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Driver Education in Virginia: An Analysis of Performance Report Data

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Abstract The Virginia Highway and Transportation Research Council was asked by the State Department of Education to assist in the analysis of the driver education programs taught throughout the state. In order to do so, the Research Council developed a computer software system designed to produce a myriad of statistical data. The reporting format used distinguished among the types of schools attended (public, private, or commercial), as well as the types of programs taught (two-phase, three-phase using simulators, three-phase using multiple car driving ranges, or four-phase). In addition, the format categorized crash and conviction data according to three driver experience levels (less than 1 year of driving experience, 1 to 2 years, and 2 to 3 years). Data were collected for two 12-month periods, and comparisons were made among the schools, the programs, and the experience levels. However, it was not possible to compare the accident and conviction rates of young people who had received formal driver training to those young people who had received either informal or no driver training, since Virginia law requires that to obtain a driver's license, all persons under 18 years of age complete a state-approved driver education course.

The analysis of the data gathered led to the following findings: (1) students graduating from commercial driving schools in Virginia have a significantly greater incidence of accident involvement and a significantly higher rate of conviction for motor vehicle offenses than do students who recieve their driver training at a public or private school; (2) during their first 3 years of driving, young people are convicted of motor vehicle offenses at an increasing rate each successive year, and this rate increases to such a degree that males who graduate from public high school driver education courses and who have 2 to 3 years of driving experience receive approximately 50 convictions for every 100 students during a single 12-month period; (3) young people who receive their training in a two-phase driver education program generally accumulate fewer convictions per 100 students than do their counterparts who receive their training in three-phase range, three-phase simulator, or four-phase programs. The capsulized versions of these and other findings are in the section of this report entitled "Analysis of the Data."

DRIVER EDUCATION IN VIRGINIA: AN ANALYSIS OF PERFORMANCE REPORT DATA

by

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A report prepared by the Virginia Highway and Transportation Research Council for the State Department of Education.

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TABLE OF CONTENTS

ABSTRACT

The Virginia Highway and Transportation Research Council was asked by the State Department of Education to assist in the analysis of the driver education programs taught throughout the state. In order to do so, the Research Council developed a computer software system designed to produce a myriad of statistical data. The reporting format used distinguished among the types of schools attended (public, private, or commercial), as well as the types of programs taught (two-phase, three-phase using simulators, three-phase using multiple car driving ranges, or four-phase). In addition, the format categorized crash and conviction data according to three driver experience levels (less than 1 year of driving experience, 1 to 2 years, and 2 to 3 years). Data were collected for two 12-month periods, and comparisons were made among the schools, the programs, and the experience levels. However, it was not possible to compare the accident and conviction rates of young people who had received formal driver training to those young people who had received either informal or no driver training, since Virginia law requires that to obtain a driver's license, all persons under 18 years of age complete a state-approved driver education course.

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INTRODUCTION

During the past half-century, driver education programs have steadily become a standard fixture in high school classrooms across America. From an inauspicious start in a solitary school in Gilbert, Minnesota, in 1923, such programs have flourished to become the primary source of driver education in our country today. And yet, despite this phenomenal growth, driver education programs have come increasingly under attack during recent years. Critics have charged that such programs are both inefficient and ineffective. To support these contentions, they cite several points. To begin with, the critics note that there is still a raging debate within the knowledgeable research community regarding whether high school driver education programs actually improve a young person's driving skills beyond the level that would have been attained had that person been engaged in an alternative system of instruction. The critics then cite the fact that accident statistics among the young remain appallingly high despite the widespread institution of public driver education courses. Lastly, the critics charge that the public is opposed to spending tax dollars on a program which has not been proven to be cost-effective.

Not surprisingly, proponents of public high school driver education have not remained idle during this assault. Instead, they have readily joined the debate. For their part, these advocates of high school driver education have proffered several arguments to support their position. To begin with, the proponents state that public instruction is crucial since it reaches young people right when they attain legal licensing age, and, thus, right when they are most highly motivated to learn. Further, the proponents note that it makes intuitive sense that driver education is helpful in reducing the number of automobile accidents and injuries upon the nation's highways since such courses teach proper driving maneuvers and the rules of the road. Finally, they argue that the consequences which flow from a poorly trained driver being on the road are so potentially serious that it is imperative that society retain control over the driver education process so as to ensure that quality instruction is provided.

As one may readily surmise from the capsulized arguments presented above, the convictions on both sides of this argument run strong and deep. This is to be expected considering the nature of this issue, for one is not dealing with some ethereal, philosophical point, but instead with cold, stark reality. A decision on this matter has the potential to affect the jobs of high school driver education teachers, the expenditure of public funds in a cost-conscious era where dollars allocated to one program may decrease the number of dollars available to another program, and, of course, the safety and security of citizens on our state's highways. In light of these points, it is crucial to examine the fundamentals of this subject matter in as objective a manner as possible. This report will attempt to accomplish that goal by analyzing data which have been collected during the past few years on Virginia high school driver education programs. Such material can then serve as a foundation upon which to base the policy choices which must be made.

BACKGROUND

Over the years there has been a plethora of studies involving different aspects of the multifaceted topic of driver education. Some studies have been extensive, some intensive; some unbiased, some stilted; some good, some bad. However, regardless of the quality of each particular study, the mass of scientific research in this area has added immeasurably to the understanding of this somewhat amorphous subject. Nevertheless, contrary to bold assertions on the part of some researchers, it is impossible to state with certainty any conclusion regarding the most vital question of all, namely, whether a young person who receives a certain type of instruction will necessarily have a better driving record than if he had received some other form of instruction or no instruction at all. In the words of one author, "The big question [facing legislators and educators today] is whether or not young people completing driver education programs have improved accident (and/or violation) records. Those who insist on a clear-cut yes or no answer are likely to be frustrated by evidence currently available."(1) Nevertheless, it is quite possible and, in fact, quite beneficial, to deal with generalities and to delve into the realm of probabilities involving the issue of driver education.

One of the first issues with which researchers have had to come to grips is how best to articulate the definition and purpose of driver education. Both sides of the debate may agree that driver education can loosely be described as a guided process controlled by an instructor, the function of which is to increase the level of performance in terms of knowledge, aptitude, and attitudes of a person just learning to operate a motor vehicle.(2) The object of such instruction is to teach students the minimum skills necessary to drive, to enable students to make sound decisions under various driving circumstances, and to encourage students to learn the legal and moral responsibilities that are inseparable from being a competent driver. The ultimate purpose of all of this is, of course, to decrease the number of accidents and driving offenses committed by young highway motorists.

From this definitional understanding, researchers have gone on to explore the rather broad question of whether there truly is a fundamental need for young people to be exposed to driver instruction. This instruction could be strictly formal in nature such as a program administered by the state, or very informal such as simple guidance by a young person's parent or guardian. Not surprisingly, it has been generally accepted by all concerned that it is vital for a young person to receive some type of instruction, be it formal or informal. The reasoning behind this conclusion rests upon two levels of analysis. The first level is the informational level. Young people need to learn "the rules of the road." At this level, beginning drivers should be exposed to such information as the meaning of a flashing yellow light, who has the right-of-way at an intersection, and when it is permissible to pass another vehicle. The second level is the motor skills level. At this level, beginning drivers should be allowed to try their hand at such tasks as parallel parking, maintaining a proper speed, and merging with traffic on a busy highway. The underlying concept here is that young people need to learn the practical as well as theoretical aspects of operating a motor vehicle, for "in driving, as in all perceptual-motor tasks, learning by practice is essential in mastering the task."(3)

Once these matters were settled, researchers and commentators began to focus on the paramount issue which still confronts us today -- some kind of training is obviously necessary, but how much and what kind? Unfortunately, there is no generally accepted answer to this question. Neither individuals with an interest in the outcome of the debate, nor neutral observers, nor researchers have spoken with one voice. As one author wryly observed regarding research efforts in this area, "Studies and statements pro and con on driver education effectiveness are easy to come by. In fact, some of the studies may support one's position regardless of what it may be."(4) At no time is this point as clear as when one engages in a survey of the many published reports on this topic in an effort to gather unchallenged information. It often seems that what one article giveth, another article taketh away. However, it is still profitable to examine a sample of these studies and to analyze those reports which are recognized as being particularly influential, noteworthy, or controversial within the driver education research community.

LITERATURE REVIEW

The majority of the studies on driver education programs have focused on one particular facet of the subject. For instance, numerous articles have been written which examine a single aspect of such topics as simulator training, range training, behind-the-wheel training, or commercial school programs. Before the exploration of some of these articles, an explanation of these terms may be helpful.

A simulator, as the name suggests, imitates on-road driving. It is a machine which, although an immobile unit, closely resembles the inside of an automobile and is replete with safety belts, gear shift lever,

steering wheel, gauges, speedometer, etc. At the front of the unit is a screen which depicts various driving scenarios a person may encounter when out on the road. The student sits in the unit and proceeds to operate the simulator as if it were a real moving vehicle. Because of an extensive network of computer software and hardware, the instructor may discern when a student has improperly operated the vehicle in light of the visual cues presented on the screen or dashboard. The instructor may then immediately correct the student's actions. The theory behind the use of the simulator is that once a student begins to drive, he will be able to transfer the skills learned on the machine to the operation of a real car.

On the other end of the spectrum is the "behind-the-wheel" program. As its name suggests, this program actually takes the student out onto the public roadways to put into practice those skills which have been discussed in the classroom. Typically, the instructor sits next to the young driver and has access to a dual brake pedal. This allows the instructor to slow down and stop the vehicle as necessary. The behind-the-wheel program has been in use since the beginning of driver instruction, and is an integral part of most such courses today.

Another driver education teaching tool is known as an off-street driving range. A range consists of a large driving area constructed separate and apart from any public roadway. On a range there are intersections, curves, and merging lanes, and, typically, painted street markings, signs, and curbs very similar to those actually used in real life. The instructor usually places several students in individual vehicles on the range at one time. He then takes his position in a nearby elevated platform area and directs the students' movements by way of a two-way radio or loudspeaker. This type of range training provides students with an opportunity to actually drive an automobile, and yet it does not expose them to the dangers inherent in on-road, in-traffic driving.

In many of the articles written, one topic of hot debate has been whether simulator-enhanced programs are superior to simple behind-the-wheel programs. One reason for the intensity of the debate may be that over the decades several simulator companies have invested large amounts of money into research and development projects. Another reason may be that simulators are quite expensive to purchase. A third reason may be that simulators represent being on the edge of the technological frontier and symbolize a commitment to driver education. Therefore, it is not surprising that the opposing views regarding their effectiveness are strongly expressed.

In one study on simulators, Michigan researchers asserted that students who had been exposed to only behind-the-wheel and classroom methods of instruction had a higher average incidence of violations and accidents than those students who had also been exposed to simulator training.(5) This finding was later echoed by the authors of a study conducted in Texas.(6) However, two other studies, one conducted in

California and the other in Illinois, contradicted this finding. The researchers who completed these latter reports concluded that there were no significant statistical differences in the numbers of crashes and convictions experienced by those students who had been enrolled in simulator-enhanced programs as compared to the number for those students who had been enrolled in behind-the-wheel programs.(7) Lastly, one other report which addressed the pros and cons of simulator training -- this one conducted by the Organization for Economic Co-operation and Development in Europe -- came down squarely on both sides of the issue. The report declared: "It may be said, in general, that the use of a simulator is probably useful insofar as it enables the simultaneous instruction of a large number of learners and an overall time-saving, but may not be beneficial at the individual level of instruction."(8) Thus, as one can see, the results are mixed.

The results are also mixed regarding the question of whether it is desirable to implement range programs for young people. A 1977 California State Department of Motor Vehicles study indicated that range students had fewer total accidents per person than non-range students in the year following the beginning of training.(9) However, a 1975 Illinois Department of Transportation study and a North Carolina Highway Safety Research Center study of the same year indicated that there were no significant differences between the performance levels of the range students and those of students who had received other types of driving instruction.(10) In fact, the North Carolina study noted that in terms of accident involvement, any slight differences between the range students and the Control group actually favored the Control group.

Not surprisingly, the research conducted to determine whether commercial school driving programs are superior to public high school driving programs has also been contradictory. One study done by the Washington Division of Motor Vehicles in 1969 stated unequivocally that commercial driving schools are more effective in teaching safe driving habits than are public high schools.(11) The researchers argued that this was particularly true for young men,because they found that the male commercial school students studied had had significantly fewer accidents and violations than their public high school counterparts. However, a 1973 California report declared that there was no difference in the accident rates observed between publicly and commercially trained students.(12) Furthermore, other studies have found that commercial school students actually have worse driving records than other students. Therefore, the debate over commercial driving schools continues.

This recitation of just a few studies is by no means exhaustive. Whole bibliographies have been printed which consist of nothing else but citations to thousands of articles, reports, studies, monographs, and papers dealing with driver education. However, by reviewing even this small number of reports, one can soon get a feeling for the issues that have been debated over the years and for the conflicts which have arisen. Unfortunately, one can also get the feeling that, to paraphrase President Harry S. Truman's statement about economists, one could lay

all of the driver education studies in this world end-to-end and reach anything but a conclusion. However, all of this was to have changed in 1983 with the publishing of a long-awaited, much-heralded, lengthy, and expensive research study financed by the federal government. Regrettably, that study, which is commonly referred to as "the DeKalb County Report", has not fulfilled all expectations. Nevertheless, it has provided invaluable data, information, and insights which shall be explored immediately below.

EXAMINATION OF DEKALB COUNTY REPORT

The 1983 report was entitled "Evaluation of Safe Performance Secondary School Driver Education Curriculum Demonstration Project." Although it was not completed until June of 1983, it had its genesis during the late 1960's. The abstract of the report characterized the study as follows: "The primary objective of this project was to determine the crash reduction potential of a quality, competency-based driver training program known as the Safe Performance Curriculum (SPC). The experimental design called for the random assignment of 18,000 volunteer high school students in DeKalb County Schools, Georgia, to one of the following: (1) Safe Performance Curriculum (SPC) - a 70-hour course including classroom, simulation, range, and on-street training; (2) Pre-Driver Licensing (PDL) - a modified curriculum containing only the minimum training required to obtain a license; and (3) Control - no formal driver education in the secondary school. The sample of students was monitored for a period of 2 to 4 years after assignment to assess measures of intermediate and ultimate performance. The primary measures of ultimate performance analyzed were the numbers and types of crashes and violations the students experienced in this time frame. Comparative analyses of SPC vs. PDL vs. Control groups were then made in terms of these ultimate measures."(13)

The results of this study showed that students who had completed the SPC or PDL driver education courses had 13% fewer accidents and 16% fewer violations during the first 6 months of driving than did those students who had been placed in the Control group. However, the study also showed that during the next year, the differences between these two groups were marginal and that these differences disappeared completely after a year and a half. These findings led to the conclusion that neither the SPC nor the PDL program was preferable to no formal driver education program at all. In addition, this study determined that there was no significant statistical difference in the subsequent performance of those students who had received the lengthy SPC driver education instruction and those who had received the greatly streamlined PDL driver education instruction which contained only the minimum training required to obtain a license. In light of these facts, the researchers in the DeKalb County project concluded the following: "The major result of this demonstration project was that the improved driver education program, Safe Performance Curriculum, was not an effective accident reduction countermeasure . . . . There were no statistically significant differences in accident rates among the three groups . . . .[Further],

there were no statistically significant differences in violation rates among the SPC, PDL, and Control groups. Thus, the answer to the major evaluation question of the project is that there were no significant differences among the three experimental groups in either accident or violation rates."(14)

To be sure, there are problems with the DeKalb County Report data. First, for example, although the students who participated in the project were randomly assigned, the initial group of 18,000 people consisted of only those individuals who had volunteered to be a part of the experiment. Thus, there may have been an initial self-selection bias and the students who participated may not have been an accurate cross section of high school students in DeKalb County, Georgia, in general. Second, although the 18,000 students were originally divided evenly among the three programs, a number of people dropped out of their assigned program or did not go on to become licensed. Again, this self-selection factor may have skewed the data. Third, as of yet, there has been an opportunity to track these students' performance for only a few years. It may turn out that the SPC contains latent benefits which will not be in full evidence for a number of years to come.

Nevertheless, despite these problems, the criticisms of the DeKalb County Report have generally been muted within the research community. The muffled criticism is probably a result of the fact that the structure of the DeKalb County experiment, although not perfect, constituted a vast improvement over the structure of a large number of other studies which had been conducted in the past. An enumeration of experimental design errors which have appeared in driver education studies like the ones examined earlier may illuminate this point.

DEFICIENCIES IN EARLIER STUDIES

When analyzing the data from older reports, the first concern that arises involves researcher bias. The fear is that the prejudices of the researcher are reflected in the method of data collection used and, ultimately, in the conclusions made. Certainly, researcher bias may have played a role in a number of driver education studies conducted over the years. In fact, this is a criticism often cited by individuals who do not agree with the results of a specific report. But, as one author aptly noted, "It should be recognized that it is possible to have the most competent neutral evaluators using the most sophisticated analytical techniques on the best possible programs and still arrive at conclusions quite different from what were anticipated and even contrary to what were expected."(15)

An additional concern involves the scope of the experiments conducted. Researchers are often trapped between Charybdis and Scylla on this score because with large-scale studies, it is difficult to control all of the factors which may influence results, and with small-scale studies, it is difficult to obtain statistically significant data. Thus, researchers are almost always open to attack from either

one side or the other, depending upon the size of the experimental sample group.

A third concern which has haunted driver education research studies is the spectre of self-selection. The concept behind self-selection is that those students who volunteer to take driver training or who volunteer for research studies about driver education are different at the outset from those students who do not. For instance, those who choose to participate may be more mature and safety conscious than their colleagues who do not choose to participate. The result is skewed data, and from skewed data may flow erroneous conclusions. The effects of self-selection may be mitigated by random assignment, but even then, as noted above, people who drop out of a course or who fail to go on to get their license may raise the spectre of self-selection once again.

A fourth matter to be considered when analyzing driver education data is whether accident and violation statistics are an accurate, adequate means of measuring driver proficiency. It can be persuasively argued that the number of crashes and convictions experienced by a group of drivers is dependent on a multitude of factors, not only the skill of the driver. Nevertheless, driving skill is certainly one of the most important factors in the causation of accidents and violations. Further, it is generally believed that when comparing one sample group of adequate size to another, the peripheral factors which could have affected the number of crashes and convictions may cancel one another out.

A related concern still proves bothersome, however. This concern involves the use of official records. Although in theory there is standardization in the reporting of accidents by the motorists involved in such mishaps or by the police officers who are assigned to investigate them, in practice this is not always the case. For instance, two-car accidents involving no personal injuries and no major vehicle damage may be underreported in large urban areas. Along this same vein, there is almost certainly a sizeable variance between jurisdictions in regard to the type of driving behavior which will prompt a citation for a traffic violation. For instance, what a typical officer of the law from New York City will view as reckless driving is going to differ from what a typical officer of the law from Little Spring, Wyoming, will view as reckless driving. The same holds true for law enforcement officials from Fairfax County and Buchanan County. Likewise, judges in different jurisdictions tend to treat offenders differently. Therefore, in the final analysis, one must be wary when comparing accident and conviction data from different regional areas. As one author has written: "Whether one is judged to be a better or worse than average driver may be more a reflection of the policies, practices, and attitudes of the controlling agents and agencies in the community where [one] lives and drives than a description of [one's] behavior on the highway. . . .[Further], the likelihood of having a collision recorded on one's record may be more dependent on local policies and practices than on one's driving proficiency -- or driver education course."(16)

Thus, as one can readily see, the number of cautionary notes regarding the validity of the research data and the conclusions based thereon are legion. To date, there have been no "experimentally pure" research studies on driver education. However, one must keep in mind that it is highly unlikely that there ever will be such a study, for we are living in a real world which imposes real limitations. For example, although the number of accidents and convictions which a certain group of drivers accumulates over a specified time period may be criticized as a suspect measurement of driving proficiency, one would be hard put to find any superior means of measurement which could serve as a viable alternative. Therefore, one must make do with the information available, while at the same time remembering the deficiencies which are present.

THE DRIVER EDUCATION DEBATE

Despite all of the data gathered, despite all of the reports published, despite all of the money spent, the debate over driver education continues. Proponents and opponents argue vociferously about all aspects of the issue as they thrust and parry on the debating field. Although this public sparring provides few answers to the many questions enveloping the issue of driver education, an examination of some of the key arguments offered by each side does provide a panoramic perspective of the subject matter. Therefore, a brief recitation of the opponents' and proponents' contentions may be instructive.

Proponent: The very nature of operating a vehicle on a public roadway militates against permitting a young person to drive without some form of instruction. To permit such experimentation would be both foolish and dangerous, not only for the young person involved, but also for others whose lives and property would be endangered. High school driver education programs provide students with an opportunity to learn the basic information and skills necessary to be a safe driver. Therefore, such programs should be retained.

Opponent: Although it is true that young people need <u>some</u> form of instruction before actually beginning to drive, this does not mean that such instruction must be provided in the public schools. The parents or guardians of a youngster may teach him how to drive, just as was done in the past. Or, alternatively, a student may attend a commercial driving school to learn the necessary skills. Under either method, a young person could receive adequate instruction and there would be no cost to the taxpayer.

Proponent: The concept of having a child's parent or guardian teach him how to drive is not a satisfactory solution to the problem of driver education. The quality of the education provided by the parent could not be guaranteed, and there would be no real means of ensuring that even the most fundamental aspects of safe driving were covered. For example, road tests such as the ones administered before a person is issued an operator's license are notoriously ineffective in detecting

driver deficiencies.(17) Thus, this type of test cannot be seen as a trenchant screening device by which to weed out young drivers who have not received adequate instruction. Furthermore, even if this issue of quality were not a consideration, it must be remembered that some students may not be able to rely on a parent or guardian to teach them how to drive. To begin with, a parent may not wish to be involved in this phase of his child's development. Additionally, in those families at the lower end of the socioeconomic scale, the parent may not have access to a vehicle. Furthermore, in the latter instance, the student may not have the financial resources to attend a commercial school which can often cost between one hundred fifty and two hundred dollars. Thus, there would be an undue burden on these individuals if high school driver education programs were cancelled.

Opponent: The argument presented above exaggerates the problems that would arise if public high school driver education programs were abolished. However, even if one were to concede for a moment that driver education should be taught in public high schools, there is no reason why costs could not be drastically reduced. There is no consistent evidence that enhanced programs using simulators and/or ranges are any more effective than streamlined programs consisting strictly of classroom instruction and behind-the-wheel training. If the public schools were to stop spending money on superfluous equipment, safety would not be sacrificed and the overall cost per student would decline.

Proponent: First, although there is no consistent evidence that enhanced programs using simulators and/or ranges are any more effective than streamlined programs, there is no consistent evidence that enhanced programs are any less effective either. Second, it is very difficult to make broad generalizations regarding whether one driver education program is more costly than another. There are simply too many variables to consider. For instance, to determine the cost of behind-the-wheel and simulator programs, one would have to calculate all of the monetary ramifications of choosing one program over the other. That is, one would have to know not only the cost of the simulator or the automobile used, but also the cost of maintaining the simulator, the energy costs involved, the salary of the driver education instructor, the salary of any paraprofessionals who could also teach, the costs of car insurance, gasoline, and automotive maintenance, and so forth. Additionally, one would have to factor in the point that a sizeable number of students could receive simulator training at one time. Only upon gathering all such information and computing the necessary calculations could one say, "The simulator program costs X number of dollars per student to operate each year, and the behind-the-wheel program costs Y number of dollars per student to operate each year. Therefore, this or that program is the one that is least expensive to operate."

Furthermore, this type of cost analysis would have to be done for each district since different schools experience different costs. For instance, some school divisions pay their instructors considerably more than other school divisions, some have to buy the cars that are used for

driver education while others have them lent, some schools have only a limited number of students enrolled in their driver education course, thus lowering the student-to-instructor ratio during the simulator phase, and so on. Thus, the figures between school divisions may be vastly different, and a program which is best for one may not be best for another. Therefore, considering all these points, it is just too difficult to make cost comparisons between different types of programs.

Opponent: The proponents of driver education are merely obscuring the real issue. By stating that there is not enough evidence to prove which program is better and by asserting that cost-analysis figures are hard to calculate, the proponents hope to paralyze the actions of others in this area, thus preserving the status quo. In so doing, the proponents are trying to place the burden of proof on the wrong side, however. They are the ones who are advocating the expenditure of millions of dollars of the taxpayers' money on these programs each year, and therefore, it is they who should justify the use of these funds. Before another penny is spent on expensive ranges or simulators, proponents of driver education should have to show that they are necessary and cost-effective teaching aids in each instance.

The proponents of driver education are obscuring another issue as well -- the issue of performance. Over the years they have asserted that the main reason why driver education should be taught in public schools is to reduce accidents. And yet, as national highway safety statistics show, we have seen little in the way of results. Teenaged drivers have more than twice as many crashes as drivers over thirty-five, and yet there are fewer teenagers on the road. Further, automobile accidents are the leading cause of death among teenagers in our nation today. In fact, it is estimated that more than 40% of the deaths among teenagers this year will be attributable to motor vehicle crashes. That means that nearly 10,000 youths will be killed on the nation's highways during a single 12-month period.(18) In Virginia alone, hundreds of young people will be maimed and injured. This deplorable condition shows that the driver education programs have not lived up to their promised performance.

Proponent: Certainly the figures cited above are tragic. If even one young person loses his life on the highway that is one too many. But these statistics do not mean that driver education is not working. On the contrary, without public high school driver education the number of crashes and deaths among teenagers may well be even higher. Also, these statistics may not be a proper way of judging the value of a driver education program. Instead of holding a driver education program accountable for whether its students do drive safely and responsibly, it would be better to hold such programs accountable only for whether its students can drive safely and responsibly. After all, the driving performance of each student is the end product of many factors such as peer influence, home pressure, adult example, style of life, and personality. These factors are beyond the control of a driving instructor, which is not surprising considering the limited class time

allocated to these instructional programs. As one author has noted, "While young people are just learning to manipulate the car, they are being subjected to intense pressure from their friends to prove themselves by using skills which they have not yet mastered, while rejecting the authority represented by traffic laws [and driving instructors]."(19)

Opponent: It is a point well taken that the late teen years of students are turbulent ones and that this may add greatly to highway irresponsibility, but this point merely supports the contention that driver education should not be taught in public schools. A recent study at Yale has shown that driver education classes in public high schools encourage students to get an operator's license at the earliest possible time.(20) This exacerbates the problem of young people cruising the highways, and therefore increases the already large number of accidents within the 16 to 18-year-old age group. If driver education courses were taken out of public high schools, a large number of young people would defer getting their operator's license, and the number of accidents would be reduced.

Proponent: First off, it's a distortion to attribute accidents to driver education simply because it leads to driving. Any group of people that drives will have accidents. Using the opponent's line of reasoning, if one wanted to make the highways even safer, obstacles to obtaining a driver's license should be put in front of all age groups, not in front of just 16 and 17-year-olds. Obviously, this would be absurd. Second, what has been too often ignored is this: "Young people not only want to drive, in a number on instances they need to drive, and their parents want them to drive."(21) Thus, driver education is not just a frivolous endeavor.

Opponent: To begin with, the proponents of driver education undermine their own position when they state that any group of people that drives will have accidents. This is the whole point, and this is exactly why the number of 16 and 17-year-olds on the road should be reduced. This goal can easily be accomplished by abolishing high school driver education. Second, there are very good reasons why 16 and 17-year-olds should be singled out: they are minors, they are part of the highest risk age group, and they are far less likely to be employed than any other age group and thus are far less likely to truly need an independent means of transportation. If a 16 or 17-year-old really does need independent transportation, he can get a driver education certificate by attending a commercial school. Or, if a parent wants his child to learn how to drive, he can teach the child himself.

Proponent: This is where we came in.

PURPOSE OF THIS REPORT

As can be seen from the above hypothetical debate, previous studies

have managed to quell neither the range nor the intensity of the controversy over high school driver education. Nonetheless, this state of affairs does not detract from the fact that many research reports have helped to shed light on important aspects of driver education, and it is not unreasonable to believe that additional research will prove to be similarly beneficial. In this spirit, during the late 1970's, the Virginia Department of Education asked the Virginia Highway and Transportation Research Council to analyze the various high school driver education programs taught in the state. After considerable consultation with representatives from the Department of Education and the Department of Motor Vehicles, the Research Council determined that it would be most beneficial to examine three facets of driver education. These three facets include the relative effectiveness of each program type, the relative effectiveness of various types of driver education schools, and the impact of driver experience on driver performance. The scope of this report also fulfills the requirements of House Joint Resolution No. 28, which was passed by the General Assembly in 1984. Under the provisions of that resolution, driver education in the public schools was to be studied.

METHOD

Previous Reporting System

In developing a method of analysis, it became necessary to devise a reporting format and computer software system. This was required because although the State Department of Education had produced a yearly computer printout which contained the number of accidents and convictions involving young drivers in Virginia, this statistical readout proved ill suited for present purposes. The deficiencies in the DOE data were twofold. First, the statistical readout did not categorize young drivers into groups based on the type of program they had successfully completed. Thus, one could not compare the effectiveness of different types of driver education programs as evidenced by student driving records. Second, the reporting system tended to dramatically understate the extent of the safety problem in respect to driving by young people during their first year of licensure. The reason for this understatement can be best illustrated as follows: Each DOE report ran from July 1 of one year to June 30 of the following year. If a student received his license sometime during that period, the number of crashes and convictions he experienced by June 30 would appear on the report. Thus, if a student received his license on July 1, the beginning of the reporting period, there was a full year of driving time during which he could experience a crash or conviction. However, if that same student received his license on June 29, the end of the reporting period, there was only one full day of driving time during which he could experience a crash or conviction. Obviously, in the latter situation, the chances were extremely slight that a mishap would occur. Thus, including in the report those people who held a license for less than a full year decreased the average number of crashes and convictions for the whole

group. In fact, it has been estimated that the typical person in each DOE report had held a license for only four months. Therefore, the statistical readout tended to understate by two-thirds the number of crashes and convictions in which young people were involved during their first year of licensure.

Despite these deficiencies, the Department of Education's statistical readout was ultimately to prove beneficial. For instance, the report categorized student driving records based on school type. In other words, the crash and conviction statistics of youngsters who had passed a public high school driver education course were kept separate from those of youngsters who had passed a private high school driver education course or a commercial school driver education course. This categorization permitted comparisons to be made among the three types of schools based on the number of crashes and convictions per 100 students. Therefore, this concept was adopted for the present report.

Current Performance Reporting System

Along these same lines, the Research Council decided to insert two new variables into the reporting format. The first new variable was based on the type of driver education program in which each student had been enrolled. There were four types of program possibilities, including the two-phase program, which involves classroom and behind-the-wheel instruction; the three-phase simulator program, which combines a two-phase program with simulator training; the three-phase range program, which consists of a two-phase program with range training added in; and the four-phase program, which combines classroom, behind-the-wheel, simulator, and range training all together. The minimum time requirements for the various elements of these four driver education programs appear in Appendix A of this report. Also, the most recent listing of the type of driver education program offered at each particular public school in the Commonwealth appears in Appendix B. The second variable was based on the number of years of driving experience each young person had accrued during the pertinent reporting period. Specifically, this categorization indicated whether a young driver had less than 1 year of experience, 1 to 2 years of experience, or 2 to 3 years of experience.

In addition to the categorization of data by school type, another concept was adopted from the statistical readout. This involved the compilation of data by conviction category. For instance, the 247 motor vehicle offenses which appear in the Code of Virginia had been distilled into a group of 58 offenses in the previous report. For the present report, these 247 offenses were also distilled into broader offense groups, but this time, only 17 groups of offenses were ultimately used. Although the precise number of offenses was arrived at somewhat arbitrarily, the type of offenses were not. Instead, they were selected after reviewing the Curriculum Guide for Driver Education in Virginia and appropriate textbooks. The purpose of this distillation and selection was to relate specific driving errors, as reflected in convictions received, to particular points of instruction touched upon

during driver education and training. The underlying premise is that these offenses are the best indicators of which driver education programs are most successful in imparting to students essential skills and information.

Out of these 17 groups of offenses came four major offense categories. These were driver infractions, license-related infractions, vehicle infractions, and miscellaneous offenses. Convictions for speeding, reckless driving, improper passing, improper turning, improper vehicle operation, failure to stop or yield, and failure to obey signs were included under the driver infraction category. Convictions for operating an unlicensed vehicle, driving without a license, driving without a permit, or driving with an improper license constituted license-related infractions. Convictions for using improper or unsafe equipment or for having an invalid inspection sticker, improper plates, or an improper registration composed the vehicle infractions. The miscellaneous category embraced reporting infractions, alcohol or drug infractions, criminal actions, and unsafe motorcycle actions.

In addition to categorizing the data by program type, school type, and time, the information system that was developed produced reports on statewide, school division, and individual school bases. The school division reports contain the same type of data as that found in the statewide statistical report, but add data unique to the school division. Although each school division receives only its own report, the division report does list statewide figures, thereby providing an opportunity for each division to compare the driving performances of its students with those for the state as a whole. Variations, whether positive or negative, can be investigated to determine the factors which can be improved or promoted. The State Department of Education can also use these data to communicate to officials in some localities the successes experienced in other localities.

In the same vein, each individual school report contains data pertinent to a particular school. These statistics provide an opportunity to compare the subsequent driving performances of those students who attended a certain school with the performances of all others who attended similar educational programs. Then, these comparisons permit the driver education community to accentuate positive findings from various schools and to implement appropriate changes. Therefore, because of the nature of the school division reports and of the individual school reports, as stated above, the analyses in this paper will focus on the statewide data. An example of the reporting format used for the statewide data appears in Appendix C of this report.

CAVEATS

Despite the obvious benefits to be gained from obtaining such information, there are some important points which should be kept in mind when analyzing the data presented. To begin with, because state

law requires persons between 16 and 18 who wish to receive an operator's license to successfully complete a state-approved driver education course, it is impossible to compare the performances of trained and untrained drivers within this age group, or even formally trained and informally trained drivers. That is, one can compare only different types of driver education programs; one cannot compare driver education in general to no driver education at all. To be able to gain data to make the latter comparison, one would have to conduct an experiment where some students were randomly assigned to receive formal driver instruction and other students were randomly assigned not to receive it. Then, the number of convictions and crashes garnered by each group would have to be contrasted. In Virginia, such an experiment would be neither politically feasible nor morally defensible, since the essence of it would be to use students as guinea pigs and then to count their carnage. Therefore, there is no control group in this study.

Second, not all of the problems which have arisen in other studies have been avoided in this one. For instance, as discussed earlier, the crash and conviction data on a person may not be a totally satisfactory measure of his driving skill or the quality of instruction he received. To begin with, the number of convictions recorded on the books is not a precise measure of the number of times a driver has made an illegal maneuver, since all infractions do not result in citations, and all citations do not result in convictions. In addition, accidents are caused by a multitude of factors, not all of which can be accounted for. Therefore, in light of these points, when there are only minimal variances in the crash or conviction data between different groups of students, it would be improper to attempt to make fine-line distinctions regarding the aptitude of the students or the quality of the instruction. The means of measurement are simply not that precise.

Third, the process of self-selection regarding the type of school attended may have affected the results gathered in this segment of the study. For instance, the average student attending a private school may be quite different from the average student attending a public school in terms of their socioeconomic backgrounds, attitudes, and motivation, all of which may be important determinants of the driving records of young people. Self-selection may play an even larger role in regard to the type of student who attends a commercial driving school. Such students may choose to enroll in a commercial program because they have anticipated their own ineptitude in operating a motor vehicle and do not wish to expose themselves to ridicule by their high school peers, or because they have already failed the driver education program offered in their high school classes. If this is indeed the case, the data collected may be skewed to the detriment of commercial driving school programs.

The fourth concern arises out of the findings of the DeKalb County Report. As was noted above, in that report it was determined that the greatest differences in crash and conviction data among the three programs arose within the first 6 months of driving. The variances then immediately began to level off and soon faded into insignificance. With

the data collected in the instant report, however, proficiency is measured only in 1-year intervals. Thus, the system used may not be sensitive enough to detect a program's beneficial aspects if they are manifest only at the earliest stages of driving.

Fifth, and last, the average numbers of miles driven by different types of young people are not known, and thus, have not been figured into the data. For instance, males generally have a much higher accident rate per person than females. This higher accident rate per person may indicate that males are worse drivers than females, or it may simply be a function of the fact that males generally drive more miles than do females, and thus have a greater chance of being involved in a crash. Therefore, direct comparisons between different groups of young people that do not recognize that mileage figures could be an essential factor in the crash and conviction statistics obtained may be misleading.

The number of caveats listed above is considerable and should serve to temper any extreme conclusions or pronouncements that might otherwise be made based on the findings contained in this report. These caveats are to be expected, however, considering the budgetary, manpower, and practical limitations which are always present in such a study. Nevertheless, despite these acknowledged problems, the data provided by this reporting system allow one to make essential evaluations that were in no way possible prior to the initiation of this project.

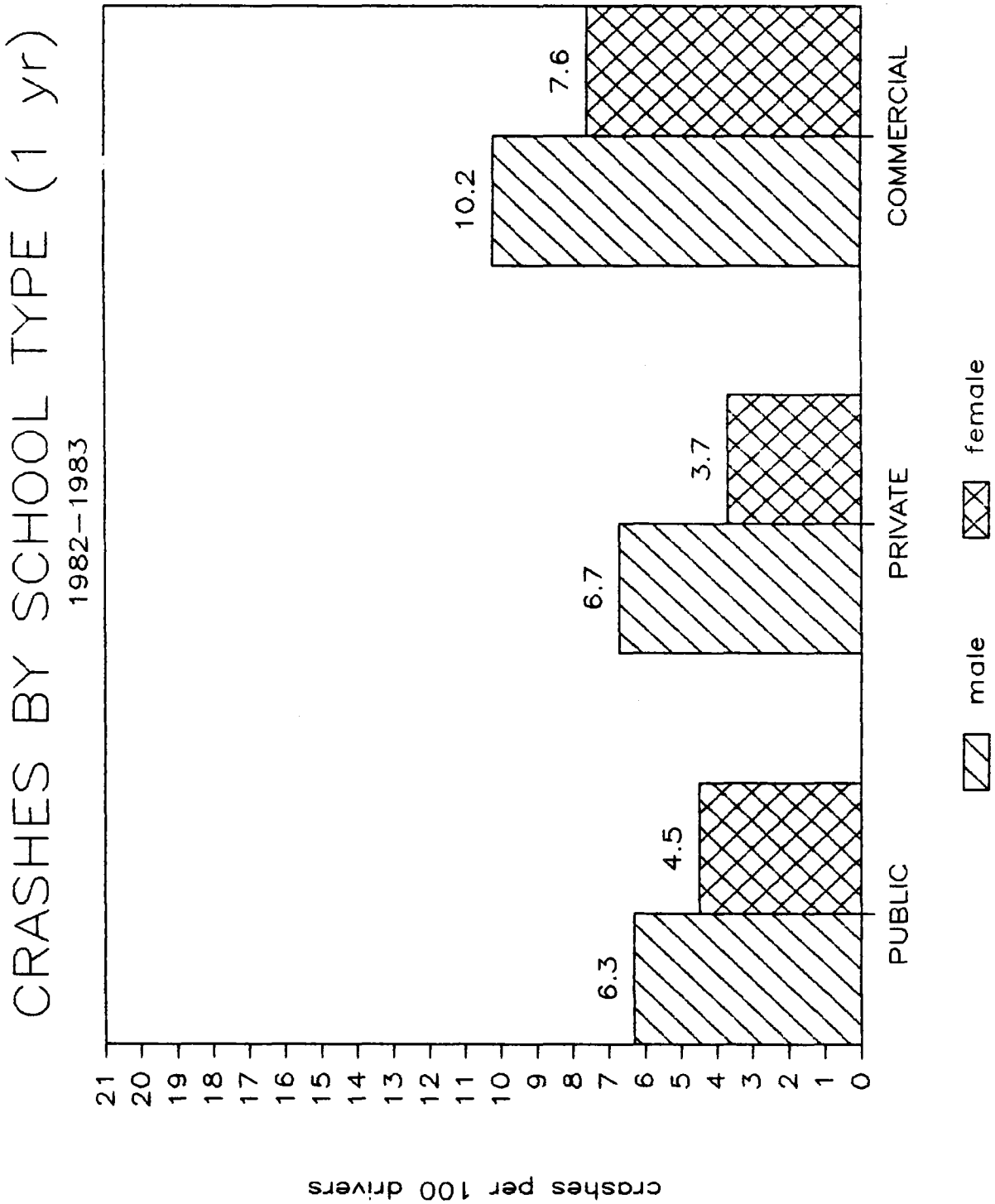
ANALYSIS OF THE DATA

A perusal of the data compiled for this project reveals some interesting relationships between the variables examined and the number of crashes and convictions recorded. Therefore, the following analyses of the charts and graphs prepared from these data may prove to be beneficial, particularly when preceded, as below, with capsulized statements of the findings.

Students passing a commercial driving school course in Virginia have a significantly greater incidence of accident involvement than do their counterparts who received their driving instruction at a public or private school. However, there is virtually no difference between the driving records of students passing a course from the latter two school types.

The data contained in Figure 1 demonstrate the relationship between the number of crashes accumulated per 100 students and the type of driving school these students attended. All of the young people in this population group had less than one year of driving experience, and the data are from the 1982-83 reporting year. When analyzing these data, it is important to realize from the outset that one is dealing with the number of accidents which involved young drivers and not with the number of young drivers who were involved in accidents. The importance of this

Figure 1


CRASHES BY SCHOOL TYPE (1 yr)
1982–1983
crashes per 100 drivers
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
6.3
4.5
6.7
3.7
10.2
7.6
PUBLIC
PRIVATE
COMMERCIAL
male
female

distinction is that some young drivers may have been involved in more than one crash in a single 12-month period, thereby inflating the figure. Thus, one must be careful when interpreting the statistics shown. For instance, in the first graph, one may not say that 6.3% of all male students passing a public high school driver education course in 1982-83 had an accident during their first year of driving. Instead, one must say that there were 6.3 accidents for every 100 drivers among those young males who graduated from a public high school driver education course in 1982-83 and who had less than 1 year of driving experience. Therefore, in light of this limitation, one must not attempt to extrapolate from the data the future likelihood that a particular student will be involved in an accident.

The first thing that becomes apparent when examining the data in Figure 1 is the disparity in the statistics between male and female drivers. A numerical gap of this nature is present throughout the data and becomes even more pronounced when examining groups of students with greater levels of driving experience, and when comparing rates of convictions rather than rates of crashes. This disparity between males and females is not surprising. Other researchers have noted similar findings in virtually all of the reports published over the past few decades. Among those researchers who have reported such findings, it is hypothesized that lower crash and conviction rates for females are a function of their superior driving habits, attitudes, and exposure in terms of miles driven. There is also general agreement, however, that the forces behind these positive habits and attitudes are gender-specific, and thus are not highly transferable to the male population. In light of this, little time in this report is devoted to examining the gap between the driving skills of the two genders as such. Instead, the focus is placed on the different driving records of specific groups within each gender in an effort to determine which types of programs are preferable.

As can be seen from the data in Figure 1, there is virtually no difference between the accident records of those students who received their driving instruction in public high schools and those students who received their driving instruction in private high schools. For both male and female drivers, less than one crash per 100 individuals separates the performances of students from these institutions. Specifically, public and private high school males had 6.3 and 6.7 crashes per 100 students, respectively, and females had 4.5 and 3.7 crashes per 100 students, respectively. Thus, there is a certain parity between these two types of schools, and, as shall be seen in the following graphs, this rough equivalence extends throughout the data. However, the commercial schools do not fare so well. In each instance, there are significantly more crashes per 100 commercial school students than per 100 public or private school students. For example, the data presented in Figure 1 show that commercial school males who had less than 1 year of driving experience were involved in 10.2 crashes per 100 drivers and their female counterparts were involved in 7.6 crashes per 100 drivers. Thus, when compared to the public school statistics, the commercial

schools registered 62% more crashes for males and 69% more crashes for females.

Similar disparities in the statistics between public and commercial schools continue throughout the crash data. Figure 2 shows the number of crashes per 100 drivers who had 1 to 2 years of driving experience during the 1982-83 reporting period. Again, the statistics for the public and private schools -- 11.2 and 11.1 for males and 7.2 and 5.9 for females, respectively -- are similar. However, the commercial school statistics of 17.3 crashes for males and 12.4 crashes for females are considerably higher. These data indicate that there were 55% more crashes for every 100 male commercial school graduates and 72% more crashes for every 100 female commercial school graduates than for their public high school counterparts. This gap in the number of crashes of public and commercial school students closes somewhat in the group which had 2 to 3 years of driving experience, as is evidenced by the fact that the difference in the number of crashes per 100 drivers was 33% for both males and females (see Figure 3). However, although the gap closes, it still remains quite large.

As used above, the percentage difference in the number of accidents of public and commercial school students is calculated by comparing the number of crashes in which each type of schools' students were involved, and then converting this to a percentage figure. Normally, however, when dealing with small numbers like those presented here, one must be cautious in using such percentages to make comparisons and to extrapolate results. For instance, the difference between 9.3 crashes per 100 drivers and 7.0 crashes per 100 drivers is quite minimal in terms of raw numbers, and the calculated difference of 33% may tend to overdramatize the variance. This is why no attempt has been made to base any substantive findings on the small numerical differences in the public high school and private high school data. Although at times there is a 10% to 15% difference between the crash rates of these two school types, such numbers have little significance. This is particularly true in the above instance since, as the graphs clearly show, at times the public school students have better crash records, and at other times the private school students have better crash records. Thus, no trend can be discerned. However, this is not the case with the commercial school data; the percentage difference between such schools and public schools is usually quite large and the variance between these schools is consistently in favor of the public and private institutions.

The above findings, which were based on statistics from the 1982-83 reporting period, are supported by the data from the 1983-84 period. Again, there is no substantial difference between public and private high schools when comparing the number of crashes per 100 students. Any differences which are noted run in favor of the public schools. For instance, there were 6.7 crashes per 100 male public high school driver education graduates, but 8.2 crashes per 100 male private high school driver education graduates (see Figure 4). The difference is noticeable, and it slightly favors the public schools. However, the

Figure 2

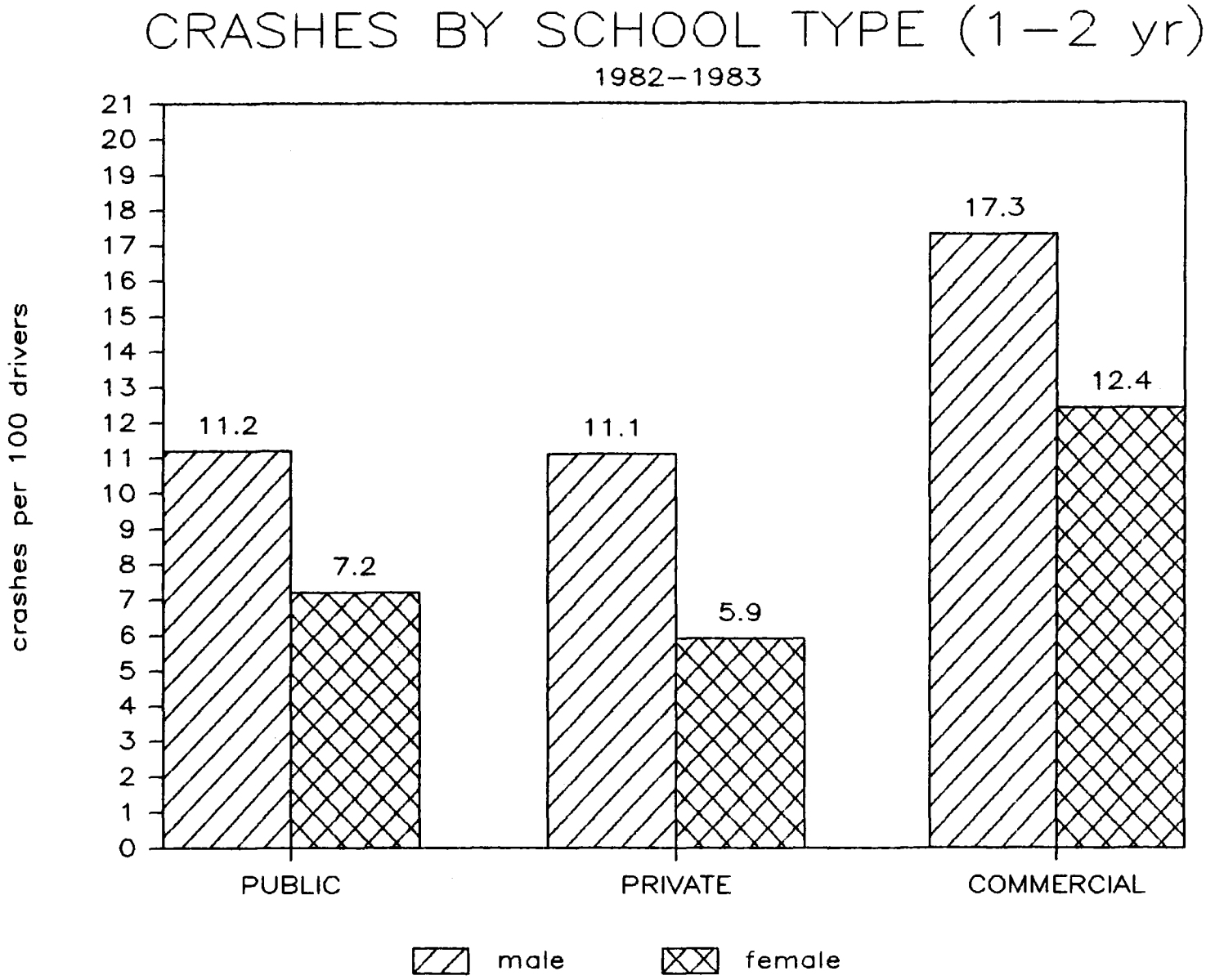

CRASHES BY SCHOOL TYPE (1–2 yr)
1982–1983
crashes per 100 drivers
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
11.2
7.2
11.1
5.9
17.3
12.4
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 3

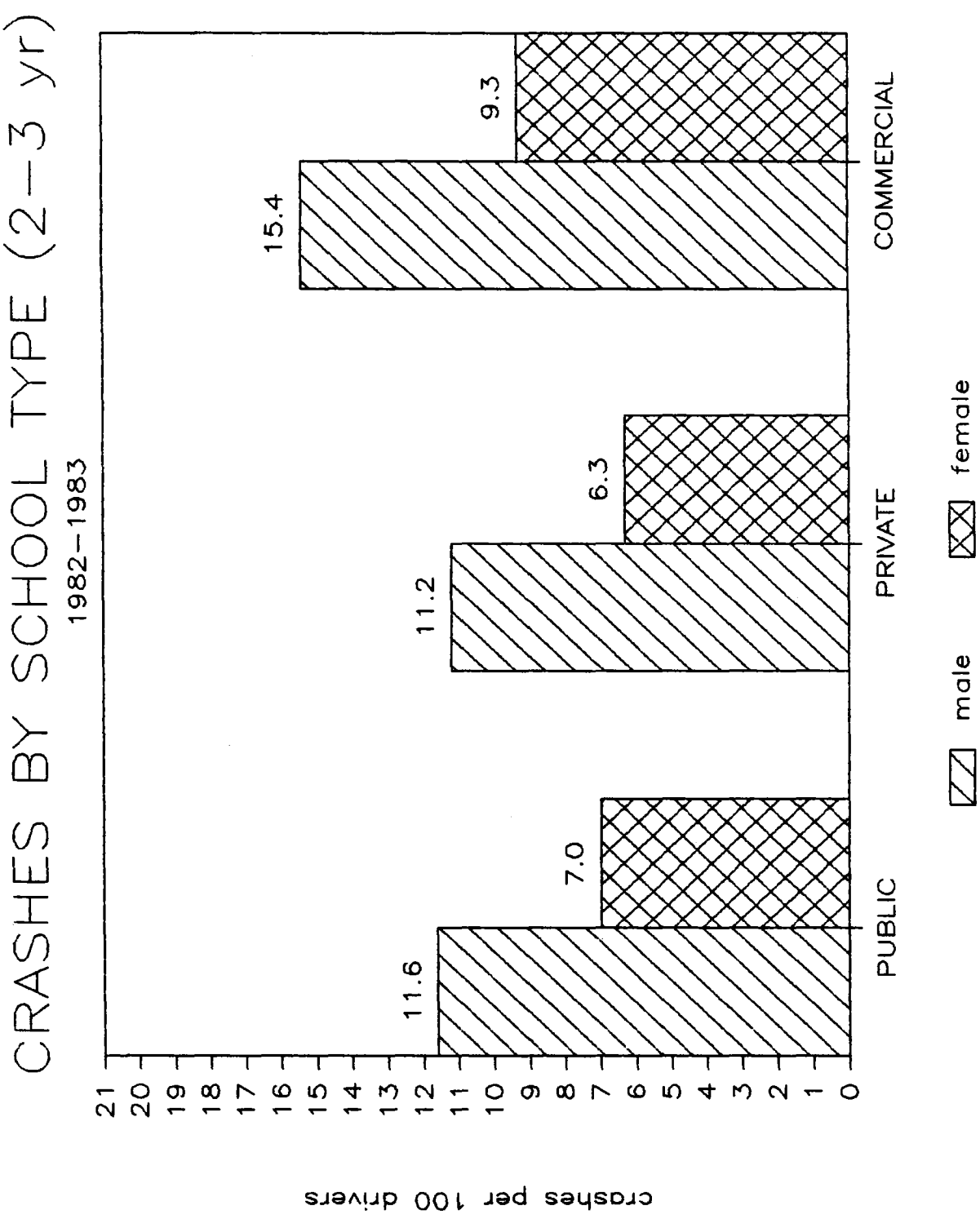
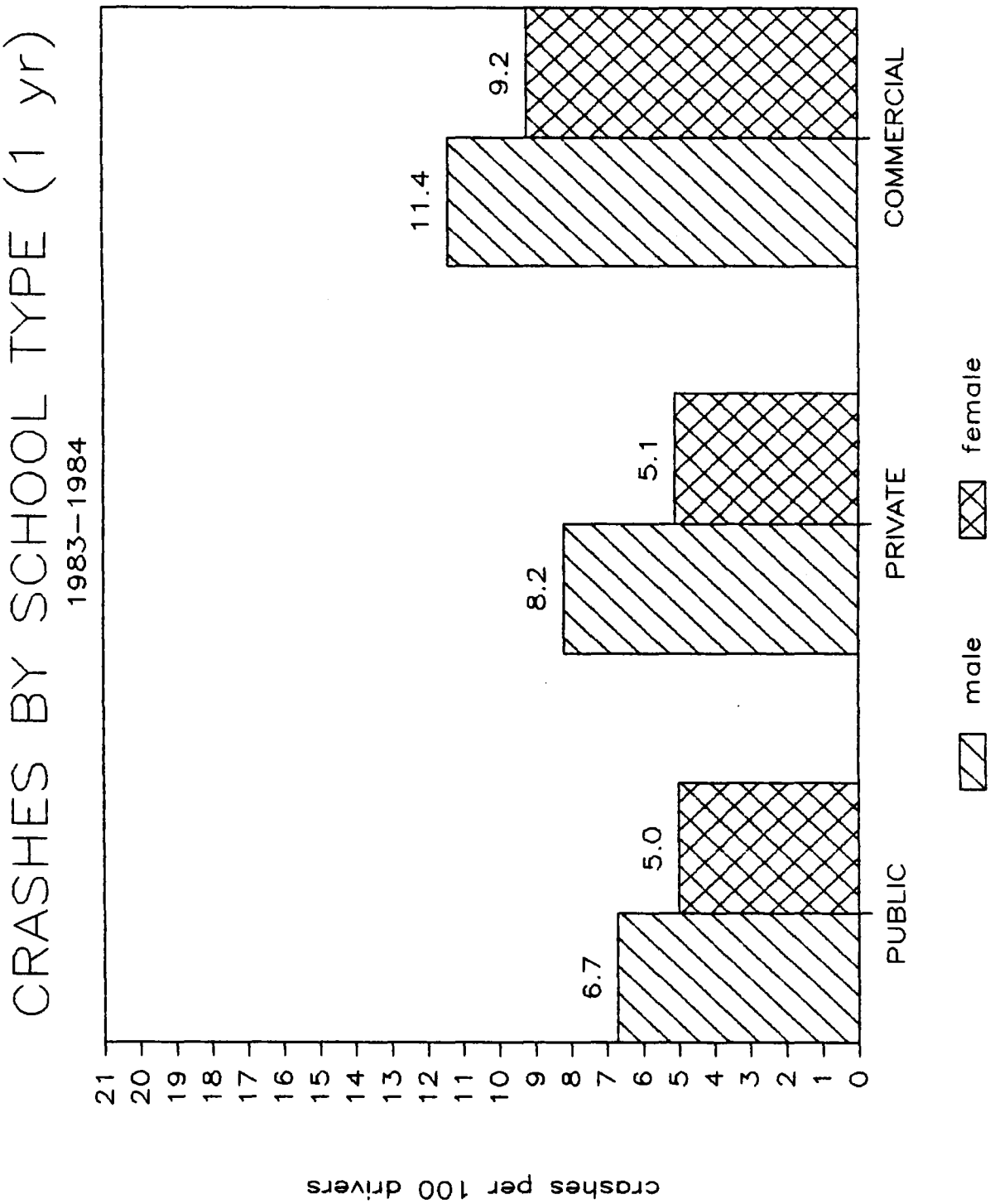

CRASHES BY SCHOOL TYPE (2–3 yr)
1982–1983
crashes per 100 drivers
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
11.6
7.0
11.2
6.3
15.4
9.3
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 4


CRASHES BY SCHOOL TYPE (1 yr)
1983-1984
crashes per 100 drivers
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
6.7
5.0
8.2
5.1
11.4
9.2
PUBLIC
PRIVATE
COMMERCIAL
male
female

data for the females -- approximately 5 crashes per 100 drivers for both public and private schools -- are nearly identical. This is not the case with the commercial school data, however. Far from being nearly identical, the rate of crashes per 100 male commercial school graduates is 70% above that for public school graduates. For females, the figure is 84% higher for the commercial driver education school graduates.

The statistics in Figure 5 are little better. There were 12.9 and 14.4 crashes per 100 male drivers from public and private high schools, respectively, while there were 19.9 crashes per 100 male drivers from commercial driving schools. For females, the numbers were 8.9 for public schools, 10.8 for private schools, and 12.2 for commercial schools. Within the group of young males who had 2 to 3 years of driving experience, the accident rate for commercial school students was 16.1 crashes per 100 drivers, which was considerably higher than the approximately 12 crashes per 100 drivers by public and private high school students (see Figure 6). Likewise, the 9.8 crashes per 100 drivers among commercial school females was higher than the 7.2 crashes per 100 drivers among both public and private high school females.

Students passing a commercial driving school course in Virginia have a significantly higher rate of conviction for motor vehicle offenses than do their counterparts who received their instruction in public or private high school driver education courses. In comparison, the conviction rates for students who were trained at public or private high schools are virtually identical.

Figure 7 shows the relationship between the number of convictions per 100 students and the type of school attended. In this group, all of the students had less than 1 year of driving experience, and the data are from the 1982-83 school year. It is evident from the data that convictions of commercial school graduates occurred at a considerably greater rate than convictions of public or private high school driver education graduates. In fact, for both males and females, during their first year of motor vehicle operation the commercial school students had more convictions per 100 drivers than the public and private high school students had combined. Specifically, for public schools, males had 24.9 convictions and females had 8.4 convictions per 100 drivers; for private schools, males had 26.3 convictions and females had 7.7 convictions per 100 drivers; and for commercial schools, males had 53.1 convictions and females had 18.9 convictions per 100 students.

While the disparity between the commercial schools and the public and private schools diminishes somewhat within the group of young people who had 1 to 2 years of driving experience, the number of convictions per 100 drivers increases (see Figure 8). This trend continues for the young people who had 2 to 3 years of experience (see Figure 9). Specifically, for those students with 1 to 2 years of driving experience, the

Figure 5

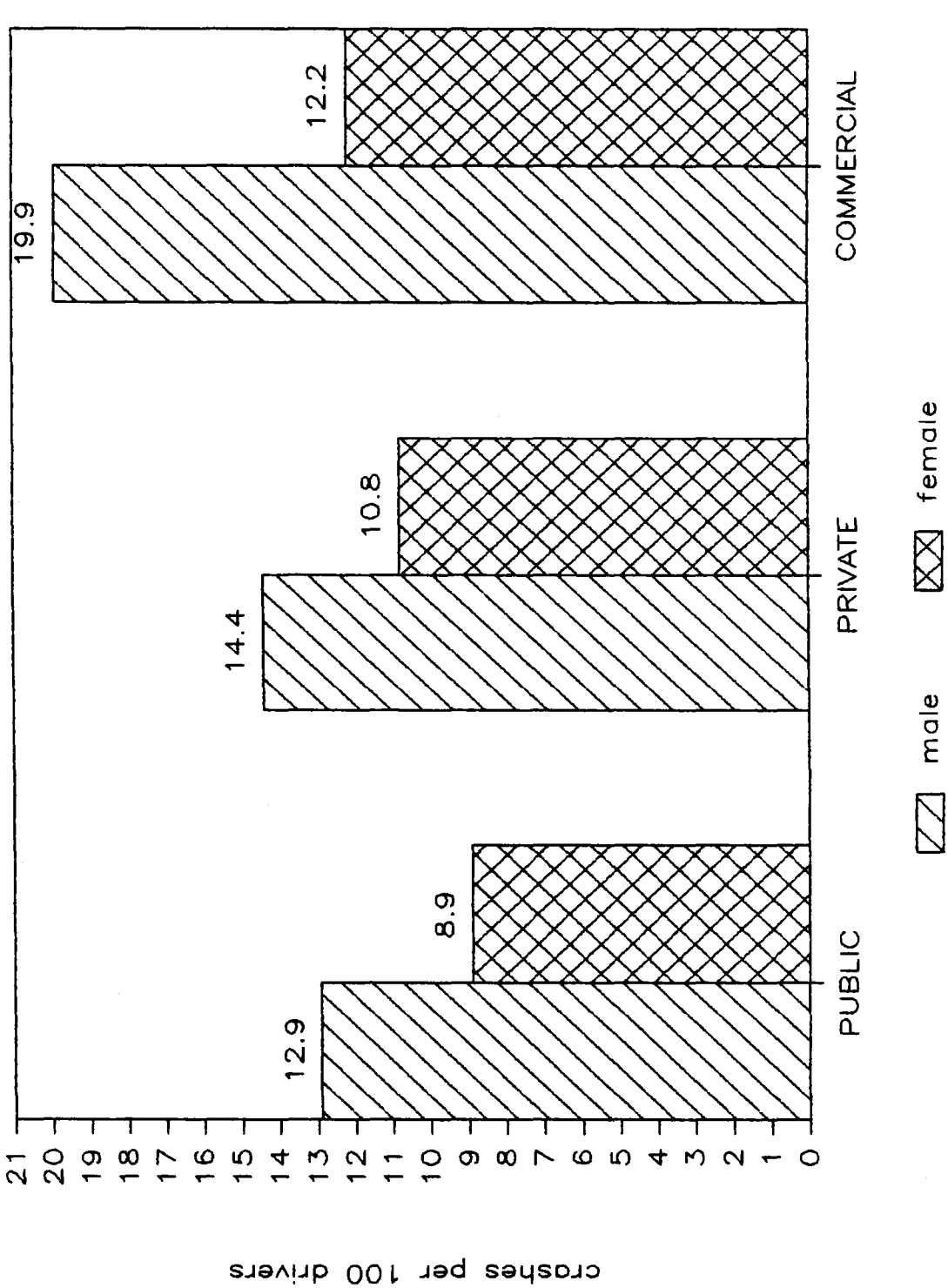

CRASHES BY SCHOOL TYPE (1-2 yr)
1983-1984
crashes per 100 drivers
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
12.9
8.9
14.4
10.8
19.9
12.2
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 6

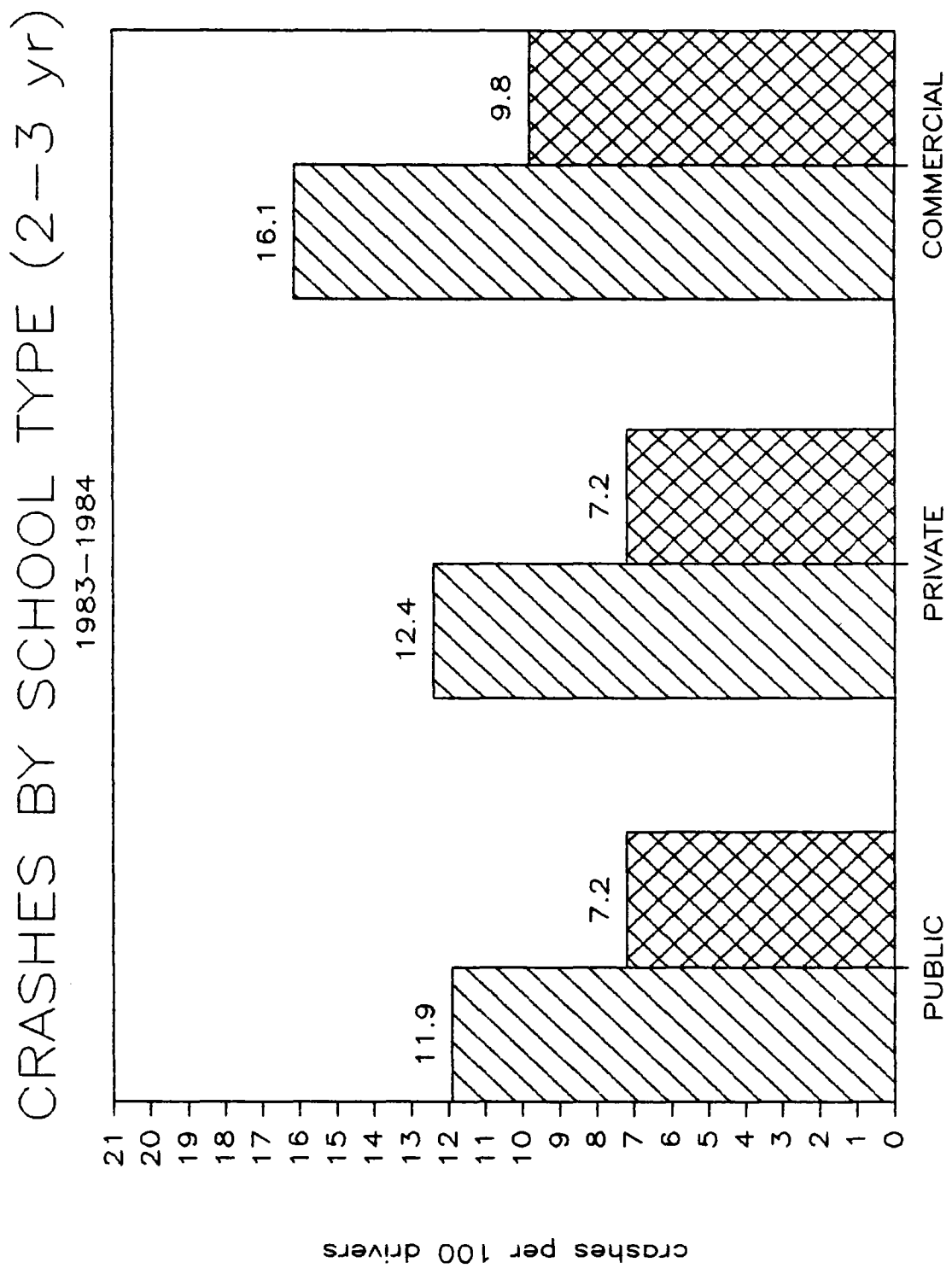

CRASHES BY SCHOOL TYPE (2–3 yr)
1983–1984
crashes per 100 drivers
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
11.9
7.2
12.4
7.2
16.1
9.8
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 7

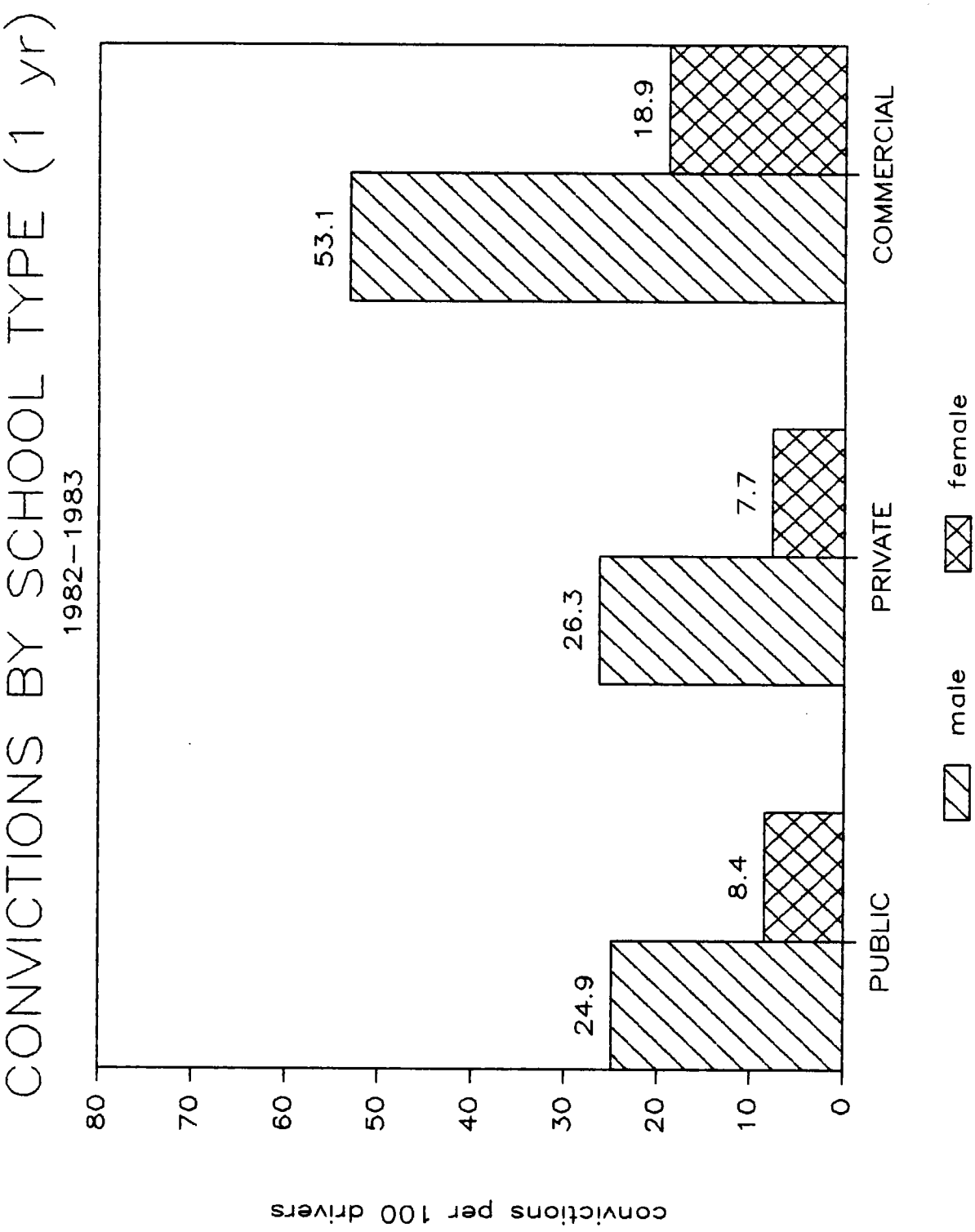

CONVICTIONS BY SCHOOL TYPE (1 yr)
1982–1983
convictions per 100 drivers
0
10
20
30
40
50
60
70
80
24.9
8.4
26.3
7.7
53.1
18.9
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 8

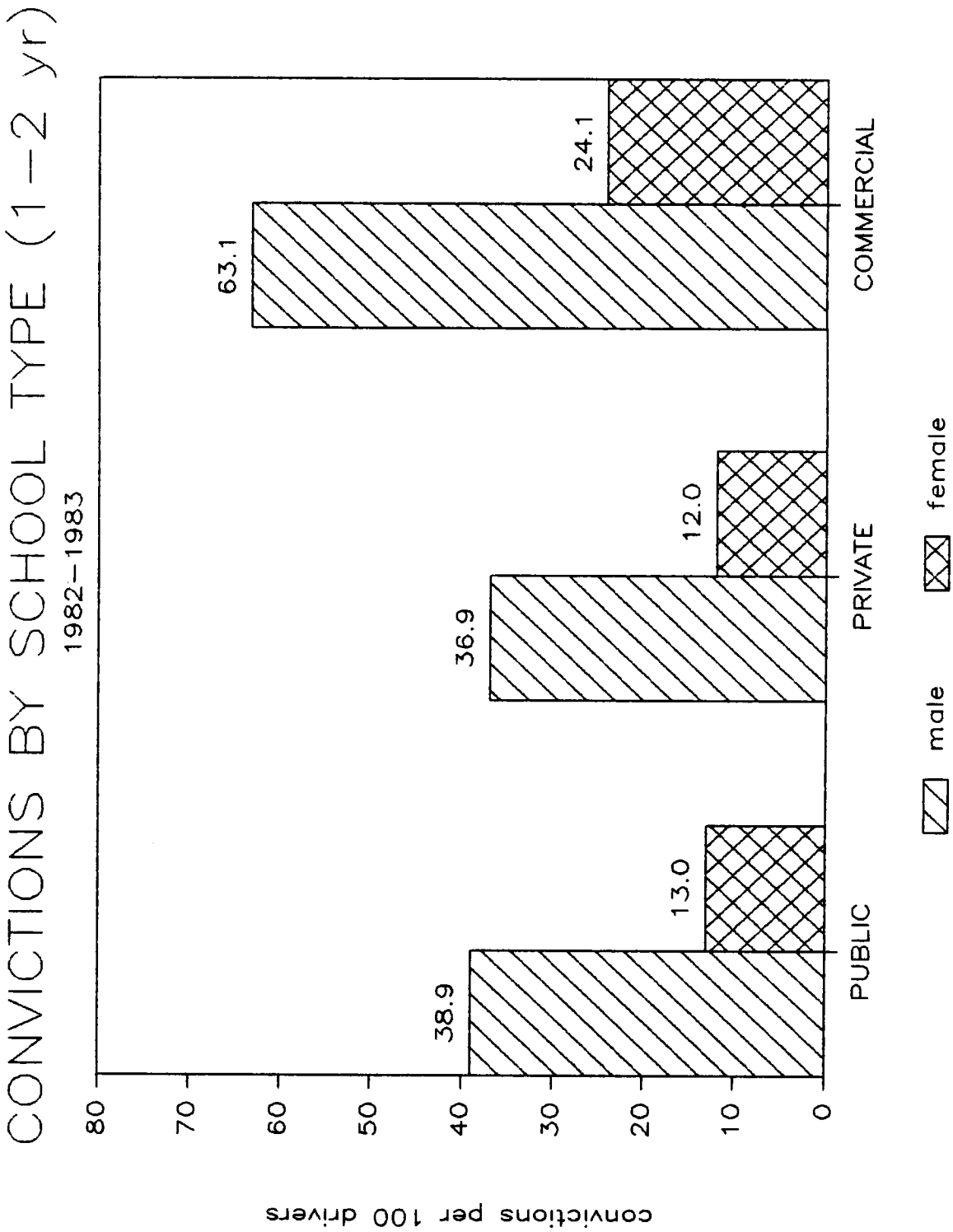
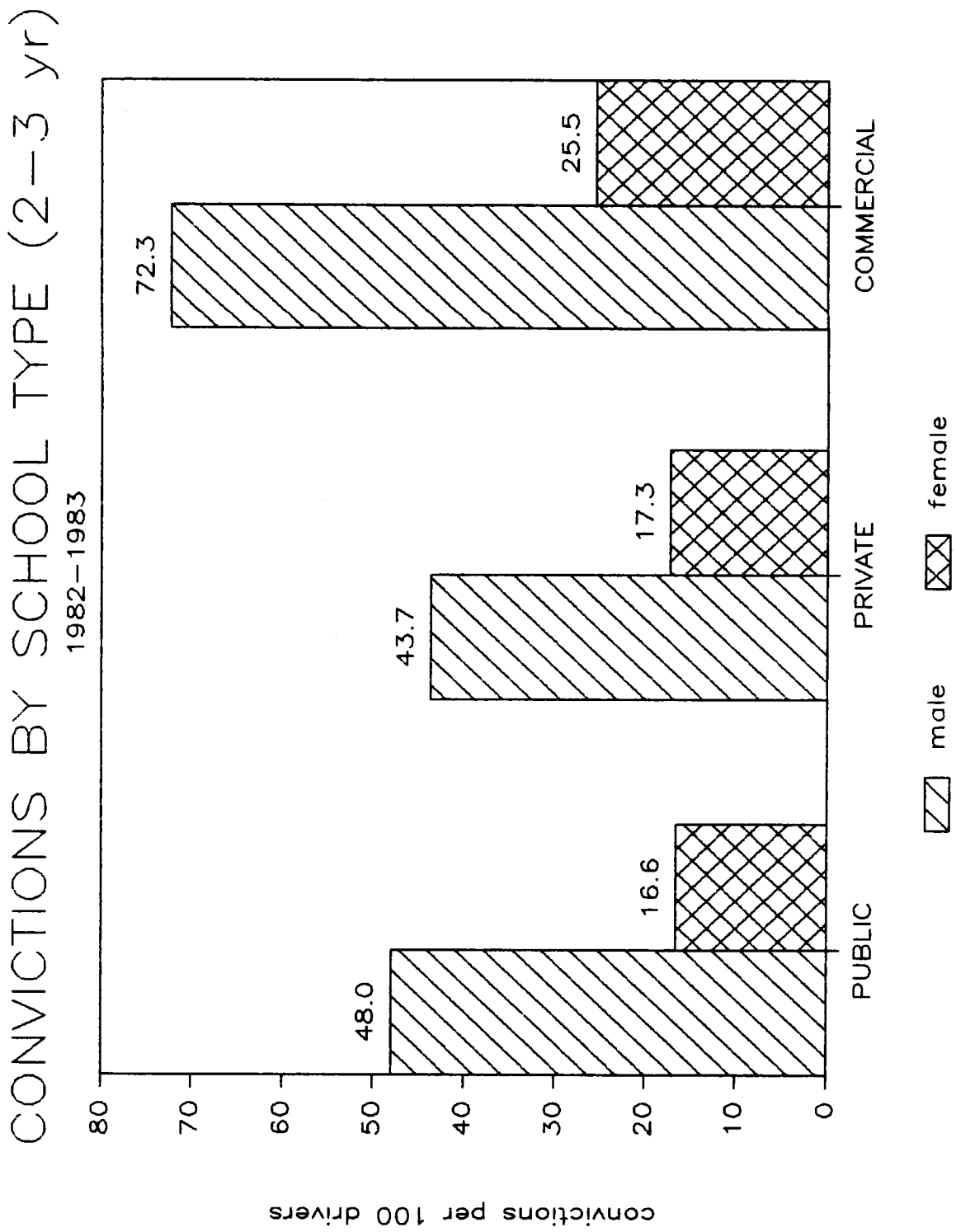

CONVICTIONS BY SCHOOL TYPE (1-2 yr)
1982-1983
convictions per 100 drivers
0
10
20
30
40
50
60
70
80
38.9
13.0
36.9
12.0
63.1
24.1
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 9


CONVICTIONS BY SCHOOL TYPE (2–3 yr)
1982–1983
convictions per 100 drivers
80
70
60
50
40
30
20
10
0
48.0
16.6
43.7
17.3
72.3
25.5
PUBLIC
PRIVATE
COMMERCIAL
male
female

number of convictions per 100 graduates of public and private school driver education courses stood in the upper thirties for males (38.9 and 36.9) and around the lower teens for females (13.0 and 12.0), while the number of convictions per 100 graduates of commercial schools was 63.1 for males and 24.1 for females. For those young people with 2 to 3 years of experience, the numbers were 48.0, 43.7, and 72.3 convictions per 100 male graduates of public, private, and commercial schools, respectively, and 16.6, 17.3, and 25.5 convictions per 100 female graduates of public, private, and commercial schools, respectively.

In Figure 10, the data which appear in Figures 7, 8, and 9 are displayed on a single graph. This format permits the easy comparison of conviction rates among graduates of the various driving schools, and the easy comparison of conviction rates between males and females. As noted above, the similarity between the data of the public and private schools is striking, and the higher rate of convictions for commercial school graduates is quite pronounced. As was also noted above, there are far fewer convictions for every 100 female drivers than for every 100 male drivers. In addition to these comparisons, the format used in this graph also allows one to clearly see the progressive increase in the number of convictions at each experience level. As was commented upon earlier, the rate rises to such a degree that those students with 2 to 3 years of driving experience typically garner a surprisingly high number of convictions during a single 12-month period.

Unfortunately, the data collected during the 1983-84 reporting period indicate that the high number of convictions observed in the preceding year was not simply an aberration. On the contrary, the conviction figures for 1983-84 are generally of the same magnitude as those for 1982-83. An average of 53.2 convictions per 100 students were recorded for commercial school males who had less than 1 year of driving experience during the 1983-84 reporting period. For females, the figure was 19.2. For public and private schools, the numbers were in the mid-twenties for males, 27.5 and 25.4, and hovered around 10 for females, 10.0 and 9.4 (see Figure 11). Compared to these students with less than 1 year of driving experience, the group of students with 1 to 2 years of driving experience garnered even more convictions per 100 students (see Figure 12), and the group with 2 to 3 years of experience garnered even more (see Figure 13). For those young people with 1 to 2 years of experience, there were approximately 40 convictions for every 100 male drivers who had graduated from public or private high school driver education courses (40.6 and 39.8 convictions, respectively), while for those young people with 2 to 3 years of experience, there were approximately 50 convictions for every 100 male drivers who had the same driver education background (50.7 and 49.1 convictions, respectively). The figures for the commercial school students remained at about 70 convictions per 100 students for both experience levels. For females with 1 to 2 years of driving experience, there were 14.0, 11.3, and 24.3 convictions per 100 students for public, private, and commercial schools, respectively, and for females with 2 to 3 years of driving

FIGURE 10

CONVICTIONS BY DRIVING EXPERIENCE AND
SCHOOL ATTENDED - 1982-1983

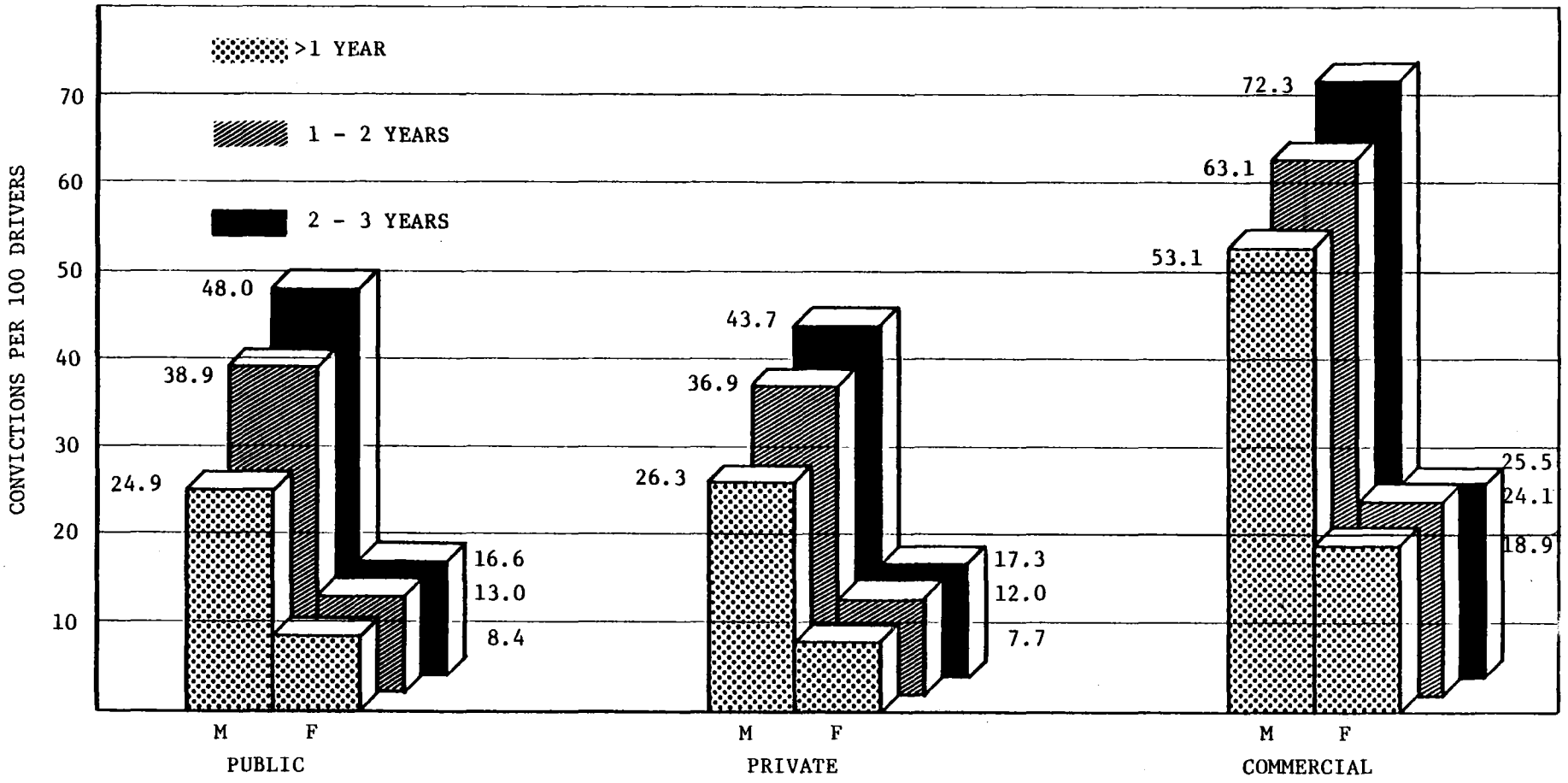


Figure 11

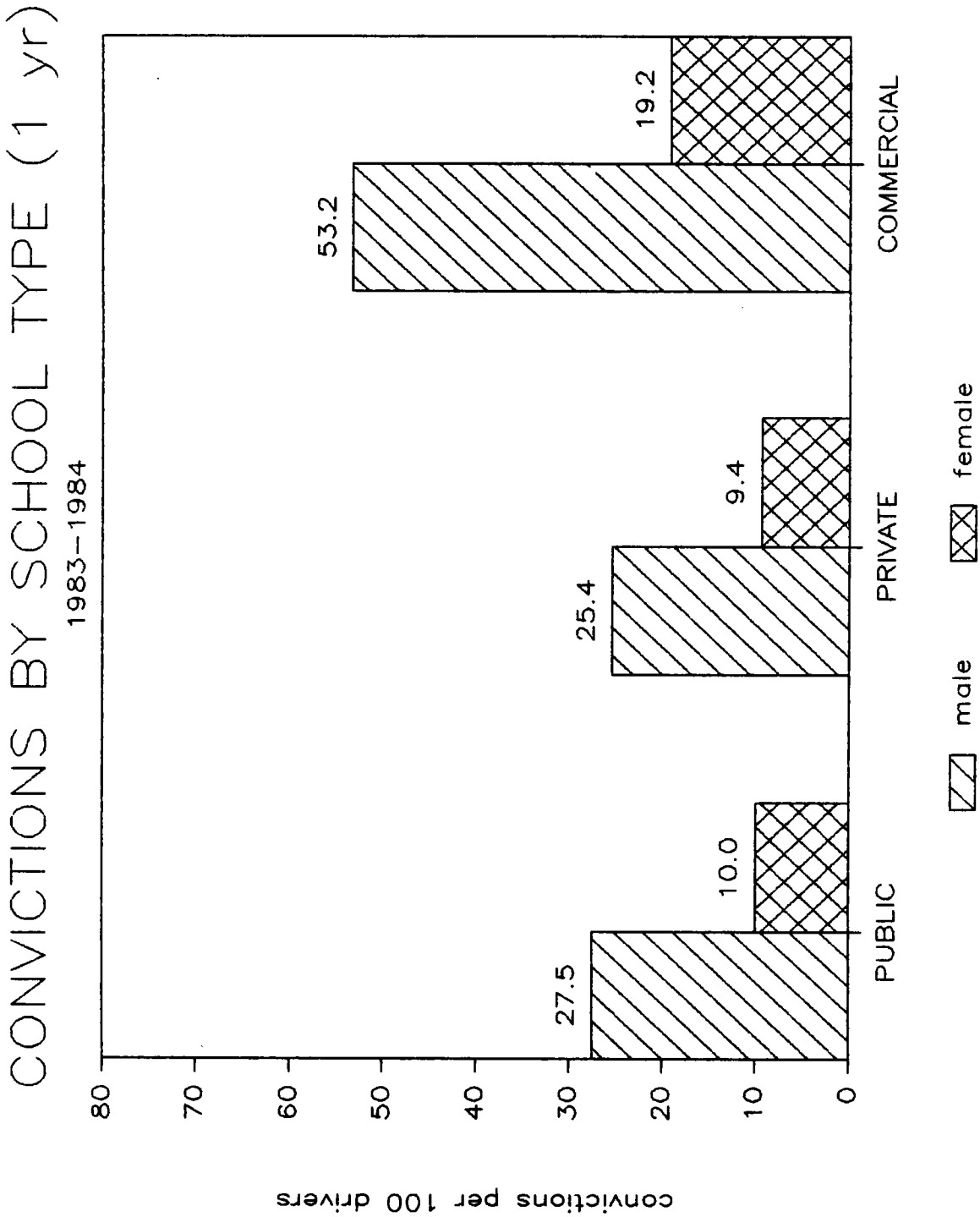

CONVICTIONS BY SCHOOL TYPE (1 yr)
1983-1984
convictions per 100 drivers
80
70
60
50
40
30
20
10
0
27.5
10.0
25.4
9.4
53.2
19.2
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 12

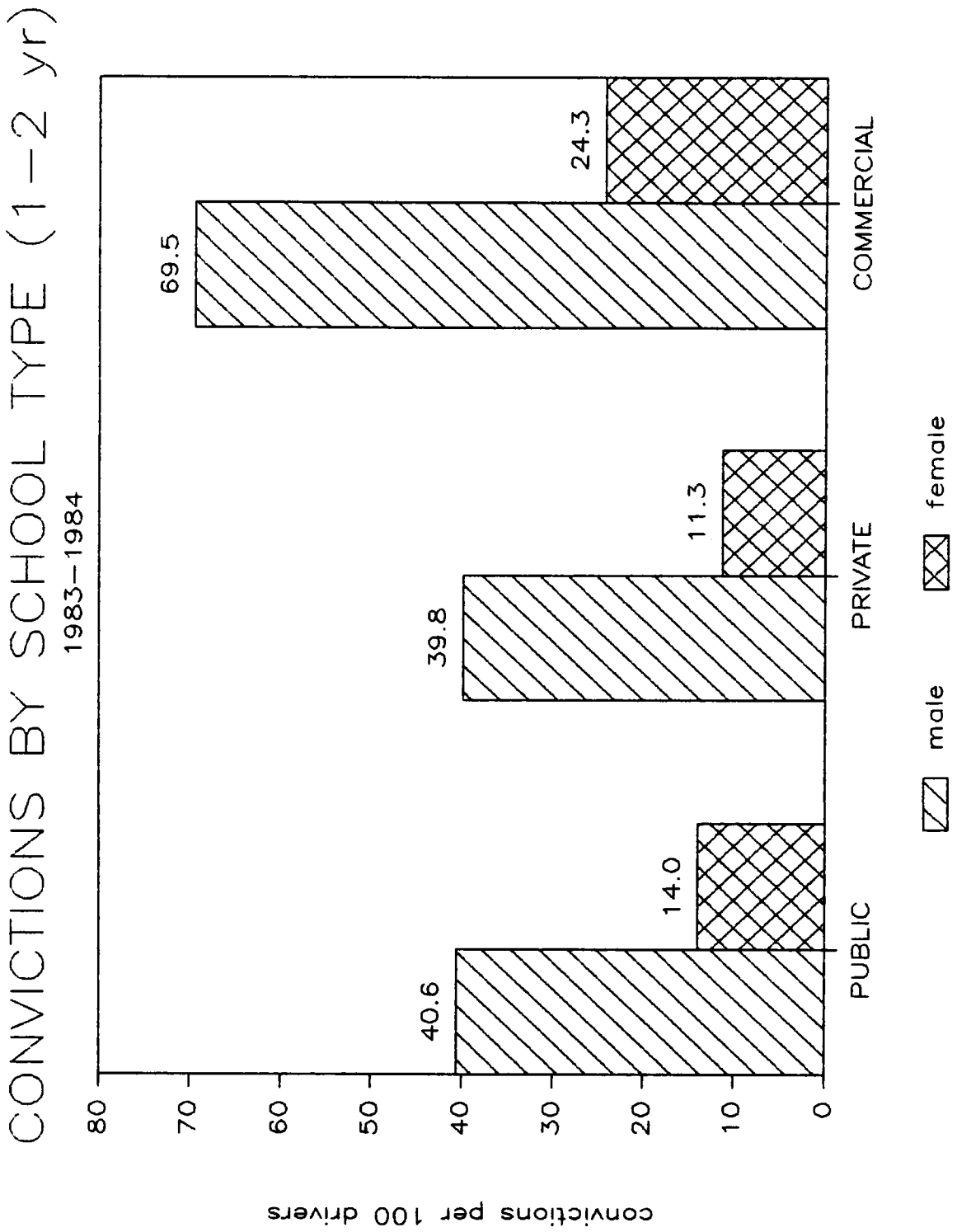
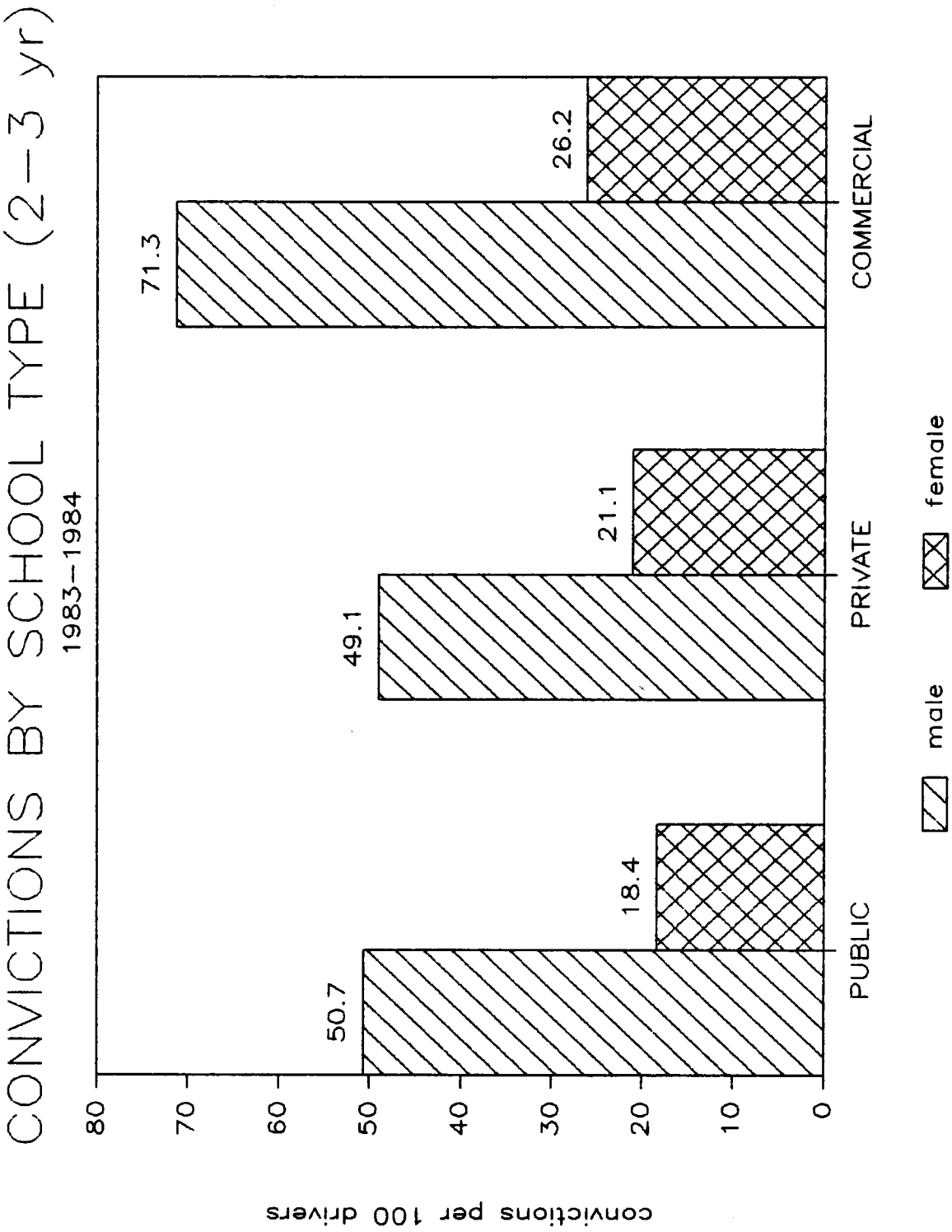

CONVICTIONS BY SCHOOL TYPE (1-2 yr)
1983-1984
convictions per 100 drivers
80
70
60
50
40
30
20
10
0
40.6
14.0
39.8
11.3
69.5
24.3
PUBLIC
PRIVATE
COMMERCIAL
male
female

Figure 13


CONVICTIONS BY SCHOOL TYPE (2-3 yr)
1983-1984
convictions per 100 drivers
80
70
60
50
40
30
20
10
0
50.7
18.4
49.1
21.1
71.3
26.2
PUBLIC
PRIVATE
COMMERCIAL
male
female

experience, 18.4, 21.1, and 26.2 convictions per 100 students, respectively. For the public and private schools, these statistics represent quite an increase. This fact is evident from Figure 14, which compiles on a single graph all of the statistics from Figures 11,12, and 13, and which is interpreted in the same manner as discussed in the narrative for Figure 10. The full import of these statistics can be better grasped by a review of the following section of this report.

During the course of their first 3 years of driving, young people are convicted of motor vehicle offenses at an increasing rate each successive year. This rate increases to such an extent that males who are graduates of public high school driver education courses and who have 2 to 3 years of driving experience receive approximately 50 convictions for every 100 students during a single 12-month period.

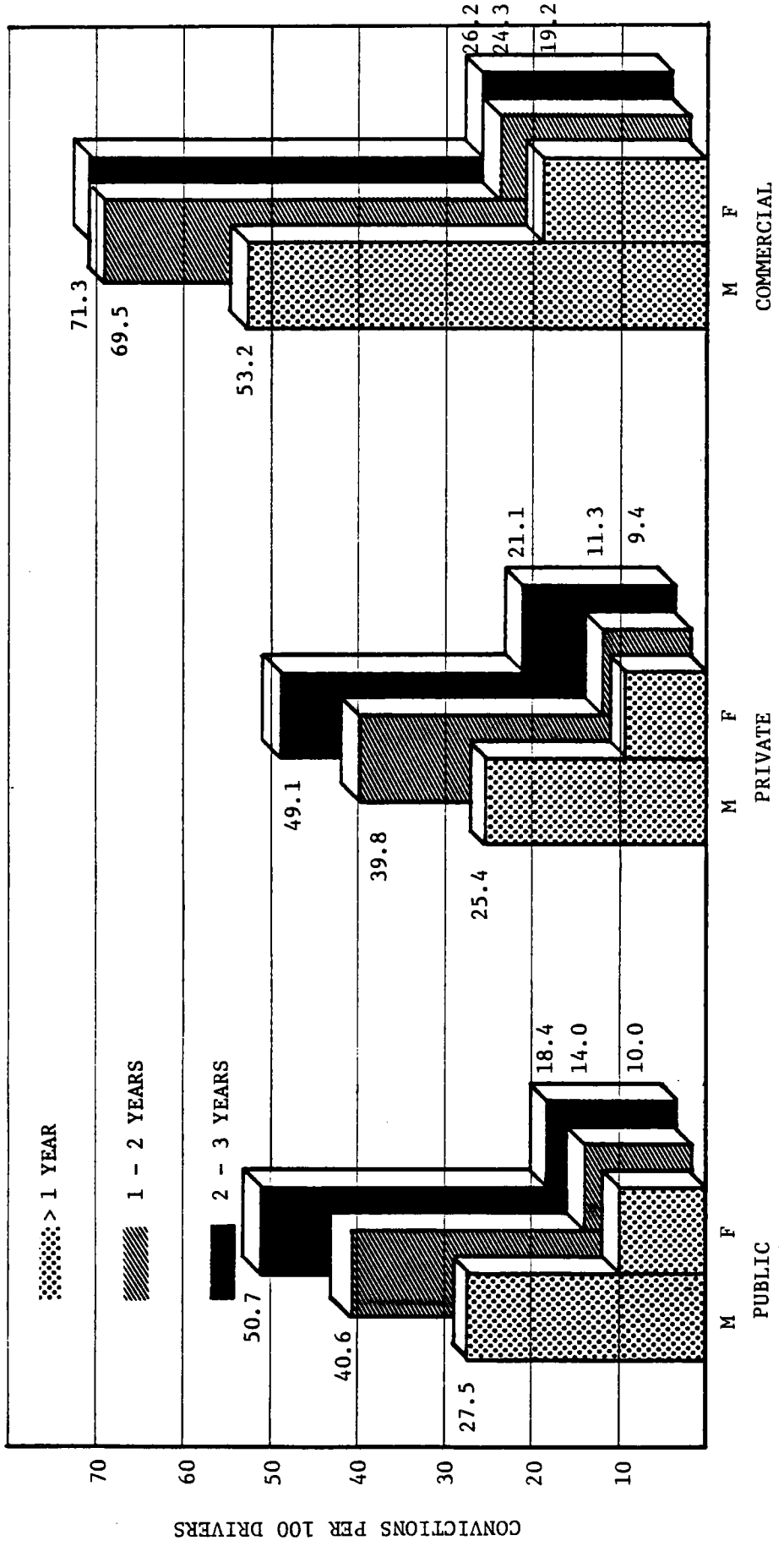
The graphs displayed as Figures 15 and 16 contain three variables. These variables include the level of experience the young drivers had attained, the type of school they had attended, and their gender. These variables are charted on the graphs in terms of the number of convictions that were received by every 100 drivers in each group. The numbers shown on the graphs are not cumulative but instead represent the number of convictions during a single 12-month period.

The data presented in Figure 15 are the same as those presented in Figures 7 through 9. However, this new graph utilizes a slightly different format so as to highlight the progressive increase in the number of convictions received by young drivers during their first 3 years on the road. In light of the purpose of this graph, and in light of the fact that all of these data were analyzed earlier, only selected parts of this graph will be discussed in this section of the report.

As the figure shows, in the data collected on public school students during the 1982-83 reporting period, the number of convictions rises from 24.9 convictions per 100 male drivers in the less than 1 year experience level, to 38.9 for those in the 1 to 2 year experience level, to 48.0 for those in the 2 to 3 year experience level. Thus, during a 12-month period, those male drivers who had graduated from a public high school driver education course and who had 2 to 3 years of driving experience received nearly twice as many convictions as did their counterparts with less than 1 year of experience. This is a significant finding. One would intuitively think that as a driver's experience in motor vehicle operation increased, the number of convictions in which he was involved would decrease. However, this is not the case. In terms of both the type of school attended and the gender of the students involved, there is a pronounced difference in the number of convictions between the groups with less driving experience and the group with the most driving experience. In fact, as the figure shows, during a single 12-month period there were more than 70 convictions per 100 male commercial school students with 2 to 3 years of experience as compared to

FIGURE 14

CONVICTIONS BY DRIVING EXPERIENCE AND
SCHOOL ATTENDED - 1983-1984



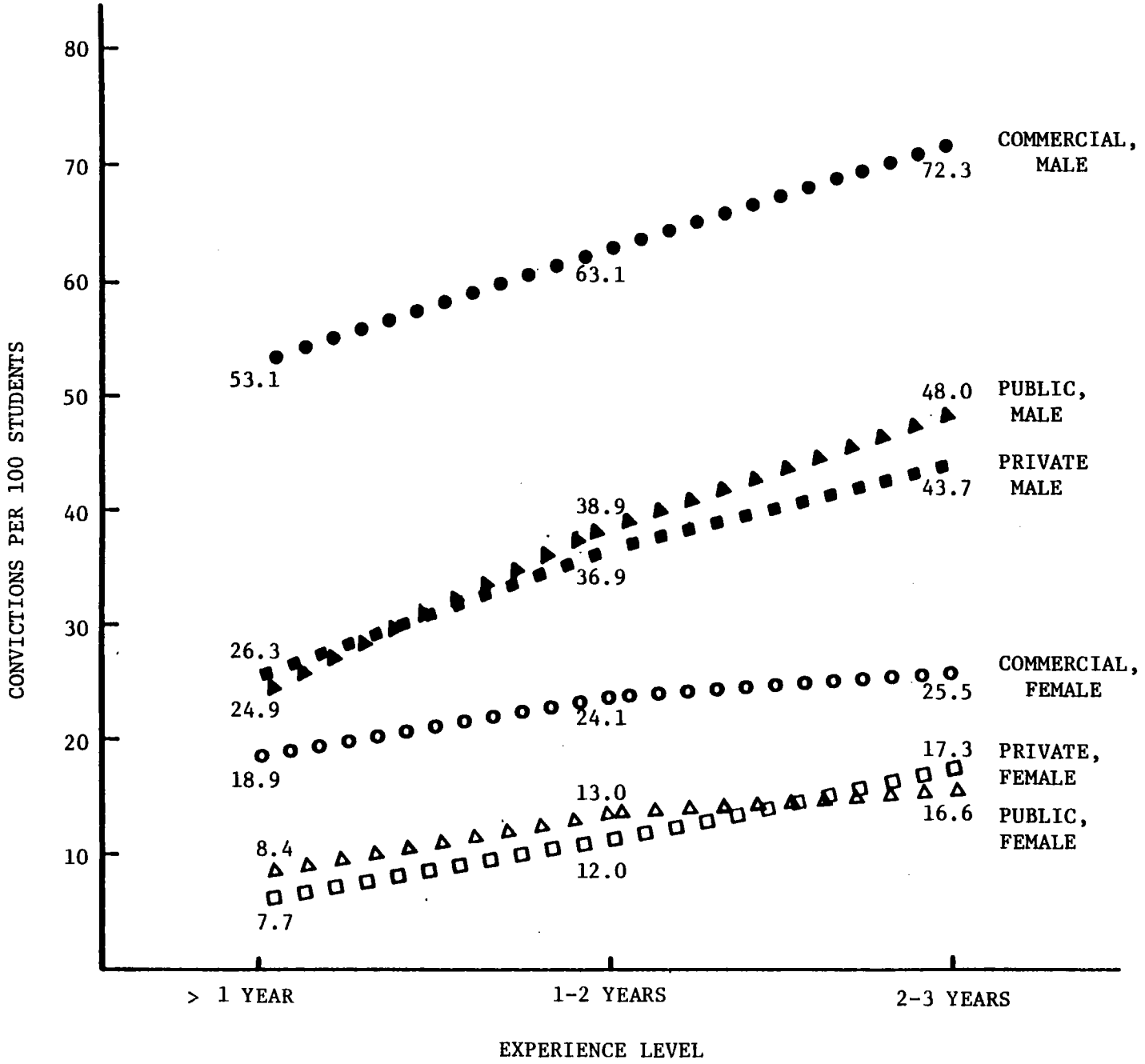


FIG. 15 - CONVICTIONS BY EXPERIENCE LEVEL - 1982-1983

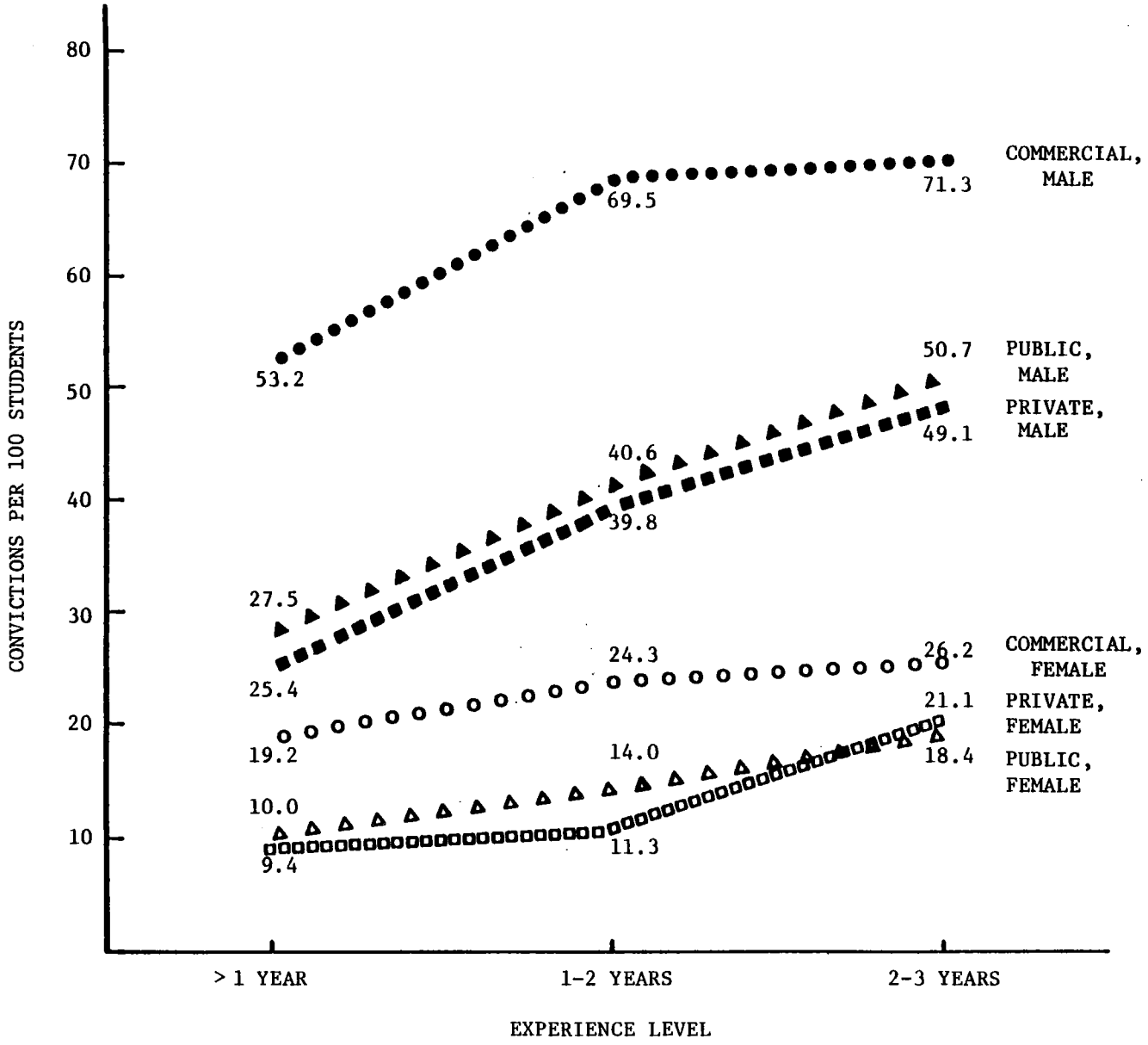


FIG. 16 - CONVICTIONS BY EXPERIENCE LEVEL - 1983-1984

approximately 53 convictions per 100 students with less than 1 year of experience.

The same general trends and magnitude of difference were also found in the conviction data collected at the end of the 1983-84 reporting period (see Figure 16). These data, which are identical to those displayed in Figures 11 through 13, show a distinct rise in the number of convictions recorded for each school type and each gender group from the lowest level of experience to the highest level of experience. For instance, male and female commercial school students with less than 1 year of driving experience had 53.2 and 19.2 convictions per 100 drivers, respectively, but male and female commercial school students with 2 to 3 years of driving experience had 71.3 and 26.2 convictions per 100 drivers, respectively. For public schools, the numbers rose from 27.5 and 10.0 convictions to 50.7 and 18.4 convictions, respectively. For private schools, the number of convictions received by males and females who had 2 to 3 years of driving experience was approximately double the number received by students who had less than 1 year of experience. Specifically, the numbers rose from 27.5 to 50.7 for males, and from 9.4 to 21.1 for females.

In examining these data, an interesting index can be produced by adding together the number of convictions recorded at each experience level within a particular school and gender group. This yields a 3-year composite figure for convictions. At the end of a 3-year reporting period and with the equivalence of 3 years of driving experience recorded, the 1982-83 data indicate that there were 106.9 convictions per 100 male private high school graduates, 111.8 convictions per 100 male public high school graduates, and 188.5 convictions per 100 male commercial driving school graduates (see Table 1). For females, the numbers were 37.0, 38.0, and 68.5 convictions per 100 students, respectively. The data for the 1983-84 reporting period are even higher, showing that there were 194 convictions accumulated by male commercial school graduates for the three different experience levels combined. For females, the number was 69.7 total convictions. Other figures include 118.8 and 42.4 total convictions for males and females from public high school programs, and 114.3 and 41.8 total convictions for males and females from private high school programs.

When examining these conviction statistics, it is important to keep in mind that not all of the motor vehicle offenses committed by these young people were infractions which endangered the safety of the driver or of others. A sizeable number of the offenses were vehicle infractions or license-related infractions which, although important, did not generally pose a threat of death or personal injury. The more serious offenses included each of the seven driver infractions enumerated earlier in this report, and three of the four miscellaneous infractions (alcohol or drug infractions, criminal actions, and unsafe motorcycle actions). By adding together the conviction statistics of these ten offenses, one can determine the percentage of the total number of convictions which were truly serious in nature. Table 2 provides

TABLE 1

THREE-YEAR CUMULATIVE CONVICTIONS

1982-1983

	PUBLIC		PRIVATE		COMMERCIAL	
EXPERIENCE LEVEL	M	F	M	F	M	F
0 to 1 year	24.9	8.4	26.3	7.7	53.1	18.9
1 to 2 years	38.9	13.0	36.9	12.0	63.1	24.1
2 to 3 years	48.0	16.6	43.7	17.3	72.3	25.5
COMBINED TOTALS	111.8	38.0	106.9	37.0	188.5	68.5

1983-1984

	PUBLIC		PRIVATE		COMMERCIAL	
EXPERIENCE LEVEL	M	F	M	F	M	F
0 to 1 year	27.5	10.0	25.4	9.4	53.2	19.2
1 to 2 years	40.6	14.0	39.8	11.3	69.5	24.3
2 to 3 years	50.7	18.4	49.1	21.1	71.3	26.2
COMBINED TOTALS	118.8	42.4	114.3	41.8	194.0	69.7

TABLE 2

PERCENTAGE OF CONVICTIONS SERIOUS IN NATURE

	0 to 1 yr experience		1 to 2 yr experience		2 to 3 yr experience	
1982-1983	M	F	M	F	M	F
PUBLIC	78.5	85.2	73.9	84.0	74.5	82.8
PRIVATE	79.3	94.3	79.2	90.5	75.3	80.2
COMMERCIAL	76.3	86.5	70.9	85.2	70.2	81.0
COMBINED AVG	78.0	88.7	74.7	86.6	73.3	81.3
1983-1984						
PUBLIC	77.4	82.5	72.4	82.2	70.7	80.1
PRIVATE	83.4	87.9	73.6	79.8	70.5	81.7
COMMERCIAL	74.6	80.3	68.4	80.0	67.2	76.6
COMBINED AVG	78.5	83.6	71.5	80.7	69.5	79.5
AVERAGE FOR BOTH YEARS						
COMBINED AVG	78.3	86.1	73.1	83.6	71.4	80.4

AVERAGE FOR BOTH YEARS AND EXPERIENCE LEVELS

MALES	74.2
FEMALES	83.4

such information based on the gender of the driver, the type of school attended, and the experience level attained. This chart shows that approximately 74% of all convictions of young male drivers and 83% of all convictions of young female drivers were for hazardous offenses. Thus, although females have a considerably lower rate of motor vehicle convictions than males, of those individuals who were convicted, females were more likely than their male counterparts to have committed an infraction which posed a threat to themselves or to others. It is also apparent from the chart that as the drivers gained experience, there was a slight decline in the percentage of offenses which were hazardous. Thus, in terms of experience levels, although there was a dramatic increase in the rate of convictions per 100 students, there was also a small decrease in the percentage of these convictions which were particularly dangerous. The result is that the rise in the number of convictions, although still very disturbing, is not quite as ominous as it first appeared.

The reasons for the steady increase in the rate of convictions at each experience level during the first 3 years of driving are not clear. There may be several causes. For instance, the rate may increase because young people drive more during each successive year and thus have a greater opportunity to commit motor vehicle offenses. Another reason may be that as drivers get older, they face new, more risky situations. For example, when the data in Figures 15 and 16 were collected, the beer drinking age in the Commonwealth was 18. Thus, a sizeable percentage of students who fell within the 1 to 2 year experience level, and virtually all of the students who fell within the 2 to 3 year experience level, became legally eligible to consume beer. The result of this may have been that there were more young drivers who drank a small enough amount of beer that they could not be arrested for "driving under the influence", but a large enough amount of beer that their driving judgement was impaired. This impairment may then have resulted in actions which constituted a motor vehicle offense.

An additional reason for the increased rate of convictions may spring from the mindset of the young drivers. As youngsters reach their late teens, they tend to chafe at authority and to "seek to sow their wild oats." Regrettably, one way in which they attempt to assert this new independence is through their driving habits. This type of attitude may lead to careless driving, and this often begets motor vehicle convictions. Another new situation which young people face in their late teens and which may result in a higher rate of convictions is extended late-night driving. Such driving is the result of dating, involvement in various other activities, and the lifting of parental curfews. Night driving is an important factor to consider since it requires special skills and since late evening is a dangerous time to be on the road.

Yet another reason for the increase in the number of convictions may lie not with young drivers but with law enforcement and judicial authorities. For example, a police officer who observes a person making

an improper turn may react differently in different situations. If the driver is a 16-year-old novice, the officer may decide that a warning is sufficient punitive action. However, if the driver is a 19-year-old, the officer may decide that a citation is necessary because the driver should already know better. Similarly, a commonwealth's attorney or a judge may be more willing to dismiss the charges against a novice driver as compared to a more experienced driver. Therefore, in spite of the fact that they executed nearly identical maneuvers, a conviction may appear on a 19-year-old's record, but nothing may appear on a 16-year-old's record.

Lastly, the reason for the increase in the rate of convictions may be that the driver education courses have failed to provide a system of instruction through which long-term benefits to student drivers may accrue in terms of attitude adjustment and skill procurement. That is, driver education may be ineffective in the "out years." The result of this is that any benefits achieved from such instruction begin to wear off almost immediately after the course is completed.

In the first 3 years of driving, the crash rate of young people generally increases during the first 2 years, but then generally declines or remains essentially constant during the following year.

The data collected on crashes tell a somewhat different story than the data collected on convictions. Figures 17 and 18 display the same statistical information as that provided in Figures 1 through 6, but in a different diagrammatic format. Here one can see that students with less than 1 year of experience are generally involved in the fewest crashes per 100 drivers, while students with 1 to 2 years of experience are generally involved in the most. Consequently, although there is an increase in the number of crashes from the first experience level to the second, there is typically a decrease in the number of crashes from the second experience level to the third.

As Figure 17 shows, in the data collected on commercial school students during the 1982-83 reporting period, the number of crashes rises from 10.2 per 100 male drivers in the less than 1 year experience level, to 17.3 per 100 male drivers in the 1 to 2 year experience level. Then, however, the number of crashes declines to 15.4 per 100 male drivers in the 2 to 3 year experience level. This same phenomenon of a rise and then a fall in the number of crashes is observed in the commercial school data for females as well. In terms of the three successive levels of driving experience, the numbers for females were 7.6, 12.4, and 9.3 crashes per 100 drivers, respectively.

The lambda-shaped formations created by the commercial school crash statistics are not evident in all of the 1982-83 data. In several instances, the number of crashes involving students with 2 to 3 years of driving experience is actually higher -- albeit infinitesimally so --

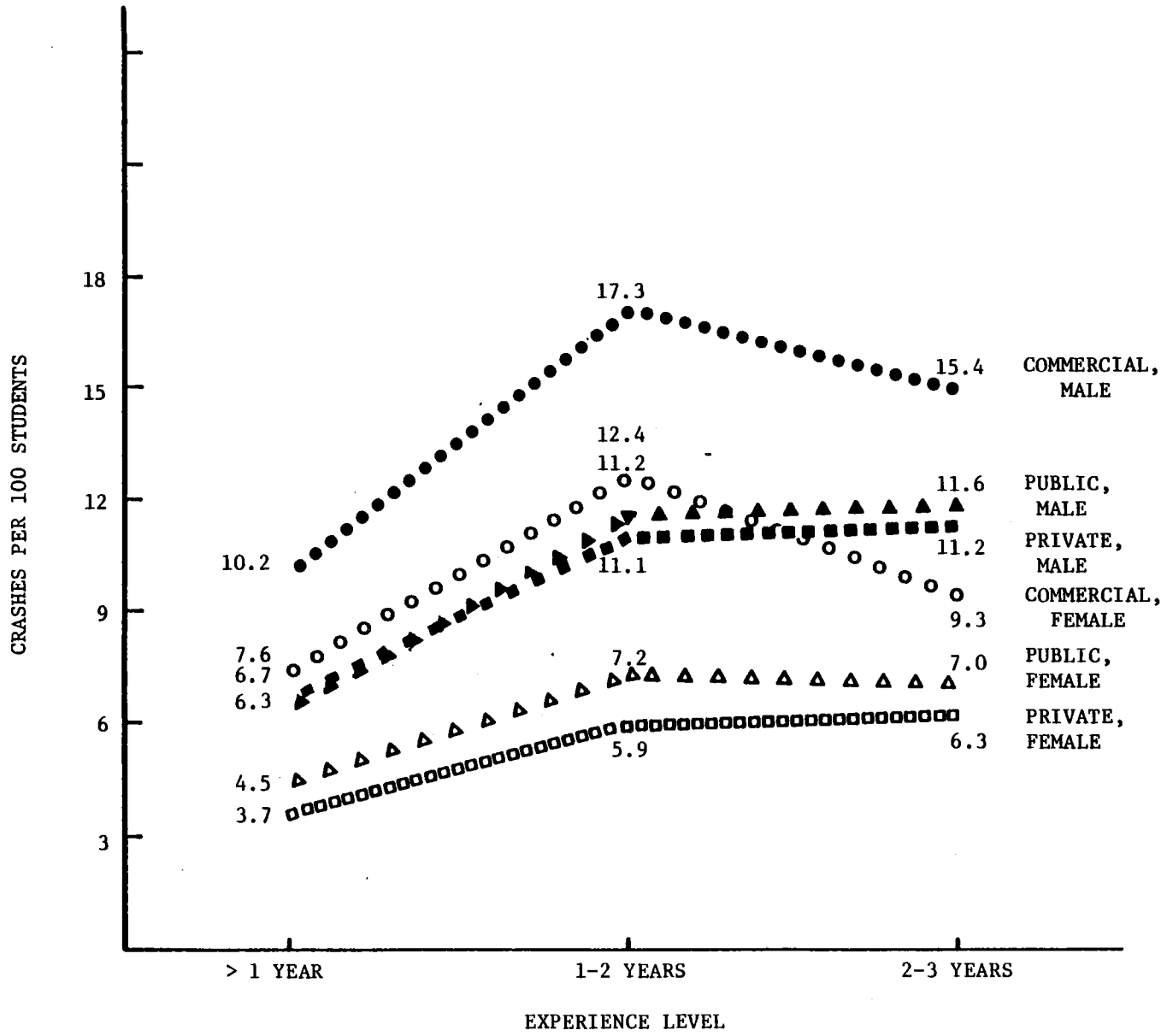


FIG. 17 - CRASHES BY EXPERIENCE LEVEL - 1982-1983

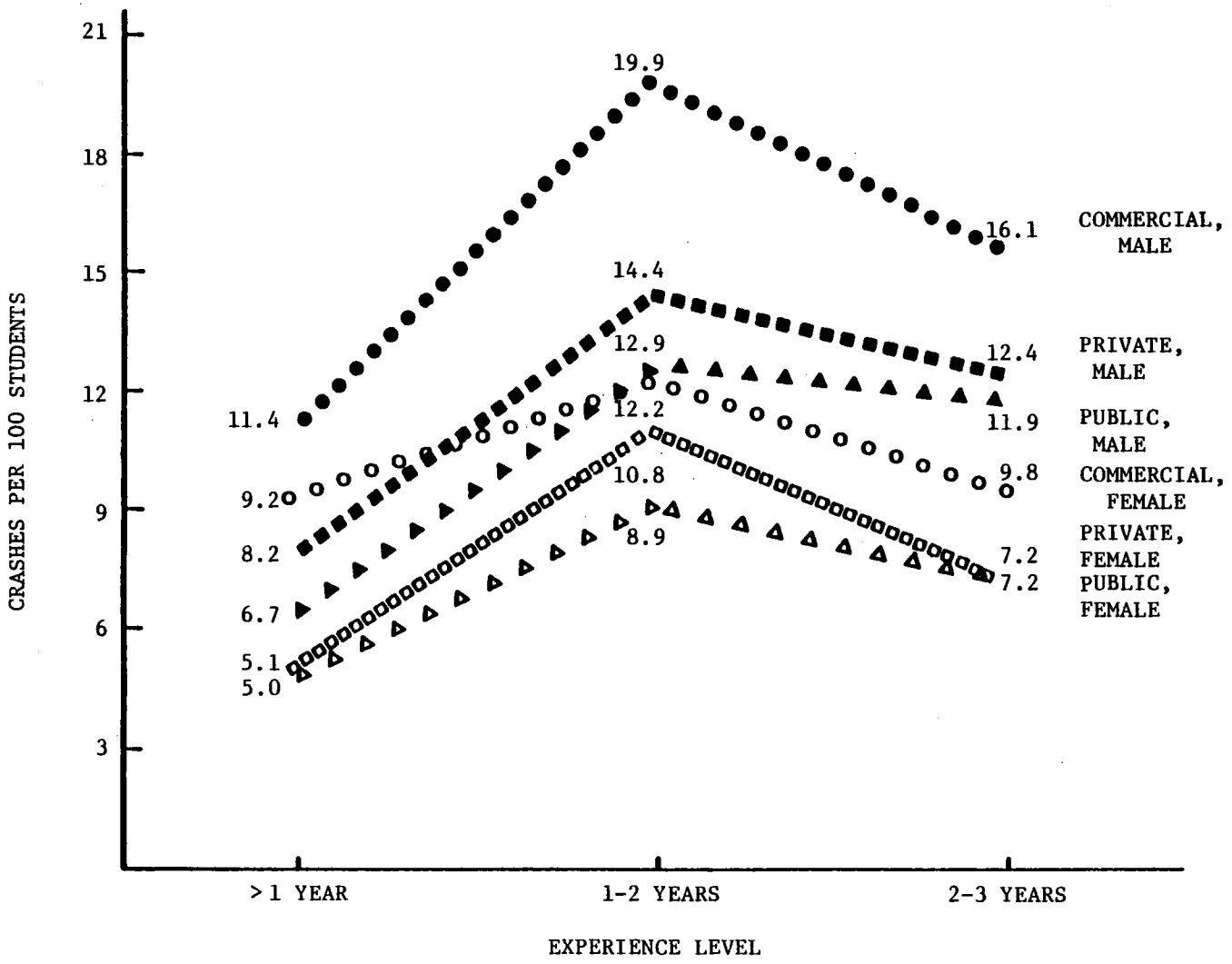


FIG. 18 - CRASHES BY EXPERIENCE LEVEL - 1983-1984

than the number involving students with less driving experience. Specifically, during the 1982-83 reporting period, the male public school students were involved in 6.3, 11.2, and 11.6 crashes per 100 drivers, respectively, the male private school students were involved in 6.7, 11.1, and 11.2 crashes per 100 drivers, respectively, and the female private school students were involved in 3.7, 5.9, and 6.3 crashes per 100 drivers, respectively. Thus, for these three groups there were increases in the crash rate at each experience level. Only the data for the public school females -- 4.5, 7.2, and 7.0 crashes per 100 drivers, respectively -- mimicked the commercial school scenario.

This is not the case with the 1983-84 data, however. Here, the lambda-shaped formations are quite pronounced (see Figure 18). In terms of the three successive levels of experience, commercial school males were involved in 11.4, 19.9, and 16.1 crashes per 100 drivers, respectively, and commercial school females were involved in 9.2, 12.2, and 9.8 crashes per 100 drivers, respectively; private school males were involved in 8.2, 14.4, and 12.4 crashes per 100 drivers, respectively, and private school females were involved in 5.1, 10.8, and 7.2 crashes per 100 drivers, respectively; public school males were involved in 6.7, 12.9, and 11.9 crashes per 100 drivers, respectively, and public school females were involved in 5.0, 8.9, and 7.2 crashes per 100 drivers, respectively. Therefore, these crash data tend to indicate that young people generally perform better on the road once they have gained at least 2 years of driving experience.

One would anticipate that there would be a fairly high degree of correlation between the number of convictions and the number of crashes within a specific population. Thus, one would expect that just as the rate of convictions increases during the third year, so would the rate of crashes. However, as has been shown by the data in Figures 17 and 18, this surmise is not correct, for there appears to be no statistical link between crashes and convictions during the 2 to 3 year experience level. Unfortunately, the reason for this disparity in the crash and conviction data is not known.

In examining these data, a helpful statistic can again be produced by adding together the number of crashes recorded at each experience level within a particular school and gender group so as to yield a 3-year composite figure. These data indicate that the crash rate ranged from 47.4 crashes per 100 male commercial school graduates in the 1983-84 data, to 15.9 crashes per 100 female private school graduates in the 1982-83 data (see Table 3). That is a large difference. It is also interesting to note that these 3-year composite figures highlight the fact that commercial school students have worse accident records than public or private school students, and that males have worse accident records than females.

Young people who receive their training in a two-phase driver education program generally accumulate fewer convictions per 100 students than do

TABLE 3

THREE-YEAR CUMULATIVE CRASHES

1982-1983

	PUBLIC		PRIVATE		COMMERCIAL	
EXPERIENCE LEVEL	M	F	M	F	M	F
0 to 1 year	6.3	4.5	6.7	3.7	10.2	7.6
1 to 2 years	11.2	7.2	11.1	5.9	17.3	12.4
2 to 3 years	11.6	7.0	11.2	6.3	15.4	9.3
COMBINED TOTALS	29.1	18.7	29.0	15.9	42.9	29.3

1983-1984

	PUBLIC		PRIVATE		COMMERCIAL	
EXPERIENCE LEVEL	M	F	M	F	M	F
0 to 1 year	6.7	5.0	8.2	5.1	11.4	9.2
1 to 2 years	12.9	8.9	14.4	10.8	19.9	12.2
2 to 3 years	11.9	7.2	12.4	7.2	16.1	9.8
COMBINED TOTALS	31.5	21.1	35.0	23.1	47.4	31.2

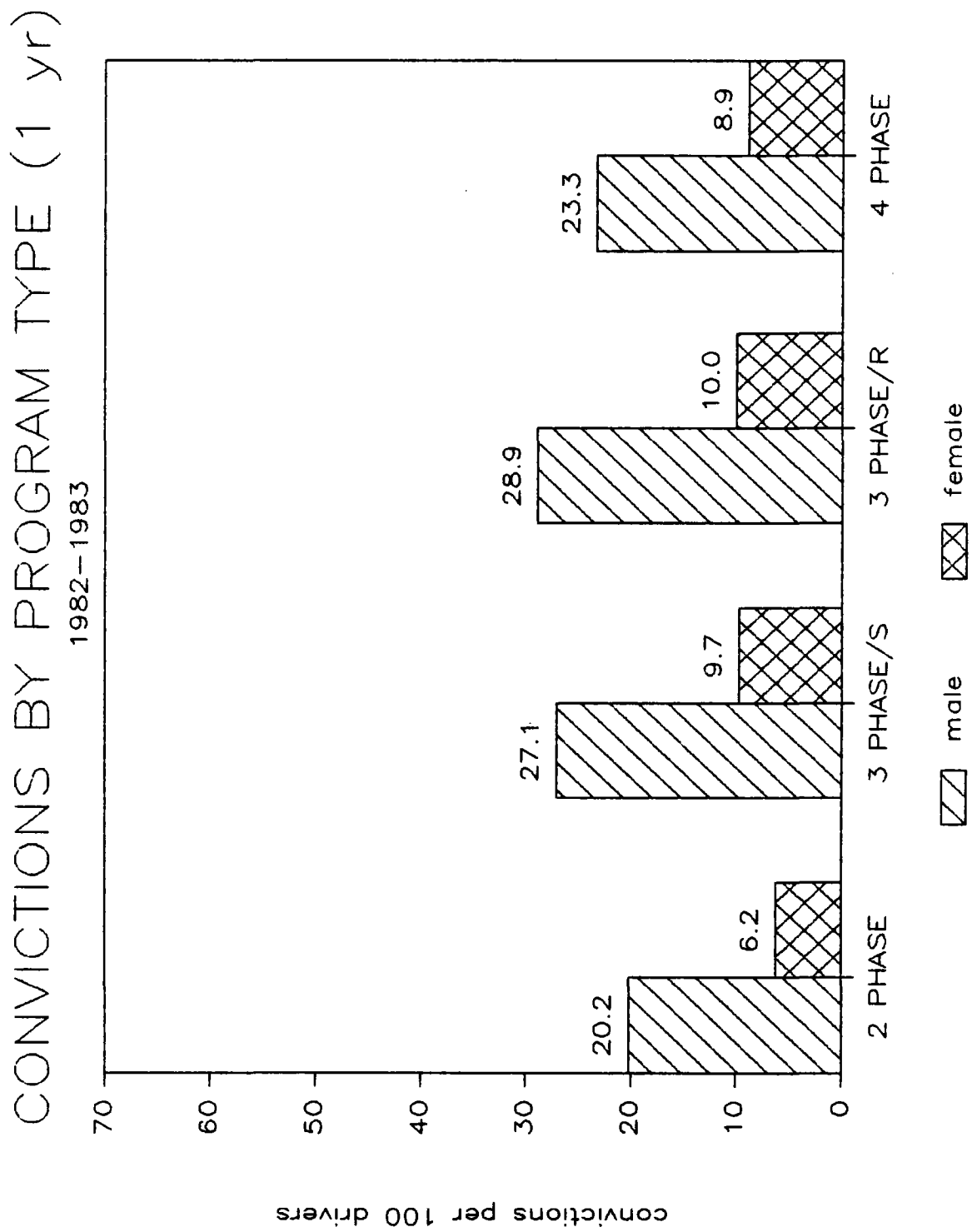
their counterparts who receive their training in three-phase range, three-phase simulator, or four-phase programs.

As noted earlier in this report, four types of driver education programs are used in the Commonwealth today -- two-phase, three-phase range, three-phase simulator, and four phase. Designations for these programs are charted along the base of Figures 19 through 30. Because the three-phase range, three-phase simulator, and four-phase programs generally have very high start-up costs and may entail high maintenance fees, very few private schools and no commercial schools use them in their instructional programs. Instead, these schools typically use the two-phase program. Therefore, in analyzing the relative effectiveness of the different types of programs, it is necessary to focus strictly on data provided from the public school system.

When analyzing the conviction data dealing with the various types of driver education programs which are offered, one should keep in mind the following point: the data presented in Figures 19 - 24 are the same as those presented in Figures 7 - 13, which showed the number of convictions accumulated by public high school driver education graduates. The only variation is that in these new graphs, the individual drivers are grouped differently. For instance, in Figure 7, data on all of the males who successfully completed a public high school driver education course were lumped into one large group, while in Figure 19, this same group of males is divided among the four different programs according to the type of instruction they received. Therefore, because there has simply been a rearrangement of the data, some of the same phenomena observed in the earlier analyses are also evident in this section of the report. For example, no matter what type of program in which the students were enrolled, males consistently had higher rates of convictions than did females. Also, regardless of program type, the greater the number of years of experience, the higher the level of convictions. Since these points have been discussed at length in earlier sections of this report, they will not be reexamined here. Instead, attention will simply be placed on the relative effectiveness of each type of program within the same gender group and within the same experience level.

For data presented in Figure 19, the conviction results occur in a near bell curve with the three-phase programs having the highest conviction rates, and the two- and four-phase programs having the lowest conviction rates. This pattern is fairly consistent throughout the data set. For the data collected during the 1982-83 reporting period there were 20.2 convictions per 100 drivers during the first year of vehicle operation by males completing a two-phase educational program, 27.1 convictions for males completing a three-phase simulator program, 28.9 convictions for the three-phase range programs, and 23.3 convictions for the four-phase range programs. At the end of the first year of driving by females, the rates were 6.2, 9.7, 10.0, and 8.9 convictions per 100 drivers, respectively.

Figure 19


CONVICTIONS BY PROGRAM TYPE (1 yr)
1982–1983
convictions per 100 drivers
70
60
50
40
30
20
10
0
20.2
6.2
27.1
9.7
28.9
10.0
23.3
8.9
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

The 1983-84 data relating to students with less than 1 year of driving experience are very similar to the 1982-83 data (see Figure 20). Again, the students who had been enrolled in a two-phase program, both male and female, had the lowest rate of convictions (21.8 and 7.0, respectively). The students who had been enrolled in a four-phase program had the next lowest (24.7 and 8.1, respectively), and the three-phase simulator students came in third (31.9 and 12.5, respectively). The students with the worst record were those who had been enrolled in a three-phase range program (34.5 and 13.9, respectively).

For those students who had 1 to 2 years of experience, the same trend was found (see Figures 21 and 22). The 1982-83 data and the 1983-84 data both show that the two-phase students performed the best, followed by the four-phase students, the three-phase simulator students, and then the three-phase range students. Specifically, for males during the 1982-83 reporting period, there were 30.4, 41.6, 42.9, and 43.6 convictions per 100 drivers, respectively; for females, there were 9.3, 12.7, 15.6, and 15.0 convictions per 100 drivers, respectively. During the 1983-84 reporting period males had 35.8, 41.3, 42.0, and 49.4 convictions per 100 drivers, respectively; and females had 11.2, 15.0, 15.1, and 16.3 convictions per 100 drivers, respectively.

The data corresponding to those students who had 2 to 3 years of driving experience were not as clear-cut as the data corresponding to those students who had fewer years of driving experience. In the 1982-83 data, the rate of male convictions for the two-phase (46.2), three-phase simulator (47.0), and three-phase range (45.0) programs were very nearly the same (see Figure 23). Indeed, as a point of fact, none of the differences among these statistics are of practical importance in determining program effectiveness. However, the four-phase program registered significantly more convictions per 100 male drivers than any of these other three programs (64.7) and this difference is of practical importance. In addition, with regard to females, the four-phase program again had the worst conviction rate of the four program types. The two-phase students had 14.3 convictions per 100 females, the three-phase simulator students had 15.5 convictions per 100 females, and the three-phase range students had 16.6 convictions per 100 females, while the four-phase students had 22.8 convictions per 100 females. Thus, as with the data on male students, the females who participated in a two-phase program possessed the best driving record.

The 1983-84 data corresponding to those students who had 2 to 3 years of driving experience support the findings enumerated above (see Figure 24). For both males and females, those students enrolled in two-phase programs had the fewest convictions per 100 drivers (43.8). For males, the next fewest convictions (in ascending order) occurred for students enrolled in the range programs (53.3), the simulator programs (55.2), and the four-phase programs (58.5). For females, the rankings were as follows: two-phase program (15.0), three-phase simulator program (15.9), four-phase program (19.1), and three-phase range program (20.2).

Figure 20

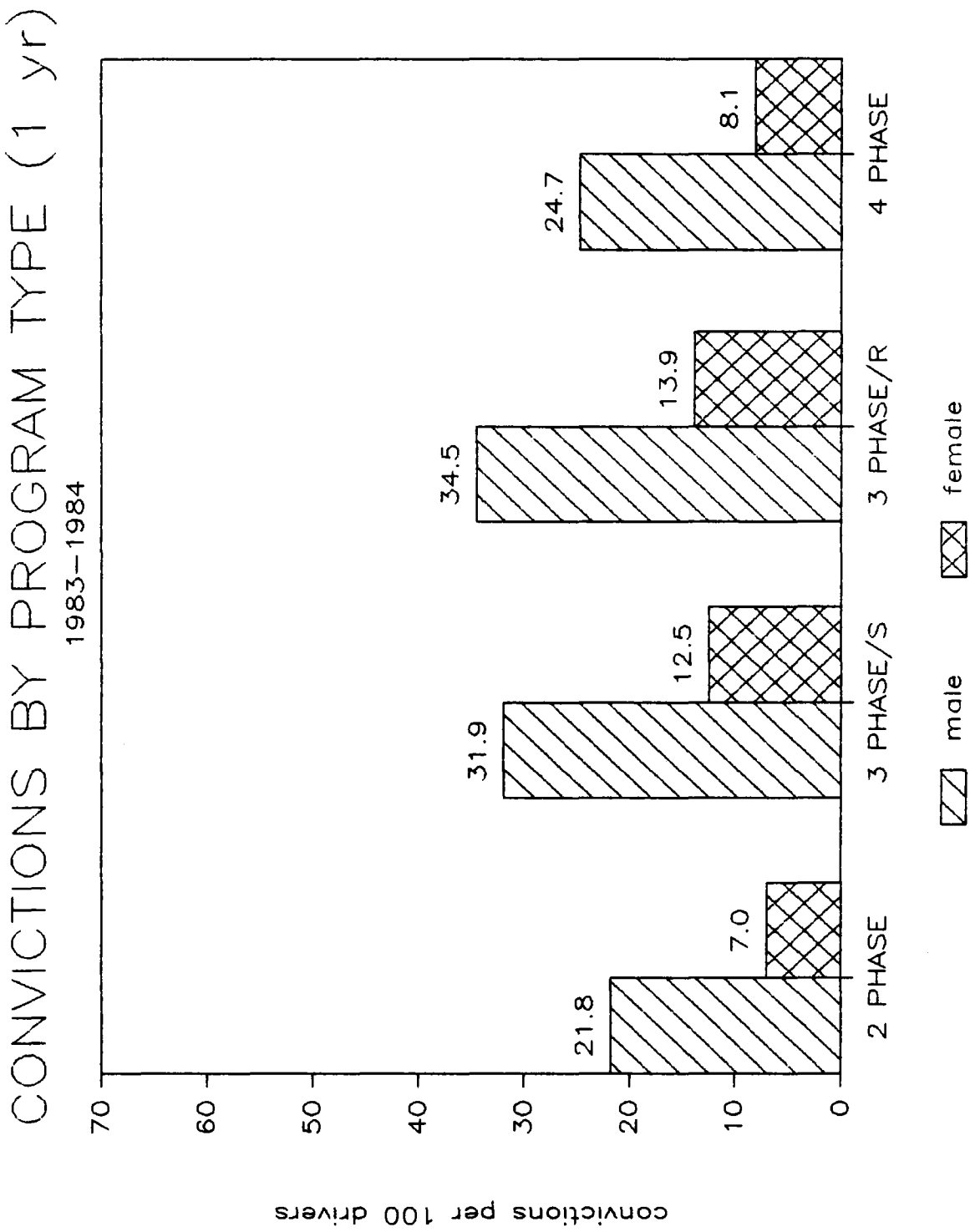

CONVICTIONS BY PROGRAM TYPE (1 yr)
1983-1984
convictions per 100 drivers
70
60
50
40
30
20
10
0
21.8
7.0
31.9
12.5
34.5
13.9
24.7
8.1
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 21

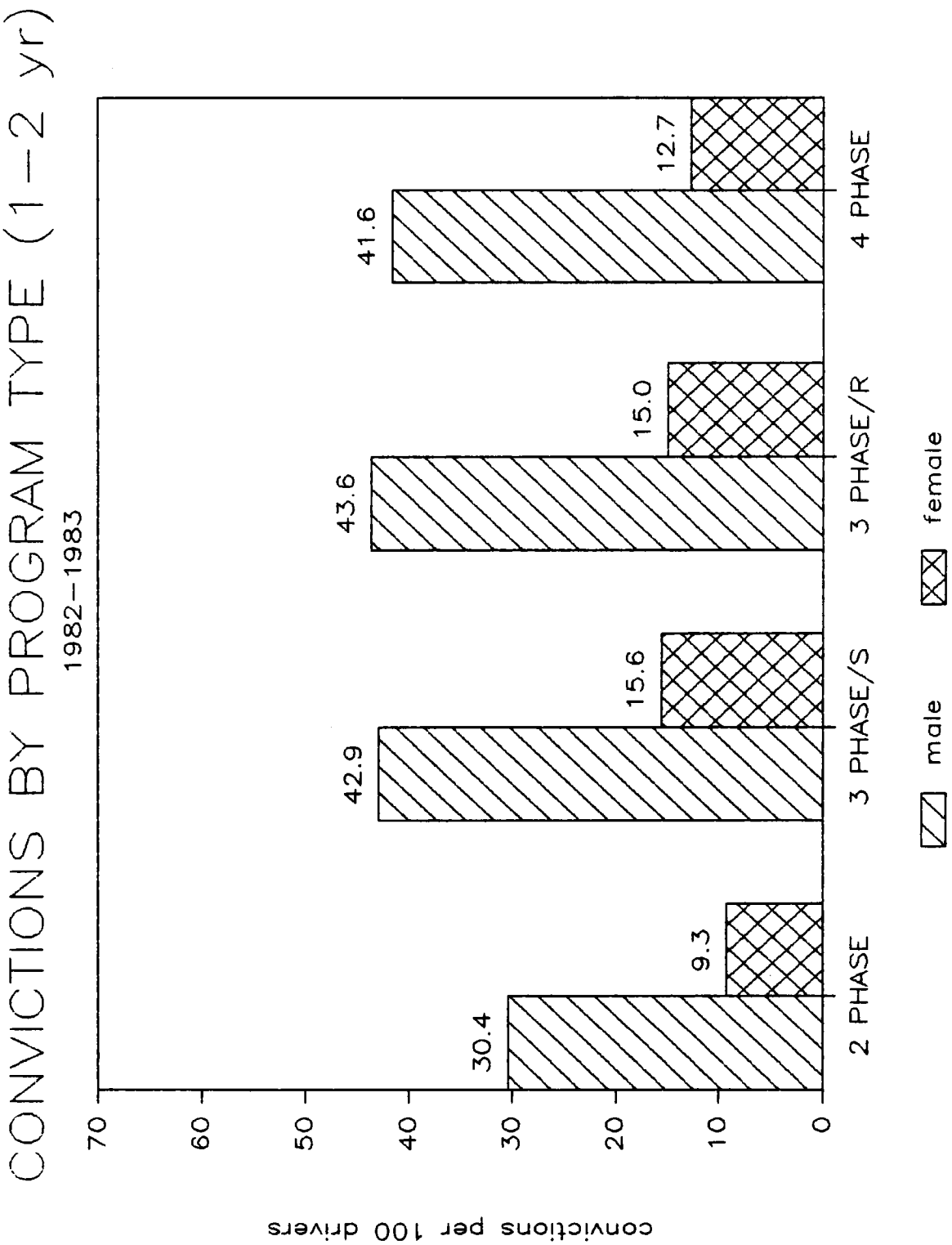

CONVICTIONS BY PROGRAM TYPE (1-2 yr)
1982-1983
convictions per 100 drivers
70
60
50
40
30
20
10
0
30.4
9.3
42.9
15.6
43.6
15.0
41.6
12.7
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 22

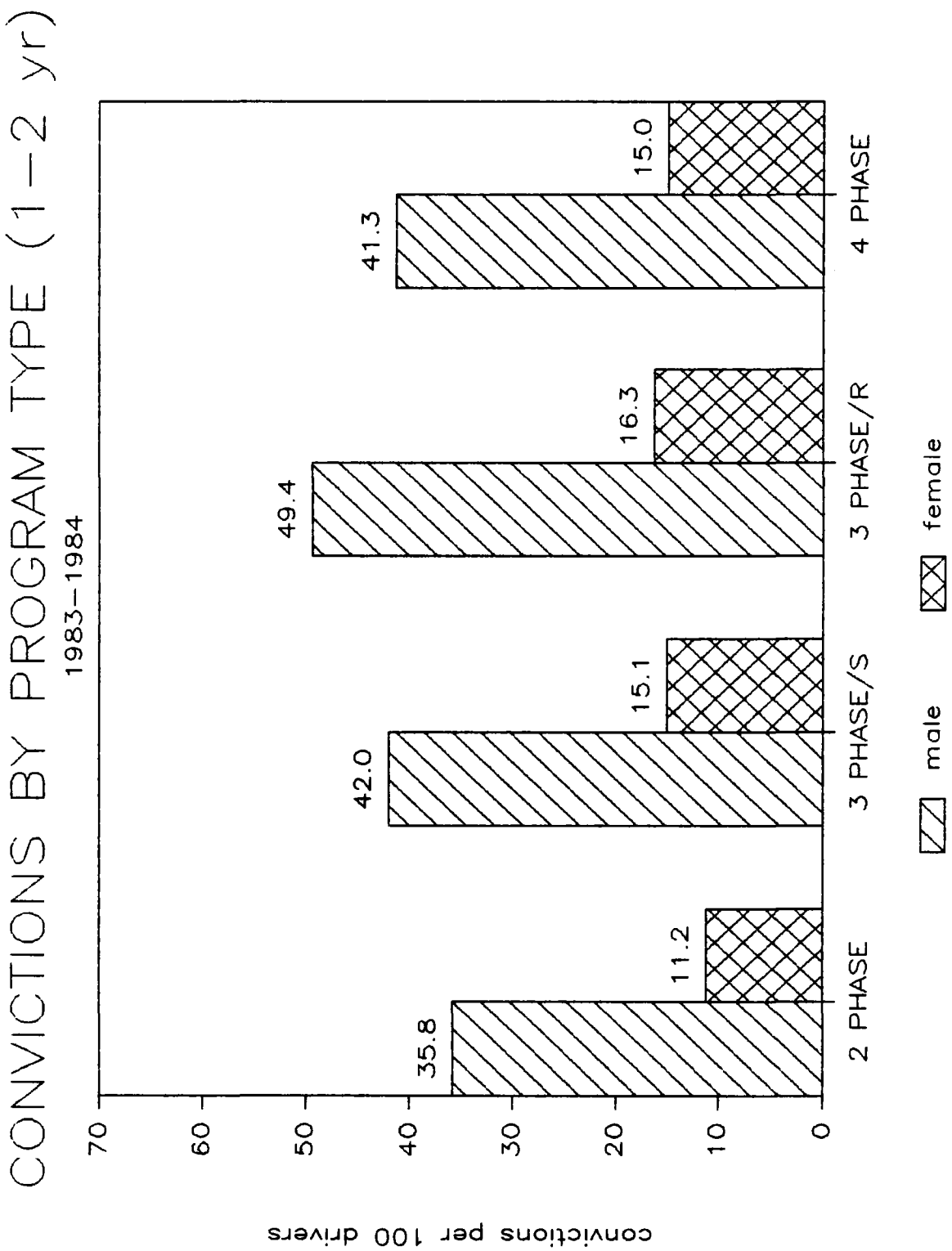

CONVICTIONS BY PROGRAM TYPE (1-2 yr)
1983-1984
convictions per 100 drivers
70
60
50
40
30
20
10
0
35.8
11.2
42.0
15.1
49.4
16.3
41.3
15.0
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 23

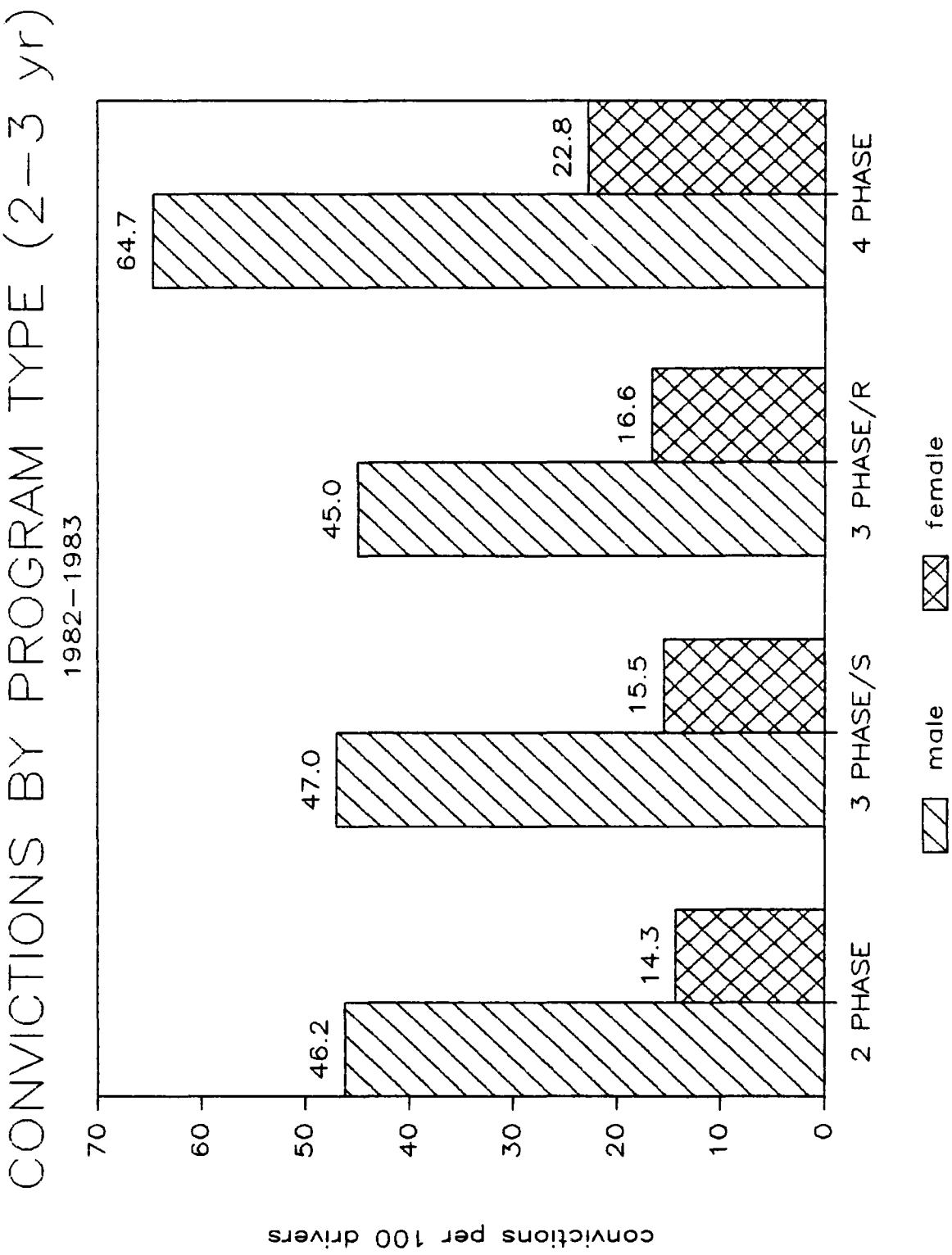
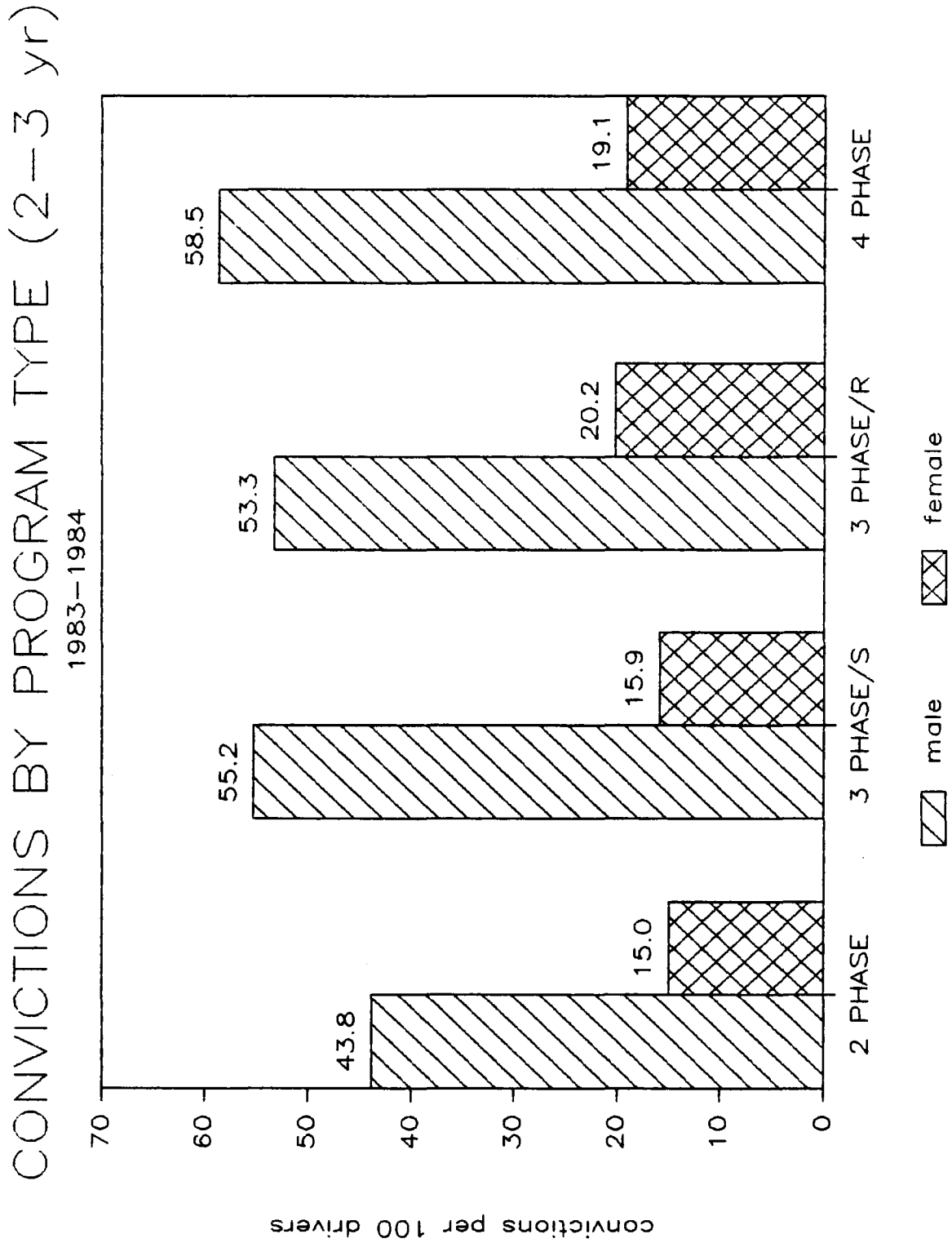

CONVICTIONS BY PROGRAM TYPE (2-3 yr)
1982-1983
convictions per 100 drivers
70
60
50
40
30
20
10
0
46.2
14.3
47.0
15.5
45.0
16.6
64.7
22.8
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 24


CONVICTIONS BY PROGRAM TYPE (2–3 yr)
1983–1984
convictions per 100 drivers
70
60
50
40
30
20
10
0
43.8
15.0
55.2
15.9
53.3
20.2
58.5
19.1
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

The data concerning the number of crashes per 100 young people as a function of the type of driver education course in which they were enrolled are conflicting. Therefore, no definitive conclusions can be reached regarding the crash-reduction potential of any particular program.

Figures 25, 26, and 27 show the relationship between the number of crashes per 100 drivers and the type of driver education program in which they were enrolled. These data are for the 1982-83 reporting period and represent three successive levels of operator experience. Figure 25 data are for drivers with less than 1 year of experience, Figure 26 data are for drivers with 1 to 2 years of experience, and Figure 27 data are for drivers with 2 to 3 years of experience. The data presented in these charts are further categorized into male and female drivers.

The 1982-83 figures provide no clear, consistent picture of whether students completing one type of driver education program have superior driving performances in terms of accident rates compared to students completing another type of program. For instance, male students graduating from a four-phase program had the fewest crashes per 100 drivers (5.5), two-phase students had the next fewest (5.9), three-phase simulator students were third in the hierarchy (6.3), and finally, male students graduating from a three-phase range program had the most crashes per 100 drivers (6.9) (see Figure 25). This hierarchy is exactly reversed when data for students who had 1 to 2 years of experience are analyzed (see Figure 26). Specifically, the three-phase range students had the best crash record (10.4), with the three-phase simulator students next (11.2), followed by the two-phase students (11.8), and then by the four-phase students (13.5). The rank order again reverses for the 2 to 3 year experience level, as shown by the data in Figure 27 (8.8 - four-phase, 10.3 - two-phase, 12.3 - three-phase simulator, and 12.9 - three-phase range.) Furthermore, the 1983-84 data for males shown in Figures 28, 29, and 30 are likewise variable, with no consistent pattern evolving. In the 1982-83 and 1983-84 data relative to female drivers, the patterns are similarly inconclusive.

This absence of a pattern in the statistics may be a result of several factors. First, and most obvious, it may simply be a result of the fact that the driver education programs -- whether two-phase, three-phase range, three-phase simulator, or four-phase -- are equally effective or equally ineffective in reducing the number of accidents involving young drivers. Or, second, it may be a result of the fact that the number of crashes is so small and so volatile that the program or programs which are superior fail to be evident since data from only two reporting periods are available for analysis. Regardless of the reason, it is virtually impossible to state with any certainty that any one of these programs is better than any other concerning potential crash reduction.

Figure 25

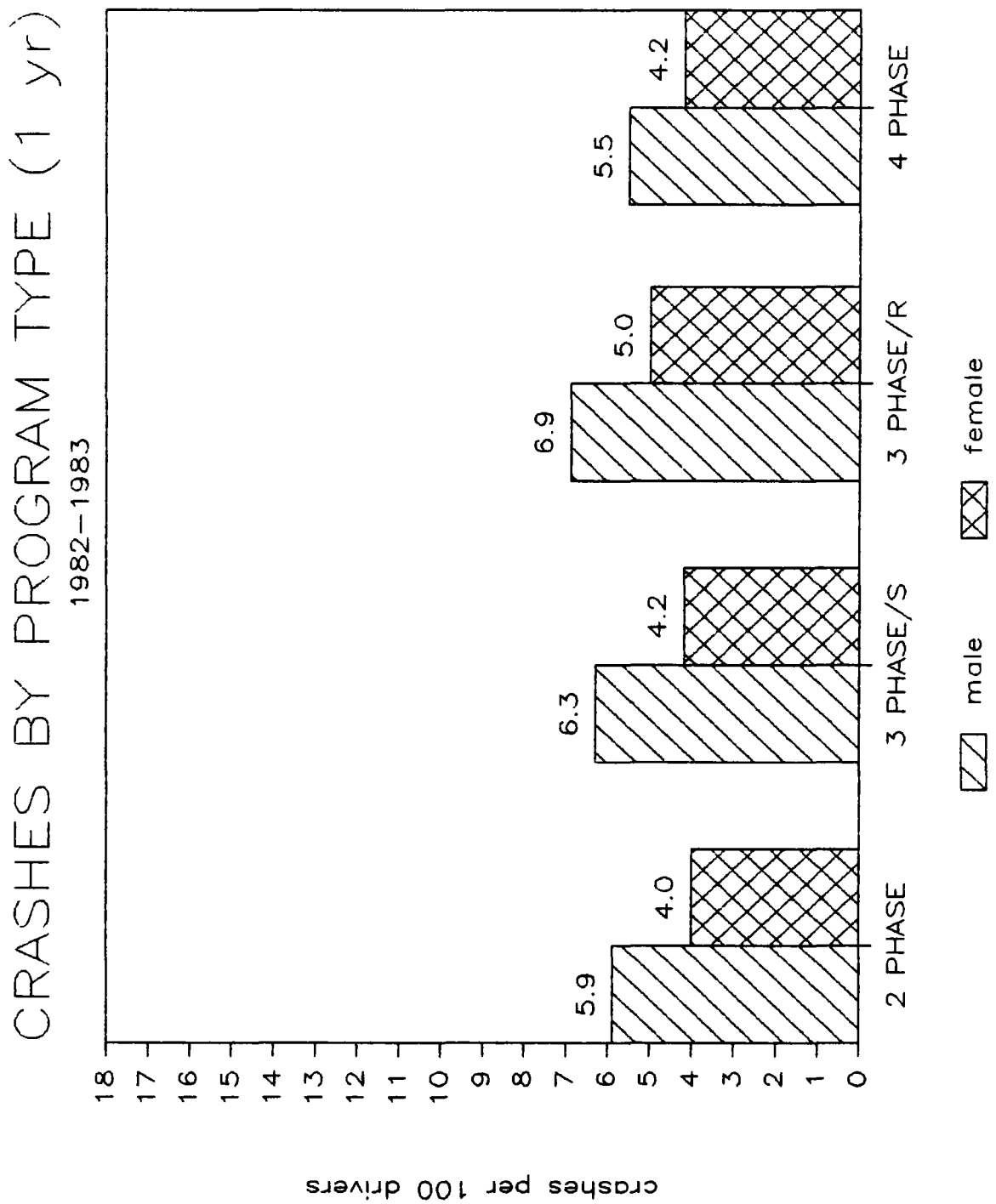

CRASHES BY PROGRAM TYPE (1 yr)
1982–1983
crashes per 100 drivers
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
5.9
4.0
6.3
4.2
6.9
5.0
5.5
4.2
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 26

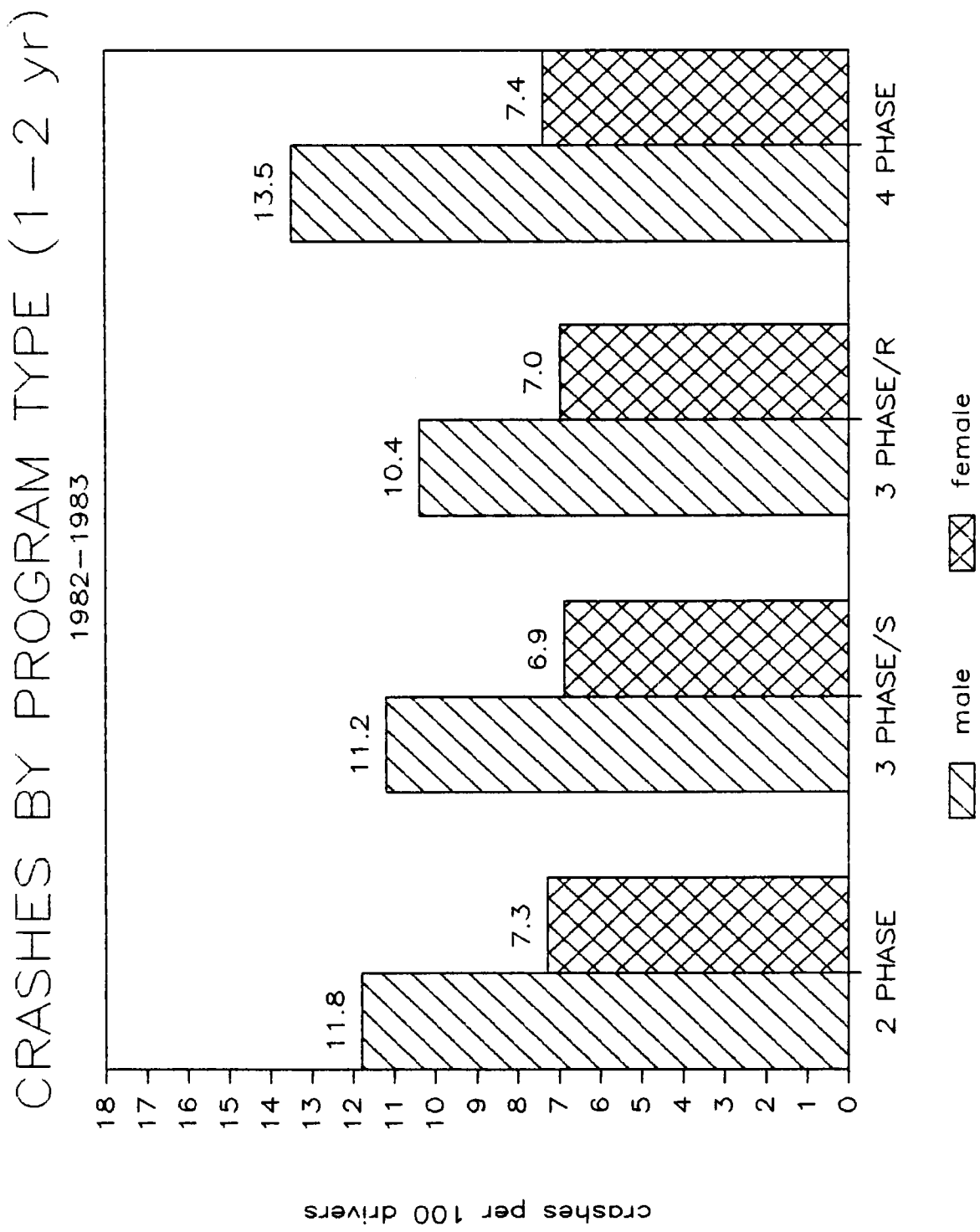

CRASHES BY PROGRAM TYPE (1-2 yr)
1982-1983
crashes per 100 drivers
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
11.8
7.3
11.2
6.9
10.4
7.0
13.5
7.4
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 27

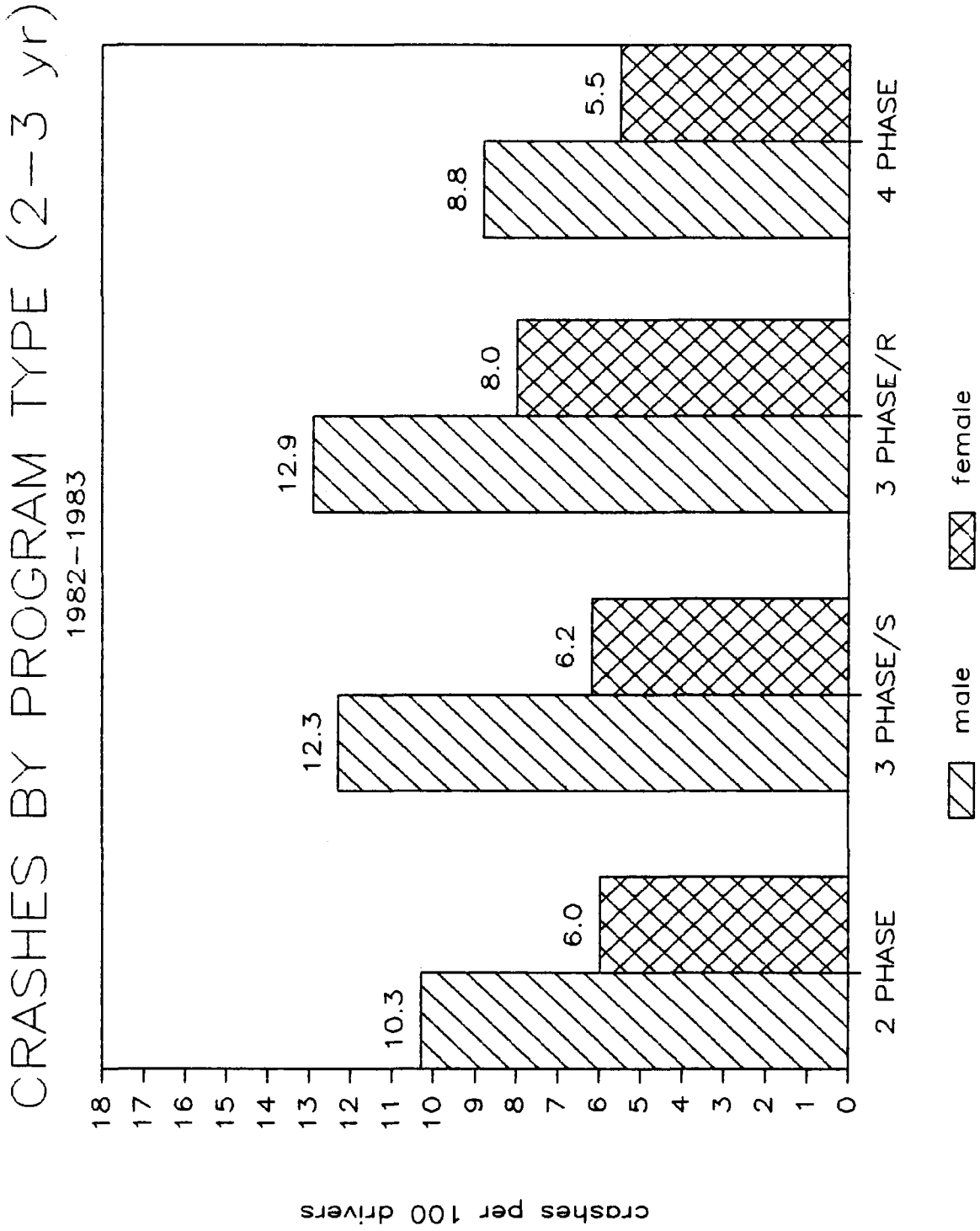

CRASHES BY PROGRAM TYPE (2–3 yr)
1982–1983
crashes per 100 drivers
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
10.3
6.0
12.3
6.2
12.9
8.0
8.8
5.5
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 28

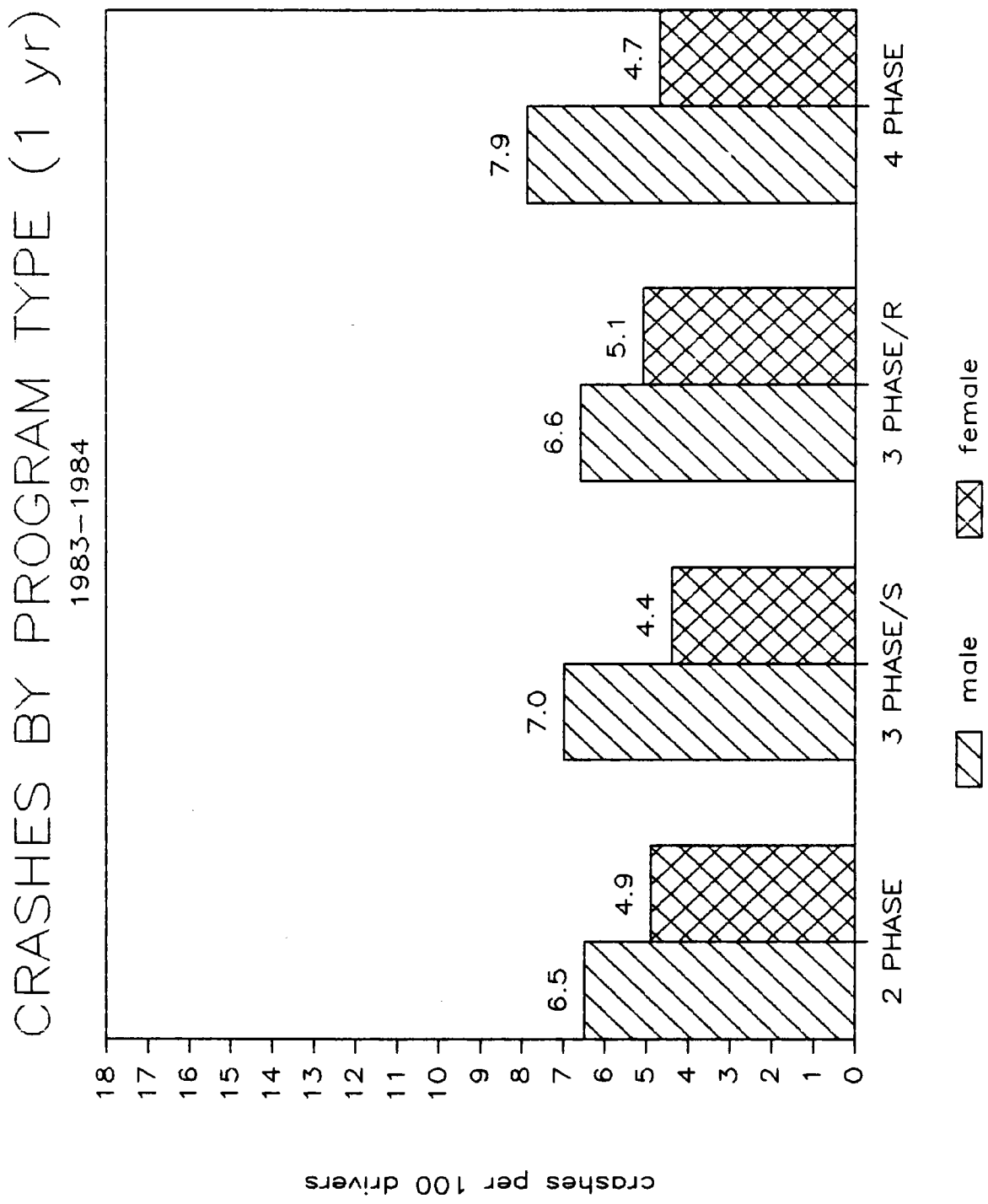

CRASHES BY PROGRAM TYPE (1 yr)
1983-1984
crashes per 100 drivers
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
6.5
4.9
7.0
4.4
6.6
5.1
7.9
4.7
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 29

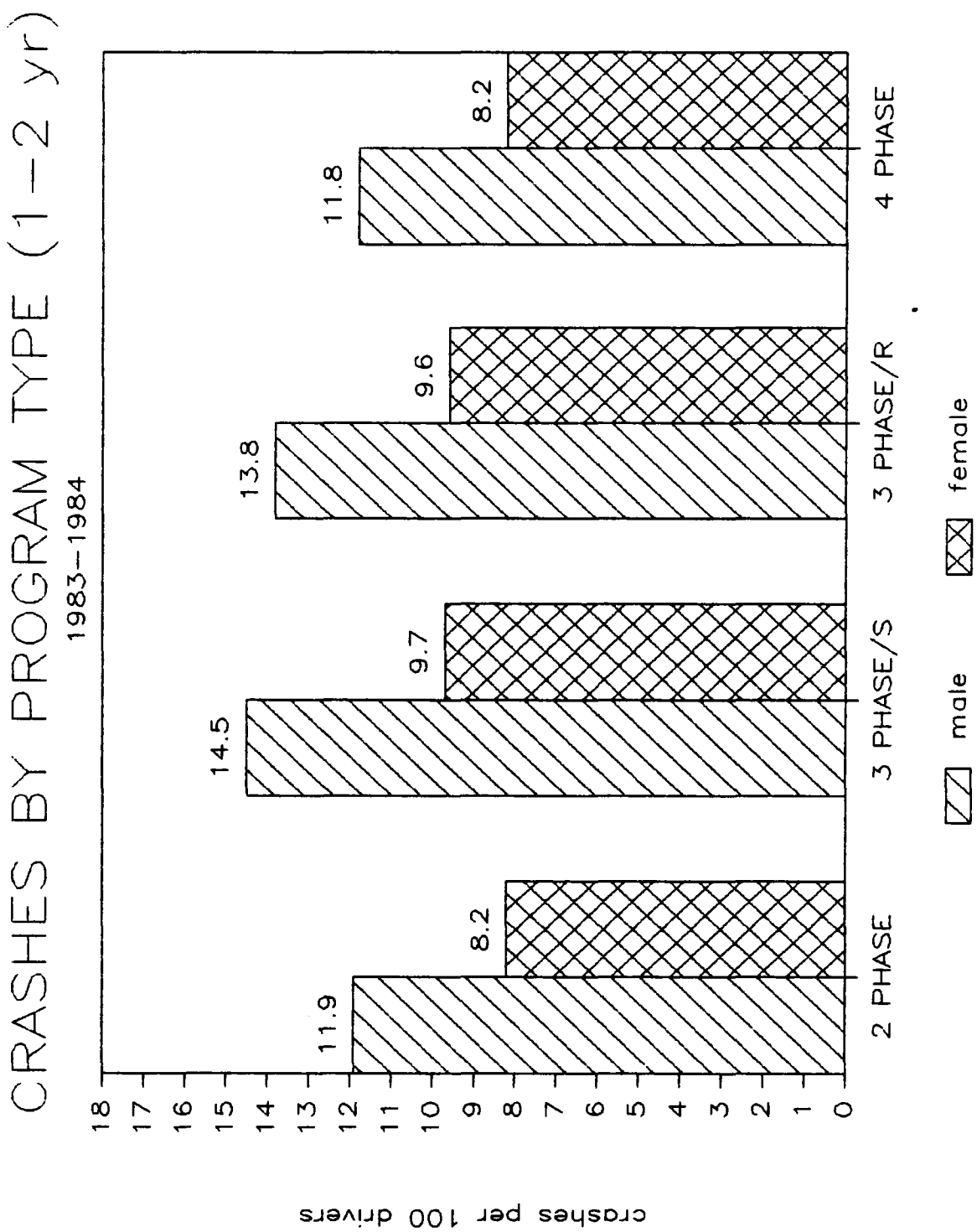
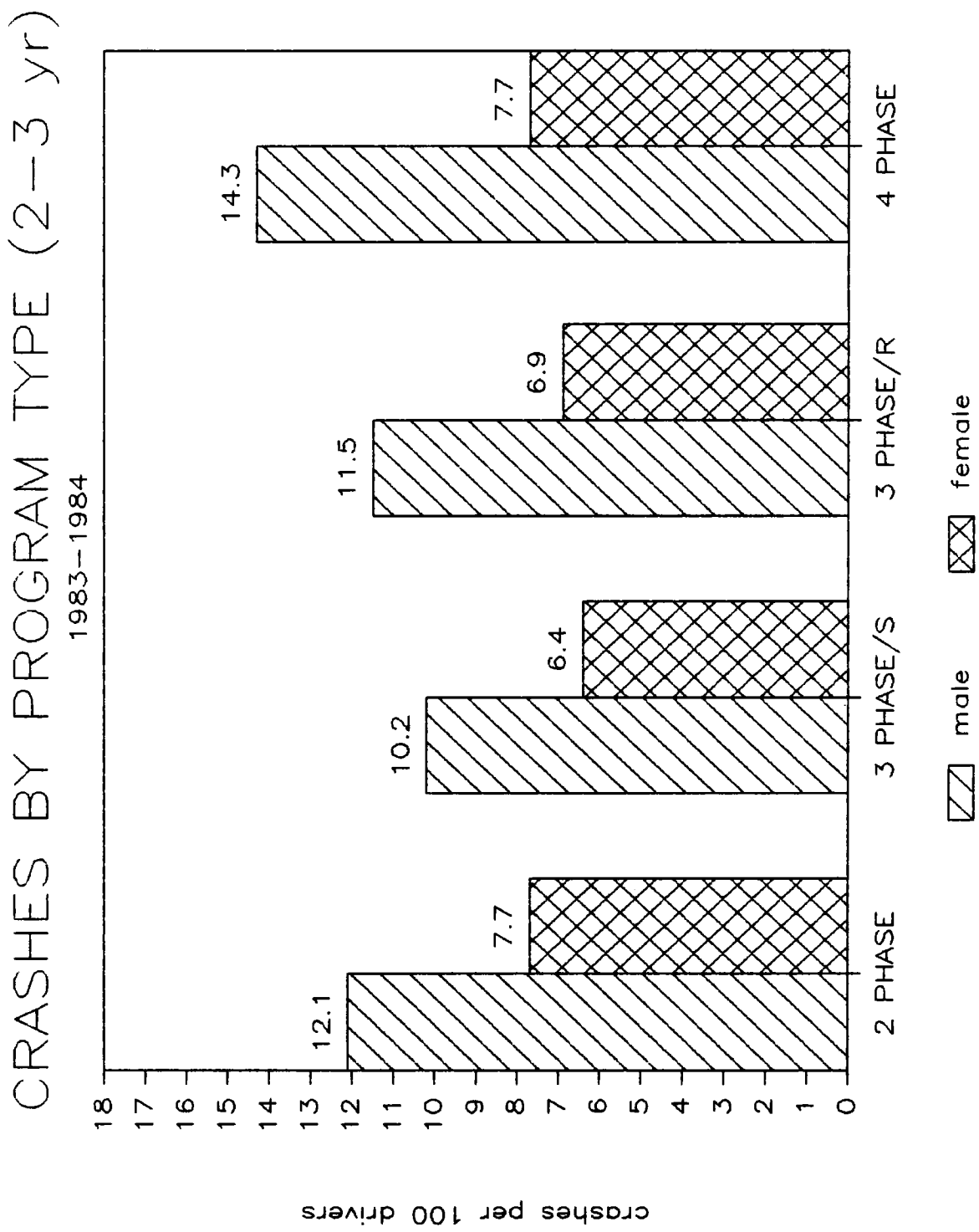

CRASHES BY PROGRAM TYPE (1-2 yr)
1983-1984
crashes per 100 drivers
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
11.9
8.2
14.5
9.7
13.8
9.6
11.8
8.2
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

Figure 30


CRASHES BY PROGRAM TYPE (2–3 yr)
1983–1984
crashes per 100 drivers
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
12.1
7.7
10.2
6.4
11.5
6.9
14.3
7.7
2 PHASE
3 PHASE/S
3 PHASE/R
4 PHASE
male
female

RELATED ISSUES

The fact that young people have disproportionately high accident and conviction rates is a universal phenomenon which has been recognized for years. What has not been a universal phenomenon is the manner in which different states have approached this issue. In the beginning, most states instituted driver education courses in public schools in the hope that such training would essentially solve the problem. Unfortunately, however, for whatever reason, the number of crashes and convictions among young people has continued to mount. Therefore, in a number of states, interested groups have begun to scrutinize the whole concept of driver education and teenage driving, and have proposed that various steps be taken. A survey of these steps follows.

In some states, attempts have been made to improve public high school driver education programs in general. In so doing, educators have extended the scope of course instruction so that safety programs now begin in kindergarten and continue through senior high school. Along these same lines, some other states have expanded the length of the driver education courses which they already have in effect in the hope that increased instruction and training will prove fruitful. Additionally, still other states have instituted enhanced driver education programs through the use of simulators, ranges, or both as discussed earlier in this report. Unfortunately, as indicated in the DeKalb County Report and as corroborated by the present data, there is little evidence that beneficial results flow from such actions.

Another approach taken by some states has been to institute a performance-based high school driver education curriculum. This type of curriculum was developed in response to the criticism that courses are not properly tailored to the needs of individual students, and thus do not maximize the potential effectiveness of driver education classes. With a performance-based curriculum, there is no requirement that all students begin at the basic entry level and then proceed in lock-step through the course. Instead, the different abilities of the various students are noted, and the instruction, training, and texts are adjusted as appropriate. Further, instead of mandating a minimum number of hours which must be spent on driver education, the performance-based curriculum simply requires the successful completion of a certain number of specific tasks. When the tasks are completed, the class is completed. Proponents of a performance-based curriculum state that in this manner, both the brighter and the slower students learn a great deal and are challenged without being overloaded. Further, proponents assert that money can be saved with this curriculum by not engaging in unnecessary training.

Instead of focusing on the augmentation of driver education programs as above, some states have decided to work on reducing the cost of their existing programs. The general feeling among legislators in such states is that increased expenditures would be futile since some studies indicate that streamlined programs are just as effective as enhanced

programs. In these states, any plans to build ranges or to purchase simulators have been abandoned. Further, instruction by lower paid paraprofessionals has been partially substituted for that of higher paid, full-time driving teachers. In a few states, it is even permissible for schools to contract out the laboratory phase of driver education courses so that the task will go to the lowest bidder.

In addressing the issue of high accident and conviction rates among young people, some other states have decided to attack the matter of teenage driving head-on through the enactment of new laws. For instance, some states have considered raising the minimum age at which a person can receive an operator's license. The theory behind this proposal is that a higher legal driving age would cut down on the number of young drivers and this in turn would cut down on the number of crashes and convictions. However, despite strong advocacy by certain insurance groups, it has yet to be shown that there is much public support for such an action. There is, however, one method of addressing the problem of teenage driving which has become increasingly popular. This approach is known as provisional licensing.

A provisional license, as the name implies, is a license issued to beginning drivers which permits them to operate a motor vehicle subject to specific restrictions. These restrictions are applied in full force until the young driver meets certain conditions, whereupon the restrictions are lifted and a regular license is issued. The concept behind provisional licensing is that the restrictions will induce young drivers to behave more safely and responsibly on the roadways. Provisional licensing has been instituted in several states such as Maryland, and it was one of the primary recommendations of the researchers who completed the DeKalb County Report. Although the details may differ from state to state, there are certain common elements which may be readily examined.

Under a provisional licensing system, one restriction which is typically imposed is that young people cannot drive late at night or very early in the morning. This curfew is meant to keep young people off the road during some of the most dangerous driving hours until they have matured personally and until they have honed their driving skills. Another restriction that is commonly imposed is that young people may drive a vehicle only when they have their safety belts fastened. The purpose of this restriction is twofold. It is meant to cut down on the number and severity of injuries sustained by young drivers, and it is meant to get them into the habit of always buckling their seat belts.

To upgrade a provisional license to a regular license, a young person must typically have a violation-free driving record for a period of 6 months to a year. The goal here is to motivate these drivers to obey the traffic laws not only by means of a "stick" in the form of a citation, but also by means of a "carrot" in the form of an unrestricted license. It is hoped that these safer, more lawful driving habits will then extend past the probationary period and be reflected in lower crash

and conviction statistics on a permanent basis. In fact, preliminary reports have indicated that provisional licensing may be successful in this regard. The National Highway Traffic Safety Administration monitored a provisional licensing program instituted in Maryland in 1979 and reported a 10% drop in convictions and a 5% drop in daytime accidents among young drivers.

As can be seen then, the steps taken in an attempt to reduce crashes and convictions among young people have generally focused on the adjustment of driver education programs or on the implementation of new laws. However, the root cause of bad driving habits -- and hence, of crashes and convictions -- may actually lie outside of this remedial sphere. Over the years, researchers have repeatedly discovered that a multitude of external and internal factors totally separate and apart from motor vehicle-related experiences can have a tremendous impact on the driving customs and abilities of young people. For example, students who are responsible, mature, and well behaved in their everyday life are likely to have better driving records than those students who are "more reckless, emotional, involved with cars, and characterized by social deviancy."(22) Similarly, students who come from a low socioeconomic background are more likely to have poor driving records, as are students who are academic underachievers. In fact, one researcher has gone so far as to state that the best predictor of driving proficiency among young people is the grade they received in high school citizenship class.(23) In light of these points, it may be assumed that if personal disposition, socioeconomic status, and academic prowess truly are determining factors of an individual's driving habits, then new laws and new programs will have little impact upon the number of crashes and convictions accumulated by young people each year.

CONCLUSIONS AND RECOMMENDATIONS

Using the broadest of brush strokes, one may make the following conclusions regarding the data presented above. First, students graduating from commercial driving schools in Virginia have significantly more crashes and convictions than their counterparts from public and private schools. Second, persons receiving instruction under two-phase programs are likely to have driving records similar to or better than those of persons receiving three-phase or four-phase training. And third, the annual number of convictions per 100 students actually increases during each of the first 3 years of driving despite the concomitant increase in experience which such students enjoy.

From these findings flow four recommendations. First, the certification requirements which are imposed on commercial driving schools should be scrutinized to determine whether they are effective in ensuring quality driver education. Specifically, the issues of minimal educational achievements by instructors and mandatory course curricula should be examined. Second, in the same vein as the above, the State Department of Education should conduct an evaluation of the effectiveness of each commercial school in terms of the crash and conviction

rates of their students. Third school districts which currently use three-phase or four-phase programs should, in light of the crash and conviction data cited above and in light of the maintenance costs experienced, seriously consider implementing a two-phase program instead. Similarly, school districts which currently use two-phase programs should not seek to enhance their programs by investing in simulators or driving ranges. Fourth, and last, the Department of Education, the various school divisions, and each individual school should diligently analyze their driver education curricula, and should thereby determine what changes are necessary to produce a more effective and cost-efficient educational program. Data which may be instrumental to such an evaluation are available through the Performance Reporting System, and should be obtained through the state.

ENDNOTES

[1]Highway Users Federation, Who Needs High School Driver Education? (Washington, D. C., 1979), p. 9.

[2]Organization for Economic Co-operation and Development, Road Research: Driver Instruction (Paris, 1976), p. 2.

[3]Ibid., p. 8.

[4]Highway Users Federation, op. cit., p. 7.

[5]P. J. O'Leary, Report on the Effectiveness of Current Driver Education Programs (Michigan Department of Education at Lansing, no date).

[6]M. Koebler, The Relative Cost-Effectiveness of 30 and 6 Driver Education and Simulator Training in Select Texas Public Schools (Texas A&M University, 1973).

[7]Margaret H. Jones, California Driver Training Evaluation Study: Summary of Final Report (Dec. 1973), p. 18.

[8]Organization for Economic Co-operation and Development, Road Research: Driver Behavior (Paris, 1970), p. 47.

[9]Dell Dreyer and Mary Janke, The Effects of Range Versus Nonrange Driver Training on the Accident and Conviction Frequencies of Young Drivers (California State Department of Motor Vehicles at Sacramento, 1977).

[10]Forrest M. Council, et al., Effects of Range Training: Comparison of Road Test Scores for Driver Education Students, (University of North Carolina Highway Safety Research Center, 1975).

[11]Rodell, A Comparison of Public and Private Driver Training Courses (Washington Division of Motor Vehicles at Spokane, 1969).

[12]Margaret H. Jones, op. cit., p. 15.

[13]James R. Stock, et al., Evaluation of Safe Performance Secondary School Driver Education Curriculum Demonstration Project (National Highway and Traffic Safety Administration, 1983).

[14]Ibid.

[15]Richard Zylman, "Evaluating Driver and Traffic Safety Education Programs: It May Be Tougher Than You Think," Journal of Traffic Safety Education (Long Beach, Calif., 1973), p. 7.

[16]Ibid.

[17]Patricia F. Waller, et al., Driver Performance Tests: Their Role and Potential (University of North Carolina Highway Safety Research Council, 1978), p. 5.

[18]Insurance Institute for Highway Safety, Teenage Drivers (Washington, D. C., 1985), p. 1.

[19]Donald P. Sandel, "Why Doesn't Driver Education Work?", Journal of Traffic Safety Education (Long Beach, Calif., 1973), p. 31.

[20]Leon Robertson, Traffic Safety Program Paper: Summary Report on Driver Education (NHTSA, 1980).

[21]William D. Cushman, "Let's Get Our Act in Gear," Journal of Traffic Safety Education (Long Beach, Calif., 1984), p. 17.

[22]Harrington, The Young Driver Follow-Up Study: An Evaluation of the Role of Human Factors in the First Four Years of Driving (California State Department of Motor Vehicles at Sacramento, 1971).

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APPENDIX A

MINIMUM INSTRUCTIONAL REQUIREMENTS FOR STATE-APPROVED DRIVER EDUCATION PROGRAMS

Two Phase Program

36 periods of classroom instruction
7 periods of on-street, in-traffic instruction
7 periods of student observation time

Three Phase Range Program

36 periods of classroom instruction
2 periods of of on-street, in-traffic instruction
2 periods of student observation time
5 periods of multiple-car range instruction[a]
5 periods of student observation time on the multiple-car range[b]

Three Phase Simulator Program

36 periods of classroom instruction
3½ periods of on-street, in-traffic instruction
3½ periods of student observation time
14 periods of simulation instruction[c]

Four Phase Program

36 periods of classroom instruction
2 periods of on-street, in-traffic instruction
2 periods of student observation time
up to five periods of on-street, in-traffic instruction may be replaced with any combination of simulation and multiple-car range instruction as long as the appropriate substitution ratios are observed.

[a] One period of multiple-car range instruction may be substituted for one period of on-street, in-traffic instruction, up to a maximum of five periods.

[b] One period of multiple-car range observation may be substituted for one period of on-street, in-traffic observation, up to a maximum of five periods.

[c] Four periods of simulation instruction may be substituted for one period of on-street, in-traffic instruction.

APPENDIX B

TYPES OF DRIVER EDUCATION PROGRAMS OFFERED IN VIRGINIA PUBLIC SCHOOLS 1984-85

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85
(PUBLIC SCHOOLS ONLY)

12/5/85

SCHOOL DIVISION (COUNTIES)	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
ACCOMACK	ARCADIA HS	X	X		X
	CHINCOTEAGUE HS	X	X		
	NANDUA HS	X	X		
	TANGIER COMBINED	X	X		
ALBEMARLE	ALBEMARLE HS	X	X		X
	WESTERN ALBEMARLE HS	X	X		X
ALLEGHANY-HIGHLANDS	ALLEGHANY HS	X	X		
AMELIA	AMELIA CO HS	X	X		
AMHERST	AMHERST CO HS	X	X		
APPOMATTOX	APPOMATTOX CO HS	X	X		
ARLINGTON	WAKEFIELD HS	X	X	X	
	WASHINGTON-LEE HS	X	X	X	
	YORKTOWN HS	X	X	X	
AUGUSTA	BUFFALO GAP HS	X	X		
	FORT DEFIANCE HS	X	X		
	RIVERHEADS HS	X	X		
	STUARTS DRAFT HS	X	X		
	WILSON MEMORIAL HS	X	X		
BATH	BATH CO HS	X	X		
BEDFORD	JEFFERSON-FOREST HS	X	X		X
	LIBERTY HS	X	X		X
	STAUNTON RIVER HS	X	X		X
BLAND	BLAND COMBINED	X	X		
	ROCKY GAP COMBINED	X	X		
PAGE 1 TOTALS		24	24	3	6

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
BOTETOURT	JAMES RIVER HS	X	X		
	LORD BOTETOURT HS	X	X		X
BRUNSWICK	BRUNSWICK SR HS	X	X		
BUCHANAN	COUNCIL HS	X	X		
	GARDEN HS	X	X		
	GRUNDY SR HS	X	X		X
	HURLEY HS	X	X		
	WHITEWOOD HS	X	X		
BUCKINGHAM	BUCKINGHAM CO HS	X	X		
CAMPBELL	ALTAVISTA HS	X	X		X
	BROOKVILLE HS	X	X		X
	RUSTBURG HS	X	X		X
	WILLIAM CAMPBELL HS	X	X		X
CAROLINE	CAROLINE CO HS	X	X		
CARROLL	CARROLL CO HS	X	X		X
CHARLES CITY	CHARLES CITY CO HS	X	X		
CHARLOTTE	RANDOLPH-HENRY HS	X	X		
CHESTERFIELD	CLOVER HILL HS	X	X		
	LLOYD C. BIRD HS	X	X		
	MANCHESTER HS	X	X		
	MATOACA HS	X	X		
	MEADOWBROOK HS	X	X		
	MIDLOTHIAN HS	X	X		
	MONACAN HS	X	X		
	THOMAS DALE HS	X	X		
PAGE 2 TOTALS		25	25	0	7

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
CLARKE	CLARKE CO HS	X	X		X
CRAIG	NEW CASTLE HS	X	X		
CULPEPER	CULPEPER CO HS	X	X		X
CUMBERLAND	CUMBERLAND CO HS	X	X		
DICKENSON	CLINTWOOD HS	X	X		
	ERVINGTON HS	X	X		
	HAYSI HS	X	X		
DINWIDDIE	DINWIDDIE CO SR HS	X	X		X
ESSEX	ESSEX HS	X	X		
FAIRFAX	ANNANDALE HS	X	X		X
	CHANTILLY HS	X	X		X
	EDISON HS	X	X		X
	FAIRFAX HS	X	X		X
	FALLS CHURCH HS	X	X		X
	FORT HUNT HS	X	X		X
	GROVETON HS	X	X		X
	HAYFIELD SECONDARY	X	X		X
	HERNDON HS	X	X		X
	JEFFERSON HS	X	X		X
	LAKE BRADDOCK SECONDARY	X	X		X
	LANGLEY HS	X	X		X
	LEE HS	X	X		X
	MADISON HS	X	X		X
	MARSHALL HS	X	X		X
(FAIRFAX CONTINUED ON P. 4)	MCLEAN HS	X	X		X
PAGE 3 TOTALS		25	25	0	19

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
FAIRFAX (CONTINUED FROM P. 3)	MOUNT VERNON HS	X	X		X
	OAKTON HS	X	X		X
	ROBINSON SECONDARY	X	X		X
	SOUTH LAKES HS	X	X		X
	STUART HS	X	X		X
	WEST SPRINGFIELD HS	X	X		X
	WOODSON HS	X	X		X
FAUQUIER	FAUQUIER CO HS	X	X		
FLOYD	FLOYD CO HS	X	X		
FLUVANNA	FLUVANNA CO HS	X	X		
FRANKLIN	FRANKLIN CO HS	X	X		X
FREDERICK	JAMES WOOD HS	X	X		X
GILES	GILES HS	X	X		
	NARROWS HS	X	X		
GLOUCESTER	GLOUCESTER HS	X	X		X
GOOCHLAND	GOOCHLAND HS	X	X		
GRAYSON	INDEPENDENCE HS	X	X		
	MOUNT ROGERS HS	X	X		
GREENE	WILLIAM MONROE HS	X	X		
GREENSVILLE	GREENSVILLE CO HS	X	X		
HALIFAX/SOUTH BOSTON	HALIFAX CO SR HS	X	X		X
HANOVER	LEE-DAVIS HS	X	X		
	PATRICK HENRY HS	X	X		
HENRICO	DOUGLAS S. FREEMAN HS	X	X	X	X
(HENRICO CONTINUED ON P. 5)	HENRICO CO HS	X	X	X	X
PAGE 4 TOTALS		25	25	2	13

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
HENRICO (CONTINUED FROM P. 4)	HENRICO TRADE CENTER	X	X	X	X
	HERMITAGE HS	X	X	X	X
	HIGHLAND SPRINGS HS	X	X	X	X
	J.R. TUCKER HS	X	X	X	X
	MILLS E. GODWIN HS	X	X	X	X
	VARINA HS	X	X	X	X
HENRY	BASSETT HS	X	X		X
	DREWRY MASON HS	X	X		X
	FIELDALE-COLLINSVILLE HS	X	X		X
	GEORGE W. CARVER HS	X	X		X
	JOHN D. BASSETT HS	X	X		X
	LAUREL PARK HS	X	X		X
HIGHLAND	HIGHLAND CO HS	X	X		
ISLE OF WIGHT	SMITHFIELD HS	X	X		
	WINDSOR HS	X	X		
KING GEORGE	KING GEORGE CO HS	X	X		
KING & QUEEN	KING & QUEEN CENTRAL HS	X	X		
KING WILLIAM	KING WILLIAM HS	X	X		
LANCASTER	LANCASTER HS	X	X		
LEE	DRYDEN COMBINED	X	X		
	FLATWOODS COMBINED	X	X		
	JONESVILLE HS	X	X		
	KEOKEE COMBINED	X	X		
	LEE CO VOCATIONAL CENTER	X	X		
(LEE CONTINUED ON P. 6)	PENNINGTON HS	X	X		X
PAGE 5 TOTALS		25	25	6	13

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
LEE (CONTINUED FROM P. 5)	THOMAS WALKER HS	X	X		X
LOUDOUN	BROAD RUN HS	X	X		
	LOUDOUN CO HS	X	X		
	LOUDOUN VALLEY HS	X	X		
	PARK VIEW HS	X	X		
LOUISA	LOUISA CO HS	X	X		
LUNENBURG	CENTRAL HS	X	X		
MADISON	MADISON CO HS	X	X		X
MATHEWS	MATHEWS HS	X	X		
MECKLENBURG	BLUESTONE HS	X	X		
	PARK VIEW HS	X	X		
MIDDLESEX	MIDDLESEX HS	X	X		
MONTGOMERY	AUBURN COMBINED	X	X		X
	BLACKSBURG HS	X	X		X
	CHRISTIANSBURG HS	X	X		X
	SHAWSVILLE COMBINED	X	X		X
NELSON	NELSON CO HS	X	X		
NEW KENT	NEW KENT HS	X	X		
NORTHAMPTON	NORTHAMPTON HS	X	X		
NORTHUMBERLAND	NORTHUMBERLAND HS	X	X		
NOTTOWAY	NOTTOWAY SR HS	X	X		
ORANGE	ORANGE CO HS	X	X		
PAGE	LURAY HS	X	X		
	PAGE CO HS	X	X		
PATRICK	PATRICK CO HS	X	X		X
PAGE 6 TOTALS		25	25	0	7

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
PITTSYLVANIA	CHATHAM HS	X	X		X
	DAN RIVER HS	X	X		X
	GRETNA SR HS	X	X		X
	TUNSTALL HS	X	X		X
POWHATAN	POWHATAN HS	X	X		
PRINCE EDWARD	PRINCE EDWARD CO HS	X	X		
PRINCE GEORGE	PRINCE GEORGE HS	X	X		X
PRINCE WILLIAM	BRENTSVILLE COMBINED	X	X		X
	GAR-FIELD SR HS	X	X		X
	OSBOURN PARK HS	X	X		X
	POTOMAC SR HS	X	X		X
	STONEWALL JACKSON SR HS	X	X		X
	WOODBRIDGE SR HS	X	X		X
PULASKI	PULASKI CO HS	X	X		X
RAPPAHANNOCK	RAPPAHANNOCK CO HS	X	X		
RICHMOND	RAPPAHANNOCK HS	X	X		
ROANOKE	CAVE SPRING HS	X	X		X
	GLENVAR HS	X	X		X
	NORTHSIDE HS	X	X		X
	WILLIAM BYRD HS	X	X		X
ROCKBRIDGE/LEXINGTON	LEXINGTON HS	X	X		
	NATURAL BRIDGE HS	X	X		
	ROCKBRIDGE HS	X	X		
ROCKINGHAM	BROADWAY HS	X	X		
(CONTINUED ON P. 8)	SPOTSWOOD SR HS	X	X		X
PAGE 7 TOTALS		25	25	0	17

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
ROCKINGHAM (CONTINUED FROM P. 7)	TURNER ASHBY HS	X	X		
RUSSELL	CASTLEWOOD HS	X	X		X
	HONAKER HS	X	X		X
	LEBANON HS	X	X		
SCOTT	GATE CITY HS	X	X		
	RYE COVE HS	X	X		
	TWIN SPRINGS HS	X	X		
SHENANDOAH	CENTRAL HS	X	X		
	STONEWALL JACKSON HS	X	X		
	STRASBURG HS	X	X		
SMYTH	CHILHOWIE HS	X	X		
	MARION SR HS	X	X		X
	R.B. WORTHY HS	X	X		
	RICH VALLEY HS	X	X		
SOUTHAMPTON	SOUTHAMPTON HS	X	X		X
SPOTSYLVANIA	COURTLAND HS	X	X		
	SPOTSYLVANIA HS	X	X		
STAFFORD	NORTH STAFFORD HS	X	X		X
	STAFFORD SR HS	X	X		X
SURRY	SURRY CO HS	X	X		
SUSSEX	SUSSEX CENTRAL HS	X	X		
TAZEWELL	GRAHAM HS	X	X		X
	POCAHONTAS HS	X	X		
	RICHLANDS HS	X	X		
	TAZEWELL HS	X	X		
PAGE 8 TOTALS		25	25	0	7

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
WARREN	WARREN CO HS	X	X		
WASHINGTON	ABINGDON HS	X	X		
	HOLSTON HS	X	X		
	JOHN S. BATTLE HS	X	X		
	PATRICK HENRY HS	X	X		
WESTMORELAND	WASHINGTON & LEE HS	X	X		
WISE	APPALACHIA HS	X	X		X
	COEBURN HS	X	X		
	J.J. KELLY HS	X	X		X
	POUND HS	X	X		
	POWELL VALLEY HS	X	X		X
	SAINT PAUL HS	X	X		
	WISE CO VOCATIONAL TECHNICAL CENTER	X	X		
WYTHE	FORT CHISWELL HS	X	X	X	
	GEORGE WYTHE HS	X	X	X	
	RURAL RETREAT HS	X	X	X	
YORK	BRUTON HS	X	X		X
	TABB HS	X	X		X
	YORK HS	X	X		X
PAGE 9 TOTALS		19	19	3	6
●●●TOTALS●●●--COUNTIES SCHOOL DIVISIONS---94	SCHOOLS---218	218	218	14	95

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION (CITIES)	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
ALEXANDRIA	T.C. WILLIAMS HS	X	X		
BRISTOL	VIRGINIA HS	X	X		X
BUENA VISTA	PARRY MCCLUER HS	X	X		
CHARLOTTESVILLE	CHARLOTTESVILLE HS	X	X	X	
CHESAPEAKE	DEEP CREEK HS	X	X	X	X
	GREAT BRIDGE HS	X	X	X	
	INDIAN RIVER HS	X	X	X	
	OSCAR F. SMITH HS	X	X	X	X
	WESTERN BRANCH HS	X	X		X
COLONIAL HEIGHTS	COLONIAL HEIGHTS HS	X	X		
COVINGTON	COVINGTON HS	X	X		
DANVILLE	GEORGE WASHINGTON HS	X	X		X
FALLS CHURCH (NO IN-CAR INSTRUCTION)	GEORGE MASON JR-SR HS	X			
FRANKLIN	FRANKLIN HS	X	X		
FREDERICKSBURG	JAMES MONROE HS	X	X		
GALAX	GALAX HS	X	X		
HAMPTON	BETHEL HS	X	X		
	HAMPTON HS	X	X		
	KECOUGHTAN HS	X	X		
	PHOEBUS HS	X	X		
HARRISONBURG	HARRISONBURG HS	X	X		
HOPEWELL	HOPEWELL HS	X	X		
LYNCHBURG	E.C. GLASS HS	X	X		
	HERITAGE HS	X	X		
MANASSAS	OSBOURN HS	X	X		X
PAGE 10 TOTALS		25	24	5	6

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
MANASSAS PARK	MANASSAS PARK HS	X	X		
MARTINSVILLE	MARTINSVILLE HS	X	X		X
NEWPORT NEWS	DENBIGH HS	X	X		X
	FERGUSON HS	X	X		X
	MENCHVILLE HS	X	X		X
	WARWICK HS	X	X		X
NORFOLK	B.T. WASHINGTON HS	X	X		X
	LAKE TAYLOR SR HS	X	X		X
	MADISON SECONDARY	X	X		
	MAURY HS	X	X		X
	GRANBY HS	X	X		X
	NORVIEW SR HS	X	X		X
NORTON	JOHN I. BURTON HS	X	X		X
PETERSBURG	PETERSBURG HS	X	X		X
POQUOSON HS	POQUOSON HS	X	X		X
PORTSMOUTH	CHURCHLAND HS	X			
(NO IN-CAR INSTRUCTION	CHURCHLAND JR HS	X			
OFFERED DURING THE REGULAR	CRADDOCK HS	X			
SCHOOL YEAR--ONLY OFFERED	I.C. NORCOM HS	X			
IN SUMMER SCHOOL)	MANOR HS	X			
	SECONDARY ED. CTR. - CAVALIER MANOR	X			
	S.H. CLARKE VOCATIONAL TRAINING CENTER	X			
	WOODROW WILSON HS	X			
RADFORD	RADFORD HS	X	X		X
PAGE 11 TOTALS		24	16	0	14

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
RICHMOND	ARMSTRONG-KENNEDY HS	X	X	X	X
	JEFFERSON-HUGUENOT-WYTHE HS	X	X	X	X
	MARSHALL-WALKER HS	X	X	X	X
	OPEN HS	X	X	X	X
ROANOKE	PATRICK HENRY HS	X	X	X	
	WILLIAM FLEMING HS	X	X	X	
SALEM	SALEM HS	X	X		X
STAUNTON	ROBERT E. LEE HS	X	X		X
SUFFOLK	FOREST GLEN HS	X	X		
	JOHN F. KENNEDY HS	X	X		
	JOHN YATES HS	X	X		
	SUFFOLK HS	X	X		
VIRGINIA BEACH	BAYSIDE HS	X	X		X
	FIRST COLONIAL HS	X	X		X
	FLOYD E. KELLAM HS	X	X		X
	FRANK W. COX HS	X	X		X
	GREEN RUN HS	X	X		X
	KEMPSVILLE HS	X	X		X
	PRINCESS ANNE HS	X	X		X
WAYNESBORO	WAYNESBORO HS	X	X		
WILLIAMSBURG/JAMES CITY	LAFAYETTE HS	X	X		X
WINCHESTER	JOHN HANDLEY HS	X	X		X
	DOWELL J. HOWARD VOCATIONAL CENTER	X	X		X
PAGE 12 TOTALS		24	24	6	16
●●●TOTALS●●●--CITIES SCHOOL DIVISIONS---35	SCHOOLS---73	73	64	11	36

TYPES OF DRIVER EDUCATION PROGRAMS
OFFERED IN VIRGINIA, 1984-85

SCHOOL DIVISION (TOWNS)	SCHOOL	CLASS-ROOM	IN-CAR	SIMU-LATION	RANGE
CAPE CHARLES	CAPE CHARLES HS	X	X		
COLONIAL BEACH	COLONIAL BEACH HS	X	X		
FRIES	FRIES HS	X	X		
WEST POINT	WEST POINT HS	X	X		
●●●TOTALS●●●--TOWNS SCHOOL DIVISIONS---4	SCHOOLS---4	4	4	0	0
(STATE SCHOOLS)	VIRGINIA SCHOOL FOR THE DEAF & BLIND - HAMPTON	X	X		
	VIRGINIA SCHOOL FOR THE DEAF & BLIND - STAUNTON	X	X		
●●●TOTALS●●● STATE SCHOOLS	SCHOOLS---2	2	2	0	0
●●●STATE-WIDE TOTALS●●●●●●●	●●●●●●●●●●●●●●●●●●●●●●●●●●●●	●●●●●●●●	●●●●●●	●●●●●●●●●	●●●●●●●●●
NO. OF COUNTIES---------94	NO. OF SCHOOLS---------218	218	218	14	95
NO. OF CITIES-----------35	NO. OF SCHOOLS--------- 73	73	64	11	36
NO. OF TOWNS----------- 4	NO. OF SCHOOLS--------- 4	4	4	0	0
NO. OF DIVISIONS-------133	NO. OF SCHOOLS---------295	295	286	25	131
STATE SCHOOLS	NO. OF SCHOOLS--------- 2	2	2	2	2
GRAND TOTALS	NO. OF SCHOOLS---------297	297	288	25	131
●●●●●●●●●●●●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●●●●●●●●●●●●●	●●●●●●●●	●●●●●●	●●●●●●●●●	●●●●●●●●●

APPENDIX C

SAMPLE OF PERFORMANCE REPORTING SYSTEM FORMAT

VIRGINIA DEPARTMENT OF EDUCATION
STATEWIDE EXPERIENCE REPORT
YEAR ENDING JUNE 30, 1984

PUBLIC SCHOOLS

2-3 YEARS EXPERIENCE

	TWO PHASE MALE	TWO PHASE FEMALE	THREE PHASE/SIM. MALE	THREE PHASE/SIM. FEMALE	THREE PHASE/RANGE MALE	THREE PHASE/RANGE FEMALE	FOUR PHAS MALE	FOUR PHAS FEMALE
AVERAGE DRIVER POPULATION BASED ON LICENSES ISSUED	9,406.0	9,097.0	1,120.0	1,080.5	14,839.0	14,854.0	2,147.5	2,036.0
NUMBER OF CRASHES	1,140	703	114	69	1,706	1,020	308	157
CRASHES PER 100 DRIVERS	12.1	7.7	10.2	6.4	11.5	6.9	14.3	7.7
NUMBER OF CONVICTIONS	4,123	1,361	618	172	7,913	3,002	1,257	388
CONVICTIONS PER 100 DRIVERS	43.6	15.0	55.2	15.9	53.3	20.2	58.5	19.1
			###PERCENT OF NUMBER OF CONVICTIONS###					
DRIVER INFRACTIONS								
SPEEDING	39.2	53.3	38.3	59.3	38.7	55.3	35.8	50.3
RECKLESS DRIVING	5.9	2.4	4.7	2.3	5.1	2.4	5.2	2.1
IMPROPER VEHICLE OPERATION	9.6	6.7	7.4	2.9	8.7	6.0	7.6	6.7
IMPROPER TURNING	0.8	1.0	0.2	1.2	0.8	0.7	1.1	2.6
IMPROPER PASSING	0.7	0.6	0.3	0.0	0.6	0.5	0.5	0.0
FAILURE TO OBEY SIGNS, ETC.	7.6	8.0	13.1	14.0	10.1	11.6	13.0	12.9
FAILURE TO YIELD OR STOP	1.7	3.0	1.5	2.3	2.2	3.7	2.0	2.8
LICENSE RELATED INFRACTIONS								
NO LICENSE/PERMIT	2.3	0.7	3.1	1.7	2.5	0.7	2.6	0.3
IMPROPER LICENSE	0.5	0.6	0.6	0.0	0.5	0.3	1.3	1.3
OPERATING UNLICENSED VEHICLE	2.6	2.9	3.2	1.2	2.9	2.8	2.9	1.8
VEHICLE INFRACTIONS								
IMPROPER OR UNSAFE EQUIPMENT	10.9	6.9	7.1	2.3	8.4	4.1	9.1	4.9
INVALID INSPECTION STICKER	8.1	8.4	9.2	7.0	8.7	6.7	9.5	8.5
IMPROPER PLATES, REGISTRATION, ETC.	4.7	3.5	6.3	2.3	5.5	3.2	4.1	4.1
REPORTING INFRACTIONS	0.5	0.5	0.0	0.6	0.3	0.1	0.2	0.0
ALCOHOL OR DRUG INFRACTIONS	4.2	1.2	4.7	2.9	3.7	1.7	3.7	1.5
CRIMINAL ACTIONS	0.0	0.0	0.3	0.0	0.0	0.1	0.8	0.3
UNSAFE MOTORCYCLE ACTIONS	0.3	0.1	0.0	0.0	0.5	0.1	0.7	0.0