A STUDY OF CERTAIN FACTORS IN THE FATAL TRAFFIC ACCIDENTS OF 16 YEAR OLD DRIVERS IN MICHIGAN, 1967-1969

By

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ABSTRACT

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Statement of the Problem

A dramatic increase has occurred in the number of 16 year old drivers involved in fatal traffic accidents from 1967 through 1969 which has caused a growing concern among those involved in traffic safety. Fatal traffic accident involvement of the 16 year old driver has increased about 115 per cent during this period of time, while the number of students completing high school driver education has increased only about ten per cent.

This study was designed to determine certain factors in the fatal traffic accidents of 16 year old drivers in Michigan, 1967-1969.

The purpose of the study was to determine and present a more definitive description of the problems that the 16 year old driver might be having early in his driving career as a result of studying the fatal traffic accidents in which

they were involved. The study was considered descriptive and exploratory in nature.

Description of the Methods, Techniques and Data Used

The sample selected for this study was the total number of 16 year old drivers involved in fatal traffic accidents in Michigan, 1967-1969.

The data was collected from the fatal traffic accident record files of the Michigan Department of State Police and the driver record files of the Michigan Department of State. The variables used in the study included the factors of time, environment, driver, vehicle, and investigation.

The data was tabulated in frequency distributions for each of the variable factors. All pertinent information relative to the fatal traffic accidents was taken from all of the fatal traffic accident reports and supplemental data reports of the accidents in which the 16 year old drivers were involved. Driver records were obtained for 91.2 per cent of the 16 year old Michigan licensed drivers involved in the fatal traffic accidents included in the study.

The Major Findings

Analysis of the data for each of the variable factors revealed:

Time

1. November had the largest percentage, 13.59, of the drivers involved.

2. Saturdays had 21.2 per cent of the drivers involved.

3. The time period which had the largest percentage, 34.78, of the drivers involved was from 6:01 p.m. - 10:00 p.m.

4. There were more accidents during the day than at night.

Driver

1. Of the Michigan licensed drivers involved, 64.43 per cent had six months or less driving experience from the date of original application for a license.

2. Of the 184 drivers studied, 15.76 per cent were unlicensed.

3. The driver records indicated that 74.19 per cent of the drivers had no record prior to involvement.

Environment

1. Farm and one family home localities were the most prevelent accident sites accounting for 70.72 per cent of the drivers involved.

2. About seventeen per cent of the accidents occurred on unpaved roads.

3. Slightly more than sixty-seven per cent of the accidents did not occur at an intersection.

Vehicle

1. Twenty-one 16 year old drivers were operating a motorcycle at the time of involvement.

2. The vehicles operated by the 16 year old driver were reported as having no mechanical defect in 53.91 per cent of the cases.

Investigation

1. Sheriffs' Departments investigated 42.54 per cent of the accidents.

2. Slightly more than forty-seven per cent of the drivers were operating at an estimated speed of 45 MPH or less.

3. Of the 184 drivers, 13.59 per cent were arrested.

Type of Accident

1. The two vehicle accidents accounted for 40.88 per cent of the total number of fatal accidents.

2. Slightly more than one-fourth of the fatal traffic accidents were single vehicle accidents.

3. The pedestrian/bicycle accidents accounted for 18.23 per cent of the total.

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CHAPTER I

THE PROBLEM

The years 1968 and 1969 show a drastic increase in the number of 16 year old Michigan drivers involved in fatal traffic accidents. Since 1967, the number of 16 year olds involved in fatal traffic accidents has risen from 39 to 85 for this age group.[1] Table 1.1 illustrates the increase by compiling the information reported by the Michigan Department of State Police[2] for the years 1967-69.

TABLE 1.1.--Fatal Accident Increase.

Year	Fatal Accident Drivers	Per Cent of Fatal Accident Involvement	Per Cent of Driving Population
1967	39	1.47	No Record
1968	60	2.00	.91
1969	85	2.63	.91

[1]Michigan Department of State Police, Michigan Traffic Accident Facts: 1968 (Michigan: Department of State Police), p. 16; and Michigan Department of State Police, Michigan Traffic Accident Digest: 1969 (Michigan: Department of State Police), p. 6.

[2]Ibid., p. 16; and Ibid., p. 6.

It should be noted that almost 100 per cent of the licensed drivers in this age group are in their first year of driving after completing High School Driver Education.[3]

The rapid and dramatic increase in the fatal traffic accident picture of this age group has caused a growing concern among those involved in traffic safety. The High School Driver Education program offerings have steadily supplied an increasing number of young people eligible for early licensing.[4] It has not, as yet, been determined if the increased total traffic accident involvement of this group is occurring at the expected rates.

National, state and local statistics support the opinion of authorities in the field of traffic safety who label the young driver a dangerous driver.[5] Yet, the statistics used in studies and reports tend to group young drivers together rather than by a single age or by the length of their driving experience after licensing. This fact has led to a general

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[3]Michigan Department of State, Michigan Vehicle Code: 1968 (Michigan: Department of State), pp. 57-69, 184-186.

[4]Michigan Department of Education, Reimbursement Summaries 1955-1969 (Michigan: Department of Education), reprint, undated.

[5]Michigan Department of State Police, op. cit., 1968, pp. 7, 16.

condemnation of young drivers no matter what their age, sex, or experience.

There is much available data showing that young drivers under 25 years of age are an exceptionally high risk group.[6] Pelz and Schuman[7] stated that some groups of drivers are distinctly more dangerous than others.

Gesteland[8] indicated that the teen-age boy did most of his driving at night.

The young drivers of today comprise an important segment of the driving population and it was the purpose of this study to investigate a part of the population of young drivers in order to determine certain factors of their involvement in fatal traffic accidents.

A study of 16 year old Michigan drivers involved in fatal traffic accidents, 1967-69, was selected. The sampling was the total population of those involved. The subjects were all Michigan residents at the time of accident. This study was selected to determine and present a more definitive description of the problems the 16 year old might

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[6] Ibid., p. 7.

[7] Donald C. Pelz and Stanley H. Schuman, "Dangerous Young Drivers," The Society for Automotive Engineers, LXXVI, (October, 1968), pp. 61-68.

[8] Norman Gesteland, "Let's Teach the Teen-ager How to Drive When They Drive the Most Often-At Night," Traffic Digest, XV (November, 1967), pp. 3-7.

be having early in his driving career as a result of studying the fatal traffic accidents in which they were involved.

Emery[9] states that the majority of driving done by 17 and 18 year olds was done for recreational purposes. It was assumed that the same was true for the 16 year old.

Silvernale and Whale[10] state that young drivers do not get enough practice or have enough experience in all types of environments under instructional or parental supervision and that their problems stem from the lack of experience, particularly during the first year of driving.

Although Pelz and Schuman[11] have studied the young driver, they did not focus on a single age. They have, as have most researchers, studied teen-age drivers and young drivers grouped together. This study is concerned only with the 16 year old Michigan Drivers involved in fatal traffic accidents during the years 1967 through 1969.

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[9]Sister Marie Therese Emery. O.P., "A Study of Certain Factors Related to the Patterns of Driving, Accident and Violation Rates of 436, 17 and 18 Year-old Licensed Drivers From Two Lansing Catholic Schools." (Unpublished Doctoral Dissertation, Michigan State University, 1969), p. 3.

[10]Leslie R. Silvernale and Malcolm D. Whale, "Does Driver Education Go Far Enough?" Traffic Safety, Vol. 69, No. 9 (September, 1969), pp. 10-12, 40, 42.

[11]Pelz and Schuman, op. cit., pp. 61-68.

As a result of studying the fatal traffic accidents of 16 year old Michigan drivers, it is hoped that the data will provide information for the enrichment of the driver education curriculum and improvement of the driver licensing procedure.

Purpose of the Study

The purpose of the study was to determine, by investigating fatal traffic accident reports, common factors in the fatal traffic accidents of 16 year old Michigan drivers. This study was considered descriptive and exploratory in nature. Two specific problems were involved:

1. To determine common characteristics of time, place, and environmental conditions bearing upon the total population in the study as a result of studying the fatal accident reports.
2. To determine common characteristics of the drivers involved as a result of studying the drivers' records.

Definition of Terms

For the purpose of this study, these terms are defined:

1. Fatal traffic accident. The collision of one or more motor vehicles with each other, a fixed object, train, bicycle or pedestrian resulting in the

death of one or more persons on a public roadway.

2. Driver's record. That information on file with the Michigan Secretary of State Driver Records Section and recorded on computer tape providing pertinent information about licensed Michigan drivers.
3. Fatal traffic accident report. The report of a fatal traffic accident on file with the Michigan Department of State Police forwarded on the State of Michigan Official Traffic Accident Report (UD-10A, 1-65) to the Safety and Traffic Division of the Michigan Department of State Police as required by law.
4. Supplemental data. The additional information accompanying the fatal traffic accident report such as complaint forms, investigation forms, post mortum forms, and death certificates.
5. Licensed driver. That individual successfully meeting the criterion established by the Michigan Department of State and carried out by the local testing station to determine fitness of the individual to operate a motor vehicle on the highways of Michigan. Each individual is assigned a special driver identification number.

6. Driver Education Certificate. Certificate of successful driver education course completion presented by the State Department of Education through the school offering the course.
7. Temporary Instruction Permit. Permit issued to an applicant allowing the individual to operate a motor vehicle on the highways when accompanied by a licensed adult operator or chauffeur who is actually occupying a seat beside the driver.
8. Length of driving experience. The amount of time, in months, from the date of original application for a driving license to the date of involvement in a fatal traffic accident for a Michigan licensed driver.

Delimitations

This study did not attempt to consider the socio-economic and psychological factors of the 16 year old driver. The study did not take into consideration the driver education course of study completed by the individuals included in the sample. The major limitation of this study was that it dealt with only a small segment of the 16 year old driving population.

The sample was selected from fatal traffic accident report records on file with the Michigan Department of State Police. The total sample consists of 16 year old drivers

involved in fatal traffic accidents in Michigan during the years 1967 through 1969. The number of 16 year olds involved in fatal traffic accidents as published by the Michigan Department of State Police for 1967 was thirty-nine; for 1968 sixty; and for 1969 eighty-five.

The accident data collected was limited to the fatal traffic accident reports and supplemental data included in the Michigan Department of State Police files.

The driver record data collected was limited to that data on the computer tapes of the Michigan Department of State.

Assumptions

1. It was assumed that each Michigan licensed driver had completed a high school driver education course meeting the minimum requirements established by the State Department of Education.

2. It was assumed that the data collected, as recorded, from the traffic accident reports and supplemental data was reliable for the purposes of this study. The considered opinion of the investigating officer(s) was included in this assumption.

3. It was assumed that the data collected from the driver record files of the Michigan Department of State was up-to-date and accurate as a result of the information received in the driver records section.

4. It was assumed that important factors regarding the 16 year old driver involved in fatal traffic accidents in Michigan could be discovered by making use of the fatal traffic accident report files of the Michigan Department of State Police and the driver record files of the Michigan Department of State.

Organization of the Study

In Chapter II an extensive review of the literature related to fatal traffic accidents and traffic accidents of young drivers is found. It should be noted that the literature dealing with the 16 year old involved in fatal traffic accidents is limited. Therefore, several closely related studies were reviewed.

Chapter III deals with the design of the study and the methods used in gathering the data. The fatal accident report file of the Michigan Department of State Police was searched to gather the appropriate data. The driver record information was gathered by submitting the licensed driver's identification number to the Michigan Secretary of State driver records section for a computer readout of each individual listed.

In Chapter IV the data tabulated from the information gathered from the accident reports and driver records is presented and analyzed.

A summary, conclusions and discussion, and recommendations are found in Chapter V.

CHAPTER II

REVIEW OF RELATED LITERATURE

There has been much written about the teen-aged driver, the young driver, and the youthful driver. The tendency has been for researchers to group the young drivers in their teens together in the stated categories. Little research has been done concerning the 16 year old driver and in particular those 16 years olds involved in fatal traffic accidents. Recently, however, there has been an attempt to present a more accurate picture of the young driver in terms of exposure, attitudes, motivation, and socio-economic factors. The references selected for this review were concerned with the 16 year old driver and the first year driver to determine accident status and factors of driving which provide some insight to the problem. It was necessary to include references which were closely allied to the 16 year old driver.

Since 1965-66 school year, the number of students completing driver education for which schools have been reimbursed has increased about 10 per cent through the

1968-69 school year (144,609 for 1965-66 to 158,985 for 1968-69).[1]

The Michigan Department of State Police published that the 16 year old driver made up .91 per cent of the driving population in 1968 and 1969.[2] This information was obtained from the Michigan Department of State, Michigan Driver Statistics, Report No. 1, dated July 21, 1968. A more accurate count was determined from Report No. 3. The 16 year old driver population is closer to being 1.2376 per cent of the total of all Michigan drivers.[3] If the figure, 1.28 per cent, is inserted in the table developed by the Michigan Department of State Police, then the 16 year old fatal accident involvement would not be interpreted to be quite so bad. Rather than having about three times the percentage of fatal accidents they seem to be allotted, it is about two times as great.

Michigan's driver education has been rated as one of the best in the country. The state's high school driver education program meets the national minimum standard of 30 clock hours of classroom instruction and six clock hours

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[1] "Reimbursement Summaries," op. cit.

[2] Michigan Traffic Accident Digest, op. cit., p. 6.

[3] Milo W. Chalfant and Joseph A. Hayes, Michigan Driver Statistics, Report No. 3. (Lansing: Michigan Department of State, May 1, 1970), p. 5.

of behind-the-wheel instruction for each student. Driessen[4] stated that perhaps we expect too much from a "30 and 6," one semester course.

Schlesinger[5] stated that the new driver does not have the experience and skill to size up the situation and take corrective action. He made the analogy between a person learning the job and a new driver saying that the accident rate is higher for a person learning the job and, therefore, it could be expected that the accident rate would be higher for the new driver. He stated that most teen-agers are having their first accident due largely to the newness and inexperience of driving. He stated that one-fifth of the accidents involved drinking; two fifths emotional condition; with the rest attributed to distrations, fatigue, speeding and a fatalistic attitude toward accidents. Much of his data was quoted from Bishop.[6]

Gesteland[7] indicated that the teen-age boy did most of his driving at night. He states that the death rate for young males was about two-thirds higher at night. He contends

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[4]Gerald Driessen, "Fallacy of the Untrained Driver," Analogy, Autumn 1969, pp. 24-26.

[5]Lawrence E. Schlesinger, Is There A Teen-Age Driver In Your House? The New American Library, Inc., New York: 1967, pp. 17-27, 70-75, 80-87.

[6]Richard W. Bishop, "Case Studies of One Car Accidents Involving Young Drivers" (unpublished Ph.D. dissertation, New York University), 1961.

[7]Gesteland, op. cit., pp. 3-7.

that the teen-ager is not trained or ready to drive and cope with situations present at night.

Klein[8] reported that the proportion of violations, fatalities and reportable accidents in which teen-agers were involved was significantly higher than for any other age group. He contends that factors such as mileage, road and traffic conditions, roadside characteristics, number of occupants in the car, must be taken into consideration when studying the teen-age accident and violation data.

Lauer,[9] as a result of an around the clock study, concluded that the driving habits of men and women were quite different. The study indicated that the teen-ager was more likely to drive during the hours when traffic conditions and weather were hazardous.

Campbell[10] revealed data from a study of the records of 32,387 drivers that young drivers have more of their accidents at night. He broke the day into twelve two hour periods and he used the 6 PM to 5:59 AM period as the night segment. Fifty-eight per cent of the young drivers were involved during this time period.

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[8]David Klein, "A Reappraisal of the Violation and Accident Data on Teen-Age Drivers," Traffic Quarterly, XX, No. 4 (October, 1966), pp. 502-510.

[9]A. R. Lauer, "A Sampling Study of Drivers on the Highways for the Twenty-Four Hour Period - Driver Characteristics and Accidents," Highway Research Board Bulletin, LXXIII (1953), pp. 14-31.

[10]B. J. Campbell, "Driver Age and Sex Related to Accident Time and Type," Traffic Safety Research Review, X, No. 2 (June, 1966), pp. 36-40.

Schuman, Pelz, et al,[11] in a study of young male drivers, reported "daredevil" practices when one or more friends were in the car of the 16-18 year old driver. Their limited data suggests that the under 21 year old driver uses the automobile as an emotional outlet. The pilot study presented a picture of a young driver as an inexperienced, impulsive, but cautious beginner.

Pelz and Schuman[12] stated that the greatest thrill and enjoyment came at the ages of 16-17.

The California Department of Motor Vehicles[13] concluded from a study that the younger driver had a disproportionately high conviction rate largely attributed to speed. A recent study conducted by the California Department of Motor Vehicles concluded that drivers completing a driver education course including behind-the-wheel instruction had fewer violations but drove less than drivers without training. There was no significant difference between groups (those who had driver education and those who did not) on accidents.

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[11]Stanley H. Schuman, Donald C. Pelz, et al., "Young Male Drivers - Impulse Expression, Accidents, and Violations," Journal of the American Medical Association, Vol. 200 (June 19, 1967), pp. 1026-1030.

[12]Donald C. Pelz and Stanley H. Schuman, "Young Drivers: Road Behavior and Motivations," (Third Traffic Medicine Congress, New York City, May 29-June 1, 1969), p. 7. (Mimeographed).

[13]California Department of Motor Vehicles, The California Driver Fact Book (California: Department of Motor Vehicles), January, 1969, pp. 3-5, 24-25.

Kritz and Nilsson,[14] in an investigation of accident frequency of new drivers with special regard to differences in age, concluded their research findings by indicating that other factors connected with age have contributed to the higher rate of accidents sustained by young male drivers. For women, there did not seem to be any difference between the younger and older drivers. Kritz and Nilsson[15] cited a British study which found no direct evidence to suggest that age ipso facto has little effect on accident rates. A German[16] study found nothing to suggest that young drivers are more susceptible to accidents than older age groups. They[17] cited a California study of teen-age drivers which demonstrated a correlation for men between age and accident involvement, the tendency being for the young drivers to be more involved. The same study found that driving experience had greater importance for accident involvement than age.

Kaestner[18] found that for the 16-19 year old group that following too closely and did not have the right of way as primary causes of accidents. Driving too fast for conditions

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[14]Lars-Bruno Kritz and Goran Nilsson, "Young Drivers and Road Accidents," Report, Official Swedish Council on Road Safety Research, November 1967.

[15]Ibid., p. 2.

[16]Ibid., p. 2.

[17]Ibid., p. 2.

[18]Noel F. Kaestner, "Study of Licensed Drivers in Oregon-Part II - Analysis of Traffic Involvement Records," Oregon Department of Motor Vehicles, December 1964.

ranked third; negligent driving fourth; and driving unsafe vehicle fifth. The accident type most frequently listed was other vehicle; ran-off road second; fixed object third; and pedestrian fourth.

In a 1967 study, Kaestner[19] reported that failure to avoid stopped vehicle, failure to yield right of way, and driving too fast for conditions ranked first to third respectively as primary causative factors in accidents of the 16-19 year old group. He reported that for the 16-19 year old group other vehicle, parked vehicle, ran-off road, and fixed object ranked first to fourth respectively as the accident type most often reported.

Bacon and Jones[20] reported the age groups most prone to accidents are the young (16 to 18 years) and the old (75 and over) drivers. "The question of drinking, driving and accidents among teen-agers has received surprisingly little attention from the point of scientific research."[21] Bacon and Jones refer to the Grand Rapids study as one which provides very interesting information. Investigation of the

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[19]Noel F. Kaestner, "A Second Look at Licensed Drivers in Oregon," Oregon Department of Motor Vehicles, November 1967.

[20]Margaret Bacon and Mary Brush Jones, Teen-Age Drinking, (New York: Thomas Y. Crowell Company, 1968), pp. 143-156.

[21]Ibid., pp. 155-156.

teen-agers' blood alcohol levels indicates they had far fewer drinking and driving accidents than the adults in the study. The authors concluded that 16 and 17 year old drivers have more than their share of accidents, but they do not seem to be drinking and driving accidents. A study of teen-age drinking in New York State[22] showed that teen aged drivers tended to have fewer accidents after they had been drinking than when sober.

Pelz, Schuman, et al.,[23] have included alcohol in their studies and have found that alcohol has a low rate of involvement especially in the first accident, an incidence rate of about 5 per cent. Using only those drivers who drank "last year," the data collected indicated that teen-agers were reluctant to drive after drinking. The data collected did not indicate that drinking was a major cause of teen-age accidents.

Klein[24] presented the statement that it might be that teen-aged accidents are due largely to the learning effect and if first licensing occurred at age 30 rather than 16, then the 30-35 age span would show a "teen-age" curve.

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[22] Ibid., p. 155.

[23] Schuman, et al., op. cit., pp. 1026-1030; Pelz and Schuman, op. cit., pp. 1-8; Pelz and Schuman, op. cit., pp. 8-9.

[24] David Klein, "The Teen-Age Driver - A Research Paradigm," Traffic Quarterly, XXII, No. 1 (January, 1968), pp. 97-107.

Pelz[25] referred to an unpublished Schuman study in which the data indicated that the single-car off-the-road fatal accidents are typical of young drivers under the age of 30.

The AAMVA Bulletin[26] referred to Kaestner's 1962 study in Oregon in which fatal accidents were studied and the conclusion reached that fatal accidents do not just happen to anyone. Young males were disproportionately represented in fatal traffic accidents and had even worse violation records. The records showed that speed related equipment and noise were represented disproportionately. Kaestner was quoted as saying that this violation record was "indicative of agressive, egocentric personalities and also reflects a definite immaturity on the part of the driver." Women involved in fatal traffic accidents were more likely to be unlicensed.

The American Youth[27] magazine discussed two studies which were alcohol related. In an Illinois study, the Illinois Medical Society and the Illinois Coroners Association cooperated in the study investigating accidents in which 142

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[25]Donald C. Pelz, "Driver Motivations and Attitudes," Driver Behavior - Cause and Effect (Insurance Institute for Highway Safety, 1968), p. 111.

[26]American Association of Motor Vehicle Administrators Bulletin, Vol. 31, No. 12 (December 1966), p. 6.

[27]"Alcohol: Killer at the Wheel," American Youth Magazine, Vol. 8, No. 4 (November-December, 1967), pp. 12-13.

teen-aged drivers were killed. One out of three of the drivers had a measurable amount of alcohol in the blood. Nearly one-half of the alcohol group had a blood alcohol level over 0.15 per cent. A California study in which 407 drivers were killed in single vehicle accidents reported that 75 per cent of the drivers had been drinking. Of the 407, 49 were teen-agers and nearly one-half of them had a blood alcohol level which averaged 0.14 per cent.

Kraus, et al.[28] conducted a study in Ontario in which they indicated several factors that influence accident and violation records of young drivers. Using a control group and attempting to match the group with the experimental group, they checked the driving experience and record, family history, residence history, health history and habits, employment history, history of contacts with law enforcement agencies, and a self-rating of several personality characteristics for each individual. They concluded that using the above categories would be helpful in determining those who might be predisposed to be involved in traffic accidents and have a traffic violation record.

Carlson and Klein[29] studied university students and a control group of young drivers aged 16-25 to determine

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[28]A. S. Kraus, et al., "Pre-Driving Identification of Young Drivers With a High Risk of Accidents," Journal of Safety Research, Vol. 2, No. 2 (June, 1970), pp. 55-56.

[29]William L. Carlson and David Klein, "Familial vs. Institutional Socialization of the Young Traffic Offender," Journal of Safety Research, Vol. 2, No. 1 (March, 1970), pp. 13-25.

factors which influence accident and violation experience. They concluded that there was a positive correlation between a father's record when compared to the son. They stated that some driving behavior is learned after years of observing the father drive. Other anti-social behavior is a factor when attempting to predict a young driver's record. Grade point averages, entrance examination marks and housing were factors considered in the study.

Discussion of Previous Research

Although much has been written about the teen-aged driver as a result of research, there is little directly related to the 16 year old driver involved in fatal traffic accidents. Most of the research has grouped the 16 year old driver with drivers of greater age as if to say there is no difference between the 16 year old, 17 year old, 18 year old and 19 year old. Several of the studies included the 16 year old in a group which included all those under 21 and at times with all of those under 25, again inferring that there is no difference between the ages. Pelz, Schuman, et. al., have limited age groups to the greatest extent. Kritz and Nilsson used a group of new drivers in their study.

The importance of demographic data, socio-economic factors, emotional and psychological factors, educational factors, and exposure factors are becoming more important as variables which need measuring to determine their importance

in traffic safety and particularly as they relate to the young driver. It was not the purpose of this study to investigate these factors, but rather to present data about the fatal traffic accidents in which 16 year old drivers were involved. At present, the literature does not include this information. Although the data is available, no one has seen fit to present the information and it is the intent of this study to do so.

CHAPTER III

DESIGN AND METHODOLOGY OF THE STUDY

Introduction

The years 1968 and 1969 have shown a dramatic increase in the number of 16 year old Michigan drivers involved in fatal traffic accidents. Preliminary study in this area indicated that very little investigation has been done that dealt exclusively with the 16 year old driver involved in fatal traffic accidents. Previous work has tended to group drivers in catagories of teen-agers, youthful drivers or young drivers.

The study was planned as an exploratory search for the common factors which are descriptive of the fatal traffic accidents of the 16 year old driver.

Although police accident reports have been criticized for not supplying data for viable accident prevention efforts, investigation of the techniques used by police officers investigating fatal traffic accidents has shown a thoroughness quite similar to that followed in the investigation of a homicide. A check was made of the philosophy and policies of the Michigan Department of State Police, two sheriffs departments, a large city police

department, a small city police department, and a township police department to determine the thoroughness of the investigations. The Safety and Traffic Division of the Michigan Department of State Police concurred that the fatal traffic accident reports and supplemental reports supplied data which would provide meaningful information for this study.

A review of the literature revealed that nearly all prior studies regarding young drivers tended to group them rather than separate them by age. Although the studies had revealed common factors in the accidents of young drivers, no such studies were found covering fatal traffic accidents of the 16 year old driver. The literature suggested that in relatively unexplored areas descriptive studies might reveal data which would be valuable in suggesting future research in this area.

It was decided to use the Michigan Department of State's driver record files to determine the driver's accident and violation record and the length of driving experience prior to involvement in a fatal traffic accident.

Sample

The study group sample was the total number of 16 year old Michigan drivers involved in fatal traffic accidents during the years 1967 through 1969.

The Nature of the Variables

The variables were selected from a number of items listed on the fatal traffic accident reports on file with the Michigan Department of State Police and the driver record files of the Michigan Department of State. Prior to their selection, careful consideration was given to those variables which would provide the most extensive and reliable information. Preliminary investigation and consultation with the personnel of the Safety and Traffic Division of the Michigan Department of State Police, Highway Safety Research Institute of the University of Michigan, and the Driver Records Section of the Michigan Department of State provided guidance in the selection of the variables.

The factors of incompleteness and inaccuracy of the accident records were considered to be variables which could influence the relationships inferred from the data. Preliminary investigation indicated that items used in this study and obtained from the accident report forms and driver records were virtually always completed. Those variables used which called for the interpretation by the investigating officer(s) were accepted as expert and/or considered judgement for the purpose of this study.

It was felt that the data collected from the fatal traffic accident record files of the Michigan Department of State Police and the driver record files of the Michigan Department of State would yield information which would allow conclusions to be made about the fatal traffic accidents involving the 16 year old Michigan driver. It was felt that the information gathered from the data would provide a better understanding of this particular fatal traffic accident phase of the total traffic accident problem.

The variables selected were:

Time
Year
Month
Day of week
Hour/period of day

Environment
Light conditions
Weather
Road conditions
Direction of travel
Total number of vehicles involved
Accident type
Road type and location
Number killed
Number injured
Occupancy of vehicle

Driver
Killed
Injured
Violation indicated
Sex
Age
Date of original license application
License restrictions
Accident and violation record prior to fatal accident involvement
Apparent driver condition

Vehicle
Year
Type
Apparent condition

Investigation
Agency
Arrest
Photographs
Re-examination
Traffic engineering

Selection of the Time Period for the Study

After investigating the fatal traffic accident records for the 16 year old drivers involved in fatal traffic accidents from 1963 through 1969, it was determined that from 1963 through 1966 the average number of 16 year old drivers involved in fatal traffic accidents was about 39 (38.75).[1] Therefore, because of the dramatic increase of 16 year old drivers involved in fatal traffic accidents, it was decided to collect data for the year 1967 with 39 drivers recorded, 1968 with 60 drivers recorded, and 1969 with 85 drivers recorded.

The data collection for 1969 was not undertaken until the month of May 1970, allowing four months to pass to be sure that all appropriate information had been received and filed in the Safety and Traffic Division of the

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[1]Michigan Department of State Police, Michigan Traffic Accident Facts, 1967, East Lansing: Department of State Police, p. 42.

Michigan Department of State Police and the driver records section of the Michigan Department of State. The data does not include those individuals who may have expired since collection of the data. A twelve month period, following the date of the accident, was used to make a final tally of fatal traffic accidents and deaths which resulted from injuries sustained in those accidents.

Procedures for Collecting Data

Fatal Traffic Accident Reports

The Safety and Traffic Division of the Michigan Department of State Police supplied a computer readout for the 16 year old drivers involved in fatal traffic accidents for the years 1967 through 1969. The readout contained the following information:

1. Michigan State Police accident report number
2. Date of accident
3. Numerical listing of the county
4. Age of the driver

An alphabetical listing of the counties in Michigan was developed and each accident report number listed for the county was entered. This procedure was followed for each of the three years included in the study.

For the years of 1967 and 1968, the Safety and Traffic Division of the Michigan Department of State Police had microfilmed each accident report and its supplemental data by county and Michigan State Police accident report

number. Using a Kodak Recordak microfilm reader, the researcher recorded applicable data for each fatal traffic accident used in the study.

Since the 1969 fatal accident records had not been microfilmed, the "hard copy," which had been separated by county and filed by number, was screened to record the pertinent information. When difficulty interpreting the accident report data was encountered, a member of the Safety and Traffic Division staff was consulted for clarification, and the information recorded.

Driver Records

The Driver Records Section of the Michigan Department of State suggested that the information desired for inclusion in the study could be acquired from the driver record computer tapes. This suggestion was taken under consideration and a formal request was made for the use of the tape information. The request was approved.

The researcher supplied the Driver Records Section of the Michigan Secretary of State with a list of drivers' license numbers for each 16 year old Michigan licensed driver involved in a fatal traffic accident during the years 1967 through 1969. The computer readout supplied the following information:

1. Name of driver
2. License identification number
3. Date of birth
4. Address
5. Date of original application for a license

6. Restrictions
7. Reportable accidents--place, date, type
8. Violation records--place, date, charge
9. Court action--place, date
10. Points charged against driver
11. Department of State License Appeal Board action
12. Suspension and revocation information
13. Re-examination information
14. Warning letter information

Treatment of the Data

Accident Report Data

A map of Michigan was used to tabulate the number of 16 year old drivers involved in fatal traffic accidents in each county for each year, 1967 through 1969.

The number of male and female drivers involved were tabulated for each year using the following catagories:

1. Michigan licensed drivers
2. Michigan Minor Operator Permit
3. Out of state licensed drivers
4. Michigan Temporary Instruction Permit
5. Michigan Driver Education Certificate
6. No license

Frequency distributions were developed using day of week and time of day for each year. The day was divided into ten time periods, taking into consideration rush hour traffic, noon hour, school dismissal times, and extra class and social activities. The breakdown of the 24 hour day was developed as follows:

12:01 AM - 3:00 AM	1:31 PM - 4:00 PM
3:01 AM - 6:30 AM	4:01 PM - 6:00 PM
6:31 AM - 9:00 AM	6:01 PM - 8:00 PM
9:01 AM - 11:30 AM	8:01 PM - 10:00 PM
11:31 AM - 1:30 PM	10:01 PM - 12:00 PM

A frequency distribution was developed for the day of the week and month of the year for each year.

Frequency distributions were developed for the following catagories for each year:

1. Type of accident

    a. Single vehicle
    b. Two vehicle
    c. Three vehicle
    d. Four vehicle
    e. Railroad crossing
    f. Pedestrian and bicycle

2. Number killed and injured in 16 year old operated vehicle

3. Number killed and injured in other vehicle(s)

4. Number of involvements with the 16 year old operator as the sole occupant

    a. Male - killed/injured
    b. Female - killed/injured
    c. Day/night
    d. Total number killed and injured in the accident
    e. One vehicle
    f. Two vehicles
    g. Three vehicles
    h. Four vehicles
    i. Railroad crossing accident
    j. Pedestrian and bicycle accident

5. Number of involvements with 16 year old operator and one or more occupants using the same catagories listed in number 4.

6. Position of killed, injured and type of injury in/on the 16 year old operated vehicle. The injuries are coded as follows:

    K- Dead
    A- Visible signs of injury, as bleeding wound or distorted member, or had to be carried from the scene
    B- Other visible injury, as bruises, swelling, limping, etc.

C- No visible injury, but complaint of pain or momentary unconsciousness
O- No indication of injury

7. Investigation

   a. At scene
   b. Photographs
   c. Investigating agency
   d. Disposition

8. Apparent physical condition of 16 year old operator

9. Drinking condition

10. Vision obstructions

11. Weather

12. Light condition

13. Kind of locality

14. Roadway

   a. Construction
   b. Surface
   c. Character
   d. Condition

15. Intersection

16. Estimated speed of 16 year old operated vehicle

17. Direction of 16 year old operated vehicle

18. Road type

19. Driver action of 16 year old operator

20. Violation indicated for 16 year old operator

21. Condition of 16 year old operated vehicle

22. Presence of traffic control

23. Type and year of vehicle operated by 16 year old driver

Additional frequency distributions were developed to cover pedestrian and bicycle accidents, farm vehicle accidents, and motorcycle accidents for each year.

Driver Record Data

The driver record data was recorded in two frequency distribution tables.

1. Driving experience - number of months from date of original application for license to the date of the fatal traffic accident involvement listed in months

2. Driving record prior to accident involvement for licensed drivers only

   a. No record (No violation or accident listed)
   b. Violation(s) only
   c. Accident(s) only
   d. Accident(s) and violation(s) only

Summary

The study was planned as an exploratory search for the common factors which are most descriptive of the fatal traffic accidents of the 16 year old driver.

The fatal traffic accident report files of the Michigan Department of State Police and the computer tape driver record files of the Michigan Department of State were used as sources for the data collected and tabulated.

All pertinent information relative to the fatal traffic accidents was taken from all of the fatal traffic accident reports in which 16 year old drivers were involved in the State of Michigan for the years 1967 through 1969.

Driver records were obtained for 91.2 per cent of the 16 year old Michigan licensed drivers involved in the fatal traffic accidents included in the study.

Frequency distributions using rows and columns, and totals and percentages were used to measure and analyze the variables.

It was felt that a descriptive study might reveal common factors contributing to the involvement of the 16 year old in fatal traffic accidents and provide worthwhile leads for curriculum improvement in driver education, changes in the driver licensing procedures and further research.

CHAPTER IV

ANALYSIS OF THE DATA

Introduction

The study was designed to determine certain factors of fatal traffic accidents in Michigan from 1967 through 1969 in which 16 year old drivers were involved.

The data from the fatal traffic accident reports on file with the Michigan Department of State Police were recorded and tabulated by hand. The data from the driver record computer tapes of the Michigan Department of State were recorded and tabulated by hand. The data were tabulated descriptively for analysis and discussion. The data were organized in the following manner for presentation and discussion:

A. A map of the State of Michigan with a tabulation of the number of 16 year old drivers involved in fatal traffic accidents for each county;

B. A frequency distribution of year, month, and day of the week;

C. A frequency distribution of year, day of the week, and time of day;

D. A listing of the type of accident (number of vehicles, train or pedestrian/bicycle) with the number killed and injured in the 16 year old operated vehicle, and the number killed and injured in the other vehicle(s);

E. A listing of the accidents involving more than one 16 year old operator;

F. A frequency distribution of the number of type of accidents where the 16 year old operator was the sole occupant of his vehicle showing the sex of the driver, injury to the driver, day or night, and the total number of fatalities and injuries for one, two, three, and four vehicle accidents, railroad crossing accidents, and pedestrian/bicycle accidents;

G. A frequency distribution of the number and type of accidents where the 16 year old operator was accompanied by one or more passengers using the same variables listed for item 6 above;

H. A frequency distribution of accidents by sex, licensed and unlicensed drivers, and day or night involvement;

I. Apparent physical condition and drinking condition of the driver;

J. A frequency distribution of the position of the occupants in the 16 year old operated vehicle showing fatalities and type of injury sustained;

K. A listing of the type and year of the vehicle operated by sex;

L. Apparent vehicle condition as judged in the considered opinion of the investigating officer(s);

M. Environmental conditions;

1. Weather
2. Light conditions
3. Kind of locality
4. Roadway construction
5. Roadway surface
6. Roadway character
7. Listed roadway defects
8. Vision obstructions
9. Intersection
10. Speed estimate
11. Direction
12. Road type
13. Driver action
14. Traffic control

N. Indicated violation in the considered opinion of the investigating officer(s);

O. Investigating agency;

1. Photographs
2. Agency
3. Disposition
4. Remarks and recommendations

P. Special catagories of fatal traffic accidents;

1. Unpaved roadway accidents
2. Farm vehicle accidents
3. Motorcycle accidents
4. Pedestrian and bicycle accidents
5. Table of drivers by sex indicating
   a. licensed-Michigan, out of state, minor operator
   b. temporary instruction permit
   c. driver education certificate
   d. no license
   e. length of driving experience in months from date of original application. Michigan licensed drivers only
6. Licensed Michigan drivers records prior to the fatal accident involvement
   a. no record
   b. conviction of violation
   c. reportable accident(s)
   d. accident(s) and violation(s)
7. Unlicensed drivers fatal accidents by sex, sole or multiple occupancy, day or night, and type of accident

After collecting the data from the accident report forms, it was discovered that the year 1967 had 39 16 year old drivers involved in fatal traffic accidents. For 1967, one of the accidents listed by the Michigan Department of State Police was discarded because the driver was too young, however, a complete search of the records revealed an accident which was not listed on the original computer read-out. The Michigan Department of State Police computer readout for 1968 listed 60 drivers. A search of the reports

for 1968 yielded an additional 16 year old driver for a total of 61. The computer readout for 1969 listed 85 drivers. The actual count of 16 year old drivers involved in fatal traffic accidents in Michigan was: 1967-39; 1968-61; 1969-84; for a total of 184.

The number of accidents in which 16 year old drivers were involved was 181. In 1967 there occurred one accident in which two 16 year old drivers were involved, and in 1968 there occurred two such accidents. The 1969 accidents had no more than one 16 year old in each accident for a total of 84.

The number of accidents for each year were: 1967-38; 1968-59; and 1969-84 for a total of 181 fatal traffic accidents in which 16 year old drivers were involved.

In 1968, five of the 16 year old drivers were not Michigan licensed drivers. In 1969, one 16 year old driver was not a Michigan licensed driver.

Analysis of the Data

The maps, Figures 4.1, 4.2, 4.3, 4.4, of the State of Michigan show the number of 16 year old drivers involved in fatal traffic accidents for each county. The number of accidents was greatest in the counties of southern lower Michigan. The population centers are located in this area.

The maps indicate that the accidents happened in and around those counties having large cities. Of the 181 fatal

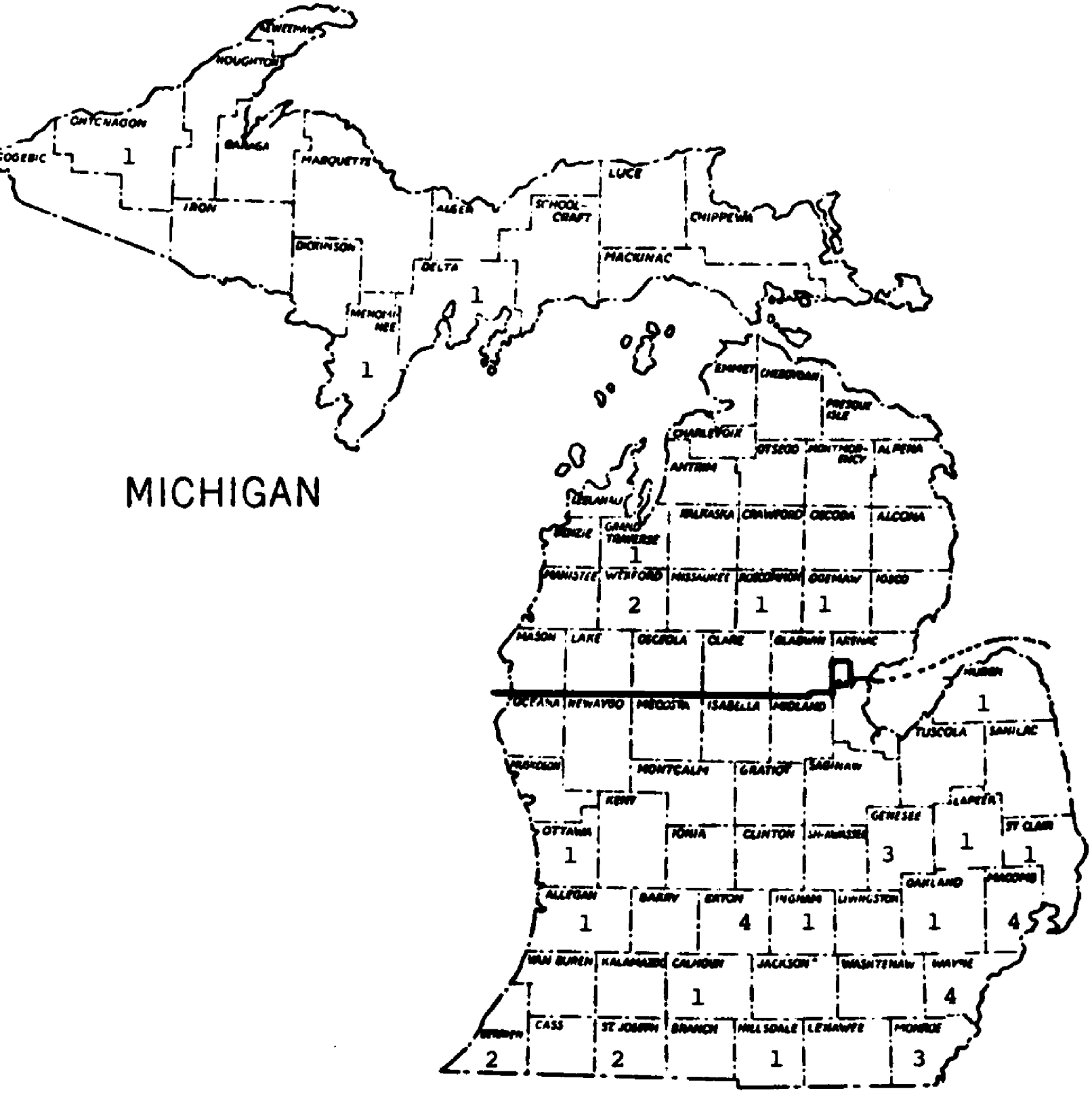

FIGURE 4.1.--Number of 16 Year Old Drivers Involved in Fatal Traffic Accidents By County For 1967.

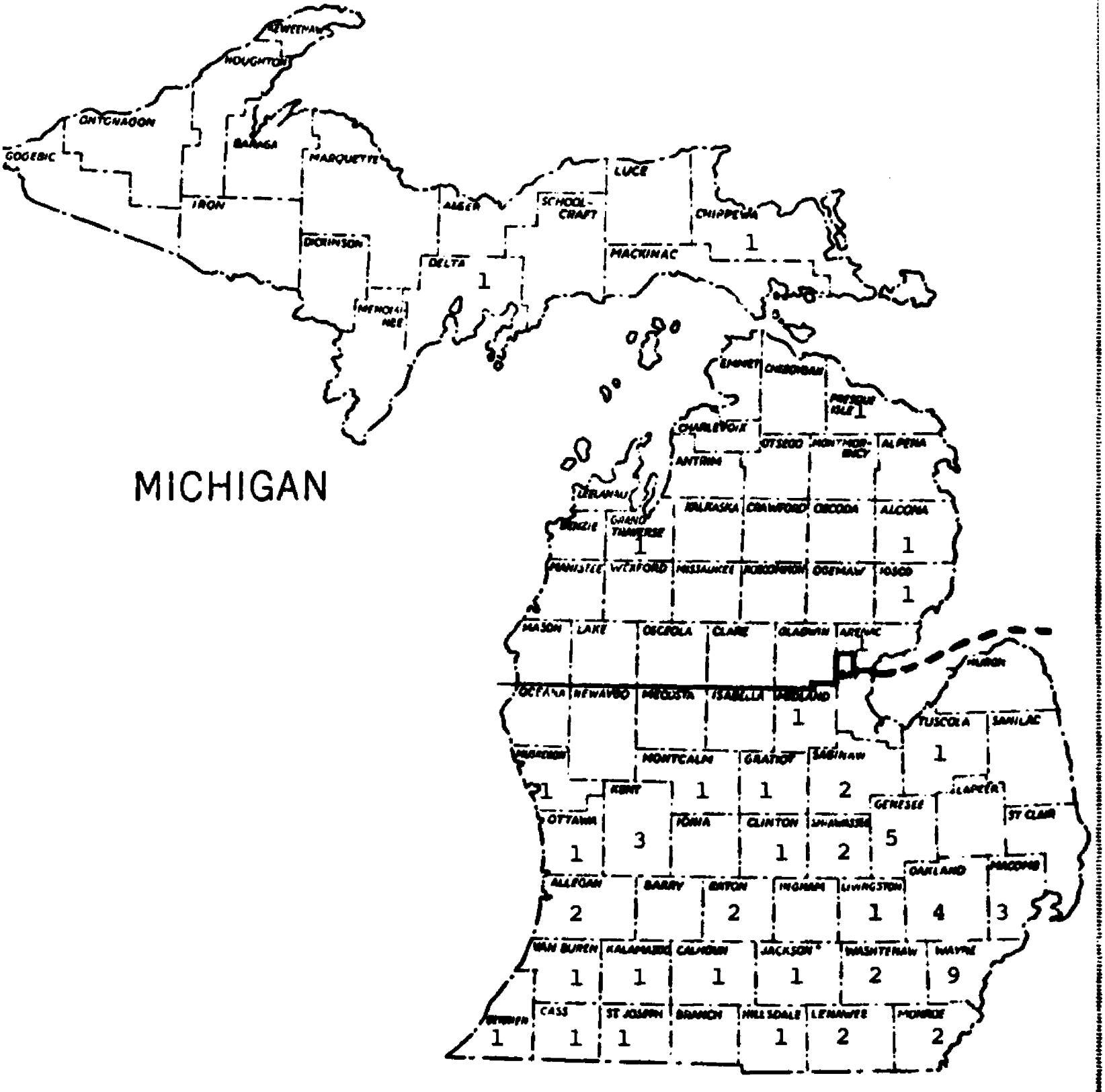

FIGURE 4.2.--Number of 16 Year Old Drivers Involved in Fatal Traffic Accidents By County For 1968.

FIGURE 4.3.--Number of 16 Year Old Drivers Involved in Fatal Traffic Accidents By County For 1969.

FIGURE 4.4.--Total Number of 16 Year Old Drivers Involved in Fatal Traffic Accidents By County for 1967 - 1969.

traffic accidents in which a 16 year old driver was involved, 28.7 per cent were investigated by city police departments.

A line was drawn on the northern boundary of Oceana, Newaygo, Mecosta, Isabella, Midland, Bay, and Huron counties to indicate the southern lower peninsula. The tally for the counties south of this line showed 159 (86.4 per cent) 16 year old drivers involved in fatal traffic accidents.

The counties of Kent, Oakland, and Wayne showed the greatest increase in the number of accidents from 1967 through 1969. The county of Eaton showed the greatest decrease from 1967 through 1969. For the years 1967, 1968, and 1969, Kent County tallied 0, 3, and 6; Oakland County tallied 1, 4, and 10; and Wayne County tallied 4, 9, and 11. Eaton County tallied 4, 2, and 0.

The frequency distribution of the number of 16 year old drivers involved in fatal traffic accidents by year, month and day of the week, Table 4.1, indicates that the months of November, August, and September, with 25, 22, and 21 drivers respectively had the greatest number of involvements. January and February, with 3 and 9 drivers respectively, had the lowest totals. November had the highest percentage, 13.6, of the drivers involved for the three year period.

Tuesdays had a total of 16 drivers involved for the lowest total for the days of the week. Saturdays, Sundays, Fridays, and Thursdays had 39, 29, 28, and 27 drivers involved respectively. Saturdays had the highest percentage, 21.2, of the drivers involved for the three year period.

TABLE 4.1.--Distribution of Drivers Involved by Year, Day, and Month.

	Sunday				Monday				Tuesday				Wednesday				Thursday				Friday				Saturday				Total				Per Cent
	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	of Total
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	o	0	1	2	3	1.63
Feb	0	1	0	1	0	1	0	1	0	1	1	2	0	0	1	1	0	0	2	2	0	0	2	2	0	0	0	0	0	3	6	9	4.89
Mar	0	1	1	2	0	0	0	0	0	0	1	1	0	1	2	3	0	1	0	1	0	0	2	2	0	3	2	5	0	6	8	14	7.61
Apr	1	0	1	2	2	1	0	3	0	1	1	2	0	0	1	1	0	0	1	1	0	0	1	1	1	0	0	1	4	2	5	11	5.98
May	1	1	2	4	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	3	0	4	2	6	2	1	2	5	4	8	8	20	10.87
Jun	0	2	4	6	2	0	0	2	0	0	0	0	0	0	2	2	0	1	0	1	1	2	2	5	0	1	1	2	3	6	9	18	9.78
Jul	0	0	0	0	0	1	1	2	0	0	1	1	0	0	2	2	1	0	1	2	1	2	1	4	0	0	3	3	2	3	9	14	7.61
Aug	0	1	2	3	0	1	3	4	1	1	0	2	1	1	0	2	1	1	4	6	1	1	0	2	1	1	1	3	5	7	10	22	11.96
Sept	0	2	1	3	2	0	1	3	1	1	0	2	1	0	1	2	1	0	4	5	0	0	0	0	1	3	2	6	6	6	9	21	11.41
Oct	0	1	1	2	0	2	0	2	1	1	2	4	0	0	1	1	1	0	1	2	0	0	2	2	0	0	2	2	2	4	9	15	8.15
Nov	3	1	1	5	3	0	0	3	0	0	1	1	2	0	1	3	1	2	0	3	0	2	0	2	1	5	2	8	10	10	5	25	13.59
Dec	1	0	0	1	0	2	0	2	0	1	0	1	1	2	1	4	0	0	1	1	0	0	0	0	1	0	2	3	3	5	4	12	6.52
TOTAL	6	10	13	29	9	9	5	23	3	6	7	16	5	4	13	22	6	6	15	27	3	11	14	28	7	15	17	39	39	61	84	184	100.00

Sundays in June and November, Thursdays in August and September, Fridays in May and June, and Saturdays in November and September were the days with the highest involvements for the months indicated.

The frequency distribution of the number of 16 year old drivers involved in fatal traffic accidents by year, day of the week, and time period of the day, Table 4.2, indicates that the 8:01 p.m. - 10:00 p.m. period, with 34 drivers involved and the 6:01 - 8:00 p.m. period, with 30 drivers involved had the highest number of involvements. Those two time periods accounted for 34.78 per cent of the total.

The 10:01 p.m. - 12:00 p.m. period on Fridays had eleven, 8:01 p.m. - 10:00 p.m. on Wednesdays had ten, 6:01 p.m. - 8:00 p.m. on Thursdays had nine, and 6:01 p.m. - 8:00 p.m. on Saturdays had eight. The three time periods for the four days mentioned above accounted for thirty-eight 16 year old drivers involved in fatal traffic accidents. The thirty-eight represented 20.65 per cent of the total.

Sundays through Wednesdays and Saturdays during the time period of 11:31 a.m. - 6:00 p.m. indicated a relatively high incidence of accident involvement. That 32 1/2 hour segment of a full week tallied 51 drivers involved, representing 27.72 per cent of the total.

TABLE 4.2.--Distribution of Drivers Involved by Year, Day, and Time.

	Sunday				Monday				Tuesday				Wednesday				Thursday				Friday				Saturday				Total				Per Cent of Total
	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	
12:01-3:00 AM	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	3	4	0	4	4	8	4.38
3:01-6:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.54
6:31-9:00 AM	1	0	0	1	1	0	0	1	0	0	1	1	1	0	0	1	0	1	1	2	0	0	0	0	0	0	0	0	3	1	2	6	3.26
9:01-11:30 AM	1	0	2	3	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	1	0	0	1	1	1	1	3	4	2	3	9	4.89
11:31-1:30 PM	1	3	1	5	1	2	1	4	0	2	0	2	2	0	2	4	1	1	0	2	0	1	0	1	0	0	3	3	5	9	7	21	11.41
1:31-4:00 PM	1	1	2	4	0	4	1	5	1	0	3	4	1	1	1	3	0	0	1	1	0	2	1	3	1	5	0	6	4	13	9	26	14.13
4:01-6:00 PM	1	2	2	5	3	0	0	3	0	3	2	5	0	1	2	3	1	0	1	2	0	1	0	1	3	1	2	6	8	8	9	25	13.59
6:01-8:00 PM	0	0	2	2	1	1	2	4	1	0	0	1	0	0	1	1	2	0	7	9	1	1	3	5	1	4	3	8	6	6	18	30	16.30
8:01-10:00 PM	1	1	2	4	3	1	0	4	1	0	1	2	1	2	7	10	0	0	3	3	1	2	3	6	0	2	3	5	7	8	19	34	18.48
10:01-12:00 PM	0	1	1	2	0	1	0	1	0	0	0	0	0	0	0	0	1	3	1	5	0	4	7	11	1	1	2	4	2	10	11	23	12.50
Not Listed																	0	0	1	1-(Daylight)											1	1	0.54
TOTAL	6	10	13	29	9	9	5	23	3	6	7	16	5	4	13	22	6	6	15	27	3	11	14	28	7	15	17	39	39	61	84	184	100.00

The 6:01 p.m. to midnight time period for Thursdays through Saturdays accounted for 56 drivers involved in an 18 hour time segment, representing 30.43 per cent of the total.

Table 4.3 shows the type of accidents in which the 16 year old drivers were involved. The total number killed and injured in all accidents is given. The number killed and injured in the 16 year old operated vehicle, and the number killed and injured in other vehicles are included.

The pedestrian/bicycle category shows a total of 33 accidents in which 35 people were killed and one injured. The fatalities and the injured were all pedestrian or bicyclists. The driver and occupant deaths and injuries are included in the 16 year old vehicle section. The 33 pedestrian/bicycle accidents accounted for 18.23 per cent of the total number of accidents.

The 50 single vehicle accidents reflect 27.62 per cent of the total. Two vehicle accidents accounted for 40.88 per cent of the total. Three vehicle accidents accounted for 8.29 per cent of the total. Four vehicle accidents accounted for 1.66 per cent of the total. Railroad crossing accidents accounted for 3.31 per cent of the total.

The fatalities, 56.71 per cent, and injuries, 62.30 per cent, were sustained in the vehicle operated by the 16 year old driver. Fatal injuries sustained by pedestrians or bicyclists accounted for 15.15 per cent of the total.

ABLE 4.3.--Type of Accident.

	Number of Accidents				
	1967	1968	1969	Total	Per Cent of Total
ngle Vehicle	12	13	25	50	27.62
o Vehicle	14*	26	34	74	40.88
ree Vehicle	3	6**	6	15	8.29
ur Vehicle	0	1	2	3	1.66
ain	1	3	2	6	3.31
destrian & Bicyclist	8(9K)	9(10K,2I)	16(16K,1I)	33	18.23
				181	100.00
mber killed in 16 year old vechicle	26	41	64	131	56.71
mber injured in 16 year old vehicle	42	69	79	190	62.30
mber killed in other vehicle(s)	12	30	18	65	28.14
mber injured in other vehicle(s)	10	40	62	112	37.38

Total Number Killed - 231
Total Number Injured - 305

967 - two 16 year old drivers involved in a single two vechilce accident.

1968 - two three vehicle accidents had two 16 year old drivers involved in each.

Fatalities and injuries in the other vehicles accounted for 28.14 per cent and 37.38 per cent of the respective totals.

Table 4.4 is a frequency distribution of accident involvement by sex, licensed/unlicensed, day/night for the years included in the study.

The number of male drivers who were unlicensed totalled 12.50 per cent and the number of female drivers who were unlicensed totalled 3.26 per cent.

Of the 184 drivers involved, 101 (54.89 per cent) were involved during the day.

Twenty-nine unlicensed drivers were involved; 21 had their accident during the day.

The distribution of licensed driver involvement shows 64 males and 16 females in day accidents, and 61 males and 14 females in night accidents.

Of the 148 male drivers involved, 125 were licensed. This was 67.95 per cent of the total number of drivers.

Thirty-six female drivers were involved. Of these, 30 were licensed. This was 16.3 per cent of the total number of drivers.

Male drivers accounted for 80.43 per cent of the total number of drivers. Female drivers accounted for 19.57 per cent of the total number of drivers.

TABLE 4.4.--Accidents by Sex.

	Day/Night -- Licensed/Unlicensed								Total	Per Cent of Total
	Day				Night					
	1967	1968	1969	Sub-Total	1967	1968	1969	Sub-Total		
Male										
Licensed	11	26*	27	64	7	21*	33**	61	125	67.94
Unlicensed	5	5	6	16	3	0	4	7	23	12.50
Female										
Licensed	7	3	6	16	3	5	6	14	30	16.30
Unlicensed	2	1	2	5	1	0	0	1	6	3.26
Total	25	35	41	101	14	26	43	83	184	100.00

*5 out-of-state - 3 males/day, 2 males/night

**1 out-of-state - male/night

Table 4.5 was developed to indicate the type of driving permit, if any, for each driver.

The table shows that 29 of the 178 Michigan resident drivers were unlicensed; this was 16.3 per cent.

Of the male Michigan residents, 16.2 per cent were unlicensed and 16.67 per cent of the females were unlicensed.

It should be noted that in 1967, of the three 16 year old drivers operating with a Driver Education Certificate, only the female was accompanied by a licensed adult, her father.

None of the 16 year old drivers driving on a Temporary Instruction Permit were accompanied by a licensed adult.

All of the out-of-state drivers were licensed males. Two from Ohio, one each in 1968 and 1969 and two from Illinois in 1968 were involved. One 16 year old driver was from Indiana and one from Tennessee involved in 1968.

TABLE 4.5.--Distribution of Drivers by License.

	Male				Female			
	67	68	69	Total	67	68	69	Total
Licensed								
Michigan	18	39	52	109	8	7	12	27
Minor Original	0	3	7	10	2	1	0	3
Out-of-State	0	5	1	6	0	0	0	0
Temporary Instruction Permit	0	1	0	1	1	1	0	2
Driver Education Certificate	2	0	0	2	1	0	0	1
No License or Permit	6	4	10	20	1	0	2	3
TOTAL	26	52	70	148	13	9	14	36

Table 4.6 indicates the number of 16 year old drivers involved in fatal traffic accidents when he was the sole occupant of the vehicle he was using. The table was developed to show the type of accident in which the 16 year old operator was involved. The table was divided into categories of; sex of the driver, driver injury or death resulting from the accident, day or night involvement and the total number of fatalities and injuries which resulted from the accidents.

There were no four vehicle accidents reported in which a 16 year old driver was the sole occupant of the vehicle.

There were 68 drivers 16 years old involved in fatal traffic accidents listed in the table. Thirty-four of the drivers were involved in accidents during the day and 34 were involved at night.

Sixty of the drivers were males of which 30 were killed. Nineteen of the male drivers were reported as not injured, thus leaving 11 male drivers who suffered an injury in the accident.

The 8 female drivers were divided as follows: Two injured, both in two vehicle accidents, one fatal in a single vehicle accident and one fatal in a two vehicle accident. Four of the female drivers were reported as suffering no injury.

TABLE 4.6.--Number of 16 Year Old Drivers--Sole Occupant.

Type of Accident	Male Killed				Male Injury Type O/ABC				Female Killed				Female Injury Type O/ABC				Day				Night				Total # Killed				Total # Injured			
	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T
One Veh.	1	3	7	11	0/0	0/0	0/2	0/2	1	0	0	1	0	0	0	0	2	0	3	5	0	3	4	7	2	3	7	12	0	0	0	0
Two Veh.	2	5	6	13	1/1	2/2	1/2	4/5	0	1	0	1	0/1	1/1	0	1/2	3	6	4	13	2	6	6	14	6	13	10	29	4	12	16	32
Three Veh.	1	1	1	3	0/1	2/3	1/0	3/4	0	0	0	0	1/0	0	0	1/0	2	3	1	6	1	3	1	5	3	5	2	10	2	12	3	17
Four Veh.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Railroad Crossing	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	1	0	1	1	2	0	3	0	0	0	0
Pedestrian/ Bicycle	0	0	0	0	1/0	4/0	7/1	12/1	0	0	0	0	0	1/0	1/0	2/0	1	3	4	8	0	2	5	7	1	5	9	15	0	3	2	5
Total	5	11	14	30	1/3	8/5	9/5	18/13	1	1	0	2	1/1	2/1	1/0	4/2	9	13	12	34	3	15	16	34	13	28	28	69	6	27	21	54

Key to Injury Type

O - No indication of injury.

A - Visible signs of injury, as bleeding wound or distorted member, or had to be carried from the scene.

B - Other visible injury, as bruises, swelling, limping, etc.

C - No visible injury, but complaint of pain or momentary unconsciousness.

Seven of the 12 single vehicle accident drivers were recorded as driving at night at the time of the accident.

Six of the 11 three vehicle accident drivers were recorded as driving during the day at the time of the accident.

Two of the 3 railroad crossing accidents happened during the day; all of the drivers were males.

Eight of the 15 drivers involved in pedestrian/bicycle accidents were driving during the day at the time of the accident.

There were 69 traffic fatalities and 54 injuries recorded in the accidents.

Thirteen of the 15 drivers involved in pedestrian/ bicylce accidents were males.

Eleven of the 12 drivers involved in single vehicle accidents were males.

Twenty-three of the 27 drivers involved in two vehicle accidents were males.

Ten of the 11 drivers involved in three vehicle accidents were males.

Only one injury was reported to a driver (male) involved in a pedestrian/bicycle accident.

The number of drivers involved in two vehicle accidents totalled 39.7 per cent.

Table 4.7 indicates the number of 16 year old drivers involved in fatal traffic accidents when the 16 year old

TABLE 4.7.--Number of 16 Year Old Drivers--Multiple Occupancy.

Type of Accident	Male Killed				Male Injury Type O/ABC				Female Killed				Female Injury Type O/ABC				Day				Night				Total # Killed				Total # Injured			
	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T
One Veh.	2	1	5	8	0/3	0/8	4/5	4/16	0	0	1	1	0/5	0/1	1/2	1/8	5	4	7	16	5	5	11	21	11	14	27	52	23	26	29	78
Two Veh.	0	2	8	10	1/6	0/8	2/5	3/19	1	1	2	4	1/1	1/2	1/5	3/8	7	10	11	28	3	4	13	20	15	26	31	72	21	49	63	133
Three Veh.	0	0	0	0	0/0	2/1	1/3	3/4	0	0	0	0	0	0	0	0	0	1	1	2	0	2	3	5	0	4	4	8	0	5	14	19
Four Veh.	0	0	1	1	0/0	0/0	1/0	1/1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	2	0	2	3	5	0	3	8	11
Railroad Crossing	0	0	1	1	0/0	0/1	0/0	0/1	0	0	0	0	0/0	0/0	0/1	0/1	0	1	1	2	0	0	1	1	0	3	3	6	0	2	2	4
Pedestrian/ Bicycle	0	0	0	0	4/1	4/0	5/1	13/2	0	0	0	0	2/0	0/0	1/0	3/0	4	4	5	13	3	0	2	5	7	5	7	19	4	0	2	6
Total	2	3	15	20	5/10	6/18	13/14	24/43	1	1	3	5	3/6	1/3	3/8	7/17	16	20	26	62	11	12	31	54	33	54	75	162	48	85	118	251

Key to Injury Type

O - No indication of injury.

A - Visible signs of injury, as bleeding wound or distorted member, or had to be carried from the scene.

B - Other visible injury, as bruises, swelling, limping, etc.

C - No visible injury, but complaint of pain or momentary unconsciousness.

vehicle had two or more occupants. The table was developed to show the type of accident in which the 16 year old driver was involved. The table was divided into categories of: sex of driver; driver injury or death resulting from the accident; day or night involvement and the total number of fatalities and injuries which resulted from the accidents.

There were 116 drivers 16 years old involved in fatal traffic accidents listed in the table. Sixty-two of the drivers were involved in accidents during the day and 54 were involved at night.

Ninety-three of the drivers were males of which 21 were killed. Twenty-three of the male drivers were reported as not injured. Forty-nine of the male drivers were reported as suffering an injury in the accident.

The female drivers were recorded as follows: 5 killed, 11 injured and 7 reported as not suffering an injury.

Twenty-one of the 38 drivers involved in single vehicle accidents were driving at night. Of the 38 drivers involved in single vehicle accidents, 28 were males (8 killed, 17 injured and 3 no injury reported). One of the female drivers was killed in a single vehicle accident. Eight of the females were injured and one was reported as suffering no injury.

There were 47 drivers involved in the two vehicle accidents. Thirty-two of the 47 were males (10 killed, 19 injured and 3 reported as suffering no injury). Four

of the females involved in the two vehicle accidents were killed, 8 injured and 3 no injury reported.

Seven drivers were involved in three vehicle accidents. Four were reported as injured and 3 not injured. All were males.

Three drivers (male) were involved in four vehicle accidents. One was killed, one injured and one not injured.

Three railroad crossing accidents were reported. One male driver was killed, one injured and one female driver was injured.

Eighteen drivers were involved in pedestrian/bicycle accidents. Fifteen of the 18 were male drivers and two were injured. None of the three female drivers were injured.

Sixteen of the 37 drivers involved in single vehicle accidents were driving during the day.

Twenty-eight of the 47 drivers involved in two vehicle accidents were driving during the day.

Five of the seven drivers involved in three vehicle accidents were driving at night.

Two of the three drivers involved in four vehicle accidents were driving at night.

Two of the three drivers involved in railroad crossing accidents were driving during the day.

Thirteen of the 18 drivers involved in pedestrian/ bicycle accidents were driving during the day.

The number of drivers involved in two vehicle accidents totalled 40.52 per cent.

The number of drivers involved in single vehicle accidents totalled 32.76 per cent.

There were 162 fatalities and 251 injuries reported in the accidents.

In Table 4.8 the positions, fatalities and type of injuries or no complaint of injury were tabulated from the accident report form. Motorcycle accidents which involved a passenger were tabulated as passenger riding rear center. One accident had the passengers riding on the outside of the vehicle on the fenders (two right front, one right rear and one left rear) and they were tabulated as riding front right, right rear and left rear respectively. There was a passenger riding in the front right position in addition to the driver. Vehicles involving farm tractors which had passengers riding were tabulated as follows: passenger on draw bar--rear center, passenger on left--left rear, and passenger on right--right front.

A total of 432 persons were riding in/on the 16 year old operated vehicle. Two hundred, forty-eight or 57.41 per cent of the people were passengers. One hundred eleven or 25.69 per cent of the total had no complaint of injury recorded. Fifty-four of the 111 were drivers having no complaint of injury.

One hundred sixty-four of the passengers were males.

TABLE 4.8.--Position of Killed and Injured in 16 Year Old Operated Vehicle.

	Killed			Injury Type A			B			C			O			Total			Total
	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	
Driver																			
Male	7	14	29	8	20	14	2	3	3	2	1	2	7	14	22	26	52	70	148
Female	2	2	3	7	3	4	0	1	1	0	0	2	4	3	4	13	9	14	36
Sub Total	9	16	32	15	23	18	2	4	4	2	1	4	11	17	26	39	61	84	184
Passenger(s)																			
Front Center																			
Male	0	0	2	1	1	1	0	0	0	0	0	2	2	2	1	3	3	6	12
Female	1	2	1	3	2	2	1	1	0	0	0	0	2	0	4	7	5	7	19
Front Right																			
Male	6	7	16	3	7	12	0	3	3	0	0	1	5	4	6	14	21	38	73
Female	2	3	5	2	4	4	2	1	2	0	0	0	2	2	5	8	10	16	34
Rear Left																			
Male	3	5	2	2	1	4	0	0	3	0	0	0	1	2	3	6	8	12	26
Female	0	1	0	0	4	1	1	1	0	0	0	1	0	2	0	1	8	2	11
Rear Center																			
Male	2	0	2	0	3	4	0	1	1	2	0	2	1	2	0	5	6	9	20
Female	1	2	0	3	3	0	0	0	0	0	0	0	1	2	0	5	7	0	12

TABLE 4.8.--Continued.

	Killed			Injury Type: A			B			C			O			Total			
	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	Total
Right Rear																			
Male	1	4	4	4	4	6	0	0	0	0	0	2	1	5	2	6	13	14	33
Female	0	1	0	0	5	1	0	0	0	0	0	1	0	0	0	0	6	2	8
Sub Total	16	25	32	18	34	35	4	7	9	2	0	9	15	21	21	55	87	106	248
Total	25	41	64	33	57	53	6	11	13	4	1	13	26	38	47	94	148	190	432

Key to injury type

O - No indication of injury.
A - Visible signs of injury, as bleeding wound or distorted member, or had to be carried from the scene.
B - Other visible injury, as bruises, swelling, limping, etc.
C - No visible injury, but complaint of pain or momentary unconsciousness.

One hundred seven or 43.15 per cent of the passengers were riding in the right front of the vehicle. Thirty-nine of the passengers riding in the front right were killed and 32 passengers were tabulated in the A injury category. The killed and A injury classifications for the right front were 66.36 per cent of the 107 riding in that position.

The right rear position was the next most occupied with 41. Ten of the 41 were fatalities. Twenty were classified in the A injury category. The killed and A injury classifications for the right rear were 73.17 per cent of the 41 riding in that position.

Sixty of the 148 male drivers were killed. Forty-two males were classified as showing an A type injury. One hundred two or 68.94 per cent of the male drivers were reported as killed or classified as having an A type injury. Forty-three of the 148 male drivers were reported as having no complaint of injury.

Seven of the 36 female drivers were killed. Fourteen or 38.89 per cent were classified as having an A type injury. Twenty-one or 58.33 per cent of the female drivers were killed or classified as having an A type injury. Eleven of the 36 female drivers were reported as having no complaint of injury.

One hundred thirty or 30.09 per cent of the total number of occupants were killed.

One hundred forty-three or 33.10 per cent of the total number of occupants were reported as suffering an A type injury.

Thirty or 6.94 per cent of the total number of occupants were reported as suffering a B type injury.

Eighteen or 4.17 per cent of the total number of occupants were reported as suffering a C type injury.

The rear center and front center positions were reported as having the least number of occupants. The rear center was tabulated as having 32 occupants and the front center had 31 occupants. The A type injury was reported most frequently for both positions.

The rear left position had 37 occupants. Twnety-six were males (ten killed, seven with an A type injury, three with a B type injury and six reported as having no complaint of injury). Eleven females occupied the rear left position (one killed, five with an A type injury, two B type injuries, one C type injury and two having no complaint of injury).

Tables 4.9 and 4.10 were developed to indicate the type and year of vehicle, respectively, the 16 year old driver was operating at the time of involvement in a fatal traffic accident. In 20 of the cases reported, the type of vehicle was classified as a sedan, coach or passenger car. The sport vehicle category was limited to Mustang, Camaro, and the Triumph type. Compact vehicles were limited to the Falcon, Corvair, Valiant, Volkswagon type. The cycle

TABLE 4.9.--Type of Vehicle Involved.

	Male				Female			
	67	68	69	Total	67	68	69	Total
Passenger Car								
Sedan/Coach/passenger car	2	4	7	13	4	1	2	7
2 door	4	19	20	43	3	1	3	7
4 door	1	9	10	20	1	5	4	10
Wagon	2	6	7	15	1	1	1	3
Convertible	2	0	5	7	1	0	1	2
Sport	0	2	2	4	1	0	0	1
Compact	4	1	8	13	2	0	2	4
Dune Buggy			2	2				
Truck	2	1	2	5	0	1	1	2
Cycle	5	9	6	20				
Go Cart	0	1		1				
Tractor	4		1	5				
Total	26	52	70	148	13	9	14	36

TABLE 4.10.--Model Year of Vehicle Involved.

Year of Vehicle	Male				Female			
	67	68	69	Total	67	68	69	Total
1959 and earlier	3	1	2	6	0			
1960	1	3	1	5	0			
1961	1	3	8	12	1			1
1962	2	2	6	10	1			1
1963	2	5	4	11	1		2	3
1964	3	8	8	19	3	1	1	5
1965	3	8	10	21	2	2	3	7
1966	4	5	12	21	3		5	8
1967	5	7	6	18	2	3	1	6
1968		8	6	14		3		3
1969			6	6			2	2
Not listed	2	2	1	5				
Total	26	52	70	148	13	9	14	36

classification included minibikes. The truck category included dump, stake and pickups.

The year of vehicle segment of the table was developed to include vehicles from 1959 and before, through 1969. In five instances, the year of the vehicle was not included on the report. This occurred when the vehicles were tractors, homemade (go cart) or minibikes.

Twenty of the drivers were operating motorcycles, including minibikes, and all were male operators. Nine of the 20 drivers were involved in a fatal traffic accident in 1968.

Five of the drivers, all male, were operating a tractor. Four of the drivers were operating the vehicle in 1967.

The two door vehicle was driven by 43 of the male drivers. In 1968 and 1969, the two door vehicle was operated in the greatest numbers by the male 16 year old. In 1968, 19 of the 52 male drivers were reported as driving a two door vehicle. In 1968, 20 of the 70 male drivers were reported as driving a two door vehicle. The percentage, 36.54, of male drivers operating two door vehicles in 1968 was 7.97 per cent greater than for the same situation in 1969.

Two door and four door vehicles were reported for 17 of the 36 female drivers, seven and ten respectively.

In 1967, 15 of the 26 male drivers and 10 of the 13 female drivers were operating vehicles of 1964 through 1967 vintage.

In 1968, 36 of the 52 male drivers were operating vehicles of 1964 through 1968 vintage. Six of the nine female drivers were operating 1967 (3) and 1968 (3) vehicles.

In 1969, 30 of the 70 male drivers were operating vehicles of 1964 through 1966 vintage. Eight of the 14 female drivers in 1969 were operating 1965 (3) and 1966 (5) vehicles.

1965 and 1966 vehicles were represented by a total of 57 of the 184 operated by the 16 year old driver.

New vehicles, those of the year in which the 16 year old drivers was involved are represented in Table 4.11.

TABLE 4.11.--New Vehicles.

Year	Number of Current Year Vehicles	Per Cent of Total Vehicles
1967	7	17.95
1968	11	18.03
1969	8	9.52

Three female drivers operated a vehicle involved in a fatal traffic accident in 1967-69 which was 7 years old or older. In 1969, 23 (21 males, 2 females) of the 16 year

old drivers involved in a fatal traffic accident were driving a vehicle 7 years old or older.

The condition of the vehicle as reported by the investigating officer(s) is represented in Table 4.12.

TABLE 4.12.--Vehicle Condition.

	1967	1968	1969	Total
Defective brakes	0	1	1	2
Defective lights	1	1	1	3
Defective steering	0	0	0	0
Defective tires	0	2	3	5
Other				
No lights	1			1
No front bumper		1		
No fenders			1	
Not known if defective	11	27	33	71
No defect	24	29	46	99
Not listed	3	1	1	5
				188

Two of the vehicles had two or more defects to account for the total of 188. One report listed not known if defective had listed tires as being defective on the same entry line.

Careful investigation of the accident report indicated that the 71 entries for not known if defective resulted from the fact that the vehicle being operated by the 16 year old driver was damaged to such an extent that it was relatively impossible for the investigating officer(s) to determine any defect except the obvious.

Ninety-nine or 53.8 per cent of the vehicles operated by the 16 year old drivers were listed as having no defect in the considered opinion of the investigating officer(s).

Thirteen instances of defective vehicle equipment were listed. The actual number of vehicles listed as being defective was nine.

Table 4.13 has listed the apparent physical condition of the 16 year old driver as recorded by the investigating officer(s).

TABLE 4.13.--Apparent Physical Condition.

	1967	1968	1969	Total	Per Cent of Total
Ill	0	0	0		
Fatigued	0	0	0		
Asleep	0	1	1	2	1.09
Other	0	1	0	1	0.54
Normal	29	41	50	120	65.22
Condition Not Known	6	18	26	50	27.17
Restrictions	-	-	-	-	
Not Listed	4	0	7	11	5.98
Total				184	100.00

One hundred twenty or 65.21 per cent of the 16 year old drivers appeared in normal physical condition. Fifty or 27.17 per cent were listed as Condition Not Known. The accident report indicated that of the drivers listed as Condition Not Known, all were fatalities.

Two drivers were listed as Asleep and one had Other recorded. The report which had Other checked, also had Unknown written on the entry line.

Eleven were not listed on the report.

All drivers having restrictions (i.e., glasses) listed on their license were operating under the imposed restrictions.

The drinking condition of the 16 year old driver involved in a fatal traffic accident, 1967-69 was listed in Table 4.14.

TABLE 4.14.--Drinking Condition.

	1967	1968	1969	Total	Per Cent of Total
Under Influence					
Not Under Influence					
Influence Not Known	1		11	12	6.52
Had Not Been Drinking	30	47	49	126	68.48
Not Known if Drinking	5	12	17	34	18.48
Not Listed	3	2	7	12	6.52
Total				184	100.00

One hundred twenty-six or 68.48 per cent were listed as Had Not Been Drinking by the investigating officer(s). Thirty-four or 18.47 per cent were listed by the investigating officer(s) in the category under Not Known if Drinking. All of the drivers checked Not Known if Drinking were also listed as fatalities.

Twelve of the drivers drinking conditions were not listed.

Twelve or 6.52 per cent were checked Influence Not Known. In 1968, none of the drivers were listed in the Influence Not Known category. In 1969, eleven of the 84 drivers involved were checked Influence Not Known. This was 13.10 per cent of the drivers involved in 1969 and 5.98 per cent of the total 184 of the drivers involved in 1967-69.

In 1967, 76.92 per cent of the drivers were listed as Had Not Been Drinking. In 1968, 77.05 per cent of the drivers Had Not Been Drinking and in 1969, 58.33 per cent of the drivers were checked Had Not Been Drinking.

Weather conditions are listed in Table 4.15.

TABLE 4.15.--Weather Conditions at the Time of the Accident.

	1967	1968	1969	Total	Per Cent of Total
Clear or cloudy	34	48	71	153	84.53
Raining	3	9	11	23	12.71
Snowing	1	2	1	4	2.21
Fog					
Other					
Not Listed			1	1	0.55
Total				181	100.00

One hundred fifty-three or 84.53 per cent of the fatal traffic accidents happened in clear or cloudy weather.

Twenty-three or 12.70 per cent of the accidents happened when it was raining.

Four accidents occurred when it was snowing.

One report did not list the weather conditions for a one vehicle accident in 1969.

In 1967, 89.47 per cent of the accidents occurred in clear or cloudy conditions and 1968 had 81.36 per cent happening in clear or cloudy conditions at the time of involvement. In 1969, 84.52 per cent of the drivers were involved in accidents under clear or cloudy conditions.

The highest percentage, 15.25 per cent, of accidents in the rain was in 1968. In 1969, 13.10 per cent were in the rain.

Table 4.16 has listed the Light Condition at the time of the accident.

TABLE 4.16.--Light Condition at the Time of the Accident.

	1967	1968	1969	Total	Per Cent of Total
Dawn			1	1	0.55
Daylight	24	34	36	94	51.93
Dusk	1	2	4	7	3.87
Darkness	13	23	42	78	43.10
Not Listed			1	1	0.55
Total				181	100.00

Ninety-four of the 181 accidents were listed as happening during daylight. This was 51.93 per cent of the total number of accidents. 1967, 1968, and 1969 had 63.16 per cent, 57.63 per cent and 42.86 per cent respectively listed as happening during daylight.

Seventy-eight or 43.09 per cent of the 181 accidents were listed as occurring in darkness. In 1967, 34.21 per cent happened in darkness. In 1968, 38.98 per cent of the accidents were listed as happening in darkness and in 1969, 50 per cent of the accidents happened in darkness.

Eight accidents were listed as occurring during the dawn (1) and dusk (7) hours.

One single vehicle accident in 1969 did not have the Light condition at the time of the accident listed.

Table 4.17 lists the Kind of Locality in which the accident occurred.

TABLE 4.17.--Kind of Locality in Which Accident Occurred.

	1967	1968	1969	Total	Per Cent of Total
Manufacturing or industrial	1	2	2	4	2.76
Shopping or Business	4	13	9	26	14.36
Apartments	1		1	2	1.10
School or Playground	1	1	1	3	1.66
One Family Homes	11	16	34	61	33.70
Farms, Fields	17	21	29	67	37.02
Not Developed	3	5	5	13	7.18
Other Freeway		1	2	3	1.66
Not Listed			1	1	0.55

The Farms, Fields segment of the table had sixty-seven or 37.02 per cent of the 181 accidents involving 16 year old drivers in 1967-69. 1967, 1968 and 1969 had 44.74 per cent, 35.59 per cent and 28.57 per cent respectively listed under Farms, Fields.

Sixty-one of the total number of accidents occurred in one family home localities. In 1967, 28.95 per cent were listed as happening in one family home areas. 1968 had 27.12 per cent and 1969 had 40.48 per cent.

In 1968, 13 or 22.03 per cent of the accidents listed were in the Shopping or Business category.

Three accidents were listed under Other for a Freeway environment.

One single vehicle accident in 1969 did not have the kind of Locality listed.

Table 4.18, The Roadway, is divided into the distinctive categories listed on the accident report form.

One hundred six of the accidents took place on Black-top roads. Thirty-one, or 17.13 per cent were listed as taking place on Unpaved (gravel, dirt or sand) roads.

One accident was listed as happening on brick pavement.

Fourteen of the accidents, all investigated by the City of Detroit Police Department, were not listed under construction of the roadway.

TABLE 4.18.--The Roadway.

	1967	1968	1969	Total
Construction				
Concrete	5	12	12	29
Blacktop	21	36	49	106
Gravel	8	5	10	23
Dirt or Sand	0	2	6	8
Other Brick		1		1
Not Listed	4	3	7	14
Surface				
Dry	30	44	62	136
Wet	7	12	18	37
Snowy or Icy	1	3	3	7
Other				
Not Listed			1	1
Character				
Straight	32	56	66	154
Curve	4	3	17	24
Not Listed	2		1	3
Level	27	52	56	135
On Grade	5	5	21	31
Hillcrest	2	1	1	4
Not Listed	4	1	6	11
Condition				
Defective	3	5	4	12
Not Defective	33	52	74	159
Not Listed	2	2	6	10

The roadway surface was reported as being Dry in 136 of the total number of accidents. Thirty-seven had the pavement listed as Wet. Seven were listed as Snowy or Icy surfaces. A total of 44 or 24.31 per cent had roadway surfaces providing a reduced amount of friction. One accident in 1969 did not have the roadway surface listed.

The Character of the Roadway was listed as being straight in 154 of the 181 accidents. Twenty-four listed curve and three were not listed, two in 1967, one in 1969. One hundred thirty-five of the accidents listed the roadway as being level, 31 on grades, four on a hillcrest and 11 are not listed. The year 1969 had the greatest number listed for on grades and hillcrest totalling 22 or 26.19 per cent of the 84 accidents for that year. In 1967, 18.42 per cent had a gradient factor listed.

Twelve roadways were listed as having a defect. Six were listed as slippery when wet, two were listed as having loose gravel, one as narrow, one as rough road, one as dusty and one as under construction. One hundred fifty-nine of the total number of roadways on which the accidents took place were listed as having no defect. Ten did not have the condition listed.

Vision Obstruction is listed in Table 4.19.

TABLE 4.19.--Driver Vision Obstruction.

	1967	1968	1969	Total	Per Cent of Total
Windshield/windows	1	2	0	3	1.63
Buildings, signs, bushes, trees, mailboxes, parked cars, embankments, high snow banks, headlights, fences	6	2	13	21	11.41
No Vision Obstruction	28	54	69	151	82.07
Not Listed	4	3	2	9	4.89
Total	39	61	84	184	100.00

One hundred fifty-one of the 184 drivers involved in fatal traffic accidents, 1967-69, were listed as having no obstruction of vision. Twenty-four or 13.04 per cent of the drivers were listed as having a vision obstruction (21 in the Buildings, signs, etc. category and three listed in the Windshield/windows category). Vision obstruction was not listed for nine of the drivers.

The greatest number of vision obstruction accidents had two or more vehicles, or pedestrians involved. One happened at a railroad crossing.

Table 4.20 was included to indicate the number of driving lanes available to the 16 year old driver involved in fatal traffic accidents in 1967-69.

TABLE 4.20.--Road Type--Number of Driving Lanes.

	1967	1968	1969	Total	Per Cent of Total
One	4	5	7	16	8.70
Two	24	37	54	115	62.50
Three	2	3	5	10	5.43
Four or more	5	11	9	25	13.59
Divided (limited access)	0	1	0	1	0.54
Divided (other)	2	0	0	2	1.09
One Way	0	0	0	0	0.00
Unpaved any width	2	4	7	13	7.07
Not Listed	0	0	2	2	1.09
Total	39	61	84	184	100.00

One hundred fifteen or 62.50 per cent of the 184 drivers involved were reported to have had two driving lanes by the investigating officer(s). Twenty-five of the drivers had four or more driving lanes. Sixteen or 8.70 per cent were reported to have had one driving lane. Ten drivers had three driving lanes. One driver was on a limited access road. Two on other types of divided roads. No drivers were reported to have been driving on a one-way road. Two drivers were not checked on the accident report form in 1969. Thirteen drivers were checked for driving on an unpaved roadway of any width.

The validity of this particular section of the accident report data is questioned in that the Roadway Construction, Table 4.18, listed 31 accidents taking place on unpaved

roadways. This section of the accident report recorded only 13 drivers involved in fatal traffic accidents on unpaved roadways. In about one-third of the accident reports listing two driving lanes, the actual number of lanes available to the 16 year old operator was one because the roadway was a two way, two lane roadway in nature.

Investigation of other sections of the accident report and supplemental data indicated that five fatal traffic accidents involving 16 year old drivers, 1967-69, happened in a Freeway environment (entrance and exit ramps and on a Freeway). One accident investigated in this study was reported in the road type section of the reports Divided (limited access) category.

Determination of whether the drivers were involved in accidents at intersections is described in Table 4.21.

TABLE 4.21.--Intersections.

	1967	1968	1969	Total	Per Cent of Total
Yes	7	17	22	46	25.00
No	31	38	55	124	67.39
Railroad Crossing	1	3	2	6	3.26
Driveway	0	3	4	7	3.80
Not Listed	0	0	1	1	0.54
Total	39	61	84	184	100.00

One hundred twenty-four or 67.39 per cent of the 184 drivers were involved in accidents which were reported as not occurring at an intersection. Twenty-five per cent of the drivers were involved in accidents which did happen at an intersection. There were 6 railroad crossing accidents reported. Seven, or 3.80 per cent of the drivers were involved in accidents which were reported as happening at a driveway. One accident in 1969 was not listed in the intersection section of the accident report.

Slightly more than one-half of the drivers were involved in fatal traffic accidents which occurred within one-quarter mile of an intersection.

Table 4.22 represents the traffic control under which the 16 year old driver was operating at the time of the accident involvement.

TABLE 4.22.--Traffic Control.

	1967	1968	1969	Total
Stop Sign	3	14	12	29
Stop and Go Signal	1	5	5	11
Officer or Watchman	0	0	0	0
Railroad Gates or Signals	1	2	2	5
Other (speed, no passing, yellow blinker, lane markings, curve, yield)	11	20	24	55
Control Not Functioning	0	0	0	0
No Traffic Control Present	23	22	40	85
Not Listed	0	0	1	1

Eight-five or 46.20 per cent of the 184 drivers were operating in an environment for which No Traffic Control Present was reported.

Fifty-five or 29.89 per cent of the 184 drivers were operating in an environment for which Other was reported on the accident report forms by the investigating officer(s). A stop sign controlled the actions of 15.76 per cent of the drivers.

There is a section of the report to indicate if the control was functioning. In 1968, one accident report indicated the stop sign had been knocked down and not been righted prior to the accident. There was no entry made in the Control Not Functioning category. One stop sign entry was reported for a railroad crossing accident in 1968.

One accident report in 1969 did not report any entry in the Traffic Control section of the accident report form.

The other category of the Traffic Control section had several entries. They were broken down into the following categories: speed (posted, basic, night, slow sign, day/night), no passing, yellow blinker, school zone, yield, center line and lane markings, curve. Only three curve traffic control entries were made in 1969; there were none listed for 1967 or 1968. There were 17 entries on the 1969 accident reports which indicated a curve in the roadway character section, Table 4.18. Four curve entries were made in the roadway character section in 1967 and three in 1968.

The 1969 accident report forms had four drivers checked more than once in the Traffic Control section. Two were checked in the Stop Sign and Other categories. One was checked in the Stop and Go signal and Other categories. One was checked in the Railroad Gates or Signs and Other categories.

The direction of travel of the 16 year old drivers involved in fatal traffic accidents, 1967-69, are described in Table 4.23. Of interest was the fact that there was no indication on the accident reports or in the supplemental data which indicated that bright/glaring sunlight might have been a contributing factor leading to accident involvement. This was true for drivers traveling East during the morning hours and for drivers traveling West during the afternoon hours.

TABLE 4.23.--Driver's Direction of Travel.

	1967	1968	1969	Total	Per Cent of Total
North	14	21	18	53	28.80
South	10	14	21	45	24.46
East	7	12	19	38	20.65
West	8	13	25	46	25.00
Not Listed	0	1	1	2	1.09
Total	39	61	84	184	100.00

Two of the drivers did not have the direction of travel entered on the accident report form, one in 1968 and one in 1969.

The estimated speed, in the considered opinion of the investigating officer(s), is described in Table 4.24.

TABLE 4.24.--Driver's Estimated Speed.

	1967	1968	1969	Total	Per Cent of Total
0-5 MPH	3	3	2	8	4.35
5-15 MPH	1	1	2	4	2.17
15-25 MPH	5	6	11	22	11.96
25-35 MPH	4	10	11	25	13.58
35-45 MPH	3	13	12	28	15.22
45-55 MPH	6	9	8	23	12.50
55-70 MPH	7	7	9	23	12.50
More than 70 MPH	4	2	7	13	7.07
Not Listed or Unknown	6	10	22	38	20.65
Total	39	61	84	184	100.00

The greatest number of entries was in the Not Listed or Unknown category of the section. Thirty-eight or 20.65 per cent of the 184 drivers did not have an estimated speed entered on the accident report forms.

The greatest number of drivers, 121, were operating between the estimated speeds of 15 and 55 miles per hour. This is 65.76 per cent of the total number of drivers are distributed fairly evenly. The 35-45 MPH category had the

greatest number, 28 or 15.22 per cent of the total number of drivers.

Of the total number of drivers, 47.28 per cent were operating at an estimated speed of 45 miles per hour or less.

The driving action of the 16 year old driver is listed in Table 4.25.

The Driver Action section of the accident report form indicated that 76.09 per cent of the total number of drivers were going straight ahead at the time of involvement in a fatal traffic accident.

The Not Listed or Unknown category of the Driver Action section had 12.50 per cent of the entries for the drivers involved. A particularly high number was noticed in this category for the year 1968. Seventeen or 27.87 per cent of the 61 drivers involved in a fatal traffic accident in 1968 was listed in the Not Listed or Unknown category. The 17 drivers listed in 1968 is 9.24 per cent of the 184 drivers in the study.

There were no entries for: Make U Turn, Start in Traffic Lane, or for Back except in conjunction with the Remain Stopped in Traffic Lane as explained for the * entry on Table 4.25.

The violation indicated for the 16 year old driver is listed in Table 4.26.

TABLE 4.25.--Driver Action.

	1967	1968	1969	Total	Per Cent of Total
Go Straight Ahead	32	40	68	140	76.09
Overtake	2	1	2	5	2.72
Make Right Turn	1	0	0	1	0.54
Make Left Trun	4	0	6	10	5.49
Make U Turn	0	0	0	0	0.00
Slow or Stop	0	0	1	1	0.54
Start in Traffic Lane	0	0	0	0	0.00
Start from Parked Position	0	1	0	1	0.54
Back	0	0	(1)*	(1)*	---
Remain Stopped in Traffic Lane	0	1	1	2	1.09
Remain Parked	0	1	0	1	0.54
Not Listed or Unknown	0	17	6	23	12.50
Total	39	61	84	184	100.00

*One of the 1969 reports had Remain Stopped in Traffic Lane checked for one driver and an entry for Back marked for the same driver.

TABLE 4.26.--Driver Violation Indicated.

	1967	1968	1969	Total	Per Cent of Total
Speed too fast	15	15	29	59	32.07
Failed to yield right of way	0	3	8	11	5.98
Drove left of center	2	4	2	8	4.35
Improper overtaking	1	0	1	2	1.09
Passed Stop sign	0	1	0	1	0.54
Disregard traffic signal	1	1	1	3	1.63
Followed too closely	0	0	0	0	0.00
Made improper turn	0	0	0	0	0.00
Improper or no signal	0	0	0	0	0.00
Improper parking location	0	0	1	1	0.54
Other improper driving (only those are listed which were recorded as a single entry for a driver violation indicated - 5 drivers had a violation in combination with this category)	4	4	5	13	7.07
No violation indicated	12	24	23	59	32.07
Not Listed	4	9	14	27	14.67
Total	39	61	84	184	100.00

It should be noted that Speed Too Fast and No Violation Indicated have the same total number, 59, entered in Table 4.26. The two categories together account for 64.14 per cent of the total number of 16 year old drivers involved in fatal traffic accidents, 1967-69.

Of the total number, 14.67 per cent were not listed in the Driver Violation Section of the accident report.

Only one violation was entered in the table for each driver. This does not mean the investigating officer(s) made a single entry on the accident report form. In 1967, six drivers had more than one entry listed. Five had speed too fast in conjunction with:

one driver - drove left of center
passed stop sign
improper turn
three drivers - drove left of center
one driver - passed stop sign

One driver in 1967 had Drove Left of Center and Passed Stop Sign checked.

In 1968, three drivers had Speed to Fast in conjunction with:

one driver - other improper driving
one driver - disregard traffic signal and other improper driving
one driver - drove left of center

One driver had a combination of Failed to Yield Right of Way and Passed Stop Sign. One driver had a combination of Passed Stop Sign and Other Improper Driving.

In 1969, twelve drivers had more than one entry in the Driver Violation Indicated section of the accident report form. Other Improper driving was in combination with Speed for three drivers. Passed Stop Sign was in combination with Speed for two drivers and Other Improper Driving for one driver. Drove Left of Center was in combination with Speed for four drivers, and entered for one driver in combination with Other Improper driving. Failure to Yield Right of Way was listed in combination with Passed Stop Sign for one driver.

The Other Improper driving category had the following listings entered: Failure to have vehicle under control - 2; Lost control - 2; No insurance - 1; No lights - 2; No operator's license - 1; Without due care and caution - 1; Right of Way - 1; No registration - 1; Reckless - 1; Flashing red signal - 1; ran off road - 2; left roadway - 1; assured clear distance - 1; and manslaughter - 1.

All of the fatal traffic accidents in which 16 year old drivers were involved, 1967-69, were investigated at the scene of the accident location.

None of the reports of the accidents were checked in the Remarks and Recommendations section for "inspect scene for need of traffic engineering" or "re-examine driver for license competency."

Additional investigation information was tabulated in Table 4.27.

TABLE 4.27.--Investigation of Accident.

	1967	1968	1969	Total	Per Cent of Total
Photographs Taken					
Yes	27	46	65	138	76.24
No	8	7	10	25	13.81
Not Listed	3	6	9	18	9.95
Total	38	59	84	191	100.00
Investigating Agency					
Michigan State Police	11	13	14	38	20.99
Sheriff Departments	16	25	36	77	42.57
Township Police Departments	3	4	7	14	7.74
City & Incorporated Municipality Police Dept.	8	17	27	52	28.73
Total	38	59	84	181	100.00
Disposition (Complaint Closed By)					
Arrest					
Yes	10	9	6	25	13.59
No	0	0	0	0	0.00
Other	13	24	33	70	38.04
Not Listed	16	28	45	89	48.37
Total	39	61	84	184	100.00

Photographs were taken of 76.24 per cent of the accident scenes. All of the accident scenes investigated by the Michigan State Police were photographed. Those reports which had not stated if photographs were taken were from the Detroit Police Department and Sheriff Departments. Sheriff Departments investigated 42.54 per cent of the accidents. Of the accidents 28.73 per cent were investigated by city and incorporated municipality police departments. The Michigan State Police investigated 20.99 per cent of the accident scenes and Township Police Departments investigated 7.74 per cent.

Twenty-five or 13.59 of the 184 drivers were arrested as a result of a violation associated with accident involvement and/or operating actions.

In 1967 the charges were: violation of basic speed law; no operator's license; no operator's license and failure to have vehicle under control; juvenile--no licensed adult; juvenile--passed stop sign; two drivers operating without lights after dark; negligent homicide; careless driving; and improper passing.

The arrests were not always listed. Some reports were checked Other or did not list a complaint.

The following section of Chapter IV includes those categories of accidents which were thought to need special attention in the description and analysis of the data.

The unpaved roadway accidents are described in Table 4.28.

Of the accidents which occurred on an unpaved roadway, 67.74 per cent involved 16 year old drivers operating vehicles with one or more occupants.

Of the unpaved roadway accidents, 58.06 per cent occurred during the day.

Of the drivers involved, 25.81 per cent were unlicensed and 74.19 per cent of the drivers involved were licensed.

Of the drivers involved in unpaved roadway accidents, 87.10 per cent were males.

Sixteen of the 31 drivers were involved in 1969.

Fifteen of the 31 accidents were single vehicle accidents and 25.81 per cent were two vehicle accidents.

Seventy-five per cent of the unlicensed driver accidents on unpaved roadways occurred during the day.

Of the licensed driver accidents on unpaved roadways, 52.17 per cent occurred during the day.

Farm vehicle accidents were limited to those in which a tractor was a contributing factor. In 1967, there were four such accidents. 1968 had no farm tractor accidents and in 1969 there were two.

One accident in 1969 did not directly involve a farm tractor in the collision. The 16 year old male driver of a car came across the crest of a hill and attempted to pass a tractor. The 16 year old driver lost control of his car.

TABLE 4.28.--Unpaved Roadway Accidents 1967-69.

Number of Vehicles	Driver Sole Occupant Year 67	68	69	Multiple Occupancy Year 67	68	69	Day Year 67	68	69	Night Year 67	68	69	Total
One		ML		MU ML	ML FL	3MU 4ML 2FU FL	MU	FL	2FU ML MU	ML	2ML	3ML 2MU FL	15
Two	2ML	ML		3ML		2ML	4ML		2ML	ML	ML		8
Three					ML						ML		1
Railroad Crossing		MU			ML			ML MU					2
Pedestrian/Bicycle	MG		4ML				MG		3ML			ML	5
Sub Total	3	3	4	5	4	12	6	3	9	2	4	7	
Total	10			21			18			13			31

FL - Female Licensed driver
FU - Female Unlicensed driver
MG - Male driver with Driver Education Certificate
ML - Male Licensed driver
MU - Male Unlicensed driver

Number of female licensed drivers involved	- 2
Number of female unlicensed drivers involved	- 2
Number of male drivers with driver education certificates	- 1
Number of male licensed drivers involved	- 21
Number of male unlicensed drivers involved	- 5
	31

The car rolled over several times and the driver was thrown from the vehicle suffering fatal injuries.

In 1967, 3 of 4 farm tractor operators were unlicensed. Two of the four accidents were single vehicle accidents, both involved passengers riding on the tractor. One accident was a two vehicle between a motorcycle and a 16 year old driver operated tractor (gravel roadway at night, tractor operator licensed and arrested for having no lights). One accident was a three vehicle accident involving two tractors, one pulling another to get started and was struck in the rear by a car, happened at night on a blacktop roadway. Two of the accidents happened on a gravel roadway and two on blacktop. Three of the four accidents happened at night. All of the tractor drivers were males. Total number killed in the accidents was five. Total number injured was four. None of the tractor operators were killed. All of the fatalities and injured were males.

The 1969 farm tractor accident happened during the day. The 16 year old male operator, unlicensed, was killed. The accident happened in what might be called ideal conditions: clear; daylight; farm locality; blacktop roadway; dry surface; straight and level roadway with no defect. The tractor left the roadway, rolled and pinned the driver to a tree with the right fender.

Motorcycle accidents in which 16 year old drivers were involved are described in Table 4.29.

TABLE 4.29.--Motorcycle Accidents in Which 16 Year Old Drivers

	1967	1968	1969	Total
Number of Motorcycle Accidents	7	10*	9	26
Number of 16 year old Motorcycle Operators	5	10*	6	21
Number of Other Motorcycle Operators	2	3	3	8
Number of Single Vehicle Motorcycle Accidents	0	1	2	3
Number of Two Vehicle Motorcycle Accidents	5	5*	5	15
Number of Three Vehicle Motorcycle Accidents	1	3	1	5
Number of Four Vehicle Motorcycle Accidents	0	0	0	0
Number of Railroad Crossing Motorcycle Accidents	0	1	0	1
Number of Pedestrian/bicycle Motorcycle Accidents	1	0	1	2
Number of 16 Year Old Licensed Motorcycle Operators	4	6	4	14
Number of Other Licensed Motorcycle Operators	1	3	2	6
Number of Unlicensed 16 Year Old Motorcycle Operators	1	4*	2	7
Number of Other Unlicensed Motorcycle Operators	1	0	1	2
Number of Motorcycle Accidents during the Day	4	7*	6	17
Number of Motorcycle Accidents during the Night	3	3	3	9
Number of Cycles Carrying More than 1 Person	2	2	3	7
Number of Motorcycle Accidents in Which 16 Year Old was not Cycle Operator	2	1	3	6

TABLE 4.29.--Continued.

	1967	1968	1969	Total
Number of Accidents in Rain or Snow	1	1*	2	4
Number of Intersection/Driveway Accidents	5	4*	2	11
Number of Accidents in Which a Curve was Recorded	0	0	3	3
Locality				
Farms	3	5	3	11
One Family	2	4	5	11
School	0	1	0	1
Shopping or Business	2	0	1	3
Roadway				
Hard Surface - Blacktop/ Concrete	5	8	9	22
Gravel/Dirt or Sand	2	2	0	4

*Go-cart included in tally of motorcycle accidents. Two minibikes were included in the tally - both accidents in which minibikes were involved were in 1969.

Of the fatal traffic accidents in which 16 year old drivers were involved and a motorcycle was one of the vehicles, 65.38 per cent happened during the day.

Twenty-nine motorcycles were involved in accidents, 21 of the operators were 16 years of age.

All motorcycle operators were males.

Seven of the cycles were carrying a passenger at the time of the accident. Four accidents occurred at night when the motorcycle was carrying a passenger. Five of the operators carrying a passenger were 16 years of age.

Of the accidents in which a motorcycle was involved, 57.69 per cent were two vehicle accidents.

One go-cart operator and one minibike operator were 16 years of age. The go-cart operator was unlicensed. One minibike operator was 9 years of age and the minibike was in collision with a car operated by a 16 year old female.

Of the 16 year old motorcycle operators, 33 per cent were unlicensed.

There were three accidents in 1968 in which more than one cycle was involved. One accident in 1968 involved two motorcycles operated by persons over the age of 16 (18 and 19) and were in collision with a car operated by a 16 year old male on a clear night, in a farm locality and on a dirt road. One accident in 1968 involved two motorcycles in which both operators were 16 years of age, one licensed and one unlicensed, and were in collision with a station wagon during a clear day on a blacktop roadway in a farm locality. One accident in 1968 in which two motorcycles were involved had one 16 year old unlicensed operator and one 18 year old operator in collision with a car during a clear day on a blacktop roadway in a farm locality.

Of the accidents, 84.62 per cent happened on a hard surfaced (blacktop or concrete) roadway.

Eleven of the accidents happened in a farm locality. Eleven of the accidents happened in a one family home locality.

Of the accidents, 42.31 per cent happened at an intersection or driveway.

Of the 16 year old drivers involved in fatal traffic accidents, 33 were involved in pedestrian/bicycle accidents. Table 4.30 indicates the nature of the accidents.

TABLE 4.30.--Pedestrian/Bicycle Accidents.

	1967	1968	1969	Total
Number of accidents	8	9	16	33
Number of fatalities	9	10	16	35
Number of injuries	1	2	3	6
Pedestrian Action				
crossing not at intersection	5	4	8	17
crossing at intersection	0	0	1	1
standing in roadway	1	1	2	4
walking with traffic	1	0	1	2
not in roadway (standing or walking)	1	2	2	5
Bicyclist Action				
riding with traffic (crossed or pulled in front of vehicle)	0	2	2	4
Time of Day				
Day	5	7	9	21
Night	3	2	7	12
Sex of Pedestrian/Bicyclist				
Male	7	9	15	31
Female	2	3	2	7
Sex of Driver				
Male	6	8	14	28
Female	2	1	2	5
Mean age of Pedestrians	38.8	40.0	28.2	34.91
Age Range of Pedestrians	3-77	5-89	1 1/2-83	1 1/2-89
Mean age of Bicyclists	00.0	10.3	6.5	8.8

TABLE 4.30.--Continued.

	1967	1968	1969	Total
Licensed Drivers				
Male	5	8	13	26
Female	1	0	2	3
Unlicensed Drivers				
Male	1	0	1	2
Female	1	1	0	2
Number Pedestrians Injured	0	2	1	3
Number of Drivers Injured	1	0	2	3

There were 33 pedestrian/bicycle accidents which involved 16 year old drivers during 1967-69. Four of the accidents were the result of a collision between the 16 year old operated vehicle and a bicycle. One bicycle involved in a 1968 accident had two occupants, the rider, a 12 year old male and a 5 year old male passenger. All bicycle riders (4) and the passengers were males and suffered fatal injuries. Seventy-five per cent, three of the four, of the collisions between a 16 year old operated vehicle and a bicycle occurred during the day. There were no bicycle accidents in 1967.

Of the accidents, 63.64 per cent happened during the day.

Twenty-six or 78.79 per cent of the pedestrians involved in the accidents were males.

Of the drivers involved in the pedestrian/bicycle accidents, 84.85 per cent were males. Two of the 28 male

drivers were unlicensed. Two of the five female drivers were unlicensed.

There was a total of 35 fatalities resulting from the pedestrian/bicycle accidents. Five were bicycle related. Of the 30 pedestrian fatalities, 25 were males. Three pedestrians were unjured in pedestrian accidents, two females and one male.

More than one-half of the pedestrians, 58.62 per cent, were crossing not at an intersection.

There were three accidents in which more than one pedestrian was involved. In 1967, two males walking with traffic at night were struck and fatally injured by a vehicle operated by a 16 year old unlicensed female. In 1968, three females standing on a traffic island were struck (one fatally injured, one A type injury and one C type injury) by a vehicle after it was hit by a vehicle operated by a 16 year old licensed male during the day. In 1969, two males walking with traffic at night were struct (one fatally injured and one A type injury) by a vehicle operated by a 16 year old licensed male.

Three of the 33 drivers were injured (two A type injuries and one C type injury); all were males.

Table 4.31 was developed to indicate the amount of driving experience, in months, 16 year old licensed Michigan drivers had prior to being involved in a fatal traffic accident. Records for 124 of the 136 licensed Michigan drivers were found. The 12 for which records were not found

TABLE 4.31.--Driving Experience--Number of Months From Date of Original Application for License to Date of Accident--Michigan Drivers Only.

Months Less Than	1967		1968		1969		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
1	4	0	2	1	3	0	9	1	10
2	3	1	2	2	7	3	12	6	18
3	3	1	3	1	4	1	10	3	13
4	4	2	5	0	4	1	13	3	16
5	0	0	4	0	7	2	11	2	13
6	0	1	5	0	6	1	11	2	13
7	0	1	1	1	1	0	2	2	4
8	0	0	1	0	2	2	3	2	5
9	1	0	4	1	8	1	13	2	15
10	0	0	2	0	4	0	6	0	6
11	1	0	4	0	3	0	8	0	8
12	0	0	1	0	1	1	2	1	3
Total	16	6	34	6	50	12	100	24	124
Minor Original	0	2	3	1	7	0	10	3	13
Driver Ed Cert. or Temp. Inst. Per.	2	2	1	1	0	0	3	3	6
Licensed-No Record Available	2	2	5	1	2	0	9	3	12
Out-of-State	0	0	5	0	1	0	6	0	6
No License	6	1	4	0	10	2	20	3	23
Total	26	13	52	9	70	14	148	36	184

were the result of incorrect entry on the accident report form or incorrect transfer of the number to the Department of State Driver Records Section or purged files of the Department of State records. The number of Michigan drivers who had records available for use in the study totalled 91.12 per cent. The 124 was 67.39 per cent of the total number in the study.

Sixty-six per cent of the 100 licensed male Michigan drivers were involved in a fatal traffic accident less than 6 months from the date of original application for a driver license.

Of the 24 female Michigan licensed drivers, 70.87 per cent were involved in a fatal traffic accident less than 6 months from the date of original application for a driver license.

Sixteen year old male licensed Michigan drivers made up 80.65 per cent of the total number of 16 year licensed Michigan drivers involved in fatal traffic accidents, 1967-69.

Sixteen year old Michigan licensed drivers totalled 67.39 per cent of the 16 year old drivers involved in fatal traffic accidents.

Of the total number of 16 year old drivers involved in fatal traffic accidents, 3.26 per cent were licensed out-of-state drivers.

Of the 184 drivers, 12.50 per cent had no license. All were Michigan residents.

Of the 184 drivers, 7.07 per cent were Michigan residents operating on a Minor Original license. They were actually licensed drivers under the Michigan Vehicle Code. The Minor Original Permit is a 60 day license to be used while the individual is waiting for his regular license to be processed and mailed.

Of the Michigan licensed drivers, 12.10 per cent were in their 9th month of driving.

Eighty-three or 66.94 per cent of the 124 Michigan licensed 16 year old drivers were involved in fatal traffic accidents less than 6 months from the date of original application for a driver license.

If the 13 Minor Originals are added to the 83, then of the 137 legally licensed Michigan drivers, 70.01 per cent were involved in a fatal traffic accident less than 6 months from the date of original application for a driving license.

Of the 124 sixteen year old Michigan drivers, 22.58 per cent were involved in a fatal traffic accident in less than two months from the date of original application for a driver license. Adding the 13 Minor Originals to the 28 drivers involved in less than two months, 29.93 per cent were involved in a fatal traffic accident less than two months from the date of original application.

Of the 124, 45.97 per cent were involved in fatal traffic accidents less than four months from the date of original application. Adding the 13 Minor Originals, 51.09 per cent were involved less than four months from the date of original application.

Table 4.32 indicates that in 1968 and 1969 there was a dramatic increase from the less than four month length of driving experience to the less than six month time period particularly in the male group and the total percentage of the years.

TABLE 4.32.--Per Cent of Drivers Involved for Each Year--Michigan Licensed Drivers.

Year	Less than 4 Month Experience			Less than 6 Month Experience		
	Male	Female	Total	Male	Female	Total
1967	87.50	50.0	77.27	87.50	75.0	81.82
1968	35.29	75.0	40.0	61.74	75.0	62.50
1969	36.0	41.67	37.10	62.0	66.67	62.90

The driving record of the 16 year old Michigan drivers prior to their fatal traffic accident involvement is shown in Table 4.33.

TABLE 4.33.--Driving Record Prior to Accident Involvement Licensed Michigan Drivers.

	No Record Prior to Accident				Violations(s) Only				Accident(s) Only				Accident(s) and Violations(s)				
	67	68	69	T	67	68	69	T	67	68	69	T	67	68	69	T	Total
Male	13	21	37	71	2	10[a]	7[b]	19	1	2	4	7	0	1[c]	2[d]	3	100
Female	4	6	11	21	1	0	1	2	1	0	0	1	0	0	0	0	24
Sub Total	17	27	48	92	3	10	8	21	2	2	4	8	0	1	2	3	124
Total	92				21				8				3				124

[a]Male driver--2 violations.

[b]Male driver--2 violations.

[c]Male driver--3 violations and 2 accidents.

[d]Male driver--2 violations and 1 accident, Male driver--1 violation 2 accidents.

For 1967, 22 of the 26 sixteen year old Michigan licensed drivers involved in fatal traffic accidents had records available from the Department of State. In 1968, 40 records out of a total of 46 were available and for 1969, 62 driver records of 64 Michigan licensed drivers were used for the study.

No female drivers in 1968 had a record of violation(s) only, accident(s) only, or accident(s) and violation(s). No female driver in 1969 had a record for accident(s) only or accident(s) and violation(s).

No male driver in 1967 had a record of accident(s) and violation(s) prior to fatal traffic accident involvement.

Of the 124 Michigan licensed drivers in the study, 74.19 per cent had no record prior to fatal traffic accident involvement.

Of the 124, 16.94 per cent had a record of violation(s) only prior to involvement. Two male drivers in this category had two violations each.

Of the 124, 6.45 per cent had a record of accident(s) only prior to involvement.

Of the 124, 2.42 per cent had a record of accident(s) and violation(s) prior to involvement.

Of the total number of males (100), 71 per cent had no record prior to involvement. Nineteen per cent of the total number of males had a record of violation(s) only. Seven per cent of the total number of males had a record of

accident(s) only. Three per cent of the total number of males had a record of accident(s) and violation(s).

Of the total females (24), 87.50 per cent had no record prior to involvement. Of the total females, 8.33 per cent had a record of violation(s) only and 4.17 per cent of the total females had a record of accident(s) only. No female had a record of accident(s) and violation(s).

Male drivers with no record prior to involvement was 57.26 per cent of the total number of Michigan licensed drivers (124) in the study.

Female drivers with no record prior to involvement was 16.94 per cent of the total number of Michigan licensed drivers (124) in the study.

Male drivers with a record of violation(s) only was 15.32 per cent of the total number of Michigan licensed drivers in the study.

Female drivers with a record of violation(s) only was 1.61 per cent of the licensed drivers included in the study.

Male drivers with a record of accident(s) only was 5.64 per cent of the total number of Michigan licensed drivers (124) in the study.

Male drivers with a record of accidents and violations prior to involvement in a fatal traffic accident was 2.42 per cent of the total number of Michigan licensed drivers (124) in the study. No female drivers were in this category.

Table 4.34 indicates the type of accidents, sex of drivers, vehicle occupancy, day or night occurrence and years of involvement in which 16 year old unlicensed drivers were involved 1967-69. All drivers were Michigan residents at the time of the accident.

During the three year period in the study, 29 unlicensed 16 year old drivers were involved in fatal traffic accidents.

Of the unlicensed drivers, 48.28 per cent were involved in single vehicle accidents. Of the 14 drivers involved in single vehicle accidents, 10 were operating during the day. Three of the 14 drivers involved in single vehicle accidents were female and all were operating during the day.

Six drivers were involved in two vehicle accidents and all were males. Seventy-five per cent of the males involved in two vehicle accidents were operating during the day.

Four drivers were involved in three vehicle accidents. One was a female operating during the day. Of the three males involved in a three vehicle accident, one was operating at night.

There were no four vehicle accidents in which an unlicensed 16 year old driver was involved.

There was one railroad crossing accident involving an unlicensed 16 year old driver. The accident happened in 1968 during the day with a male, as the sole occupant operating the vehicle.

TABLE 4.34.--Unlicensed Driver Fatal Traffic Accidents (Including those operating on Driver Education Certificates and Temporary Instruction Permits).

Number of Vehicles	Sole Occupant						Multiple Occupancy						Day						Night					
	Male			Female			Male			Female			Male			Female			Male			Female		
	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69	67	68	69
One	1	0	1	0	0	0	3	1	5	1	0	2	3	1	3	1	0	2	1	0	3	0	0	0
Two	0	1	2	0	0	0	2	0	1	0	0	0	1	1	2	0	0	0	1	0	1	0	0	0
Three	1	2	0	1	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	0	0	0	0
Railroad	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Pedestrian/ Bicycle	1	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	1	0	1	0	0	1	0	0
	3	4	3	1	1	0	5	1	7	2	0	2	4	5	6	2	1	2	4	0	4	1	0	0
	10			2			13			4			15			5			8			1		
	12						17						20						9					

1967 - Two males (unaccompanied) operating on Driver Education Certificates. One female (accompanied) operating on Driver Education Certificate. One female (unaccompanied) operating on Temporary Instruction Permit.

1968 - One male (unaccompanied) and one female (unaccompanied) operating on Temporary Instruction Permits.

1969 - No drivers operating on Driver Education Certificate or Temporary Instruction Permit.

There were four 16 year old unlicensed operators involved in pedestrian/bicycle accidents, two males and two females. One male and one female were involved while operating during the day. One female and one male were involved while operating during the night, both in 1967. One male and one female were the sole occupants of the vehicle they were operating. One female and one male were operating a vehicle with one or more persons riding in addition to the driver.

Of the 16 year old unlicensed drivers, 58.62 per cent were operating a vehicle with one or more occupants riding in addition to the driver. Thirteen of the 17 drivers operating multiple occupancy vehicles were males.

Seventy-five per cent of the unlicensed drivers operating during the day and involved in a fatal traffic accident were males. Eight of the nine unlicensed drivers involved in a fatal traffic accident at night were males.

Of the unlicensed drivers involved in a fatal traffic accident, 79.31 per cent were males.

Seventy-five per cent of the unlicensed female drivers involved in a fatal traffic accident were operating a vehicle with multiple occupancy. Of the unlicensed female drivers involved in a fatal traffic accident, 16.67 per cent were operating during the night.

Of the unlicensed drivers involved in a fatal traffic accident, 56.52 per cent were operating a vehicle with

multiple occupancy and 65.22 per cent of the unlicensed male drivers were operating during the day at the time of involvement in a fatal traffic accident.

Of the unlicensed drivers involved in a single vehicle fatal traffic accident, 71.43 per cent were operating during the day.

Seventy-five per cent of the unlicensed drivers involved in a two vehicle accident were operating during the day.

Seventy-five per cent of the unlicensed drivers involved in a three vehicle accident were operating during the day. All of the unlicensed drivers involved in a three vehicle accident were the sole occupant of the vehicle.

Of the total number of drivers (184) included in the study 15.76 per cent were unlicensed.

Of the unlicensed male drivers involved in a single vehicle accident 63.64 per cent were operating during the day at the time of the accident. All of the unlicensed female drivers involved in single vehicle accidents were operating during the day at the time of the accident.

Seventy-five per cent of the unlicensed male drivers involved in a two vehicle accident were operating during the day at the time of the accident. No female unlicensed drivers were involved in a two vehicle accident.

Summary

One hundred eighty-one fatal traffic accidents occurred during the years 1967 through 1969 in which 184 sixteen year old drivers were involved.

The fatal traffic accidents happened in and around those counties in which large cities are located. These counties are located in the southern lower peninsula of Michigan. Of the 16 year old drivers, 86.4 per cent were involved in fatal traffic accidents in this area.

The months of November (25), August (22), and September (21) had the greatest number of 16 year old drivers involved. January (3) had the fewest number. November had 13.6 per cent of the drivers involved during the three year period.

During the three year period, 16 drivers were involved on a Tuesday for the lowest total of a day during the week. Of the drivers, 21.2 per cent were involved on Saturdays during the three year period.

The 6:01 p.m. - 10:00 p.m. time period accounted for 34.78 per cent of the involvements. The 10:01 p.m. to midnight on Fridays and 8:01 p.m. to 10:00 p.m. on Wednesday had 11 and 10 drivers involved respectively.

Two vehicle accidents accounted for 40.88 per cent of the 181 accidents. Single vehicle accidents accounted for 27.62 per cent and pedestrian/bicycle accidents accounted for 18.23 per cent of the total number (181) of accidents.

Of the total number of fatalities, 56.71 per cent occurred to occupants of the 16 year old operated vehicle. Of the total number of injuries, 62.30 per cent occurred to occupants of the 16 year old operated vehicle.

A total of 231 fatalities and 305 injuries resulted from the fatal traffic accidents in which 16 year old drivers were involved.

Of the 184 sixteen year old drivers involved in fatal traffic accidents, 1967-69, 80.43 per cent were males. Of the male drivers, 84.46 per cent were licensed; six of the males were licensed drivers from out-of-state.

Sixty-four male licensed drivers and 16 female licensed drivers were involved in accidents during the day. Sixty-one male licensed and 14 female licensed drivers were involved in night accidents.

Twenty-nine of the 178 Michigan resident drivers were unlicensed.

Sixty-eight 16 year old drivers were involved in accidents when they were the sole occupant of the vehicle, one-half of them at night. Twenty-seven of the drivers were involved in a two vehicle accident, 13 during the day.

One hundred sixteen 16 year old drivers were in accidents when their vehicle had one or more passengers and 46.55 per cent of the drivers were involved at night. Ninety-three of the 116 were males. Forty-seven of the 116 drivers were involved in two vehicle accidents. Sixty-two of the drivers were operating during the day at the time of the accident.

A total of 432 persons were riding in/on the 16 year old operated vehicle, 57.41 per cent were passengers. Of the total (432), 25.69 per cent had no complaint of injury and 43.15 per cent of the passengers were riding in the right front position of the vehicle. Of the 107 riding in the front right, 66.36 per cent were fatally injured or suffered an A type injury.

The two door and four door vehicle was most often operated by the 16 year old driver. The 1964-66 vehicles were represented most often as being operated by the 16 year old drivers. Twenty motorcycles were involved in fatal traffic accidents operated by 16 year old drivers.

Of the vehicles operated by the 16 year old drivers, 53.81 per cent were reported as having no mechanical defect. Seventy-one of the 184 vehicles were damaged to such an extent that the investigating officer(s) were unable to determine if the vehicle was defective.

Of the 16 year old drivers, 65.21 per cent appeared to be in normal physical condition and 68.48 per cent of the drivers involved had not been drinking.

Almost 85 per cent of the fatal traffic accidents happened while the 16 year old driver was operating in clear or cloudy weather and 51.93 per cent of the accidents occurred during the daylight hours. In 1969, 42.86 per cent of the accidents were listed as happening during the daylight hours.

Of the 181 accidents included in the study, 37.02 per cent were listed as happening in a farms, fields locality and 33.70 per cent of the 181 accidents were listed as occurring in a one family home locality. In 1967, 44.74 per cent happened in farms and fields localities and in 1969, 40.48 per cent happened in one family home localities.

About 17.1 per cent of the accidents were listed as taking place on unpaved roadways. The Detroit Police Department did not list the type of pavement on the reports. Slightly more than 24 per cent of the accidents occurred on pavements with a reduced amount of friction. The character of the roadway was listed as being straight in 154 of the 181 accidents.

The reports listed 13.04 per cent of the 16 year old drivers as having a vision obstruction as a possible contributing factor to the accident.

Of the 16 year old drivers involved in fatal traffic accidents, 67.39 per cent were reported as being involved in accidents not occurring at an intersection. There were six railroad crossing accidents reported.

Of the 184 drivers, 46.20 per cent were operating in an environment for which no traffic control was listed. A stop sign controlled the actions of 15.76 per cent of the drivers.

Of the 184 drivers, 20.65 per cent did not have an estimated speed entered on the accident report form and 65.76 per cent were operating between the estimated speeds of 15 and 55 MPH. About 15 per cent of the drivers were operating at estimated speeds between 35-45 MPH and 47.28 per cent of the drivers were operating at an estimated speed of 45 MPH or less.

The reports listed 76.09 per cent of the drivers as going straight ahead at the time of involvement. This includes those entering, on, or leaving a curve. Of the sixty-one 16 year old drivers involved in a fatal traffic accident in 1968, 27.87 per cent were not listed or stated as unknown at the time of the accident in the driver's action segment of the accident report.

In the violation indicated portion of the report, 32.07 per cent of the 16 year old drivers had speed too fast listed. No violation was listed for 32.07 per cent of the drivers and 14.67 per cent had no listing entered. Of the one hundred eight-four 16 year old drivers, 13.59 per cent were arrested as a result of an indicated violation.

None of the accident reports in the Remarks and Recommendations section, had checked "inspect scene for traffic engineering" or "re-examine driver for license competency." Sheriff Departments investigated 42.54 per cent of the accidents.

Thirty-one accidents occurred on unpaved roadways. Of the accidents, 67.74 per cent involved 16 year old drivers

operating vehicles with multiple occupancy. About 58 per cent of the unpaved roadway accidents occurred during the day. Males accounted for 87.10 per cent of the drivers. Fifteen of the 31 accidents were single vehicle accidents and 14 of the 15 were multiple occupancy vehicles.

Farm vehicle accidents were limited to those in which a tractor was a contributing factor. In 1967, there were four such accidents, 1968 had none, and in 1969 there were two.

There were 26 accidents in which a motorcycle was included in the accident report. Twenty-one of the motorcycles were operated by a 16 year old. Seventeen of the accidents occurred during the daylight hours. Fifteen of the accidents involved two vehicles. Eleven of the accidents were listed as occurring in farm or one family home localities. Of the 16 year old motorcycle operators, 33 per cent were unlicensed.

The records indicated that 66 per cent of male Michigan licensed drivers were involved in a fatal traffic accident less than six months from the date of original application for a license. When adding the 13 minor original permits to the 136 legally licensed Michigan 16 year old drivers, 64.43 per cent of the drivers were involved less than six months from the date of original application. Of the 149 licensed Michigan drivers, 27.52 per cent were involved in a fatal traffic accident less than two months from the date

of original application and 46.98 per cent were involved less than four months from the date of original application.

Male drivers with no record prior to involvement in a fatal traffic accident was 57.26 per cent of the total number of Michigan licensed drivers (124) included in the study. Female drivers with no record prior to involvement in a fatal traffic accident was 16.94 per cent of the total number of licensed Michigan drivers (124) included in the study. Male drivers with a record of violations(s) only prior to involvement was 15.32 per cent of the Michigan licensed drivers included in the study. Female drivers with a record of violation(s) only was 1.61 per cent of the Michigan licensed drivers included in the study, and 5.64 per cent and .81 per cent of male and female drivers respectively had a record of accident(s) only prior to involvement. Of the licensed drivers included in the study, 2.42 per cent had a record prior to involvement of accident(s) and violation(s), all were males.

There were 33 pedestrian/bicycle accidents in which a 16 year old driver was involved. The pedestrian/bicycle accident category was 18.23 per cent of the total number (181) of accidents. All of the bicycle accidents involved male riders and passengers. Three of the four bicycle accidents happened during the day. Of the pedestrians involved in the accidents, 78.79 per cent were males and 84.85 per cent of the drivers involved in pedestrian/bicycle accidents were

males. Almost 64 per cent of the accidents happened during the day and 58.62 per cent of the pedestrians were crossing the roadway not at an intersection.

Twenty-nine or 15.76 per cent of the 184 drivers included in the study were unlicensed and 48.28 per cent of of them were involved in single vehicle accidents. Of the unlicensed 16 year old drivers, 58.62 per cent were operating a vehicle with one or more occupants as passengers. Thirteen of the 17 drivers operating multiple occupancy vehicles were males. Eight of the nine unlicensed drivers involved in a fatal traffic accident at night were males. Males accounted for 79.31 per cent of the unlicensed drivers.

CHAPTER V

SUMMARY, CONCLUSIONS AND DISCUSSION, AND RECOMMENDATIONS

Summary

The study was designed to determine certain factors in the fatal traffic accidents of 16 year old drivers in Michigan, 1967-69. A dramatic increase in the number of 16 year old drivers involved in fatal traffic accidents from 1967 through 1969 was indicated for each year studied (1967-39, 1968-61, 1969-84, totaling 184) and has caused a growing concern among those involved in traffic safety. There has been about a ten per cent increase in the number of students completing high school driver education from the 1965-66 school year through the 1968-69 school year. Fatal traffic accident involvement of the 16 year old driver has increased 115 per cent from 1967 to 1969.

Young drivers have traditionally been grouped together rather than by a single age or the length of their driving experience. Yet little has been done in past research about the 16 year old driver either by sex or length of driving experience.

A study of 16 year old drivers involved in fatal accidents in Michigan 1967-69 was selected. The sample was the total number of 16 year old drivers involved in fatal traffic accidents in Michigan 1967-69. The study was selected to determine and present a more definitive description of the problems the 16 year old driver might be having early in his driving career as a result of studying the fatal traffic accidents in which they were involved. The study was considered descriptive and exploratory in nature.

The data were collected from the fatal traffic accident record files of the Michigan Department of State Police and the driver record files of the Michigan Department of State. The variables used in the study included the factors of time, the environment, the driver, the vehicle and investigation.

The data were tabulated in frequency distributions for each of the variable factors. All pertinent information relative to the fatal traffic accidents was taken from all of the fatal traffic accident reports in which 16 year old drivers were involved in the State of Michigan for the years 1967 through 1969. Driver records were obtained for 91.2 per cent of the 16 year old Michigan licensed drivers involved in the fatal traffic accidents included in the study.

One hundred eighty-one fatal traffic accidents occurred from 1967 through 1969 in which 184 sixteen year old drivers were involved. Of the 16 year old drivers, 86.4 per cent were involved in fatal traffic accidents in the southern lower peninsula.

November had the greatest number of drivers involved. This was 13.59 per cent of the total. January had the fewest, three, drivers involved.

Saturdays had 21.2 per cent of the drivers involved while Tuesday had the fewest number, sixteen, of drivers involved.

The 6:01 p.m. - 10:00 p.m. time period accounted for 34.78 per cent of the drivers involved. Fridays, 10:01 p.m. to midnight and Wednesdays 8:01 p.m. to 10:00 p.m. were tabulated as the times and days when the most drivers were involved.

Two vehicle accidents accounted for 40.88 per cent of the 181 fatal traffic accidents in which 16 year old drivers were involved.

Of the 184 sixteen year old drivers involved, 80.43 per cent were males. Of the males, 84.46 per cent were licensed. Six of the males were licensed in neighboring states. Twenty-nine of the 178 Michigan residents were unlicensed.

Sixty-four male licensed drivers and 16 female licensed drivers were involved during the day and 61 male and 14 female licensed drivers were involved in night accidents.

Sixty-eight 16 year old drivers were involved in accidents when they were the sole occupant of the vehicle, one-half of them at night. Twenty-seven of the drivers were involved in a two vehicle accident, 13 during the day. One hundred sixteen 16 year old drivers were involved in fatal traffic accidents when their vehicle had one or more passengers, of which 46.55 per cent were involved at night. Forty-seven of the 116 drivers were involved in two vehicle accidents.

Almost fifty-four per cent of the vehicles operated by the 16 year old drivers were reported as having no mechanical defect.

Of the 16 year old drivers, 65.21 per cent appeared to be in normal physical condition and 68.48 per cent were reported as "had not been drinking."

Of the fatal traffic accidents, 84.53 per cent happened while the 16 year old driver was operating in clear or cloudy weather and 51.93 per cent of the accidents occurred during the day light hours.

In the 181 accidents, 37.02 per cent and 33.70 per cent were listed as happening in a farms, fields locality and in a one family homes area respectively.

The percentage of accidents listed as taking place on unpaved roadways was 17.13 per cent and 24.31 per cent of the accidents occurred on pavements with a reduced amount of friction. The character of the roadway was listed as being straight in 154 of the 181 accidents.

There were six railroad crossing accidents and 67.39 per cent of the accidents were reported as not occurring at an intersection.

Of the drivers, 47.28 per cent were operating at an estimated speed of 45 MPH or less and 65.76 per cent were operating between the estimated speeds of 15 and 55 MPH. At the time of involvement, 76.09 per cent of the drivers were listed as going straight ahead.

"Speed too fast" for 32.07 per cent of the 16 year old drivers was listed as the indicated violation and 32.07 per cent had "no violation" listed. Of the 184 sixteen year old drivers, 13.59 per cent were arrested as a result of an indicated violation.

None of the accident reports, in the Remarks and Recommendations section, had checked "inspect scene for traffic engineering" or "re-examine driver for license competency."

Thirty-one of the 181 accidents occurred on unpaved roadways, 67.74 per cent of the 31 involved drivers were operating vehicles multiple occupancy, and 58.06 per cent occurred during the day.

There were 26 accidents reported in which a motorcycle was involved. Twenty-one of the motorcycles were operated by a 16 year old. Seventeen of the 26 accidents occurred during the day. Thirty-three per cent of the 16 year old operators were unlicensed.

Of the Michigan licensed drivers involved, 64.43 per cent had less than 6 months of driving experience; 46.98 per cent were in fatal traffic accidents with less than 4 months of driving experience; and 27.52 per cent had less than 2 months of driving experience.

The driver records indicated that 74.19 per cent had no record prior to involvement in a fatal traffic accident.

Of the total number of accidents (181), 18.23 per cent were classified as pedestrian/bicycle accidents and 63.64 per cent happened during the day. The pedestrians were crossing the roadway not at an intersection in 58.62 per cent of the accidents.

Of the drivers included in the study, 15.76 per cent were unlicensed and 48.28 per cent of the unlicensed drivers were involved in single vehicle accidents. Of the unlicensed drivers, 58.62 per cent were operating a vehicle with one or more occupants and 79.31 per cent of the unlicensed drivers were males.

Conclusions and Discussion

Most researchers have found that young drivers do most of their driving at night and for recreational purposes. This would infer that the time for the greatest number of fatal traffic accident involvements would also be at night. This might be true for young drivers in general but it is not the case for the 16 year old driver. The number of

16 year old drivers involved in fatal traffic accidents totaled ninety-six during the day and eighty-eight at night.

The one vehicle accident shows a greater number (28) of drivers involved at night as opposed to 21 drivers involved during the day.

The two vehicle accident was the dominant type of accident (41 during the day and 34 at night).

Researchers have concluded that many of the accidents happen when others are riding with the young driver. The data from this study indicates that the 16 year old driver is involved in fatal traffic accidents when he is accompanied. Of the 184 drivers included in the study, 116 were involved in a fatal traffic accident when accompanied. This would indicate that the 16 year old driver may be having a problem coping with the distractions and pressures exerted by his peers.

Researchers have stated that as the violation rate increases the accident rate increases for the young driver. For the 16 year old driver, 92 of the 124 Michigan licensed drivers had no record prior to involvement in the fatal traffic accident. The question arises: Are those drivers involved in fatal traffic accidents different from other drivers? Ninety-six of the 137 had been driving less then six months before involvement in fatal traffic accident. The two statements support Schlesinger's contention that most teen-agers are having their first accident.[1]

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[1]Schlesinger, op. cit., p. 23.

The large number of accidents listed as happening in one family home, farm and field areas, would indicate that residential areas and highway or open road driving are contributing factors. The questions are then proposed: Do 16 year old drivers operate their vehicle in a safer manner in congested areas?/or Does the 16 year old driver do most of his driving in areas of little congestion?

The question of alcohol usage and driving always presents itself. The data supports the conclusions of Pelz and Schuman that the young driver (teen-ager) does not drive after drinking or is not involved after drinking. If we look closely at the data in the study, we find that 31.52 per cent were listed in the catagories of influence not known, not known if had been drinking or not listed. This was particularly true in 1969 when 41.67 per cent of the drivers were listed in the catagories stated above.

The data from the study and the results of other studies indicate that the Department of State, the traffic or probate courts, police agencies, Department of Education, schools, teachers, students and parents must cooperate to a greater extent to provide experiences which will enable the 16 year old driver to operate safely and efficiently in the Highway Transportation System.

Recommendations

The ability of the young driver to function safely and efficiently as a member of the Highway Transportation System would be enhanced if the following recommendations were instituted:

High School Driver Education

1. The State Department of Education should require all courses of instruction in driver education to include:

    a. Behind-the-wheel night driving for each student.

    b. Behind-the-wheel residential area driving for each student.

    c. Behind-the-wheel instruction and practice driving in areas where pedestian movement is not controlled by signs, signals or markings for each student.

    d. Behind-the-wheel unpaved roadway driving for each student.

    e. The handling of various distractions inside and outside the vehicle.

    f. Behind-the-wheel instruction on rural highways for each student.

    g. The recognition of, development of basic skills necessary and simulated experiences in critical situations, and the development of the basic competencies necessary in accident avoidance techniques.

2. The College and University teacher preparation curriculum for driver and traffic education must not only include the theoretical aspects of operating a motor vehicle safely and efficiently, but also must include the demonstrated ability, on the part of future teachers, to understand and operate the motor vehicle in any situation.

Licensing

1. The issuance of an original motorcycle operators license shall be dependent on the same criterion established for the issuance of a regular operators license in addition to those specifically required of a motorcyclist.

2. The Department of State in cooperation with the Department of Education shall develop and institute the concept of a driving log to be used by each driver under the age of 18 years as suggested by Silvernale and Whale.[2]

Research

1. A determination must be made to discover if the 16 year old driver is different when compared to other young drivers.

2. A comparison between the 16 year old driver and other new drivers might well show some interesting results.

3. Research must continue to determine the nature of the individual when he drives when compared to his life style and background.

4. A study to determine if there is a correlation between fatal accident involvement and personal injury, property damage accident involvement of the 16 year old driver.

5. A study to compare driver education programs. Regular school day, after school, Saturdays and Summer school programs would be studied and compared with the traditional classroom and in-car laboratory instruction, classroom simulation and in-car; classroom range and in-car; classroom, simulation, range, and in-car laboratory instruction.

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[2]Silvernale and Whale, op. cit., pp. 10-12, 40, 42.

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