

2. Height_____(ft.)_____(in.) [| |]

3. Weight_____(pounds) [| | |]

4. Sex

   1 Male
   2 Female [ ]

5. Race

   1 Caucasian
   2 Negro
   3 Asian (Oriental)
   4 American Indian
   5 Other_____ [ ]

6. Date of birth_____ [| | | | | |]

7. Place of birth

   1 North East (U.S.)
   2 North West (U.S.)
   3 Mid-West (U.S.)
   4 South East (U.S.)
   5 South West (U.S.)
   6 Outside U.S. [ ]

8. Age at time of accident (years and months)_____ [| |]

9. Does the subject have a telephone?

   1 No
   2 Yes [ ]

10. Census tract number_____ [| | | |]

11. Time lived at last address (years and months)_____ [| | |]

12. Birth rank:_____of_____ [| | | |]

13. Was the subject a _____ child?

1 Natural
2 Adopted
3 Step
4 Foster

42 ☐

14. If the subject ever served in the armed forces, what type of discharge did he receive?

1 Never served
2 Still serving
3 Honorable
4 Medical
5 General
6 Undesirable
7 Bad conduct
8 Dishonorable

☐

PARENTAL

15. Is the subject's mother living? (If "Yes", skip to 18)

1 No
2 Yes

☐

16. How old was the subject when his mother died (years)_____ ☐☐

17. Did the subject's mother die from

1 Natural causes
2 Accident
3 Homicide
4 Suicide

☐

18. Was the subject otherwise permanently separated from his mother before the age of 16 because of (If not Separated, skip to 20)

1 Abandonment
2 Divorce
3 Illness

☐

19. If so, how old was the subject when separated from his mother?_____ ☐☐

20. How could the subject's mother best be described?

1 Harsh
2 Cold, unaffectionate
3 Disinterested
4 Inconsistent, unpredictable
5 Hard working
6 Over-protective
7 Comfortable, easy going
8 Guide and mentor
9 Warm, affectionate

☐

21. Is the subject's father living? (If "Yes", skip to 24)

1 No
2 Yes

52 ☐

22. How old was the subject when his father died (years)?_____ ☐☐

23. Did the subject's father die from

1 Natural causes
2 Accident
3 Homicide
4 Suicide

☐

24. Was the subject otherwise permanently separated from his father before the age of 16 because of (If not Separated, skip to 26)

1 Abandonment
2 Divorce
3 Illness

☐

25. If so, how old was the subject when separated from his father?_____ ☐☐

26. How could the subject's father best be described?

1 Harsh
2 Cold, unaffectionate
3 Disinterested
4 Inconsistent, unpredictable
5 Hard working
6 Over-protective
7 Comfortable, easy going
8 Guide and mentor
9 Warm, affectionate

☐

27. How would you best describe the subject's parents' marital relationship?

1 Appeared to go own separate ways without attempting marital agreement
2 Had difficulty in making marital decisions
3 Worked well together in solving marital problems

☐

28. Who was mainly responsible for the subject's rearing?

1 Both parents
2 Mother
3 Father
4 Adoptive parent(s)
5 Step parent(s)
6 Close relatives
7 Foster parents

☐

SCHOOL

29. As a child, did the subject attend school regularly?

1 No
2 Yes

☐

30. Education (in years completed)_____ 63 [ ][ ]

31. During the subject's school years, his scholastic average was

	Below Average	Average	Above Average	
a. Grades 1-6	1	2	3	[ ]
b. Grades 6-12	1	2	3	[ ]
c. College	1	2	3	[ ]
d. Graduate	1	2	3	[ ]

32. The main difficulty(s) encountered by the subject during his school years (grades 1-12) was (were): (Note: Check each item)

	No	Yes	
a. Failure to get along with peers	1	2	[ ]
b. Failure to keep up with peers	1	2	[ ]
c. Inability to pass scholastically	1	2	[ ]
d. Absenteeism due to injury or illness	1	2	[ ]
e. Difficulties at home	1	2	[ ]
f. Trouble with the law	1	2	[ ]
g. Financial difficulty	1	2	[ ]
h. Alcohol or drug abuse	1	2	[ ]

MARITAL 1 2

33. Marital status (If "Single", skip to 40)

1	Married	4	Widowed	7
2	Common-law	5	Separated	
3	Single	6	Divorced	

34. How many times had the subject been married?_____

35. What was the duration of the subject's most recent marriage (years and months)?_____

36. How would you best describe the nature of the subject's marital relationship? (If divorced, separated, or widowed - indicate previous relationship)

1	Never known to fight or argue	4	Occasional violent arguments
2	Occasional bickering and quibbling	5	Many violent arguments
3	Constant bickering and quibbling		

37. Was there any change in the subject's marital situation within the six months prior to the accident?

1	None (or still single)	5	Divorce
2	Just married	6	Illness of spouse
3	Threat of separation	7	Death of spouse
4	Separation	8	Other_____

38. In the six months prior to the accident, did the subject encounter any difficulty in his marital relationship?

		No	Yes
a.	Dealing with his children	1	2
b.	An extra marital affair	1	2
c.	Gambling	1	2
d.	Handling alcohol	1	2
e.	Managing money	1	2
f.	Providing financially for family	1	2
g.	Providing emotionally for family	1	2
h.	Sexual relationship	1	2
i.	Other_____	1	2

39. Did the subject have any children (actual numbers)?

23 ☐☐

a. Natural_____ ☐
b. Adopted_____ ☐☐
c. Step_____ ☐
d. Foster_____ ☐☐
e. Total_____

RELATIONSHIPS WITH SIGNIFICANT OTHERS

40. How would you best describe the subject's relationship with his siblings?

1 No strong relationship
2 Indifferent
3. Close with one or more ☐

41. With whom did the subject live at the time of the accident?

1 With spouse, children, and parent(s)
2 With spouse and children
3 With spouse and parent(s)
4 With spouse only
5 With parent(s)
6 Other relatives
7 Friend
8 Alone ☐

42. Was there any change in the relationship between the subject and other significant individuals within the last six months?

1 None
2 New girl/boy friend
3 Plans to engage or marry
4 Change in plans to engage or marry
5 Separation
6 Pregnancy
7 Death
8 Other_____ ☐

43. Did the subject recently experience major difficulties with any significant persons? (If "No", skip to 45)

1 No
2 Yes ☐

44. With whom did the subject experience major difficulties? (Note: Check each item)

		No	Yes	
a.	Spouse	1	2	35 ☐
b.	Children	1	2	☐
c.	Mother	1	2	☐
d.	Father	1	2	☐
e.	Sibling(s)	1	2	☐
f.	In-laws	1	2	☐
g.	Other relatives	1	2	☐
h.	Friends	1	2	☐
i.	Co-workers	1	2	☐
j.	Boss	1	2	☐
k.	Other_____	1	2	☐

45. What did the subject usually do in his leisure time prior to the accident? (Note: Check each item)

		No	Yes	
a.	Watch television	1	2	☐
b.	Read	1	2	☐
c.	Play cards	1	2	☐
d.	Engage in sports (specify)	1	2	☐
e.	Sew	1	2	☐
f.	Cook	1	2	☐
g.	Hunt	1	2	☐
h.	Water sports	1	2	☐
i.	Drag race	1	2	☐
j.	Drink	1	2	☐
k.	Fly	1	2	☐

		No	Yes	
l.	Sky dive	1	2	57 ☐
m.	Social club	1	2	☐
n.	Civic club (physical activity, organizational activity)	1	2	☐
o.	Other_____	1	2	☐

46. Did the subject ever participate in Judo, Karate, Jujitsu, etc.?

1 No
2 Yes ☐

47. Did the subject have any tattoos?

1 No
2 Yes ☐

48. Did the subject ever seriously consider getting a tattoo?

1 No
2 Yes ☐

JOB

49. What was the subject's occupation?

1 None
2 Unskilled worker (laborer, service, domestic)
3 Semi-skilled worker or skilled operator
4 Skilled manual worker
5 Small business owner, clerical or sales worker, technician
6 Semi-professional, owner of small independent business, administrative personnel
7 Manager/proprietor - medium size business, minor professional
8 Executive/proprietor - large concern, major professional ☐

50. How was the subject employed at the time of the accident?

1 Not employed
2 Unable to work
3 Retired
4 Pre-school or student
5 Housewife
6 Self-employed
7 Other employed (regular job) ☐

51. What length of time (in years and months) had the subject worked at his most recent job at the time of the accident?_____ 66 [ ][ ][ ]

52. Did the subject have any job changes within the last 12 months? (If "Yes", check type of most recent change)

1	None	5	Accident	
2	Promotion	6	Demotion	[ ]
3	Change to new job	7	Layed off	
4	Leave of absence	8	Fired	

53. How many times did the subject change jobs within the year prior to the accident?_____ [ ][ ]

54. How was the subject supporting himself at the time of the accident?

1	Not self-supporting	
2	Partially self-supporting	[ ]
3	Fully self-supporting	

55. What was the subject's yearly gross income?

1	0-3,000	5	11,000-15,000	
2	3,100-5,000	6	16,000-25,000	[ ]
3	5,100-7,500	7	26,000-50,000	
4	7,600-10,000	8	50,000 and above	

Approximately how much $_____ [ ][ ][ ][ ][ ]

56. Did the subject experience any changes in income within the six months prior to the accident?

1	Decreased by half or more	4	Increased less than half	
2	Decreased less than half	5	Increased by half or more	[ ]
3	Same			

57. Did the subject have increased debts within the six months prior to the accident?

1	No	
2	Yes	[ ]

1 3

HEALTH

58. During the subject's childhood, was he ever known to have (Note: Check each item)

		No	Yes	
a.	been unconscious	1	2	7 ☐
b.	rheumatic fever	1	2	☐
c.	serious injury	1	2	☐
d.	physical handicap	1	2	☐
e.	been mentally retarded	1	2	☐

59. During the subject's childhood, was he (Note: Check each item)

		No	Yes	
a.	sick a great deal	1	2	☐
b.	hospitalized	1	2	☐
c.	periodically separated from family	1	2	☐
d.	excessively active and/or aggressive	1	2	☐
e.	a loner	1	2	☐

60. As a child, was the subject ever prone to (Note: Check each item)

		No	Yes	
a.	temper tantrums and/or other outbursts of rage	1	2	☐
b.	being deceitful and/or defiant	1	2	☐
c.	bouts of erratic behavior	1	2	☐
d.	running away from home	1	2	☐
e.	stealing	1	2	☐
f.	bed-wetting	1	2	☐

61. How would you best describe the subject's mental health during the year prior to the accident?

1 Poor
2 Fair
3 Good
4 Excellent

23 ☐

62. Did the subject have a history of psychiatric care?

1 None
2 Past year
3 Past two years
4 Past five years
5 Prior to five years ago

☐

63. Did the subject have any blood relatives who were diagnosed or treated for mental illness? (Note: Where more than one applies, indicate numerically highest alternative)

1 None
2 Distant relatives
3 Grandparent(s)
4 Mother only
5 Father only
6 Siblings only
7 Both parents
8 Parent(s) and sibling(s)

☐

64. Would you say that during the week prior to the accident the subject

	Never	Occasionally	Frequently	
a. didn't work well with others	1	2	3	☐
b. complained a great deal	1	2	3	☐
c. was usually dissatisfied with work	1	2	3	☐
d. was generally inefficient	1	2	3	☐
e. was stubborn	1	2	3	☐
f. procrastinated a great deal	1	2	3	☐

65. How was the subject's physical health during the year prior to the accident?

1 Poor
2 Fair
3 Good
4 Excellent

☐

66. Was there any worsening in the subject's state of physical health during the week prior to the accident?

1 No
2 Yes

☐

67. Was the subject under a physician's care at the time of the accident?

1 No
2 Yes

34 ☐

68. When was the last time the subject saw a physician?

1 Last month
2 2-3 months ago
3 4-6 months ago
4 7-12 months ago
5 More than one year ago
6 Never

☐

69. At the time of the accident, was the subject known to have physical problems associated with his:

	No	Yes	
a. heart	1	2	☐
b. liver	1	2	☐
c. stomach	1	2	☐
d. brain	1	2	☐
e. kidneys	1	2	☐

70. At the time of the accident, was the subject known to have any physical handicap?

1 No
2 Yes

☐

71. Did the subject have a history of:

	No	Yes	
a. severe headaches	1	2	☐
b. migraine headaches	1	2	☐
c. seizures	1	2	☐
d. fainting spells	1	2	☐
e. meningitis	1	2	☐
f. high fevers	1	2	☐
g. head injuries	1	2	☐
h. other_____	1	2	☐

72. Did the subject have a history of bodily injuries?

1 No
2 Yes

50 ☐

73. What was the mode of any bodily injuries the subject ever sustained?

		No	Yes	
a.	automobile	1	2	☐
b.	criminal assault	1	2	☐
c.	fall	1	2	☐
d.	other_____	1	2	☐

74. How many times was the subject hospitalized?_____ ☐☐

75. Did the subject ever have major surgery?

1 No
2 Yes

☐

76. Would you describe the subject as:

		No	Yes	
a.	nervous and irritable	1	2	☐
b.	easily excited	1	2	☐
c.	being impulsive	1	2	☐
d.	careful and methodical	1	2	☐

DRUGS, ALCOHOL

77. Had the subject ever taken any medications regularly?

		No	Yes	
a.	tranquilizers	1	2	☐
b.	barbiturates	1	2	☐
c.	amphetamines	1	2	☐
d.	anti-hypertensives	1	2	☐
e.	digitalis preparations	1	2	☐

		No	Yes	
f.	antihistamines	1	2	67 ☐
g.	insulin	1	2	☐
h.	anti-convulsants	1	2	☐
i.	antibiotics	1	2	☐
j.	narcotics	1	2	☐
k.	other_____	1	2	☐

78. How extensive was the subject's general use of marijuana?

1	Never	5	Once a week	☐
2	Once or twice	6	Several times a week	
3	Several times a year	7	Once a day or more	
4	Once a month			

79. Did any member of the subject's family have a history of alcoholism?

		No	Yes	
a.	mother	1	2	☐
b.	father	1	2	☐
c.	sibling(s)	1	2	☐
d.	spouse	1	2	☐
e.	children	1	2	☐

80. Did the subject drink alcoholic beverages? (If "None", skip to 94)

1	None	5	Less than four/week	
2	Less than one/week	6	Equal or greater than four/week	
3	One/week	7	One or more/day	☐
4	A few/week			

1 4

81. If the subject uses alcohol, at what age did he start?_____ 7

82. How long has the subject been drinking (years and months)?_____

83. How much alcohol did the subject usually drink per week?

_____fifths of liquor
_____cans (bottles) of beer
_____fifths of wine

84. Did the subject's drinking ever produce a loss of emotional control?

1 No
2 Yes

85. How frequently while drinking did the subject lose consciousness?

1	Never	4	Occasionally
2	Once or twice	5	Frequently (at least half of the time)
3	Rarely but sometimes	6	Very often (more than half the time)

86. Did the subject ever drink when he was

	Never	Occasionally	Frequently
a. anxious and upset	1	2	3
b. depressed and down in the dumps	1	2	3
c. happy and excited	1	2	3
d. angry	1	2	3
e. unable to sleep	1	2	3
f. ill	1	2	3
g. other_____	1	2	3

87. Did the subject ever drink while

	Never	Occasionally	Frequently
a. working	1	2	3
b. driving	1	2	3

88. With whom does the subject drink?

	No	Yes	
a. friends	1	2	29
b. family	1	2	
c. business associates	1	2	

89. Where does the subject drink most of the time?

1 In the home
2 Not in the home

90. When does the subject usually drink?

	No	Yes	
a. weekdays (Monday morning - Friday afternoon)	1	2	
b. weekends (Friday evening - Sunday evening)	1	2	

91. At what time does the subject usually drink?

	No	Yes	
a. morning	1	2	
b. evening	1	2	
c. night	1	2	

92. Extent of subject's drinking?

1 Abstainer (special occasions - never drunk)
2 Moderate (drunk 1-3 times/year)
3 Heavy social (drunk more than 3 times/year)
4 Sporadic binge (drunk for days at a time)
5 Abuser (chronically drunk)

93. Did the subject ever receive medical treatment for the effects of drinking?

1 No
2 Yes

94. If the subject smoked, how many cigarettes did he smoke per day?____

95. How many cups per day did the subject drink?

a. Coffee_____
b. Tea_____

RELIGION

96. What was the subject's religion?

1	Catholic	5	Other Christian	46 ☐
2	Jewish	6	Other Non-Christian	
3	Protestant	7	None	
4	Muslim			

97. How frequently did the subject participate in religious activities?

1	Never	☐
2	Special holidays only	
3	Half of the time	
4	Regularly	

98. Would you consider the subject to be

1	not religious	☐
2	religious	
3	deeply religious	

SUICIDE, DEATH

99. Did the subject experience the death of any relative, friend, or acquaintance within the year prior to the accident?

1	No	☐
2	Yes	

100. Would you say that during the last year the subject thought about death?

1	Never	☐
2	Occasionally	
3	Frequently	

101. If the subject ever threatened suicide, when was the most recent threat?

1	Within last 6 months	4	More than 2 years prior to accident	
2	Within last 7-12 months	5	Never	☐
3	Within last 2 years			

102. If the subject ever made a suicide attempt, when was the most recent attempt?

1	Within last 6 months	4	More than 2 years prior to accident	
2	Within last 7-12 months	5	Never	☐
3	Within last 2 years			

CAR AND DRIVING HABITS

103. What was the status of the subject's license at the time of the accident?

1 Valid
2 None
3 Revoked
4 Suspended

53 [ ]

104. How old was the subject when he first obtained his driver's license?

[ ][ ]

_____

105. Did the subject own the car involved in the accident?

1 No
2 Yes

[ ]

106. How often had the subject driven the car involved in the accident?

1 Never
2 Occasionally
3 Frequently

[ ]

107. Did the subject have any passengers in the car at the time of the accident?

(exact number)_____ [ ]

108. Approximately how many miles did the subject drive each week? [ ][ ][ ][ ]

109. Was the subject driving in a familiar area?

1 No
2 Yes

[ ]

110. What was the purpose of the subject's trip at the time of the accident?

1 Social - going to or coming from some social function
2 Business - going to or coming from work activity
3 Shopping
4 Just driving for pleasure

[ ]

111. At the time of the accident, approximately how close was the subject to his home (in miles)?

_____ (Zero means at home) [ ][ ][ ][ ]

112. At the time of the accident, approximately how close was the subject to his destination?

_____ (Zero means at destination) [ ][ ][ ][ ]

113. Was the subject insured?

1 No
2 Yes

73 ☐

114. Would you describe the subject as generally being

1 a slow driver (well below speed limit)
2 average driver (within speed limit)
3 a fast driver
4 a very fast driver

☐

115. Would you say that generally, the subject

1 was cautious
2 was average
3 took chances
4 often took chances

☐

116. Was the subject ever known to

	No	Yes	
a. drive for long hours at a stretch	1	2	☐
b. drive fast when late	1	2	☐
c. have other unusual driving patterns	1	2	☐

117. Did the subject use seat belts?

1 Never
2 Occasionally
3 All the time

☐

118. Did the subject have his seat belt on at the time of the accident?

1 No
2 Yes

☐

MOTOR VEHICLE VIOLATIONS

1 [5]

119. To his recollection, approximately how many traffic violations did the subject have during the past two years? (If "None", skip to 122).

7 [ ][ ]

_____

120. What type of traffic violations did the subject have

1 None
2 Non-moving violations
3 Moving violations
4 Both

[ ]

121. What were the traffic violation penalties imposed upon the subject?

	No	Yes	
a. Warning	1	2	[ ]
b. Fine	1	2	[ ]
c. License suspension	1	2	[ ]
d. License revocation	1	2	[ ]
e. Jail sentence	1	2	[ ]

122. Concerning traffic violations, did the subject exhibit

1 no concern
2 average concern
3 much concern

[ ]

123. Was the subject involved in any other automobile accident while under the influence of alcohol?

1 No
2 Yes

[ ]

OTHER LEGAL VIOLATIONS

124. Was the subject ever in trouble with the law?

	No	Yes	
a. As a child	1	2	[ ]
b. As a teenager	1	2	[ ]
c. As an adult	1	2	[ ]

125. Approximately how many times was the subject in trouble with the law?

_____ 20 [ ][ ]

126. Was the subject ever arrested for drinking?

1 No
2 Yes

[ ]

MARYLAND MEDICAL-LEGAL FOUNDATION, INC.

PSYCHOSOCIAL QUESTIONNAIRE - SUPPLEMENT 1

1 6

Case Number_____ 2 [ ][ ][ ][ ][ ]

1. Current points at time of accident_____ 7 [ ][ ]

2. Number of previous suspensions_____ 9 [ ][ ]

3. Has license ever been revoked? 11 [ ]

1 No
2 Yes

4. Number of Driving While Intoxicated convictions_____ 12 [ ][ ]

5. Number of speeding convictions_____ 14 [ ][ ]

6. Number of other moving convictions_____ 16 [ ][ ]

7. Number of non-moving convictions_____ 18 [ ][ ]

8. Number of previous accidents_____ 20 [ ][ ]

9. Culpability in current accident 22 [ ]

1 Not responsible
2 Responsible

10. Driver residence 23 [ ]

1 Urban (core of city)
2 Urban (outskirts of city)
3 Suburban
4 Rural
5 Other_____

11. Time drinking at a sitting_____hours 24 [ ][ ]

12. Number of drinks per sitting_____ 26 [ ][ ]

13. Form of transportation to and from drinking location 28 [ ]

1 None (drinks at home)
2 Walks
3 Mass transit (subway or bus)
4 Taxi or chauffer
5 Spouse or friend drives
6 Drives self

14. Revised alcoholic classification (7/73) 29 [ ]

1 Abstainer (never drinks)
2 Mild social (never drunk)
3 Moderate social (drunk 1-3/year)
4 Moderate/heavy social (4-6/year)
5 Heavy social (6-12/year)
6 Sporadic binge (days at time)
7 Alcoholic

15. Use other drugs while drinking? 30 [ ]

1 No
2 Yes

Appendix III

KAS Behavior Inventories (R-Form)

KAS BEHAVIOR INVENTORIES
R FORMS

By Martin M. Katz

	24				
Study	Form	Hospital	Subject	Period	Rater

Name of subject _____

Name of respondent _____

Respondent's relationship to the subject _____

Date _____

Interviewer _____

Please wait for instructions before beginning.

PART I

		1 almost never	2 some-times	3 often	4 almost always	Card 01
1.	Has trouble sleeping	☐	☐	☐	☐	col. 19
2.	Gets very self critical, starts to blame himself for things	☐	☐	☐	☐	col. 20
3.	Cries easily	☐	☐	☐	☐	col. 21
4.	Feels lonely	☐	☐	☐	☐	col. 22
5.	Acts as if he has no interest in things	☐	☐	☐	☐	col. 23
6.	Is restless	☐	☐	☐	☐	col. 24
7.	Has periods where he can't stop moving or doing something	☐	☐	☐	☐	col. 25
8.	Just sits	☐	☐	☐	☐	col. 26
9.	Acts as if he doesn't have much energy	☐	☐	☐	☐	col. 27
10.	Looks worn out	☐	☐	☐	☐	col. 28
11.	Feelings get hurt easily	☐	☐	☐	☐	col. 29
12.	Feels that people don't care about him	☐	☐	☐	☐	col. 30
13.	Does the same thing over and over again without reason	☐	☐	☐	☐	col. 31
14.	Passes out	☐	☐	☐	☐	col. 32
15.	Gets very sad, blue	☐	☐	☐	☐	col. 33
16.	Tries too hard	☐	☐	☐	☐	col. 34
17.	Needs to do things very slowly to do them right	☐	☐	☐	☐	col. 35
18.	Has strange fears	☐	☐	☐	☐	col. 36
19.	Afraid something terrible is going to happen	☐	☐	☐	☐	col. 37
20.	Gets nervous easily	☐	☐	☐	☐	col. 38
21.	Jittery	☐	☐	☐	☐	col. 39

		1 almost never	2 some-times	3 often	4 almost always	
22.	Worries or frets	☐	☐	☐	☐	col. 40
23.	Gets sudden fright for no reason	☐	☐	☐	☐	col. 41
24.	Has bad dreams	☐	☐	☐	☐	col. 42
25.	Acts as if he sees people or things that aren't there	☐	☐	☐	☐	col. 43
26.	Does strange things without reason	☐	☐	☐	☐	col. 44
27.	Attempts suicide	☐	☐	☐	☐	col. 45
28.	Gets angry and breaks things	☐	☐	☐	☐	col. 46
29.	Talks to himself	☐	☐	☐	☐	col. 47
30.	Acts as if he has no control over his emotions	☐	☐	☐	☐	col. 48
31.	Laughs or cries at strange times	☐	☐	☐	☐	col. 49
32.	Has mood changes without reason	☐	☐	☐	☐	col. 50
33.	Has temper tantrums	☐	☐	☐	☐	col. 51
34.	Gets very excited for no reason	☐	☐	☐	☐	col. 52
35.	Gets very happy for no reason	☐	☐	☐	☐	col. 53
36.	Acts as if he doesn't care about other people's feelings	☐	☐	☐	☐	col. 54
37.	Thinks only of himself	☐	☐	☐	☐	col. 55
38.	Shows his feelings	☐	☐	☐	☐	col. 56
39.	Generous	☐	☐	☐	☐	col. 57
40.	Thinks people are talking about him	☐	☐	☐	☐	col. 58
41.	Complains of headaches, stomach trouble, other physical ailments	☐	☐	☐	☐	col. 59

		1 almost never	2 some-times	3 often	4 almost always	
42.	Bossy	☐	☐	☐	☐	col. 60
43.	Acts as if he's suspicious of people	☐	☐	☐	☐	col. 61
44.	Argues	☐	☐	☐	☐	col. 62
45.	Gets into fights with people	☐	☐	☐	☐	col. 63
46.	Is cooperative	☐	☐	☐	☐	col. 64
47.	Does the opposite of what he is asked	☐	☐	☐	☐	col. 65
48.	Stubborn	☐	☐	☐	☐	col. 66
49.	Answers when talked to	☐	☐	☐	☐	col. 67
50.	Curses at people	☐	☐	☐	☐	col. 68
51.	Deliberately upsets routine	☐	☐	☐	☐	col. 69
52.	Resentful	☐	☐	☐	☐	col. 70
53.	Envious of other people	☐	☐	☐	☐	col. 71
54.	Friendly	☐	☐	☐	☐	col. 72
55.	Gets annoyed easily	☐	☐	☐	☐	col. 73
56.	Critical of other people	☐	☐	☐	☐	col. 74
57.	Pleasant	☐	☐	☐	☐	col. 75
58.	Gets along well with people	☐	☐	☐	☐	col. 76
59.	Lies	☐	☐	☐	☐	col. 77
60.	Gets into trouble with law	☐	☐	☐	☐	col. 78
61.	Gets drunk	☐	☐	☐	☐	col. 79
62.	Is dependable	☐	☐	☐	☐	col. 80
						Card 02
63.	Is responsible	☐	☐	☐	☐	col. 19
64.	Argues (talks) back	☐	☐	☐	☐	col. 20
65.	Obedient	☐	☐	☐	☐	col. 21

		1 almost never	2 some-times	3 often	4 almost always	
66.	Shows good judgment	☐	☐	☐	☐	col. 22
67.	Stays away from people	☐	☐	☐	☐	col. 23
68.	Takes drugs other than recommended by hospital or clinic	☐	☐	☐	☐	col. 24
69.	Shy	☐	☐	☐	☐	col. 25
70.	Quiet	☐	☐	☐	☐	col. 26
71.	Prefers to be alone	☐	☐	☐	☐	col. 27
72.	Needs a lot of attention	☐	☐	☐	☐	col. 28
73.	Behavior is childish	☐	☐	☐	☐	col. 29
74.	Acts helpless	☐	☐	☐	☐	col. 30
75.	Is independent	☐	☐	☐	☐	col. 31
PART II						
1.	Moves about very slowly	☐	☐	☐	☐	col. 32
2.	Moves about in a hurried way	☐	☐	☐	☐	col. 33
3.	Clumsy; keeps bumping into things or dropping things	☐	☐	☐	☐	col. 34
4.	Very quick to react to something you say or do	☐	☐	☐	☐	col. 35
5.	Very slow to react	☐	☐	☐	☐	col. 36
6.	Gets into peculiar positions	☐	☐	☐	☐	col. 37
7.	Makes peculiar movements	☐	☐	☐	☐	col. 38
8.	Hands tremble	☐	☐	☐	☐	col. 39
9.	Will stay in one position for a long period	☐	☐	☐	☐	col. 40
10.	Loses track of day, month, or year	☐	☐	☐	☐	col. 41
11.	Forgets his address or other places he knows well	☐	☐	☐	☐	col. 42

		1 almost never	2 some-times	3 often	4 almost always	
12.	Remembers the names of people he knows well	☐	☐	☐	☐	col. 43
13.	Acts as if he doesn't know where he is	☐	☐	☐	☐	col. 44
14.	Remembers important things	☐	☐	☐	☐	col. 45
15.	Acts as if he's confused about things; in a daze	☐	☐	☐	☐	col. 46
16.	Acts as if he can't get certain thoughts out of his mind	☐	☐	☐	☐	col. 47
17.	Acts as if he can't concentrate on one thing	☐	☐	☐	☐	col. 48
18.	Acts as if he can't make decisions	☐	☐	☐	☐	col. 49
19.	Talks without making sense	☐	☐	☐	☐	col. 50
20.	Hard to understand his words	☐	☐	☐	☐	col. 51
21.	Speaks clearly	☐	☐	☐	☐	col. 52
22.	Refuses to speak at all for periods of time	☐	☐	☐	☐	col. 53
23.	Speaks so low you cannot hear him	☐	☐	☐	☐	col. 54
24.	Speaks very loudly	☐	☐	☐	☐	col. 55
25.	Shouts or yells for no reason	☐	☐	☐	☐	col. 56
26.	Speaks very fast	☐	☐	☐	☐	col. 57
27.	Speaks very slowly	☐	☐	☐	☐	col. 58
28.	Acts as if he wants to speak but can't	☐	☐	☐	☐	col. 59
29.	Keeps repeating the same idea	☐	☐	☐	☐	col. 60
30.	Keeps changing from one subject to another for no reason	☐	☐	☐	☐	col. 61
31.	Talks too much	☐	☐	☐	☐	col. 62

		1 almost never	2 some-times	3 often	4 almost always	
32.	Says that people are talking about him	☐	☐	☐	☐	col. 63
33.	Says that people are trying to make him do or think things he doesn't want to	☐	☐	☐	☐	col. 64
34.	Talks as if he committed the worst sins	☐	☐	☐	☐	col. 65
35.	Talks about how angry he is at certain people	☐	☐	☐	☐	col. 66
36.	Talks about people or things he's very afraid of	☐	☐	☐	☐	col. 67
37.	Threatens to injure certain people	☐	☐	☐	☐	col. 68
38.	Threatens to tell people off	☐	☐	☐	☐	col. 69
39.	Says he is afraid that he will injure somebody	☐	☐	☐	☐	col. 70
40.	Says he is afraid that he will not be able to control himself	☐	☐	☐	☐	col. 71
41.	Talks about strange things that are going on inside his body	☐	☐	☐	☐	col. 72
42.	Says how bad or useless he is	☐	☐	☐	☐	col. 73
43.	Brags about how good he is	☐	☐	☐	☐	col. 74
44.	Says the same thing over and over again	☐	☐	☐	☐	col. 75
45.	Complains about people and things in general	☐	☐	☐	☐	col. 76
46.	Talks about big plans he has for the future	☐	☐	☐	☐	col. 77
47.	Says or acts as if people are after him	☐	☐	☐	☐	col. 78
48.	Says that something terrible is going to happen	☐	☐	☐	☐	col. 79
49.	Believes in strange things	☐	☐	☐	☐	col. 80

		1 almost never	2 some-times	3 often	4 almost always	
						Card 03
50.	Talks about suicide	☐	☐	☐	☐	col. 19
51.	Talks about strange sexual ideas	☐	☐	☐	☐	col. 20
52.	Gives advice without being asked	☐	☐	☐	☐	col. 21

KAS FORM R2

	1 is not doing	2 is doing some	3 is doing regularly	0 does not apply	
1. Helps with household chores	☐	☐	☐	☐	col. 22
2. Visits his friends	☐	☐	☐	☐	col. 23
3. Visits his relatives	☐	☐	☐	☐	col. 24
4. Entertains friends at home	☐	☐	☐	☐	col. 25
5. Dresses and takes care of himself	☐	☐	☐	☐	col. 26
6. Helps with the family budgeting	☐	☐	☐	☐	col. 27
7. Remembers to do important things on time	☐	☐	☐	☐	col. 28
8. Gets along with family members	☐	☐	☐	☐	col. 29
9. Goes to parties and other social activities	☐	☐	☐	☐	col. 30
10. Gets along with neighbors	☐	☐	☐	☐	col. 31
11. Helps with family shopping	☐	☐	☐	☐	col. 32
12. Helps in the care and training of children	☐	☐	☐	☐	col. 33
13. Goes to church	☐	☐	☐	☐	col. 34
14. Takes up hobbies	☐	☐	☐	☐	col. 35
15. Works	☐	☐	☐	☐	col. 36
16. Supports the family	☐	☐	☐	☐	col. 37

KAS FORM R3

		1 did not expect him to be doing	2 expected him to be doing some	3 expected him to be doing regularly	0 does not apply	
1.	Helps with household chores	☐	☐	☐	☐	col. 38
2.	Visits his friends	☐	☐	☐	☐	col. 39
3.	Visits his relatives	☐	☐	☐	☐	col. 40
4.	Entertains friends at home	☐	☐	☐	☐	col. 41
5.	Dresses and takes care of himself	☐	☐	☐	☐	col. 42
6.	Helps with the family budgeting	☐	☐	☐	☐	col. 43
7.	Remembers to do important things on time	☐	☐	☐	☐	col. 44
8.	Gets along with family members	☐	☐	☐	☐	col. 45
9.	Goes to parties and other social activities	☐	☐	☐	☐	col. 46
10.	Gets along with neighbors	☐	☐	☐	☐	col. 47
11.	Helps with family shopping	☐	☐	☐	☐	col. 48
12.	Helps in the care and training of children	☐	☐	☐	☐	col. 49
13.	Goes to church	☐	☐	☐	☐	col. 50
14.	Takes up hobbies	☐	☐	☐	☐	col. 51
15.	Works	☐	☐	☐	☐	col. 52
16.	Supports the family	☐	☐	☐	☐	col. 53

KAS FORM RS4

		1 frequently	2 sometimes	3 practically never	0 does not apply	
1.	Work in and around the house	☐	☐	☐	☐	col. 54
2.	Work in the garden or yard	☐	☐	☐	☐	col. 55
3.	Work on some hobby	☐	☐	☐	☐	col. 56
4.	Listen to the radio	☐	☐	☐	☐	col. 57
5.	Watch television	☐	☐	☐	☐	col. 58
6.	Write letters	☐	☐	☐	☐	col. 59
7.	Go to the movies	☐	☐	☐	☐	col. 60
8.	Attend lectures, theatre	☐	☐	☐	☐	col. 61
9.	Attend club, lodge, other meetings	☐	☐	☐	☐	col. 62
10.	Shop	☐	☐	☐	☐	col. 63
11.	Take part in community or church work	☐	☐	☐	☐	col. 64
12.	Bowl or other sports	☐	☐	☐	☐	col. 65
13.	Play cards or other table games	☐	☐	☐	☐	col. 66
14.	Take rides	☐	☐	☐	☐	col. 67
15.	Visit friends	☐	☐	☐	☐	col. 68
16.	Entertain friends	☐	☐	☐	☐	col. 69
17.	Sew, crochet or knit	☐	☐	☐	☐	col. 70

	1 frequently	2 sometimes	3 practically never	0 does not apply	
18. Read	☐	☐	☐	☐	col. 71
19. Go to the library	☐	☐	☐	☐	col. 72
20. Just sit and think	☐	☐	☐	☐	col. 73
21. Take courses at home	☐	☐	☐	☐	col. 74
22. Go to school	☐	☐	☐	☐	col. 75
23. Other (what?) _____	☐	☐	☐	☐	col. 76

KAS FORM R5

	1 satisfied with what he does here	2 would like to see him do more of this	3 would like to see him do less	0 does not apply	
1. Work in and around the house	☐	☐	☐	☐	col. 77
2. Work in the garden or yard	☐	☐	☐	☐	col. 78
3. Work on some hobby	☐	☐	☐	☐	col. 79
4. Listen to the radio	☐	☐	☐	☐	col. 80
					Card 04
5. Watch television	☐	☐	☐	☐	col. 19
6. Write letters	☐	☐	☐	☐	col. 20
7. Go to the movies	☐	☐	☐	☐	col. 21
8. Attend lectures, theatre	☐	☐	☐	☐	col. 22
9. Attend club, lodge, other meetings	☐	☐	☐	☐	col. 23
10. Shop	☐	☐	☐	☐	col. 24
11. Take part in community or church work	☐	☐	☐	☐	col. 25
12. Bowl or other sports	☐	☐	☐	☐	col. 26
13. Play cards or other table games	☐	☐	☐	☐	col. 27
14. Take rides	☐	☐	☐	☐	col. 28
15. Visit friends	☐	☐	☐	☐	col. 29
16. Entertain friends	☐	☐	☐	☐	col. 30
17. Sew, crochet or knit	☐	☐	☐	☐	col. 31
18. Read	☐	☐	☐	☐	col. 32

	1 satisfied with what he does here	2 would like to see him do more of this	3 would like to see him do less	0 does not apply	
19. Go to the library	☐	☐	☐	☐	col. 33
20. Just sit and think	☐	☐	☐	☐	col. 34
21. Take courses at home	☐	☐	☐	☐	col. 35
22. Go to school	☐	☐	☐	☐	col. 36
23. Other (what?) _____	☐	☐	☐	☐	col. 37

Appendix IV

Contributions By Team Members

Contributions By Team Members

In addition to the Research Project as presented in this final report, the Team contributed to public and professional education regarding highway and vehicular safety by the following presentations:

1. Lecture on vehicular accidental deaths to the Delaware Department of Public Safety, Dover, Delaware

2. One day training of an accident investigation course conducted by the University of Maryland on the concepts of Multidisciplinary Accident Investigations

3. Two lectures to members of the Baltimore City Police Department Forensic Science Program

4. Several lectures conducted to civic organizations on the topic of Multidisciplinary Accident Investigation

5. Lecture on the concepts of accident investigation to the students of The Johns Hopkins School of Hygiene

Appendix V

References

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