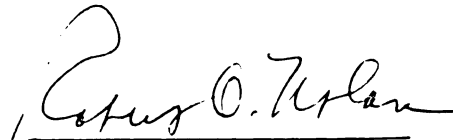




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thesis entitled
THE PRESENT STATUS OF EMERGENCY DRIVING INSTRUCTION
TAUGHT TO HIGH SCHOOL STUDENTS, AS PERCEIVED BY
SELECTED HIGHWAY SAFETY INSTRUCTORS
presented by
ANGELO JOSEPH SCALET

has been accepted towards fulfillment
of the requirements for
PH.D. degree in SECONDARY ED. & CURRICUL.


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THE PRESENT STATUS OF EMERGENCY DRIVING INSTRUCTION
TAUGHT TO HIGH SCHOOL STUDENTS, AS PERCEIVED BY
SELECTED HIGHWAY SAFETY INSTRUCTORS

By

Angelo Joseph Scalet

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Secondary Education and Curriculum

1980

ABSTRACT

THE PRESENT STATUS OF EMERGENCY DRIVING INSTRUCTION TAUGHT TO HIGH SCHOOL STUDENTS, AS PERCEIVED BY SELECTED HIGHWAY SAFETY INSTRUCTORS

By

Angelo Joseph Scalet

Statement of the Problem

Inclusion of emergency driving exercises in the regular driver education program is affected by the level of professional commitment to the implementation of Federal Highway Safety Program Standard Four. Federal Standard Four of June 27, 1967, was one of the earliest standards to be drafted by the National Highway Safety Agency (now known as the National Highway Traffic Safety Administration). It stated that the objective of driver education was to insure that every eligible high school student has the opportunity to enroll in a course of instruction designed to train him to drive skillfully, and as safely as possible, under all traffic and roadway conditions.

The purpose of this research was to determine the present status of teaching emergency driving situations and exercises to high-school-age drivers and to identify situations and exercises considered appropriate for inclusion in the regular driver education curriculum.

Description of the Method Used

Data were sought from selected professional groups involved directly and indirectly with high school driver education students. Questionnaires were sent to high school driver education teachers, college and university instructors, state department of education personnel, county supervisors of driver education, law enforcement and government personnel, and representatives from insurance and automobile companies. The sample was nonrandomly selected and included primarily individuals who had had special preparation and/or experience in highway safety programming.

Data on the following topics were sought: (1) general curriculum, (2) facilities and equipment, (3) instructor training, (4) opinions regarding the appropriateness of including emergency driving instruction in the high school driver education curriculum, and (5) strengths and needed improvements in individual programs.

The design of the study was reviewed by specialists in educational research at Michigan State University and by the doctoral committee for this dissertation. A pilot study was conducted to pretest the instrument.

A 70 percent return rate of the completed questionnaire was achieved. A narrative presentation of the analyzed data, with attendant tables, was used to describe the current and recommended practices of the highway safety instructors.

Major Findings

The major findings of the study are summarized as follows:

1. The emergency driving situations and exercises most often taught in the regular and/or advanced driver education courses were:

<u>Regular</u>	<u>Advanced</u>
Animals on road	Brakes fail
Blinding lights	Gas pedal sticks
Brakes fail	Steering failures
Deep ruts/holes in road	Submerged vehicle
Stalling on railroad	Vehicle catches fire
Off-road recovery	Evasive maneuver
Serpentine maneuver	Skid control

2. "Bee in vehicle," "submerged vehicle," "vehicle catches fire," and "sudden loss of air/blowout" were most often considered inappropriate for high school students.

3. Although instructors most often developed their own exercise programs, a frequently used commercial curriculum was the General Motors' Program. Three to eight hours were allocated for the exercise instruction.

4. Off-street driving ranges, school parking lots, and rural roads were most often used for teaching the exercises. Most instructors had their own practice area or a nearby facility available. Although many instructors used a special area for skidding purposes, most high school instructors did not have a skid pan. Most instructors indicated that no special equipment (other than seatbelts and shoulder harnesses) was worn by students.

5. Classroom instruction was most often used to teach the situations; the exercises were most often taught using behind-the-wheel

instruction. Simulation was least often used to teach either the situations or the exercises.

6. The college driver education course was the most frequently used source of preparation for high school instructors; the General Motors' Program was selected next most often as a source of preparation.

7. Instructors felt the majority of students would benefit from emergency driving instruction.

8. Learning the skills and knowledge necessary to cope with emergency driving situations was deemed to be essential. Needed improvements included availability of better facilities and more time allocated for emergency driving instruction in an advanced driver education course.

IN MEMORIAM
JOSEPH A. SCALET
1893-1962

Son, never too young or too old to learn,
May you always have a yearn;
Life won't always go your way,
But learning can be everyday.

ACKNOWLEDGMENTS

The writer expresses a special thank-you and the greatest appreciation to Dr. Robert O. Nolan, Director of the Highway Traffic Safety Center at Michigan State University and Chairman of the doctoral guidance committee, for his time, counsel, direction, and encouragement in this endeavor. To other members of the guidance committee, Dr. Robert E. Gustafson and Dr. William Mann, a sincere thank-you for their suggestions, time, and constructive criticism. A special thank-you to Dr. Louis G. Romano, for his additional encouragement and support in making final revisions.

Special appreciation is due my mother, for accepting the responsibilities that go with motherhood and especially for realizing the importance of education contributing to the growth and maturity of the individual.

Heartfelt acknowledgment is extended to someone special, Diane, for her encouragement, patience, understanding, and inspiration.

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CHAPTER I

THE NATURE OF THE PROBLEM

Introduction

More than thirty years has passed since driver education was originally introduced into public high school curriculum. As the number of licensed drivers and registered automobiles increased, so has the number of traffic citations, accidents, and fatalities. Although research studies lay claims to the fact that driver education students have fewer accidents and citations, highway fatalities have increased.¹

The reality of the preceding statement is apparent, upon detailed examination of current accident statistics. In 1977, according to the National Safety Council, motor-vehicle accidents resulted in \$10.1 billion in property damage,² 1,900,000 traffic injuries disabling beyond the day of the accident, and 49,500 traffic deaths.³ Of those fatalities, 16,650 involved young people between the ages of 15 and 24.⁴ Of the 137,900,000 drivers in the nation in 1977, 13,900,000 were under the age of 20. This group accounted for 10.1 percent of the driving population, but were involved in 18.1 percent of all accidents and 17.1 percent of all fatal accidents.⁵

¹Louis I. Bernhoff, "Dare Driver Education Change the Social Order?" Caldea Calendar, March 1968, p. 11.

²National Safety Council, Accident Facts (Chicago: National Safety Council, 1978), p. 5.

³Ibid., p. 40.

⁴Ibid., p. 14.

⁵Ibid., p. 54.

In 1968, McGuire studied the effect of qualitatively different driver education programs on the frequency of accidents and violations. He concluded that the addition of simulation training and behind-the-wheel experience did not appear to alter accidents appreciably. He stated,

It is further concluded that no form of existent high school driver education regardless of its quality, in any way reduces highway accidents. . . . High school driver education can no longer be naively accepted as playing a role in our national effort to reduce death and injury on the highway.⁶

According to Bishop, driver educators need to focus on a number of areas, to increase the effectiveness of driver education. One of the areas he mentioned was preparing drivers to cope with emergency driving situations. Bishop indicated that the most critical issue with respect to emergency driving situations is the driver's ability to respond appropriately to slippery road conditions. If the driver loses control and slides off the pavement, it is important that he be able to maneuver the car onto the pavement from the shoulder of the road. Many drivers respond to such a situation by turning the steering wheel impulsively and not reducing their speed after one or more wheels meet the shoulder. Bishop contended that drivers respond impulsively to emergency driving situations unless they have had adequate training and experience with those kinds of situations.⁷

⁶H. J. Roberts, ed., The Causes, Ecology, and Prevention of Traffic Accidents (Springfield, Ill.: Charles C. Thomas, 1971), p. 876.

⁷Richard Bishop, "Case Studies of One Car Accidents Involving Young Drivers" (Ph.D. dissertation, New York University, 1961), pp. 177-78.

Wingate stated that there are a variety of reasons why students are not receiving sufficient behind-the-wheel experience in handling common emergencies. According to Wingate,

Most of the already limited behind-the-wheel training is conducted in good weather on familiar local roads that are traffic-free and that provide almost perfect driving conditions. In many cases, to make this deficiency even worse, driver education classes are cancelled at the instructor's first notice of a sprinkle, let alone a downpour or a snow-storm. . . . The student driver's ability to handle a vehicle under less than good conditions is never challenged under realistic conditions.⁸

McKnight indicated that if a student learned to avoid panic braking and skidding, which characterize almost half of the highway accidents, instruction in handling emergencies would be worthwhile.⁹

Yet the primary emphasis in all public training programs has been on the basics of driving, leaving advanced practice, such as emergency driving situations, for the student to learn on his own. Most students get their licenses immediately after completing the regular driver education course; thus special driving situations, such as skidding, are normally first experienced in traffic, where they could result in accidents.¹⁰

⁸Roger H. Wingate, "How to Set Up a Lifesaving Driver Education Course That Takes More Sense Than Dollars," American School Board Journal, November 1973, pp. 29-30.

⁹A. James McKnight, "Needed--Goals for Driver Education," Journal of Traffic Safety Education, January 1973, p. 6.

¹⁰Arthur D. Little, The State of the Art of Traffic Safety (Arthur D. Little, Inc., for the Automobile Manufacturers Association, Inc., 1966), p. 119.

Statement of the Problem

Driver education, as it is currently taught in most public schools, is not adequately preparing young drivers to cope with real-life driving situations.¹¹ Although law enforcement, military, and government personnel recognize the need for emergency driving instruction, driver educators have been reluctant to incorporate such instruction into programs for high school students.¹²

Advanced training has long been commonplace in driving specialties such as racing, police pursuit, bus driving, truck driving, and military driving. During the past six years, there has been a considerable upsurge of interest in advanced training for general drivers.¹³ Detailed study of the various advanced training programs with respect to the driving specialties that are now in operation offers considerable promise for the development of future programs for general drivers as well as for the improvement of present programs.¹⁴

Purpose of the Study

The purpose of this descriptive study was to survey a selected sample of highway safety driving instructors, to assess the present status of the teaching of emergency driving situations and exercises

¹¹Wingate, p. 29.

¹²Arnold W. Siegel, "Emergency Driving--Why Teach It?" Part II, Journal of Traffic Safety Education, October 1970, p. 9.

¹³Leo G. Goldstein, Advanced Driver Education--A Review of the Literature (California Traffic Safety Education Task Force, August 1973), p. 74.

¹⁴*Ibid.*, pp. 74-75.

to high-school-age drivers. More specifically, the study was concerned with the identification of emergency driving situations and exercises that had been taught and those emergency driving situations and exercises that highway safety instructors considered appropriate to teach to high school driver education students.

Additional purposes of the study were:

1. To identify emergency driving situations and exercises taught during the regular and/or advanced driver education course.
2. To identify curriculum materials and guidelines used in teaching emergency driving situations and exercises to high-school-age drivers.
3. To determine the types of facilities and equipment used and/or recommended for instructing high school driver education students in emergency driving situations and exercises.
4. To specify methods of instruction appropriate for teaching emergency driving situations and exercises to high-school-age drivers.
5. To determine the type of training instructors received with regard to emergency driving situations and exercises.
6. To ascertain instructor opinions regarding the teaching of emergency driving situations and exercises to high school students.

7. To assess the strengths and needed improvements of programs currently involved in teaching emergency driving situations and exercises.

The emergency driving situations referred to in the survey instrument were compiled by the Highway Traffic Safety Center at Michigan State University,¹⁵ whereas the emergency driving exercises were developed by General Motors personnel at the Proving Grounds in Milford, Michigan.¹⁶

Importance of the Study

This study will indicate the degree of importance accorded to the teaching of emergency driving situations and exercises to high-school-age drivers, in the opinion of a selected group of highway safety instructors. The study will also provide some information that might prove helpful in assessing the efficacy of teaching emergency driving situations and exercises to high school students.

Moseley indicated that research in this area was a necessity. Such investigation is needed to develop training procedures and design engineering devices that will support safe training.¹⁷

¹⁵"Meeting Emergencies" (East Lansing: Highway Traffic Safety Center, Michigan State University, October 1971).

¹⁶F. D. Smithson and R. A. Whitworth, Development of an Advanced Driver Education Program, 4637 (Milford, Michigan: General Motors Engineering Staff--Proving Grounds, April 1972), pp. 4-15.

¹⁷Alfred Moseley, "Training Drivers to Meet Emergencies," Research on Fatal Highway Collisions, Papers 1961-1962, p. 72.

Definition of Terms

The following terms are defined in the context in which they were used in this study.

EMERGENCY SITUATIONS--Environmental and mechanical conditions that necessitate instantaneous driver behaviors to reduce the possibility of an accident.

Environmental Conditions--Obstacles in the roadway, weather conditions, or distraction of the driver's attention that may cause the loss of control of the automobile; the loss of control may include hitting obstacles in the roadway and/or running off the roadway.

Mechanical Conditions--Mechanical failures that may cause the driver to lose control of his automobile, hitting obstacles in the roadway, running off the roadway, or becoming an obstacle in the pathway of other automobiles.

EMERGENCY DRIVING EXERCISES--A series of training exercises in which a driver learns to prevent loss of control of the vehicle, to regain control of the vehicle if control is lost, and to negotiate unexpected obstacles, reducing the chances of producing an accident situation. These exercises involve three actions: (1) steering, (2) braking, and (3) acceleration. The driving exercises, as listed on page 1 of the Survey Instrument, are:

1. Off-Road Recovery--A driver will often either deliberately or accidentally drop two wheels off the roadedge. This exercise is designed to give the participant the feel and technique

necessary to return to the road surface after leaving the pavement.

2. Skid Control--A driver who experiences a skid and knows little about the forces involved often panics and does nothing or reacts improperly to the skid. This exercise is designed to teach the behavior and control responses on a slippery surface and to provide practice in the proper driving technique needed to correct a skid.
3. Evasive Maneuver--A driver needs to have alternative methods of controlling the vehicle in emergency situations. This exercise is designed to show the evasive capability of an automobile in relation to its stopping capability. It also provides training in handling an emergency evasion, giving attention to avoiding the tendency toward panic braking.
4. Controlled Braking--A driver may need to avoid an obstacle in his pathway without panic braking and locking the wheels of the vehicle. This exercise is designed to give the participant experience in performing a maximum controlled brake stop while still retaining steering ability.
5. Sudden Loss of Air (Blowout, Front and Rear)--A driver may, at any speed, experience a sudden loss of tire inflation pressure. This exercise is designed to provide instruction in the proper control of a vehicle in the event of a sudden loss of tire inflation pressure.
6. Serpentine Maneuver--A driver needs to have a good sense of the vehicle's maneuverability. This exercise is designed to

provide a sense of the rhythm and proper hand positions required to handle an automobile.

HIGHWAY SAFETY INSTRUCTORS--Individuals who have had special preparation and/or experience in teaching emergency driving exercises or who have been actively involved in highway safety programs.

DRIVER EDUCATION COURSE--

Regular (High School) Driver Education--A class in which a student enrolls to learn how to drive and to obtain a driver's license, upon satisfactorily completing the requirements.

Advanced (High School) Driver Education--May be taken after completion of the regular driver education course. The purpose of the advanced course is to develop additional skills that will enhance the driver's ability to avoid and recover from accident-producing situations.

Other Than High School--Training that provides traffic safety instruction to specific adult groups, including teacher-preparation classes, driver education teachers, law enforcement personnel, ambulance drivers, fire departments, school bus drivers, U.S. Coast Guard, and the general public.

MULTIPLE-CAR METHOD--A technique that permits several automobiles to be operated simultaneously on a special off-street facility, under the direction of one or more teachers positioned outside the vehicles. Some teachers use a radio to communicate with students.¹⁸

¹⁸Richard W. Bishop et al., The Multiple-Car Method (Washington, D.C.: Automotive Safety Foundation, 1976), p. 4.

ON-STREET DRIVING--The laboratory phase of the driver education course, during which students are given instruction in driving on the regular highways, roads, and streets whose primary purpose is to accommodate the general traffic flow.

Delimitations of the Study

The study was delimited in the following manner. One hundred sixty-three questionnaires were sent to selected highway safety instructors representing educational establishments, governmental agencies, and private concerns. More specifically, they included high school and college driver education instructors, representatives from the automobile industry and insurance companies, military personnel, and state and local law enforcement employees.

It was not feasible to take a large sample from the highway safety population. Thus, the sample was primarily limited to selected safety instructors who had been trained to teach and had taught emergency driving situations and exercises. The selection and identification of respondents are described in detail in Chapter III.

Organization of the Study

Chapter I included the nature and statement of the problem, the purposes, importance, and delimitations of the study, and definitions of important terms used in the dissertation.

Chapter II includes an in-depth review of the literature. A brief analysis of the effectiveness of driver education and areas of deficiency introduces the chapter. Projects and studies that provide accident statistics of situations that require emergency

driving skills are also included. The discussion is followed by a brief examination of a few driver education programs that pioneered the teaching of emergency driving skills. The last section is devoted to the concept of teaching emergency driving situations and exercises, its relation to learning theories, and its feasibility for high school students, as seen from the perspectives of various highway safety instructors. The driver education curriculum standards, as set forth in 1974, are briefly discussed.

Included in Chapter III are the methodology and procedures used in developing the survey instrument and gathering the required data for analysis. The method used in selecting the sample is explained in detail.

In Chapter IV, the analysis of the data is provided in narrative and tabular form.

Chapter V contains a summary of the major findings, conclusions, recommendations, and a discussion of the potential effect of including emergency driving situations and exercises in the regular driver education curriculum.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

A review of the literature indicated that information related to the purpose of this study was limited. Examination revealed that, although emergency driving techniques were not offered extensively, a limited number of programs offered in-depth training. These programs were found primarily in educational or governmental (i.e., law enforcement) settings; a few were conducted by insurance companies or by those working in the automotive industry.

The purpose of this section is to review factors related to the research of these programs. These factors include a brief analysis of the effectiveness of driver education and the areas of improvement needed, driver education curriculum standards, studies related to accident investigation, emergency driving exercise programs, and learning theory as it relates to the acquisition of psychomotor skills.

The Effectiveness of Driver Education

The highway safety literature provided a broad analysis of the current traffic situation. It indicated that technology has significantly improved the safety of the automobile and that highway engineering has contributed to safer roads. However, the third

element, the driver, has received less dramatic attention. The purpose of driver education is "to insure that every eligible high school student had the opportunity to enroll in a course of instruction designed to train him to drive skillfully and as safely as possible under all traffic and roadway conditions."¹⁹

Accident statistics indicated that highway injuries and fatalities continue to rise,²⁰ even though driver education is considered to be a major deterrent to accidents. According to Moynihan, research on the effects of driver education in reducing accidents has shown no conclusive results on its effectiveness to change driver behavior.²¹

Although there was a lack of consensus among traffic safety educators about the feasibility of teaching emergency driving skills to high school driver education students, some have pointed out that gaps in training exist in the current driver education curriculum. Some have criticized the quality of the instructors who teach driver education, whereas others have focused on the facilities and equipment available to driver education programs. Many traffic safety educators have begun to examine the instructional content of the driver education curriculum. One of the more frequent criticisms

¹⁹ Highway Safety Program Standards, U.S. Secretary of Transportation, Highway Safety Act of 1966, p. 5.

²⁰ National Safety Council, Accident Facts (Chicago: National Safety Council, 1974), p. 54.

²¹ D. Moynihan, "Committee Report to the Secretary of Health, Education, and Welfare, 1968," citing H. J. Roberts, ed., The Causes, Ecology, and Prevention of Traffic Accidents (Springfield, Illinois: Charles C. Thomas, 1971), p. 876.

of the driver education program is that student drivers are seldom prepared to handle emergency driving situations that develop suddenly on the highway.²²

Critics have pointed out that public training programs emphasize basic driving techniques, leaving practice of emergency situations to the student himself. Most students first experience an emergency situation in traffic, with no previous experience or practice in selecting the appropriate response. The driver education curriculum, for the most part, does not include teaching emergency driving techniques and skills; the obvious result is that many drivers are licensed, having had no instruction in skidding, off-road recovery, maneuvering around obstacles, tire blowouts, or controlled braking.²³

Snyder stated:

One of the major flaws in almost any safety education program is the lack of training for emergency situations. Surprisingly, a large number of accidents are not actually due to collision itself but to running off the highway, rolling, or skidding off the highway.²⁴

Even as late as 1966, Little recognized the absence of emergency driving maneuver programs for the general public. He stated:

²²Gerald Wallace, "A Quality Program for Driver Education," California Journal of Traffic Safety Education (June 1969): 15, 22.

²³Arthur D. Little, The State of the Art of Traffic Safety (Arthur D. Little, Inc., for the Automobile Manufacturers Association, Inc., 1966), p. 119.

²⁴William B. Snyder, "Analysis of Driver Education Effectiveness and Recommendations for Its Improvement," Proceedings of the Eleventh Annual Meeting of the American Association for Automotive Medicine, ed. Arthur H. Keeney (Springfield, Ill.: Charles C. Thomas, 1970), p. 170.

We have found no substantive information on advanced programs directed at such things as emergency procedures, skidding and the like. Although a number of special programs have been developed by insurance companies for fleet operators and appear to achieve economical return for the effort, . . . there is some question as to whether programs directed at employees would have the same effect on the general driver.²⁵

According to the literature, it was apparent that drivers are not receiving preparation for emergency situations. Although some safety programs have made provisions for emergency driving techniques, such techniques are not widely taught. Researchers for the Liberty Mutual Insurance Company felt that today's drivers are not being adequately prepared to handle emergency driving situations. They stated:

Of driver education in the 70s, one thing is certain: student drivers are not being prepared to cope with present day conditions. Specifically, too many students are not receiving sufficient behind-the-wheel experience in handling common emergencies. Once they get their licenses, they too often are unprepared for accident-producing situations.²⁶

Moseley stated that, if driver-education-trained students do not possess a significant advantage over students who do not take driver education, it may be a result of the fact that "while driver education accomplished what it set out to do, it did not set out to do enough."²⁷ Moseley went on to state:

It is not subject to proof at this time, and I must freely admit it, but I hold the opinion that the reason why our driver education-trained students do not show the advantages

²⁵Little, p. 16.

²⁶Liberty Mutual Insurance Companies, A Primer for Setting Up an Emergency Driving Range (Boston: Liberty Mutual Insurance Companies, 1972), p. 1.

²⁷Alfred Moseley, "Training Drivers to Meet Emergencies," Research on Fatal Highway Collisions, Papers 1961-1962, p. 59.

that we might wish is due to the fact that their training does not go far enough to equip them with skills to meet the practical emergencies of highway travel. Therefore, what I am saying is that policy decisions favoring the addition of emergency training must be made. The goal of this training is to provide the student with emergency skills for the occasion of need.²⁸

Moseley contended that training drivers for emergencies was a feasible concept. His reasoning was that:

It has been utilized in other areas with considerable effect and with a reduction in the incidence of death under extreme circumstances. In addition, it has provided skills, concepts, attitudes and "presence of mind," so that in situations which were completely unpredicted, the basic characteristics of the training came to the aid of the individual in solving the unexpected problem.²⁹

Some safety experts believe that emergency driving skills should not be taught to driver education students. They consider driver education students to be too inexperienced as drivers and the emergency driving skills too dangerous to perform. However, Moseley indicated that:

Skills cannot be developed when you have only one instance requiring perception of the developing trouble, diagnosis of the existing trouble, the need for immediate, accurate decision, the need for accurate remedial action. To meet this problem, the person exposed to the dangers should be placed in situations of a training nature in which the educational procedure and the engineering devices have been carefully structured by appropriate research and, conforming closely to the operational characteristics of the real emergency, to be given firsthand experience in the diagnosis and management of the emergency situation.³⁰

Briggs, likewise, stated that a student driver should obtain experience in testing the limits of the vehicle and the system in

²⁸Ibid.

²⁹Ibid., p. 58.

³⁰Ibid., pp. 60, 61.

which he operates. He would not, however, condone such experimentation if it were to endanger other drivers on the streets and highways. Although Briggs did not condone "do-it-yourself" testing, he did understand students' need to know what the limits are and what to do "if." Thus, he asked: "Would it not be better to provide such experience during formal driver training?"³¹

Driver Education Curriculum Standards

According to the Highway Safety Program Manual of September 1974, instruction in handling emergency driving situations should be included in the basic driver education course. Section IV of this publication stipulated that driver education course content should include:

Basic and advanced driving maneuvers.

Operation of motor vehicles on streets and highways with emphasis on techniques that will aid the driver in avoiding crashes. This should specifically include training in handling driving emergencies, including hydroplaning and skid avoidance and recovery.³²

Accident-Investigation Studies

The significance of driver error as a contributing factor in traffic accidents was revealed in data collected on single- and multiple-vehicle accidents. A variety of driver errors accounted

³¹George E. Briggs, "Driving as a Skilled Performance," Proceedings of the Second Annual Traffic Safety Research Symposium of the Automobile Insurance Industry (Washington, D.C.: Insurance Institute for Highway Safety, March 19-21, 1968), p. 134.

³²Highway Safety Program Manual, No. 4 (U.S. Department of Transportation, National Highway Safety Administration, September 1974), p. IV-8.

for the types of traffic accidents that occurred, not the least of which was inadequate preparation in dealing with unforeseen circumstances. A number of accident-investigation studies have been undertaken, focusing on the types of deficits drivers exhibited under emergency conditions. Four such studies are discussed below.

Operation 66 was a three-month Joint Engineering-Enforcement Project (popularly known as JEEP), which analyzed factors contributing to single-vehicle accidents. The study was conducted along Route 66 from Joliet, Illinois, to San Bernardino, California. Seven states through which Route 66 passed participated in this unique project; they were California, Arizona, New Mexico, Texas, Oklahoma, Missouri, and Illinois. The Office of Highway Safety, Bureau of Public Roads, was responsible for the overall coordination of the project.³³

Eight hundred fifty single-vehicle accidents were investigated; data were grouped according to three types of operational failures as follows:

1. The most common failure was leaving the roadway, with at least one wheel leaving the area of normal travel. In 781 of the 850 cases, at least one wheel of the vehicle left the area of normal travel. In 687 of these cases, the vehicle ran off the roadway and also hit fixed objects or overturned after running off the traveled area.
2. The second failure was striking stationary objects without leaving the roadway. Thirty-eight vehicles which struck objects before leaving the roadway hit guardrails, bridge structures, and traffic control devices.
3. The third failure was overturning on the pavement; this occurred in 31 cases.³⁴

³³Report of Operation 66 (Joint Engineering Enforcement Project, U.S. Department of Commerce, Bureau of Public Roads, November 1966), p. 2.

³⁴Ibid., p. 3.

When the investigators were polled for their opinions about factors contributing to the aforementioned accidents, the following percentages resulted. Of the 850 accidents investigated, 24.1% were attributed to vehicle factors (with tire failure most frequently mentioned), 22.1% were attributed to road factors (with slippery roads most often mentioned), and 53.8% were accorded to driver factors.³⁵

In addition, it was found that small cars were involved in 3.5 times as many accidents as were standard-size cars. Small cars were classified as being under 2,000 pounds and standard-size cars were classified as being over 3,000 pounds. The risk indexes varied inversely with the size of the car, but the reason for this variation had not been determined. Age differences of the drivers or different types of cars may have accounted for this finding.³⁶

A study conducted by the Indiana University Institute for Research in Public Safety during the Period July 1, 1969, to June 1970 also contributed to a better understanding of accident causes. The main objective of that study was:

To investigate a limited number of accidents involving late-model vehicles in an extremely broad and unrestricted manner, looking at all human, vehicular, and environmental factors of relevance in the pre-crash, at-crash, and post-crash time intervals, and then utilizing a "systems approach" through the interaction of relevant disciplines, to discover and report causal factors, conclusions, and recommendations which tend to reduce the occurrence of accidents or reduce the extent of injury in those that do occur.³⁷

³⁵Ibid., p. 12.

³⁶Ibid., p. 9.

³⁷Kent B. Joscelyn and John R. Treat, Multidisciplinary Highway Crash Investigation Team (Institute for Research in Public Safety, U.S. Department of Transportation, July 1970), p. 1.

Twenty-five accidents were selected for full multidisciplinary crash research investigation; 20 of these were accidents in Monroe County, 1 in an adjacent county, and 4 others at locations in Indiana substantially distant from Institute offices.

The results regarding the driver as cause of an accident were as follows:

Of 24 vehicles investigated, driver error was regarded as the primary cause of 22 of them. Of the remaining two accidents, one was deliberately a plan of self-destruction, while the other was the result of a mechanical failure. The 25th accident was due to improper safety procedures in handling a tractor tire.³⁸

The observed driver errors generally occurred in the presence of significant contributing vehicular or environmental factors. Environmental factors often were wet or snow-covered pavement, obstacles in the roadway (i.e., animals), and vision limited by surrounding land or fog. Environmental factors played their most significant role as objects of impact.³⁹ Vehicular factors most frequently were bald tires.⁴⁰

The 22 vehicle accidents caused by driver errors were categorized as follows:

- (6)--Involved failure to use proper care at an intersection to see and avoid oncoming traffic.
- (5)--Drivers lost control of their vehicles
 - (4)--under the influence of alcohol
 - (1)--inexperienced driver of a stolen car
- (3)--Inattentiveness of drivers in negotiating curves
 - (1)--snow-covered pavement
 - (1)--wet pavement on a reverse bank curve
 - (1)--dry pavement

³⁸Ibid., p. 95.

³⁹Ibid., pp. 96-97, 102.

⁴⁰Ibid., p. 97.

- (2)--Drivers drifted left of center and into path of oncoming traffic for no apparent reason
 - (1)--One driver had ingested codeine
 - (1)--One driver was under the influence of alcohol
- (2)--Improper evasive maneuvers
 - (1)--Driver braked and swerved, losing control and sliding broadside off the road and into a tree, believing that he had seen a deer in the road ahead.
 - (1)--Driver, running too fast through extremely dense fog, perceived a vehicle to be out in the road in front of him, though in fact the vehicle was stationary and off the right edge of the road. As a result, the driver took unnecessary "evasive" action which caused him to slide broadside off the side of the road and directly into the vehicle he sought to avoid.
- (1)--Driver fell asleep at the wheel and lost control as he awoke and over-corrected.
- (1)--Driver (who may have been drinking) cut across the inside of a tight curve on a back country road, impacting a vehicle headed in the opposite direction head-on.
- (1)--Accident involving several cars resulted when a vehicle at the head of a tightly bunched and rapidly moving column of traffic slowed on a curve to make a turn precipitating a series of rear-end collisions as traffic behind him was unable to slow sufficiently.
- (1)--Driver of a tractor-trailer failed to see, and was impacted by an oncoming train.

In at least 9 of the 22 driver-error accidents, excessive speed was a major causative factor.⁴¹

Bishop's study of 119 single-vehicle accidents showed that certain types of driver errors were predominant. The specific errors that drivers committed were:

1. Abrupt movements on slippery surface.
2. Late correcting and/or compensating for a skid.
3. Locking of the wheels which eliminated the possibility of steering.⁴²

⁴¹Ibid., pp. 97-98.

⁴²Richard W. Bishop, One Car Accidents and the Young Driver (Safety and Traffic Division, Automobile Club of Michigan, 1963).

Bishop concluded that these errors often resulted from a lack of knowledge, because of inadequate training or experience in that kind of situation. Results of his accident investigation indicated that many of the drivers possessed a narrow concept of driving; they were inclined to consider only the minimum essentials of driving (i.e., accelerating, shifting gears, braking, and avoiding obstacles). Bishop felt that both beginning and experienced drivers needed to develop a broader perspective of the driving task. According to him, in 50% of the accidents investigated, the driver had misinterpreted the traffic scene and this resulted in excessive speed for conditions, sudden movement, or other errors.

In a summary of research findings dealing with single-vehicle accidents, Baker listed four main areas relating to driver problems. These four areas were:

1. Delayed perception due to drowsiness and distraction.
2. Impaired judgment due to alcohol.
3. Ineffectual evasive tactics due to lack of skill.
4. Speed giving too little time for evasive tactics in emergencies.⁴³

Baker concluded that driving-maneuver skills can be taught to drivers. However, such training requires facilities that are not generally available and are often expensive. Baker indicated that the cost of expensive training must be weighed against the possible benefits derived. He also cautioned that young drivers may unwisely practice

⁴³ J. Stannard Baker, Single-Vehicle Accidents (Traffic Institute, Northwestern University for Automotive Safety Foundation, 1968).

the maneuvers on public streets or not try to avoid emergency situations, because of over-confidence in their driving skills.

Emergency Driving Exercise Programs

Following is a brief description of six programs that have offered training in emergency driving techniques. Although the program offered by the California Highway Patrol has long been regarded as one of the finest in training law enforcement officers, the Advanced Driver Education Course designed by General Motors has generally received greater national recognition outside the law enforcement community. The General Motors course was first demonstrated to traffic safety officials of many states and several foreign countries in 1969 at the Proving Grounds in Milford, Michigan. The original program was designed for General Motors test drivers and was later expanded to include law enforcement personnel and then high school driver education instructors. The high school driver education teachers received the course at university safety centers throughout the country.

Five of the six programs that follow are General Motors related. Three of the five General Motors programs involved teaching high school students emergency driving techniques and were conducted in Northbrook, Illinois; Havre, Montana; and Warrensburg, Missouri. The emergency driving exercise program developed by General Motors is included in Appendix B.

California Highway Patrol Academy

The California Highway Patrol Academy at Sacramento, California, offered emergency vehicle operations training to their cadets. Approximately 30 to 35 hours of driver training instruction were given during the last 8 weeks of a 16-week training program at the Academy. Cadets spent a maximum of 4 hours in lectures; the remaining time they spent behind the wheel, each cadet averaging 26 hours in such training.

The program was implemented in 1958 and has been continually upgraded. At the time of this writing, two methods that were used for improving the program were feedback from the cadets going through the training and discussion sessions among the instructors on concepts and skills that needed to be presented. Every six months the instructors at the Academy received a computerized printout of the accidents involving California State Patrol vehicles. These accidents were evaluated to determine the kind of training that needed to be emphasized. The results of this training were as follows:

The indication from the instruction personnel is that California Highway Patrolmen are averaging 7 accidents per million miles of travel. Comparable state and local agencies throughout the country are averaging between 12 and 25 accidents per million miles of driving. Their feeling is that the driver training program is extremely effective.⁴⁴

Few accidents occurred during training. The personnel indicated that approximately two roll-overs occurred each year and that only one injury had occurred since the program's inception in 1958.

⁴⁴Gerald V. Barrett, Analysis of Performance Measurement and Training Requirements for Driving Decision Making in Emergency Situations (New York: University of Rochester, 1973), p. 86.

In the California Highway Patrol Academy, a variety of techniques were used in teaching emergency driving skills and concepts. Drivers underwent training in commentary driving, high-speed driving, evasive maneuvers, skid-pan exercises, and defensive driving skills. The use of these techniques can reduce the conditions of stress. According to Barrett,

It is known that individuals show a significant decline in performance under conditions of stress. The decline in performance is much greater for those who are inexperienced in performing the task. This accounts for the observation that the typical driver, when faced with emergency situations, limits his responses to hard braking.⁴⁵

Thus, the emergency vehicle operations course emphasized behind-the-wheel training. Generally, the cadet received between 26 and 30 hours of practical experience to insure that, during moments of stress, driving responses would be executed properly.

The General Motors Advanced Driver Education Program

The Advanced Driver Education Program was developed at the General Motors Proving Grounds in 1969, to gain a better understanding of driver capabilities as related to accident-free driving. Initially, the program was designed to develop and test a driver-retraining course for Proving Grounds drivers. Objectives of the program included:

1. Prevent vehicle accidents on the Proving Grounds road system during the running of the annual durability tests.

⁴⁵Ibid., p. 88.

2. Acquire some understanding of typical driver habits and deficiencies which might represent a contribution to the state of the art of public driver education.⁴⁶

Proving Grounds records were reviewed to determine the types of accidents durability test drivers had experienced in the past. Thirty percent of the test drivers in the study were permanent Proving Grounds employees and the rest had been hired temporarily for the study. None of the employees were professional test drivers. A group of drivers from among Proving Grounds Garage Department employees were chosen for the retraining program. These drivers were involved in the types of driving situations and conditions commonly experienced by the average motorist.

The durability test course was 28 miles long, with a variety of road, speed, and traffic conditions. The course was operated 24 hours a day from October to February.

Records revealed that the largest number of accidents were caused by drivers falling asleep. The majority of non-sleep-caused accidents seemed to result from the driver's inability to cope with unexpected driving situations such as wet road skids, path blockage by other vehicles, and misjudged speed.⁴⁷

According to Hoffman, McLellan, and Kelly, there was a need for a defensive driving course that would teach drivers techniques to be used in compensating for unexpected driving situations, especially those involving proper accident-avoidance actions.

⁴⁶Richard G. Hoffman, David R. McLellan, and Alonzo H. Kelly, Jr., "Training Drivers for Emergencies," General Motors Safety Seminar, 1969, p. 1.

⁴⁷Ibid.

The subsequently developed Proving Grounds retraining program consisted of four hours of classroom instruction and four hours devoted to behind-the-wheel training and practice in specially prepared vehicles. Objectives of the program were:

1. To increase the driver's awareness and understanding of driving hazards in potential accident situations.
2. To improve the driver's ability to control and maneuver a vehicle when confronted with an emergency situation.⁴⁸

Results of the study indicated that:

A total of 150 drivers who had received the advanced driver training course were included in this study. Six months after receiving the course, a representative number of drivers was selected at random for retesting to determine how well they were able to retain the material and techniques taught in the course. Each driver was exposed to a series of emergency situations while accompanied by an instructor who observed their reaction and response. The results were most encouraging. Drivers, in general, exhibited good retention of the training materials. Especially gratifying was the fact that the drivers appeared to be very confident in performing the defensive maneuvers, a dramatic contrast to the nervous, unsure attitude that prevailed at the beginning of the course. The total value of the effort can only be determined from the impact it has on accident reduction; it will take time to fully evaluate this aspect of the results.⁴⁹

From the results of the study, it was felt that substantial improvements can be realized in defensive driving techniques when the driver actually experiences the emergency situations firsthand. It was apparent that techniques requiring a high degree of precision can not be taught solely by film, demonstration, or presently available simulators, but these are useful supplements to actual behind-the-wheel experience.⁵⁰

⁴⁸Ibid., pp. 1-2. ⁴⁹Ibid., p. 3. ⁵⁰Ibid., pp. 3-4.

Oakland County (Michigan) Sheriff's
Department Advanced Driving Program

In 1969, the Oakland County Sheriff's Department approached General Motors with a request that their patrolmen be trained to react to emergency driving situations. Sixty officers were selected and matched to provide two groups that were as similar as possible. Thirty officers were trained in October 1969 and the other 30 made up the control group.

The program comprised a single 7.5-hour session with 1.5 hours devoted to classroom instruction and the remaining 6 hours to behind-the-wheel experience and observation. Generally, each driver spent two hours behind the wheel and four hours as an observer. The training exercises duplicated those used by Proving Grounds personnel. The results of the experiment were as follows:

As of March 1971, the groups have an accident record of 10 to 5 in favor of the trained group. The trained group showed a 50% accident reduction as compared to the untrained group. Prior to the training, the accident rate for the two groups was 13 and 11 accidents for an equal time period.⁵¹

Also of importance in assessing the program was the cost-benefit ratio. Data indicated that the total cost of accidents for the untrained group was ten times that for the trained group. Table 1 shows the precise figures.

The time interval for the experiment was 17 months. No assessment of long-term retention had been done; however, the results

⁵¹F. D. Smithson, "Development of an 'Advanced' Driver Education Program," Proceedings of the Fifteenth Conference of the American Association for Automotive Medicine (New York: Society of Automotive Engineers, Inc., 1972), p. 359.

of this experiment may lend promise for the future upgrading of driver education.

According to Smithson,

It is at least obvious that some form of advanced or modified driver education program must be undertaken in this country to help reduce traffic accidents. The increasing activity and interest in driver education and the progress being made by the driver educator in attempting to upgrade his understanding and capabilities give one hope that great strides will be made in this area in the near future.⁵²

Table 1.--Comparison of trained and untrained groups of Oakland County Sheriff's Department Personnel as related to cost benefits of emergency driving exercises.

	Trained Group	Untrained Group
Number of accidents	5	10
Injuries	0	2
Lost days	0	87
Lost wages	\$1,446.50	\$ 3,500.00
Vehicle damage costs	0	\$11,247.10
Vehicles totaled	0	3
Total cost	\$1,446.50	\$14,747.10
Average cost/accident	\$ 289.00	\$ 1,474.00

Source: F. D. Smithson, "Development of an 'Advanced' Driver Education Program," Proceedings of the Fifteenth Conference of the American Association for Automotive Medicine (New York: Society of Automotive Engineers, Inc., 1972), p. 359.

⁵²Ibid., p. 360.

High School Programs

Although the inclusion of emergency driving skills and concepts in high school driver education classes was not widespread, a few high schools across the nation were preparing high school students for emergency driving situations. Further, a limited number of colleges offered high school students training as part of the teacher-preparation program. Training was available to students in either the regular driver education course and/or an advanced driver education course.

The following high schools were among the first to include the teaching of emergency driving skills in their driver education courses.

Glenbrook North High School, Northbrook, Illinois.--One of the primary emergency driving skills taught at Glenbrook was skid control; this experience was included in the regular driver education program. Two objectives were involved in teaching this skill:

1. Contribution to student's knowledge and understanding of skid causes so that control measures can be learned and understood.
2. Developing and perfecting special skills and techniques for controlling skids in a controlled practice environment.⁵³

It was felt that students who were exposed to skid control training were better equipped to make proper decisions and reactions when confronted with real-life experiences involving snow and ice conditions.

⁵³Margaret Johnson, Teaching Skid Control in High School Driver Education (National Safety Congress, 1969), p. 1.

A nearby skating rink was used as the practice area for skidding. Three students were taken in the car at one time, giving each approximately 15 minutes of practice or until he/she demonstrated a feeling of control. A number of exercises were used to help facilitate the students' learning of skid-control techniques--stopping and starting the car on ice, steering right and left through a serpentine course, passing maneuvers, and turning corners.

The skid-control aspect of the driver education program at Glenbrook had been in effect since 1969. There was no statistical research to indicate whether the training experience on ice had a positive carryover to actual performance on snow- and ice-covered highways; however, the students' reactions to this type of training were positive. They felt the training gave them a greater sense of confidence, security, and control in handling a car on ice.

Other emergency situations taught at Glenbrook were:

(1) ignition failure, (2) running the car off the road, (3) brake failure, (4) tire blow-out, and (5) accelerator sticking.

Emergency Driving Procedure Mini-Course, Havre, Montana.--The original Havre Mini-Course was first offered in April 1972. Curt Hahn, representing the Office of Superintendent of Public Instruction, and Georgia Rice, a Havre High School Traffic Education Supervisor, were instructors.

Five exercises constituted the Critical Procedures Mini-Course: (1) off-road recovery, (2) evasive maneuver, (3) controlled braking, (4) tire blow-outs, and (5) serpentine maneuvers. The exercises were designed to be conducted during a 2.5-hour session.

Each participant was permitted approximately 30 minutes of driving time per exercise. In addition, those participants who were high school students had had a minimum of 30 hours of classroom instruction in the regular driver education program offered before the mini-course.

According to Rice, the rationale for offering such an emergency driving course was

to prepare drivers for critical situations that may occur in traffic. Even the most experienced, competent defensive driver is occasionally confronted by critical situations caused by hazardous roadway conditions, mechanical malfunction, driver errors, or an unpredictable outside force or obstacle.⁵⁴

Rice felt it was imperative that the teenage driver be able to cope with emergency situations that occur on the nation's highways.

The mini-course provided an opportunity, under carefully controlled conditions, to develop and perfect special driving skills and techniques required to handle various critical situations effectively. In an effort to reduce driver error in case of emergency, the course was intended to help drivers at various performance levels improve their ability to react safely in an emergency.

Central Missouri State University, Warrensburg, Missouri.--

Central Missouri State University offered an advanced or precision driving techniques program for high school students in the university laboratory. It was modeled after the General Motors Advanced Driver Education Program. To enroll in the program, students must have completed the basic driver education course and have received a driver's

⁵⁴Georgia Rice, "Emergency Driving Procedure Mini-Course," p. 3.

license. The program dealt with advanced driving techniques; trailer-ing; truck driving and motorcycle education; accident causation including multiple-cause theory, precrash, crash, and postcrash information; and traffic engineering. The advanced techniques included blow-outs, skid instruction, power steering and brake failure, engine failure, and accelerator stick. Also included were serpentine exercises, evasive maneuvers, off-road recovery, and controlled braking activities. Generally, these activities were done at speeds between 20 and 35 m.p.h.

The advanced driving program is now included in the teacher preparation program. All undergraduate majors and minors in traffic safety education are trained in these activities, as are graduate students in traffic safety degree programs.

Dr. Robert Ulrich, Professor and Head of the Safety Department, felt strongly that those who have been assigned responsibility for teaching these activities must be thoroughly trained in their use and know how to teach them. He also felt it was important that these activities be included in the program, after the students have mastered the art of handling the vehicle relatively well; otherwise, they become frustrated and the activity may well become detrimental--even dangerous.⁵⁵

⁵⁵ Letter from Dr. Robert Ulrich, Associate Professor and Head of the Safety Department, Central Missouri State University, Warrensburg, Missouri, April 1, 1974.

Concept of Teaching Emergency Driving Techniques

This section is devoted to the concept of teaching emergency driving exercises and its relation to learning theory. Its feasibility in the regular driver education curriculum is briefly examined, as seen by some highway safety experts.

Skill Training

Carter questioned whether accident avoidance can be taught through evasive maneuvers. He stated that research in this area had been attempted at the university level and by some state police departments. However, in general, few motorists have had an opportunity to receive accident-avoidance training.⁵⁶

Carter also questioned whether it should be assumed that drivers are not going to encounter emergency situations on the highway or, if they do encounter such situations, they will know how to respond to them from having read a textbook or remembered a diagram presented in class.⁵⁷

Moseley⁵⁸ and Siegel⁵⁹ both agreed that a driver can not be expected to react appropriately during an emergency situation, if he

⁵⁶Kenis Carter, "Can We Really Teach Evasive Maneuvers?" Journal of Traffic Safety Education, April 1974, p. 31.

⁵⁷Ibid.

⁵⁸Alfred Moseley, "Training Drivers to Meet Emergencies," Research on Fatal Highway Collisions, Papers 1961-1962, pp. 60-61.

⁵⁹Arnold W. Siegel, "Emergency Driving--Why Teach It?" Part I, California Journal of Traffic Safety Education, June 1970, p. 19.

has never been exposed to such an occurrence. Moseley stated that the purpose of training is to reduce a situation of danger to a point of control and to provide a skill with which to act under conditions of imminent danger or stress. Similarly, Siegel believed that drivers should be field trained so as to be equipped to react correctly and automatically to common driving emergencies. Carter, like Moseley and Siegel, believed that the more exposure students have to emergencies, under controlled conditions, the better prepared they will be to meet and cope with emergencies on the highway.

Moseley delineated the criteria under which students should be exposed to an emergency situation:

The person should be placed in situations of a training nature in which educational procedures and engineering devices have been carefully structured by appropriate research and conforming closely to the operational characteristics of the real emergency, to be given firsthand experience in the diagnosis and management of the emergency situation.⁶⁰

According to Strother, traffic authorities are beginning to realize that the death toll remains high partly because people have forgotten what they learned in driver education and still more because they were never taught what to do in emergency situations. Strother stated that the driver education curriculum, consisting of 30 hours in class and 6 hours behind the wheel, is about the same as it was when introduced in 1933. It covers only the rudiments of driving.⁶¹

⁶⁰Moseley, p. 60.

⁶¹Robert S. Strother, "Post-Graduate Driving," Kiwanis Magazine, March 1974, p. 26.

Wingate stated that the value of training in emergency driving techniques should be obvious. Most of the behind-the-wheel experience students receive is conducted in good weather on familiar local roads, providing excellent driving conditions. The student driver's ability to handle a vehicle under less than good conditions is never challenged under realistic conditions. Wingate believed that "the lives of young drivers depend not only on the amount--but on the type of behind-the-wheel training they received in controlling common emergency situations."⁶²

McKnight, like Wingate, acknowledged that few students ever experience driving under adverse weather conditions while enrolled in driver education classes. Many students graduate without ever having experienced starting, driving, and stopping on slippery pavement.⁶³

According to Roberts, the human factor in accident causation is most crucial. Six of eight causative categories listed by engineers who investigated accidents on the Pennsylvania Turnpike dealt with human errors. They were: (1) inattention, (2) illegal and unsafe actions, (3) deficiencies in driving skill, (4) misperception, (5) failure to avoid obstacles in the road, and (6) intoxicants. The other two categories concerned the vehicle or the physical condition of the road.⁶⁴

⁶²Roger H. Wingate, "How to Set Up a Lifesaving Driver Education Course That Takes More Sense Than Dollars," American School Board Journal, November 1973, pp. 29-30.

⁶³A. James McKnight, "Needed--Goals for Driver Education," Journal of Traffic Safety Education, January 1973, p. 5.

⁶⁴H. J. Roberts, ed., The Causes, Ecology, and Prevention of Traffic Accidents (Springfield, Ill.: Charles C. Thomas, 1971), p. 55.

Qualified instructors and adequate facilities are two components needed to prepare student drivers to cope with the traffic scene. A driving range or unused stretch of roadway can be used to teach evasive steering, to overcome fear of leaving the roadway, and to react correctly to simulated blow-outs or brake failure.⁶⁵

Strother indicated that an unobstructed area 450 feet by 250 feet was adequate for behind-the-wheel preparation in emergency driving skills.⁶⁶

Carter stated that the possibility of student injury was minimal, if the driver was given adequate space to recover if he lost control of the vehicle. Students should have doors locked and their shoulder harness and seat belt fastened at all times while driving a vehicle, on the range or on the highway.⁶⁷

The importance of providing an opportunity to practice emergency driving techniques can not be over-emphasized. The research studies discussed on the following pages demonstrated that people retain perceptual motor skills better with repeated practice. Providing sufficient opportunity for practice is a critical factor in determining the proficiency in the acquired motor skill.

According to learning theorists Anderson and Faust, motor skills were usually over-learned or practiced beyond the point of mastery, even in laboratory settings. They also stated that the

⁶⁵McKnight, p. 6.

⁶⁶Strother, p. 28.

⁶⁷Carter, p. 35.

greater the similarity between the learning situation and the actual experience, the better will be the recall.⁶⁸

Jones and Bilodeau undertook a study to determine gunners' retention of sight-manipulating skills over long intervals of no practice. The results of the study were important to military policy in recalling or reassigning personnel. Their findings included:

1. Well-trained sight operators can return to the task after relatively long absences and be expected to be significantly more proficient in sighting skills than the novice.
2. The once well-trained operator, after relatively long absences, can be expected to reacquire former proficiency in a relatively short period of time.⁶⁹

Ammons et al. initiated research in 1958 to determine subjects' retention of perceptual-motor skills following differing amounts of initial training and after no-practice intervals up to two years. Subjects were trained to operate a vertical panel on which 17 control units were mounted. The units included a knife switch, a toggle switch, an automobile turn indicator, an automobile turn handle, a rotary switch, a doorbell buzzer, and a sliding door latch, all arranged so that the subjects could easily reach any one. The task involved manipulating the controls in a given sequence, which was mounted on the panel for the subjects to see. Subjects used the first few trials to identify the items and the correct sequence and

⁶⁸Richard Anderson and Gerald W. Faust, Educational Psychology: The Science of Instruction and Learning (New York: Dodd, Mead, and Company, 1973), pp. 460, 462.

⁶⁹Earl I. Jones and Edward A. Bilodeau, "Retention and Relearning of a Complex Perceptual-Motor Skill After Ten Months of No-Practice," Human Resources Research Bulletin, No. 53-17, June 1953, p. 13.

to manipulate the controls correctly. The next step was to speed up the runs, still using the schematic chart as a guide. Subjects of the study were male university students. Groups ranging from 40 to 47 subjects were trained to perform 12 sequential arrangements, representing two degrees of learning (5 trials and 30 trials). The trials were combined with six durations of no-practice intervals (one minute, one day, one month, six months, one year, two years). The subjects were tested for retention and retrained for ten trials after the no-practice interval. The results of the study indicated:

A greater proportion of proficiency was lost by groups receiving less initial training and groups receiving longer no-practice intervals. Re-training to the earlier level of proficiency took more trials the longer the no-practice interval and the greater the amount of training.⁷⁰

The Fleishman and Parker studies of the early 1960s demonstrated a number of factors influencing retention and relearning of perceptual-motor skills. The 1962 study included in its design provisions to simulate the learning of a complex skill--learning to fly a radar intercept mission. Their research questions included the following:

1. How well is such a skill retained without practice?
2. What is the relation between retention and level of proficiency after the original learning?
3. Is the type of initial training related to retention?

⁷⁰R. B. Ammons, R. G. Farr, E. Bloch, E. Neumann, M. Dey, R. Marion, and C. H. Ammons, "Long-Term Retention of Perceptual-Motor Skills," Journal of Experimental Psychology 55 (1958): 327.

4. If there is a loss in proficiency, how much practice is required to regain it?⁷¹

The findings of the study indicated that retention of proficiency in a complex perceptual-motor skill was extremely high, even after 24 months with no practice. The most important factor in retention was the level of proficiency developed in the initial learning session. The correlation between final level of original learning and performance after different intervals of no practice was found to be .80. It was also found that retention was a function of the level of proficiency at the end of the initial training, rather than a function of the type of initial training used.

With respect to the amount of practice needed to learn perceptual-motor skills, Moseley asserted:

The training program should be carried to the point where the student shows his tendency to panic and is eliminated; or shows his incapacity to properly manage the emergency and is eliminated; or develops a skill and capacity to respond to the emergency by doing the correct thing in time for it to be effective.⁷²

He continued:

The more significant the contribution of the man to the successful performance of the man-machine relationships, the more important it is that the training of the human operator be carried to a degree of where he can successfully manage all types of problems which arise.⁷³

Barrett indicated that students should practice emergency driving skills, not only until the skills are perfected, but until a level of emotional desensitization is reached. Under situations of

⁷¹Edwin A. Fleishman and James F. Parker, "Factors in the Retention and Re-learning of Perceptual-Motor Skills," Journal of Experimental Psychology 64(3) (1962): 215.

⁷²Moseley, p. 61.

⁷³Ibid.

stress, people experience more anxiety or arousal. There is an optimum level of individual arousal that allows for maximum performance. However, beyond that level, the individual's performance diminishes substantially. The individual often then limits his responses solely to hard or panic braking. Students must be given an opportunity to develop emotional control in situations of stress.⁷⁴

The value of training and practice in emergency driving skills seems to rest on their being as similar to the actual situation as possible. The better the driver learns these skills, the more likely it is that he will respond appropriately when an emergency arises in traffic. Traffic safety educators disagree, however, about whether emergency driving skills should be taught to high school students in the regular driver education course or in an advanced driver education course.

Seals stated that crash-avoidance techniques or evasive performance skills should not be taught in the regular driver education course. He believed that including emergency driving skills in the regular driver education course could increase the probability of the student driver's becoming involved in a collision. Two reasons he cited were:

1. Few students acquire minimal skill since practice time is so short. Many learners would practice maneuvers on their own. This is a deadly practice.

⁷⁴Barrett, Performance Measurement and Training Requirements, pp. 88-89.

2. Off-road recovery involves swerving back on the roadway without delay--another deadly practice.⁷⁵

There is not sufficient time in the regular driver education course to teach emergency driving skills. Seals suggested that advanced driver education skills should be taught only to students who have successfully completed the basic driver education course and have had one year of driving experience.

Siegel believed that training in driving skills makes students better drivers. He felt that emergency driving skills can be taught in the regular driver education course, in an advanced driver education course, or as an extension of the practical driving aspect of the regular course.⁷⁶

Dunn, another traffic safety educator, believed that the regular driver education curriculum should place increased emphasis on crash avoidance and emergency driving techniques. He felt the curriculum and facilities should give students an opportunity to learn emergency driving procedures under proper field conditions. Learning these procedures, he said, would enhance students' understanding of collisions, how injuries are caused, and how to respond correctly to avoid collisions and accident-producing situations.⁷⁷

⁷⁵Thomas A. Seals, "Evasive Drills Have No Place in Driver Education for Beginners," Journal of Traffic Safety Education, October 1974, p. 26.

⁷⁶Arnold W. Siegel, "Emergency Driving--Why Teach It?" Part II, Journal of Traffic Safety Education, October 1970, p. 11.

⁷⁷LeRoy Dunn, "Where Is Driver Education Headed?" Journal of Traffic Safety Education, October 1974, p. 7.

Barrett indicated that there has not been sufficient research in the area of preparing young drivers for emergency driving situations. Thus, it is not possible to weigh the outcomes of such training until further research is undertaken.⁷⁸

Summary

The review of literature indicated that many experts felt there was a deficiency in the present driver education curriculum. Driver education students complete the regular driver education course without adequate skills to handle common driving emergencies.

Statistics showed that drivers were involved in accidents involving running off the roadway, skidding, hitting obstacles in the roadway, and uncontrolled braking (with subsequent locking of the brakes). It was hypothesized that many accidents might have been prevented or their severity reduced if the driver had received proper instruction and training in handling common driving emergencies.

There was, however, no general consensus among highway safety experts about whether emergency driving techniques should be taught in the regular driver education curriculum. Some believed that such techniques should be taught only in an advanced course to students with driving experience. Others felt that the high school driver education student should receive this training as part of the regular driver education course. The literature also revealed that the opportunity for students to enroll in an advanced driver education course was limited.

⁷⁸Barrett, pp. 93-94.

From the literature review, a trend toward including emergency driving situations and exercises in the regular driver education curriculum was apparent. However, that subject requires considerable research and analysis.

A discussion of the design of the present study, developing and pilot testing the survey instrument, the selection of the sample, follow-up procedures, and the method of data analysis are included in Chapter III.

CHAPTER III

DESIGN AND METHODOLOGY OF THE STUDY

The review of related literature was presented in the preceding chapter. In this chapter, the design and methodology of the current study are presented.

Research Questions to Be Answered

This study was concerned with identifying the emergency driving situations and exercises that respondents had taught and those they considered appropriate for high school driver education students.

In addition to obtaining this information, data were sought to determine:

- a. the types of curriculum guidelines used.
- b. the nature of the facilities and special equipment used.
- c. qualifications of the instructors.
- d. instructor opinion regarding a number of factors related to teaching emergency driving exercises to high school driver education students.
- e. instructor assessment regarding strengths and needed improvement of their existing programs, as related to the teaching of emergency driving situations and exercises.

Sample Selection

The study sample was nonrandomly selected. Highway safety instructors who had had special preparation and/or experience in teaching emergency driving exercises or who were actively involved in highway safety programs were considered. Contacts with additional instructors were gained through correspondence and personal contact with various highway safety personnel throughout the United States. These instructors were also requested to complete the questionnaire.

Richard Whitworth, driver education supervisor at the General Motors Proving Grounds in Milford, Michigan, suggested individuals who had taken the Advanced Driver Education Course sponsored by General Motors and taught by him at various safety centers in the United States. These graduates then became instructors of the Advanced Driver Education Course in their local areas, training high school instructors and some law enforcement personnel in advanced driver education techniques. These individuals, in turn, were able to provide the names of people who had participated in a workshop or training session under their supervision.

Sgt. Timothy Baker of the Michigan State Police provided the names of other possible sample members from the Highway Patrol and State Police organizations. Harvey Clearwater from the University of Maryland provided names of Maryland county supervisors of driver education and Maryland State Department of Education personnel.

Also included in the sample were highway safety instructors from colleges, universities, state departments of education, insurance and automobile companies, government personnel from the Armed Forces

and the National Aeronautics and Space Administration, and a private research organization. The names of these individuals are included in Appendix D.

Some problems were encountered in compiling resource people for the sample. Resource personnel identified by Richard Whitworth, driver education supervisor at the General Motors Proving Grounds, were very cooperative in providing the names of people who had participated in workshops in emergency driving exercises under their supervision. However, it was difficult to obtain government personnel for the sample. Some had taken new positions or had moved to new locations. In other instances, representatives from the Army, Navy, and Air Force would designate other individuals to contact about highway safety education issues. Thus, the researcher was often referred to as many as two or three people before reaching someone who could provide the requested information.

Included among government and private company representatives were law enforcement and insurance company personnel. These individuals were included in the sample because of their long-standing, extensive involvement in teaching emergency driving exercises, not only to their respective personnel but also to the general public. It was felt that their experience in this area would be valuable in making judgments regarding high school driver education students.

Following are the categories of highway safety personnel sampled:

- a. High school instructors
- b. College and university instructors
- c. State department of education personnel
- d. County supervisors of driver education (Maryland)
- e. Private company representatives
- f. Government personnel

The traffic safety professionals in these six categories possessed the broadest range of experience relative to the teaching of emergency driving situations and exercises.

Respondents completing the survey instrument were asked to identify themselves with regard to their training in and teaching of emergency driving exercises. Based on their teaching and training experience, the highway safety instructors were categorized into four major groups:

- Group I Trained to teach emergency driving situations and exercises and have taught them
- Group II Not trained to teach emergency driving situations and exercises, but have taught them
- Group III Trained to teach emergency driving situations and exercises, but have never taught them
- Group IV Not trained to teach emergency driving situations and exercises and have never taught them

The Survey Instrument

The survey instrument was divided into five sections. Each section was completed only by those respondents who met the following criteria. A number of questionnaire items were to be answered by respondents who had had experience in teaching emergency driving

exercises. Other questions were to be completed by respondents who had been specifically trained to teach emergency driving exercises. The sections containing opinion questions were completed by all respondents.

This grouping system clarified for the respondents which sections of the survey instrument they were to complete. It also reduced the possibility that those who lacked specific expertise would respond to specialized questions about facility dimensions, curriculum, and equipment. Respondents in Groups I and II were asked to complete the entire survey instrument. Those in Groups III and IV completed the instructor training and opinion sections of the instrument. (Individuals in Groups I and II had had experience in teaching emergency driving situations and exercises, whereas those in Groups III and IV had not had such experience.)

The five sections of the survey instrument were as follows:

I. General--Items included under this heading involved the type of driver education program in which emergency driving exercises were offered, the season and time of day the exercises were taught, the amount of teaching time allotted to emergency driving exercises, curriculum guidelines used to teach emergency driving exercises, and whether student participation was voluntary or mandatory.

II. Facilities and Special Equipment--These items included the types of facilities that were used to teach emergency driving exercises, the dimensions of the facilities, the dimensions of the skid pan areas, and recommendations regarding minimum dimensions needed for special facilities. Also included were items regarding

the type of special equipment needed in the teaching of emergency driving exercises, with respect to the vehicles used or equipment worn by the driver.

III. Instructor Preparation for Teaching Emergency Driving Situations and Exercises--Items regarding the respondent's own training and teaching experience elicited the number of years of teaching experience in the field of highway traffic safety, the type of special training received in preparation to teach emergency driving exercises, and the various exercises included in the training.

IV. Opinions--Opinion items examined types of methods that should be used to teach emergency driving exercises, whether students would benefit from instruction in emergency driving exercises, and the issue of whether students may be inclined to practice the exercises on roads and highways.

V. Areas of Improvement--Items included under this heading were designed to assess strengths and needed improvements of the existing emergency driving exercise programs. An item was also included to determine whether the respondent's program was going to be continued.

A separate curriculum item was included to determine what methods instructors employed in training; included were 13 emergency driving situations taken from a Michigan State University curriculum guide for driver education⁷⁹ and 6 emergency driving exercises from

⁷⁹"Meeting Emergencies" (unpublished paper, Highway Traffic Safety Center, Michigan State University, October 1971).

the General Motors Advanced Driver Education Course.⁸⁰ Methods of instruction included classroom, simulator, and behind the wheel. Respondents who had had no teaching experience omitted this portion of the questionnaire.

All respondents were expected to complete the opinion section of the aforementioned item, designating which emergency driving situations and exercises they considered feasible for inclusion in the regular high school driver education course, an advanced high school driver education course, or both. Those situations and exercises considered inappropriate for high school driver education students were to be noted under the heading: "Should not be taught in high school." This curriculum item preceded the other five sections of the survey instrument.

Pilot Testing of the Survey Instrument

The survey instrument was pilot tested by having a selected group of individuals complete the questionnaire. Included were graduate students from two driver education courses being offered at Michigan State University during the summer of 1975. In addition, six high school driver education instructors from the Lansing, Michigan, area were asked to complete the questionnaire. Sixteen individuals participated in pilot testing the survey instrument.

The results of the pilot test indicated that certain modifications of the survey instrument were necessary. More specific

⁸⁰F. D. Smithson and R. A. Whitworth, Development of an Advanced Driver Education Program, 4637 (Milford, Michigan, General Motors Engineering Staff--Proving Grounds, April 1972), pp. 4-15.

information regarding the duration of the driver education courses and the amount of time devoted to teaching emergency driving exercises was needed. Time included the total number of hours allocated to teaching emergency driving exercises, the number of classroom and behind-the-wheel sessions per week, the number of minutes per session, and the total number of classroom and behind-the-wheel sessions in the driver education course devoted to emergency driving exercises. The item asking for the frequency of emergency driving exercise sessions was deleted, as it was too vague. The question regarding the number of years of teaching experience related to highway safety was changed to elicit an open-ended response. The specific number of years of teaching experience for each respondent was obtained, rather than a range of years of teaching experience. The item regarding the number of years of teaching experience related to emergency driving exercises was modified to include the possibility that a selected safety instructor might not have had any experience teaching emergency driving exercises. Two additional subject areas were added to the question asking why a high school might not offer an emergency driving exercise program (lack of adequate space and difficulty in securing vehicles from automobile dealers for emergency driving exercise training). In addition, the format of that item was modified to a rank-order rather than a single-choice response.

Follow-Up Procedures

The initial survey instrument was sent to 163 selected highway safety instructors on October 2, 1975. Approximately five

weeks later, a follow-up letter was sent to those people who had failed to respond to the initial mailing. A total of 96 questionnaires were returned and used.

Methods of Data Analysis

On most of the items included in the questionnaire, respondents had to check the one choice they perceived as being the correct response as indicated in a particular program. Only two questions required respondents to write in their answers. The data for each question were tabulated, frequencies noted, and percentages determined. In Chapter IV, these data are presented in tabular form, with numerical representations. Included is a narrative discussion of the data contained in each table.

Summary

This chapter included a discussion of the research questions to be answered, sample selection, the survey instrument, pilot testing of the survey instrument, follow-up procedures, and the method of data analysis. Analysis of the data gathered by means of the survey questionnaire is presented in Chapter IV.

CHAPTER IV

ANALYSIS AND PRESENTATION OF SURVEY DATA

This study was designed to obtain personal reactions of selected highway safety instructors to questions concerning the teaching of emergency driving exercises to high school students enrolled in driver education.

In the preceding chapter, methods used to analyze the research data were explained. Contained in this chapter are an analysis of the data and presentation of the findings in tabular form. Where possible, percentages were computed to illustrate the findings descriptively. The instrument that was used to gather these data was the survey questionnaire, a sample copy of which can be found in Appendix A.

The questionnaire included the following sections:

- I. A comprehensive grouping of emergency driving situations and exercises
- II. The general curriculum
- III. Facilities and equipment
- IV. Instructor training
- V. Highway safety instructor opinions regarding the teaching of emergency driving exercises
- VI. Strengths and needed improvements in current emergency driving programs

Questionnaires were sent to a group of highway safety instructors chosen nonrandomly from a broad range of safety disciplines including law enforcement, education, government agencies, private industry, and insurance and automobile companies.

As indicated in Table 2, 163 highway safety instructors were sent questionnaires. It was assumed that not all questionnaires would reach the individuals for whom they were intended, nor would all people receiving a questionnaire complete it. A total of 96 individuals completed their questionnaires, giving a return rate of 59%.

Table 3 shows that 72% of the highway safety instructors had training and taught; 7% had no training and taught; 9% had training but did not teach; and 11% had no training and did not teach. (See Table 3.)

Group I and Group II instructors were asked to respond to items regarding general curriculum, facilities and equipment, and strengths and needed improvements in existing programs. All four groups were asked to respond to instructor training and opinion sections of the questionnaire.

In the first section of the questionnaire, Group I and II instructors responded to items regarding specific methods they used to teach emergency driving situations and exercises to high school students; all four groups identified emergency driving situations and exercises they considered appropriate to teach to high school students. All four groups also identified whether the situations and exercises should be taught in a regular or an advanced driver education course, or both.

Table 2.--Questionnaires distributed to and returned by highway safety instructors.

Highway Safety Instructors	Number Distributed	Number Returned	Percent Returned
High school instructors	80	45	56
College instructors	26	19	73
State department of education personnel	11	9	82
County supervisors of driver education	24	8	33
Private company representatives	6	5	83
U.S. government personnel	16	10	63
Total	163	96	59

Table 3.--Highway safety instructors grouped according to training and experience in teaching emergency driving procedures.

Highway Safety Instructors	Group I	Group II	Group III	Group IV	Total
	Training, Teaching	No Training, Teaching	Training, No Teaching	No Training, No Teaching	
High school instructors	33	5	5	2	45
College instructors	18	..	..	1	19
U.S. government personnel	7	..	..	3	10
State department of education personnel	6	..	2	1	9
Private company representatives	3	..	..	2	5
County supervisors of driver education	2	2	2	2	8
Total	69 (72%)	7 (7%)	9 (9%)	11 (11%)	96 (99%)

Table 4 indicates the methods used by instructors in Groups I and II to teach various emergency driving situations.

From 68 to 85% of the Group I instructors taught emergency driving exercises in the classroom, whereas 60 to 100% of the instructors in Group II taught emergency driving exercises in the classroom.

The method used second most often by Group I instructors to teach emergency driving situations was behind-the-wheel instruction. The exceptions were submerged vehicle and bee in vehicle, taught by 3% and 16% of the instructors, respectively, which were taught more often in the classroom. Instructors in Group II also used behind-the-wheel instruction second most often, with the exceptions of submerged vehicle, vehicle catches fire, bee in vehicle, hood flies up, and stalling on railroad. Only 20% of the instructors taught these situations by means of behind-the-wheel instruction.

Both groups reported that the method they used least often to teach emergency driving situations was simulation. The situation most often taught using simulation, as reported by Group I instructors, was brakes fail (40%). The situation that Group II instructors most often taught using simulation was blinding lights (40%).

Behind-the-wheel instruction and simulation were used equally often in teaching two situations: vehicle catches fire by Group I instructors (24%) and blinding lights by Group II instructors (40%).

Table 5 shows the methods used by Group I and Group II instructors to teach emergency driving exercises.

The behind-the-wheel method was most often used by those in Group I to teach emergency driving exercises. The exercises taught

Table 4.--Methods used to teach emergency driving situations.

Emergency Situations	Group I (Training, Teaching) (N = 68)					Group II (No Training, Teaching) (N = 5)						
	Method					Method						
	Class		B.T.W.		Sim.	Class		B.T.W.		Sim.		
	N	%	N	%	N	N	%	N	%	N		
Brakes fail	58	85	41	60	27	40	5	100	3	60	1	20
Gas pedal sticks	57	84	32	47	23	34	5	100	3	60	1	20
Lights fail	57	84	23	24	13	19	5	100	3	60	1	20
Flooding carburetor	48	71	28	41	11	16	2	40	3	60	..	..
Stalling on railroad	47	69	18	26	10	15	3	60	1	20	..	..
Hood flies up	56	82	16	24	15	22	3	60	1	20	..	..
Steering failures	51	75	27	40	16	24	3	60	2	40	..	..
Bee in vehicle	46	68	11	16	5	7	4	80	1	20	..	..
Animals on road	51	75	35	51	15	22	3	60	3	60	1	20
Blinding lights	57	84	32	47	19	28	3	60	2	40	2	40
Deep ruts/holes in road	51	75	44	65	12	18	4	80	5	100	1	20
Vehicle catches fire	49	72	16	24	16	24	3	60	1	20	..	..
Submerged vehicle	46	68	2	3	6	9	3	60	1	20	..	..
Total	674	76	325	36	188	21	46	71	29	44	7	10

Key: Class = classroom phase, B.T.W. = behind-the-wheel phase, Sim. = simulation phase.

Table 5.--Methods used to teach emergency driving exercises.

Emergency Driving Exercises	Group I (Training, Teaching) (N = 68)					Group II (No Training, Teaching) (N = 5)				
	Method				Class N %	Method				Class N %
		B.T.W. N %	Sim. N %				B.T.W. N %	Sim. N %		
Off-road recovery	50	74	58	85	24	35	3	60	2	40
Skid control	51	75	51	75	24	35	4	80	3	60
Evasive maneuver	49	72	54	74	17	25	4	80	3	60
Controlled braking	48	71	58	85	15	22	3	60	4	80
Sudden loss of air (blowout)	47	69	31	46	21	31	5	100	2	40
Serpentine maneuver	40	50	56	82	8	12	3	60	2	40
Total	285	69	308	75	109	26	24	80	18	60
									13	43

Key: Class = classroom phase, B.T.W. = behind-the-wheel phase, Sim. = simulation phase.

by this method ranged from sudden loss of air (blowout) (46%) to off-road recovery and controlled braking (both 35%).

The method used second most often to teach emergency driving exercises, as reported by instructors in Group I, was classroom presentation. Seventy-five percent taught skid control in the classroom, whereas only 50% included serpentine maneuver.

In contrast, instructors assigned to Group II reported that classroom presentation was the principal method they used to teach emergency driving exercises. Further, 100% of the instructors in this group stated that the emergency driving exercises they most frequently taught in the classroom were off-road recovery and sudden loss of air (blowout).

Both groups reported that simulation was the method least used to teach emergency driving exercises. Group I instructors reported that, when simulation was employed, the three exercises most often taught were off-road recovery (35%), skid control (35%), and sudden loss of air (blowout) (31%).

Group II instructors indicated that they most often taught skid control (60%) and evasive maneuver (60%) by means of simulation.

As shown in Table 6, Group I instructors indicated that all of the emergency driving situations should be included in the regular driver education course. Responses ranged from 65% for the submerged vehicle to 91% for the blinding lights situations. Approximately 25% or less reported these situations should be included in the advanced driver education course. A small number (9% or less) reported that

Table 6.--Respondents' opinions about teaching emergency driving situations in the regular and/or advanced driver education course.^a

Emergency Driving Situations	Group I (Training, Teaching)(N = 68)					Group II (No Training, Teaching)(N = 5)					Group III (Training, No Teaching)(N = 9)					Group IV (No Training, No Teaching)(N = 10)				
	Program					Program					Program					Program				
	Reg. N	Adv. %	N.A. ^b N	%		Reg. N	Adv. %	N.A. ^b N	%		Reg. N	Adv. %	N.A. ^b N	%		Reg. N	Adv. %	N.A. ^b N	%	
Brakes fail	58	85	13	19	2 3	5	100	1	20	.. ..	8	29	2	22	.. ..	9	90	1	10	.. ..
Gas pedal sticks	55	81	12	18	3 3	5	100	1	20	.. ..	7	78	1	10	1 11	8	80	2	20	.. ..
Lights fail	53	78	7	10	2 3	5	100	1	20	.. ..	6	65	2	22	1 11	9	90	1	10	.. ..
Flooding carburetor	56	82	7	10	1 2	5	100	1	20	.. ..	6	67	.. ..	3 33	.. ..	8	80	2	20	.. ..
Stalling on railroad	58	85	4	6	3 4	5	100	1	20	.. ..	6	67	1	11	2 22	7	70	2	20	.. ..
Hood flies up	54	79	10	15	1 2	5	100	1	20	.. ..	5	56	1	11	3 33	6	60	3	30	.. ..
Steering failures	52	77	16	24	1 2	5	100	1	20	.. ..	4	44	4	44	2 22	8	80	2	20	 ⁶²
Bee in vehicle	52	77	4	6	3 4	5	100	1	20	.. ..	6	67	.. ..	3 33	.. ..	7	70	2	20	1 10
Animals on road	57	84	6	9	2 3	5	100	1	20	.. ..	7	78	.. ..	1 11	.. ..	9	90	1	10	.. ..
Blinding lights	62	91	6	9	2 3	5	100	1	20	.. ..	8	89	1	11	.. ..	9	90	1	10	.. ..
Deep ruts/holes in the road	58	85	5	7	1 2	5	100	1	20	.. ..	7	78	.. ..	2 22	.. ..	8	80	.. ..	1 10	.. ..
Vehicle catches fire	49	72	11	16	3 4	5	100	1	20	.. ..	2	22	2	22	4 44	4	40	2	20	2 20
Submerged vehicle	44	65	14	21	6 9	4	80	2	40	.. ..	2	22	2	22	4 44	3	30	3	30	3 30
Total	708	80	115	13	30 3	64	99	14	21	.. ..	74	63	16	14	26 22	95	73	22	17	7 5

^aThe total number of responses to any driving situation could be greater than the number of persons assigned to a group, because of the possible selection of more than one response by each respondent.

^bN.A. = not appropriate for high school driver education students.

these emergency situations were not appropriate for high school driver education courses.

All but one of the instructors assigned to Group II stated that all of the emergency driving situations should be taught in a regular driver education course. One respondent indicated that the submerged vehicle situation should be taught in an advanced driver education course. No respondents stated that the situations were inappropriate for high school driver education students.

Most respondents assigned to Group III indicated that the emergency driving situations should be taught in the regular driver education course, with the exception of submerged vehicle and vehicle catches fire (both 22%). Forty-four percent of the instructors reported that these two emergency situations were not appropriate for inclusion in high school curricula.

Most instructors assigned to Group IV stated that the emergency driving situations should be taught in a regular driver education course, with the exception of vehicle catches fire (40%) and submerged vehicle (30%). They felt these situations were not appropriate for high school students.

Group I and Group III instructors considered more emergency driving situations inappropriate for high school driver education students than did Group II and Group IV instructors.

As indicated in Table 7, most respondents in Group I felt that emergency driving exercises should be taught in the regular driver education course. There was a response range from 56% (evasive maneuver) to 62% (off-road recovery). Approximately half of the

Table 7.--Respondents' opinions about teaching emergency driving exercises in the regular and/or advanced driver education course.^a

Emergency Driving Exercises	Group I (Training, Teaching)(N = 68)						Group II (No Training, Teaching)(N = 5)						Group III (Training, No Teaching)(N = 9)						Group IV (No Training, No Teaching)(N = 10)					
	Reg.			Adv.			Reg.			Adv.			Reg.			Adv.			Reg.			Adv.		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Off-road recovery	49	62	24	35	3	4	5	100	1	20	1	20	4	44	6	67	..	..	4	40	4	40	..	..
Skid control	43	63	31	46	3	4	4	80	2	40	2	40	3	33	6	67	..	..	5	50	4	40	..	..
Evasive maneuver	38	56	36	53	5	7	4	80	2	40	2	40	3	33	7	78	..	..	4	40	4	40	..	..
Controlled braking	45	66	29	43	4	6	4	80	2	40	2	40	4	44	6	67	..	..	5	50	4	40	..	..
Sudden loss of air (blowout)	45	62	28	41	5	7	3	60	2	40	2	40	3	33	5	56	1	11	5	50	3	30	1	10
Serpentine maneuver	44	65	29	43	4	6	4	80	2	40	2	40	2	22	5	56	..	..	4	40	4	40	1	10
Total	261	64	177	43	24	6	24	80	11	37	11	37	19	35	35	65	..	..	27	45	23	38	2	3

^aThe total number of responses to any driving exercise could be greater than the number of persons assigned to a group, because of the possible selection of more than one response by each respondent.

^bN.A. = not appropriate for high school driver education students.

respondents (35-53%) stated that these emergency driving exercises should be taught in advanced driver education. Less than 7% felt these exercises were inappropriate for high school programs.

Most respondents in Group II stated that the emergency driving exercises should be taught in the regular driver education program (60-100%). All respondents included off-road recovery in the regular driver education course. Forty percent of the instructors reported that all exercises except off-road recovery (20%) should be included in the advanced driver education course. None felt the exercises were inappropriate for high school driver education.

Most respondents in Group III felt that the exercises should be taught in advanced driver education, whereas 44 percent or less would place these exercises in the regular driver education course. Only one person indicated that the blowout exercise was not appropriate for high school driver education students.

Respondents assigned to Group IV showed no clear indication about the inclusion of these exercises in the regular or advanced driver education course. One respondent indicated that the blowout exercise and serpentine maneuver were inappropriate for high school driver education students to learn.

General Curriculum Questions

Only respondents who had had experience in teaching emergency driving exercises were asked to respond to questions regarding general curriculum; this included Group I and II instructors.

Table 8 illustrates that emergency driving exercises were taught during the regular driver education course by 100% of the state department of education instructors and county supervisors of driver education in Group I. One hundred percent of the high school instructors and county supervisors of driver education in Group II also taught the exercises during the regular driver education course.

Ninety-seven percent of the high school instructors in Group I taught emergency driving exercises in the regular driver education course, whereas 36% of the college instructors in Group I taught the exercises in an advanced course. High school students receiving emergency driving exercise instruction from college instructors were enrolled in a university laboratory driver education course or were from other high schools in the area; these students provided future teachers with an opportunity to work with inexperienced drivers.

Emergency driving exercises were taught in an advanced driver education course by 3% of the high school instructors and 50% of the private company representatives in Group I.

Table 9 shows the groups other than high school driver education students who received instruction in emergency driving exercises from the survey respondents. These data indicated that 38% of the respondents offered emergency driving exercises to law enforcement personnel, and 31% offered such instruction to teacher-preparation students. Sixteen percent of the respondents offered emergency driving exercises to the general public. Thirteen percent of the respondents offered driving instruction to driver education instructors and ambulance drivers. Another 9% of

Table 8.--Emergency driving exercises taught during the regular or advanced driver education course.

Instructors	N	Driver Education Program			
		Regular		Advanced	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	29	28	97	1	3
College instructors	14	9	64	5	36
U.S. government personnel	..	..	..	..	..
State department of education personnel	6	6	100	1	17 ^a
Private company representatives	2	1	50	1	50
County supervisors of driver education	2	2	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	58	51	88	8	14

^aIndicates a state department of education respondent who taught emergency driving exercises in the regular and advanced driver education program.

Table 9.--Groups other than high school driver education students who received instruction in emergency driving exercises from survey respondents.

	Others Who Received Instruction																
	I		II		III		IV		V		VI		VII		VIII		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Group I																	
<u>(Training, Teaching)</u>																	
High school instructors	4	1	25	..	..	1	25	..	..	1	25	..	..	1	25	..	..
College instructors	14	8	57	3	21	2	14	4	29	2	14	..	..	3	21	..	..
U.S. government personnel	7	..	..	..	..	6	86	..	..	..	..	..	..	..	..	1	14
State department of education personnel	3	..	..	..	..	3	100	..	..	..	..	..	..	..	..	..	..
Private company representatives	2	1	50	1	50	..	..	..	..	..	..	..	..	..	..	..	..
County supervisors of driver education	1	..	..	..	..	..	..	..	..	..	..	1	100	..	..	..	..
Group II																	
<u>(No Training, Teaching)</u>																	
High school instructors	1	..	..	..	..	..	..	..	..	..	..	..	..	1	100	..	..
County supervisors of driver education	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	32	10	31	4	13	12	38	4	13	3	9	1	3	5	16	1	3

Key: I = Teacher Preparation, II = Driver Education Instructors, III = Law Enforcement, IV = Ambulance Driver, V = Fire Department, VI = School Bus Drivers, VII = General Public, VIII = U.S. Coast Guard.

the respondents offered such instruction to fire department personnel, and 3% offered it to school bus drivers and members of the U.S. Coast Guard.

Table 10 illustrates the seasons during which emergency driving exercises were taught.

One hundred percent of government personnel, private company representatives, and county supervisors in Group I taught emergency driving exercises during the fall. Eighty-three percent of high school, college, and state department of education instructors in Group I taught the exercises during the fall. Sixty-seven percent of the high school instructors and 50% of the county supervisors of driver education in Group II taught them during the fall.

Emergency driving exercises were taught during the winter months by 100% of the county driver education supervisors in Group I. From 50 to 89% of the remaining categories of instructors in Groups I and II taught the exercises during the winter. Seventy percent of the high school instructors in Group I and 67% in Group II offered the emergency driving instruction during this season.

The instruction was given most frequently during the spring. One hundred percent of the government personnel, state department of education personnel, private company representatives, and county supervisors of driver education in Group I and high school instructors in Group II taught the exercises during the spring.

Eighty percent of the high school instructors and 94% of the college instructors in Group I and 50% of the county supervisors of

Table 10.--Seasons of the year during which emergency driving exercises were offered.

Instructors	N	Seasons ^a							
		Fall		Winter		Spring		Summer	
		N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>									
High school instructors	30	25	83	21	70	24	80	19	63
College instructors	18	15	83	16	89	17	94	17	94
U.S. government personnel	7	7	100	7	100	7	100	7	100
State Department of Education personnel	6	5	83	5	83	6	100	3	50
Private company representatives	3	3	100	2	67	3	100	3	100
County supervisors of driver education	2	2	100	2	100	2	100	2	100
<u>Group II (No Training, Teaching)</u>									
High school instructors	3	2	67	2	67	3	100	1	33
County supervisors of driver education	2	1	50	1	50	1	50	..	..
Total	71	60	85	56	79	63	89	52	73

^a In most cases, respondents indicated teaching emergency driving exercises during more than one season.

driver education in Group II taught the exercises during the spring.

During the summer, 100% of the private company representatives and county supervisors in Group I offered emergency driving exercises. Ninety-four percent of the college instructors in Group I offered instruction during the summer, as did 63% of the high school instructors in that group. Thirty-three percent of the high school instructors in Group II taught the emergency driving exercises during the summer.

One hundred percent of the government personnel in Group I offered the emergency driving exercises during all four seasons.

Table 11 indicates when the individual respondents offered emergency driving instruction.

Emergency driving instruction was offered during the regular school/work day by 100% of the government personnel and private company representatives in Group I and county supervisors of driver education in Group II. Eighty-seven percent of the college instructors and 77% of the high school instructors in Group I (67% in Group II) taught the exercises during the day.

All of the state department of education personnel and 53% of the college instructors (Group I) offered the instruction after school/work. Only 37% of the high school instructors in that group offered the exercises after school or work.

Between 40% and 50% of the college instructors and state department of education personnel in Group I offered the program on weekends. Only 17% of the high school instructors in Group I were

Table 11.--When the emergency driving instruction was offered.

Instructors	N	When Offered						Other N %
		During School/ Work Day		After School/ Work Day		Weekends		
		N	%	N	%	N	%	
<u>Group I (Training, Teaching)</u>								
High school instructors	30	23	77	11	37	5	17	1 3 ^a
College instructors	15	13	87	8	53	6	40	1 7 ^b
U.S. government personnel	5	5	100	1	20	..	..	.. ..
State department of education personnel	6	2	33	6	100	3	50	.. ..
Private company representatives	3	3	100	1	33	..	..	.. ..
County supervisors of driver education	2	1	50	1	50	..	..	.. ..
<u>Group II (No Training, Teaching)</u>								
High school instructors	3	2	67	1	33	1	33	.. ..
County supervisors of driver education	2	2	100	..	..	..	..	.. ..
Total	66	51	77	29	44	15	23	2 3

^aOne high school instructor reported that the program was offered during vacation periods.^bReported by college instructor as being offered during workshop or inservice days.

involved in weekend instruction, whereas 33% of the high school instructors in Group II offered the instruction on weekends.

Three percent of the high school instructors and 7% of the college instructors in Group I offered the instruction during vacation or inservice days.

Table 12 shows the duration of driver education in weeks, as taught by the respondents.

The median program length for high school instructors, state department of education personnel, and county supervisors of driver in Group I was 13 weeks, which was also the case for high school instructors in Group II. Government personnel had the shortest driver education training; their median program length was one week.

Table 13 depicts the duration of the emergency driving instruction in weeks and hours.

The median program duration in weeks for government and state department of educational personnel in Group I and for high school instructors in Group II was one week. The median length for high school instructors, college instructors, and county supervisors of driver education in Group I was two weeks, whereas it was 16 weeks for private company representatives.

The median number of hours for high school and college instructors in Group I was five hours; for state department of education personnel in Group I and high school instructors in Group II, the median was four hours. The median length of emergency driving instruction for government personnel was 20 hours, whereas for county supervisors of driver education in Group II it was eight hours.

Table 12.--Mean and median length of driver education course, in weeks.

Instructors	N	Number of Weeks	
		Mean	Median
<u>Group I (Training, Teaching)</u>			
High school instructors	31	17	18
College instructors	15	16	16
U.S. government personnel	7	2	1
State department of education personnel	6	14	18
Private company representatives	2	8	8
County supervisors of driver education	1	18	18
<u>Group II (No Training, Teaching)</u>			
High school instructors	5	18	18
County supervisors of driver education	2	14	14

Table 13.--Mean and median length of emergency driving instruction in driver education, in weeks and hours.

Instructors	N	Weeks		N	Hours	
		Mean	Median		Mean	Median
<u>Group I (Training, Teaching)</u>						
High school instructors	16	5	2	29	7	5
College instructors	12	2	2	14	6	5
U.S. government personnel	4	3	1	7	25	20
State department of education personnel	4	3	1	6	6	4
Private company representatives	1	16	16	..	..	..
County supervisors of driver education	1	2	2	2	3	3
<u>Group II (No Training, Teaching)</u>						
High school instructors	4	1	1	4	5	4
County supervisors of driver education	..	..	..	2	8	8

Table 14 represents the time scheduled for classroom sessions in emergency driving exercises.

The median number of sessions for high school instructors, government personnel, private company representatives, and county supervisors of driver education in Group I was three, as it was for high school instructors in Group II.

The median number of sessions for college instructors and state department of education personnel in Group I was two. The median number of sessions for county supervisors of driver education in Group II was four.

The median number of minutes per session for high school and college instructors, state department of education personnel, and private company representatives in Group I and for county supervisors in Group II was 55. The median number of minutes for government personnel in Group I was 120. The median for high school instructors in Group II was 50 minutes.

Table 15 depicts the time scheduled for behind-the-wheel sessions in emergency driving exercises.

The median number of sessions for high school and college instructors and private company representatives in Group I was two. The median number of sessions for government personnel and county supervisors of driver education in Group I was four; the median number of sessions for state department of education personnel in that group was three. For high school instructors in Group II, the median was one session.

Table 14.--Time scheduled for classroom session in emergency driving exercises (number of sessions and minutes per session).

Instructors	N	# of Sessions		N	# of Minutes Per Session	
		Mean	Median		Mean	Median
<u>Group I (Training, Teaching)</u>						
High school instructors	27	4	3	27	55	55
College instructors	16	2	2	16	69	55
U.S. government personnel	5	3	3	6	179	120
State department of education personnel	5	3	2	5	75	55
Private company representatives	2	3	3	3	200	55
County supervisors of driver education	2	3	3	2	60	60
<u>Group II (No Training, Teaching)</u>						
High school instructors	4	4	3	4	50	50
County supervisors of driver education	1	4	4	2	55	55

Table 15.--Time scheduled for behind-the-wheel practice of emergency driving exercises (number of sessions and number of minutes per session).

Instructors	N	# of Sessions		N	# of Minutes Per Session	
		Mean	Median		Mean	Median
<u>Group I (Training, Teaching)</u>						
High school instructors	27	3	2	27	53	55
College instructors	16	3	2	15	101	58
U.S. government personnel	6	6	4	6	263	120
State department of education personnel	5	5	3	5	106	120
Private company representatives	2	2	2	3	115	55
County supervisors of driver education	2	4	4	1	45	45
<u>Group II (No Training, Teaching)</u>						
High school instructors	2	1	1	2	55	55
County supervisors of driver education	..	..	..	2	60	60

The median number of minutes per session for high school instructors and private company representatives in Group was 55, as it was for high school instructors in Group II. The median number of minutes per session for government personnel and state department of education personnel in Group I was 120; for college instructors in that group, the median number of minutes was 58. For county supervisors of driver education in Group I, the median was 45 minutes, whereas it was 60 minutes for county supervisors in Group II.

Table 16 indicates the total number of classroom sessions devoted to emergency driving exercises.

The median number of sessions for high school instructors in Group I and county supervisors in Group II was five. The median number of sessions for college instructors and state department of education personnel in Group I was three. For government personnel in Group I and high school instructors in Group II, the median was four. The median number of sessions for private company representatives in Group I was two, whereas for county supervisors in that group, the median was eight sessions.

Table 17 shows the total number of behind-the-wheel sessions devoted to emergency driving exercises.

The median number of sessions for high school and college instructors and state department of education personnel in Group I was three. For government personnel in the same group, the median was ten. The median number of sessions for county supervisors of driver education was four for Group I and two for Group II. The median of sessions for high school instructors in Group II was one.

Table 16.--Number of classroom sessions devoted to emergency driving exercises.

Instructors	N	# of Sessions	
		Mean	Median
<u>Group I (Training, Teaching)</u>			
High school instructors	30	7	5
College instructors	16	4	3
U.S. government personnel	6	4	4
State department of education personnel	5	5	3
Private company representatives	1	2	2
County supervisors of driver education	2	8	8
<u>Group II (No Training, Teaching)</u>			
High school instructors	4	5	4
County supervisors of driver education	1	5	5

Table 17.--Number of behind-the-wheel sessions devoted to emergency driving exercises.

Instructors	N	# of Sessions	
		Mean	Median
<u>Group I (Training, Teaching)</u>			
High school instructors	31	6	3
College instructors	16	6	3
U.S. government personnel	6	9	10
State department of education personnel	5	6	3
Private company representatives	..	..	..
County supervisors of driver education	2	4	4
<u>Group II (No Training, Teaching)</u>			
High school instructors	2	1	1
County supervisors of driver education	1	2	2

Table 18 indicates the length of time emergency driving exercises had been a part of the respondents' programs.

In Group I, 100% of the government personnel and private company representatives had offered the instruction for two or more years, as had the county supervisors of driver education in Group II. Eighty-one percent of the high school instructors and 83% of the college instructors in Group I had offered the instruction for two or more years, and so had 75% of the high school instructors in Group II.

Six percent of the high school and college instructors in Group I had offered the exercise instruction for less than 12 months.

Thirteen percent of the high school instructors, 11% of the college instructors, and 33% of the state department of education personnel in Group I had taught emergency driving exercises for more than one year but less than two years.

Table 19 shows the sources of curricula used to teach emergency driving exercises.

The response most often given by instructors was that they had developed their own program. This was especially true of high school instructors in Group II, all of whom indicated that they had developed their own program. In Group I, 86% of the government personnel, 75% of the high school instructors, and 61% of the college instructors had developed their own program. Only 50% of the private

Table 18.--Length of time emergency driving exercises had been a part of the respondents' programs.

Instructors	N	Length of Time							
		Less Than Six Months		Six to Twelve Months		More Than One Year But Less Than Two		Two Years or More	
		N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>									
High school instructors	32	1	3	1	3	4	13	26	81
College instructors	18	..	..	1	6	2	11	15	83
U.S. government personnel	7	..	..	..	..	..	..	7	100
State department of education education personnel	6	..	..	..	..	2	33	4	67
Private company representatives	2	..	..	..	..	..	..	2	100
County supervisors of driver education	2	..	..	1	50	..	..	1	50
<u>Group II (No Training, Teaching)</u>									
High school instructors	4	..	..	1	25	..	..	3	75
County supervisors of driver education	2	..	..	..	..	..	..	2	100
Total	73	1	1	4	5	8	11	60	82

Table 19.--Sources of curriculum used to teach emergency driving exercises.

Respondents	N	Source of Curriculum															
		Commercial						Developed Own		Other							
		G.M. N	%	L.M. N	%	A.I. N	%	L.S.C. N	%	Program N	%	a N	b N	c N			
<u>Group I (Training, Teaching)</u>																	
High school instructors	32	8	25	..	..	..	..	..	..	24	75	1	3	2	6	1	3
College instructors	18	16	89	2	11	1	6	..	..	11	61	..	..	..	..	..	..
U.S. government personnel	7	1	14	..	..	..	..	..	..	6	86	..	..	..	..	1	14
State department of education personnel	6	4	67	..	..	..	..	..	..	2	33	..	..	..	..	..	..
Private company representatives	2	1	50	..	..	..	..	..	..	1	50	..	..	..	..	..	..
County supervisors of driver education	2	..	..	..	..	..	..	1	50	1	50	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>																	
High school instructors	4	..	..	..	..	..	..	..	..	4	100	..	..	..	..	..	..
County supervisors of driver education	2	..	..	..	..	1	50	..	..	1	50	..	..	..	..	..	..
Total	73	30	41	2	3	2	3	1	1	50	68	1	1	2	3	2	3

Key: G.M. = General Motors Program
L.M. = Liberty Mutual Insurance Company
A.I. = Aetna Insurance Company
N.S.C. = National Safety Council
a = State patrols
b = College and university consultants
c = Simulators and films

company representatives in Group I and county supervisors in Groups I and II indicated that they had designed their own instructional program.

Of the commercial curriculum available, the General Motors Program was used most often as a guideline. In Group I, 89% of the college instructors and 67% of the state department of education instructors used the General Motors curriculum. Only 25% of the high school instructors and 14% of the government personnel in Group I used the General Motors curriculum. Fifty percent of the county supervisors of driver education in Group I used guidelines from the National Safety Council, whereas 50% of the county supervisors in Group II used Aetna Insurance Company guidelines.

Other sources of guidelines used by high school instructors in Group I included state patrols, college and university consultants, and simulators and films.

Table 20 indicates student participation in emergency driving exercises.

Instructors in Groups I and II most often required student participation in emergency driving exercises; exceptions were college instructors, private company representatives, and county supervisors in Group I. Only 28% of the college instructors in Group I indicated that the instruction was a requirement; 50% of the private company representatives and county supervisors in that group concurred.

College instructors in Group I most often indicated that student participation was voluntary (50%).

Twenty-two percent of the college instructors and 6% of the high school instructors in Group I indicated that student participation

Table 20.--Student participation in emergency driving exercises--voluntary or required.

Instructors	N	Type of Participation				Both ^a	
		Voluntary		Required		N	%
<u>Group I (Training, Teaching)</u>							
High school instructors	32	8	25	22	69	2	6
College instructors	18	9	50	5	28	4	22
U.S. government personnel	7	1	14	6	86	..	..
State department of education personnel	6	2	33	4	67	..	..
Private company representatives	2	1	50	1	50	..	..
County supervisors of driver education	2	1	50	1	50	..	..
<u>Group II (No Training, Teaching)</u>							
High school instructors	4	1	25	3	75	..	..
County supervisors of driver education	2	..	..	2	100	..	..
Total	73	23	32	44	60	6	8

^aBoth indicates that (1) depending on the student clientele, the exercises were voluntary (i.e., general public) or required (i.e., law enforcement); or (2) the classroom aspect of the exercises was required but the behind-the-wheel aspect was voluntary.

was both voluntary and required, depending on the nature of the student population (i.e., general public or law enforcement) and the phase of instruction being taught (i.e., classroom or behind the wheel).

Facilities and Equipment

Only respondents who had experience in teaching emergency driving exercises were asked to respond to questions regarding facilities and equipment. This included Group I and II instructors.

Table 21 indicates which respondents had their own area for practicing emergency driving exercises. Eighty-three percent of the college instructors, 71% of the government personnel, and 100% of the county supervisors of driver education in Group I had their own area for practicing the exercises. Forty-seven percent of the high school instructors and 50% of the state department of education instructors in Group I had their own practice area. Only 20% of the high school instructors in Group II had their own area.

Table 22 shows how often another nearby facility was used for practicing emergency driving exercises.

Of the instructors who did not have their own facility, 100% of the state department of education instructors and government personnel in Group I were able to use a nearby facility to practice the exercises. One hundred percent of the county supervisors of driver education in Group II were able to use a nearby facility.

The instructors who had most difficulty locating a facility close by were the high school instructors in Group I (59%) and Group II (67%) and the college instructors in Group I (67%).

Table 21.--Respondents who had their own area for practicing emergency driving exercises.

Instructors	N	Had Their Own Area	
		Yes N %	No N %
<u>Group I (Training, Teaching)</u>			
High school instructors	32	15 47	17 53
College instructors	18	15 83	3 17
U.S. government personnel	7	5 71	2 29
State department of education personnel	6	3 50	3 50
Private company representatives	3	3 100	.. ..
County supervisors of driver education	2	2 100	.. ..
<u>Group II (No Training, Teaching)</u>			
High school instructors	5	1 20	4 80
County supervisors of driver education	2	1 50	1 50
Total	75	45 60	30 40

Table 22.--Respondent used another nearby facility for practicing emergency driving exercises.

Instructors	N	Used Another Nearby Facility	
		Yes N %	No N %
<u>Group I (Training, Teaching)</u>			
High school instructors	17	7 41	10 59
College instructors	3	1 33	2 67
U.S. government personnel	2	2 100	.. ..
State department of education personnel	3	3 100	.. ..
Private company representatives	..	.. ..	.. ..
County supervisors of driver education	..	.. ..	.. ..
<u>Group II (No Training, Teaching)</u>			
High school instructors	3	1 33	2 67
County supervisors of driver education	1	1 100	.. ..
Total	29	15 52	14 48

Table 23 furnishes the distance traveled by instructors to reach a nearby practice facility.

High school instructors in Group I traveled an average of 3.7 miles, and high school instructors in Group II traveled an average of 4 miles to reach the practice area.

College instructors in Group I traveled an average of 12 miles, whereas government personnel in that group traveled an average of 20.2 miles. Also in Group I, state department of education instructors traveled an average of 15.6 miles.

County supervisors of driver education in Group II traveled an average of one mile.

Table 24 represents the width of the area on which emergency driving exercises were practiced.

The median width for high school instructors, government personnel, and state department of education personnel in Group I and county supervisors of driver education in Group II was 200 feet. The median width for college instructors was 275 feet, and for county supervisors of driver education in Group I it was 237 feet. The median width for private company representatives in Group I was 400 feet.

Table 25 shows the length of the area on which emergency driving exercises were practiced.

The median length of the practice area for county supervisors of driver education in Groups I and II was 300 feet. For high school instructors and private company representatives in Group I, the median was 600 feet; for college instructors it was

Table 23.--Distance traveled to use another facility (in miles).

Instructors	N	Distance (in Miles)	
		Mean	Median
<u>Group I (Training, Teaching)</u>			
High school instructors	7	3.7	3.0
College instructors	1	12.0	12.0
U.S. government personnel	2	20.2	20.2
State department of education personnel	3	15.6	5.0
Private company representatives	..	..	..
County supervisors of driver education	..	..	..
<u>Group II (No Training, Teaching)</u>			
High school instructors	1	4.0	4.0
County supervisors of driver education	1	1.0	1.0

Table 24.--Width of the area on which emergency driving exercises were practiced (in feet).

Instructors	N	Width of the Area (in Feet)						Mean	Median	
		1-100	101-200	201-300	301-400	401-500	501-600			
<u>Group I (Training, Teaching)</u>										
High school instructors	23	9	5	5	2	2	..	191	200	
College instructors	17	..	4	9	2	1	1	300	275	
U.S. government personnel	4	1	1	2	..	..	..	187	200	
State department of education personnel	5	1	3	..	1	..	..	184	200	
Private company representatives	3	..	..	..	2	..	1	466	400	
County supervisors of driver education	2	..	..	2	..	..	..	237	237	
<u>Group II (No Training, Teaching)</u>										
High school instructors ^a	2	..	..	..	..	..	..	..	..	
County supervisors of driver education	1	..	1	..	..	..	..	200	200	

^aRespondents indicated they practiced emergency driving exercises on a racetrack. No dimensions were given.

Table 25.--Length of the area on which emergency driving exercises were practiced (in feet).

Instructors	N	Length of the Area (in Feet)								Mean	Median
		1- 200	200- 400	401- 600	601- 800	801- 1000	1001- 1200	1201+			
<u>Group I (Training, Teaching)</u>											
High school instructors	24	8	3	5	1	2	1	4	1338	600	
College instructors	17	..	4	4	5	4	..	..	643	650	
U.S. government personnel	4	..	1	..	1	..	..	2	3237	2900	
State department of education personnel	5	..	1	..	3	1	..	..	716	800	
Private company representatives	3	1	..	1	1	..	..	..	560	600	
County supervisors of driver education	2	..	2	..	..	..	..	..	300	300	
<u>Group II (No Training, Teaching)</u>											
High school instructors ^a	2	..	..	..	..	..	..	..	..	..	
County supervisors of driver education	1	..	1	..	..	..	..	..	300	300	

^a Respondents indicated they practiced emergency driving exercises on a race track. No dimensions were given.

650 feet. Also in Group I, the median length for state department of education personnel was 800 feet, whereas for government personnel it was 2900 feet.

Shown in Table 26 are the characteristics of the practice area used for emergency driving instruction.

Most of the instructors indicated that their practice area was clear and unobstructed. One hundred percent of the college instructors, government personnel, state department of education personnel, private company representatives, and county supervisors of driver education in Group I indicated that their practice area was clear and unobstructed. Thirteen percent of the high school instructors in Group I stated that their practice area was not clear and unobstructed, as did 33% of the high school instructors in Group II and 50% of the county supervisors of driver education in that group.

Table 27 indicates how many instructors felt they had adequate space in which to practice the emergency driving exercises.

Most of the instructors said that they did have adequate space for practicing the emergency driving exercises. One hundred percent of the private company representatives and county supervisors in Group I said they had adequate space. Ninety-four percent of the college instructors and 86% of the government personnel in that group indicated they had enough space. Eighty-three percent of the state department of education personnel in Group I indicated they had adequate space to practice the exercises.

Table 26.--Respondents' indications of whether the area used for practicing emergency driving exercises was clear and unobstructed.

Instructors	N	Area Was Unobstructed	
		Yes N %	No N %
<u>Group I (Training, Teaching)</u>			
High school instructors	23	20 87	3 13
College instructors	18	18 100	.. ..
U.S. government personnel	7	7 100	.. ..
State department of education personnel	6	6 100	.. ..
Private company representatives	3	3 100	.. ..
County supervisors of driver education	2	2 100	.. ..
<u>Group II (No Training, Teaching)</u>			
High school instructors	3	2 67	1 33
County supervisors of driver education	2	1 50	1 50
Total	64	59 92	5 8

Table 27.--Respondents' indications of whether the area used for practicing emergency driving exercises was adequate.

Instructors	N	Area Was Adequate	
		Yes N %	No N %
<u>Group I (Training, Teaching)</u>			
High school instructors	24	15 63	9 38
College instructors	18	17 94	1 6
U.S. government personnel	7	6 86	1 14
State department of education personnel	6	5 83	1 17
Private company representatives	3	3 100	.. ..
County supervisors of driver education	2	2 100	.. ..
<u>Group II (No Training, Teaching)</u>			
High school instructors	3	2 67	1 33
County supervisors of driver education	2	1 50	1 50
Total	65	51 78	14 22

Respondents who most often noted that they did not have adequate space were high school instructors in Group I (38%) and in Group II (33%).

The nature of the facility on which emergency driving exercises were practiced is shown in Table 28.

Off-street driving ranges and school parking lots were most frequently used as practice areas for teaching emergency driving instruction. Rural roads were used almost as often as were school parking lots.

High school instructors in Group I used off-street driving ranges and school parking lots equally often (46%) and rural roads (50%) somewhat more often. College instructors in Group I used off-street driving ranges most often (78%) and school parking lots next most often (44%).

Of the facilities available, instructors used blocked-off city streets and private parking lots least often. Other types of facilities that instructors used for these exercises included airport facilities, helicopter pads, residential streets, and racetracks. Of these four facilities, instructors most frequently used airport strips as practice areas.

Table 29 indicates the recommended minimum length of an area on which to teach emergency driving exercises.

The median length recommended by state department of education personnel was 350 feet; county supervisors in Group I recommended a median of 375 feet. The median length recommended by high school

Table 28.--The nature of the facility used for practicing emergency driving exercises.

Instructors	N	Nature of Facility Used															
		Off-Street Dr. Range		Blocked-Off City Street		Private Park Lot		School Park Lot		Rural Road		Other					
		N	%	N	%	N	%	N	%	N	%	a	b	c	d		
<u>Group I (Training, Teaching)</u>																	
High school instructors	28	13	46	5	18	2	7	13	46	14	50	4	14	..	..	2	7
College instructors	18	14	78	..	..	..	..	8	44	2	11	1	6	..	..	..	..
U.S. government personnel	7	3	43	..	..	1	14	..	..	2	29	3	43	1	14	..	..
State department of education personnel	6	3	50	..	..	1	14	..	..	..	..	2	33	..	..	..	..
Private company representatives	3	3	100	1	33	..	..	..	..	..	..	..	..	..	..	..	..
County supervisors of driver education	2	..	..	..	..	..	..	2	100	1	50	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>																	
High school instructors	2	..	..	..	..	..	..	..	..	..	..	2	100	..	..	..	1 50
County supervisors of driver education	2	1	50	..	..	..	..	1	50	1	50	..	..	..	..	..	..
Total	68	37	54	6	9	4	6	24	35	20	29	11	16	1	1	2	3 1 1

Key: a = airport facilities
b = helicopter pads
c = residential streets
d = racetrack

Table 29.--Recommended minimum length of an area on which to teach emergency driving exercises
(in feet).

Instructors	N	Minimum Length (in Feet)						Mean	Median	
		1- 200	201- 400	401- 600	601- 800	801- 1000	Over 1000			
<u>Group I (Training, Teaching)</u>										
High school instructors	25	4	8	3	4	3	3	766	500	
College instructors	18	3	7	6	1	1	..	440	400	
U.S. government personnel	7	..	1	..	1	2	3	1463	1000	
State department of education personnel	6	2	3	1	..	..	..	350	350	
Private company representatives	3	..	1	2	..	..	..	433	450	
County supervisors of driver education	2	..	2	..	..	..	..	375	375	
<u>Group II (No Training, Teaching)</u>										
High school instructors	1	..	1	..	..	..	..	300	300	
County supervisors of driver education	1	..	..	..	1	..	..	800	300	

instructors in Group I was 500 feet, whereas that recommended by college instructors was 400 feet. Private company representatives in Group I recommended a median of 450 feet. The median length recommended by government personnel in Group I was 1000 feet; that recommended by county supervisors in Group II was 800 feet.

Table 30 illustrates the recommended width of an area on which to teach emergency driving exercises.

The median width recommended by high school instructors and state department of education personnel in Group I and by high school instructors in Group II was 150 feet. College instructors, government personnel, private company representatives, and county supervisors in Group I recommended a median width of 200 feet. For county supervisors in Group II, the median width they recommended was 500 feet.

Table 31 indicates the width of the special area used for skidding purposes.

In Group I, the median width for high school instructors was 150 feet, and for college instructors in that group it was 100 feet. For government personnel in Group I the median was 135 feet. The median width for state department of education personnel in that group was 40 feet, and for private company representatives in the same group it was 24 feet.

Table 32 shows the length of the special area used for skidding purposes.

In Group I, for college instructors and government personnel, the median length of the special area was 250 feet. The median length for high school instructors and for private company representatives

Table 30.--Recommended minimum width of an area on which to teach emergency driving exercises
(in feet).

Instructors	N	Recommended Width (in Feet)										Mean	Median
		1-100	101-200	201-300	301-400	401-500	501-600	601-700	701-800				
<u>Group I (Training, Teaching)</u>													
High school instructors	25	10	7	3	3	1	..	..	1		200	150	
College instructors	18	5	7	4	1	1	..	..	..		203	200	
U.S. government personnel	7	3	1	2	..	1	..	..	..		218	200	
State department of education personnel	6	2	3	..	..	..	..	..	..		138	150	
Private company representatives	3	..	3	..	..	..	..	..	..		216	200	
County supervisors of driver education	2	..	1	1	..	..	..	..	..		200	200	
<u>Group II (No Training, Teaching)</u>													
High school instructors	1	..	1	..	..	..	..	..	..		150	150	
County supervisors of driver education	1	..	..	..	..	1	..	..	..		500	500	

Table 32.--Length of the special area (skid pan) used for skidding purposes (in feet).

Instructors	N	Median Length (in Feet)				Mean	Median
		1- 200	201- 400	401- 600	601- 800		
<u>Group I (Training, Teaching)</u>							
High school instructors	5	3	1	..	1	310	200
College instructors	13	5	6	1	1	277	250
U.S. government personnel	6	2	3	1	..	283	250
State department of education personnel	2	2	..	..	..	150	150
Private company representatives	3	3	..	..	..	193	200
County supervisors of driver education	..	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>							
High school instructors	..	..	..	..	..	..	..
County supervisors of driver education	..	..	..	..	..	..	..

was 200 feet. For state department of education personnel, the median length of the skid pan was 150 feet.

Shown in Table 33 is the surface composition of the skid pan area.

The composition of the skid pan area most often was asphalt. One hundred percent of the college instructors, state department of education personnel, private company representatives, and county supervisors in Group I and high school instructors in Group II said their skid pan areas had asphalt surfaces.

Eighty percent of the high school instructors in Group I said their skid pan areas were asphalt, whereas 20% used snow and ice for these areas. Thirty-three percent of the government personnel in Group I said the surface composition of their skid pan areas was concrete.

Table 34 indicates whether respondents' skid pan areas had been treated with a special sealant.

Most instructors indicated that a special sealant had been used on their skid pan area. One hundred percent of the state department of education personnel and private company representatives in Group I indicated that a special sealant had been used. Eighty-five percent of the college instructors in Group I had used a special sealant on their skid pan area, whereas only 43% of the high school instructors in that group had used such a product.

One hundred percent of the county supervisors in Group I and high school instructors in Group II indicated they had not used a sealant.

Table 33.--Surface composition of the skid pan area.

Instructors	N	Surface Composition		
		Asphalt N %	Concrete N %	Snow and Ice N %
<u>Group I (Training, Teaching)</u>				
High school instructors	10	8 80	.. ..	2 20
College instructors	14	14 100	.. ..	.. ..
U.S. government personnel	6	4 67	2 33	.. ..
State department of education personnel	2	2 100	.. ..	.. ..
Private company representatives	3	3 100	.. ..	.. ..
County supervisors of driver education	1	1 100	.. ..	.. ..
<u>Group II (No Training, Teaching)</u>				
High school instructors	1	1 100	.. ..	.. ..
County supervisors of driver education	..	.. ..	.. ..	.. ..
Total	37	33 89	2 5	2 5

Table 34.--The use of a special sealant on the skid pan area.

Instructors	N	Use of Sealant		Type of Sealant Used					
		Yes	No	a		b		c	
		N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>									
High school instructors	7	3	43	4	57	..	..	..	..
College instructors	13	11	85	2	15	1	9	6	55
U.S. government personnel	6	4	67	2	33	1	25	..	..
State department of education personnel	2	2	100	..	..	..	..	..	..
Private company representatives	3	3	100	..	..	1	33	..	..
County supervisors of driver education	1	..	..	1	100	..	..	..	..
<u>Group II (No Training, Teaching)</u>									
High school instructors	1	..	..	1	100	..	..	..	..
County supervisors of driver education	..	..	..	..	..	..	..	..	..
Total	33	23	70	10	30	3	9	6	18
								5	15

Key: a = coal tar

b = genite

c = Jet Seal, black top, Hydro-Seal

Instructors who had used a special sealant on their skid pan area identified the compound by various names, all of which have a coal-tar base.

Table 35 indicates how the surface of the skid pan area was prepared to accomplish skidding.

Most instructors said that water was used to accomplish the skidding. In Group I, 100% of the private company representatives and state department of education personnel, 85% of the college instructors, and 83% of the government personnel used water to accomplish skidding. High school instructors in that group (78%) used snow and ice most often to bring about skidding.

Table 36 shows the recommended width for a skid pan area.

The median width recommended by high school instructors, college instructors, and government personnel in Group I was 100 feet. State department of education personnel and private company representatives in that group recommended a median width of 50 feet. The median width recommended by county supervisors in Group I and high school instructors in Group II was 150 feet.

Shown in Table 37 is the recommended length for a skid pan area.

The median length recommended by college instructors, state department of education personnel, and private company representatives in Group I was 200 feet. Government personnel in Group I and high school instructors in Group II recommended a median length of 300 feet. The median length recommended by high school instructors

Table 35.--Surface preparation of the skid pan area to accomplish skidding.

Instructors	N	Surface Preparation																						
		Water			Oil			Foam		Snow and Ice		Other												
		N	%		N	%		N	%	N	%	N	%	a	N	%	b	N	%	c	N	%		
<u>Group I (Training, Teaching)</u>																								
High school instructors	9	4	44		..	..		..	..		7	78		..	..		..	..		..	..		..	..
College instructors	13	11	85		2	15		1	8		1	8		..	..		..	..		..	..		..	..
U.S. government personnel	6	5	83		2	33		..	..		..	..		1	17		1	17		..	..		..	..
State department of education personnel	2	2	100		..	..		..	..		..	..		..	..		..	..		..	..		..	..
Private company representatives	3	3	100		..	..		..	..		..	..		..	..		..	..		..	..		..	..
County supervisors of driver education	..	..	..		..	..		..	..		..	..		..	..		..	..		..	..		..	..
<u>Group II (No Training, Teaching)</u>																								
High school instructors	1	..	..		..	..		..	..		..	..		..	..		..	..		..	..		1	100
County supervisors of driver education	..	..	..		..	..		..	..		..	..		..	..		..	..		..	..		..	..
Total	34	25	74		4	12		1	3		8	24		1	3		1	3		1	3		1	3

Table 36.--Width recommended for a skid pan (in feet).

Instructors	N	Recommended Width (in Feet)							Mean	Median	
		1-100	101-200	201-300	301-400	401-500	501-600	601-700			
<u>Group I (Training, Teaching)</u>											
High school instructors	16	10	3	2	..	1	..	..	144	100	
College instructors	18	12	3	2	1	..	..	..	123	100	
U.S. government personnel	7	1	1	4	..	1	..	..	119	100	
State department of education personnel	5	5	..	..	..	..	..	..	56	50	
Private company representatives	3	3	..	..	..	..	..	..	58	50	
County supervisors of driver education	1	..	1	..	..	..	..	..	150	150	
<u>Group II (No Training, Teaching)</u>											
High school instructors	1	..	1	..	1	..	..	..	150	150	
County supervisors of driver education	..	..	..	..	..	..	..	..	..	..	

Table 37.--Length recommended for a skid pan (in feet).

Instructors	N	Recommended Length (in Feet)						Mean	Median	
		1- 200	201- 400	401- 600	601- 800	801- 1000				
<u>Group I (Training, Teaching)</u>										
High school instructors	16	2	7	4	..	3	453	350		
College instructors	17	9	6	1	1	..	249	200		
U.S. government personnel	7	2	4	1	..	..	271	300		
State department of education personnel	5	3	1	..	..	1	370	200		
Private company representatives	3	2	1	..	..	..	216	200		
County supervisors of driver education	1	..	1	..	..	..	400	400		
<u>Group II (No Training, Teaching)</u>										
High school instructors	1	..	1	..	..	..	300	300		
County supervisors of driver education	..	..	..	..	..	..	..	..		

in Group I was 350 feet, whereas for county supervisors in the same group it was 400 feet.

Table 38 indicates the special equipment that was used in teaching emergency driving exercises.

The special equipment used most often to teach emergency driving exercises was the blowout simulator. Seventy-three percent of the college instructors and all of the private company representatives in Group I used the blowout simulator most often in teaching the exercises. Government personnel and high school instructors in that group used the blowout simulator least often (14% and 21%, respectively).

The response given next most often was that no special equipment was used in the emergency driving instruction. This was especially true of high school instructors in Group I (61%).

Instructors used brake-locking devices and driving simulators almost equally often. Brake-locking devices were used by 100% of the private company representatives and 93% of the college instructors in Group I. The driving simulator was used most often by college instructors in Group I (60%) and by high school instructors (67%) and county supervisors (100%) in Group II.

Other special equipment used by instructors included water spray guns, cones, and interchange traffic lanes.

Table 39 shows how vehicles used to teach emergency driving exercises were obtained.

One hundred percent of the state department of education personnel and county supervisors in Groups I and II used vehicles that

Table 38.--Special equipment used to teach emergency driving exercises.

Instructors	N	Type of Special Equipment Used											
		Driving Simulator		Blowout Simulator		Brake-Locking Device		None		Other			
		N	%	N	%	N	%	N	%	a	b	c	
<u>Group I (Training, Teaching)</u>													
High school instructors	33	11	33	7	21	1	30	20	61	..	..	..	..
College instructors	15	9	60	11	73	14	93	3	20	..	..	..	..
U.S. government personnel	7	..	..	1	14	3	43	3	43	1	14	1	14
State department of education personnel	6	2	33	4	67	1	17	1	17	..	..	1	17
Private company representatives	3	..	..	3	100	3	100	..	..	..	..	..	..
County supervisors of driver education	2	..	..	1	50	1	50	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>													
High school instructors	3	3	67	1	33	1	33	..	..	..	..	..	..
County supervisors of driver education	2	2	100	..	..	..	..	..	..	..	..	..	..
Total	71	26	37	28	39	24	34	27	38	1	1	2	3

Key: a = water spray gun, b = cones, c = interchange traffic lanes.

Table 39.--Source of vehicles used to teach emergency driving exercises.

Instructors	N	Source of Vehicles				Leased by School District/Agency	
		On Loan from Local Auto Dealer		Purchased by School District /Agency			
		N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>							
High school instructors	33	30	91	1	3	4	12
College instructors	17	15	88	5	29	1	6
U.S. government personnel	7	..	..	6	86	1	14
State department of education personnel	6	6	100	1	17	..	..
Private company representatives	2	..	..	2	100	..	..
County supervisors of driver education	2	2	100	1	50	..	..
<u>Group II (No Training, Teaching)</u>							
High school instructors	2	1	50	1	50	..	..
County supervisors of driver education	2	2	100	..	..	..	..
Total	71	56	79	17	24	6	8

were on loan from a local automobile dealer. Ninety-one percent of the high school instructors and 88% of the college instructors in Group I obtained their vehicles from a local automobile dealer.

All of the private company representatives and 86% of the government personnel in Group I said they purchased the vehicles used for emergency driving instruction. Only 3% of the high school instructors in Group I indicated that their vehicles had been purchased.

Twelve percent of the high school instructors in Group I stated that their school districts had leased the cars used for emergency driving instruction.

Table 40 illustrates whether an older-model car was used for practicing emergency driving exercises.

County supervisors in Group II and government personnel in Group I were the two groups that most frequently used an older-model car for the exercises.

On the other hand, 100% of the state department of education personnel, private company representatives, and county supervisors in Group I and high school instructors in Group II reported that an older-model car was not used for practicing the emergency driving exercises. Ninety-seven percent of the high school instructors in Group I also indicated that an older-model car was not used for the exercises.

Table 41 presents data regarding students' use of special equipment (other than seatbelts and shoulder harnesses) while practicing emergency driving exercises.

Table 40.--The use of an older- vs. a newer-model car for practicing emergency driving exercises.

Instructors	N	Type of Car Used			
		Older	Newer	Both	
		N	N	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	1	32	97	.. ..
College instructors	17	6	11	65	.. ..
U.S. government personnel	7	3	43	3	43 1 14
State department of education personnel	6	..	6	100	.. ..
Private company representatives	3	..	3	100	.. ..
County supervisors of driver education	2	..	2	100	.. ..
<u>Group II (No Training, Teaching)</u>					
High school instructors	2	..	2	100	.. ..
County supervisors of driver education	1	1	100	..	.. ..
Total	71	11	15	59	83 1 1

Table 41.--Students' use of special equipment (other than seatbelts and shoulder harnesses) while practicing emergency driving exercises.

Instructors	N	Was Special Equipment Worn?				Type of Equipment			
		Yes		No		Helmets		Special Harness	
		N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>									
High school instructors	33	2	6	31	94	2	6	..	..
College instructors	17	1	6	16	94	1	6	..	..
U.S. government personnel	7	5	71	2	29	5	71	..	..
State department of education personnel	6	1	17	5	83	..	..	1	17
Private company representatives	3	1	33	2	67	1	33	..	..
County supervisors of driver education	2	..	..	2	100	..	..	..	..
<u>Group II (No Training, Teaching)</u>									
High school instructors	2	..	..	2	100	..	..	..	..
County supervisors of driver education	2	..	..	2	100	..	..	..	..
Total	72	10	14	62	86	9	13	1	1

One hundred percent of the county supervisors in Groups I and II and high school instructors in Group II reported that students used no special equipment when practicing the exercises. Ninety-four percent of the high school and college instructors in Group I indicated that students wore no special equipment, as did 83% of the state department of education personnel in that group.

By comparison, 71% of the government personnel in Group I used special equipment while practicing emergency driving exercises; the special equipment most often worn was a helmet.

Table 42 illustrates instructors' opinions about providing additional practice in emergency driving exercises.

State department of education personnel (57%) and private company representatives (67%) in Group I reported most frequently that additional practice could be provided. College instructors in Group I (65%) also indicated that additional practice could be provided. Only 22% of the high school instructors in that group stated that students could receive additional practice in emergency driving exercises.

All of the county supervisors of driver education in Groups I and II and high school instructors in Group II indicated that additional practice was not possible. Seventy-eight percent of the high school instructors in Group I also reported that additional practice was not possible.

Table 43 shows the various personnel who were available to supervise additional extra practice sessions in emergency driving exercises.

Table 42.--Instructors' opinions about providing additional practice in emergency driving exercises.

Instructors	N	Additional Practice Could Be Provided			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	32	2	22	25	78
College instructors	17	11	65	6	35
U.S. government personnel	7	4	57	3	43
State department of education personnel	6	4	57	2	33
Private company representatives	3	2	67	1	33
County supervisors of driver education	2	..	..	2	100
<u>Group II (No Training, Teaching)</u>					
High school instructors	2	..	..	2	100
County supervisors of driver education	1	..	..	1	100
Total	70	28	40	42	60

Table 43.--Supervisors of extra practice sessions in emergency driving exercises.

Instructors	N	Type of Supervisor							
		Staff Instructors		Parents		Graduate Asst.		Teacher Aides	
		N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>									
High school instructors	7	4	57	1	14	..	..	..	..
College instructors	11	3	27	..	..	1	9	1	9
U.S. government personnel	4	4	100	..	..	..	..	..	..
State department of education personnel	4	2	50	..	..	..	..	..	..
Private company representatives	2	1	50	..	..	..	..	1	50
County supervisors of driver education	..	..	..	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>									
High school instructors	..	..	..	..	..	..	..	..	..
County supervisors of driver education	..	..	..	..	..	..	..	..	..
Total	18	14	78	1	6	1	6	2	11

These extra practice sessions were most often supervised by staff instructors. One hundred percent of the government personnel, 57% of the high school instructors, and 50% of private company representatives and state department of education personnel in Group I reported using staff instructors to supervise additional practice sessions.

Nine percent of the college instructors in Group I used graduate assistants and teacher aides to supervise extra practice sessions. Only 14% of the high school instructors in Group I employed parents to supervise extra practice sessions.

Instructor Training

All four groups of respondents were asked to respond to questions regarding instructor training. Individuals in Groups I and II responded to items regarding experience in teaching emergency driving exercises, whereas those in Groups I and III responded to items regarding instructor preparation. Group IV instructors responded to items pertaining to general experience in the field of highway traffic safety.

Table 44 gives the number of years of teaching experience related to highway traffic safety, acquired by respondents in all four groups. The median number of years for high school instructors in Group I was ten; for high school instructors in Group II, the median was four years. The median number of years for high school instructors in Group III was zero, and for high school instructors in Group IV the median was six years.

Table 44.--Respondents' teaching experience related to highway traffic safety.

Instructors	N	Years of Teaching Experience							Mean	Median
		0	1-5	6-10	11-15	16-20	21-25	26-30		
<u>Group I (Training, Teaching)</u>										
High school instructors	33	..	8	9	8	4	3	1	11.0	10.0
College instructors	17	..	1	6	1	4	4	1	15.0	16.0
U.S. government personnel	7	..	3	2	2	..	..	..	6.7	6.0
State department of education personnel	6	..	2	4	..	..	..	..	6.7	6.0
Private company representatives	3	..	..	..	1	1	1	..	17.6	20.0
County supervisors of driver education	2	..	..	1	1	..	..	..	12.5	12.5
<u>Group II (No Training, Teaching)</u>										
High school instructors	4	..	2	1	..	1	..	..	8.7	4.0
County supervisors of driver education	2	..	..	1	..	..	1	..	16.5	16.5
<u>Group III (Training, No Teaching)</u>										
High school instructors	5	3	..	1	1	..	..	..	4.6	0.0
State department of education personnel	2	..	..	..	2	..	..	..	11.5	11.5
County supervisors of driver education	2	..	1	1	..	..	..	..	6.5	6.5
<u>Group IV (No Training, No Teaching)</u>										
High school instructors	2	..	1	1	..	..	..	..	6.0	6.0
College instructors	1	..	..	..	1	..	..	..	15.0	15.0
U.S. government personnel	2	2	..	..	..	..	..	..	0.0	0.0
State department of education personnel	1	..	..	..	1	..	..	..	13.0	13.0
Private company representatives	2	1	1	..	..	..	..	..	.5	.5
County supervisors of driver education	2	..	..	1	1	..	..	..	13.0	13.0

Table 45 represents the number of years the respondents had taught emergency driving exercises.

The median number of years for high school instructors in Group I was 4 and the mean was 6.6 years. For high school instructors in Group II, both the mean and median were 5.5 years.

Table 46 shows when instructors had last taught emergency driving exercises. The dates respondents listed ranged from 1969 to 1975 (the survey was conducted in 1976).

One hundred percent of the private company representatives in Group I and county supervisors in Group II indicated that the year was 1975. Eighty-eight percent of the college instructors and 84% of the high school instructors in Group I had last taught emergency driving exercises in 1975. Seventy-one percent of the government personnel in Group I had last taught the exercises in 1975, as had 67% of the state department of education personnel in that group.

Illustrated in Table 47 are the types of training instructors had received in preparation for teaching emergency driving exercises. Instructors reported most frequently that the General Motors Advanced Driver Education Course was their source of training. However, instructors indicated nearly as often that they had received training from their own department or from a college driver education course.

One hundred percent of the private company representatives in Group I and the state department of education personnel in Group III indicated that their source of preparation was the General Motors course, whereas 100% of the private company representatives indicated

Table 45.--Number of years respondents had taught emergency driving exercises.

Instructors	N	Number of Years					Mean	Median
		1-5	6-10	11-15	16-20	21-25		
<u>Group I (Training, Teaching)</u>								
High school instructors	32	22	7	1	1	1	6.6	4.0
College instructors	16	12	1	1	2	..	6.3	3.0
U.S. government personnel	7	4	2	1	..	..	5.8	4.0
State department of education personnel	6	5	1	..	..	..	4.2	3.0
Private company representatives	3	..	2	1	..	..	10.0	9.0
County supervisors of driver education	2	1	1	..	..	..	3.5	3.5
<u>Group II (No Training, Teaching)</u>								
High school instructors	2	1	1	..	..	..	5.5	5.5
County supervisors of driver education	2	..	1	..	..	1	16.5	16.5

Table 46.--The year respondents last taught emergency driving exercises.

Instructors	N	Year									
		1969	1970	1971	1972	1973	1974	1975			
		N	%	N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>											
High school instructors	31	..	..	..	..	2	7	3	10	26	84
College instructors	16	..	..	1	6	..	..	1	6	14	88
U.S. government personnel	7	..	..	..	1	14	..	1	14	5	71
State department of education personnel	6	..	..	..	..	1	17	1	17	4	67
Private company representatives	3	..	..	..	..	..	..	..	..	3	100
County supervisors of driver education	1	1	100	..	..	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>											
High school instructors	2	..	..	..	..	1	50	..	..	1	50
County supervisors of driver education	2	..	..	..	..	..	..	..	..	2	100
Total	68	1	1	1	1	4	6	6	9	55	81

Table 47.--Types of training received by the respondents in preparation for teaching emergency driving exercises.

Instructors	N	Type of Training Received											
		College Dr. Ed. With EDE		Own Dept.		Military		G.M. Advanced Course		Other			
		N	%	N	%	N	%	N	%	a	b	c	d
<u>Group I (Training, Teaching)</u>													
High school instructors	33	19	58	11	33	2	6	14	42	..	..	..	..
College instructors	18	2	11	4	22	17	94	4	22	..	..	..	..
U.S. government personnel	7	3	43	6	86	1	14	2	29	1	14	..	..
State department of education personnel	6	3	50	3	50	..	..	3	50	..	..	1	17
Private company representatives	3	..	..	3	100	..	..	3	100	..	..	..	..
County supervisors of driver education	2	1	50	1	50	..	..	..	..	1	50	..	..
<u>Group III (Training, No Teaching)</u>													
High school instructors	5	1	20	2	40	..	..	2	40	..	..	..	..
State department of education personnel	2	..	..	..	..	..	..	2	100	1	50	..	..
County supervisors of driver education	2	..	..	..	..	..	..	1	50	..	..	..	..
Total	78	29	37	30	38	20	26	31	40	3	4	1	1

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Key: a = National Safety Council
b = Academy of Defensive Driving
c = Liberty Mutual Insurance Company
d = Workshops

that another source of preparation was instruction from their own department.

Fifty-eight percent of the high school instructors in Group I had received their training from college driver education courses. Although only 6% of the high school instructors in Group I had received their training from military experience, 94% of the college instructors reported military experience as a source of preparation to teach emergency driving exercises.

Eighty-six percent of the government personnel had received training within their own department; only 33% of the high school instructors in Group I indicated that they had received such training.

Table 48 shows the number of hours of special training in emergency driving exercises received by respondents in Groups I and III.

For high school instructors in Group I, the median number of hours of special training was 18; for high school instructors in Group III, the median number of hours of special training was 9.

Table 49 depicts the emergency driving exercises practiced by instructors during their special training.

Evasive maneuver and serpentine maneuver were two exercises most often included in the instructors' training. One hundred percent of the instructors in Groups I and III, with the exception of college instructors in Group I, had practiced evasive maneuvers during their training. Ninety-four percent of the college instructors had practiced the evasive maneuver during training.

Table 48.--Hours of special training in emergency driving exercises received by respondents.

Instructors	N	Hours of Training									Mean	Median
		1-40	41-80	81-120	121-160	161-200	201-240	241-280	281-320			
<u>Group I (Training, Teaching)</u>												
High school instructors	30	27	3	..	..	..	..	..	..	20.0	18.0	
College instructors	15	12	2	1	..	..	..	..	..	36.0	30.0	
U.S. government personnel	5	3	..	..	..	1	..	..	1	115.0	35.0	
State department of education personnel	6	4	1	1	..	..	..	..	..	45.0	24.0	
Private company representatives	3	2	..	..	1	..	..	..	..	69.0	40.0	
County supervisors of driver education	..	..	..	..	..	..	..	..	..	..	..	
<u>Group III (Training, No Teaching)</u>												
High school instructors	4	3	1	..	..	..	..	..	..	26.0	9.0	
State department of education personnel	2	2	..	..	..	..	..	..	..	12.5	12.5	
County supervisors of driver education	2	2	..	..	..	..	..	..	..	22.0	22.0	

Table 49.--Emergency driving exercises practiced by respondents during their special training.

Instructors	N	Emergency Driving Exercises											
		Off-Road Recovery		Skid Control		Evasive Maneuver		Controlled Braking		Blowouts		Serpentine Maneuver	
		N	%	N	%	N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>													
High school instructors	33	30	91	25	76	33	100	27	82	23	70	30	91
College instructors	18	17	94	18	100	17	94	17	94	17	94	17	94
U.S. government personnel	7	7	100	7	100	7	100	7	100	4	57	7	100
State department of education personnel	6	5	83	6	100	6	100	6	100	4	67	6	100
Private company representatives	3	3	100	3	100	3	100	3	100	3	100	3	100
County supervisors of driver education	2	2	100	2	100	2	100	2	100	2	100	2	100
<u>Group III (Training, No Teaching)</u>													
High school instructors	4	3	75	3	75	4	100	4	100	2	50	4	100
State department of education personnel	2	2	100	2	100	2	100	2	100	2	100	2	100
County supervisors of driver education	2	2	100	2	100	2	100	2	100	1	50	2	100
Total	77	71	92	68	88	76	99	70	91	58	75	73	95

All of the instructors in Groups I and III, with the exception of high school and college instructors, had practiced the serpentine maneuver. Ninety-four percent of the college instructors had practiced serpentine maneuver in their training, as had 91% of the high school instructors in Group I.

During their training, instructors had practiced the blowout exercise least often. However, 100% of the private company representatives and county supervisors in Group I and state department of education personnel in Group III had practiced the blowout exercise.

Approximately 25% of the highway safety instructors in Groups I and III had not practiced skid control during their special training.

The amount of classroom time respondents spent in learning emergency driving exercises is shown in Table 50.

The high school instructors in Groups I and III indicated that they had spent 30 to 60 minutes on each of the following exercises: off-road recovery, skid control, evasive maneuver, controlled braking, and blowouts. Respondents had spent 1 to 29 minutes of classroom time on the serpentine maneuver.

Table 51 illustrates the number of minutes respondents had spent behind the wheel, learning emergency driving exercises.

High school instructors in Group I had spent between 30 and 60 minutes on each emergency driving exercise. Those in Group III had spent 1 to 29 minutes on off-road recovery, skid control, and blowouts. They had spent between 30 and 60 minutes behind the wheel, learning evasive maneuver, controlled braking, and serpentine maneuver.

Table 50.--Classroom time spent by respondents in learning emergency driving exercises (given as a mean, in minutes).

Instructors	Mean Time (in Minutes)					
	Off-Road Recovery	Skid Control	Evasive Maneuver	Controlled Braking	Blowouts	Serpentine Maneuver
<u>Group I (Training, Teaching)</u>						
High school instructors	30-60	30-60	30-60	30-60	30-60	1-29
College instructors	30-60	30-60	30-60	30-60	30-60	30-60
U.S. government personnel	30-60	30-60	30-60	30-60	1-29	30-60
State department of education personnel	1-29	1-29	1-29	1-29	1-29	1-29
Private company representatives	61-120	61-120	61-120	61-120	61-120	61-120
County supervisors of driver education	61-120	61-120	61-120	61-120	..	61-120
<u>Group III (Training, No Teaching)</u>						
High school instructors	30-60	30-60	30-60	30-60	30-60	1-29
State department of education personnel	1-29	30-60	30-60	30-60	30-60	1-29
County supervisors of driver education	1-29	1-29	1-29	1-29	1-29	1-29

Table 51.--Time respondents spent behind the wheel, learning emergency driving exercises (given as a mean, in minutes).

Instructors	Mean Time (in Minutes)					
	Off-Road Recovery	Skid Control	Evasive Maneuver	Controlled Braking	Blowouts	Serpentine Maneuver
<u>Group I (Training, Teaching)</u>						
High school instructors	30-60	30-60	30-60	30-60	30-60	30-60
College instructors	61-120	61-120	61-120	61-120	30-60	61-120
U.S. government personnel	61-120	61-120	61-120	61-120	30-60	61-120
State department of education personnel	1-29	1-29	1-29	1-29	1-29	1-29
Private company representatives	61-120	120+	61-120	61-120	61-120	30-60
County supervisors of driver education	..	..	61-120	..	61-120	61-120
<u>Group III (Training, No Teaching)</u>						
High school instructors	1-29	1-29	30-60	30-60	1-29	30-60
State department of education personnel	30-60	30-60	30-60	30-60	30-60	30-60
County supervisors of driver education	61-120	61-120	61-120	30-60	1-29	30-60

Instructor Opinions

Table 52 illustrates respondents' opinions regarding students benefiting from instruction in emergency driving exercises. Tables 52 through 68 include respondents in Groups I, II, III, and IV.

Ninety-two percent of the respondents stated that they felt the majority of high school students would benefit from instruction in emergency driving exercises; 8% did not feel the majority of high school students would benefit from such instruction.

Table 53 shows the methods respondents felt should be used to teach high school students the emergency driving exercises.

Ninety-eight percent of the respondents felt classroom instruction should be used to teach the exercises, whereas 89% indicated that off-street driving should be used in teaching high school students emergency driving exercises.

The driving simulator was chosen by 66% of the respondents as an appropriate instructional method. Only 46% of the respondents indicated that on-street driving should be used to teach emergency driving exercises.

Table 54 contains the respondents' opinions about teaching emergency driving exercises in the regular high school driver education program, an advanced course, or in both.

Thirty-one percent of the respondents felt that the exercises should be taught in the regular course, whereas 20% felt they should be taught in an advanced driver education course. Forty-eight percent of the respondents said they thought the exercises should be taught in both the regular and advanced driver education courses.

Table 52.--Instructors' opinions about whether the majority of high school students would benefit from instruction in emergency driving exercises.

Instructors	N	Students Would Benefit			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	30	91	3	9
College instructors	17	17	100	..	..
U.S. government personnel	7	6	86	1	14
State department of education personnel	6	6	100	..	..
Private company representatives	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	4	4	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	3	60	2	40
State department of education personnel	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	2	100	..	..
College instructors	1	1	100	..	..
U.S. government personnel	3	3	100	..	..
State department of education personnel	1	..	..	1	100
Private company representatives	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	94	87	92	7	8

Table 53.--Instructors' opinions about the methods that should be used to teach high school students emergency driving exercises.

Instructors	N	Teaching Method					
		Classroom		Driving Simulator		On-Street Driving	
		N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>							
High school instructors	29	29	100	18	62	18	62
College instructors	18	18	100	13	72	10	56
U.S. government personnel	7	7	100	5	71	3	43
State department of education personnel	6	6	100	4	67	3	50
Private company representatives	3	3	100	1	33	..	..
County supervisors of driver education	2	2	100	1	50	1	50
<u>Group II (No Training, Teaching)</u>							
High school instructors	4	4	100	2	50	..	..
County supervisors of driver education	2	2	100	2	100	1	50
<u>Group III (Training, No Teaching)</u>							
High school instructors	3	3	100	1	33	1	33
State department of education personnel	2	2	100	1	50	1	50
County supervisors of driver education	2	2	100	2	100	1	50
<u>Group IV (No Training, No Teaching)</u>							
High school instructors	2	2	100	1	50	..	..
College instructors	1	1	100	1	100	1	100
U.S. government personnel	3	3	100	3	100	1	33
State department of education personnel	1	..	..	1	100	..	..
Private company representatives	2	1	50	1	50	..	..
County supervisors of driver education	2	2	100	2	100	..	..
Total	89	87	98	59	66	41	46
						79	89

Table 54.--Instructors' opinions about whether emergency driving exercises should be taught in the regular high school driver education course, an advanced course, or both.

Instructors	N	Type of Course			
		Regular		Advanced	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	17	52	4	12
College instructors	18	..	..	7	39
U.S. government personnel	7	1	14	2	29
State department of education personnel	6	2	33	..	..
Private company representatives	3	..	..	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	4	1	25	2	50
County supervisors of driver education	2	2	100	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	4	..	..	1	27
State department of education personnel	2	..	..	1	50
County supervisors of driver education	2	..	..	..	..
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	1	50	..	..
College instructors	1	..	..	..	..
U.S. government personnel	3	1	33	..	..
State department of education personnel	1	..	..	1	100
Private company representatives	1	1	100	..	..
County supervisors of driver education	2	1	50	1	50
Total	93	29	31	19	20
				45	48

Shown in Table 55 are the possible reasons a high school might not offer an emergency driving exercise program.

Twenty-six percent of the respondents said that the reason for not setting up a program was the cost involved in developing an area for teaching emergency driving exercises. Twenty-five percent of the respondents indicated that a lack of trained instructors might be a reason why high schools do not offer such a program.

Lack of awareness of the concept of emergency driving exercises was a reason given by 14% of the respondents.

Twelve percent of the instructors stated that a fear of accidents or injuries to students and a lack of space for conducting emergency driving exercises were reasons a high school might not offer such a program. Eleven percent of the instructors indicated that a difficulty in securing vehicles might prevent a high school from offering an emergency driving exercise program.

Table 56 shows respondents' opinions about whether high school students would be inclined to experiment on roads and highways, if enrolled in emergency driving exercises.

Fifty-six percent of the respondents said they felt high school students would be inclined to experiment on the roads and highways, whereas 44% did not feel students would be so inclined.

Table 57 is a tabulation of respondents' opinions regarding whether students should be permitted to use their own car on school facilities, if they wanted additional practice.

Table 55.--Instructors' opinions regarding the reasons a high school might not offer an emergency driving exercise program.

Instructors	N	Reasons												Difficulty Securing Vehicles	
		Cost Involved		Lack of Instruc- tors		Fear of Accidents		Lack of Awareness		Lack of Space					
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>															
High school instructors	28	4	14	10	36	5	18	3	11	4	14	2	7		
College instructors	17	2	12	5	29	2	12	4	24	3	18	1	6		
U.S. government personnel	6	4	67	1	17	..	..	1	17	..	..	..	..		
State department of education personnel	4	2	50	1	25	..	..	1	25	..	..	..	..		
Private company representatives	3	2	67	..	..	..	..	1	33	..	..	..	..		
County supervisors of driver education	2	1	50	1	50	..	..	..	..	..	..	..	..		
<u>Group II (No Training, Teaching)</u>															
High school instructors	3	1	33	..	..	1	33	..	..	..	..	1	33		
County supervisors of driver education	2	..	..	1	50	..	..	1	50	..	..	..	..		
<u>Group III (Training, No Teaching)</u>															
High school instructors	4	1	25	1	25	1	25	..	..	..	..	1	25		
State department of education personnel	2	..	..	..	..	..	..	1	50	1	50	..	..		
County supervisors of driver education	2	..	..	..	..	..	..	..	..	1	50	1	50		
<u>Group IV (No Training, No Teaching)</u>															
High school instructors	2	..	..	..	..	..	..	..	..	..	..	2	100		
College instructors	1	1	100	..	..	..	..	..	..	..	..	..	..		
U.S. government personnel	3	1	33	1	33	..	..	..	..	1	33	..	..		
State department of education personnel	1	1	100	..	..	..	..	..	..	..	..	..	..		
Private company representatives	2	1	50	..	..	1	50	..	..	..	..	..	..		
County supervisors of driver education	2	1	50	..	..	..	..	..	..	..	..	1	50		
Total	84	22	26	31	25	10	12	12	14	10	12	9	11		

Table 56.--Instructors' opinions about whether high school students enrolled in emergency driving exercises would be inclined to experiment on roads and highways.

Instructors	N	Inclined to Experiment			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	18	55	15	46
College instructors	18	9	50	9	50
U.S. government personnel	7	4	57	3	43
State department of education personnel	6	4	67	2	33
Private company representatives	3	1	33	2	67
County supervisors of driver education	2	..	..	2	100
<u>Group II (No Training, Teaching)</u>					
High school instructors	4	2	50	2	50
County supervisors of driver education	1	..	..	1	100
<u>Group III (Training, No Teaching)</u>					
High school instructors	4	3	75	1	25
State department of education personnel	2	1	50	1	50
County supervisors of driver education	2	1	50	1	50
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	1	50	1	50
College instructors	1	1	100	..	..
U.S. government personnel	3	2	67	1	33
State department of education personnel	1	1	100	..	..
Private company representatives	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	93	52	56	41	44

Table 57.--Instructors' opinions about whether students who want additional practice should be permitted to use their own car on school facilities.

Instructors	N	Students May Use Own Car			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	9	27	24	73
College instructors	18	10	56	8	44
U.S. government personnel	7	4	57	3	43
State department of education personnel	6	3	50	3	50
Private company representatives	3	1	33	2	67
County supervisors of driver education	2	..	..	2	100
<u>Group II (No Training, Teaching)</u>					
High school instructors	4	..	..	4	100
County supervisors of driver education	1	..	..	1	100
<u>Group III (Training, No Teaching)</u>					
High school instructors	4	1	25	3	75
State department of education personnel	2	1	50	1	50
County supervisors of driver education	2	..	..	2	100
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	..	..	2	100
College instructors	1	..	..	1	100
U.S. government personnel	3	2	67	1	33
State department of education personnel	1	..	..	1	100
Private company representatives	1	1	100	..	..
County supervisors of driver education	2	1	50	1	50
Total	92	33	36	59	64

Sixty-four percent of the respondents stated that students should not be permitted to use their own cars on school facilities to acquire additional practice.

Table 58 illustrates respondents' opinions about emergency driving exercises being voluntary or compulsory, if taught in the regular high school driver education program.

Fifty-one percent of the respondents felt the emergency driving exercises should be voluntary, if taught in the regular high school driver education program. The remaining 49% felt these exercises should be compulsory.

Table 59 indicates whether respondents believed parents would approve of emergency driving exercises being taught in the regular high school driver education program.

Eighty-six percent of the respondents felt that parents would approve of the emergency driving exercises being taught in the regular program; 14% did not feel parents would approve.

Table 60 shows whether respondents believed parents would approve of emergency driving exercises being taught in an advanced driver education course.

Ninety-nine percent of the respondents stated that they felt parents would approve the teaching of emergency driving exercises in an advanced driver education course; only 1% did not feel parents would approve.

Table 61 indicates the need to periodically offer an emergency driving exercise refresher course to instructors.

Table 58.--Instructors' opinions about whether emergency driving exercises should be voluntary or compulsory, if taught in the regular high school driver education program.

Instructors	N	Program Should Be:		
		Voluntary N %	Compulsory N %	
<u>Group I (Training, Teaching)</u>				
High school instructors	32	13 41	19 59	
College instructors	18	14 78	4 22	
U.S. government personnel	7	1 14	6 86	
State department of education personnel	6	2 33	4 67	
Private company representatives	2	1 50	1 50	
County supervisors of driver education	2	1 50	1 50	
<u>Group II (No Training, Teaching)</u>				
High school instructors	4	3 75	1 25	
County supervisors of driver education	2	1 50	1 50	
<u>Group III (Training, No Teaching)</u>				
High school instructors	4	3 75	1 25	
State department of education personnel	2	1 50	1 50	
County supervisors of driver education	2	1 50	1 50	
<u>Group IV (No Training, No Teaching)</u>				
High school instructors	2	1 50	1 50	
College instructors	1	1 100	..	
U.S. government personnel	3	2 67	1 33	
State department of education personnel	1	1 100	..	
Private company representatives	2	..	2 100	
County supervisors of driver education	2	1 50	1 50	
Total	92	47 51	45 49	

Table 59.--Respondents who believed parents would approve of emergency driving exercises being taught in the regular high school driver education program.

Instructors	N	Parents Would Approve			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	31	28	90	3	10
College instructors	17	15	88	2	12
U.S. government personnel	7	6	86	1	14
State department of education personnel	6	6	100	..	..
Private company representatives	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	3	60	2	40
State department of education personnel	1	1	100	..	..
County supervisors of driver education	2	1	50	1	50
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	1	..	..	1	100
College instructors	1	1	100	..	..
U.S. government personnel	3	3	100	..	..
State department of education personnel	1	..	..	1	100
Private company representatives	2	1	50	1	50
County supervisors of driver education	..	..	..	..	..
Total	87	75	86	12	14

Table 60.--Respondents who believed parents would approve of emergency driving exercises being taught in an advanced driver education course.

Instructors	N	Parents Would Approve			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	22	22	100	..	..
College instructors	17	17	100	..	..
U.S. government personnel	7	6	86	1	14
State department of education personnel	4	4	100	..	..
Private company representatives	3	3	100	..	..
County supervisors of driver education	1	1	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	3	3	100	..	..
County supervisors of driver education	..	..	..	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	5	100	..	..
State department of education personnel	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	2	100	..	..
College instructors	1	1	100	..	..
U.S. government personnel	3	3	100	..	..
State department of education personnel	1	1	100	..	..
Private company representatives	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	77	76	99	1	1

Table 61.--Instructors' opinions about the need to periodically offer an emergency driving exercise refresher course to instructors.

Instructors	N	Need to Offer Refresher			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	31	94	2	6
College instructors	17	15	88	2	12
U.S. government personnel	7	6	86	1	14
State department of education personnel	6	5	83	1	17
Private company representatives	3	2	67	1	33
County supervisors of driver education	2	2	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	4	80	1	20
State department of education personnel	2	2	100	..	..
County supervisors of driver education	2	1	50	1	50
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	2	100	..	..
College instructors	1	1	100	..	..
U.S. government personnel	3	2	67	1	33
State department of education personnel	1	1	100	..	..
Private company representatives	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	91	83	91	10	11

Ninety-one percent of the respondents agreed that a periodic refresher course should be offered to instructors.

Table 62 indicates how often a refresher course should be made available to instructors. The responses to this question ranged from yearly to every ten years, in addition to the time at which instructors are recertified.

Twenty-eight percent of the respondents stated that a refresher course should be offered annually; about the same number (30%) indicated it should be offered every two years.

Table 63 reflects respondents' opinions about offering an emergency driving refresher course to students.

Sixty-nine percent of the respondents stated that there is a need to periodically offer students a refresher course.

Table 64 indicates how often an emergency driving exercise program should be offered to students, as a refresher course.

Thirty-six percent of the respondents stated that a refresher course should be offered yearly, 23% recommended that such a course be given every two years, and 18% said every five years.

Table 65 contains respondents' opinions regarding colleges and universities offering emergency driving exercise training to undergraduate or graduate students who plan to teach driver education.

All of the respondents believed that emergency exercise training should be provided for both undergraduate and graduate students who plan to teach driver education.

Table 62.--Instructors' opinions about how often refresher courses in emergency driving exercises should be offered to instructors.

Instructors	N	Frequency of Refresher Course												Recenti- fication	
		Yearly		Every 2 Yrs.		Every 3 Yrs.		Every 4 Yrs.		Every 5 Yrs.		Every 10 Yrs.			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>															
High school instructors	26	8	31	6	23	4	15	..	..	7	27	1	4	..	..
College instructors	8	2	25	3	38	2	25	..	..	1	13	..	..	..	..
U.S. government personnel	6	3	50	2	33	..	..	..	..	1	17	..	..	..	..
State department of education personnel	4	2	50	1	25	1	25	..	..	..	..	..	..	..	..
Private company representatives	1	..	..	1	100	..	..	..	..	..	..	..	..	..	..
County supervisors of driver education	2	..	..	..	..	2	100	..	..	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>															
High school instructors	1	..	..	..	..	..	..	..	..	..	..	..	..	1	100
County supervisors of driver education	1	1	100	..	..	..	..	..	..	..	..	..	..	..	..
<u>Group III (Training, No Teaching)</u>															
High school instructors	3	..	..	2	67	..	..	..	..	1	33	..	..	..	..
State department of education personnel	2	1	50	..	..	1	50	..	..	..	..	..	..	..	..
County supervisors of driver education	1	..	..	1	100	..	..	..	..	..	..	..	..	..	..
<u>Group IV (No Training, No Teaching)</u>															
High school instructors	2	..	..	..	..	1	50	..	..	1	50	..	..	..	..
College instructors	1	..	..	1	100	..	..	..	..	..	..	..	..	..	..
U.S. government personnel	1	1	100	..	..	..	..	..	..	..	..	..	..	..	..
State department of education personnel	1	..	..	..	..	1	100	..	..	..	..	..	..	..	..
Private company representatives	2	..	..	2	100	..	..	..	..	..	..	..	..	..	..
County supervisors of driver education	2	..	..	..	..	..	..	1	50	1	50	..	..	..	..
Total	64	18	28	19	30	12	19	1	2	12	19	1	2	1	2

Table 63.--Instructors' opinions about the need to periodically offer students an emergency driving exercise refresher course.

Instructors	N	Need to Offer Refresher			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	31	21	67	10	32
College instructors	16	15	94	1	6
U.S. government personnel	7	7	100	..	..
State department of education personnel	6	4	67	2	33
Private company representatives	3	2	67	1	33
County supervisors of driver education	2	1	50	1	50
<u>Group II (No Training, Teaching)</u>					
High school instructors	3	1	33	2	67
County supervisors of driver education	2	2	100	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	2	40	3	60
State department of education personnel	2	2	100	..	..
County supervisors of driver education	2	..	..	2	100
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	1	50	1	50
College instructors	1	..	..	1	100
U.S. government personnel	3	2	67	1	33
State department of education personnel	1	..	..	1	100
Private company representatives	2	1	50	1	50
County supervisors of driver education	2	1	50	1	50
Total	90	62	69	38	42

Table 64.--Instructors' opinions about how often refresher courses in emergency driving exercises should be offered to students.

Instructors	N	Frequency of Refresher Course												Driver's License Renewal	
		Yearly		Every 2 Yrs.		Every 3 Yrs.		Every 4 Yrs.		Every 5 Yrs.		Every 7 Yrs.			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>															
High school instructors	13	5	39	3	23	2	15	1	8	1	8	..	..	1	8
College instructors	9	3	33	3	33	..	..	..	..	2	22	1	11	..	..
U.S. government personnel	7	4	57	2	29	..	..	..	..	1	14	..	..	..	..
State department of education personnel	4	1	25	..	..	3	50	..	..	1	25	..	..	..	..
Private company representatives	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
County supervisors of driver education	1	1	100	..	..	..	..	..	..	..	..	..	..	..	..
<u>Group II (No Training, Teaching)</u>															
High school instructors	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
County supervisors of driver education	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<u>Group III (Training, No Teaching)</u>															
High school instructors	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
State department of education personnel	2	..	..	..	..	..	..	..	..	1	50	..	..	1	50
County supervisors of driver education	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
<u>Group IV (No Training, No Teaching)</u>															
High school instructors	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
College instructors	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
U.S. government personnel	1	..	..	..	..	..	..	..	..	..	..	..	..	1	100
State department of education personnel	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Private company representatives	1	..	..	..	..	..	..	..	..	1	100	..	..	..	..
County supervisors of driver education	1	..	..	1	100	..	..	..	..	..	..	..	..	..	..
Total	39	14	36	9	23	4	10	1	3	7	18	1	3	3	8

Table 65.--Instructors' opinions about whether colleges and universities should offer emergency driving exercise training to undergraduates or graduate students who plan to teach driver education.

Instructors	N	Level of Student			
		Undergraduates		Graduate Students	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	33	100	33	100
College instructors	18	18	100	18	100
U.S. government personnel	7	7	100	7	100
State department of education personnel	6	6	100	..	..
Private company representatives	3	3	100	3	100
County supervisors of driver education	2	2	100	2	100
<u>Group II (No Training, Teaching)</u>					
High school instructors	4	4	100	4	100
County supervisors of driver education	2	2	100	2	100
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	5	100	5	100
State department of education personnel	2	2	100	2	100
County supervisors of driver education	2	2	100	2	100
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	2	100	2	100
College instructors	1	1	100	1	100
U.S. government personnel	3	3	100	3	100
State department of education personnel	1	1	100	1	100
Private company representatives	2	2	100	2	100
County supervisors of driver education	2	2	100	2	100
Total	95	95	100	95	100

Table 66 illustrates respondents' opinions about colleges and universities offering emergency driving exercise training to graduates who are experienced driver education instructors.

Ninety-nine percent of the respondents stated that colleges and universities should offer the training to graduates who are experienced driver education instructors.

Table 67 shows respondents' opinions regarding the relationship of emergency driving exercise training to chances of accident involvement.

Ninety-two percent of the respondents believed that participation in the training would decrease a student's chances of becoming involved in an accident. One percent of the instructors felt that participation would increase the likelihood of an accident, whereas 7% did not feel it would increase or decrease accident involvement.

Table 68 shows which aspects of emergency driving exercises the respondents were willing to teach.

Ninety-three percent of the respondents indicated they would teach both the classroom and behind-the-wheel aspects of emergency driving exercises.

Areas of Improvement

Table 69 indicates whether the respondents' programs were going to be continued.

Eighty-seven percent of the respondents in Groups I and II stated that their emergency driving exercise program was going to continue, whereas 13% reported that it would be discontinued.

Table 66.--Instructors' opinions about whether colleges and universities should offer emergency driving exercise training to graduates who are experienced driver education instructors.

Instructors	N	Should Offer Training			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	33	33	100	..	..
College instructors	18	18	100	..	..
U.S. government personnel	7	7	100	..	..
State department of education personnel	6	6	100	..	..
Private company representatives	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group II (No Training, Teaching)</u>					
High school instructors	5	5	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group III (Training, No Teaching)</u>					
High school instructors	5	5	100	..	..
State department of education personnel	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
<u>Group IV (No Training, No Teaching)</u>					
High school instructors	2	2	100	..	..
College instructors	1	1	100	..	..
U.S. government personnel	3	2	67	1	33
State department of education personnel	1	1	100	..	..
Private company representatives	2	2	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	96	95	99	1	1

Table 67.--Instructors' opinions regarding the relationship of a student's participation in an emergency driving exercise course to chances of accident involvement.

Instructors	N	Relationship to Chances of Accident					
		Increase		Decrease		Neither	
		N	%	N	%	N	%
<u>Group I (Training, Teaching)</u>							
High school instructors	29	..	..	28	97	1	3
College instructors	16	1	6	14	88	1	6
U.S. government personnel	7	..	..	7	100	..	..
State department of education personnel	6	..	..	6	100	..	..
Private company representatives	3	..	..	3	100	..	..
County supervisors of driver education	2	..	..	2	100	..	..
<u>Group II (No Training, Teaching)</u>							
High school instructors	4	..	..	3	75	1	25
County supervisors of driver education	2	..	..	2	100	..	..
<u>Group III (Training, No Teaching)</u>							
High school instructors	5	..	..	5	100	..	..
State department of education personnel	2	..	..	2	100	..	..
County supervisors of driver education	2	..	..	1	50	1	50
<u>Group IV (No Training, No Teaching)</u>							
High school instructors	2	..	..	2	100	..	..
College instructors	1	..	..	1	100	..	..
U.S. government personnel	3	..	..	3	100	..	..
State department of education personnel	1	..	..	1	100	..	..
Private company representatives	1	..	..	1	100	..	..
County supervisors of driver education	2	..	..	..	..	2	100
Total	88	1	1	81	92	6	7

Table 68.--Aspects of emergency driving exercises training the respondents would teach.

Instructors	N	Aspect of Training								
		Classroom		Behind-the-Wheel		Both		Neither		
		N	%	N	%	N	%	N	%	
<u>Group I (Training, Teaching)</u>										
High school instructors	33	1	3	2	6	30	91	..	..	..
College instructors	18	..	..	..	..	18	100	..	..	..
U.S. government personnel	7	..	..	..	..	7	100	..	..	..
State department of education personnel	6	..	..	..	..	6	100	..	..	..
Private company representatives	2	..	..	..	..	2	100	..	..	..
County supervisors of driver education	2	..	..	..	..	2	100	..	..	..
<u>Group II (No Training, Teaching)</u>										
High school instructors	4	..	..	..	..	4	100	..	..	..
County supervisors of driver education	2	..	..	..	..	2	100	..	..	..
<u>Group III (Training, No Teaching)</u>										
High school instructors	5	..	..	..	..	5	100	..	..	..
State department of education personnel	2	..	..	..	..	2	100	..	..	..
County supervisors of driver education	2	..	..	..	..	2	100	..	..	..
<u>Group IV (No Training, No Teaching)</u>										
High school instructors	2	..	..	1	50	..	..	1	50	..
College instructors	1	..	..	..	..	1	100	..	..	..
U.S. government personnel	3	1	33	..	..	2	67	..	..	..
State department of education personnel	1	..	..	..	..	..	..	1	100	..
Private company representatives	2	..	..	..	..	2	100	..	..	..
County supervisors of driver education	2	..	..	..	..	2	100	..	..	..
Total	94	2	2	3	3	87	93	2	2	2

Table 69.--Continuation of the present emergency driving exercise program.

Instructors	N	Program Will Continue			
		Yes		No	
		N	%	N	%
<u>Group I (Training, Teaching)</u>					
High school instructors	31	25	81	6	19
College instructors	18	18	100	..	..
U.S. government personnel	7	7	100	..	..
State department of education personnel	6	4	67	2	33
Private company representatives	2	2	100	..	..
County supervisors of driver education	2	1	50	1	50
<u>Group II (No Training, Teaching)</u>					
High school instructors	3	3	100	..	..
County supervisors of driver education	2	2	100	..	..
Total	71	62	87	9	13

Table 70 is a compilation of comments from Group I and II respondents regarding the strengths of an emergency driving exercise program.

Forty-five percent of the respondents stated that the strength of their program was that students learned the skills and knowledge necessary to cope with emergency driving situations in traffic. Another 26% of the respondents stated that their program was well organized, taught by qualified instructors, and supported by administrators. In addition, they stated that the program was available during the school day and open to all driver education students.

Compiled in Table 71 are the comments given by Group I and II respondents regarding improvements needed in emergency driving exercise programs.

Fifty-eight percent of the respondents stated that better facilities were needed, and 26% cited a need for better equipment. Forty-one percent indicated that more time should be reserved in the driver education curriculum for emergency driving exercise training.

Summary

Presented in Chapter IV was a compilation of the data obtained from the survey. Questionnaires were sent to a nonrandomly selected group of highway safety instructors from a broad range of disciplines, including education, law enforcement, government agencies, and private industry. One hundred sixty-three questionnaires were sent to safety instructors who were known to have had some exposure to the concept of emergency driving exercises. Many instructors were contacted through

Table 70.--The strengths of an emergency driving exercise program, as reported by Group I and II respondents (N = 73).

Comment	N	%
Student learns the skills and knowledge necessary to cope with emergency driving situations in traffic.	33	45
The program is well organized, taught by qualified instructors, and supported by administrators. The program is available during the school day and is made available to all driver education students.	19	26
Facilities are available to operate emergency driving exercise programs.	14	19
Student learns his own limitations.	10	14
The training provides real-life exposure to emergency driving situations.	9	12
The community supports teaching this aspect of driver education.	9	12
Students learn the limitations of the vehicle.	8	11
The other phases of driver education (classroom, simulator) are reinforced through actual behind-the-wheel experience.	8	11
Student learns to avoid panic reactions.	5	7

Table 71.--Improvements needed in emergency driving exercise programs, as reported by Group I and II respondents (N = 73).

Comment	N	%
Better facilities are needed.	39	58
More time needs to be reserved in the driver education curriculum for this type of training.	30	41
Better equipment is needed.	19	26
Specific preparation of driver education instructors is needed (in emergency driving exercises).	14	19
More funding is needed to establish this type of training.	11	15
The emergency driving exercise instruction needs to cover a wider variety of exercises and situations.	8	11
Need research on the effectiveness of the emergency driving exercise course.	6	8
An advanced course needs to be created to handle this type of instruction.	5	7
A greater number of students should be permitted to engage in this type of training.	5	7
The support of educational administrators is needed.	2	3

the assistance of Richard Whitworth, Driver Education Supervisor at the General Motors Proving Grounds in Milford, Michigan. Many high school and college instructors had first gained experience in emergency driving exercises by participating in the General Motors Advanced Driver Education Course at the Proving Grounds or under Whitworth's tutelage at workshops held periodically throughout the United States.

Of the 163 questionnaires distributed, 96 were completed and returned. Returned questionnaires were categorized according to the respondents' professional capacity and whether they had taught and/or had been trained to teach emergency driving exercises. The six categories of professional capacities were: high school instructors, college instructors, state department of education personnel, county supervisors of driver education (Maryland), private company representatives, and U.S. government personnel.

After being placed in one of the six categories, respondents were grouped according to whether they had taught emergency driving exercises and/or been trained to teach these exercises. The four groups were as follows:

- Group I : Trained to teach emergency driving situations and exercises and have taught them.
- Group II : Not trained to teach emergency driving situations and exercises, but have taught them.
- Group III: Trained to teach emergency driving situations and exercises, but have never taught them.
- Group IV : Not trained to teach emergency driving situations and exercises and have never taught them.

Because of the nonrandom selection of safety leaders, Group I was the largest of the groups. The other three groups were much smaller than Group I, but of nearly equal size to each other.

The purpose of the survey was to determine the present status of teaching emergency driving situations and exercises to high school driver education students. It was felt that safety leaders who had been trained to teach emergency driving situations and exercises and who had actually taught them could give well-considered opinions about including these situations and exercises in the regular high school driver education curriculum.

Analysis of the data provided information regarding the general curriculum of driver education programs in which emergency driving situations and exercises were offered. The data also provided information regarding facilities and equipment needed for teaching emergency driving situations and exercises. Information was obtained about the feasibility of teaching emergency driving situations and exercises to high school students; this section comprised answers to opinion questions regarding parental approval, methods of teaching the exercises, whether colleges and universities should prepare instructors to teach such exercises, and other related topics.

Respondents in Groups I and II were asked to comment on the strengths of their emergency driving exercise programs. In addition, information regarding areas of improvement needed in existing emergency driving exercises programs was sought. Further, Group I and Group II respondents were asked to indicate whether their present program would be continued.

Chapter V contains a summary of the study, including the major findings, conclusions drawn from the findings, general recommendations, and recommendations for future research.

CHAPTER V

SUMMARY, FINDINGS, AND RECOMMENDATIONS

The analysis of the data was presented in Chapter IV. In Chapter V are found a summary of the study, major findings, and general recommendations. Recommendations for further research and a discussion are also included in this chapter.

Summary

Purpose and Problem

The purpose of this study was to survey a selected number of highway safety instructors to assess the present status of teaching emergency driving situations and exercises to high-school-age drivers. More specifically, the study was concerned with identifying emergency driving situations and exercises that had been taught and those emergency driving situations and exercises that highway safety instructors considered appropriate to teach to high school driver education students. Other purposes of the study were:

1. To identify emergency driving situations and exercises taught during the regular and/or advanced driver education course.
2. To identify curriculum materials and guidelines used in teaching emergency driving situations and exercises to high-school-age drivers.

3. To determine the types of facilities and equipment in use and/or recommended for instructing high school driver education students in emergency driving situations and exercises.
4. To specify methods of instruction appropriate for teaching driving situations and exercises to high-school-age drivers.
5. To determine the type of training instructors received in preparation to teach emergency driving situations and exercises to high school students.
6. To ascertain instructors' opinions regarding various aspects of teaching emergency driving situations and exercises to high school students.
7. To assess the strengths and needed improvements of programs currently involved in teaching emergency driving situations and exercises.

Although emergency driving situations and exercises are not widely taught in the high school driver education curriculum, a limited number of programs do offer rather extensive training in these procedures. Some of these programs are at the high-school level; others are frequently found in college teacher-preparation programs or in law enforcement training.

Accident statistics indicate that young drivers between the ages of 15 and 24 are involved in a disproportionate share of automobile accidents. Some of these accidents may be the result of an inability to react correctly to emergency driving situations. As

stated in Chapter I, in 1975 the 15-24 age group accounted for 10.25% of the driving population. They were, however, involved in 17.8% of all traffic accidents and 16.4% of all fatal accidents. It would appear that modification in the driver education curriculum may be necessary to improve the performance of this group of drivers.

Methods and Procedures Employed

The sample of nonrandomly selected instructors represented a broad range of highway safety professionals, including:

1. High school teachers of driver education
2. College instructors of driver education/highway traffic safety
3. State department of education personnel
4. County supervisors of driver education
5. Government instructors (law enforcement, federal government, armed forces)
6. Private company representatives

Highway safety instructors who had had special preparation and/or experience in teaching emergency driving exercises or who were actively involved in highway safety programs were considered for the sample.

The instructors were grouped as follows, according to their training and/or teaching experience related to emergency driving exercises:

- | | |
|---------|--|
| Group I | Trained to teach emergency driving situations and have taught them |
|---------|--|

- | | |
|-----------|--|
| Group II | Not trained to teach emergency driving situations and exercises, but have taught them |
| Group III | Trained to teach emergency driving situations and exercises, but have never taught them |
| Group IV | Not trained to teach emergency driving situations and exercises and have never taught them |

This grouping system clarified for respondents which sections of the survey instrument they were to complete. This system reduced the possibility that those who lacked specific expertise would respond to specialized questions about facility dimensions, curriculum, and equipment.

The survey instrument included five sections. A number of questionnaire items were answered by respondents who had been specifically trained to teach emergency driving exercises. Opinion questions were completed by all respondents. The five sections of the survey instrument were as follows:

1. General Curriculum--Items included under this heading involved the type of driver education program in which the emergency driving exercises were offered, the season and time of day the exercises were taught, the amount of teaching time allotted to emergency driving exercises, curriculum guidelines used to teach emergency driving exercises, and whether student participation in the exercises was voluntary or required.

2. Facilities and Special Equipment--These items included examining the types of facilities that were used to teach emergency driving exercises, the dimensions of the facilities, the dimensions of the skid pan areas, and recommendations regarding minimum dimensions

needed for special facilities. Also included were items regarding the type of special equipment needed in teaching emergency driving exercises, with respect to the vehicles or to the equipment worn by the driver.

3. Instructor Preparation--Items regarding the respondent's own training and teaching experience sought the number of years of teaching experience in the field of highway safety, the type of special training received in preparation to teach emergency driving exercises, and the various exercises included in the training.

4. Instructor Opinions--Opinion items included examining types of methods that should be used to teach emergency driving exercises, whether students would benefit from instruction in emergency driving exercises, the possibility that students may be inclined to practice the exercises on roads and highways, and other related issues.

5. Strengths and Needed Improvements in Existing Emergency Driving Exercise Programs--Items included under this heading were designed to assess strengths and needed improvements of existing emergency driving exercise programs. An item was also included to determine whether the respondent's program was going to be continued.

Respondents in Groups I and II were asked to complete the entire survey instrument, whereas those in Groups III and IV completed the instructor training and opinion sections.

A separate curriculum item, which preceded the aforementioned five sections, was designed to determine the methods instructors employed in training. This item included 13 emergency driving

situations taken from a Michigan State University curriculum guide for driver education⁸¹ and six emergency driving exercises taken from a General Motors Advanced Driver Education Course.⁸² Methods of instruction included classroom, simulator, and behind the wheel. Groups I and II responded to this aspect of the item, as individuals in both groups had had experience in teaching emergency driving exercises.

All respondents were asked to complete the opinion section of the abovementioned item, designating which emergency driving situations and exercises they considered feasible for inclusion in the regular high school driver education course, an advanced driver education course, or both. Those situations and exercises they considered inappropriate for high school driver education students were to be noted under the heading, "Should not be taught in high school."

Findings

The findings are categorized under six main headings, as follows:

1. Methods Used to Teach Emergency Driving Situations and Exercises
2. General Curriculum
3. Facilities and Special Equipment

⁸¹"Meeting Emergencies" (unpublished paper, Highway Traffic Safety Center, Michigan State University, October 1971).

⁸²F. D. Smithson and R. A. Whitworth, Development of an Advanced Driver Education Program, 4637 (Milford, Michigan, General Motors Engineering Staff--Proving Grounds, April 1972), pp. 4-15.

4. Instructor Preparation
5. Instructor Opinions
6. Strengths and Needed Improvements in Existing Emergency Driving Exercise Programs

Emergency driving situations were only referred to in section 1.

The findings from sections 2 through 6 pertain only to the teaching of emergency driving exercises.

Methods Used to Teach Emergency Driving Situations and Exercises

Classroom instruction was the method most often used to teach the emergency driving situations identified in the Michigan State University driver education curriculum guide. Behind-the-wheel instruction was the method most often used to teach the emergency driving exercises used in the General Motors Advanced Driver Education Program. Simulation was the instructional method least often used to teach either emergency driving situations or emergency driving exercises, primarily because of the inherent limitations of this type of specialized training.

With the exception of "submerged vehicle," "vehicle catches fire," and "bee in vehicle," the majority of respondents considered the emergency driving situations to be appropriate for inclusion in the high school driver education curriculum. With the exception of "sudden loss of air/blowout," the majority of respondents considered the emergency driving exercises as appropriate for inclusion in the high school driver education curriculum.

In general, the respondents felt that both emergency driving situations and emergency driving exercises should be offered in the regular driver education course. Only Group III respondents, who had had no teaching experience, favored the teaching of emergency driving exercises in an advanced driver education course.

General Curriculum

The majority of respondents in Groups I and II (including high school instructors) had had experience teaching emergency driving exercises in a regular driver education curriculum. These respondents had also offered emergency driving exercise training to groups other than high school driver education students, including teacher-preparation students, driver education teachers, law enforcement personnel, ambulance drivers, fire departments, school bus drivers, U.S. Coast Guard, and the general public. College highway safety instructors had had the most experience offering emergency driving exercise training to these diverse groups of individuals.

The emergency driving exercises were generally offered year-round (during all four seasons), with slightly more emphasis during fall and spring. The emergency driving exercises were offered most often during the school/work day. Some instructors offered the exercises after the school/work day and least often on weekends or during vacation periods.

Two to four classroom periods of approximately 55 minutes were scheduled for emergency driving exercise training. One to four behind-the-wheel sessions of 55 minutes were scheduled for emergency driving.

With the length of the driver education courses ranging from 1 to 18 weeks, 1 to 2 weeks were generally reserved for teaching emergency driving exercises. From 2 to 8 classroom sessions and from 1 to 10 behind-the-wheel sessions were devoted to emergency driving instruction. There was some variation in the amount of instructional time devoted to emergency driving exercise instruction, depending on the specific orientation of the highway safety instructor involved. Of the various highway safety instructors involved in such training, government personnel appeared to offer the most extensive training in emergency driving exercises.

The emergency driving exercise training had generally been a part of the highway safety instructors' programs for two years or more. The instructors most often had developed their own emergency driving exercise program, although a frequently used curriculum source was the General Motors Advanced Driver Education Program. The most frequently used commercial curriculum source was the General Motors Program. High school instructors usually developed their own program, however, instead of using commercial curricula.

Student participation in emergency driving exercises taught by highway safety instructors was generally required, as opposed to voluntary participation. High school instructors most often responded that participation in emergency driving exercises was required.

Facilities and Equipment

Most highway safety instructors indicated that they had their own facility for practicing emergency driving exercises, although high school instructors stated equally often that they did not have their own facility. Of the highway safety instructors who did not have their own facility for practicing emergency driving exercises, approximately 50% were able to use a nearby facility. High school instructors had the most difficulty locating a nearby facility to use. The distance traveled to reach a nearby facility ranged from 1 to 40 miles. The average distance high school instructors traveled was 3.7 miles.

The dimensions most often given of the area on which emergency driving exercises were practiced were 201-301 feet in width and 201-400 feet in length. The minimum dimensions recommended most often for an area on which to teach emergency driving exercises were 101-200 feet in width and 201-400 feet in length.

Highway safety instructors most often indicated that the area on which emergency driving exercises were practiced was clear and unobstructed. Respondents indicated that they had adequate space for practicing these exercises, although some high school instructors had less than adequate space. The types of facilities used most often for practicing emergency driving exercises were off-street driving ranges, school parking lots, and rural roads.

Most highway safety instructors indicated that they did not have a special area for skidding purposes. Of those who had a skid

pan, the dimensions were 1-50 feet in width and 1-200 feet in length. High school instructors most often used skid pans that were 101-150 feet wide and 1-200 feet long. Respondents most often recommended that a skid pan have minimum dimensions of 1-100 feet wide and 201-401 feet long.

Asphalt was most often used by highway safety instructors in the surface composition of the skid pan area. A sealant was used on the area, and usually consisted of genite. High school instructors indicated equally often that no sealant was used. Water was most often used to prepare the surface of the skid pan for skidding. High school instructors used snow and ice to bring about skidding.

The blowout simulator was the type of special equipment most often used to teach emergency driving exercises. Although driving simulators and brake-locking devices were used about as often as blowout simulators, there were as many highway safety instructors who indicated that no special equipment was used to teach emergency driving exercises. When high school instructors used special equipment, it was usually a driving simulator.

Most of the vehicles used to teach emergency driving exercises were on loan from a local automobile dealer. Some vehicles were purchased by the school district or agency involved, and a few were leased by the school district or agency. Most highway safety instructors indicated that an older-model car was not used for practicing emergency driving exercises.

Most instructors indicated that no special equipment (other than seatbelts and shoulder harnesses) was worn by students while

practicing emergency driving exercises. When special equipment was worn, it consisted of a special helmet or harness.

Highway safety instructors did not feel additional practice in emergency driving exercises could be provided to students who requested it. Highway safety instructors who were able to provide additional practice sessions indicated they would be supervised by staff instructors. A few instructors indicated that the sessions would be supervised by parents, graduate assistants, or teacher aides.

Instructor Training

Highway safety instructors involved in this study most often had six to ten years of teaching experience related to highway traffic safety. Of the highway safety instructors in Groups I and II, a majority had one to five years of teaching experience related to emergency driving exercises. Most of the instructors had last taught emergency driving exercises in 1975 (the study was undertaken in 1976); thus their experience was current.

Most highway safety instructors had received preparation to teach emergency driving exercises from the General Motors Advanced Driver Education Course. Receiving preparation from their own department and from college driver education courses with an emphasis on emergency driving exercise training were sources of preparation identified equally often by highway safety instructors. High school instructors indicated that the college driver education course with training in emergency driving exercises was the most frequently used

source of preparation; the General Motors Advanced Driver Education Course was selected next most often as a source of preparation.

The duration of the special training ranged from 1 to 20 hours; nearly as many instructors indicated that the duration of the special training was from 21 to 40 hours. The highway safety instructors in Groups I and III indicated that the training received most often included (a) evasive maneuver, (b) serpentine maneuver, and (c) off-road recovery/controlled braking. High school instructors indicated that the training received most often included (a) evasive maneuver, (b) off-road recovery/serpentine maneuver, and (c) controlled braking.

Highway safety instructors in Groups I and III most often spent 30 to 60 minutes in the classroom learning each emergency driving exercise, except serpentine maneuver, which they spent 1 to 29 minutes learning. These respondents most often took 30 to 60 minutes behind the wheel, learning controlled braking, blowouts, and serpentine maneuver. From 61-120 minutes were used to learn off-road recovery, skid control, and evasive maneuver.

Instructor Opinions

Most highway safety instructors, including high school instructors, felt that the majority of high school students would benefit from instruction in emergency driving exercises. They felt these exercises should be taught during both the regular high school driver education course and in an advanced course, using both the classroom phase and the off-street driving phase of instruction.

The highway safety instructors most frequently indicated that the cost involved in developing an area for teaching emergency driving exercises was the reason high schools might not offer an emergency driving exercise program. High school instructors felt that the lack of trained instructors to teach emergency driving exercises was the reason a high school might not offer such a program.

A majority of highway safety instructors felt that high school students enrolled in emergency driving exercises would be inclined to experiment on roads and highways. However, almost as many highway safety instructors felt that students would not be inclined to experiment on roads and highways. Most of the respondents felt that students who wanted additional practice should not be permitted to use their own cars on school facilities.

Highway safety instructors were almost evenly divided in their responses regarding emergency driving exercises being voluntary or compulsory, if taught in the regular high school driver education program; there was a slight preference that the exercises be voluntary. These instructors felt that parents would approve of emergency driving exercises being taught in the regular high school driver education course and in an advanced driver education course.

Most highway safety instructors felt there was a need periodically to offer an emergency driving exercise refresher course to instructors as well as to students. Most instructors responded that this refresher course should be offered to instructors every two years, and should be offered to students yearly.

All highway safety respondents felt that colleges and universities should offer emergency driving exercise training to undergraduates or graduate students who plan to teach driver education. They also felt that colleges and universities should offer emergency driving training to graduates who are experienced driver education instructors.

Most highway safety instructors felt that student participation in an emergency driving exercise course would decrease their chances of becoming involved in an accident. In addition, most of the respondents indicated they would be willing to teach both the classroom and the practical driving phases of such a course.

Strengths and Needed Improvements in Existing Emergency Driving Exercise Programs

Most highway safety instructors in Groups I and II indicated that their emergency driving exercise programs would be continued. Instructors most often stated that the strength of an emergency driving exercise program was that "the student learns the skills and knowledge necessary to cope with emergency driving situations in traffic." In regard to needed improvements, highway safety instructors most often stated that "better facilities are needed" and that "more time needs to be reserved in the driver education curriculum for this type of training."

Conclusions of the Study

The data gathered from this study produced the following conclusions:

1. All groups of driver education teachers primarily used the classroom method of instruction and secondly, behind-the-wheel instruction. Simulation was least often used in the teaching of emergency driving exercises.

2. Most of the instructors stated that emergency driving situations should be a part of the regular driver education course.

3. Public school personnel recommended that emergency driving exercises should be in the regular driver education program. This includes instructors with training and teaching, and instructors with no training and teaching.

4. The teaching of emergency driving exercises was offered in fall, winter, and spring by instructors with teaching and no training.

5. Most of the instructors offered emergency driving instruction during the school or work day, whereas less than 50% offered it after school or work day.

6. All public school instructors offered the driver education course for approximately 16 weeks.

7. Emergency driving instruction in driver education was offered for approximately four weeks by public school personnel, whereas the private company representatives offered it for 16 weeks.

8. All instructors had approximately three sessions devoted to emergency driving exercises, whereas the U.S. government personnel and private company representatives provided the largest number of minutes per session.

9. All instructors provided approximately five sessions for emergency driving exercises, whereas the private company representatives provided only two sessions.

10. Approximately six sessions were devoted to emergency driving exercises using behind-the-wheel training by instructors with training and teaching. Instructors with no training and teaching used this type of training sparingly.

11. Most of the instructors developed their own program or curriculum, whereas a significant number of instructors with training and teaching also used commercial materials (General Motors Program).

12. Most students were required to participate in emergency driving exercises.

13. Approximately 50% of the instructors had their own area for practicing emergency driving exercises, except for high school instructors with no training and teaching.

14. Most of the instructors had a nearby facility for practicing emergency driving exercises.

15. There was no specific width or length of the area on which emergency driving exercises were practiced.

16. The area for practicing emergency driving exercises was found to be clear and unobstructed.

17. Most instructors indicated that the area used for practicing emergency driving exercises was adequate, except that a group of high school instructors found it to be inadequate.

18. An off-street driving range was usually available for practicing emergency driving exercises.

19. No specific minimum length or width of an area on which to teach emergency driving exercises was reported.

20. No specific width or length of the skid pan used for skidding purposes was reported.

21. Asphalt surface composition was used for the skid pan area.

22. Most of the instructors made use of a special sealant on the skid pan area.

23. Water was the most common surface preparation of the skid pan area to accomplish skidding.

24. No specific length or width was recommended for a skid pan.

25. All of the instructors used some type of special equipment such as driving simulator, blowout simulator, and brake-locking device to teach emergency driving exercises.

26. Most of the instructors used vehicles on loan from the local automobile dealer or purchased the vehicle outright.

27. Almost all of the instructors used a newer model car rather than an older model car to teach emergency driving exercises.

28. Rarely did the students use special equipment other than seatbelts and shoulder harnesses while practicing emergency driving exercises.

29. Most instructors did not feel that additional practice in emergency driving should be provided.

30. Staff instructors were primarily used as supervisors of extra practice sessions in emergency driving exercises.

31. Most instructors had taught emergency driving exercises for a period of six years.

32. Most instructors received their training in preparation for teaching emergency driving exercises in college or in their own department.

33. Almost all of the instructors received various emergency driving exercises during their special training.

34. Most of the instructors spent between 30 and 60 minutes in each of six emergency driving exercises in their training.

35. Most of the instructors, for each of six emergency driving exercises, spent approximately 60 minutes behind the wheel.

36. The vast majority of the instructors stated that high school students would benefit from instruction in emergency driving exercises.

37. Almost all of the instructors stated that classroom instruction and off-street driving should be used to teach high school students emergency driving exercises, whereas more than half of the instructors would also use the driving simulator.

38. More than half of the instructors felt that emergency driving exercises should be taught in the regular high school driver education course or in the advanced course.

39. Cost involved is the reason given why a high school might not offer an emergency driving exercise program.

40. Half of the instructors stated that high school students enrolled in emergency driving exercises would be inclined to experiment

on roads and highways; the other instructors felt that students would not be inclined to experiment on roads and highways.

41. Most instructors felt that students should not be permitted to use their own car on school facilities.

42. Half of the instructors felt that emergency driving exercises should be voluntary; the other half felt such exercises should not be voluntary.

43. Almost all of the instructors believed that parents would approve of emergency driving exercises being taught in the regular high school driver education program, or in an advanced driver education course.

44. Most of the instructors felt the need periodically to take a refresher course in emergency driving exercises.

45. Instructors could not agree about the frequency of a refresher course in emergency driving exercises for themselves.

46. Approximately half of the instructors felt the need periodically to offer students an emergency driving exercise refresher course, but could not agree about the frequency of such a course.

47. All of the instructors felt that colleges and universities should offer emergency driving exercise training to both undergraduates and graduate students who plan to teach driver education.

48. All of the instructors felt that colleges and universities should offer emergency driving exercise training to graduates who are experienced driver education instructors.

49. Nearly all of the instructors felt that the students' participation in an emergency driving exercise course would decrease their chances of accidents.

50. All of the instructors felt that both classroom and behind-the-wheel instruction should be used in emergency driving exercise training.

51. Almost all of the instructors felt there should be a continuation of the present emergency driving exercise program.

52. Half of the instructors felt that one of the strengths of an emergency driving exercise program is that students learn the skills and knowledge necessary to cope with emergency driving situations in traffic.

53. The improvements needed in emergency driving exercise programs, as reported by the instructors, are better facilities, more time reserved in the driver education curriculum for this type of training, and better equipment.

General Recommendations

The following general recommendations are based on the findings of this study:

1. Colleges and universities should be encouraged to design and incorporate emergency driving exercise training into the basic college driver education curriculum. Undergraduates and graduate students should receive the emergency driving exercise training in preparation to teach high school driver education.

2. Colleges and universities should be encouraged to offer workshops in emergency driving exercise training on a periodic basis so that driver education instructors in the field can acquire the necessary skills to teach emergency driving exercises to their students. Workshops could also serve as a refresher course for interested driver education instructors.

3. A manual for driver education instructors should be designed to offer information regarding the nature of facilities, equipment, and instructional objectives needed to teach emergency driving exercises to high school students.

4. A similar manual should be prepared for high school driver education students, stating the rationale for learning how to handle emergency driving situations and the terminal objectives to be reached upon completion of this aspect of the driver education course.

5. Classroom and driving time should be allocated in the driver education course for teaching high school driver education students to cope with emergency driving situations that may occur in traffic.

6. Preparation in handling emergency driving situations should be made an integral part of the regular high school driver education curriculum.

7. There seems to be some confusion about the length and width of the area on which emergency driving exercises are to be practiced. An agency at the state or federal level should determine, through studies, the minimum dimensions needed for this facility.

8. Funds from the state level should be provided to schools that include emergency driving exercises as a regular part of the driver education program.

Recommendations for Further Research

The following are recommendations for further research.

1. Survey state departments of education to determine whether Federal Standard Four (especially as it relates to instruction under all traffic and roadway conditions) is being interpreted and promoted by professionals concerned with the quality of driver education.
2. Study short- and long-term effectiveness in reducing traffic accidents among students "trained" in emergency driving procedures, as compared with students who have not received such training or preparation.
3. Conduct experimental research to identify the duration and type of training needed to transfer skills learned in a simulated environment to an actual highway situation.
4. Conduct experimental research to determine what level of proficiency is needed to cope with emergency conditions in traffic.
5. Conduct experimental research to identify simulated conditions that most nearly resemble real driving emergencies.

Discussion

From the review of literature, the writer's own experience as a driver education teacher, and the data obtained from this study, the following views emerged.

It is no longer a question whether teaching emergency driving exercises is a feasible aspect of driver education for high school students. The literature and the findings from this study indicate that preparing the driver education student for the reality of driving emergencies is a responsibility that driver educators must face. Preparing the student for only the most ideal driving conditions demonstrates not only a lack of responsibility for the driver education student, but also for the potential victims of his driving errors. The highway transportation system comprises not only other motorists and their vehicles, but also pedestrians, bicyclists, and motorcyclists who are at a greater disadvantage, if either they or motorists are in error while sharing the highway system. Stressing the importance of learning to cope with emergency driving situations is not intended, in any way, to diminish the importance of pedestrian, bicycle, and motorcycle safety. Inasmuch as many components share the highway system, it is a responsibility of the educational system to insure that each component is adequately prepared to participate as safely and as effectively as possible.

Although the inclusion of emergency driving exercises was officially sanctioned in the Highway Safety Program Manual of September 1974, it is apparent from the findings that the actual teaching of such exercises is fragmented. The reason most survey respondents

gave for why the exercises might not be offered in a high school driver education program was their cost. However, from past experience and findings in the literature, it would appear that lack of awareness of the concept of emergency driving exercises is more influential, in addition to a lack of trained instructors.

Thus, for emergency driving exercises to become an integral part of driver education, there must be a total commitment of the educational system and its various representatives. This includes commitment in practice as well as in theory.

The literature and the results of this study indicate that there is more agreement that emergency driving exercises should be included in the driver education curriculum, than agreement on how that is to be accomplished. Because the educational system is a complex network, it is important that all facets of the system coordinate their efforts to ensure that educational legislation is adopted. These facets include the state departments of education, universities and colleges, local school districts and their administrators, driver education instructors and their professional organizations, and the respective student communities.

The data from this study indicated that the majority of parents would favor the inclusion of emergency driving exercises in the high school driver education course. Although this was an opinion of the survey respondents, from the writer's past experience, parental approval can be gained if an effort is made to explain the purpose of such activities and to demonstrate them.

Before emergency driving exercises can become an integral part of the course, there must be a commitment on the part of teacher-preparation institutions to insure that qualified instructors are prepared for this task.

Also, some consensus about the nature of the curriculum must be reached, not only to design specific objectives for high school driver education students, but, more important, to provide impetus for colleges and universities to pursue improvements in the current teaching practices of driver education.

APPENDICES

APPENDIX A

COVER LETTER AND SURVEY INSTRUMENT

APPENDIX A

P.O. Box 931
Lansing, Michigan 48904

Dear Sir:

As part of my doctoral studies, I am involved in conducting a survey of driver education programs offering emergency driving exercises. The survey is designed to secure information relative to those emergency driving exercises being offered in your program and the nature of the program with respect to facilities, equipment, and curriculum. I am currently working on my doctorate in Traffic Safety Education at Michigan State University; Dr. Robert O. Nolan is my chairman.

You have been selected to participate in the survey because of your leadership in highway traffic safety.

I would appreciate your assistance in completing the attached questionnaire. The information you provide will enable me to better evaluate the feasibility of teaching emergency driving exercises to high school driver education students.

Should you desire a copy of the dissertation abstract, I will gladly forward one to you. Your cooperation in returning the questionnaire as soon as possible will be greatly appreciated.

Sincerely,

Angelo J. Scalet

SURVEY OF INSTRUCTION IN EMERGENCY DRIVING
SITUATIONS AND EXERCISES

Check which is applicable in your case.

- _____ 1. Trained to teach emergency driving situations and exercises and have taught them.
- _____ 2. Not trained to teach emergency driving situations and exercises, but have taught them.
- _____ 3. Trained to teach emergency driving situations and exercises, but have never taught them.
- _____ 4. Not trained to teach emergency driving exercises and situations, and have never taught them.

Directions

If you have checked either #1 or #2 above:

- a. Please respond to the instrument on page 1 in the following manner:

Indicate which situations and exercises you taught by checking which methods were used in the teaching of that situation or exercise (Classroom--Class), (Behind-the-Wheel--B.T.W., includes range, skid pan, on-the-street, etc.), (Simulator--Sim).

Then check whether or not you consider these situations and exercises appropriate and feasible to teach to high school students. For those situations and exercises you consider feasible, designate whether that exercise or situation should be taught in the regular driver education program (Reg.) or in an advanced driver education program (Adv.).

- b. Please answer the questionnaire beginning on page 2, as it applies to emergency driving exercises you have taught.
Answer the entire questionnaire.

If you have checked either #3 or #4 above:

- a. Please respond to the Opinion columns of the instrument on page 1:

Check whether or not you consider the emergency driving situations and exercises appropriate and feasible to teach to high school students. For those situations and exercises you

consider feasible, designate whether it should be taught in the regular driver education program (Reg.) or in an advanced driver education program (Adv.).

- b. Then complete the Instructor Training and Opinion Sections of the questionnaire.

METHODS USED TO TEACH
EMERGENCY DRIVING SITUATIONS AND EXERCISES

	Methods			Opinions		
	Class	B.T.W.	Sim.	Should Not Be Taught in H.S.	Should Be Taught in H.S.	
<u>Emergency Situations</u>					Reg.	Adv.
Brakes fail	_____	_____	_____	_____	_____	_____
Gas pedal sticks	_____	_____	_____	_____	_____	_____
Lights fail	_____	_____	_____	_____	_____	_____
Flooding carburetor	_____	_____	_____	_____	_____	_____
Stalling on railroad	_____	_____	_____	_____	_____	_____
Hood flies up	_____	_____	_____	_____	_____	_____
Steering failures	_____	_____	_____	_____	_____	_____
Bee in vehicle	_____	_____	_____	_____	_____	_____
Animals on road	_____	_____	_____	_____	_____	_____
Blinding lights	_____	_____	_____	_____	_____	_____
Deep ruts/holes in road	_____	_____	_____	_____	_____	_____
Vehicle catches fire	_____	_____	_____	_____	_____	_____
Submerged vehicle	_____	_____	_____	_____	_____	_____
<u>Emergency Driving Exercises</u>						
Off-road recovery	_____	_____	_____	_____	_____	_____
Skid control	_____	_____	_____	_____	_____	_____
Evasive maneuver	_____	_____	_____	_____	_____	_____
Controlled braking	_____	_____	_____	_____	_____	_____
Sudden loss of air (blowout)	_____	_____	_____	_____	_____	_____
Serpentine maneuver	_____	_____	_____	_____	_____	_____

SURVEY OF EMERGENCY DRIVING EXERCISES

General

1. Instruction in emergency driving exercises (in your program) was offered:

☐ As part of the regular high school driver education course
☐ As part of an advanced high school driver education course
☐ Other than high schools _____
Specify

2. When were the emergency driving exercises offered?

a. ☐ Fall	b. ☐ During the school/work day
☐ Winter	☐ After school/work day
☐ Spring	☐ Weekends
☐ Summer	☐ Other _____
	Specify

3. a. What is the actual duration of your driver education course?

☐ Number of weeks

- b. What portion of the driver education course was devoted to training students in emergency driving exercises?

☐ Number of weeks ☐ Number of hours

- c. How many times (sessions) per week did your class meet for classroom instruction in emergency driving exercises and for how many minutes per session?

☐ Times (Sessions) ☐ Minutes per session

- d. How many times (sessions) per week did your class meet for behind-the-wheel instruction in emergency driving exercises and for how many minutes per session?

☐ Times (Sessions) ☐ Minutes per session

- e. What were the total number of classroom sessions devoted to instruction in emergency driving exercises?

☐ Total number of classroom sessions

- f. What were the total number of behind-the-wheel sessions devoted to instruction in emergency driving exercises?

☐ Total number of behind-the-wheel sessions

4. How long has the teaching of emergency driving exercises been a part of your program?
- ☐ Less than 6 months
☐ 6 to 12 months
☐ More than 1 year but less than 2 years
☐ 2 years or more
5. What guidelines did you use to teach emergency driving exercises?
- ☐ Commercially produced program _____ Specify
☐ Developed own program
☐ Other _____ Specify
6. Was student participation in emergency driving exercises voluntary or required in your program?
- ☐ Voluntary
☐ Required

Facilities and Equipment

7. Did you have your own area for practicing emergency driving exercises?
- a. ☐ Yes
☐ No
- b. If No to (a)--Did you use another facility close by?
☐ Yes
☐ No
- c. If Yes to (b)--How far did you travel to reach the facility?
☐ Number of miles
8. Respond if you answered Yes to 7a or 7b.
- a. What were the dimensions of the area on which emergency driving exercises were practiced in your program?
☐ Width (ft.)
☐ Length (ft.)
- b. Was the area clear and unobstructed?
☐ Yes
☐ No
- c. Did you have adequate space to practice emergency driving exercises?
☐ Yes
☐ No

9. What is the nature of the facility upon which you practice emergency driving exercises? (Check more than one if applicable.)

☐ Off-street driving range
☐ Blocked-off city street
☐ Parking lot (Check one)
 ☐ School
 ☐ Private
☐ Rural road (little traveled)
☐ Other _____
 Specify _____

10. What minimum dimensions would you recommend for an area on which to teach emergency driving exercises?

☐ Width (ft.)
☐ Length (ft.)

11. If you use a special area for skidding purposes (skid pan), what are its dimensions?

☐ Width (ft.)
☐ Length (ft.)
☐ Do not have a special area for skidding (Skip #12)

12. What is the surface composition of your skid pan area?

a. ☐ Asphalt
 ☐ Concrete
 ☐ Other _____
 Specify _____

- b. Was a special sealant used?

☐ Yes _____
 Describe
☐ No

- c. How did you prepare the surface to accomplish skidding?

☐ Water
☐ Oil
☐ Foam
☐ Snow and Ice
☐ Other _____
 Specify _____

13. What minimum dimensions would you recommend for a skid pan?

☐ Width (ft.)
☐ Length (ft.)

14. What type of special equipment did you use to teach emergency driving exercises?
- ☐ Driving simulator
☐ Blow-out simulator
☐ Brake-locking devices
☐ Other _____
Specify _____
☐ No special equipment was used
15. Who furnished the vehicles that you used to teach emergency driving exercises?
- ☐ On loan from a local auto dealer
☐ Purchased by the school district
☐ Leased by the school district
16. Was an older model car(s) used in your emergency driving exercise program?
- ☐ Yes
☐ No
17. Did your students wear special equipment (other than seatbelts and shoulder harnesses) while practicing emergency driving exercises?
- ☐ Yes _____
Specify _____
☐ No
18. If students wanted additional practice in emergency driving exercises, could your school provide this opportunity?
- a. ☐ Yes
☐ No
- b. How would these practice sessions be supervised? _____
Specify _____

Instructor Training

19. How many years of teaching experience (related to highway traffic safety) have you had? Fill in the exact number of years on the appropriate line.
- _____ Number of years
20. How long have you been teaching emergency driving exercises?
- a. _____ Months _____ Years
- b. Give date that you last taught emergency driving exercises
- _____
- c. _____ Have had no experience in teaching emergency driving exercises

24. How much time did you spend learning the following skills:
Key: (1) 1-29 minutes (2) 30-60 minutes (3) 61-120 minutes
(4) more than 120 minutes

- _____ Off-road recovery
- _____ Skid control
- _____ Evasive maneuver
- _____ Controlled braking
- _____ Blow-outs
- _____ Serpentine maneuver
- _____ Other

25. Would the majority of high school students benefit from instruction in emergency driving exercises?

_____ Yes
No

26. What method(s) should be used to teach emergency driving exercises to high-school-age students? (Check all that are applicable.)
- ☐ Classroom
- ☐ Driving simulator
- ☐ On-the-street driving
- ☐ Off-street driving range
- ☐ Other _____
- Specify
27. The teaching of emergency driving exercises should be:
- ☐ A part of the regular high school driver education course
- ☐ Taught in an advanced driver education course in high school
- ☐ Both
- ☐ Neither
28. If a high school does not offer an emergency driving exercise program, this may be due to: (Rank in order of importance from most important (1) to least important (6).)
- ☐ Cost involved in developing an area for teaching emergency driving exercises
- ☐ Lack of trained instructors to teach emergency driving exercises
- ☐ Fear of accidents and injuries to students
- ☐ Lack of awareness of the concept of emergency driving exercises
- ☐ Lack of space or proper area to conduct emergency driving exercises
- ☐ Difficulty in securing vehicles from auto dealers for such use
29. Do you think that high school students enrolled in emergency driving exercises would be inclined to experiment on roads and highways?
- ☐ Yes
- ☐ No
30. If students want additional practice, should they be permitted to use their own car (on school facilities)?
- ☐ Yes
- ☐ No
31. Should participation in emergency driving exercises be voluntary or compulsory (if taught in the regular high school driver education program)?
- ☐ Voluntary
- ☐ Compulsory

32. Do you believe that parents would approve of emergency driving exercises being taught in:
- ____ Yes ____ No The regular high school driver education course
- ____ Yes ____ No An advanced driver education course in high school
33. Is there a need to offer an emergency driving exercise refresher course periodically to instructors?
- ____ Yes If Yes, how often? _____
- ____ No
34. Is there a need to offer an emergency driving exercise refresher course periodically to students?
- ____ Yes If Yes, how often? _____
- ____ No
35. Should colleges and universities offer emergency driving exercise training to undergraduates and/or graduate students who plan to teach driver education?
- ____ Undergraduates
- ____ Graduate students
- ____ Both
36. Should colleges and universities offer emergency driving exercise training to graduates who are experienced driver education instructors?
- ____ Yes
- ____ No
37. Participation in an emergency driving exercise course would:
- ____ Increase the driver's chances of becoming involved in an accident
- ____ Decrease the driver's chances of becoming involved in an accident
- ____ Neither increase nor decrease the driver's chances of becoming involved in an accident
38. Would you, as an instructor, teach:
- ____ The classroom aspect of emergency driving exercises
- ____ The practical driving phase of emergency driving exercises
- ____ Both
- ____ Neither

Areas of Improvement

39. Is your present emergency driving exercise program going to be continued?
- _____ Yes
_____ No
40. List three strengths of your emergency driving exercise program.
1.
2.
3.
41. List three ways your emergency driving exercise program could be improved.
1.
2.
3.

Any special comments not covered in the questionnaire:

Please complete and return with questionnaire.

Name _____

Title or Position _____

Agency or School _____

Address _____

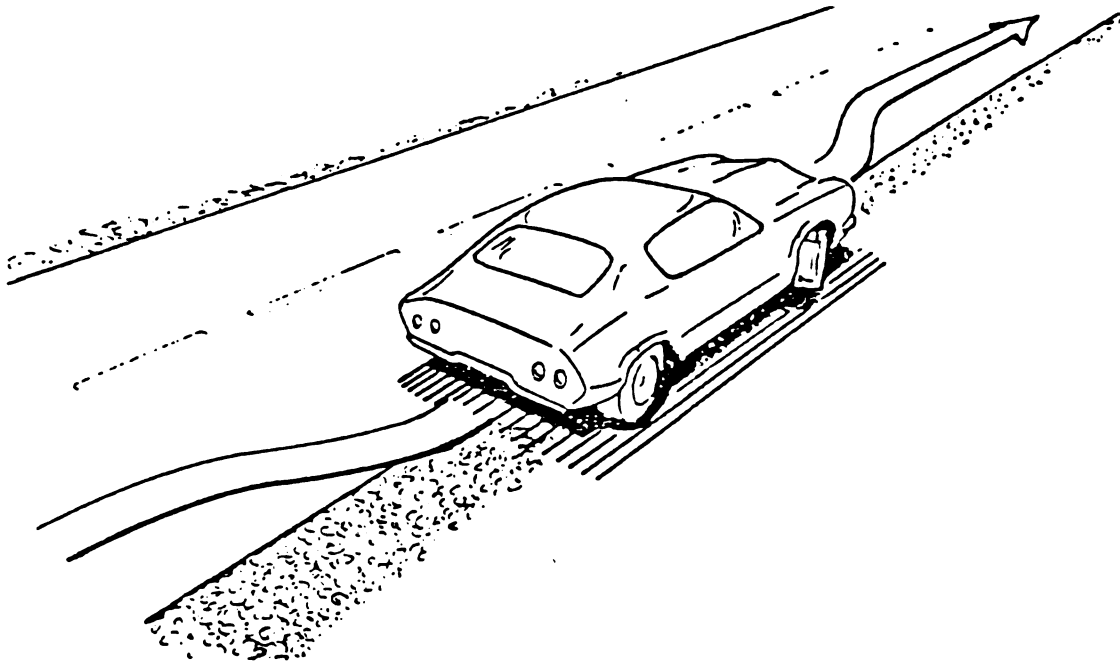
Thank you.

APPENDIX B

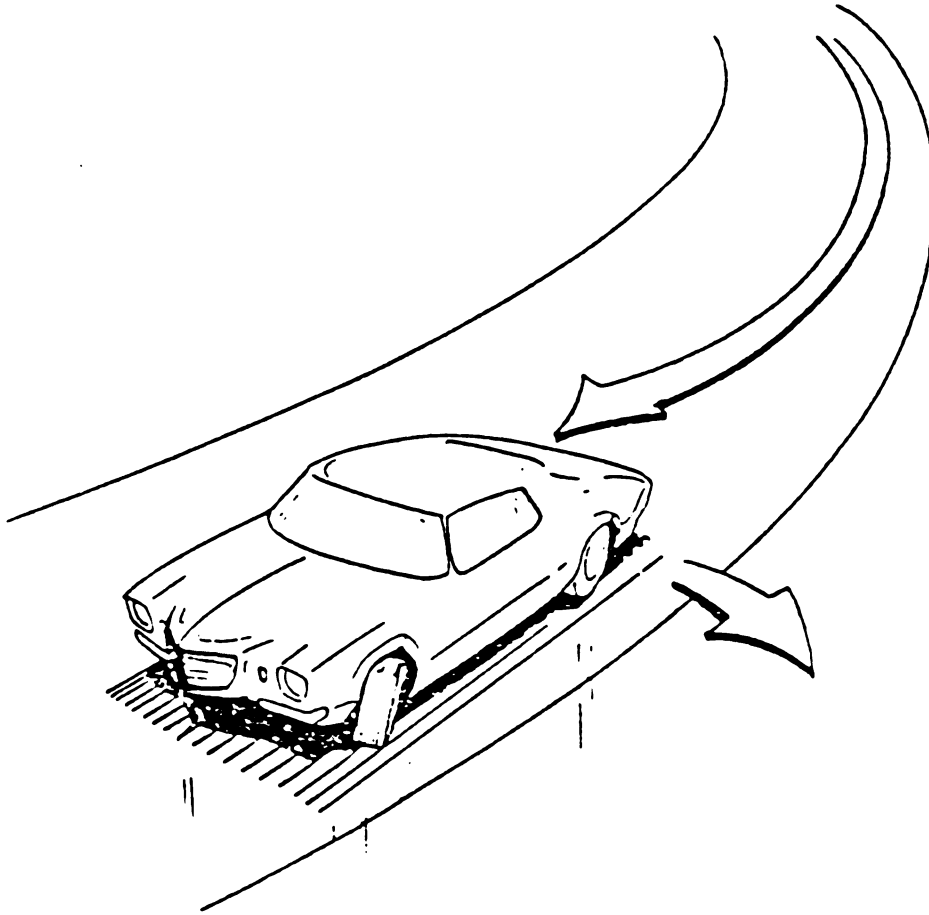
EMERGENCY DRIVING EXERCISES

Source: F. D. Smithson and R. A. Whitworth, Development of an Advanced Driver Education Program, 4637 (Milford, Michigan: General Motors Engineering Staff--Proving Grounds, April 1972), pp. 4-15.

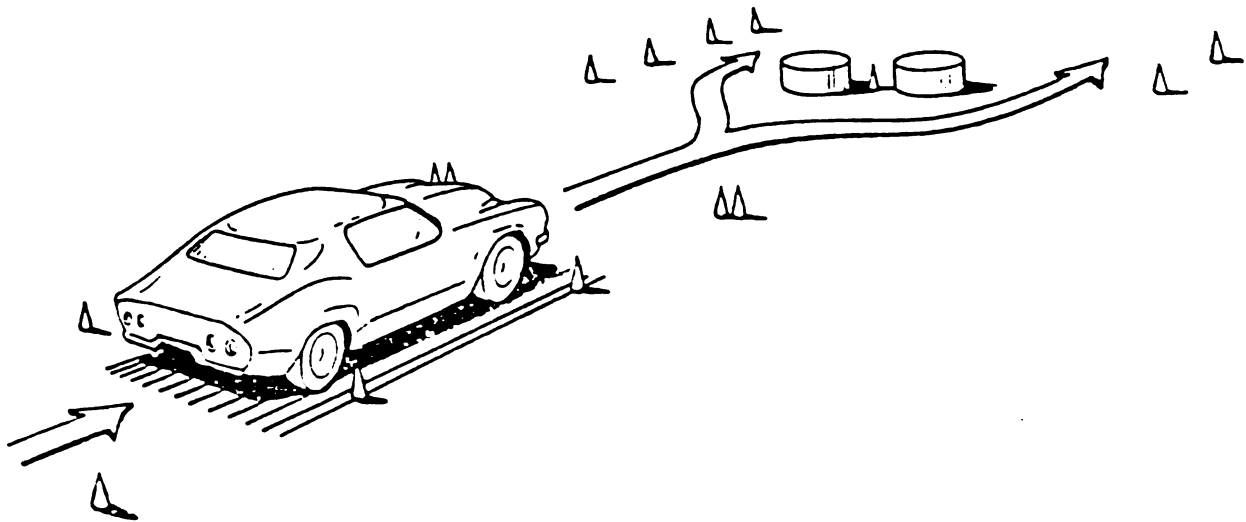
APPENDIX B



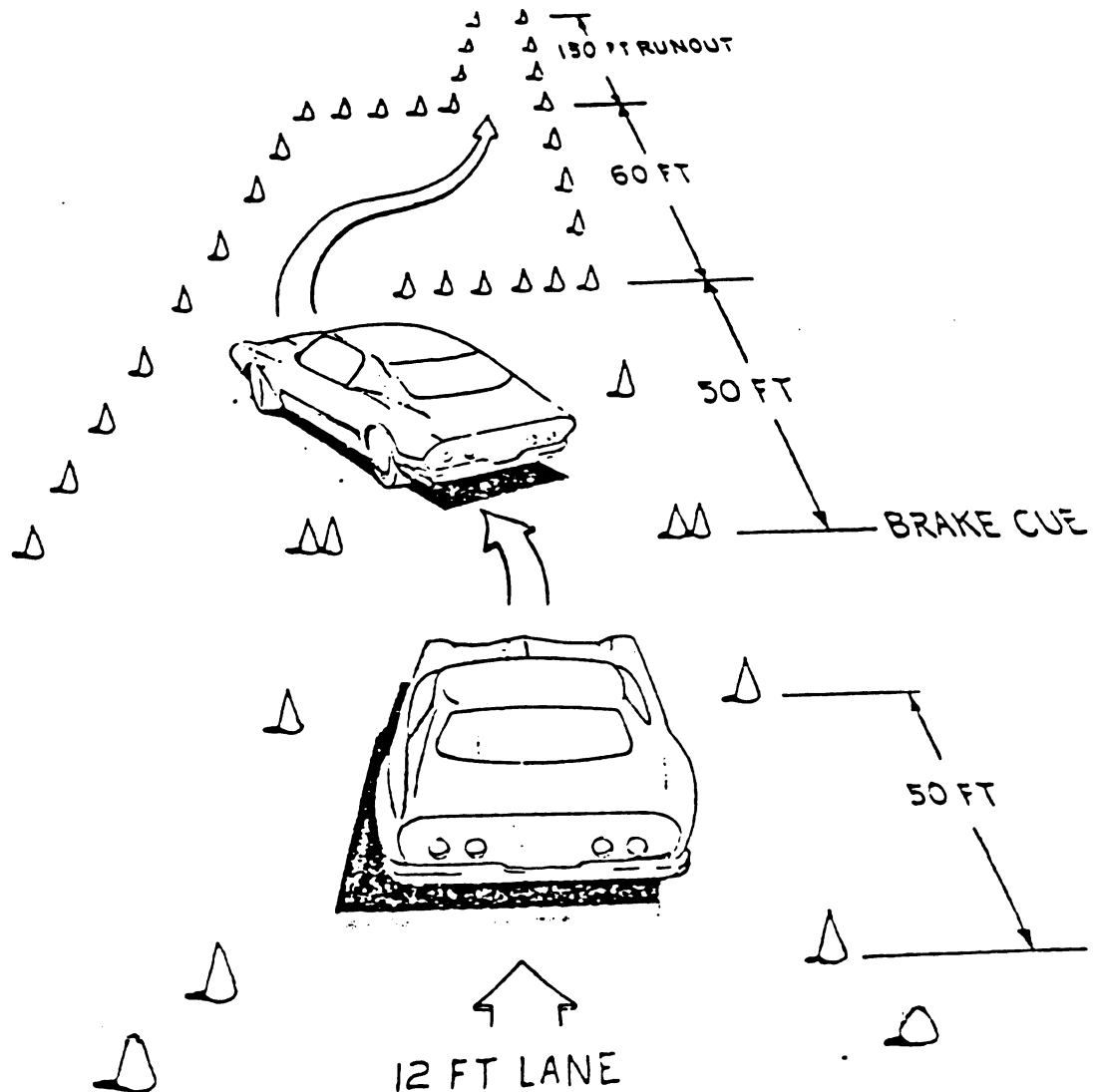
1. Off-road recovery (Figure 1) - In normal driving a driver will often either deliberately or inadvertently drop two wheels off the roadedge. Due to poor shoulder maintenance on many roads, this edge may be as large as 4 to 6 inches. The driver knows he should slow down and then return to the road surface. While this is undoubtedly a correct approach, there are several conditions which may prevent the driver from exercising this technique. The shoulder may be blocked by a disabled vehicle or some other obstacle or the vehicle may be in a stream of high speed traffic. In addition, it is against basic human nature to slow down in this type of situation. Whatever the reason, drivers do attempt to return to the road surface and often have problems. The driver problem occurs because he tends to be cautious. He scrubs the tire on the roadedge and this requires a very large steering input to enable the tire to climb the dropoff. When the tire does climb up, the large steering input makes the vehicle rapidly cross the traffic lane possibly leading to a collision or a difficult control situation. The exercise shown in Figure 1 gives the student practice in performing the maneuver properly. This requires a sharp input from a straddle position, with a quick return to the straight ahead steering position at the moment of tire impact. In this maneuver, the momentum of the vehicle will carry it up on the road and it will still stay within the traffic lane. The test facility is a 4" concrete curbing which is used to prevent pavement raveling.



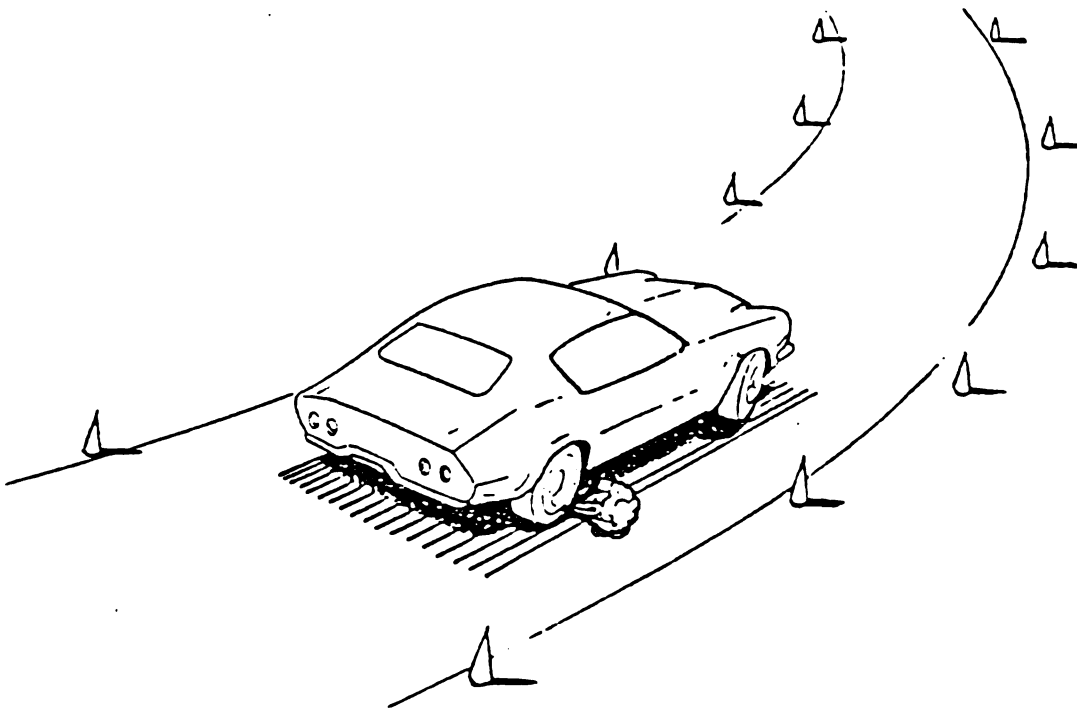
2. Skids (Figure 2) - The training of drivers in skid recovery has long been recognized as a desirable feature of any advanced driver training program. It is important to define a skid as it is used here. Our analysis of accident data indicates that the common power skid where the vehicle has lost rear wheel cornering traction due to overthrottle application on a slippery curve is the type of skid which is the most troublesome and is that which the motorist identifies with the word "skid" per se. In our exercise, this type of skid is simulated by momentarily locking the rear wheels to induce the skid on a wetted skid pad. A pneumatic hydraulic unit was developed which can be quickly attached to any vehicle and, since it is electrically initiated and installed in the trunk, can be used without "cueing" the student as is often the case of an in-vehicle mounted brake pedal. Students are trained at speeds up to 35 mph progressing to more severe skids as they become more competent.



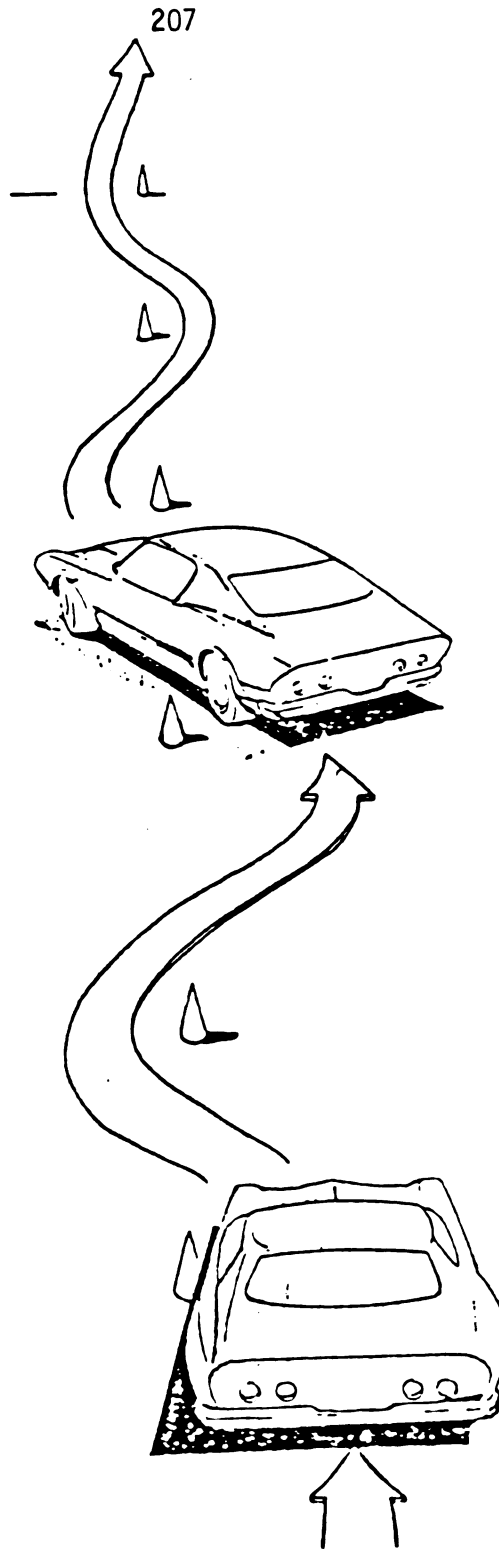
3. Evasive maneuvers (Figure 3) - Many cases of a driver either failing to make or improperly performing an evasive maneuver led to the development of an evasive exercise. A major driver deficiency appears to be lack of awareness of the evasive capability of an automobile and overdependence on the brake as an emergency control. In addition, most drivers and many driving instructors are not aware that a locked tire cannot provide steering capability. These reasons led to the development of the evasive maneuver and the controlled braking exercise discussed in 4. In the evasive exercise, the student drives down a cone marked lane which is blocked at the end. At a predetermined point, he is cued to evade this barricade by making a left or right lane change without braking. Several cueing systems have been used such as lights, plastic curtains which close all but one lane, and vocal command. All appear to be equally effective. The major objective is for the student to become aware of and utilize the evasive capability of the automobile. The student is shown what can be done and then runs through the exercise at increasing speeds as related to his progress. Distance from cue point to obstacle can be selected based on the available space and type of student. A 60-ft interval with a typical maximum student speed of 40 mph has been found to be suitable.



4. Controlled Braking (Figure 4) - It is important to brake a vehicle to reduce speed even in an evasive maneuver but the driver must learn to brake without locking the wheels so that he can maintain steering control. The controlled braking exercise also requires a lane change evasive maneuver, but the student knows the direction of evasion so as not to over-complicate the exercise and mask the important aspect which is proper braking control. The student is told that we are simulating his coming over the crest of a hill, and at the cue point, he has just seen a disabled vehicle in his path. He is to get around this vehicle and then back into his road lane because of the possibility of oncoming traffic and at the same time, he is to stop the car in the shortest possible distance. The student must learn to modulate the brake and detect wheel lockup, and learn how to react to wheel lockup. The maximum speed is generally 45 mph for a 50-ft distance between the brake cue and the cone barricade.



5. Tire Blowouts (Figure 5) - Tire blowouts are infrequent occurrences today and account for few accidents, but drivers have a fear of what will happen if one occurs. The Proving Ground has developed a Blowout Simulator (shown in Figure 7) which is a pneumatic valve that allows the tire to be deflated through the rim in a time comparable to a sudden tire air loss. The device will automatically reinflate the tire so that repetitive blowouts can be given on the same tire. This unit has been licensed and is available to the general public. Even though tire blowouts are not a major accident causation factor, the fear of a blowout, the ability of giving a driver a simulated emergency, and the similarity of driver control response to other vehicle handling situations, make it an effective training exercise. Both front and rear blowouts are given at speeds up to 60 mph while operating in a straight line and on curves.



6. Serpentine Course (Figure 6) - While not directly related to a specific emergency situation, a serpentine course is incorporated to develop proper hand positions, rhythm, and timing of steering inputs, and to increase the driver's ability to perceive the spatial relationship of his vehicle with respect to fixed obstacles, i. e. cones. It is believed that this will help in developing a better interpretation of driving tasks.

APPENDIX C

MEETING DRIVING EMERGENCIES

Source: Highway Traffic Safety Center, Continuing Education Services, Michigan State University. Education 329F: Introduction to Driver and Traffic Education.

APPENDIX C

HIGHWAY TRAFFIC SAFETY CENTER
Continuing Education Service
Michigan State University

ED 329F
Introduction to Driver and Traffic Education

MEETING DRIVING EMERGENCIES

1. BRAKES FAIL

Take foot off accelerator pedal.
Pump brake pedal repeatedly.
Turn off ignition.
Engage parking brake.
Shift to lower gear.
Rub tire against curbing, if on a steep city hill.
Rub fender against cliff or run into bushes before picking up speed, if on a mountain road.

2. RUNNING OFF PAVEMENT

Release accelerator pedal.
Keep firm grip on steering wheel.
Resist urge to return to pavement immediately.
Straddle pavement edge until car is moving slowly.
Turn sharply back onto pavement where pavement is nearly level with shoulder.

3. TIRE BLOWS OUT

Keep firm grip on steering wheel.
Keep wheels as straight as possible.
Gradually release accelerator pedal.
Pump brakes lightly.
Reduce speed to 15 MPH or less before pulling off onto shoulder.
Have car well off road to change the tire.

4. GAS PEDAL STICKS

Pump accelerator pedal with several sharp jabs to release.

Turn off ignition.

Apply brakes and pull off highway.

5. RECOVERING FROM A SKID

Avoid braking unless absolutely necessary.

Steer in the direction in which the rear end of the car is skidding.

Compensate for the skid immediately.

Straighten front wheels, when car begins to straighten.

6. DRIVING ON SNOW AND ICE

Drive at reduced speed.

Make no sudden changes in speed or direction.

To slow, pump brake pedal lightly, two or three times per second.

In starting, for optimum traction, accelerate gradually.

7. BLINDING LIGHTS

Dim lights, even though other driver does not.

Look at right edge of road.

Slow down.

Pull to the right in order to give other driver room.

8. LIGHTS FAIL

Try other lights--high or low beam, turning signal, parking lights, fog lights, brake lights.

Pull off the road and stop.

9. FLOODING OF CARBURETOR

Hold accelerator pedal against floor. (Do not pump pedal!)

Engage starter for 20 to 30 seconds; repeat if necessary.

10. STALLING ON RAILROAD TRACKS

If train is coming, leave the car.

Leave the area of impact--do not go in direction train is going.

If train is not coming--standard transmission--place gear shift lever in low or reverse, engage clutch, and engage starter.

Automatic transmission--place in neutral and push.

11. ANIMALS ON THE ROAD

Avoid hitting animal only if you can safely do so by braking and steering, but do not swerve so drastically as to lose control. It is better to strike the animal.

12. SUBMERGED CAR

Escape through open window, before water reaches window level, if possible. Most cars will float for several minutes.

If car sinks too rapidly, move to rear of passenger compartment to breathe trapped air, while planning escape.

a. Open side window or knock out back window.

b. Open door only when water pressure is equalized.

13. DEEP RUTS AND/OR HOLES IN THE ROAD

Reduce speed.

Try to avoid.

Before wheel drops in rut or hole, let up on brakes so wheels will turn.

Maintain firm grip on the steering wheel.

14. HOOD FLIES UP

Look ahead out of left window.

Pull off road as soon as possible.

15. STEERING FAILURE

Hard steering--pull off road and check for low tire or broken power steering belt

Complete failure--apply brakes moderately to prevent skidding.

16. CAR CATCHES ON FIRE

Carry fire extinguisher.

Throw mud, dirt, or snow on blaze.

Hub cap can be used to carry water from ditch or stream.

17. REAR END COLLISION IMMINENT

Throw yourself across front seat or slump down so your head is supported by back of front seat.

18. BEE IN CAR

Ignore while driving.

Stop on shoulder and then remove bee.

19. WHEN AN ACCIDENT IS IMMINENT

Steer until accident is unavoidable. Stay in the car.

Driver cross arms over face and press head and arms against dash or steering wheel.

Front seat passengers cross arms over face and press head and arms against dash or steering wheel.

Rear seat passengers cross arms over face and press head and arms against back of front seat.

Each person in car should have seat belts securely fastened.

APPENDIX D

REPRESENTATIVES IN GOVERNMENT AND PRIVATE ORGANIZATIONS
WHO SERVED AS CONTACT PERSONS

APPENDIX D

REPRESENTATIVES IN GOVERNMENT AND PRIVATE ORGANIZATIONS WHO SERVED AS CONTACT PERSONS

Mr. Gilbert Drake	Director of Motor Vehicle Safety Education (Liberty Mutual Insurance Company)
Mr. Walter Horner	Administrator of Field Education and Training (Aetna Insurance Company)
Dr. Francis Kenel	Director of Traffic Engineering and Safety Department (AAA)
Lt. Gen. Gerald W. Johnson	Chief Safety Education Division (Department of the Air Force)
Mr. C. H. Ernst	Assistant Director of Safety (Department of the Army)
Mr. Jerry Crawford	Engineering Division (Department of the Navy)
Mr. John L. McCarty	Head Aircraft Landing Dynamics Section (National Aeronautics and Space Administration)
Dr. Richard Pain	Staff Scientist (Biotechnology, Inc.)

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