FUNDING FOR HIGHWAY SAFETY RESEARCH, DEVELOPMENT, AND DEMONSTRATION IN THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

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16. Abstract

This report presents the results of a study examining the National Highway Traffic Safety Administration's (NHTSA) allocation of resources to highway safety research, development, and demonstration programs (RD&D). This NHTSA activity is often referred to as the "403 Program" because it is authorized by Section 403 of the 1966 Highway Safety Act. The allocation of financial resources to this area is examined for the 1970-1979 time period, and additional analysis is made of the allocation of 403 contract expenditures in NHTSA's proposed 1980-1984 plan.

The data on which the analysis is based are actual appropriations figures provided by NHTSA for the period from the 1976 transition quarter through 1979. For earlier years they are based on adjusted requirements from the agency's budget submissions. The 1980-1984 projected figures are taken from the NHTSA plan made public in March 1979. The analysis examines past and perspective funding trends in light of the agency's legislative mandate, its own expressed objectives, and the research needs of the highway safety field.

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This study could not have been completed without the assistance of National Highway Traffic Safety Administration staff in providing data and supporting information. I am particularly indebted to John Jacobus, John Krause, Charles Livingston, and Ronald Willett.

Thomas C. Anderson

EXECUTIVE SUMMARY

This report presents the results of a study examining the National Highway Traffic Safety Administration's (NHTSA) allocation of resources to human-oriented highway safety research, development, and demonstration (RD&D) programs. This NHTSA activity is often referred to as the "403 program" because it is authorized by Section 403 of the Highway Safety Act of 1966. The allocation of financial resources to this area is examined in detail for the 1970-1979 time period, and additional analysis is made of the allocation of 403 contract expenditures in NHTSA's proposed 1980-1984 plan.

The study focuses on the activities of NHTSA because this federal agency has primary responsibility for supporting human-oriented highway safety RD&D in the United States. The human-oriented aspects of the highway safety field include those that focus on driver, passenger, and pedestrian behavior. They also encompass the administrative, judicial, and educational systems that exist to control or influence behavior to reduce losses from motor vehicle crashes. NHTSA is the major sponsor of research covering these aspects of highway safety in this country.

Trends in the allocation of resources are measured in this study by examining the distribution of funds to NHTSA RD&D projects. The data included in this report are based on actual appropriations figures provided by NHTSA for the period from the 1976 transition quarter through 1979. For earlier years they are based on adjusted requirements from the agency's budget submissions. The projected 1980-1984 figures are data taken from the proposed 403 plan made public by NHTSA in March 1979. Thus, most of the funding data for the 403-funded contract programs were provided by NHTSA, either in budget submissions or in information received directly from the agency. Administration and support funding for 1970 to 1976 had to be estimated, and detailed breakouts for demonstration contracts had to be compiled from other sources.

NHTSA expended a total of $299 million for 403 RD&D programs in the 1970-1979 decade. Of this amount, just under $220 million was used to fund RD&D contracts. The remaining $79 million was required for administration and support activities. The 1980-1984 plan envisages the expenditure of $73 million dollars on contract projects in the next five years. No estimate of future administration and support expenditures has been made.

Analysis of the allocation of funds among the organizational and program components that are part of the total 403 program leads to the following findings:

- The rapid and substantial increase of 403 RD&D funds in the 1970-1979 period represented a significant effort to meet the federal commitment in the Highway Safety Act of 1966 to improve the knowledge base in human-oriented highway safety. The increase of 138 percent in annual 403 funding between 1970 and 1979 is significantly greater than the 86 percent increase for all federal RD&D outlays. However, most of this increase occurred in the early years of the decade. Following the ending of the large-scale Alcohol Safety Action Program (ASAP) in the 1970s, annual 403 funding declined, and since 1977 the level has stabilized at just over $26 million. When the effects of inflation are taken into account, this represents a decline over the past three years in real effort.
- Within its over-all 403 RD&D program, NHTSA has chosen to emphasize the latter stages of the research-development-demonstration-action sequence in attacking human-oriented highway safety problems. Both in 1970 and in 1979 it allocated only twenty-five percent of its contract funds to research. In the midyears of the decade when the ASAP demonstration projects were in operation this proportion was considerably smaller. Across the decade most of NHTSA's 403 funds have been committed to demonstrations, manpower development and training, and accident data collection. A significant and increasing proportion of its funds (5.1% in 1970

and 11.2% in 1979) have been committed to the National Driver Register, which many regard as an operational activity rather than an RD&D program.

- The 1970-1979 data on funding of RD&D contracts in different program areas show that NHTSA has distributed its resources across a broad spectrum of major highway safety problems. The largest share of its 403 contract funds have been allocated to alcohol and drug RD&D. Other areas receiving major RD&D support have been law enforcement, driver education and control, highway safety manpower and management development, and pedestrian and bicycle safety. In the last ten years there have been some significant shifts in program emphasis. Alcohol related RD&D has tended to decline since the ASAPs, and the early emphasis on vehicle inspection programs has also diminished. These declines have been more than matched by a broadening of the 403 RD&D program into other significant problem areas, including pedestrian and bicycle safety, emergency medical services, and motorcycle safety.
- A significant problem in fulfilling the 403 mandate may result from the increasing proportion of funds absorbed in the administration and support of NHTSA programs. This component of NHTSAs 403 budget has increased from thirty percent in 1970 to forty-five percent in 1979. Funds used for this purpose are clearly not available for the RD&D contracts that have been the primary means used by NHTSA to expand human-oriented highway safety knowledge.
- Comparing the plan for the next five years with the history of the past ten, the most striking fact is the programmed decline in 403 RD&D contract programs. Following modest increases in 1980 and 1981, three years of decline are anticipated. The total in 1984 is $13.3 million, down from $14.5 million in 1979. This is a planned decline of nine percent for which no explanation is presented.
- The planned program does show changes of emphasis that appear

to indicate a modest reallocation of effort toward the more exploratory stages of the RD&D process. Research and development activities are programmed to increase absolutely over the life of its plan by over twenty-five percent. By 1984 they occupy a significantly larger proportion of 403 contract funding then they do in 1979 (42% versus 31%). Counterbalancing this increase is a sharp decline in planned demonstration projects. The funding for these decreases steadily from $3.7 million in 1979 to $1 million in 1984.

- The 1980-1984 plan also indicates significant shifts will take place in the allocation of resources among program areas. The major increases--in occupant restraint and motorcycle safety programs—give emphasis to areas that have received increasing attention in the highway safety community and in the Congress as priority problems to be attacked. The declines in programs related to unsafe driving acts, alcohol and drugs, the young driver, and pedestrian and bicycle safety are more difficult to explain. The problems addressed in these programs have certainly not been solved, and the most rational explanation may be the requirements of meeting a limited total budget.

There are serious questions that can be raised concerning NHTSA's allocation of resources. Given the limited extent of knowledge, it seems reasonable to suggest that the proportion of resources allocated to the exploratoary phases of the RD&D process has been too small. The continued use of 403 funds to support the National Driver Register, which is essentially an operational tool, is highly questionable. The large proportion of funds absorbed by administration and support activities is also a matter for concern. The proposed five-year plan does appear to redress somewhat the imbalance between exploratory and later-stage RD&D projects. However, it introduces a new concern because it projects a decline in the 403 RD&D program that is difficult to justify in light of the need.

The federal highway safety program is still relatively young. Most problems remain unsolved, and it is likely that others have yet to be

identified. NHTSA has played a central role in the evolution of the field and will continue to do so. This study does raise questions about how NHTSA has allocated resources in the past and what it plans for the future. It does so recognizing that much has been accomplished since 1966 and that the agency is firmly committed to solving the important problems this country faces in highway safety. This analysis does lead to suggestions for change. However, these are essentially pointed at shifts of emphasis and in allocations within the total program. The basic thrust of NHTSA's approach as it has matured over the past ten years and as it is programmed to evolve over the next five years appears sound and will hopefully continue to be strengthened.

CONTENTS

CHAPTER ONE
INTRODUCTION

This monograph reports an assessment of how the National Highway Traffic Safety Administration (NHTSA) has allocated resources in human-oriented highway safety research, development, and demonstration (RD&D) programs during the past decade. This activity is often referred to as NHTSA's "403 program" since it was authorized by Section 403 of the Highway Safety Act. The allocation of financial resources to this area is examined in detail for the 1970 to 1979 time period, and additional analysis is made of the tentatively planned allocation of contract expenditures for the 1980 to 1984 time period.

This report was prepared as part of research activities performed under a project entitled Highway Safety Planning. The project is sponsored by the Motor Vehicle Manufacturers Association (MVMA). It is being performed by the Policy Analysis Division of The University of Michigan Highway Safety Research Institute.

The Highway Safety Planning study was started in 1976. Its general objectives are to assess research needs in the field of highway safety, to develop priorities for research, and to identify policy actions that should be taken to improve the effectiveness of highway safety research.

This report focuses on the activities of NHTSA, because this federal agency is the one that has primary responsibility for supporting human-oriented highway safety research and development in the United States. NHTSA is currently the major sponsor of projects covering this aspect of highway safety in this country. Therefore, a study of NHTSA's research and development activities is a logical early step in an overall examination of progress in expanding the base of knowledge in the human-oriented highway safety field.

Trends in the allocation of resources are measured in this study by examining the distrubution of funds to NHTSA's research, development,

and demonstration (RD&D) projects. Thus, the specific objectives of the study reported here have been to determine how much NHTSA has spent for human-oriented highway safety and how this has been allocated among major areas. The study also compares past trends with the planned allocation for the next five years (1980 to 1984), which NHTSA made public in March of this year.

This study is particularly appropriate and timely in light of the 403 planning NHTSA is undertaking. This study was started before the current NHTSA 403 plan was announced. The information on the plan that has been made public is included as an integral part of this report.

Because this report covers human-oriented highway safety, it seems important to clarify what is meant by this term. The safety problems associated with the highway transportation system involve three factors: roadways, vehicles, and people. Aspects of the problems involving the roadway are part of highway safety. They are within the purview of the Federal Highway Administration (FHWA) and are not covered in this report. Aspects involving the vehicle, including related equipment, are generally considered to be motor vehicle safety rather than highway safety. Although an important part of NHTSA's responsibilities, they are beyond the scope of this study and are only tangentially covered in this report.

The remaining parts of the problems associated with the highway transportation system (the nonroadway, nonvehicle parts) involve people. These include not only drivers, passengers, and pedestrians, but also law enforcement personnel, people involved in traffic law adjudication, driver education, driver license examination, and many others involved with managing and counteracting highway safety problems. Ths problems of people--their behavior and their interactions--are referred to as human-oriented highway safety in this report. The term "traffic safety" has been used frequently to refer to this aspect of the field. However, traffic safety is also used to encompass motor vehicle and traffic control engineering problems. The term human-oriented highway safety is more precise and unambiguous. It indicates clearly that the focus is on the social or behavioral aspects of the general highway safety problem as

opposed to either a vehicle or roadway orientation.

The body of this report is organized as follows: Chapter Two provides background information on NHTSA. It includes a discussion of the legislation authorizing NHTSA's various programs and outlines the structure of NHTSA. It discusses in greater detail those elements of NHTSA involved in human-oriented highway safety.

Chapter Three provides background material on the technical aspects of the study. It reviews the information required for the analysis, defines the terms used, the sources of information, and the estimation procedures that had to be used in compiling the data.

Chapter Four presents an analysis of NHTSA's human-oriented highway safety RD&D funding during the period 1970-1979. These programs are compared to other NHTSA activities. A detailed analysis of human-oriented highway safety activities follows. Trends are examined in several different ways to show areas of emphasis and changes in emphasis over the ten-year period. This includes discussion of NHTSA's different components and activities and an analysis of NHTSA's RD&D contract programs.

In Chapter Five NHTSA contract programs for the past ten years are compared with the agency's proposed plan for the next five years. The final chapter presents conclusions and recommendations.

CHAPTER TWO
BACKGROUND

NHTSA is a relatively complex organization. Its activities are authorized under three separate laws and subsequent amendments to them. Highway safety RD&D is only one of several areas of involvement. This chapter presents background on this organization. First, it provides an overall view, then a detailed look at the aspects dealing with human-oriented highway safety research,development, and demonstration.

LEGISLATIVE AND ORGANIZATIONAL BACKGROUND

Federal highway and motor vehicle safety activities are principally organized within one agency of the U.S. Department of Transportation: the National Highway Traffic Safety Administration (NHTSA). This section outlines federal activities prior to 1966, the legislation passed in that year that started formal federal agency involvement, and legislative and organizational changes that have occurred since then.

Early History

Initial concern leading to federal action in highway and motor vehicle safety had a long gestation period. Interest was expressed many times over the years with little formal action. An early expression of public interest in highway safety policy occurred in 1924 when then Secretary of Commerce Herbert Hoover convened the First National Conference on Street and Highway Safety. Twelve years later Congress directed that the Bureau of Public Roads study the causes of highway accidents and recommend countermeasures.

This was followed in the post-World War II period with a Highway Safety Conference sponsored by President Truman in 1946. This conference proposed an Action Program but no federal agency was given authority to implement programs. This responsibility was left to the

states. With the failure of the Action Program, a provision in the Federal-Aid Highway Act of 1956 authorized the secretary of commerce to investigate and report alternative roles the federal government might take in highway safety. The secretary's report proposed direct government involvement in traffic law enforcement, laws, vehicle safety, education, highway improvement, driver records, and the establishment of a safety board. The National Driver Record (NDR) was established under the authority of this act in 1960.

In 1965 the Baldwin Amendment (Public Law 89-139) was passed. It emphasized state highway safety programs in compliance with uniform standards in several areas. The provisions of this act were not implemented before the enactment of the two safety acts in 1966.

Basic Laws

Following patterns established by the previous actions discussed above, and in response to public concern over rising highway fatalities and injuries, President Johnson proposed and Congress passed two acts directing federal involvement in addressing motor vehicle and highway safety problems. Both acts were passed on September 9, 1966.

The National Traffic and Motor Vehicle Safety Act (Public Law 89-563) authorized establishment of safety standards for motor vehicles and associated equipment (rulemaking), enforcement of those standards, a research program to support those programs including testing and training, and authority to investigate the need for facilities to undertake testing. It also authorized expansion of the NDR. These actions were to be implemented by a National Traffic Safety Agency in the Department of Commerce.

The Highway Safety Act (Public Law 89-564) consisted of two separate but related efforts. The first, authorized under Section 402 of the act, was a coordinated highway safety grant program to provide funds to states on a matching fund basis. The second established a highway safety research, development, and demonstration (RD&D) program to support the grant program and highway safety research in general. State highway safety programs were required under the act before a state

qualified for grants. The program was to conform with highway safety standards that were to be developed by a National Highway Safety Agency in the Department of Commerce.

The research activities established under Section 403 of this act gave the secretary authority to conduct highway safety research on all phases of highway construction, development, maintenance, safety, and traffic conditions. Activities were to include education of personnel, research fellowships, accident investigation, emergency service, demonstrations, and other related activities that the secretary considered necessary. It defined "highway safety" broadly as including "but not limited to highway safety systems, research and development relating to vehicle, highway and driver characteristics, accident investigations, communications, emergency medical care, and transportation of the injured."

These two acts set the basic framework for the motor vehicle and highway safety programs of the federal government. They provided authority for rulemaking (setting of standards) and enforcement for motor vehicle safety and a research program to support it. Also provided was a mechanism for the establishment of highway safety standards with implementation being ensured by grants to states that complied. An action program was established with economic incentives to states through grants to see that it was implemented. Authority was established to conduct highway safety research in support of the grant program but was broadly defined to cover all aspects of highway safety.

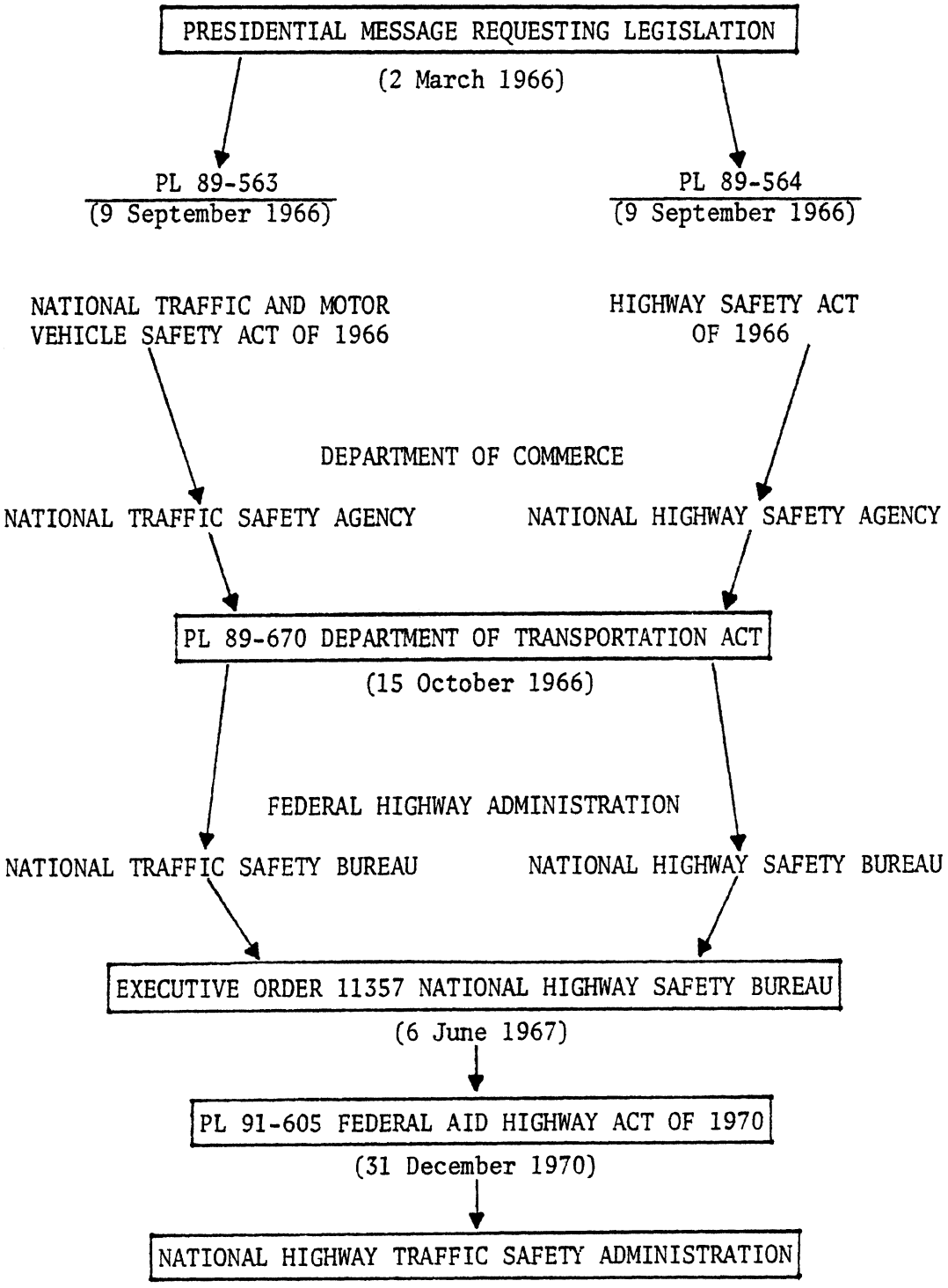
Organizational Development

The evolution of NHTSA is illustrated in Figure 2-1. With the passage of the two major acts in September 1966, two separate agencies were established in the Department of Commerce. The National Traffic Safety Agency was authorized by the National Traffic and Motor Vehicle Safety Act and the National Highway Safety Agency authorized by the Highway Safety Act.

In October of that year the Department of Transportation Act (Public Law 89-670) established the Department of Transportation and the two agencies became bureaus in the Federal Highway Administration (FHWA)

FIGURE 2-1

EXECUTIVE AND LEGISLATIVE ACTIONS
AFFECTING HIGHWAY AND TRAFFIC SAFETY PROGRAMS



in the new department.

In June of 1967, the two separate bureaus were combined by an executive order into a single National Highway Safety Bureau (NHSB), an operational element of the Federal Highway Administration (FHWA).

The Federal-Aid Highway Act of 1970 changed the name to the National Highway Traffic Safety Administration (NHTSA) and established it as a separate entity. Most of the highway safety responsibilities originally delegated to FHWA were given to NHTSA. The Act also authorized additional research in roadway aspects of highway safety and assigned them to FHWA. FHWA now administers three and one-half of the highway safety standards, and NHTSA administers fourteen and one-half. The agencies share responsibility for pedestrian safety.

Legislative Changes and Additions

The basic purposes of the 1966 acts remain the core of NHTSA's programs today. There have been changes in the laws as well as additions, but they have not altered the basic thrust of the original legislation.

A major change was the addition of nonsafety activities to NHTSA's responsibilities. In 1972 the **Motor Vehicle Information and Cost Savings Act** (Public Law 92-512) was passed in response to concern with rising repair costs and the incidence of safety defects in automobiles. The Act has four elements or titles dealing with (I) bumper standards to reduce repair costs in low speed collisions, (II) consumer information activities, (III) diagnostic inspection demonstration projects, and (IV) odometer regulations. This Act was amended with passage of the Energy Policy and Conservation Act of 1975 providing a fifth responsibility (Title V), the development and enforcement of mandatory automotive fuel economy standards.

Additional acts have given direction to NHTSA's RD&D program. The Federal-Aid Highway Act of 1973 (among other things pertaining to FHWA responsibilities) authorized research in traffic control technology, drug use, and driver education. Studies on mass media, public participation, and pedestrian-bicycle safety were emphasized.

The Federal-Aid Highway Act of 1976 established incentive grants as part of the 402 program. It also authorized school bus driver training.

Authorization in Title II of the Surface Transportation Assistance Act of 1978 involved public highway safety education and information campaigns. It directed that further studies be made of the effectiveness of mandatory motorcycle helmet regulations and methods to encourage safety belt use. It also requested a report on previous efforts to detect and counteract drug use by drivers.

These authorizations to perform research and other activities in areas other than those specified in the original legislation provide insight into the direction given by Congress as to what NHTSA should be doing.

Summary

Public concern resulted in the passage of legislation in 1966 that led to the establishment of NHTSA and its programs. The mandates of the two original safety acts remain as fundamental responsibilities of NHTSA. Additional responsibilities have been given, particularly under the Motor Vehicle Information and Cost Savings Act as amended. These have neither diminished nor changed the original direction given to NHTSA. The authority and responsibility to engage in a broad-based program of highway safety RD&D remain unchanged since 1966.

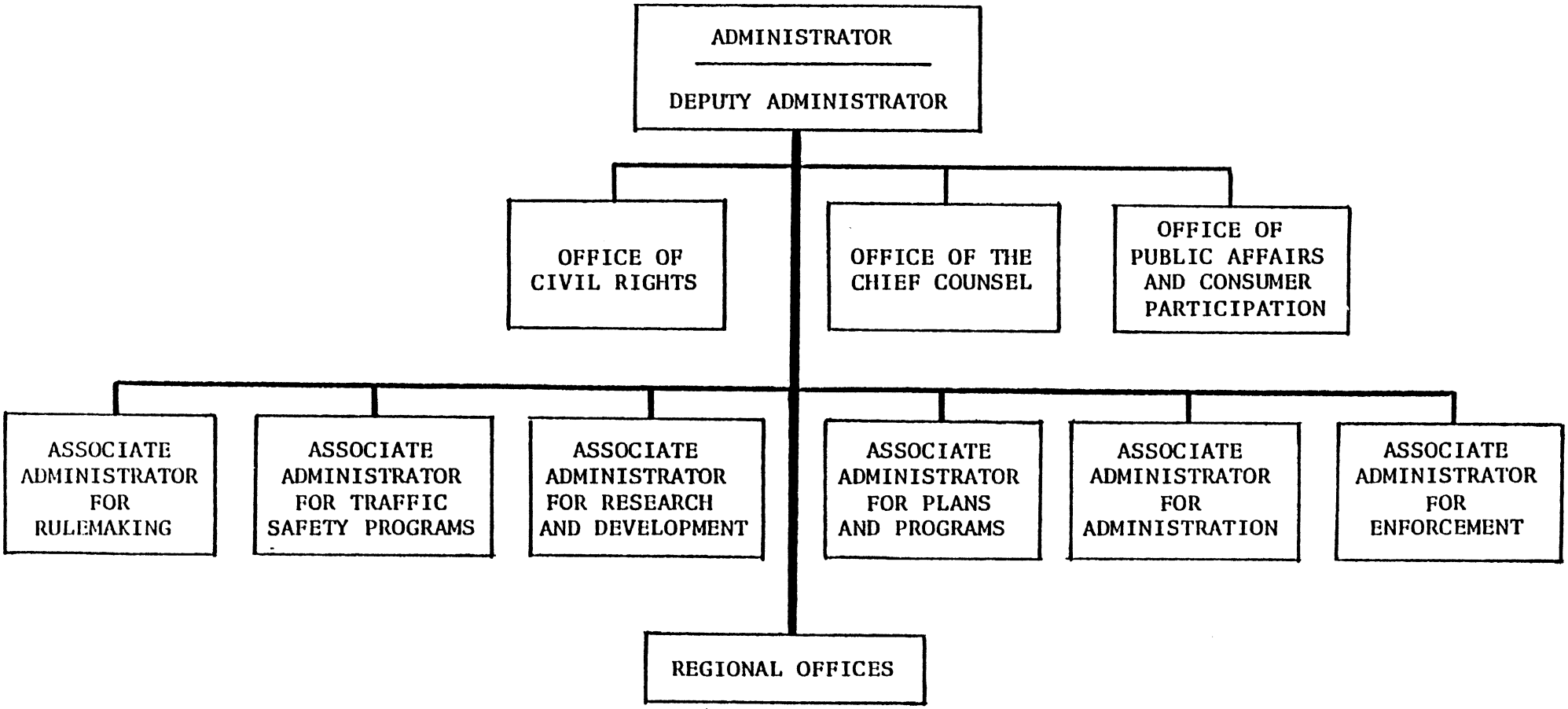
CURRENT ORGANIZATION AND RELATIONSHIP TO LEGISLATION

The current organization of NHTSA is shown in Figure 2-2. There are three type of offices. First there is that of the Administrator, which includes the offices of (a) Civil Rights, (b) Chief Council, and (c) Public Affairs and Consumer Participation. Second are the six elements supervised by associate administrators: Rulemaking, Enforcement, Traffic Safety Programs (1), Research and Development (2), Plans and Programs, and Administration. Finally there are the Regional Offices.

In its recent budget presentation there are five program areas. Each of the four operational divisions of NHTSA (Rulemaking, Enforcement, Traffic Safety Programs, and Research and Development) are listed separately. The Regional Offices are included in Traffic Safety Programs.

FIGURE 2-2

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION



Source: U.S. Department of Transportation. 1977, Attachment 2-1.

The other elements are all included in General Administration. The basic functions of these divisions are as follows (U.S. Department of Transportation 1979):

> Rulemaking Programs - Covers rulemaking activity relative to the promulgation of Federal motor vehicle safety standards for new and used motor vehicles, tires, and equipment; automotive fuel economy standards required by the Energy Policy and Conservation Act; and programs requiring economic bumpers withstanding low-speed collisions, automobile ratings, diagnostic inspection, and odometer regulation.
>
> Enforcement Programs - Provides for the enforcement of programs described under the rulemaking activity, including manufacturer compliance with motor vehicle safety and automotive fuel economy standards, investigation of safety related motor vehicle defects, and surveillance of odometer tampering.
>
> Traffic Safety Programs - This activity provides for headquarters and field staff to assist the States in the conduct of their highway safety programs through program guidance, technical assistance and evaluation. Demonstration projects are conducted to show effectiveness of new techniques in operational environments and attain widespread acceptance and adoption of these new techniques and countermeasures. Training courses and materials are developed for use in the States.
>
> Research and Development - This activity provides for research and development in support of all NHTSA programs, including the collection and analysis of data to determine the relationship between motor vehicle and driver performance characteristics and crashes causing death or personal injury. Provision is also made for facilities required to furnish scientific and technical bases for motor vehicle standards, and to do limited compliance testing and defects investigation. The 1980 budget includes funds to continue the development of a national accident data collection program to improve problem identification, rulemaking support, and program evaluation activities.
>
> General Administration - This activity provides for overall executive direction, coordination, and implementation of agency programs except for mission-oriented support activities which are included in the respective program areas. Basic administrative and support requirements for all safety programs are also provided in this category. (p. 5.)

The relative sizes of these five program areas are reflected in the personnel and funding figures summarized in Table 2-1.

The personnel for the five divisions for each of the four authorizing legislations (sections of the Highway Safety Act are shown separately) are listed in Table 2-2. The allocations of personnel by both program area and by authorizing legislation are shown in Figure 2-3. This figure gives an indication of the current relative size of NHTSA's programs by both program area and by authorizing legislation.

The correlation between program area and authorizing legislation is not simple or straightforward. Two or more authorizing legislations support each of the program areas. NHTSA reports its budget information to the public in such a way that the relationships often cannot be determined. The breakdowns shown are based in some cases on information provided directly by NHTSA and in some other cases on estimates (3).

Brief History of Program Areas

Rulemaking and **Enforcement** were established as separate program areas with a reorganization of NHTSA in 1978. They were formed by separating what had previously been **Motor Vehicle Programs** into the two parts and then adding similar elements from **Auto Fuel Economy.** This put all enforcement programs together and all rulemaking programs together. Motor Vehicle Programs had been an area reported in NHTSA's budget throughout the 1970 to 1978 period.

Traffic Safety Programs has existed throughout the 1970 to 1979 period. With the establishment of NHTSA in 1970 certain activities that were formerly in the research-oriented arm of the NHTSB were shifted into Traffic Safety Programs. The funding of Traffic Safety Programs has generally been from authorizations in both Sections 402 and 403 of the Highway Safety Act. Diagnostic Inspection Demonstration Projects are also part of Traffic Safety Programs. Funding was authorized by Title III of the Motor Vehicle Information and Cost Savings Act.

Research and Development has also existed throughout the 1970 to 1979 period. Its major emphasis and financial support was from Motor Vehicle Research. Traffic safety research, funded by the Highway Safety

TABLE 2-1

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
COMPARISON OF FY 1979 ADJUSTED PROGRAM REQUIREMENTS
DISTRIBUTION OF PERSONNEL AND FUNDING FOR FY 1969

	POSITIONS	SALARIES & SUPPORTING EXPENSE	CONTRACT & GRANT PROGRAMS	TOTAL FUNDS	SALARIES & SUPPORTING EXPENSE PER POSITION
RULEMAKING PROGRAMS	118	4,238	2,060	6,298	35,915
Vehicle Safety Standards	65	2,330	600	2,930	35,846
Fuel Economy Standards	38	1,355	---	1,355	35,658
Consumer Programs	15	553	1,460	2,013	36,867
ENFORCEMENT PROGRAMS	115	3,529	6,733	10,262	30,687
Vehicle Safety Compliance	48	1,482	4,673	6,155	30,875
Defects Investigation	52	1,588	1,950	3,538	30,538
Fuel Economy Odometer	15	459	110	569	30,600
TRAFFIC SAFETY PROGRAMS	259	8,832	174,477	183,309	34,100
Operations & Research	(80)	(3,928)	(7,381)	(11,309)	49,100
Alcohol and Other Countermeasures	14	687	2,025	2,712	49,071
Improvement of Traffic Safety & Enforcement Systems	21	1,030	2,775	3,805	49,048
Improvement of State Program Management	37	1,817	2,515	4,332	49,108
State Vehicle Programs	4	197	66	263	49,250
Diagnostic Inspection	4	197	---	197	49,250
State and Community Programs	(179)	(4,904)	(167,096*)	(172,000)	27,397
Headquarters	64	1,882	---	1,882	29,406
Regional Offices	115	3,022	---	3,022	26,278
RESEARCH & DEVELOPMENT	199	6,406	33,625	40,031	32,191
Motor Vehicle & Fuel Economy	116	3,715	21,194	24,909	32,026
Traffic Safety Research	26	832	3,650	4,482	32,000
National Center for Statistics and Analysis	57	1,859	8,781	10,640	32,614
GENERAL ADMINISTRATION	183	13,049	2,274	15,323	71,306
TOTAL	874	36,054	219,169	255,233	41,252

Source: U.S. Department of Transportation. 1979.

*Grants

TABLE 2-2

ALLOCATION OF 1979 PERSONNEL BY
PROGRAM AREA AND AUTHORIZING LEGISLATION

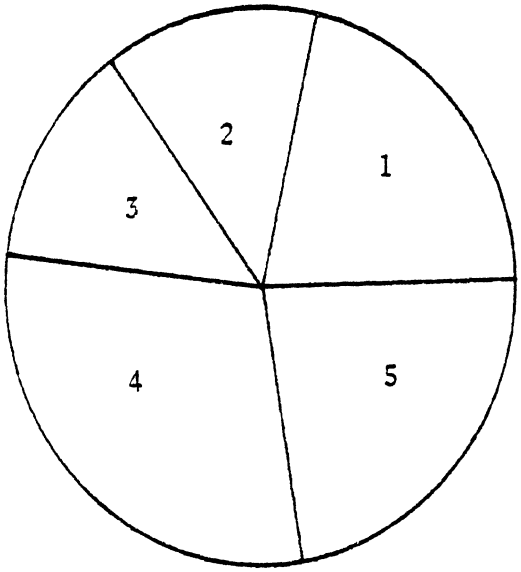
	Consumer Information Auto Fuel	Motor Vehicle	Highway Safety RD&D	Highway Safety Grants	TOTAL
Rulemaking	53	65	---	---	118
Enforcement	15	100	---	---	115
Traffic Safety Programs	3	---	77	179	259
Research & Development	10	140	49	---	199
General Administration	11	86	86	---	183
TOTAL	92	391	212	179	874

Source: Table 2-1, with estimates of breakdown by public law. See text.

FIGURE 2-3

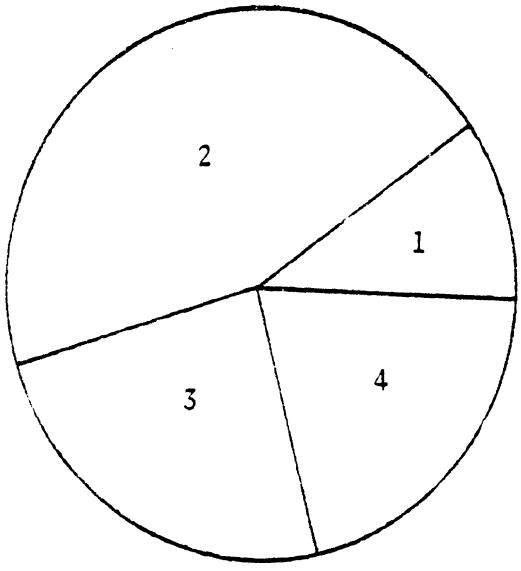
1979 ALLOCATION OF NHTSA PERSONNEL

ALLOCATION BY PROGRAM AREA



1. 183 - General Administration
2. 118 - Rulemaking
3. 115 - Enforcement
4. 259 - Traffic Safety Programs
5. 199 - Research and Development

ALLOCATION BY AUTHORIZING LEGISLATION



1. 92 - Motor Vehicle Information and Cost Savings Act
2. 391 - Traffic and Motor Vehicle Safety Act
3. 212 - Highway Safety Act, Section 403
4. 179 - Highway Safety Act, Section 402

Source: Table 2-2.

Act, has been a relatively small but gradually increasing part of its operations. The office of the National Center for Statistics and Analysis is also included in this program area and is jointly funded by the two safety acts. Automobile fuel economy research has been included in this program area only since the reorganization of 1978. Prior to this, it was a separate area.

HIGHWAY SAFETY RD&D IN NHTSA

In this section the two program areas of NHTSA that have responsibilities for its 403 programs are reviewed in greater detail. The method NHTSA uses to conduct its RD&D programs is briefly outlined.

Traffic Safety Programs

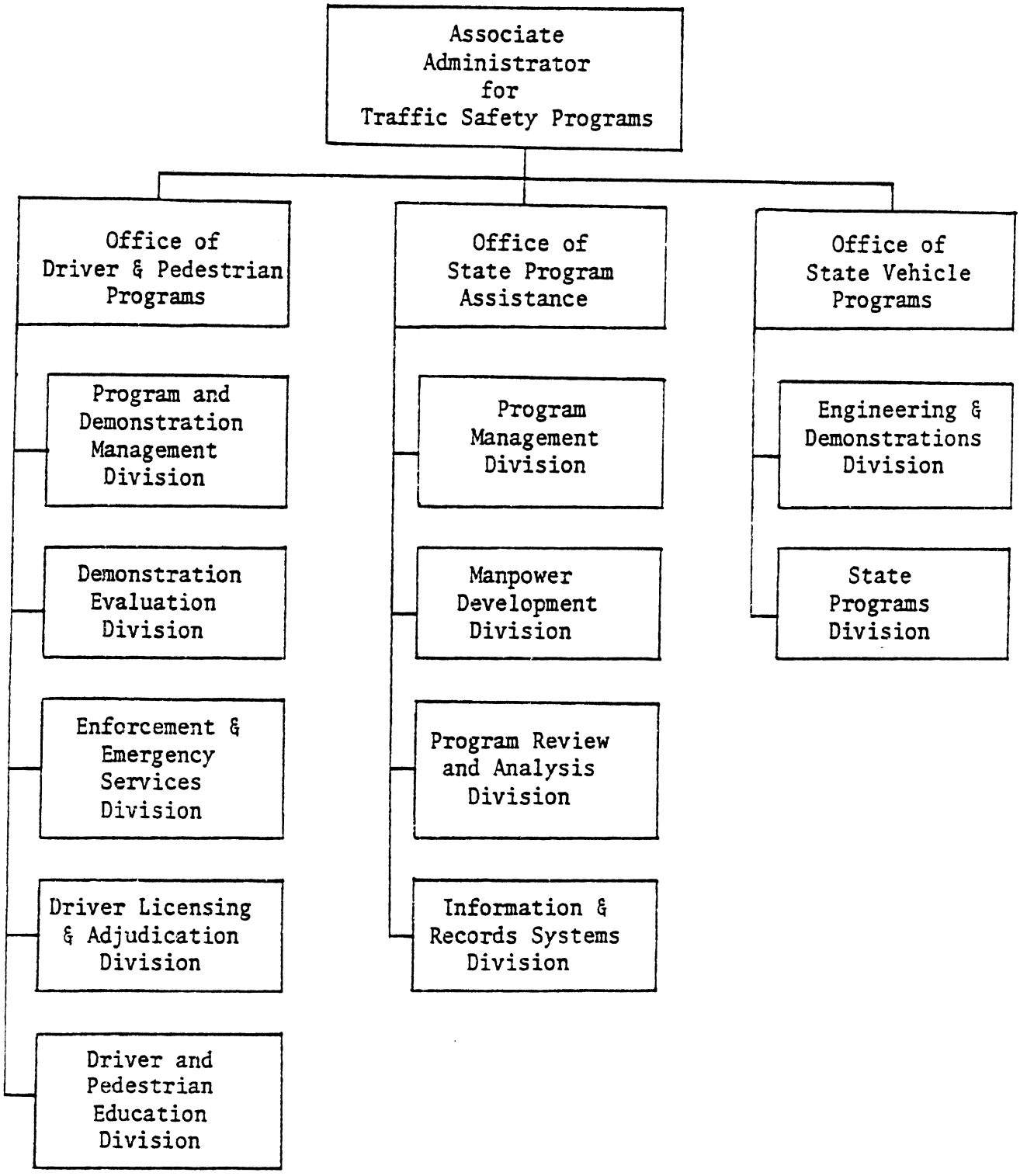
The headquarters of the Traffic Safety Programs consists of three offices. Each office is concerned with both 402 and 403 programs. The organization of Traffic Safety Programs is shown in Figure 2-4. The responsibilities of each of the three offices follows. (Included also is a description of the responsibilities of the Regional Offices, since they have been involved in the 403 program. [U.S. Department of Transportation 1979, pp. 33-35].)

OFFICE OF DRIVER AND PEDESTRIAN PROGRAMS

> This office is responsible for developing and improving traffic safety standards and programs relating to drivers and pedestrians that are aimed at reducing traffic accidents and deaths, injuries and property damage relating therefrom; and providing technical advice and assistance in connection with the development, analysis, implementation, monitoring, and evaluation of State-community driver and pedestrian highway safety programs and 55 MPH compliance programs.
>
> Specific activities include working with regional offices in amplifying highway safety standards and guidelines for the States to follow in achieving more qualitative programs and measurable results. This office also works closely with national organizations to secure public support for program implementation. Staff also participates in the implementation of State programs addressing youth and 55 MPH compliance as well as those in support of National Alcohol Countermeasure programs in enforcement, traffic courts, driver licensing, driver education, and public education

FIGURE 2-4

TRAFFIC SAFETY PROGRAMS ORGANIZATIONAL STRUCTURE



Source: Croke 1977, Figure I-3, p. I-8.

functional areas by virtue of having technical competency in these areas.

The office also works closely with the Office of State Program Assistance in reviewing and evaluating technical aspects of States' submissions of their Highway Safety Plans.

Another important function of this office is the maintenance and operation of the National Driver Register of motor vehicle operators whose licenses have been suspended, revoked, or withdrawn by the States. An automated system, more responsive to the needs of the States, is currently under development.

In addition to these activities, a significant part of staff effort consists of contract management for the projects in the development stage, on-site monitoring of State and local programs, and liaison with approximately 75 State and national organizations concerned with traffic safety.

OFFICE OF STATE PROGRAM ASSISTANCE

This office provides the planning, guidance and coordination necessary for the development, implementation, monitoring, and evaluation of comprehensive highway safety programs combining the highway safety standard elements into effective integrated State and community programs responsive to the national goals and objectives of reducing traffic accidents and deaths, injuries, and property damage. The office also works closely with the Office of Highway Safety in the Federal Highway Administration to ensure that NHTSA and FHWA State and Community Highway Safety programs are compatible and coordinated.

The office is also responsible for programs to improve the management capabilities of State and local highway safety personnel and for the development of guidelines and procedures for highway safety in areas where traffic control is exercised by Federal agencies. They also work actively to improve highway safety among the Indian Nations.

OFFICE OF STATE VEHICLE PROGRAMS

This office provides the leadership and guidance necessary to develop and improve State programs for inspecting vehicles in use; and for effective vehicle identification and control. It also provides technical assistance to States for implementing and evaluating program and procedural guidelines; and additionally conducts demonstration projects to develop and evaluate advanced inspection equipment.

REGIONAL OFFICES

The National Highway Traffic Safety Administration has 10 regional offices which provide leadership, technical guidance and assistance to the States in the development and implementation of comprehensive highway safety programs geared to the reduction of accidents, deaths and injuries. While the major regional office involvement is in the area of the State and Community Highway Safety grant program, their responsbility for technical assistance also extends to demonstration and manpower programs. They also provide advice and assistance to the States and consumers relative to motor vehicle programs and assist Headquarters in the interpretation of research program needs.

Individual regional office staff allocations vary from 9 to 17 personnel depending on geographic coverage and other factors. The Regional Offices, in addition to overseeing the administration of NHTSA's highway safety programs, are responsible for monitoring and evaluating State programs.

Research and Development

Research and Development consists of five offices or divisions as shown in Figure 2-5. Only two of these are involved in the 403 program. The Office of Driver and Pedestrian Research has line item financing in NHTSA's budget under the title Traffic Safety Research. (In the 1980 budget submission this is renamed Highway Safety Research, but the historical title is used here.) The responsibilities of this office as described by NHTSA are as follows (U.S. Department of Transportation 1979, p. 50, 52).

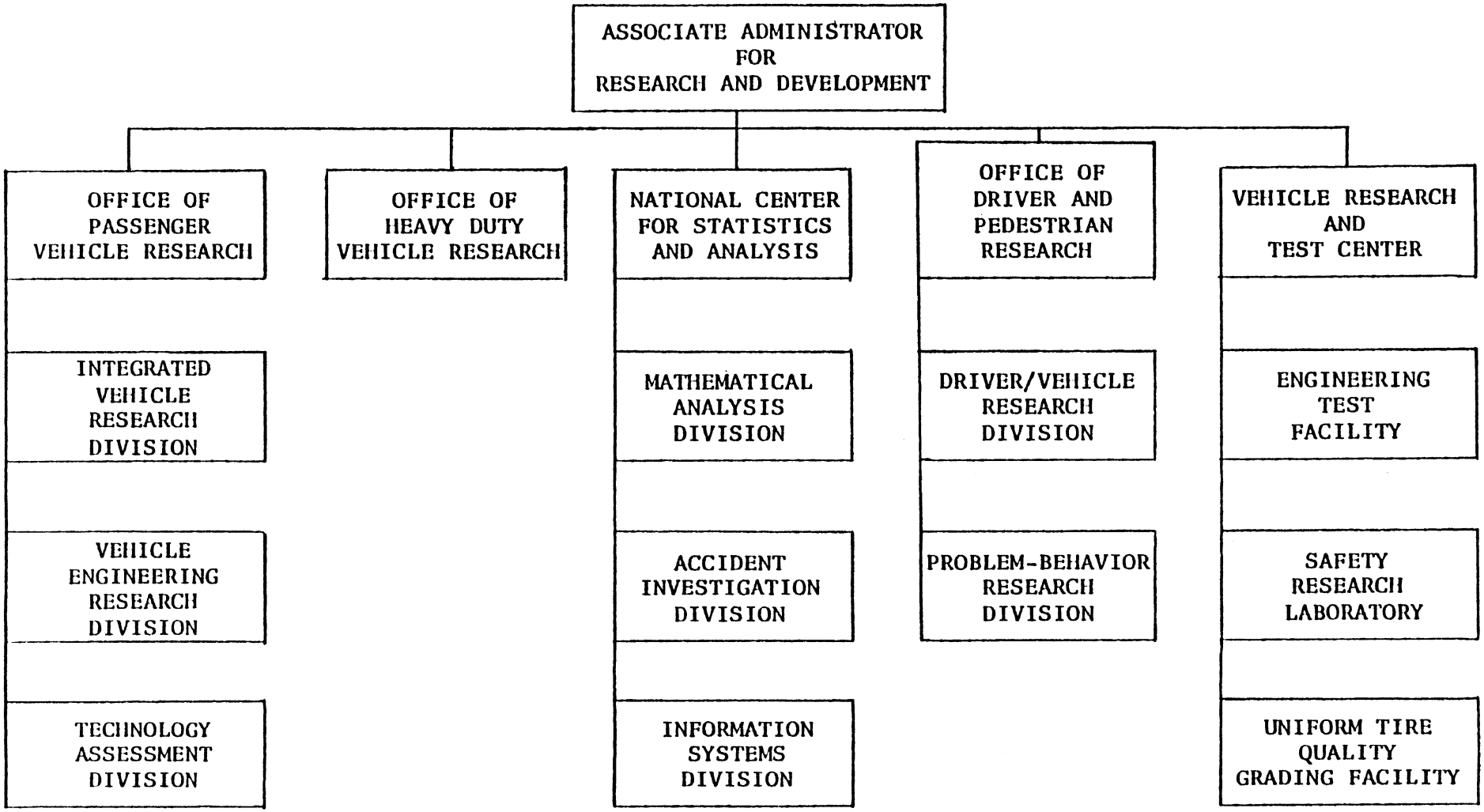
TRAFFIC SAFETY RESEARCH

Plans, directs, conducts or participates in the conduct of research programs aimed at (1) identifying, isolating, and specifying problem behaviors and attitudes related to road users, and accident-generating situations, and, (2) determining the incidence of specific agents (e.g., alcohol and drugs), behaviors, or attitudes and their effects on traffic safety.

Plans, directs, conducts or participates in the development, testing, and evaluation of traffic safety countermeasures aimed at resolving problems identified through the research program.

Develops scientific and technical measurement methodology,

FIGURE 2-5



Source: U.S. Department of Transportation. 1977. Attachment 2-5.

research approaches and techniques required to conduct RDT&E [research, development, testing and evaluation] projects in road user behavior and highway and traffic safety countermeasures.

Provides consultative services and contract technical management for other elements of NHTSA and, through interagency agreement, to other government agencies, in projects involving mission-related areas.

Coordinates closely with the Driver/Vehicle Research Division to assure that all RDT&E activities have been fully integrated and are consistent and supportive of the policies, plans and objectives of the Office and the national research program.

Establishes and maintains liaison with scientific, technical, professional, other government agencies, and the private sector involved in related RDT&E activities to assure coordination of effort.

The National Center for Statistics and Analysis (NCSA) receives funding from both safety acts. It was previously entitled Accident Investigation and Data Analysis. The responsibilities of this office are as follows:

NATIONAL CENTER FOR STATISTICS AND ANALYSIS

The National Center for Statistics and Analysis provides for conduct of the following functions:

- Development and operation of a national program for the monitoring, collection, storage, retrieval and dissemination of information on driver, vehicles, crashes and injuries, and highways as they relate to traffic and motor vehicle safety.

- Conduct of detailed mathematical and statistical analyses and clinical follow-up studies of crash trauma, driver factors, and vehicle performance as they relate to crash and injury causation.

- Conduct analyses to establish safety measurement criteria, causation relationships, traffic safety trends, and program recommendations.

- Design and development of new and improved techniques for the conduct of meaningful field investigations of crashes at the Federal, State and local levels.

The National Center for Statistics and Analysis supports NHTSA, DOT and the highway safety community by collecting, processing and analyzing nationally representative data needed to support and

evaluate the effectiveness of rulemaking and decisions in highway safety program. To accomplish this, the NCSA develops and operates national data collection program depicting the national accident environment, specific rulemaking support programs to respond on a timely basis to special or non-routine data needs, and support programs to provide necessary analysis, information services, and technical and consultant support relevant to its data collection program.

Contract Research Program

In general, NHTSA implements its highway safety RD&D mandate through contract research. The agency has engaged in some research in highway safety within its own organization, but generally it contracts with others, including universities, private research organizations, and units of both state and local governments. It is also involved in cooperative efforts with other federal agencies, such as the Federal Highway Administration and the Department of Health, Education, and Welfare.

NHTSA's projects cover a wide spectrum of activities from exploratory research to field tests and demonstrations to the development of training materials for highway safety personnel, following the mandate of the acts under which it operates. Similarly, its contract programs cover all of the aspects of the knowledge generation and use process.

The principal RD&D responsibilities of the NHTSA staff are to devise programs, request RD&D proposals from potential contractors, evaluate the proposals that are submitted, supervise contracts, write reviews of projects and ensure dissemination of results. The individual with primary responsibility for technical supervision of a contract is the contract technical manager (CTM). Other NHTSA staff in general administration are responsible for the legal and contractual aspects of the contracts.

SUMMARY

Concern with the problems of highway safety culminated in the passage of the National Traffic and Motor Vehicle Safety Act and the Highway Safety Act in 1966. Subsequent legislation and executive orders together with amendments to these acts resulted in the formation in 1970

of the National Highway Traffic Safety Administration (NHTSA) in the U.S. Department of Transportation. The original legislation gave NHTSA its mandates and although later legislation added to NHTSA's responsibilities, the basic safety responsibilities remain as they were in 1970.

NHTSA is involved in a number of programs with highway safety RD&D being only one of them. Highway safety RD&D is closely related to NHTSA's state and community grant program. However, the 403 program is supposed to go beyond the purview of 402 programs and be an independent and comprehensive highway safety RD&D program in its own right.

There have been several changes in organization and in organizational titles over the years of NHTSA's existence. Its reponsibilities for highway safety RD&D are centered in Traffic Safety Programs and in Research and Development. It has implemented its congressional mandate to perform highway safety RD&D through establishment of contract research programs managed by offices within these two program areas.

CHAPTER THREE
METHOD OF ANALYSIS

The basic purpose of this study has been to analyze the development of NHTSA's highway safety RD&D program by determining how the agency has allocated its resources during the past ten years and how this compares with plans for the next five years. The funding information required for this study was not available in summary form from NHTSA or any other source. Piecing together the information proved to be a difficult task for several reasons. First, there are many ways to measure funding effort, and these measures are not consistently related in an easily understandable manner. Second, different amounts were often given for the same measure reported at different times or in reports of different offices or agencies. Third, obtaining some important funding information proved to be impossible, and this necessitated making estimates.

This chapter summarizes the process that was involved in compiling and estimating the information presented in this report. It presents definitions of the measures considered and approaches used to find or estimate the data.

MEASURES AND DEFINITIONS

Assessing a government agency's program is generally a difficult task. A major question is how to reliably measure effort. A financial measure is used most frequently, although manpower and other measures can also be employed. Within the financial area there are many different possible measures. For the present study it was necessary to select a measure that would be accurate and consistent in reflecting both total effort and the component parts of NHTSA's programs.

SELECTING A MEASURE

The actual or prospective use of funds is treated in a variety of ways in the federal government budgetary process. The following list defines the major ways dollar figures are reported (U.S. Executive Office of the

President, Office of Management and Budget 1977, pp. 82-84):

TERMS USED IN THE BUDGETARY PROCESS

AUTHORIZATION

Basic substantive legislation enacted by Congress that sets up or continues the legal operation of a Federal program or agency. Such legislation is normally a prerequisite for subsequent appropriations, but does not usually provide budget authority.

BUDGET AUTHORITY (BA)

Authority provided by law to enter into obligatons that generally result in outlays. It may be classified by the period of availability (1-year, multiple-year, no-year), by the timing of congressional action (current or permanent), or by the manner of determining the amount available (definite or indefinite). The basic forms of budget authority are:

Appropriations:

budget authority provided through the congressional appropriation process that permits Federal agencies to incur obligations and make payments.

Borrowing authority:

statutory authority, not necessarily provided through the appropriations process, that permits Federal agencies to incur obligations and make payments from borrowed moneys.

Contract authority:

statutory authority, not necessarily provided through the appropriations process, that permits Federal agencies to enter into contracts or incur other obligations in advance of an appropriation.

OBLIGATIONS

Amounts of orders placed, contracts awarded, services rendered, or other commitments made by Federal agencies during a given period that will require outlays during the same or a future period.

The most likely candidates for measuring effort in the list above are **appropriations, obligations,** and **outlays.** (Outlays is generally used interchangeably with expenditures or costs.) Any of these three measures

could have been used as long as data were presented down to a level of detail that distinguished individual NHTSA program areas by authorizing legislation. This proved to be a critical limiting requirement.

A variety of sources were examined without finding all of the desired data. NHTSA reports did not give detailed information. The annual reports to Congress included appropriations broken out by public law, but did not provide figures for individual RD&D programs. The Appendix to the Budget of the United States, published annually by the Office of Management and Budget, provided information on appropriations, obligations, and outlays in total and by major program area. However, again there was no detailed breakdown into contract areas.

The only publicly available source of information that contained line item details of NHTSA's RD&D programs was the information NHTSA submits to Congress each year in its budget request. The weakness in these data was that no breakdown was given by authorizing law. This breakdown was needed to isolate the correct part of general agency administrative costs to the 403 RD&D program. However, the budget requests contained more information than any other source. Therefore, these were used as a primary reference. Estimates were made of breakdowns where this proved necessary. These are described in more detail below.

The data presented in the budget requests do not provide appropriations figures in detail. However, they do provide figures that are closely related to appropriations. The requests include figures for two years: the budget request for the upcoming fiscal year, and "adjusted requirements" for the current fiscal year. The appropriations for the current year are "adjusted" in two ways. First, supplemental appropriations are added. The major one is the federal pay raise. (Salaries are not part of an individual agency's budget request, it requests only positions.) Second, changes are made to make the funding data for the two years comparable. This includes changes to account for different number of working days in the two fiscal years, the number of paid holidays, and similar matters. These are accounting or bookkeeping adjustments and do not affect actual finances. It should be noted that

only appropriations for administration and support are subject to this second adjustment. The actual amounts appropriated for contracts should be identical to adjusted requirements. After making these two adjustments to appropriations the result is adjusted requirements.

Copies of the relevant sections of each years' budget submission were obtained to get information on NHTSA's operations. The major portion of most of the highway safety RD&D programs were fully supported by 403 funds and did not require estimates. These included all Traffic Safety Programs contracts (except Diagnostic Inspection demonstrations) and all Traffic Safety Research contracts in Research and Development (4). Estimates were needed for the 403 share of funding for both the National Center for Statistics and Analysis contracts and for the administration and support expenses for all program areas.

When the proposed five-year plan for 403 programs was published in March 1979, NHTSA provided background information that included detailed breakdowns of 1976 to 1979 finances. Some of the figures agreed but others disagreed with the adjusted requirements data as they appeared in previous budget submissions. Inquiries to NHTSA resulted in their providing revised data for 403-funded programs that generally were in agreement with adjusted requirements. These data covered the transition quarter ("TQ", which covers July to September 1976) and each fiscal year thereafter through 1979. NHTSA also provided data giving funding by public law for the National Center for Statistics and Analysis for 1970 through 1976.

The information provided by NHTSA significantly reduced the amount of data that had to be estimated. Only administration and support expense for the different program areas needed to be estimated, and then only for the years prior to the transition quarter. The methods used in deriving these estimates are explained in the next section.

In summary, the data included in this report are based on actual appropriations provided by NHTSA for the period from the transition quarter in 1976 through 1979. For earlier years the data are based on adjusted requirements from the agency's budget submissions. Thus most funding for NHTSA's 403-funded contract programs were provided by

NHTSA, either in the budget submission or directly by the agency. Administration and support funding for 1970 to 1976 had to be estimated.

ESTIMATION PROCEDURES

Because NHTSA does not publish statistics giving the detailed information needed for this study and did not provide it for all years, some estimates had to be made. Specifically, figures covering administration and support for 1970 to 1976 and the breakdown of contracts within Traffic Safety Programs between demonstrations and other types of programs had to be developed.

Administration and Support Expense

It was assumed that all of administration and support funds for the Office of Traffic Safety Programs (after deducting 402 grant administration), were funded by 403 funds. This covers the period preceding funding for its inspection demonstration projects.

Administration and support funds for Research and Development were divided among the public laws on the basis of data on personnel positions funded under each law. These data did appear in the budget submissions. All positions in Traffic Safety Research, plus a proportional share of the positions in the National Center for Statistics and Analysis, were divided by total nonadministrative positions. This fraction was then assumed to be the 403-funded share of total administration and support for Research and Development.

The share of the NHTSA General Administration funded by 403 was estimated by finding the share of total 403 funding for both Traffic Safety Programs and Research and Development as a proportion of total NHTSA finances, excluding General Administration. This fraction was multiplied by total General Administration to estimate the funds attributable to Section 403.

Demonstrations

NHTSA does not list demonstrations as a category of Traffic Safety Programs. The figure for these projects was estimated by listing all

demonstration programs and finding the funding associated with each project. Information on many projects was available in the TRAIS (Transportation Research Activities Information) file obtained from the Department of Transportation. This was supplemented with information in NHTSA and contractor reports and in contract files kept by the HSRI Library. Personal telephone conversations with NHTSA staff in Traffic Safety Programs were made to obtain figures on current programs and to validate or correct estimates.

Two problems should be mentioned regarding the estimates of funding for demonstrations. First, data for different programs during different periods of time were from different sources and are not equivalent measures. Part of the funding represented adjusted requirements and part represented obligations. A second problem is perhaps more significant. This concerned determining whether a particular program was a demonstration or not. There is a grey area between demonstrations and research per se as well as between demonstrations and action programs such as public information campaigns. Where to draw the line is debatable. Although many projects clearly belong in one area or another, others lie in between.

Given these problems, the information presented on demonstrations should be accepted only as reasonable estimates. The financial measures for the full 1970 to 1979 time period should be fairly accurate, given the criteria that were used to determine whether the different projects were demonstrations. Because the data presented are a compilation of two different financial measures, it is possible that any given year may be high or low, with offsetting estimates in other years. Although only estimates, they should be accurate enough to serve the purposes of this report.

Validity

The results of the estimating procedures described above yield totals that are close to total actual funding as reported by NHTSA. Actual appropriations for the 403 program covering the 1970 to 1979 period were $292.1 million. The total derived from using detailed breakdowns and the

estimates that had to be made for this study is $299.0 million. The difference is only $6.9 million, or less than three percent. Thus, data in the chapters that follow appear to provide a valid basis for assessing the development and trends of NHTSA's highway safety RD&D program.

CHAPTER FOUR
FINDINGS—TRENDS TO DATE

This chapter presents an overview of NHTSA finances as well as a detailed look at its programs in highway safety RD&D. It answers the questions of how much NHTSA has spent for highway safety RD&D and how the agency has allocated resources among different programs during the 1970 to 1979 period.

The analysis begins with an examination of overall NHTSA funding and the relationship of highway safety RD&D to NHTSA's total operation. Then, funding is examined by functional and organizational divisions. Following this, the allocation of funds among NHTSA contract program areas is discussed. The last section contains a summary and conclusions.

APPROPRIATIONS FOR HIGHWAY SAFETY RD&D

The financial support Congress has provided NHTSA under all three of the authorizing laws discussed in Chapter Two is shown in Table 4-1. The three laws are the Traffic and Motor Vehicle Safety Act, the Highway Safety Act, and the Automotive Fuel Economy and Consumer Information Act. Funding is provided by two appropriations. The Operations and Research appropriation provides budget authority for all of NHTSA's activities except the state and community grant program. The State and Community Highway Safety appropriation funds the grant program including its administration, authorized by Section 402 of the Highway Safety Act.

The financing procedures for the two appropriations differ. Operations and Research provides budget authority in the form of appropriations that allow NHTSA to incur obligations and make payments. The State and Community Highway Safety appropriation provides contract authority that allows NHTSA to enter into contracts or incur obligations in advance of the actual appropriation. The data in Table 4-1 lists appropriations for

TABLE 4-1

TRAFFIC AND HIGHWAY SAFETY APPROPRIATIONS AND
STATE AND COMMUNITY SAFETY OBLIGATIONS
FISCAL YEARS 1970 TO 1979
(millions)

	FY70	FY71	FY72	FY73	FY74	FY75	FY76	TQ	FY77	FY78	FY79	Total	Average Approp.
Traffic and Motor Vehicle Safety	20.2	25.9	40.3*	33.0	30.3	35.1	38.3	10.4	41.8	42.8	43.9	362.	35.3
Highway Safety RD&D	10.0	17.0	38.6	44.2	38.6	28.1	29.0	6.3	27.1	26.9	26.3	292.1	28.5
Automotive Fuel Economy and Consumer Information					15.0	7.7	0.7	0.0**	7.4	10.2	12.4	53.6	7.3***
Total Operations and Research Appropriation	30.3	42.9	78.9	77.2	83.9	70.9	68.0	17.0	76.3	79.9	82.6	707.7	69.0
State and Community Safety Obligations	70.0	75.0	67.1	82.1	66.8	85.3	100.9	25.1	129.0	172.0	172.0	1045.3	102.0
TOTAL	100.2	117.9	146.0	159.3	150.7	156.2	168.9	42.1	205.3	251.9	254.6	1753.0	171.0

* Includes $9.6 million for Test Facility.
** Less than $50,000.
*** Average for 7.25 years following initial funding.

Source: U.S. Department of Transportation 1978, Table C-1.

traffic and highway safety and obligations for the grant program. This gives a more accurate estimate of actual financial support for NHTSA's programs than other measures.

The data in Table 4-1 show the significance of the 403 program and its place in overall NHTSA operations. Funding for 403 programs, including allocated administration and support expenditures, total $292.1 million over the 1970 to 1979 period. (Here and throughout this analysis the years are fiscal years.) This is 41.3% of total Operations and Research and 16.7% of NHTSA's total funding.

Average annual 403 funding was $28.5 million, starting at a low of $10.0 million in 1970, increasing to $44.2 million in 1973 when the Alcohol Safety Action Projects (ASAPs) were at their maximum, and declining to $26.3 million in 1979.

Funding for Motor Vehicle Safety also increased rapidly during the early 1970s. Virtually all of the growth in NHTSA's Operations and Research funded programs occurred by 1972. Changes since that time have been reallocations of the total, rather than additions. Funding to support Automotive Fuel Economy and Consumer Information programs was added in 1974 at a time when the other two areas were declining.

The funding pattern for the state and community grant program differed. This program grew slowly at first, but increased rapidly during later years.

Examining the whole period one gets a different picture of NHTSA and changes in its operations than would be obtained by looking at only the 1970 and 1979 levels. Over the full ten-year period (1970-1979) the 403 programs have increased at about the same average rate as the NHTSA total operation. Both Operations and Research funding and State and Community safety funding have increased at about the same average rate. This has occurred in spite of the addition of Automotive Fuel Ecnomy and Consumer Information responsibilities. Motor Vehicle programs have declined in relative importance to make this possible.

The 403 portion of NHTSA was 10.0% in 1970 and 10.3% in 1979. Motor Vehicle programs declined from 20.2% to 17.2% during the same period. And Automotive Fuel Economy and Consumer Information was

added in 1974 rising to 4.9% of NHTSA in 1979. The State and Community grant program under Section 402 account for the balance of NHTSA's funds. The proportion of NHTSA funds represented by this program declined moderately from 69.9% in 1976 to 67.6% in 1979.

Taking funding as a reasonable measure of the importance of different programs, it appears that Congress and NHTSA considered the 403 programs as important in 1979 relative to other NHTSA programs as they did in 1970.

TOTAL FUNDING AND MAJOR COMPONENTS

The purpose of this section is to examine trends in total funding for highway safety RD&D and by comparing the different components of NHTSA's operations to determine what changes in emphasis have occurred. Table 4-2 shows funding for highway safety for the 1970 to 1979 period. Total highway safety RD&D is shown at the top of the table, with the State and Community grant program at the bottom. The 403-funded portion is divided into (1) administration and support and (2) contracts. Within each of these divisions funding is broken down into the two program areas—Traffic Safety Programs and Research and Development.

There is no single best way of analyzing patterns in NHTSA funding. In the following material four analyses are presented showing different aspects of NHTSA's operations. Each of the analyses is based on the same data. The data are summarized three different ways to show different patterns and trends.

Total Funding

Total funding is illustrated in Figure 4-1. This shows a major increase in highway safety RD&D funding during the early 1970's when the ASAP program was being implemented. Since reaching a peak in 1973, it declined rapidly and has been fairly stable since 1975.

An interesting view is afforded when the same totals are expressed in constant 1970 dollars. This is particularly important because of the high rates of inflation that have occurred during recent years. In order to approximate real funding, the nominal figures were divided by the GNP

TABLE 4-2

403 AND 402 FINANCES FOR SELECTED ACTIVITIES: 1970-1979
(all figures in thousands of dollars)

Activity	Fiscal Period												
	70	71	72	73	74	75	76	TQ(d)	77	78	79	70-79 Total	Average
TOTAL 403 FINANCES	11,163	17,863	40,760	45,896	40,181	27,780	30,004	6,320	26,438	26,028	26,545	298,987	29,169
ADMINISTRATION AND SUPPORT	3,348	4,839	6,171	7,391	7,347	7,355	9,854	2,080	8,928	10,071	12,002	79,386	7,745
General Administration (a)	1,691	2,402	4,265	4,963	4,401	4,135	5,623	760	4,413	4,613	6,636	43,902	4,283
Traffic Safety Programs	786	1,353	666	1,345	1,709	2,162	2,877	785	3,131	4,148	3,789	22,751	2,220
Research and Development (b)	871	1,084	1,240	1,083	1,237	1,068	1,354	535	1,384	1,310	1,577	12,733	1,242
CONTRACTS	7,815	13,024	34,589	38,505	32,834	20,485	20,150	4,240	17,510	15,957	14,543	219,592	21,424
Traffic Safety Programs	3,285	8,576	29,439	31,511	25,663	12,100	12,016	2,370	8,894	8,116	7,381	149,351	14,571
Demonstrations (c)	2,864	6,491	27,551	28,594	23,201	10,228	6,657	930	2,500	3,500	3,700	116,216	11,338
National Driver Register	---	---	---	---	---	430	460	135	1,130	1,200	1,640	4,995	951(e)
Development	421	2,085	1,888	2,917	2,462	1,442	4,899	1,305	5,264	3,416	2,041	28,140	2,745
Research and Development	4,530	4,448	5,150	6,994	7,171	8,325	8,134	1,870	8,616	7,841	7,162	70,241	6,853
Traffic Safety Research	1,970	2,579	2,950	4,688	4,200	6,245	5,230	1,290	5,000	4,250	3,650	42,052	4,103
National Driver Register	393	300	106	124	289	---	---	---	---	---	---	1,212	242(e)
NCSA	2,167	1,569	2,094	2,182	2,682	2,080	2,904	580	3,616	3,591	3,512	26,997	2,632
TOTAL 402 FINANCES	70,000	74,976	67,096	82,061	66,823	86,076	100,939	25,108	129,000	172,000	172,000	1,046,079	102,056
GRANT ADMINISTRATION	2,050	2,611	3,300	3,300	3,300	3,300	3,300	825	3,300	3,300	4,904	33,490	3,267
GRANTS	67,950	72,365	63,796	78,761	63,523	82,776	97,639	24,283	125,700	168,700	167,096	1,012,589	98,789

Assumptions used in estimating 403 share are given in the footnotes below.

Notes: (a) Based on 403 funds share of other NHTSA activities.

(b) Based on positions in 403 programs as share of total positions in Research and Analysis.

(c) Estimated from information on TRAIS records for individual contracts supplemented with other information.

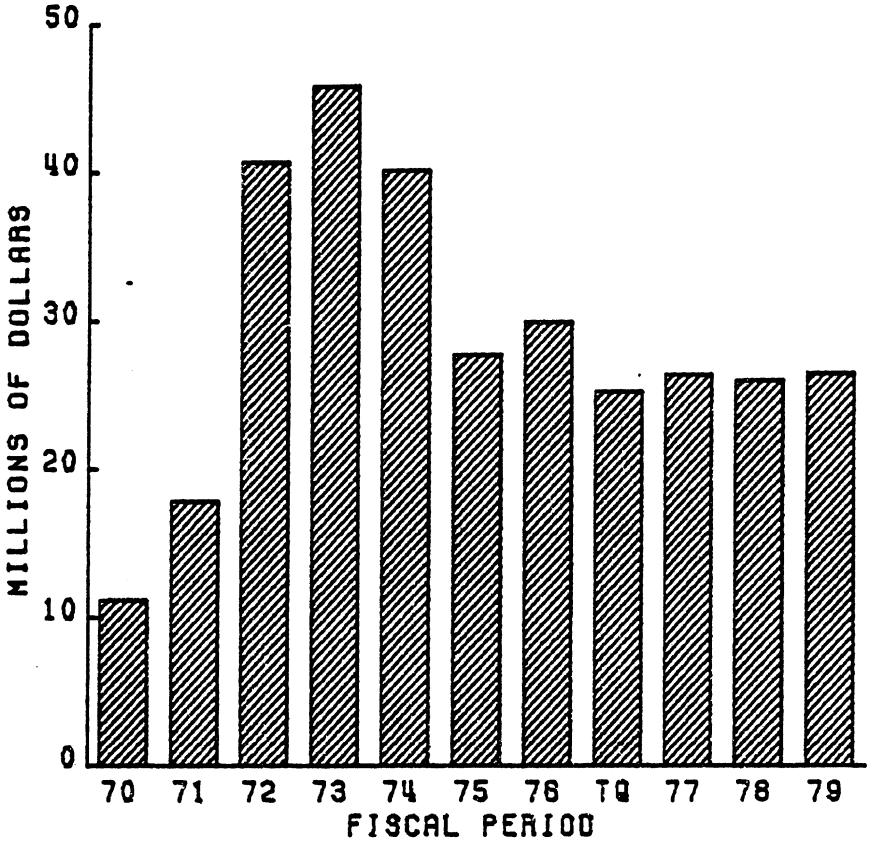
(d) Transition Quarter.

(e) National Driver Register yearly average for full period is $606,000 from 403 funds.

Source: see text.

FIGURE 4-1

NHTSA HIGHWAY SAFETY RD&D FUNDING 1970-1979
(actual dollars)



deflator. The result is shown in Figure 4-2.

Comparing the two figures, the funding levels for the 1975-1979 time period show a much more dramatic drop with constant dollars than with nominal dollars. Looking at the change from 1970 to 1979, using constant dollars there has been an increase in funding of 137.8%. In comparison, using nominal dollars the increase has been 234.8%. During this same period the total federal outlay for RD&D increased only 85.7% (in nominal terms). It appears that in the view of Congress, highway safety is a significant problem to the extent that it has given relatively more emphasis in 1979 than it did in 1970.

Organization

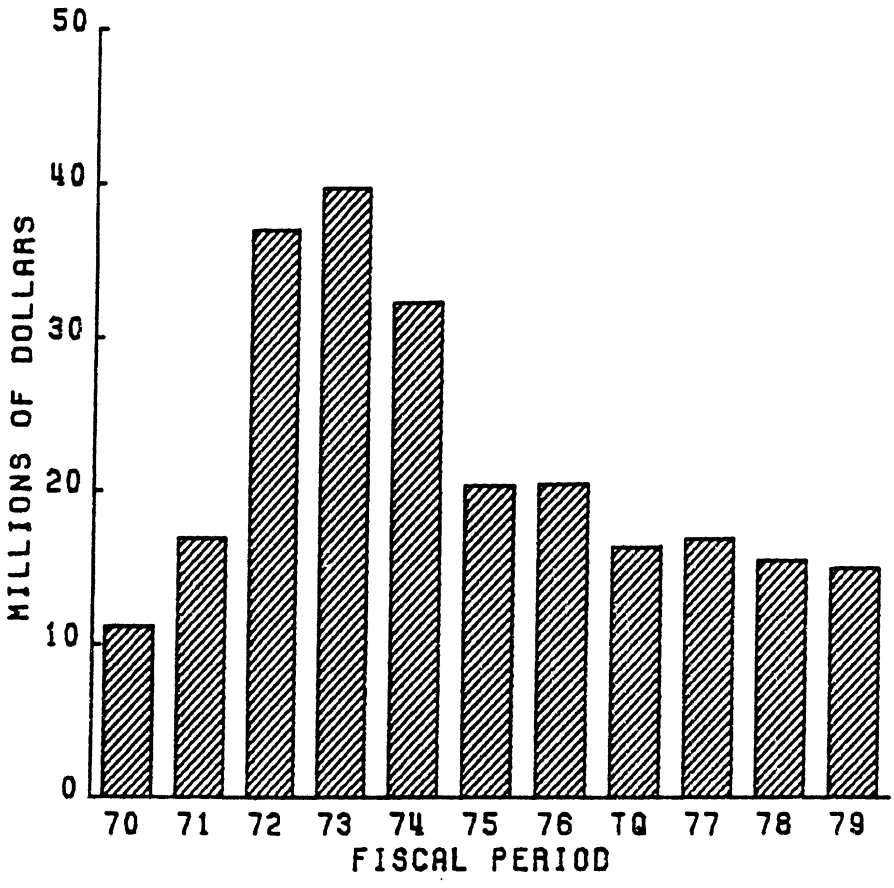
The three main parts of the NHTSA organization financed by 403 funds are (1) General Administration, (2) Traffic Safety Programs, and (3) Research and Development. The relative size of these parts as measured by the funds allocated to them is shown in the upper part of Table 4-2. Of the three parts, the fastest growing in the 1970-1979 period has been General Administration. It grew from $1.7 million in 1970 to $6.6 million in 1979, an increase of $4.9 million. This was a compound annual increase of 15.9% per year. While in 1970 General Administration accounted for 15.1% of the 403 funds, by 1979 it accounted for 25.0%.

The Traffic Safety Programs increase was greater in absolute terms, but the rate of increase was smaller. The total includes administration and support plus contract financing. The increase was from $4.1 million in 1970 to $32.8 million in 1973 when the ASAP program was at its peak. Since 1973 the total declined to $11.2 million by 1979. The net ten-year increase of $7.1 million represents a compound growth rate of 11.5% per year. The relative importance of Traffic Safety Programs increased from 36.5% of the total 403 budget in 1970 to 71.6% in 1973 and declined to 42.1% in 1979.

Research and Development had the smallest absolute increase among the three divisions over the 1970-1979 period and showed the slowest rate of increase. From a level of $5.4 million in 1970 it gradually grew to $10.0 million in 1977 and then decreased to $8.7 million in 1979. This was

FIGURE 4-2

NHTSA HIGHWAY SAFETY RD&D FUNDINGS 1970-1979
(constant 1970 dollars)



an average rate of increase of 5.3%. Over the ten years, Research and Development funding declined from 48.4% of total 403 funds in 1970 to 32.9% in 1979.

It is clear that the relative importance in the 403 RD&D program of the two operating components as measured by the funds allocated to them has reversed. In 1970 Traffic Safety Program was three-fourths as large as the 403-funded portion of Research and Development. By 1979, 403 funds for Research and Development was less than four-fifths those for Traffic Safety Programs.

Management vs. Contracts

The increase in funds for General Administration noted in the previous section gives rise to the question of how much overall administration and support has increased relative to contract programs. Administration and support as used here is referred to as "Salaries and Supporting Expense" in NHTSA's budget. Total funds for 403 program administration and support include three items: a proportionate 403 share of General Administration, including a small amount for support contracts each year; the administration and support of 403-funded Traffic Safety Programs; and a similar amount for the management of 403-funded Research and Development. (General Administration contracts were excluded because they are not "research" contracts. They are relatively small, accounting for less than three percent of NHTSA funding in 1979.)

In 1970 total administration and support was $3.3 million, or some 30.0% of NHTSA's 403 budget. By 1979 this had increased to $12.0 million or 45.2% of NHTSA's 403 budget. The largest absolute increase was in General Administration. This increased $4.9 million or at a rate of 15.9% per year. Traffic Safety Programs administration and support increased at a faster rate. It grew at a rate of 18.5% per year from $0.8 million in 1970 to $3.8 million in 1979. Administration and support of Research and Development increased 6.6% per year, rising from $0.9 million to $1.5 million over the ten-year period.

The source of the relatively high administration and support expense for 1979 is reflected in the data in Table 2-1. The last column of that

table shows salaries and support expense per position for each of the program areas, as well as divisions within them. It should be noted that salaries and support are primarily salaries and fringe benefits, but not exclusively so. The figures include all expenditures except contracts and grants--e.g., general office expenses, travel, publication and distribution of materials, utilities, and rent.

The highest level of salaries and supporting expense per position is in General Administration where it is $71,306. The higher grade level of the personnel in that office would explain some of the higher expenditures there. In the operational program areas other than Traffic Safety Programs, average salaries and supporting expense per position ranges from $30,538 to $35,915, about half the level of General Administration. The range in salaries and supporting expense per position shows little variation.

Traffic Safety Programs differs significantly. There the range is from $27,397 for those in the State and Community Programs to an average of $49,100 for those programs funded by Operations and Research (primarily those funded with 403 funds).

The significant increase in the burden of managerial costs is evident in a single comparison. In 1970 NHTSA had administration and support expense of $43 for every $100 of contracts. In 1979 this expense had risen to $83 for $100 of contracts.

Research vs. Other Contract Programs

NHTSA has utilized its 403 funds for a variety of functions (demonstrations, development of manuals, etc.) in addition to exploratory or discovery research. In attempting to solve highway safety problems it seems appropriate that it do so as long as it maintains research at a level that is high enough for NHTSA to accomplish its mission. Amelioration of the problems requires carrying ideas beyond the research stage, to field testing in demonstration projects, development of training materials for how to implement countermeasure techniques, and evaluation of ongoing programs. But research may be important to lay the foundations for success in these areas. The purpose of the following

discussion is to describe how NHTSA has varied its emphasis among these various programs over time.

As shown in Table 4-2, 403-contract activities have been divided into different areas. These include (1) Demonstrations and (2) Development within Traffic Safety Programs, (3) Traffic Safety Research and (4) the National Center for Statistics and Analysis in Research and Development. In addition there is (5) the National Driver Register that was part of each program area at different times.

The NHTSA categorization of its programs implies that highway safety research includes only (3) Traffic Safety Research in the Research and Development program areas. Other programs funded by 403 funds include the other four contract areas.

Traffic Safety Research has the purpose of setting the foundation for developing new techniques or approaches to reducing traffic accidents and related deaths and injuries, with the focus concentrating on the driver and other nonvehicle and nonhighway factors. In the 1970-1979 period funds for **research** experienced an overall rate of increase that was about equal to that for other contract programs. Funding went from $2.0 million in 1970 to $3.7 million in 1979, an increase of $1.7 million. The relative importance was maintained as evident from the fact that these research contracts accounted for 25.2% of 403 contract funds in 1970 and 25.1% in 1979. One-fourth of the additional funding that was provided in 1979 relative to 1970 went into research.

Development projects involve preparation of manuals and training programs to improve the capabilities of personnel working in the highway safety field at all levels of government and in the private sector. These projects accounted for $1.6 million of the increase in contract funding for 1979 over 1970, almost one-fourth of the total increase. Their relative importance increased significantly from 5.4% of NHTSA's 403 contract funds in 1970 to 14.0% in 1979.

Demonstrations are intended to field test new or modified countermeasures. Demonstrations accounted for $0.8 million of the increase in contract funding between 1970 and 1979, growing from $2.9 million in 1970 to an estimated $3.7 million in 1979. This relatively small

growth obscures the fact that during the 1971-1976 period when NHTSA's large-scale ASAP program to counteract drunk driving was in operation, demonstration funds were very large. Although more recent demonstration funds no longer reflect the much larger share of the total they had during the ASAPs (when they accounted for as much as 79.7% of 403 contract funds in 1972), they still accounted for over one-fourth of all 403 contract expenditures in 1979. .

National Driver Register (NDR) might more properly be defined as system support rather than an element of the 403 RD&D program. It is a computerized register of hazardous drivers that is accessible by state authorities. It is designed to prevent individuals with revoked licenses in one state from obtaining a license in another state.

The National Driver Register received substantial increases in funding between 1970 and 1979. The annual funding of the NDR increased to over four times the 1970 level from $0.4 million to $1.6 million. It accounted for only 5.0% of total 403 contract funds in 1970, by 1970 this had increased to 11.3%. (In 1970 the NDR also received funding under the Motor Vehicle Act.)

National Center for Statistics and Analysis is a significant element in the research process, although much of the effort is concentrated in vehicle-oriented data collection and analysis, rather than in highway safety as it has been defined in this report. Funding for the center increased 62.1% between 1970 and 1979. It accounted for 20.0% of the change in 403 contract funding over the ten years and now accounts for 24.1% of 403 contracts.

Comparing the five areas of NHTSA 403 RD&D activity, it is aparent that in 1979 the overall program had a different emphasis than existed in 1970. The emphasis on research relative to other programs did not change significantly. It still accounts for about twenty-five percent of the 403 contract program. The shift that did occur was from demonstrations and the NCSA to development programs and the NDR.

BREAKDOWN OF CONTRACTS INTO PROGRAM CATEGORIES

This section examines how NHTSA has allocated its 403-contract

resources among different substantive program categories. Table 4-3 presents data on NHTSA's highway safety RD&D contracts over the 1970 to 1979 period broken down into the program categories NHTSA has used historically within Traffic Safety Programs and Research and Development. The contract total for each year in Table 4-3 agrees with the contract total in Table 4-2. Similarly the ten-year totals for Traffic Safety Programs contracts and for Research and Development contracts agree.

It should be noted further that the subtotals for Traffic Safety Research and the subtotal for the National Driver Register agree in the two tables. But the subtotals for demonstrations and development projects in Table 4-1 cannot be reconciled with the subtotals in Table 4-2. This is because "demonstrations" is a functional category that is part of several historical program categories in the contract areas. Generally each contract area includes some demonstrations and development as well.

The definitions of NHTSA 403 program categories that follow are drawn from the agency's statement of objectives. (Paullin, Dye, and Bolger 1977, pp. III-165 to III-169 and III-177 to III-181). Program titles may vary slightly from those that appear in this report, because of minor changes made by NHTSA over time:

TRAFFIC SAFETY PROGRAMS:

ASAP
The central feature of the Alcohol Countermeasures Program is the 35 Alcohol Safety Action Projects to identify, control, and provide surveillance of the drunk driver, particularly the problem drinker.

Advanced Countermeasures Experiments
To implement individual alcohol countermeasure demonstrations, with the intent of determining and documenting the most cost-effective strategy within each countermeasure.

Advanced Countermeasure Support and Evaluation
To provide support to the alcohol countermeasures and to develop and refine new approaches to the problem of alcohol-related highway fatalities.

Alcohol Public Education
To educate the public as to the serious nature of the drinking driver problem and to provide training so that the necessary

technical knowledge is available at the local level.

Manpower Development
To increase the availability of qualified safety personnel required to manage and operate state and local highway safety programs.

Enforcement
To reduce fatal, personal injury and property-damage accidents in which traffic violations are casual factors.

Driver Programs
To reduce traffic accidents by improving driver performance through the development of driver examination criteria, driver education programs, alcohol youth education and safety belt usage demonstrations.

Systems Operation
To develop information, techniques and guidelines needed for program management of highway safety efforts at the state, county, and local levels.

Pedestrian and Cyclist Safety
This program demonstrates the countermeasures designed to improve the safety behavior of pedestrians and motorcyclists.

Emergency Medical Service
To develop and demonstrate effective emergency care systems into a coordinated reporting mechanism.

State Records and Information Systems
To assist states in the development, demonstration, and implementation of traffic records, technical materials, procedures and model systems in support of traffic safety programs.

National Driver Register
This project is designed to regster hazardous drivers and drivers whose licenses have been denied into a computer master file to reduce by decreasing the risk of licensing hazardous and ineligible drivers.

Vehicle-In-Use Program
To reduce traffic accidents by minimizing accident-causing defects in vehicles-in-use. To provide for states implementation of periodic inspection of vehicle.

RESEARCH AND DEVELOPMENT:

National Center for Statistics and Analysis
To provide statistically valid accident data together with quantitative description and analyses of highway safety programs

and trends that can be used in the establishment, operation, and evaluation of highway traffic safety programs.

National Driver Register
This project is designed to register hazardous drivers and drivers whose licenses have been denied into a computer master file to reduce by decreasing the risk of licensing hazardous and ineligible drivers.

Drugs and Alcohol Research and Test
To develop information about the alcohol and highway safety problem and to use this information to identify, develop and test new countermeasures for specific alcohol related safety problems.

Driver Pedestrian Factors
To promote safety on the road by developing training techniques, licensing tests, analysis of pedestrian and bicycling safety problems, and conformance with safe driving practices. Each of the subject areas will be independently addressed.

Safe Driving Conformance Research
To add significant knowledge to the existing data base so that programs can be identified and developed that will reduce the unsafe actions of drivers.

Safety Belt Usage
This program includes the determination of safety belt usage among drivers and vehicle occupants; determination of attitudes and motivations in regard to safety belt usage. In addition, the program will be aimed at improving the design of safety belt systems to increase usage. To determine how to motivate drivers and passengers to use their seat belts.

Pedestrian Safety and Bicyclist Safety Research
This program will provide testing of potential countermeasures aimed at reducing vehicle/bicycle and pedestrian accidents. Research will also be undertaken in field testing to determine the effectiveness of public safety messages and training programs.

Motorcyclist and Motor Driven Cyclist Safety
Improve rider capability through improved traffic safety programs. Enable states to do a better job of preparing riders and checking their capabilities.

Driver Licensing
To promote safe driving through the process of identification and screening of drivers not capable of driving safely and effectively and implementing new licensing procedures incorporating vision, hearing, and decision making, and accident avoidance skills.

Vehicle Operator Education and Rehabilitation
This program consists of an in-depth analysis of the human factor causes of accidents and training objectives to correct identified driver deficiencies. Education rehabilitation programs are being developed for specific groups of drivers with identified problems.

Advanced Inspection Techniques
To standardize vehicle inspection techniques, equipment and procedures. Develop inspection facility guidelines and model inspection program.

Traffic Safety Programs Contracts

Two adjustments were necessary to make the data consistent throughout the 1970-1979 period. First, "Safety Demonstration Projects," a composite category in Traffic Safety Programs used only during 1970 and 1971, was eliminated by shifting the funds to other categories. This was accomplished by making a detailed analysis of the contracts that appeared to be domonstrations. The financial figures were not closely comparable. Nevertheless, in order to make the data consistent throughout the period these are included here. The funding allocated to the different program areas was as follows:

	1970	1971
Driver Control Programs	+150	+135
Systems Operation	+180	+160
Emergency Medical Systems	+390	+330
Vehicle-In-Use/State Vehicle Programs	+660	+560
Safety Demonstration Projects	-1,380	-1,185

Second, public education appeared for the first and only time in 1979. This was reallocated to approximate the 1980 allocation as follows:

Enforcement	+600
Driver Control Programs	+300
Alcohol Public Education	+300
Public Education	-1,200

Data for Traffic Safety Programs contracts are presented in the top portion of Table 4-3. They are illustrated graphically in Figures 4-3 through 4-17.

Total **Traffic Safety Programs** (Figure 4-3) increased rapidly from a

TABLE 4-3

ALLOCATION OF 403 RESOURCES BY HISTORICAL CONTRACT CATEGORIES
(thousands of dollars)

CONTRACT AREA	Fiscal Period 70	71	72	73	74	75	76	TQ	77	78	79	Ten Year Total
A. TRAFFIC SAFETY PROGRAMS												
1. ASAP	830	5,500	26,000	27,000	21,700	6,000	5,386	--	--	--	--	92,416
2. Advanced Alcohol Countermeasure Experiments	--	--	--	--	--	1,900	1,300	455	1,400	450	600	6,105
3. Advanced Alcohol Countermeasure Support	--	--	--	--	--	300	310	115	310	300	225	1,560
4. Alcohol Public Education	95	636	1,198	1,345	1,100	500	500	150	800	225	300	6,849
5. Manpower-Management Development	730	550	425	450	450	750	750	260	950	810	150	6,275
6. Enforcement	--	515	1,000	1,300	1,200	750	285	90	500	2,080	1,470	9,190
7. Driver Control Programs	150	135	0	600	600	500	950	400	1,000	1,400	1,500	7,235
8. Systems Operation	180	350	250	250	250	250	250	75	269	96	0	2,220
9. Pedestrian-Cyclist Safety	--	--	--	--	--	375	425	135	635	280	335	2,185
10. Emergency Medical Systems	390	330	0	--	--	345	900	215	900	325	370	3,775
11. State Records-Information Systems	--	--	--	--	--	--	500	190	800	850	725	3,065
12. National Driver Register	--	--	--	--	--	430	460	135	1,130	1,200	1,640	4,995
13. Vehicle-In-Use/State Vehicle Programs	660	560	566	566	363	--	--	150	200	100	66	3,231
14. Other*	250	--	--	--	--	--	--	--	--	--	--	250
SUBTOTAL	3,285	8,576	29,439	31,511	25,663	12,100	12,016	2,370	8,894	8,116	7,381	149,351

TABLE 4-3 (continued)

ALLOCATION OF 403 RESOURCES BY HISTORICAL CONTRACT CATEGORIES
(thousands of dollars)

CONTRACT AREA	Fiscal Period 70	71	72	73	74	75	76	TQ	77	78	79	Ten Year Total
B. RESEARCH AND DEVELOPMENT (403 Portion)												
1. NCSA ****	2,167	1,569	2,094	2,182	2,682	2,080	2,904	580	3,616	3,591	3,512	26,977
2. National Driver Register	393	300	106	124	289	--	--	--	--	--	--	1,212
3. Drugs and Alcohol Research	665	1,464	1,700	2,200	2,200	2,200	1,785	440	1,795	1,750	1,488	17,687
4. Driver Pedestrian Factors	800	865	800	1,838	2,000	2,650	3,040	725	2,800	2,400	2,162	20,080
a. Safe Driver Conformance (UDA)	--	--	--	--	(126)	(450)	(550)	(118)	(468)	(399)	(383)	(2,494)
b. Safety Belt Usage	(240)	(130)	(50)	(120)	(600)	(310)	(305)	(70)	(295)	(265)	(255)	(2,640)
c. Pedestrian-Bicycle Safety Research	--	--	(210)	(953)	(490)	(795)	(840)	(213)	(1,000)	(834)	(802)	(6,137)
d. Motorcycle Safety	--	--	--	--	--	(275)	(320)	(99)	(373)	(250)	(192)	(1,509)
e. Driver Licensing	(560)	(330)	(200)	(365)	(476)	(445)	(575)	(126)	(541)	(420)	(307)	(4,345)
f. Driver-Operator Education and Rehabilitation	--	(405)	(340)	(400)	(308)	(375)	(450)	(99)	(123)	(232)	(223)	(2,955)
5. Advanced Inspection	200	250	450	650	--	500	405	125	405	100	--	3,085
6. Other	305**	--	--	--	--	895***	--	--	--	--	--	1,200
SUBTOTAL	4,530	4,448	5,150	6,994	7,171	8,325	8,134	1,870	8,616	7,841	7,162	70,241
TOTAL	7,815	13,024 ,	34,589	38,505	32,834	20,425	20,150	4,240	17,510	15,957	14,543	219,592

Key: * Traffic Safety Program Mission Support
** Traffic Systems Operation
*** Highway Safety Studies
**** Figure Given Excludes National Driver Register

FIGURE 4-3

TRAFFIC SAFETY PROGRAMS, 1970-1979

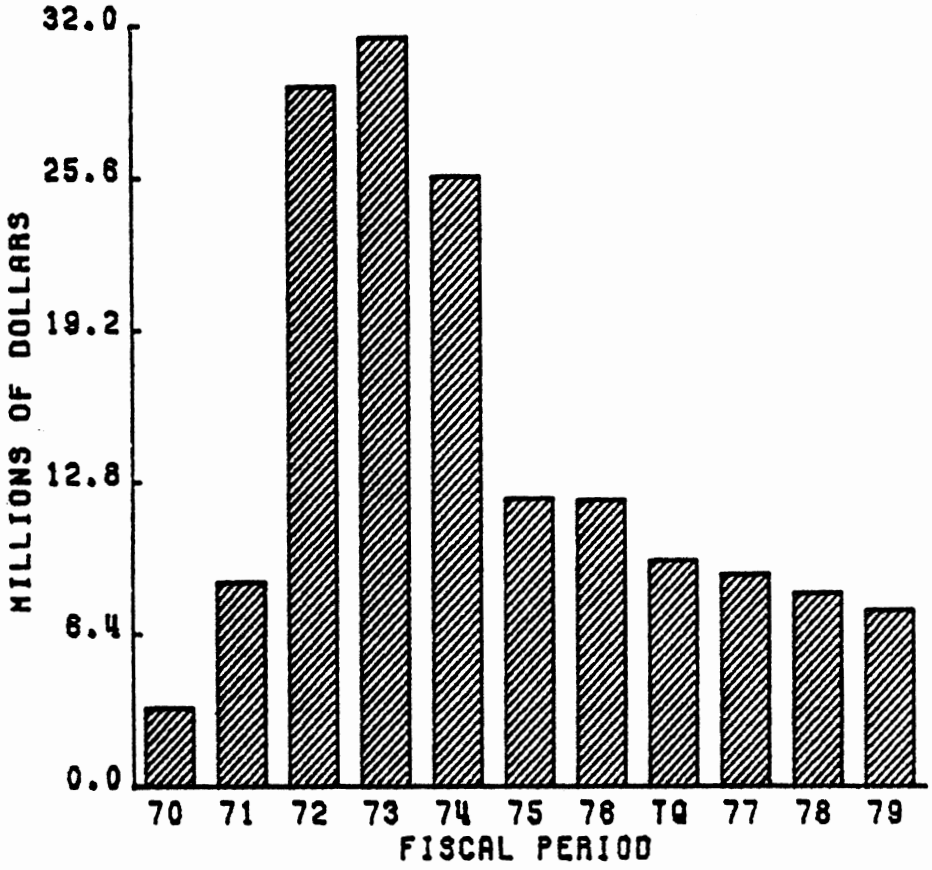
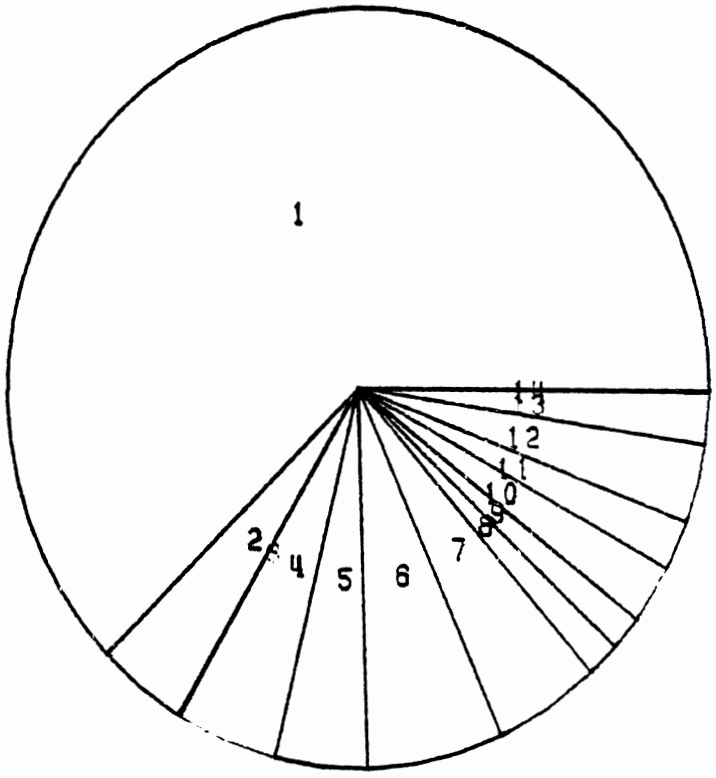


FIGURE 4-4

ALLOCATION OF TRAFFIC SAFETY PROGRAMS CONTRACTS, 1970-1979



1	61.7%	6	6.2%	11	2.1%
2	4.1%	7	4.8%	12	3.3%
3	0.1%	8	1.5%	13	2.2%
4	4.6%	9	1.5%	14	.02%
5	4.2%	10	2.5%		

FIGURE 4-5

ASAP

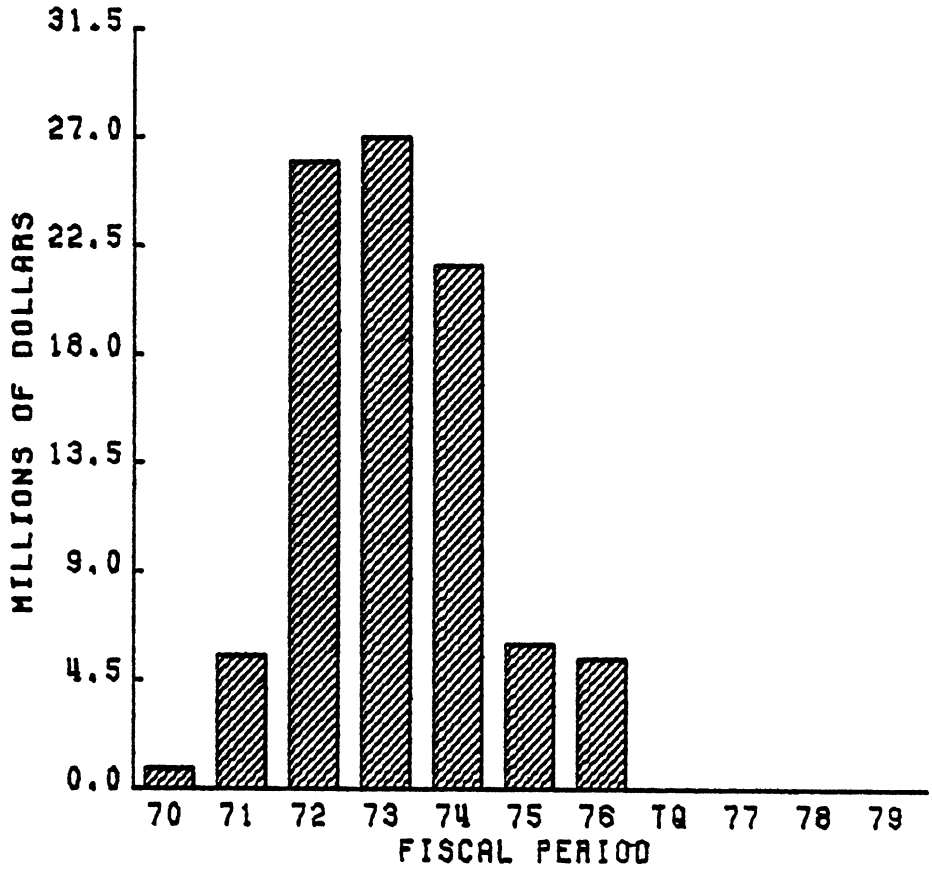


FIGURE 4-6

ADVANCED COUNTERMEASURE EXPERIMENTS

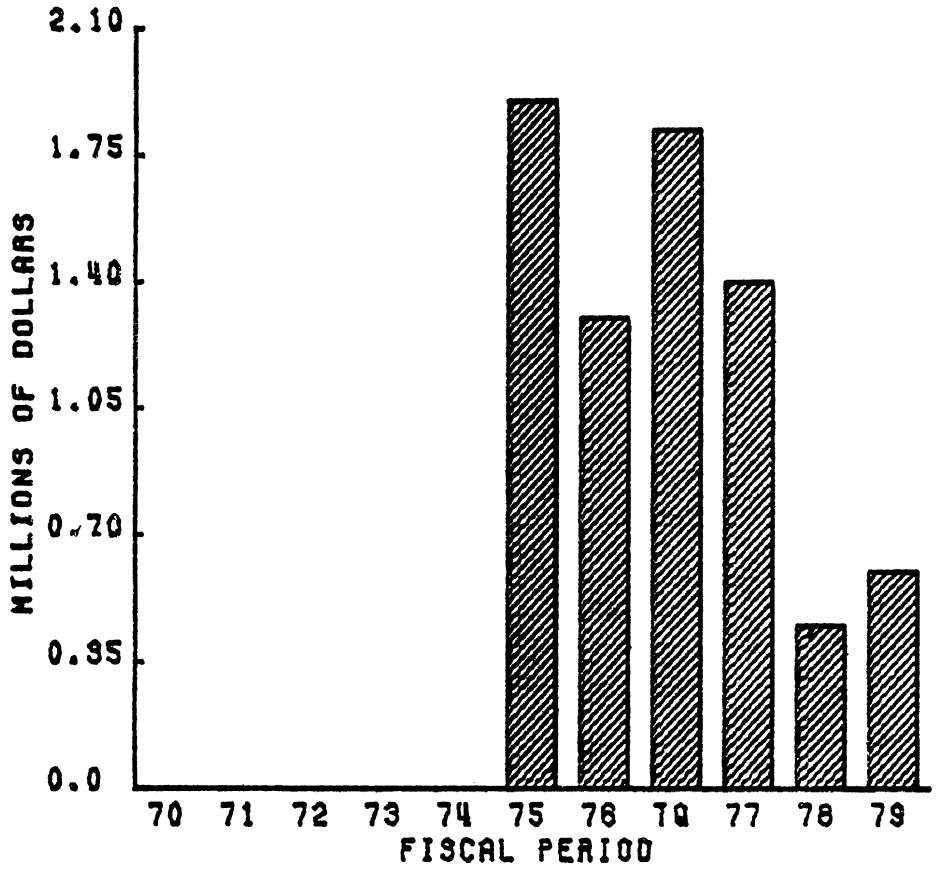


FIGURE 4-7

ADVANCED COUNTERMEASURE SUPPORT

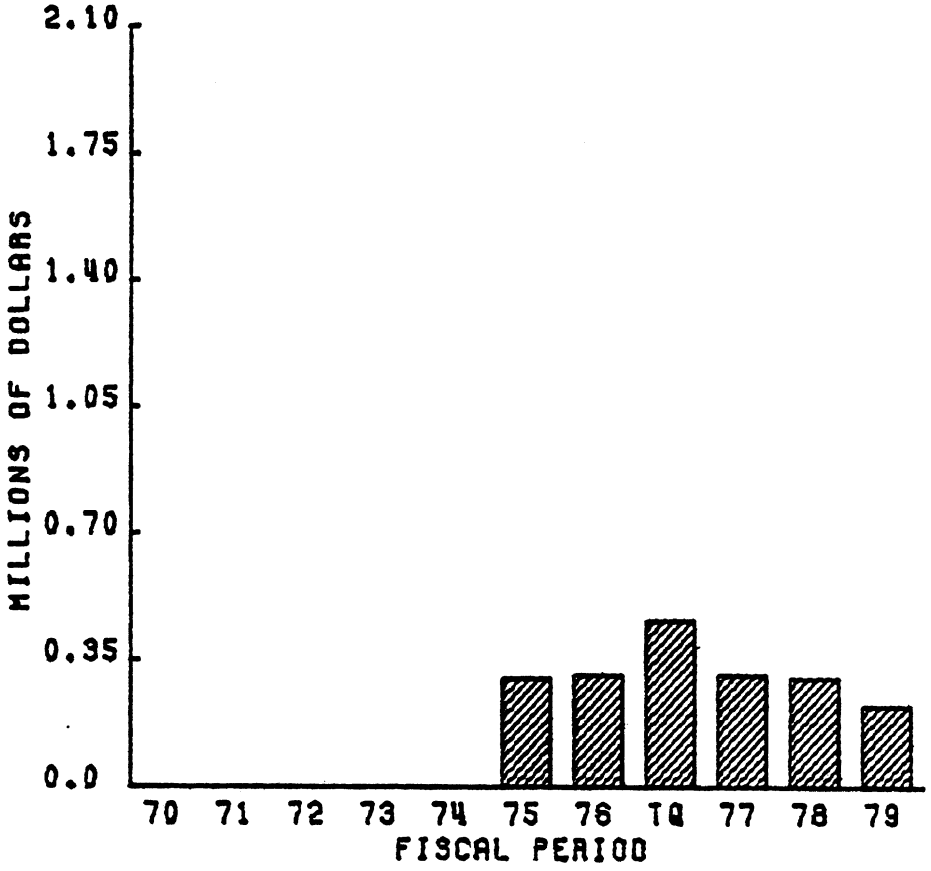


FIGURE 4-8

ALCOHOL PUBLIC EDUCATION

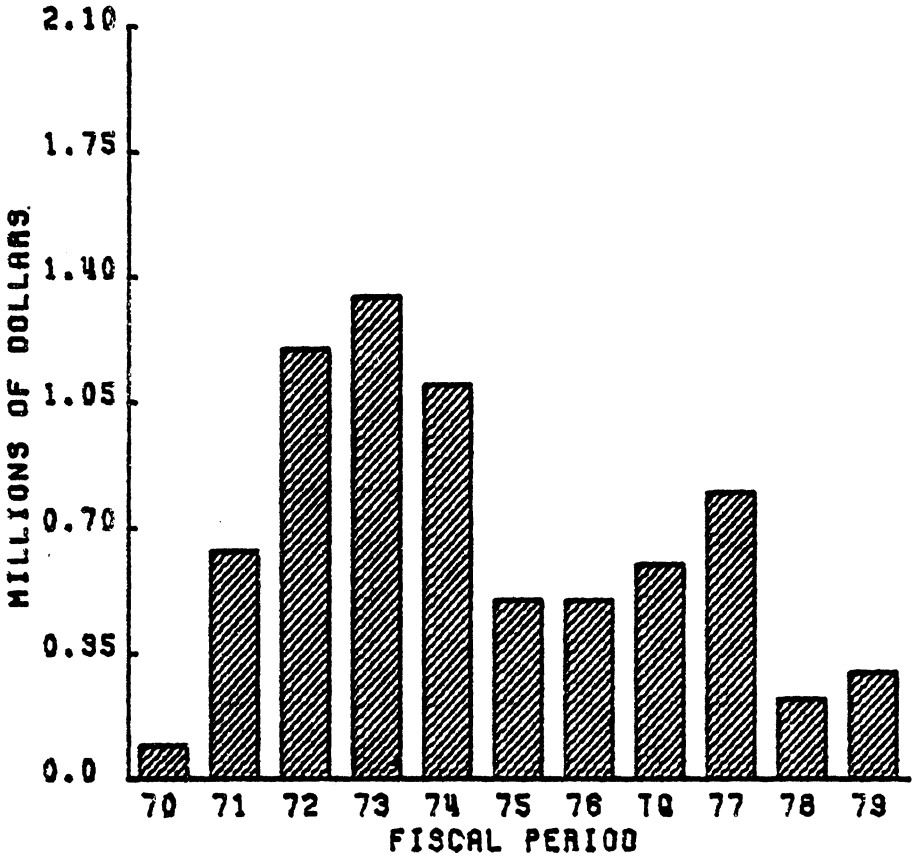


FIGURE 4-9

MANPOWER-MANAGEMENT DEVELOPMENT

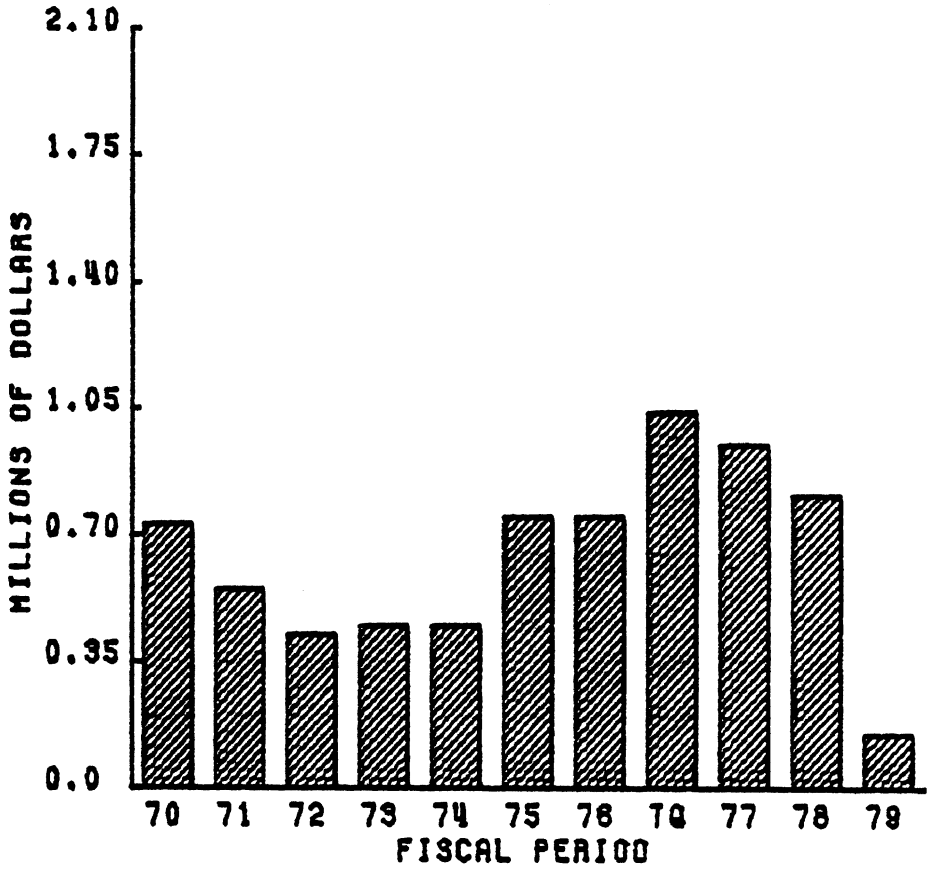


FIGURE 4-10

ENFORCEMENT

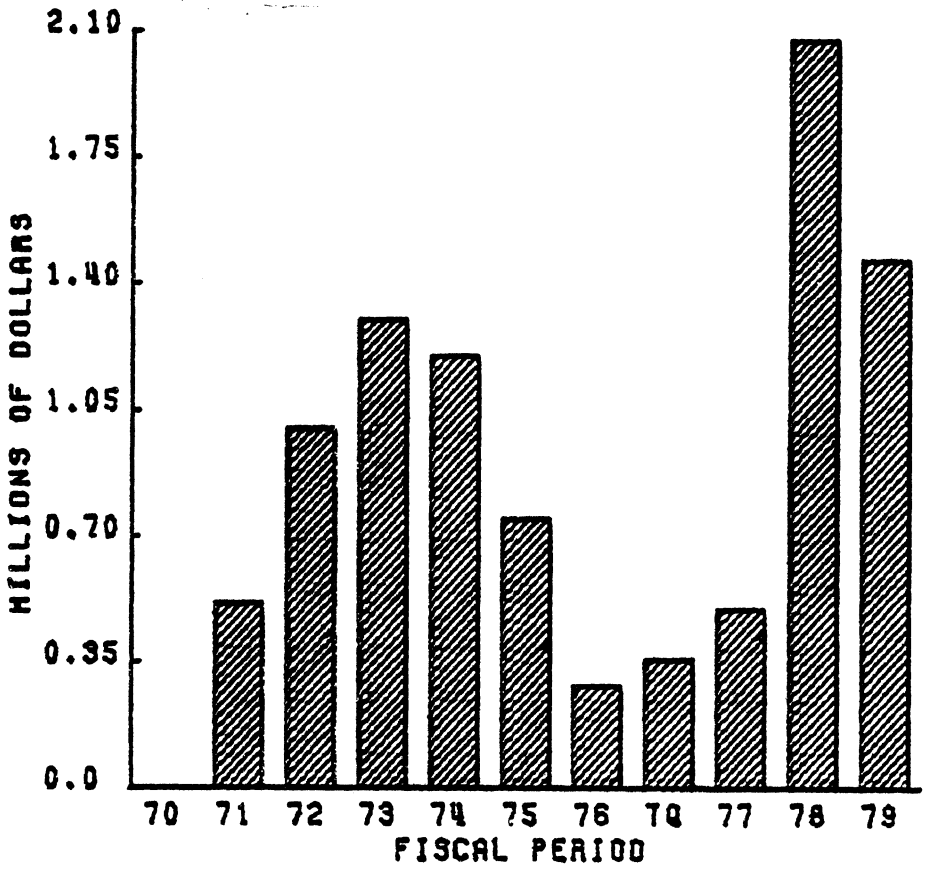


FIGURE 4-11

DRIVER CONTROL PROGRAMS

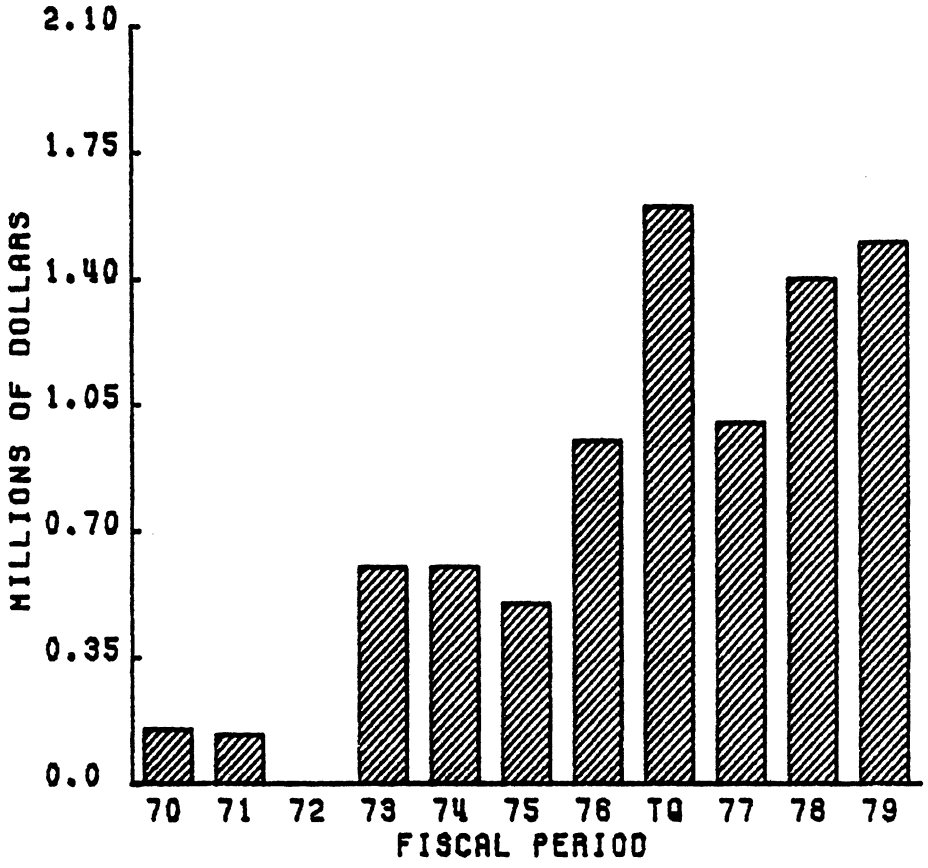


FIGURE 4-12

SYSTEMS OPERATION

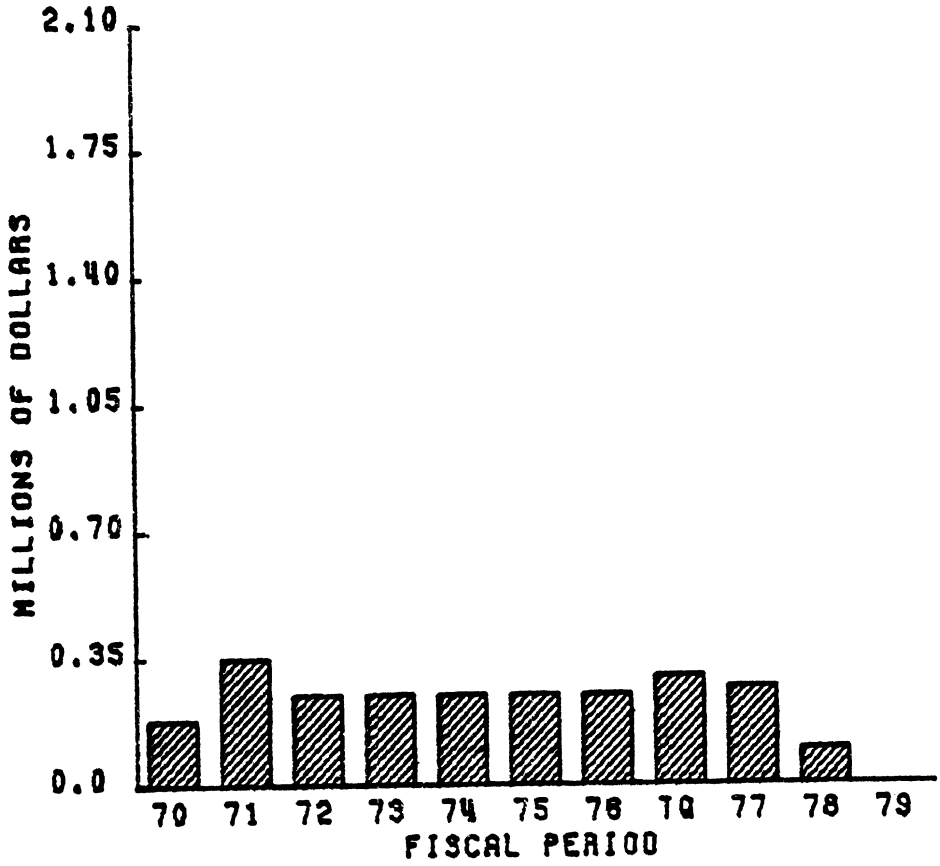


FIGURE 4-13

PEDESTRIAN-CYCLIST SAFETY

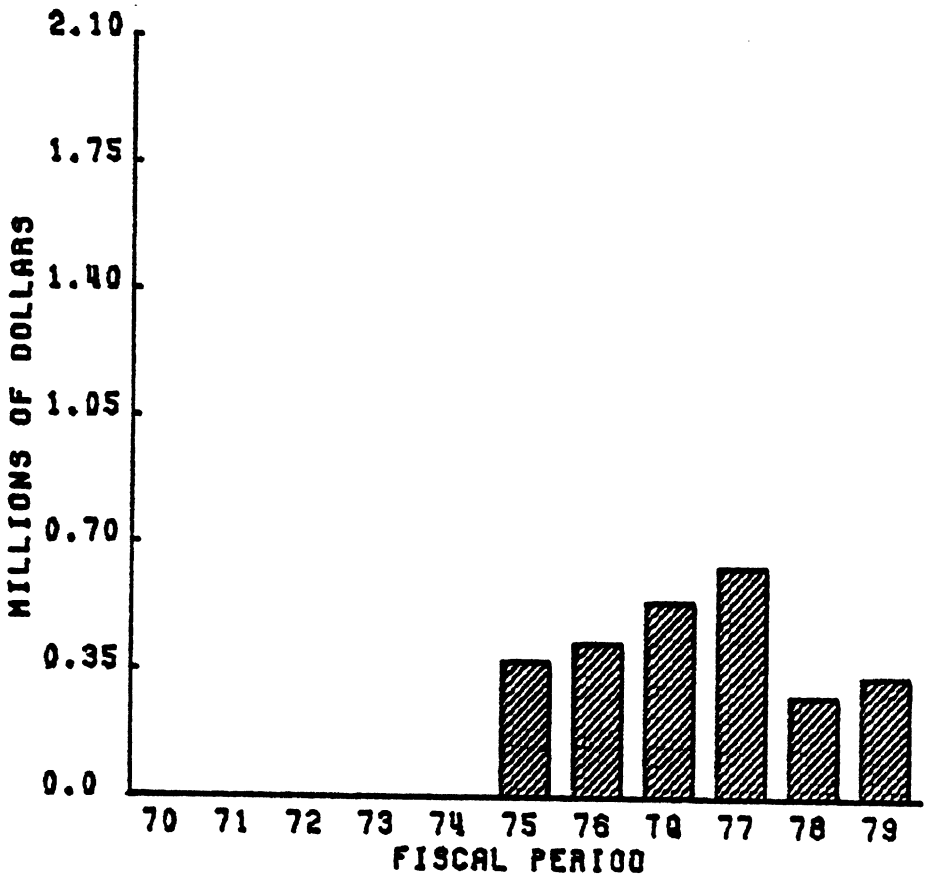


FIGURE 4-14

EMERGENCY MEDICAL SYSTEMS

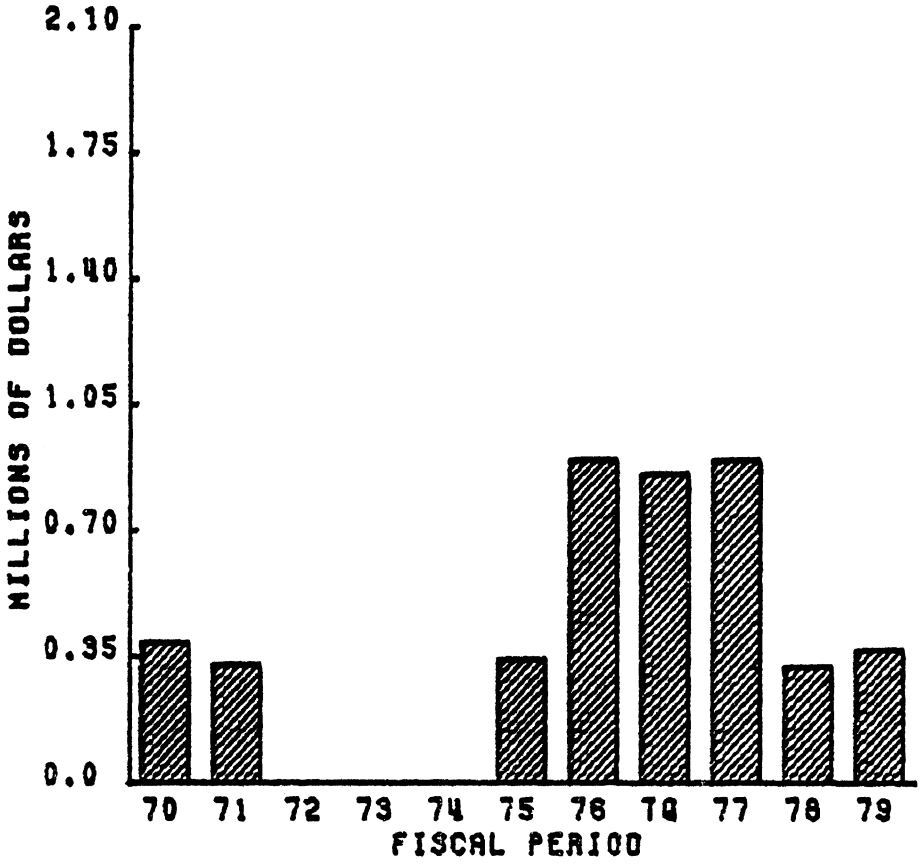


FIGURE 4-15

STATE RECORDS-INFORMATION SYSTEMS

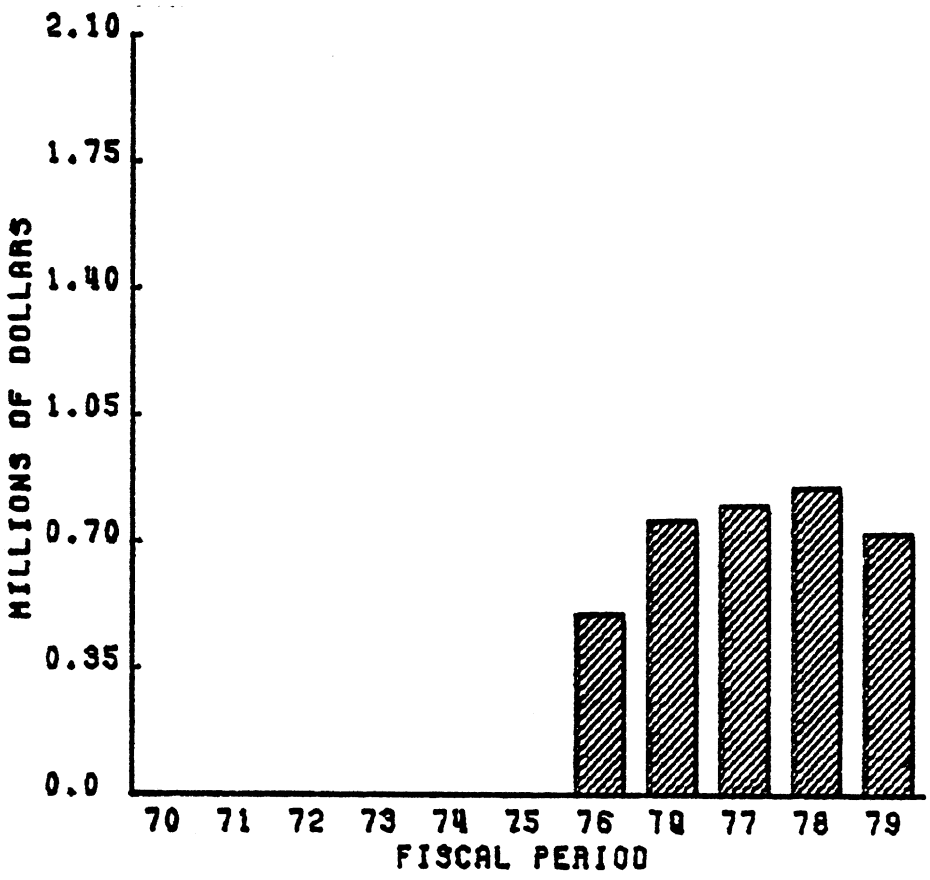


FIGURE 4-16

NATIONAL DRIVER REGISTER

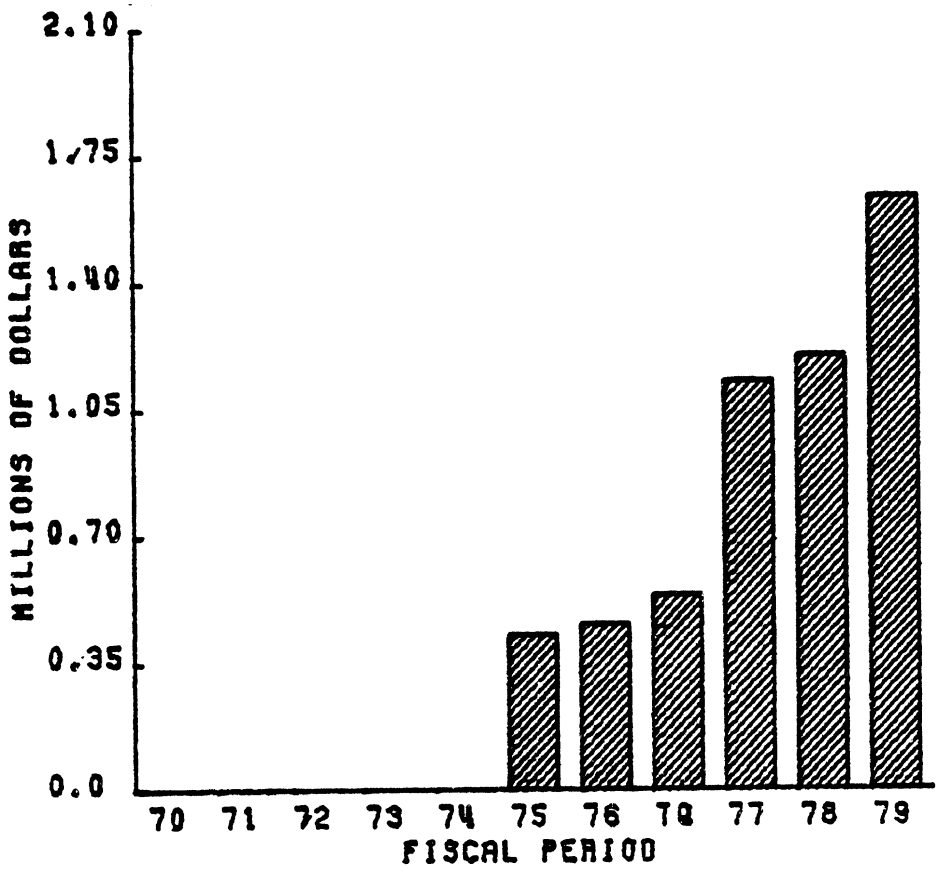
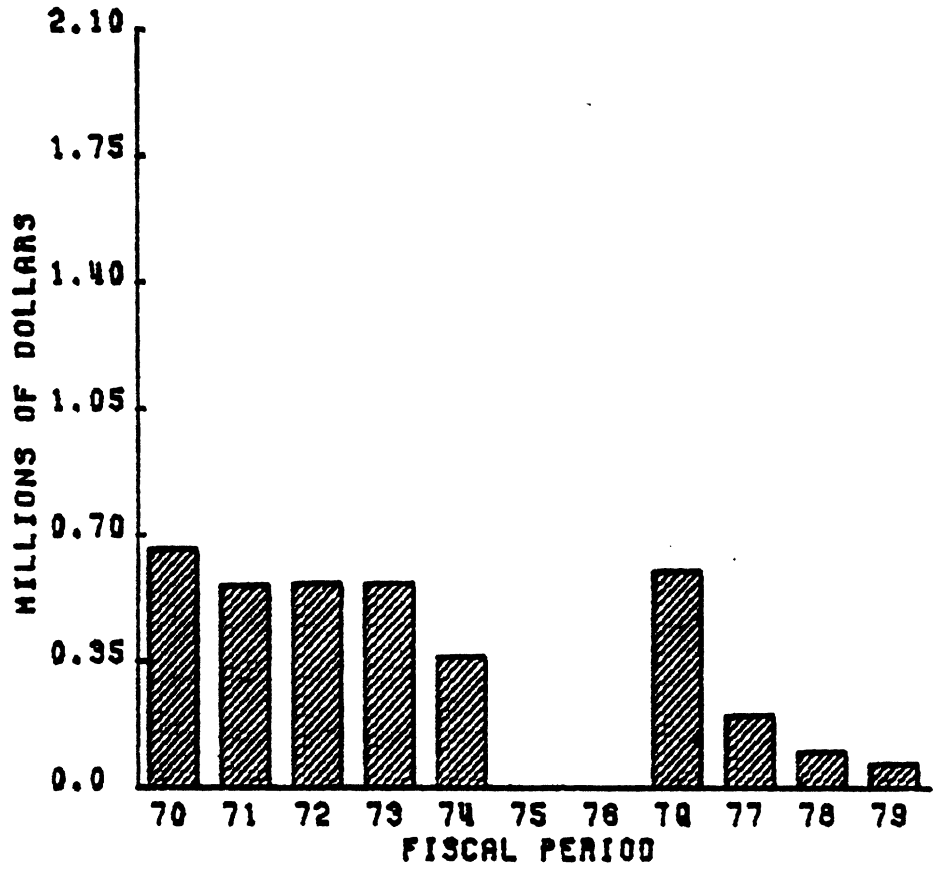


FIGURE 4-17

VEHICLE-IN-USE/STATE VEHICLE PROGRAMS



level of $3.3 million in 1970 to $31.5 million in 1973. Funds were cut significantly in 1975 and have gradually declined since that time to a current 1979 level of $7.4 million.

The cause of the rapid changes in contract funding is due to the **ASAP** program instituted in the early 1970s (Figure 4-5). Total ASAP contracts alone account for 61.9% of total Traffic Safety Programs contracts during the 1970 to 1979 period, although the program was only funded for seven of those years. During the 1971 to 1974 period ASAP contracts were 84.3% of Traffic Safety Programs contracts. (Note that the scale on Figure 4-5 differs from that for other program categories.)

Advanced Alcohol Countermeasure Experiments (Figure 4-6) first appears in 1975 with funding of $1.9 million. It has been lowered to more modest levels and was $0.6 million in 1979.

Advanced Alcohol Countermeasure Support (Figure 4-7) was also instituted in 1975. With funding in the initial year of $300,000 it has experienced relatively stable funding during the following years with funding of $225,000 in 1979.

Alcohol Public Education (Figure 4-8) was at a level of $95,000 in 1970, increased to a high of $1.3 million in 1973, and then declined to $0.5 million in both 1975 and 1976. Funded at $800,000 in 1977, its current level is $300,000.

These four categories dealing with the alcohol problem together have accounted for some 71.6% of all contracts within Traffic Safety Programs during the 1970 to 1979 period. Although they are presently much smaller, they are still significant. Current 1979 funding for these categories is $1.1 million, some 15.2% of total Traffic Safety Programs contracts.

Manpower-Management Development contracts (Figure 4-9) were $0.7 million in 1970, declined to $0.4 million in 1972, were increased to $0.75 million in 1975 and 1976, and to $0.9 million in 1977. In 1978 it was cut to $0.8 million and then to $150,000 in 1979.

Enforcement (Figure 4-10) started at $0.5 million in 1971 and increased to over $1.0 million in each of the following three years. It then declined to $0.75 million in 1975. Funding for the past three years

has been $0.5 million, $2.1 million, and $1.5 million.

Driver Control Programs (Figure 4-11) ranged from no funding to $150,000 during the first three years and was increased to $0.6 million the following two years. It was then decreased to $0.5 million before being increased again. During the last three years it has ranged from $1.0 million to $1.5 million, its current level.

Systems Operation (Figure 4-12) experienced relatively stable funding during the 1970 to 1977 period, ranging from $180,000 to $350,000. It was cut to $96,000 in 1978 and eliminated in 1979.

Pedestrian-Cyclist Safety (Figure 4-13) first appeared as a separate category in 1975 with funding of $375,000. It increased through 1977 when it reached $635,000. In the following two years it was lowered to $280,000 and $335,000.

Emergency Medical Systems (Figure 4-14) has experienced significant changes in its funding throughout the period. Funded at $390,000 and $330,000 during 1970 and 1971, it was then cut to zero the following three fiscal years. In 1975 it again appears with funding of $345,000. It then increased to $0.9 million in both 1976 and 1977. The last two years show funding of $325,000 and $370,000.

State Records-Information Systems (Figure 4-15) was initially funded in 1976 at $0.5 million. It was increased to $0.8 million in 1977. The 1979 level is $0.7 million.

National Driver Register (Figure 4-16) first appears in 1975. Prior to that time it was part of Research and Development. From the 1975 level of $430,000 it has increased to a current 1979 level of $1.6 million.

Vehicle-In-Use/State Vehicle Programs (Figure 4-17) was funded at $0.7 million in 1970 and declined to $363,000 in 1974. There was no funding in the following two years. Reinstated in the transition quarter, it was funded at $200,000 in 1977 and declined to $66,000 in 1979.

Thus, Traffic Safety Programs has had significant changes in the composition of its contracts. The major shift has been the decline in funding as well as in the relative importance of alcohol-related programs. Other programs have been increased, while others have decreased, with little trends in overall direction to be noted. One exception to this is

the increase in funding for the NDR. Enforcement and Driver Control Programs have also been increased in the later years.

Research and Development Contracts

The funding data for Research and Development contracts appear in the bottom portion of Table 4-3 and are shown graphically for individual programs in Figures 4-18 through 4-32. Contracts within the broad area of Driver Pedestrian Factors within Research and Development were not broken down into the more detailed program categories prior to 1974. The breakdowns for the years 1970 through 1973 were estimated on the basis of analyzing contract information.

The major component of Research and Development that is relevant to 403 funding is Traffic Safety Research. Funding for this office, relative to other components of 403-funded Research and Development is shown in Figure 4-19. This element includes both Drugs and Alcohol Research and Driver Pedestrian Factors divisions. The detailed breakdown into program categories is shown in Figures 4-24 through 4-29.

Overall funding for **Research and Development** (Figure 4-19) has been more modest than that for Traffic Safety Programs. Similarly, changes in the level of funding have been more gradual. Funded at a level of $4.5 million in 1970, it was increased gradually to $8.3 million in 1975. It declined the following year but was again increased to a level of $8.6 million in 1977. It has since declined and now stands at $7.2 million.

The **National Center for Statistics and Analysis** (Figure 4-21) is the most dominant program within Research and Development. It has accounted for thirty-eight percent of the total contracts (Figure 4-20). Starting at a level of $2.2 million in 1970, funding has shifted up and down over the years, with a general upward trend reaching a peak of $3.6 million in 1977. Current funding is $3.5 million, accounting for forty-nine percent of total Research and Development contracts.

National Driver Register (Figure 4-22) was originally part of the NCSA. (Funding for NDR has been deleted from the figures so that NCSA figures are net of NDR.) From a funding level of $393,000 in 1970 funding declined to $106,000 in 1972 and then increased to $289,000 in

FIGURE 4-18

MISSION SUPPORT

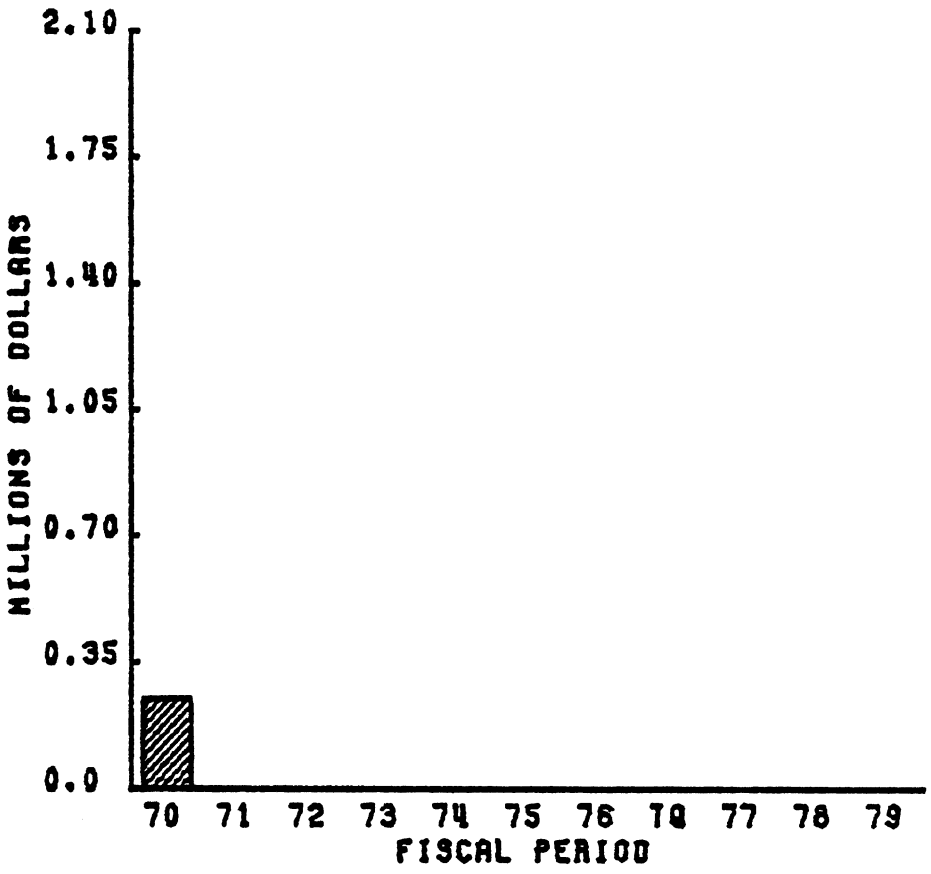


FIGURE 4-19

RESEARCH AND DEVELOPMENT, 1970-1979

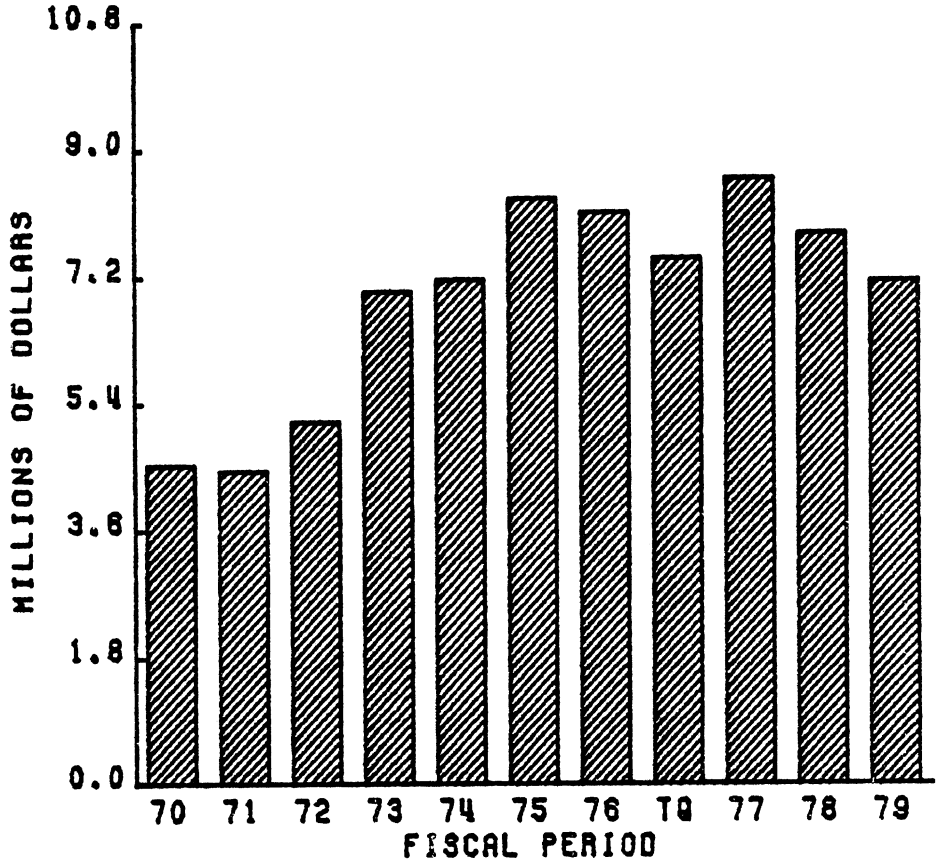


FIGURE 4-20

ALLOCATION OF RESEARCH AND DEVELOPMENT CONTRACTS
1970-1979

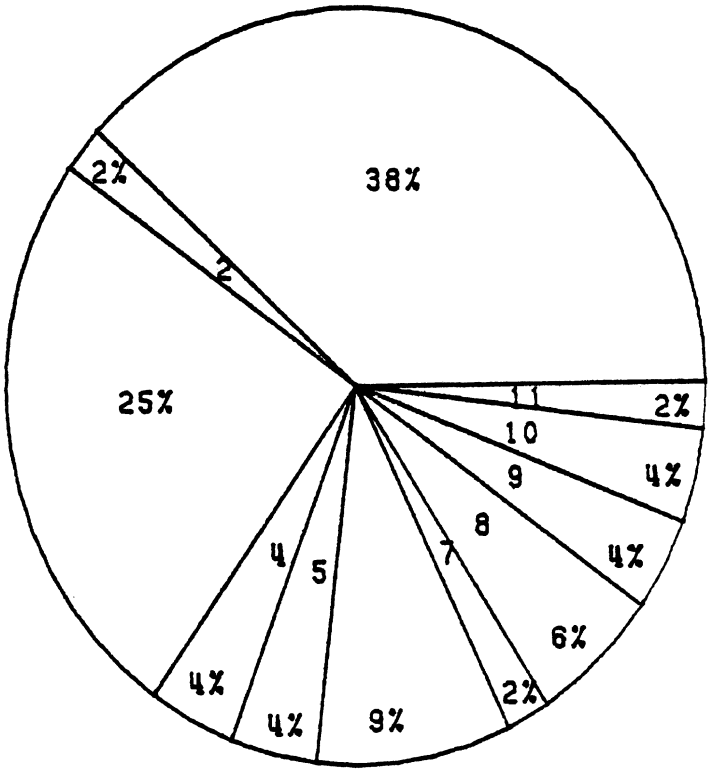


FIGURE 4-21

NATIONAL CENTER FOR STATISTICS AND ANALYSIS

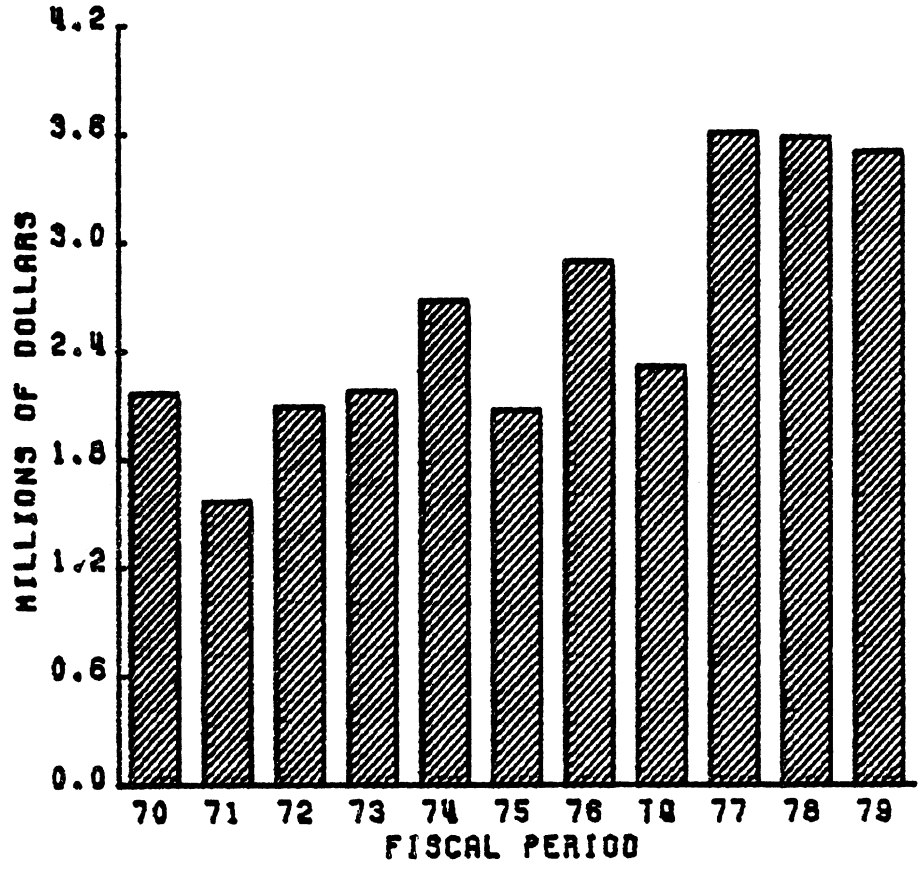


FIGURE 4-22

NATIONAL DRIVER REGISTER

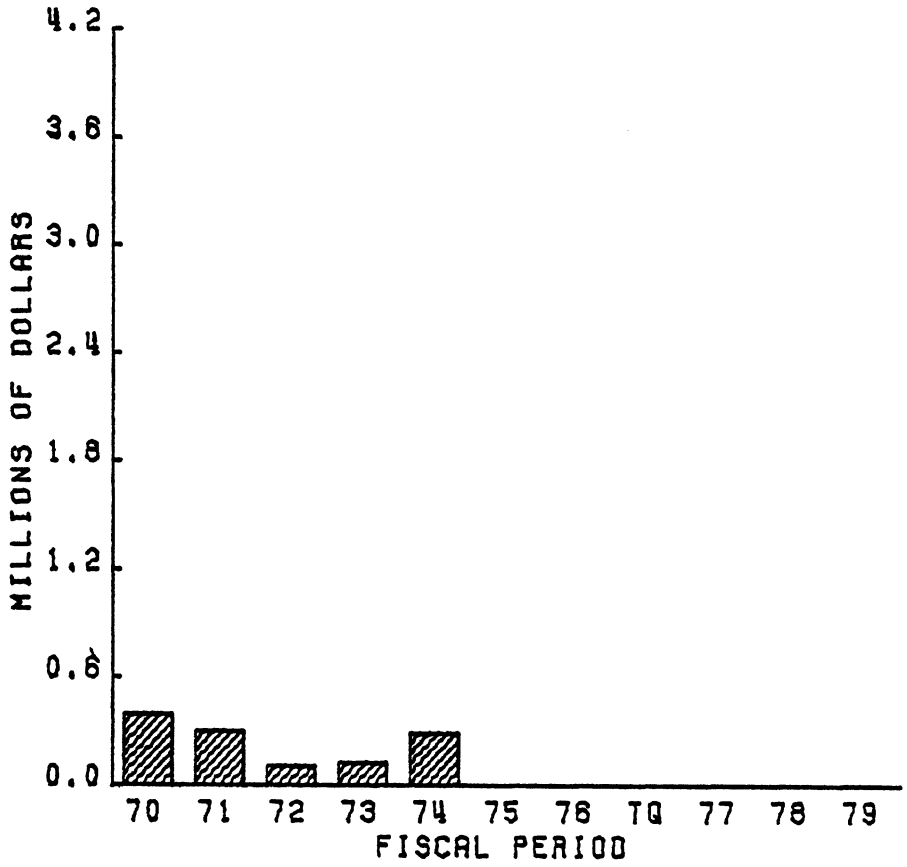


FIGURE 4-23

DRUGS AND ALCOHOL RESEARCH

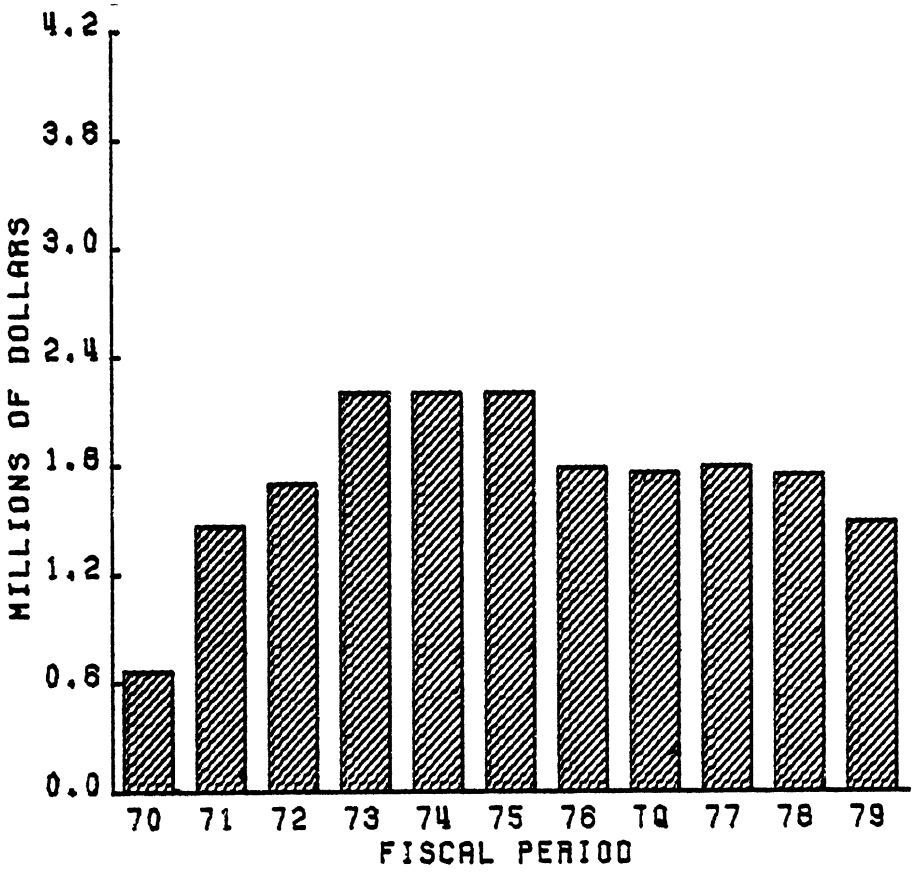


FIGURE 4-24

DRIVER PEDESTRIAN FACTORS

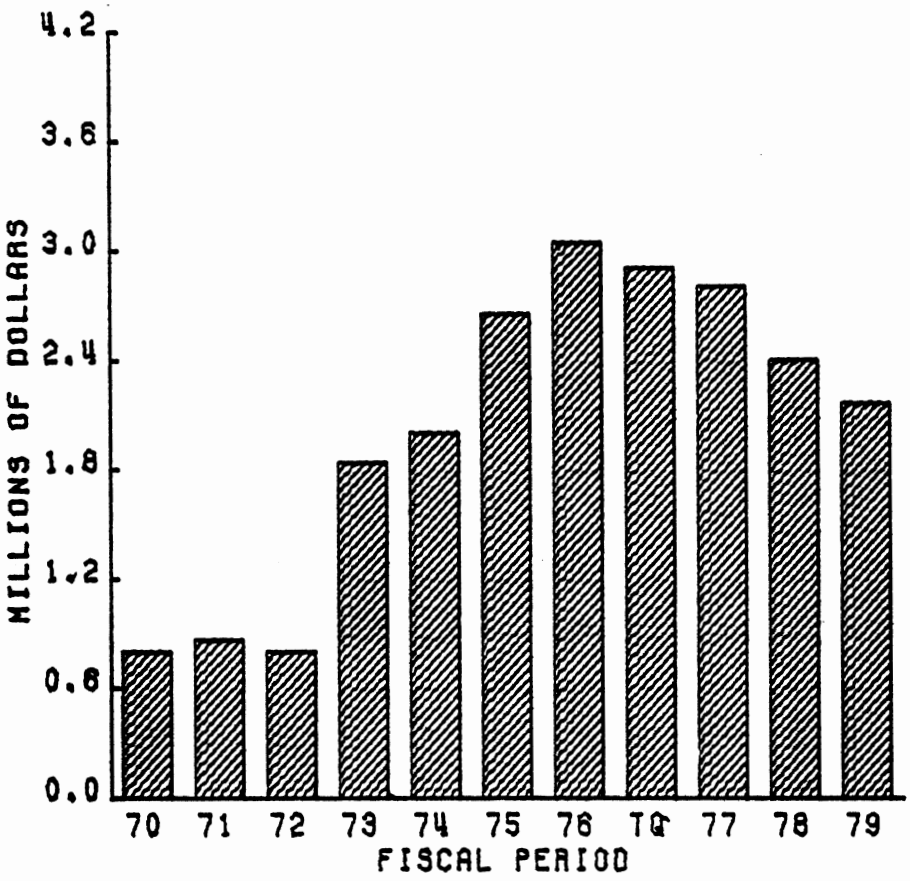


FIGURE 4-25

SAFE DRIVER CONFORMANCE (UDA)

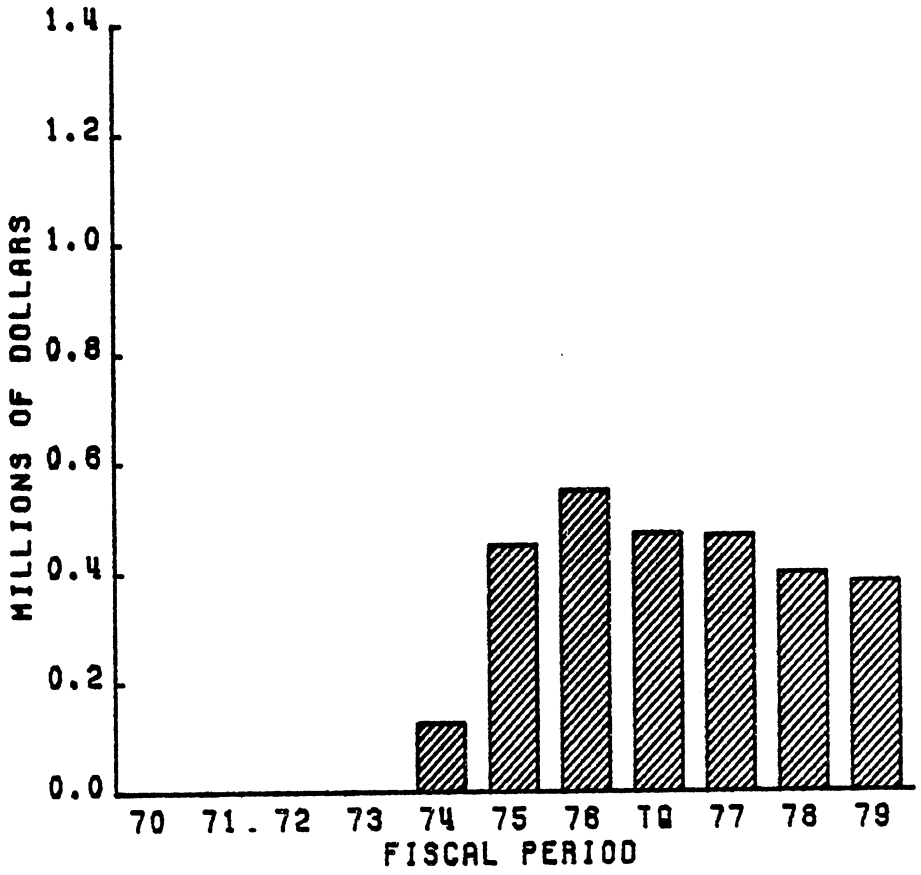


FIGURE 4-26

SAFETY BELT USAGE

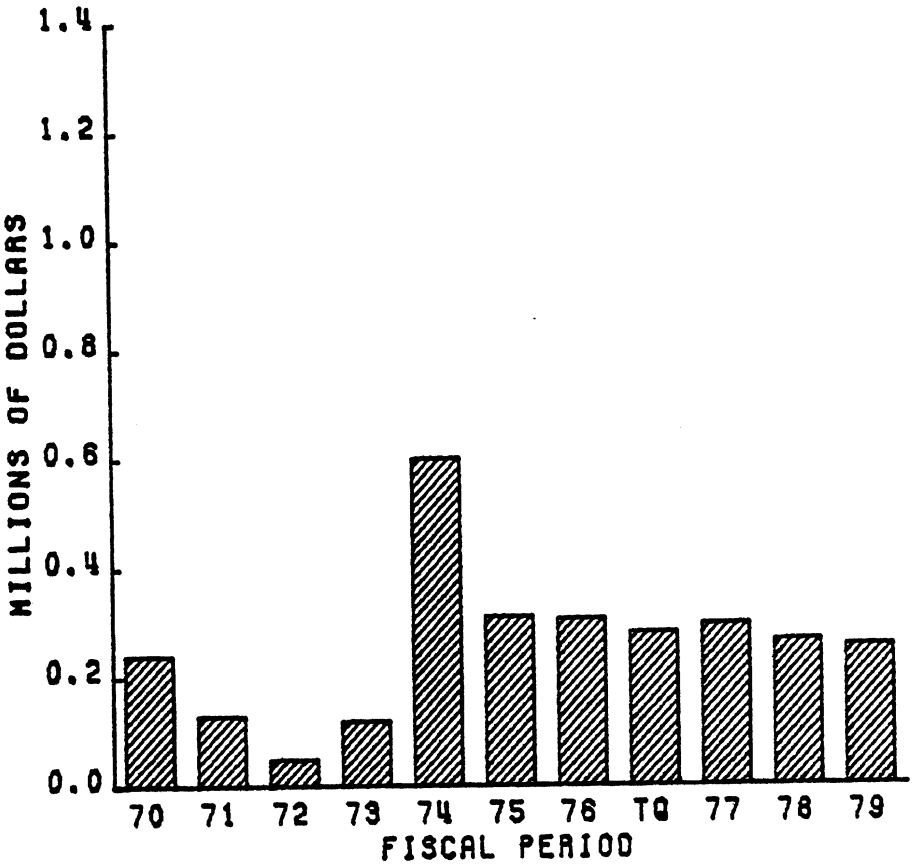


FIGURE 4-27

PEDESTRIAN-BICYCLE SAFETY RESEARCH

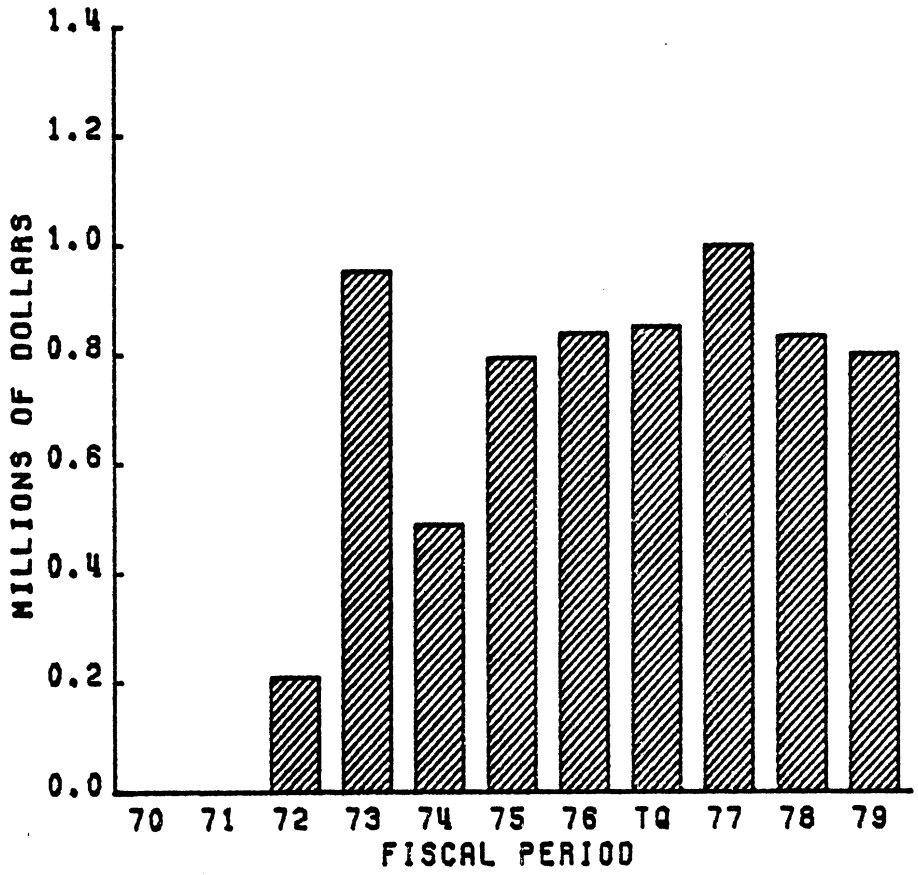


FIGURE 4-28

MOTORCYCLE SAFETY

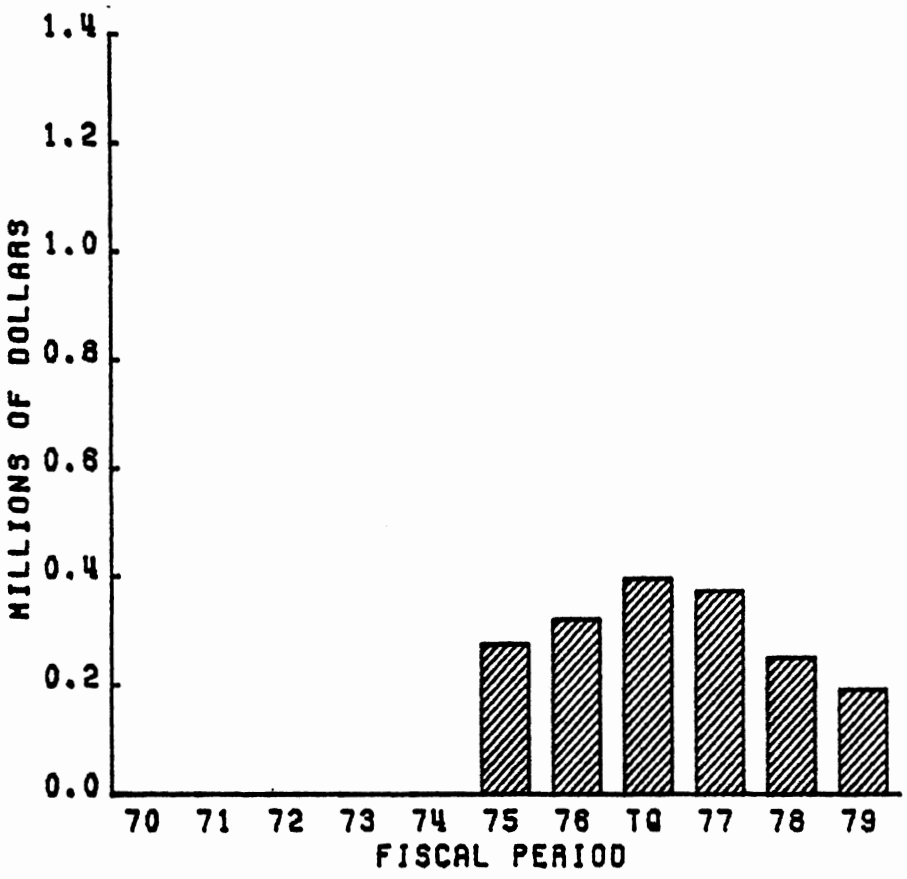


FIGURE 4-29

DRIVER LICENSING

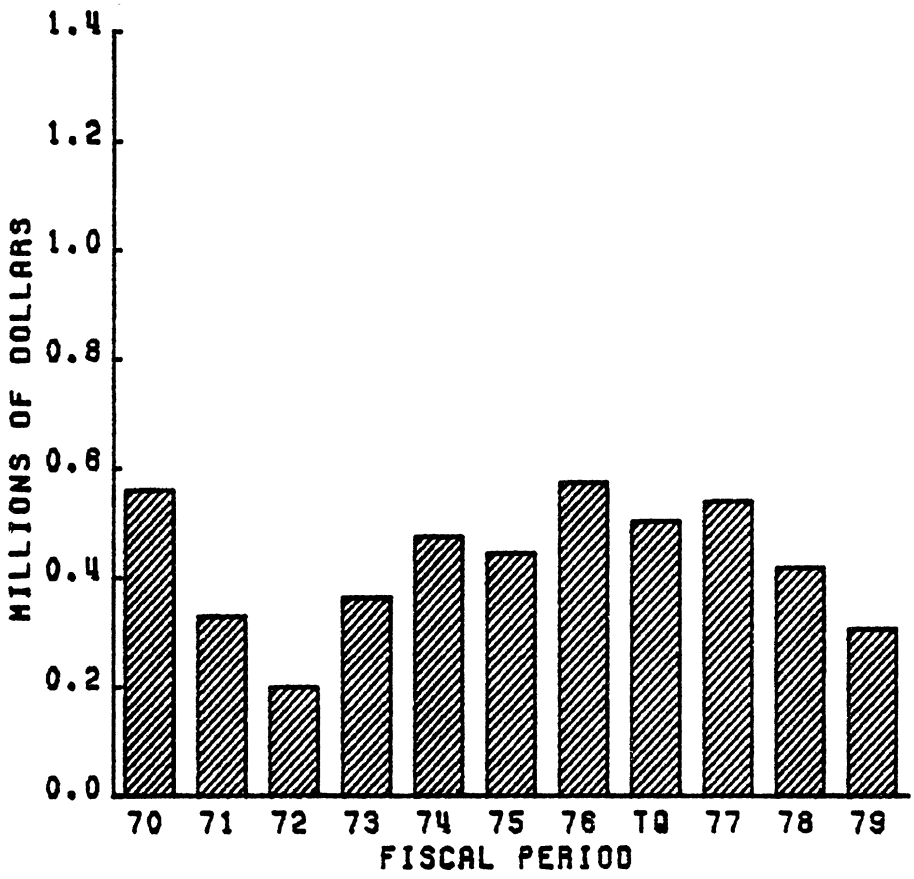


FIGURE 4-30

DRIVER-OPERATOR EDUCATION AND REHABILITATION

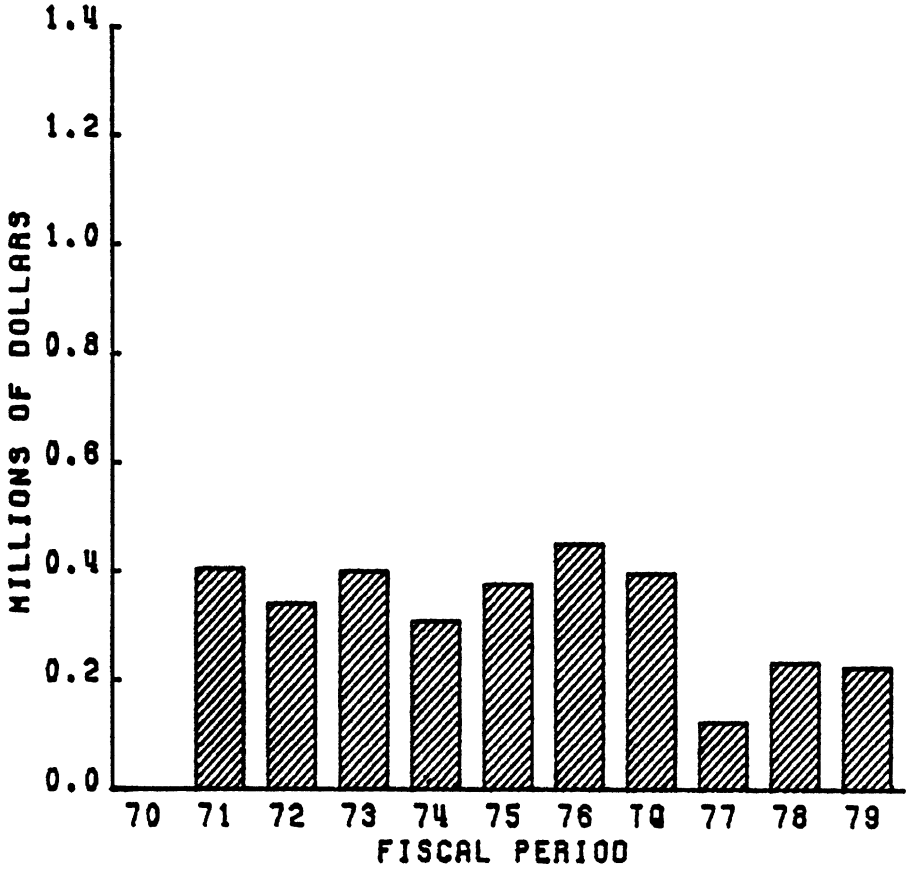


FIGURE 4-31

ADVANCED INSPECTION

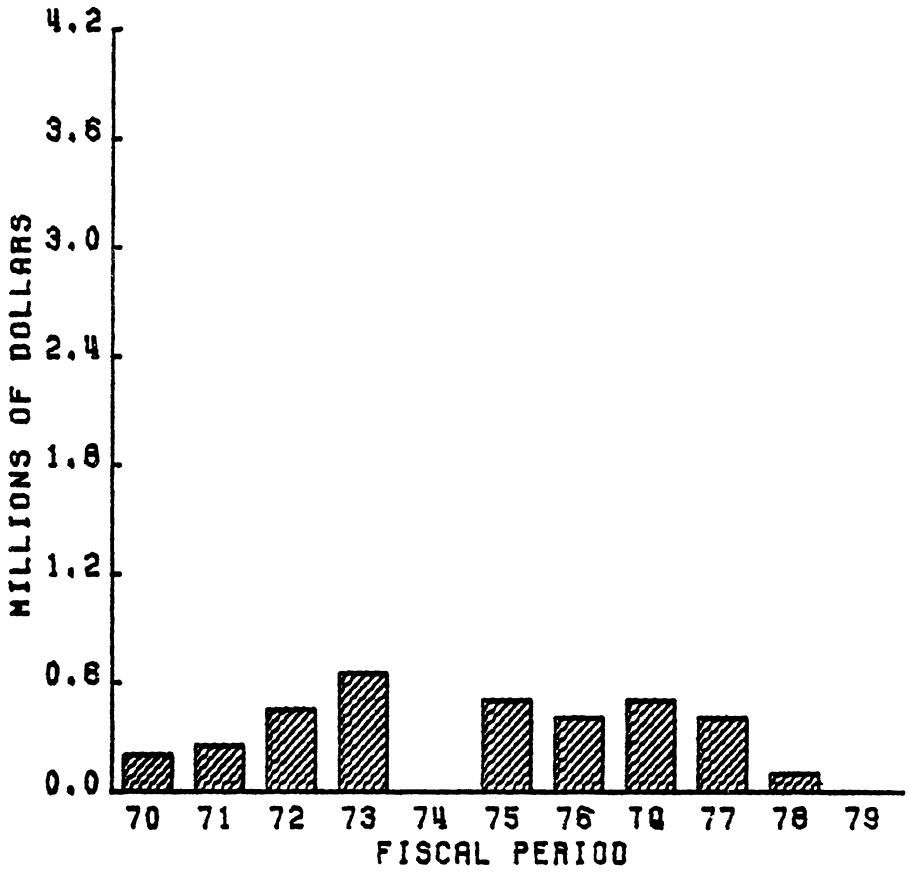
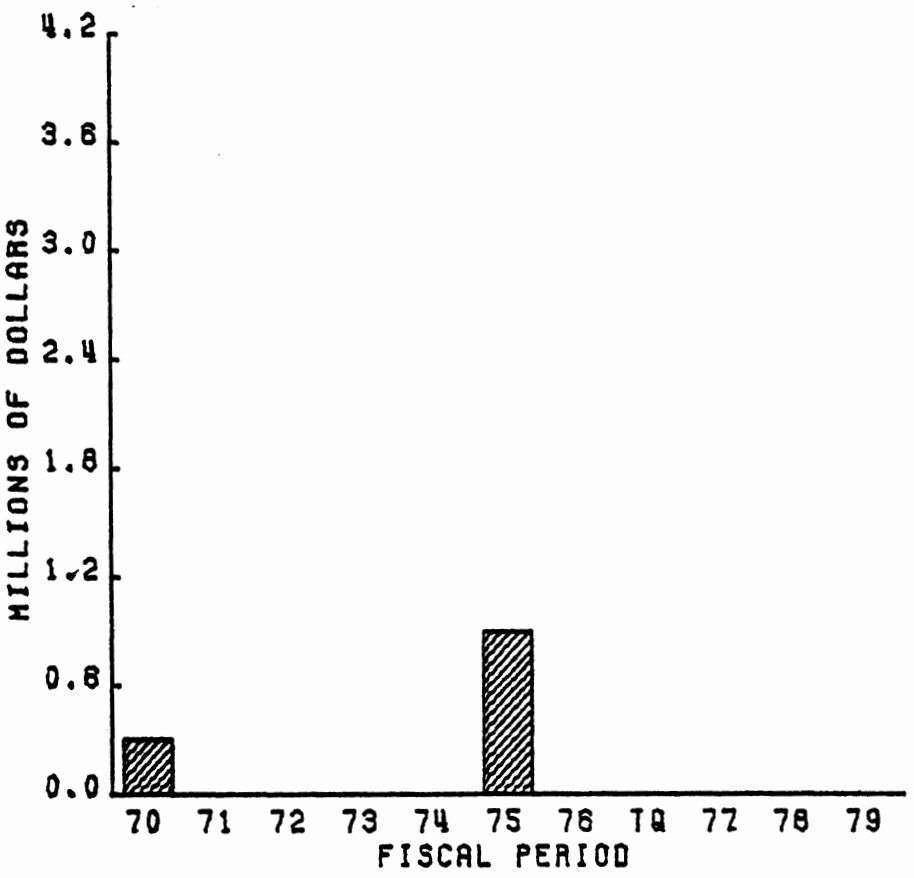


FIGURE 4-32

OTHER



1974. After that time it was shifted to Traffic Safety Programs.

Drugs and Alcohol Research (Figure 4-23) was funded at a level of $0.7 million in 1970 and increased consistently through 1973 when it reached $2.2 million. This level was maintained for three years, it was decreased to $1.8 million for three years, and then lowered again to $1.5 million for 1979.

Driver Pedestrian Factors (Figure 4-24) was funded at a level of $0.8 million in 1970 and this was more or less maintained through 1972. In 1973, it was increased to $1.8 million with further gradual increases in the following years until 1976 when it reached $3.0 million. The following three fiscal years saw declines to $0.2 million each year, reaching $2.2 million in 1979. Driver Pedestrian Factors is further divided into its six components which will now be discussed.

The category **Safe Driver Conformance (UDA)** (Figure 4-25) first appears in 1974 with funding of $126,000. It increased to a high of $550,000 in 1976 after which it declined gradually to $383,000 in 1979.

Safety Belt Usage (Figure 4-26) began with funding of $240,000, decreased to $50,000 in 1972, and then increases the following two years, reaching its high of $600,000 in 1974. It was cut to almost half that level in 1975 and has declined gradually since then to $255,000 in 1979.

Pedestrian-Bicycle Safety Research (Figure 4-7) appears as a separate category starting in 1972, with estimated funding of $210,000. Funding since then has ranged from $0.5 to $1.0 million per year. In 1979 it was $0.8 million.

Motorcycle Safety (Figure 4-28) became a separate category in 1975 with funding of $275,000. Funding was increased through the transition quarter with a level of $99,000 (equivalent to $396,000 per year) and then declined to the 1979 level of $192,000.

Driver Licensing (Figure 4-29) has existed as a category throughout the 1970 to 1979 period. From a level of $560,000 in 1970 it declined to $200,000 in 1972. It then increased through 1976 when it reached a level of $575,000. Declines during the following years occurred until the level of $307,000 in 1979.

Driver-Operator Education and Rehabilitation (Figure 4-30) the

final component of Driver Pedestrian Factors, first appeared in 1971 with a funding level of $405,000. From then through 1976 funding ranged between $308,000 and $450,000. In 1977 funding was cut to $123,000 then increased for 1978 and 1979. The 1979 level is $223,000.

Advanced Inspection (Figure 4-31) has been a relatively small component of Research and Development. From a level of $200,000 in 1970, it increased to $650,000 in 1973. It received no funding the following year, but was funded at $500,000 the year after that. In following years it declined generally to $100,000 in 1978. There was no funding in 1979.

There have been no erratic shifts within Research and Development. Most changes have been fairly gradual, with any minor exceptions being accounted for by research funding patterns. The major general shift within Research and Development is the increase in NCSA funding relative to other 403-funded programs. This is discussed elsewhere in this report.

SUMMARY

The 403-funded programs of NHTSA remain an important part of NHTSA's activities. They accounted for about one-tenth of NHTSA's total budget in 1970, increased significantly with the implementation of ASAP, and have declined since then. They are at a level in 1979 that gives them the same share of NHTSA funds as existed in 1970.

In absolute terms, 403 funding in NHTSA increased from a level of $11.2 million in 1970 to $45.9 million in 1973 and declined to $27.8 million in 1975. Since that time there has been a slight overall decline with funding of $26.5 million for 1979. This represents an increase in funding for 1979 relative to 1970 of 137.8%.

NHTSA has not increased all of its programs proportionally. Organizationally the increases have been 292.4% for General Administration, 174.4% for Traffic Safety Programs, and 61.8% for Research and Development.

Looked at another way, there was an increase of 258.5% for Administration and Support and 86.1% for contracts. In 1979 NHTSA spent

$83 on administration and support for every $100 in contracts. In 1970 it spent $43.

Traffic Safety Programs has increased relative to Research and Development. Contract funding within Traffic Safety Programs increased 124.7%, while similar funding in Research and Development increased 58.1%. Within the program areas there was virtually no change in research relative to other contract programs.

Examining the program categories, the relative balance of funding among major areas of interest has changed over time. The most significant area has been alcohol, first with significant increases during ASAP program and then declining. There have been significant increases in funding of enforcement programs during the early and the late 1970s. Another area of significant funding during the late 1970s was for enforcement and driver control programs.

There has been a continued interest in demonstrations, in the National Driver Register, and in the National Center for Statistics and Analysis. These action-type programs have not accounted for a growing portion of 403 funds, but they have accounted for a substantial portion over time.

CHAPTER FIVE
FINDINGS—PAST VS. FUTURE

The purpose of this chapter is to examine NHTSA's planned allocation of 403 contract resources for the 1980-1984 time period and to compare it with the past pattern of highway safety RD&D. The analysis of planned expenditures has been based on data taken from NHTSA's Proposed Plan for Highway Safety Research, Development and Demonstration (Section 403 of Title 23, USC) Fiscal Years 1980-1984. This plan was published on March 30, 1979; it was the topic of a "403 Program Conference" sponsored by NHTSA and supervised by the Transportation Research Board held in April 1979. The report of the TRB Conference, together with other comments on the plan will form the basis for a final plan scheduled to be issued in late 1979.

BACKGROUND ON THE 403 PLAN

The proposed five-year plan that NHTSA published in March 1979 was produced as a result of a request from Congress that NHTSA review its approach to highway safety research and develop a longer-term plan for coordinated activity that would hopefully lead to more effective programs. The plan covers fiscal years 1980-1984. While the plan is not the initial attempt by NHTSA to project future research activities in highway safety, NHTSA does characterize it as the agency's "first fully coordinated and comprehensive Section 403 program plan." The plan "consequently establishes proposals for five years of research, development, demonstration, and support activities" (U.S. Department of Transportation 1979).

As of this writing, the plan is still tentative. It has been placed on the docket for public review and comment. Once this process is complete and NHTSA has reviewed comments and suggestions the plan will be finalized and reported to Congress. NHTSA considers the plan to

be a flexible guide rather than an unchanging blueprint. The introduction to the plan states that the "safety environment is dynamic" and "changes in legislation, new technology, and the nature of the traffic safety problems require that this plan remain a flexible, dynamic document subject to change" (U.S. Department of Transportation 1979).

Despite the fact that the plan is still preliminary and subject to change, it does represent NHTSA's present intentions for fulfilling its mandate under Section 403, during the next five years. As such it provides the most legitimate current basis for an analysis of the probable future course of federal highway safety RD&D activities and a comparison of these prospective trends with the history of the past ten years.

The plan document presents NHTSA's proposed highway safety RD&D activities in considerable detail. In its 125 pages, future 403 activities are divided into fourteen program categories. Within each program category projects are defined and estimated funds are allocated to each project for each of the five years covered by the plan. A total of 129 individual projects are identified and discussed. NHTSA has also classified each project according to its functional category within the research and development process. Thus, each project is denoted as being a problem identification effort, a countermeasure development, a demonstration, an evaluation, a technology transfer effort, or state assistance.

The information NHTSA has presented in its plan document is sufficiently detailed so that an analysis can be made of it in its own right and a comparison can be made with the history of the past ten years. Three limitations need to be noted concerning the comparison of the planned five years with experience of the past ten, which is the subject of the previous chapter. First, the fourteen categories of the plan are not the same as the historical program categories. (The relationship between historical program categories and 403-plan categories is discussed in the next section.) Second, the plan covers only proposed contract expenditures and does not include estimates of probable administration and support costs. Thus, no comparison can be made of trends in this area, which in 1979 accounted for 45.2% of the 403 budget. Third, the plan does not distinguish which organizational element of

NHTSA will administer which program. Therefore, no comparisons can be made concerning the roles that Traffic Safety Programs and Research and Development will play in the future as compared to the past. Even with these limitations, an analysis of the plan does give a picture of relative priorities among NHTSA proposed highway safety RD&D contract programs.

CATEGORY OF EFFORT

Estimated funding for all of NHTSA's contracts for the 1979 to 1984 period are shown in Table 5-1. This total includes the total shown in the 403 plan including the total for the National Center for Statistics and Analysis (NCSA). The center is not discussd in the plan even though it is partially funded by 403 funds. It is included in this analysis so that as much comparability with the historical trends as possible can be retained. The $3.5 million per year figure for the center is an estimate of future expenditures included in the plan. The remaining data are also taken from the plan.

Demonstrations are included in the plan as a functional category. The National Driver Register (NDR) is shown as a contract category. Funding for Public Information and Education (PI&E) is taken from the line item information given in the plan, excluding PI&E funding that was part of a demonstration to eliminate double counting. PI&E funding for 1979 was included as a line item in the 1980 budget submission, providing a basis for linking the plan figures to the historic past.

Research and development funding for 1979 is the sum of Development within Traffic Safety Programs (excluding $1.2 million for PI&E) and Traffic Safety Research within Research and Development. Research and development for 1980 to 1984 is the difference between total contract research and the other programs discussed above.

As Table 5-1 shows, overall 403 contract funding is planned to increase from the current level of $14.5 million to $15.6 million in 1981 and then to decrease to $13.3 million in 1984.

Research and development increases from its 1979 level of $4.5 million to $6.0 million in 1982, and then declines to $5.6 million in 1984. The relative importance of research and development increases from

TABLE 5-1

ACTUAL AND PLANNED FUNDING FOR 403 PROGRAMS
(000's)

	Fiscal Year					
	1979	1980	1981	1982	1983	1984
Demonstrations	3,700	3,400	3,000	2,100	1,600	1,000
NDR	1,640	2,020	1,765	1,690	1,705	1,745
PI&E	1,200	1,400	1,475	1,375	1,375	1,425
NCSA	3,512	3,500	3,500	3,500	3,500	3,500
Subtotal	10,052	10,320	9,640	8,665	8,185	7,670
Research & development	4,491	5,065	5,855	5,960	5,905	5,615
Total	14,543	15,385	15,595	14,625	14,085	13,285

This shows a gradual increase in research and development funding through 1982, with slight reductions thereafter.

30.9% of all contract in 1979 to 40.8% in 1982 and 42.3% in 1984. Thus there is a significant increase in research and development relative to other programs.

Overall funding for programs other than research and development declines from $10.1 million in 1979 to $7.7 million in 1984. The drop of $2.4 million is primarily in demonstrations. There are small increases in NDR and PI&E funding.

Demonstrations decline substantially throughout the plan from the estimated 1979 level of $3.7 million to only $1.0 million in 1984. The relative importance of demonstrations in the overall 403 contract budget declines from about one-fourth to only 7.5%. Although the average over the plan period of $2.2 million is significantly below the 1970 to 1979 average of $11.1 million, it is about equal to the $2.1 million historic average expenditure excluding ASAP. It is higher than average at the beginning of the plan and considerably below average at the end.

The NDR is projected to average $1.7 million over the plan period, compared to an average $0.6 million for the 1970 to 1979 period and $1.6 million in 1979. Its place in the overall 403 plan is 13.1% of the total in 1984, compared to 11.3% in 1979.

PI&E has recently reached a significant place in NHTSA's program. (This appears to be in response to congressional action in 1978 as mentioned in Chapter Two.) Prior to 1978 there was a budget category "Alcohol Public Education." This averaged $0.7 million over the 1970-1979 period. In 1979 the category was renamed "Public Education" and expanded to include funds for the 55 mph national speed limit and programs dealing with promoting seat belt usage. The funding level was increased to $1.2 million. This emphasis continues throughout the plan period with proposed funding of approximately $1.4 million each year. The relative significance of PI&E activities increases from 8.3% of the 403 contract budget in 1979 to 10.7% in 1984. (Alcohol Public Education accounted for 3.1% of contracts from 1970-1978.)

The National Center for Statistics and Analysis (NCSA) is projected on the basis of NHTSA estimates to continue at the 1979 level of $3.5 million throughout the plan period. Although the absolute

amount remains constant, the relative importance of this program increases slightly because overall contract funding is scheduled to decrease. It rises from 24.1% of the 403 budget in 1979 to 26.3% in 1984.

In summary, although there is a decrease in overall contract funding at the end of the plan period (1984) relative to current levels (1979), there is a modest increase in dollars to fund research and development contracts, and this results in a significant increase in the proportion of total 403 effort allocated to these activities. This is mainly accomplished by decreasing demonstrations.

ANALYSIS OF PROGRAM CATEGORIES

This section compares projected funding for the different program categories in the 403 Plan with historical funding.

The comparisons are not as firmly based as one would like because neither the plan document itself nor supplementary information received from NHTSA provide very much detail on how the program categories in the 403 Plan are related to the program categories previously used by NHTSA. NHTSA did provide estimates for 1979 by program category; in fact, more than one estimate. It was difficult to reconcile the differences. Although some correlations were straightforward, others were not. It was an easy matter when two or more historical program categories were combined to make a single 403 Plan program category. But when a 403 Plan program category is a combination of parts of different historical program categories, reconciling the two is not possible.

Some estimates had to be made. These are presented below, with the qualification that they are estimates and hence only approximations. Nevertheless, the information generally agrees with the NHTSA provided information for 1979, and this provides an indication that the figures used below are reasonable.

The correlation between the historical and the plan program categorizations is given in Table 5-2. The most likely place for errors to occur include the allocation of Driver Control Programs funding to areas other than Young Driver. An adjustment is made for 1979, which is noted in the table. The extent of adjustments for earlier years could not be

TABLE 5-2

CORRELATION OF 403 PLAN CATEGORIES AND
HISTORICAL PROGRAM CATEGORIES

403 Plan Program Categories	Historical Program Plan Categories
1.	55 MPH & UDA
	A6. Enforcement
	B4a. Safe Driver Conformance (UDA)
2.	Occupant Restraints (1)
	B4b. Safety Belt Usage
3.	Alcohol/Drugs
	A1. A.S.A.P.
	A2. Alcohol Countermeasure Experiments
	A3. Alcohol Countermeasure Support
	A4. Alcohol Public Education
	B3. Drugs and Alcohol Research
4.	Ped/Bike/Pupil
	A9. Pedestrian-Cyclist Safety
	B4c. Pedestrian-Bicycle Safety Research
5.	Driver Licensing
	B4e. Driver Licensing
6.	Motorcycle and Moped
	B4d. Motorcycle Safety
7.	Young Driver
	A7. Driver Control Programs**
	B4f. Driver-Operator Education and Rehabilitation
8.	EMS
	A10. Emergency Medical Systems
9.	Program Management
	A5. Manpower-Management Development
10.	National Driver Register
	A12. National Driver Register
	B2. National Driver Register
11.	Traffic Records
	A11. State Records-Information Systems
12.	Vehicle Registration/Titling
	(new program category)

TABLE 5-2 (continued)

13. Adjudication & Police Traffic Services
    A8. Systems Operation

14. NCSA
    B1. NCSA

15. Inspection
    A13. Vehicle in Use/State Vehicle Programs
    B5. Advanced Inspection

*Also includes $300,000 from Driver Control Programs for 1979.

**Excluding $300,000 for 1979 which was included in Occupant Restraints.

determined. Also the Adjudication & Police Traffic Services category probably includes parts of other categories. This is a combination of two separate categories in the 403 Plan. Historical funding could not be separated and hence the combination of the two plan categories in this analysis.

Table 5-3 contains the estimated historical allocation as well as the NHTSA announced planned funding for 1980 to 1984. The pattern for each category is shown in Figures 5-1 through 5-16. Discussion of each of the program categories follows.

55 MPH and UDA

55 MPH and UDA (Figure 5-1) is an abbreviation of the NHTSA title "55 MPH Non-Compliance and Other Unsafe Driving Acts." Projected is a more than doubling of the effort over the 1970-1979 average. Although higher than average funding, it is actually less than the average of the last two years. It is planned to account for 11.5% of 403 contract for 1980-1984 compared to 5.3% during the 1970-1979 period.

Occupant Restraints

Occupant Restraints (Figure 5-2) was assumed to include only Safety Belt Usage except in 1979 when $300,000 for Public Education was included. Driver Control Programs included seat belts, in the 1980 budget, but apparently not before. This is an area whose funding will receive a significant increase during the 1980s according to the proposed plan. From an average 1970-1979 funding level of $0.3 million, it is projected to exceed $1.0 million for each of the five years of the plan. It accounts for 9.1% of total contract funding over the five-year period.

Alcohol/Drugs

Alcohol/Drugs (Figure 5-3) has historically been the largest area in NHTSA's 403 program. It accounted for 56.7% of contract funding during the 1970-1979 period. Its projected levels continue the downward trend in this area that started after the ASAP program peaked in 1973. Although declining, it still is planned to be a significant area during the 1980-1984

TABLE 5-3

ALLOCATION OF 403 RESOURCES BY 403-PLAN CATEGORIES

	PROGRAM AREAS	FISCAL PERIOD 70	71	72	73	74	75	76	TQ	77	78	79	80	81	82	83	84	70-79 AVG	80-84 AVG
1)	55 MPH AND UDA	-	515	1000	1300	1326	1200	835	208	968	2479	1853	1875	1975	1725	1725	1075	1140	1675
2)	Occupant Restraint	240	130	50	120	600	310	305	70	295	265	555	1400	1500	1375	1225	1150	287	1330
3)	Alcohol/Drugs	1590	7600	28898	30545	25000	10900	9281	1160	4305	2725	2613	1775	1575	1325	1325	1225	12158	1445
4)	Ped/Bike/Pupil	-	-	210	953	490	1170	1265	348	1635	1114	1137	1010	800	785	875	935	812	881
5)	Driver Licensing	560	330	200	365	476	445	575	126	541	420	307	740	990	810	970	970	424	896
6)	Motorcycle and Moped	-	-	-	-	-	275	320	99	373	250	192	815	1000	1200	875	875	147	953
7)	Young Driver	150	540	340	1000	908	875	1400	499	1123	1632	1423	825	995	775	675	625	965	779
8)	EMS	390	330	0	-	-	345	900	215	900	325	370	280	345	330	280	300	368	307
9)	Program Management	730	550	425	450	450	750	750	260	950	810	150	215	165	125	130	135	612	154
10)	National Driver Register	393	300	106	124	289	430	460	135	1130	1200	1640	2020	1765	1690	1705	1745	606	1785
11)	Traffic Records	-	-	-	-	-	-	500	190	800	850	725	645	725	750	475	425	299	604
12)	Vehicle Registration/ Titling	-	-	-	-	-	-	-	-	-	-	-	50	100	50	50	50	-	60
13)	Adjudication & Police Traffic Services	180	350	250	250	250	250	250	75	269	96	0	235	160	185	275	275	217	226
	SUBTOTAL	4233	10645	31479	35107	29789	16950	16841	3385	13289	12166	10965	11885	12095	11125	10585	9785	18034	11095
14)	NCSA	2167	1569	2094	2182	2682	2080	2904	580	3616	3591	3512	3500	3500	3500	3500	3500	2632	3500
15)	Inspection	860	810	1016	1216	363	500	405	275	605	200	66	0	0	0	0	0	616	0
16)	Other	555*	0	0	0	0	895**	0	0	0	0	0	0	0	0	0	0	141	0
	SUBTOTAL	3582	2379	3110	3398	3045	3475	3309	855	4221	3791	3578	3500	3500	3500	3500	3500	3390	3500
	TOTAL	7815	13024	34589	38505	32834	20425	20150	4240	17510	15957	14543	15385	15595	14625	14085	13285	21424	14595

*Traffic Safety Program Mission Support (250) and Traffic Systems Operation (305)

**Highway Safety Studies

FIGURE 5-1

55 MPH UDA

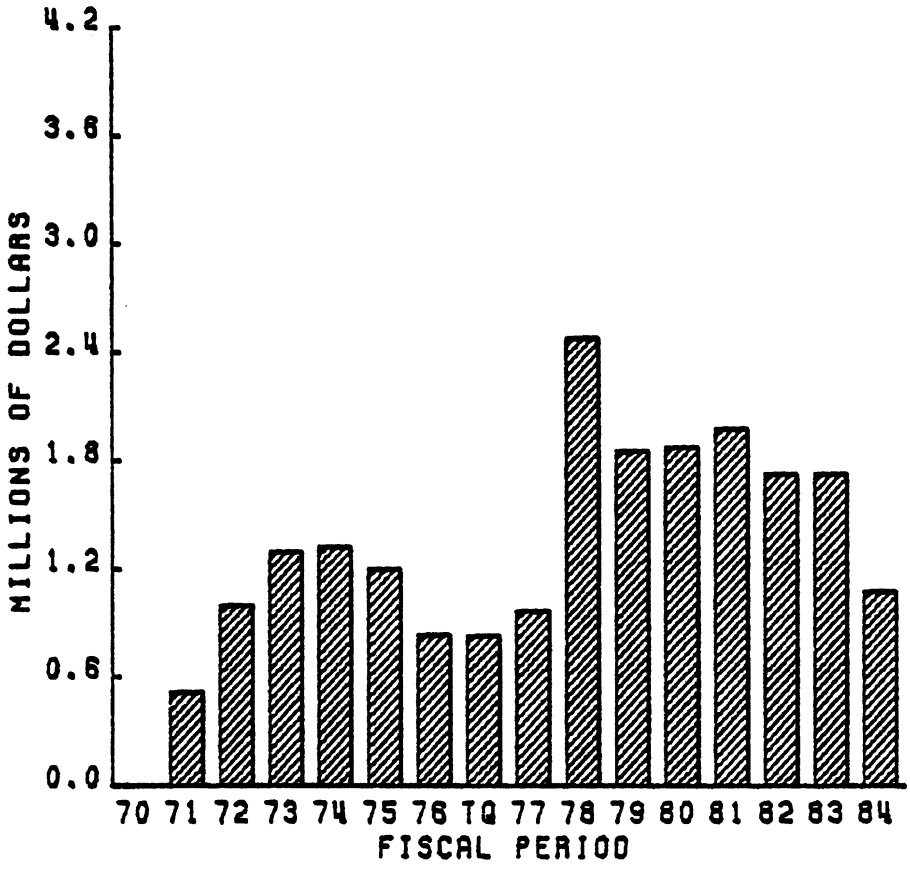


FIGURE 5-2

OCCUPANT RESTRAINT

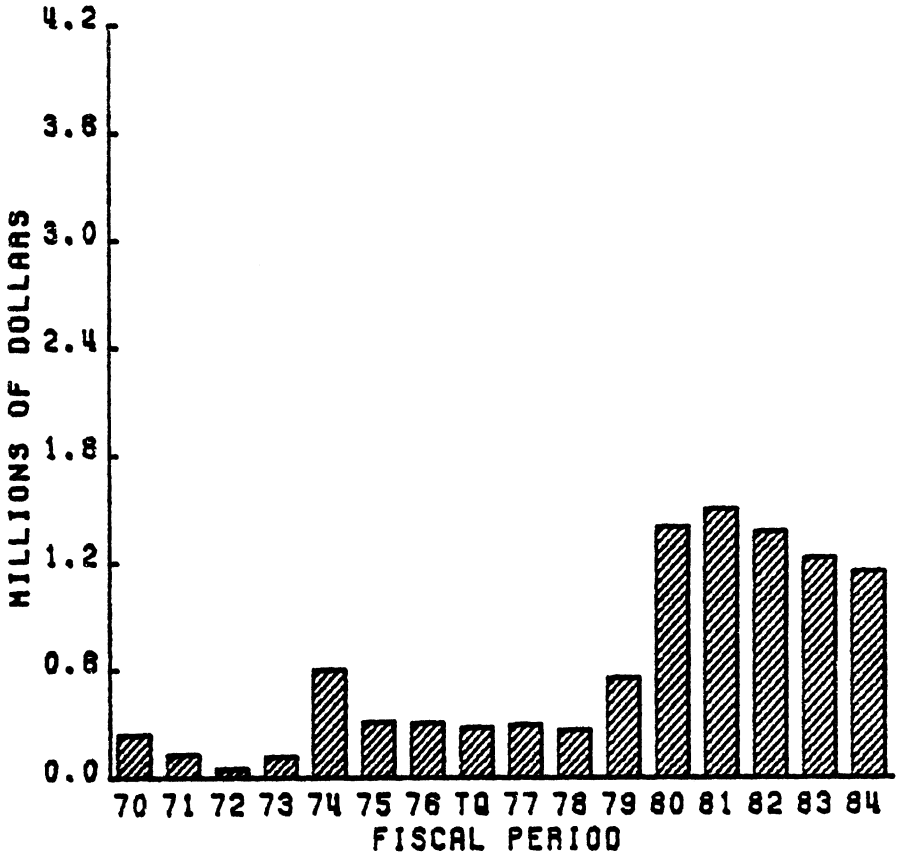


FIGURE 5-3

ALCOHOL/DRUGS

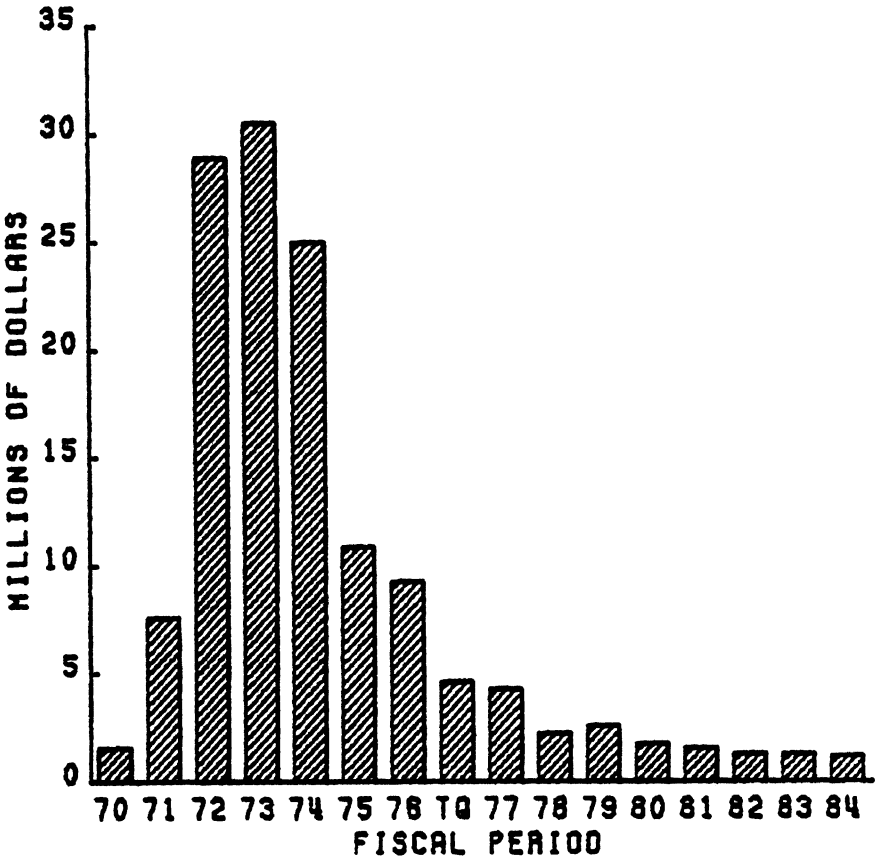


FIGURE 5-4

PED/BIKE/PUPIL

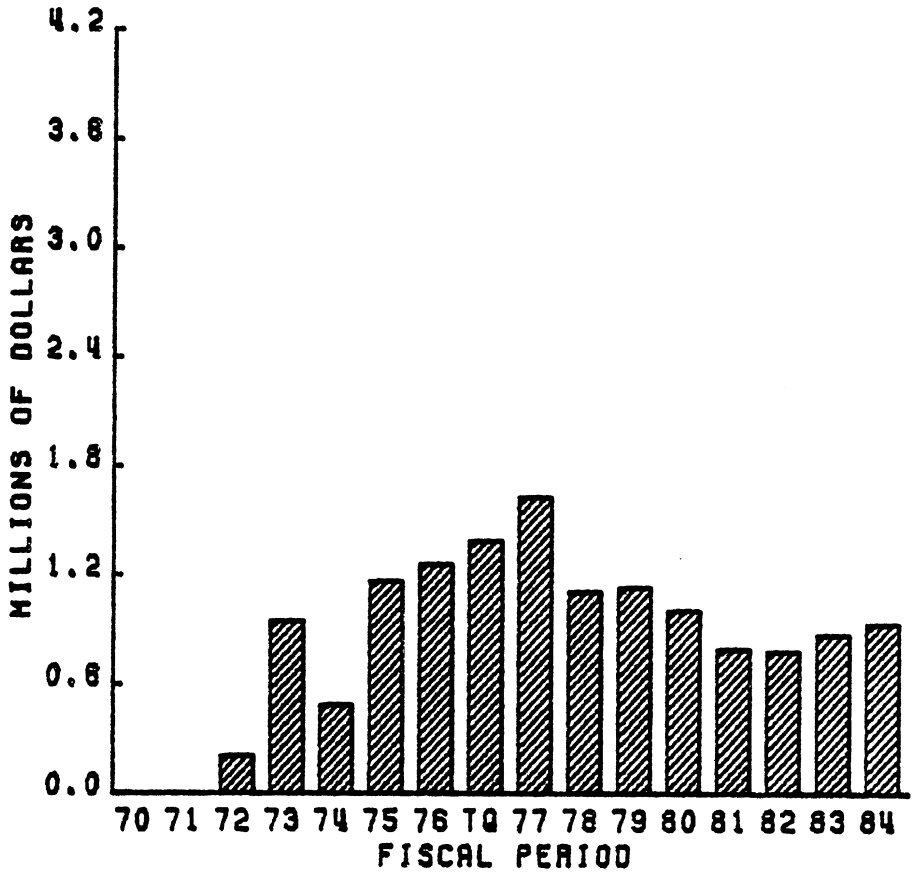


FIGURE 5-5

DRIVER LICENSING

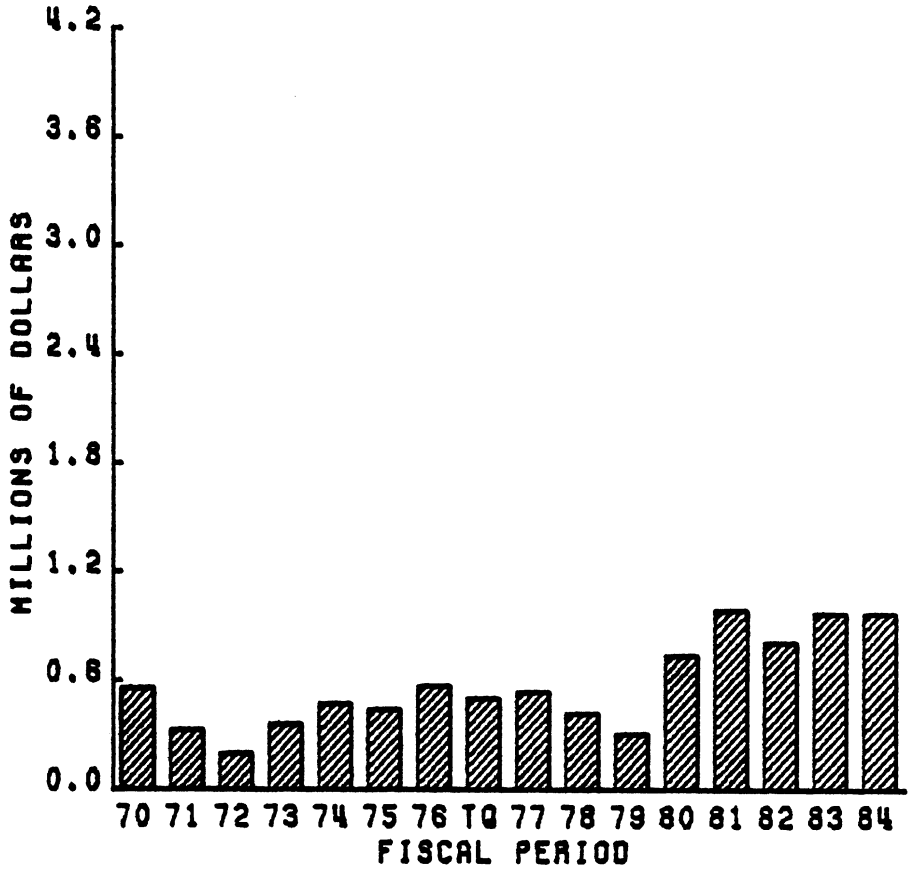


FIGURE 5-6

MOTORCYCLE AND MOPED

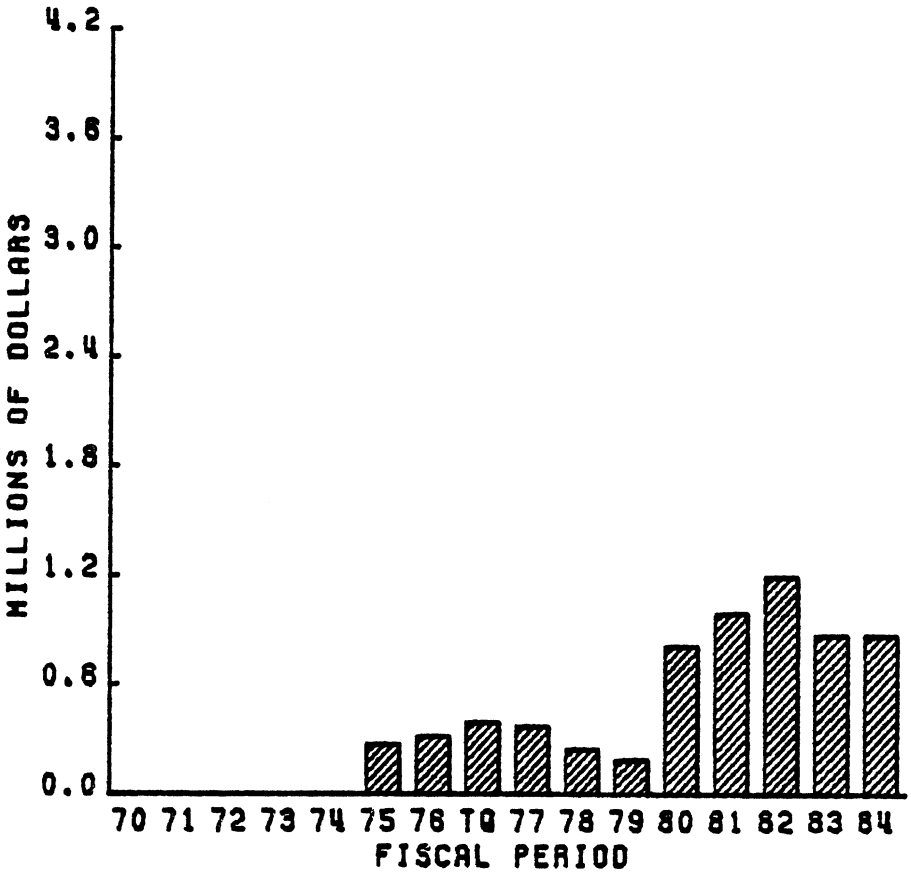


FIGURE 5-7

YOUNG DRIVER

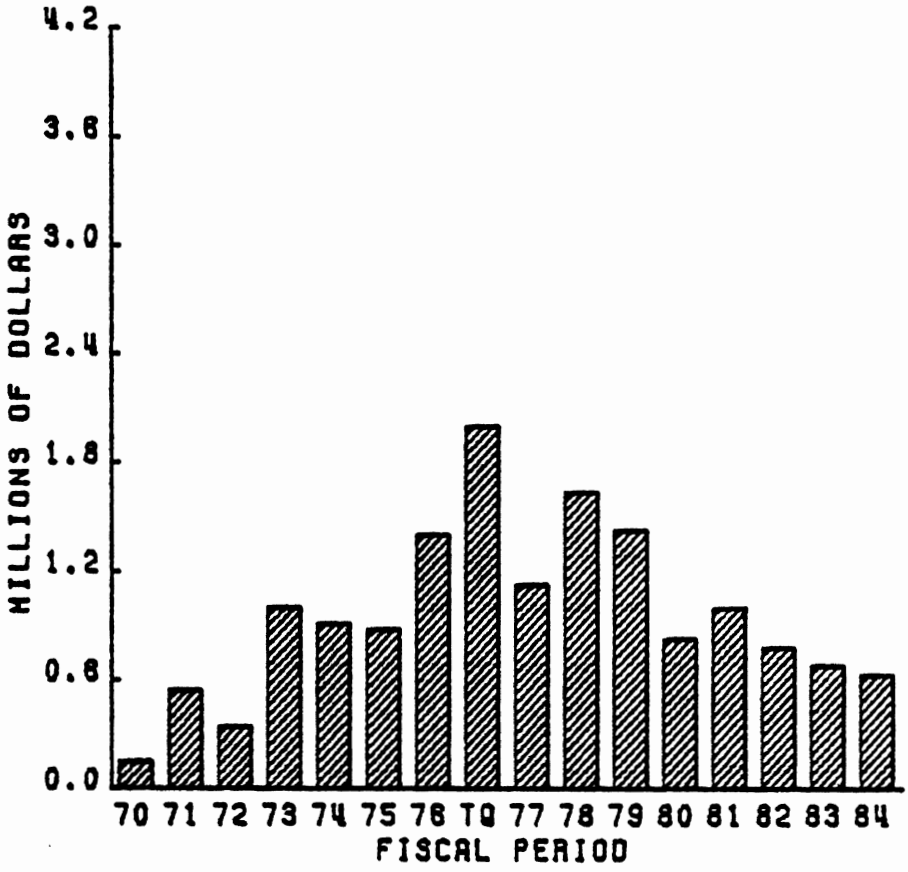


FIGURE 5-8

EMS

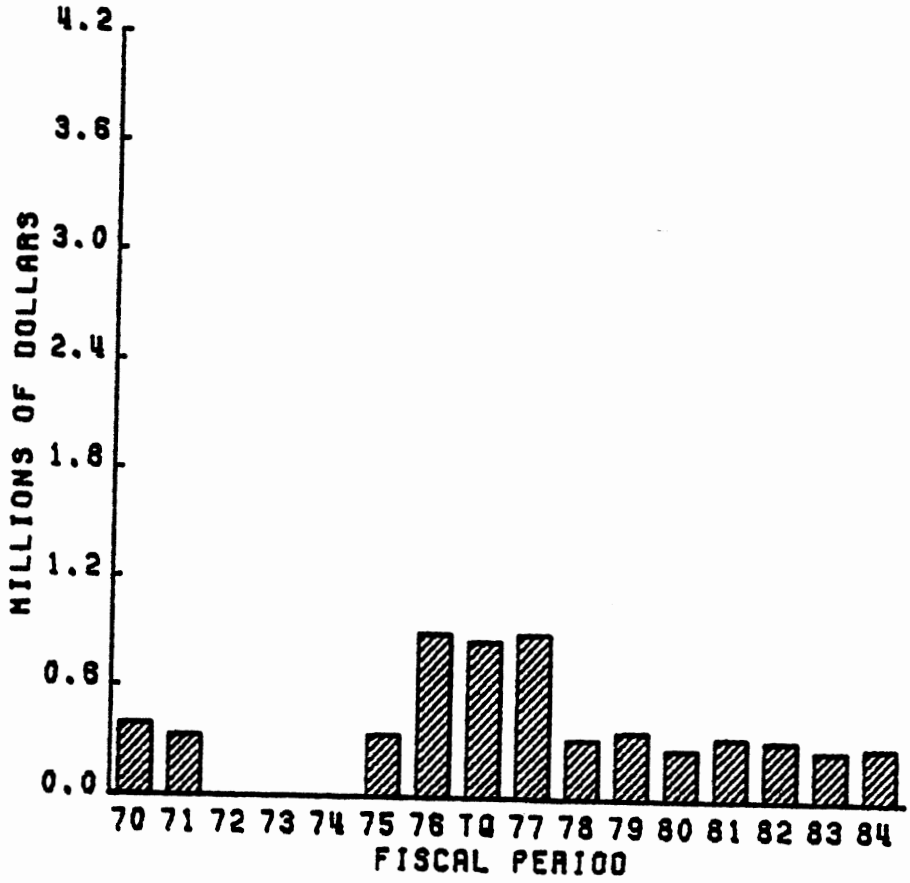


FIGURE 5-9

PROGRAM MANAGEMENT

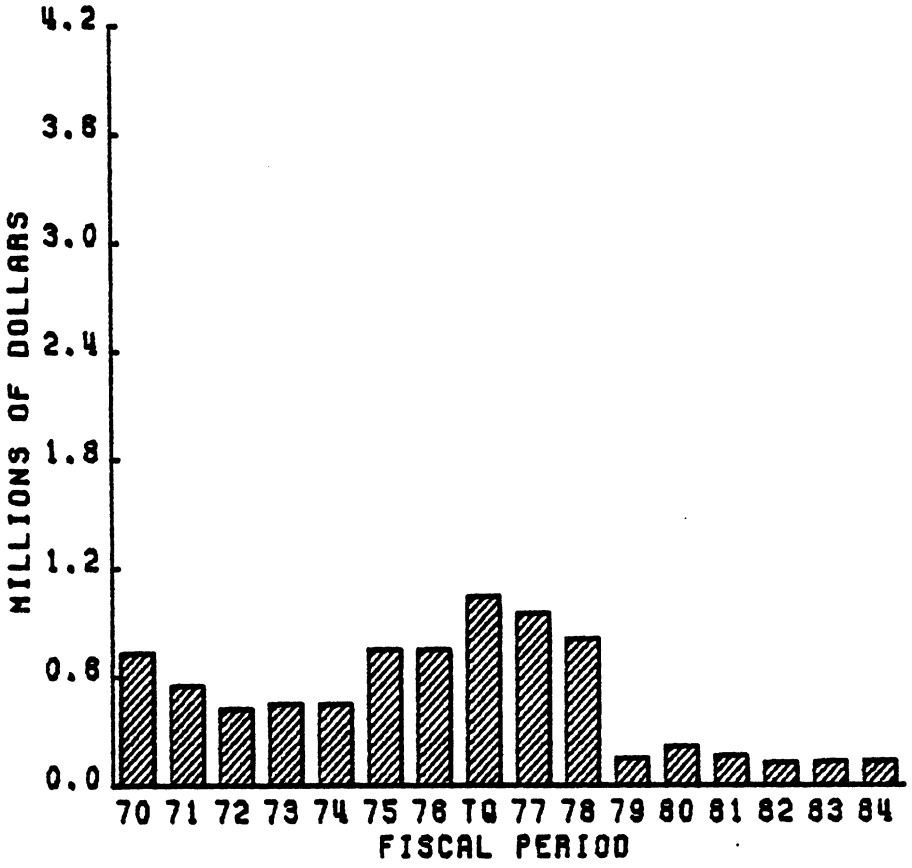


FIGURE 5-10

NATIONAL DRIVER REGISTER

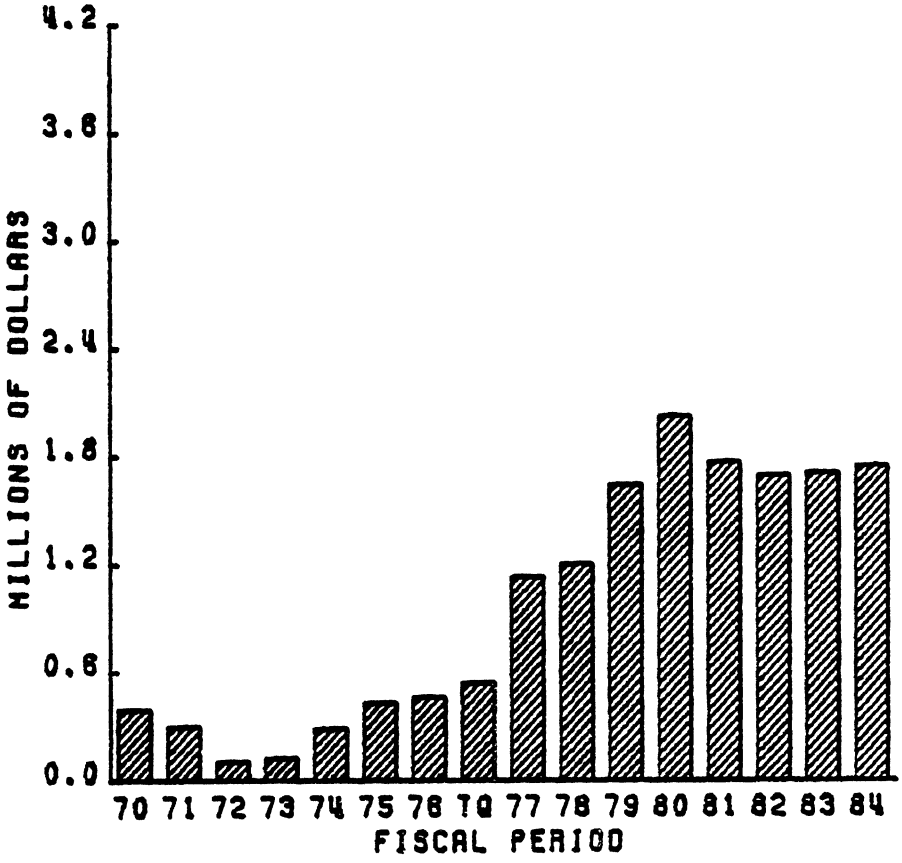


FIGURE 5-11

TRAFFIC RECORDS

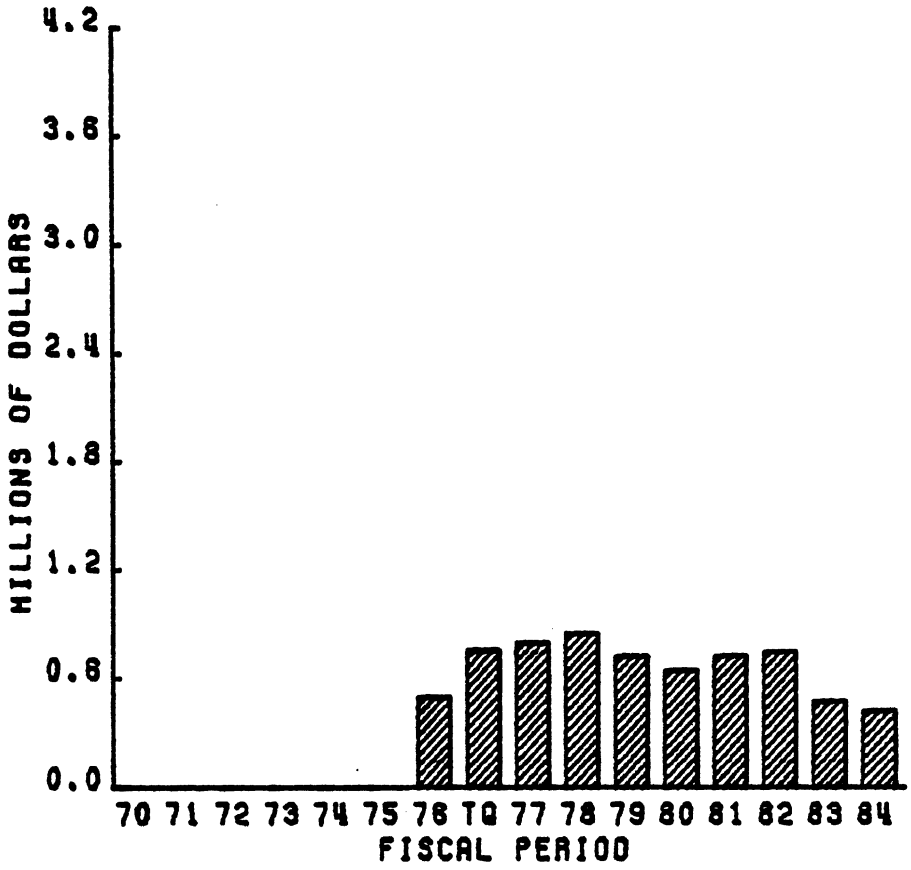


FIGURE 5-12

VEHICLE REGISTRATION/TITLING

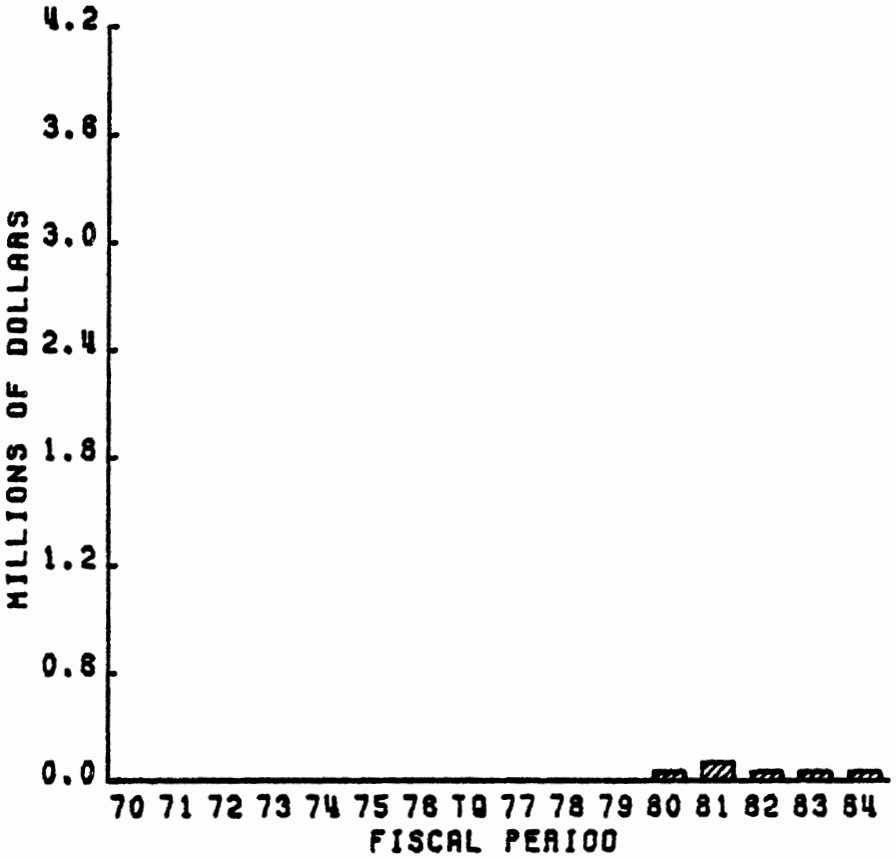


FIGURE 5-13

ADJUDICATION AND POLICE TRAFFIC SERVICES

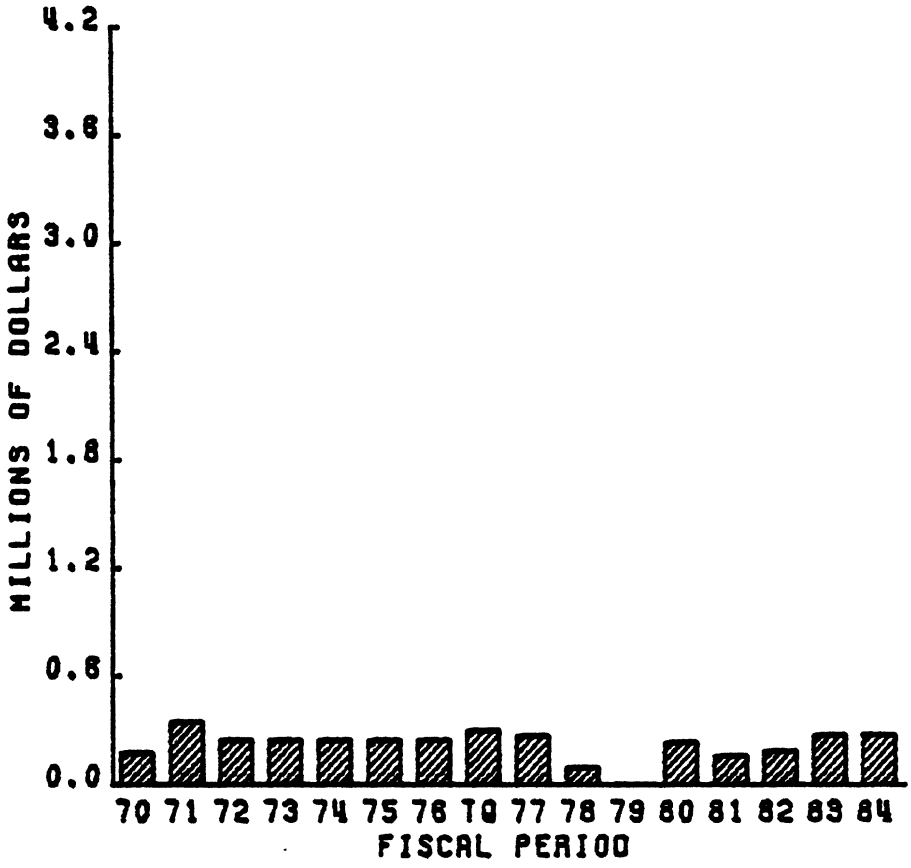


FIGURE 5-14

NATIONAL CENTER FOR STATISTICS AND ANALYSIS

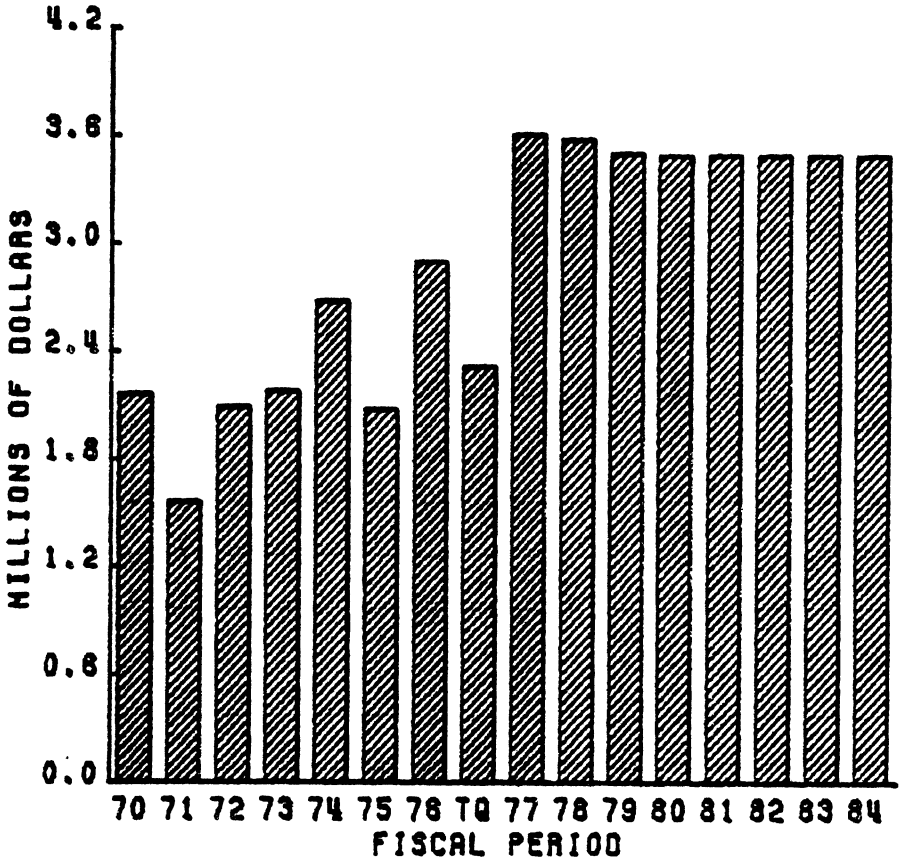


FIGURE 5-15

INSPECTION

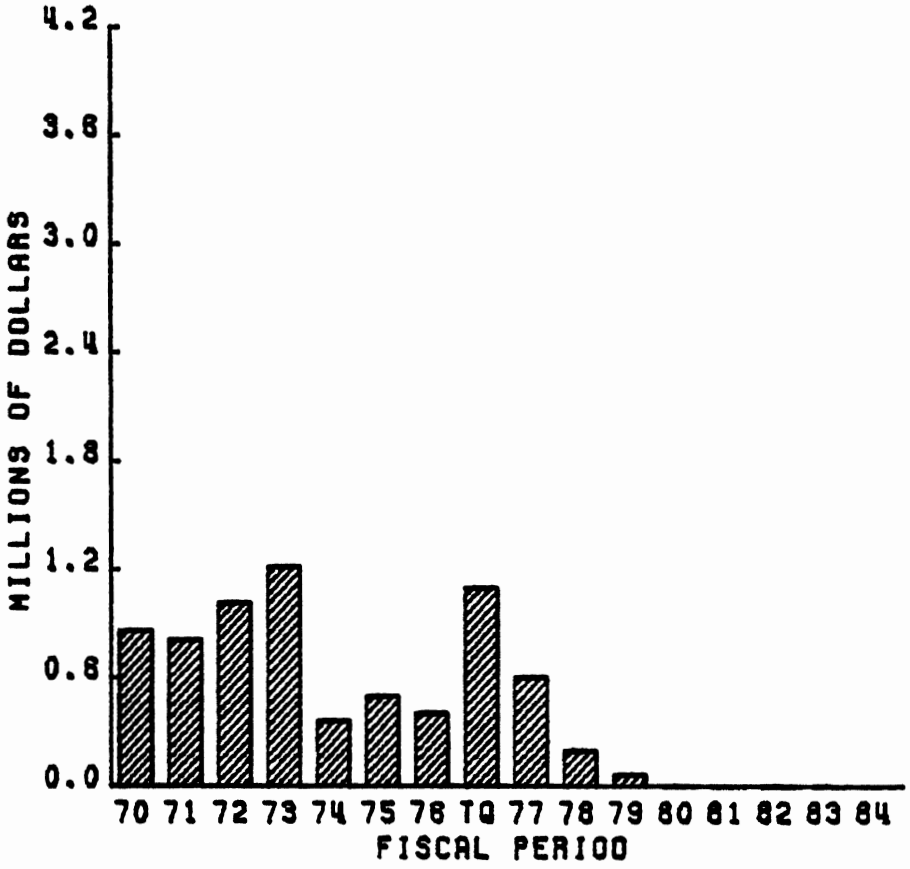
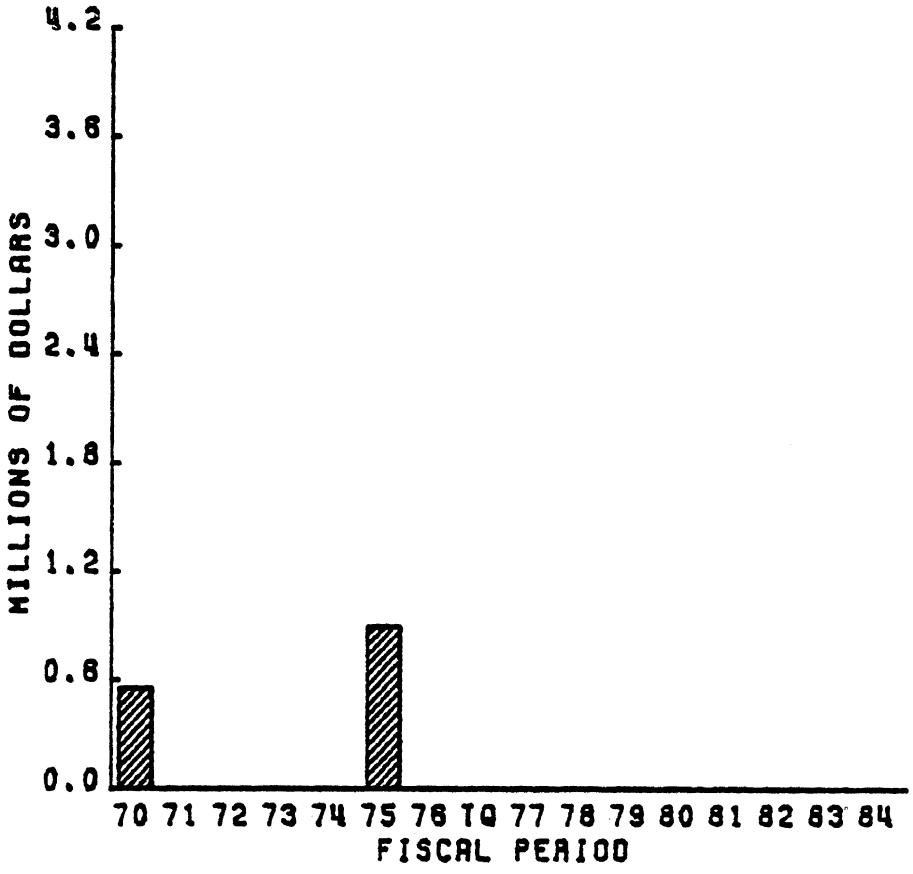


FIGURE 5-16

OTHER



period and accounts for 9.9% of proposed expenditures.

Ped/Bike/Pupil

Ped/Bike/Pupil (Figure 5-4) is an abbreviation for Pedestiran Bicyclist and Pupil Transportation. Average funding in this composite group has been $0.8 million during the 1970s. It is projected to be $0.9 million during the early 1980s. Although little difference is evident in the averages of the historic and plan periods, the plan shows a significant and continuing decline in funding for this category since the peak $1.6 million in 1977. Over the five-year plan period this program area will account for some 6.0% of the total funding for contracts.

Driver Licensing

Driver Licensing (Figure 5-5) may include funding from Driver Control Programs, although this could not be determined with certainty. Funding is projected to increase from the historical average of $424,000 to average $896,000 per year. It will account for 6.1% of the funding over the 1980 to 1984 period.

Motorcycle and Moped

Motorcycle and Moped (Figure 5-6) is projected to have a substantial increase over the average 1975 to 1979 funding of $287,000 per year to $953,000 during the early 1980s. It will be responsible for 6.5% of the planned funding.

Young Driver

Young Driver (Figure 5-7) is primarily related to driver operator education and rehabilitation. Although below recent levels of funding, it will still account for an average $779,000 during the 1980s, 5.3% of the total.

EMS

EMS (Figure 5-8) is an abbreviation of Emergency Medical Services. Funding is projected to continue approximately at current levels. It will

average $307,000, 2.1% of planned contract funding.

Program Management

Program Management (Figure 5-9). Projected funding of only $154,000 per year will only be 1.1% of the contract total. This is about one-fourth of the historical average for this area. This is an area that will be cut significantly if the plan is implemented.

National Driver Register

National Driver Register (Figure 5-10) is scheduled for a sharp increase in funding for 1980, but drops in 1981 and for the years following. Funding for this area is larger than any other category except National Center for Statistics and Analysis. It will account for some 12.2% of projected funding and will average $1.8 million per year.

Traffic Records

Traffic Records (Figure 5-11) is projected to continue at its approximate current level and then drop. Averaging $0.6 million per year, it will be 4.1% of contract funding for 1980 to 1984.

Vehicle Registration/Titling

Vehicle Registration/Titling (Figure 5-12) is a new program area. Averaging funding of $60,000 during the early 1980s it will account for only 0.4% of the funding.

Adjudication & Police Traffic Services

Adjudication & Police Traffic Services (Figure 5-13) likely includes parts of categories other than systems operation, although this could not be determined. This program area is also relatively small. Average funding during the 1970s was $217,000. It is projected to continue at the same approximate level--$226,000 per year—and represents only 1.5% of projected contract funds.

NCSA

NCSA (Figure 5-14) is projected in the plan to continue at $3.5 million. This accounts for 24% of the planned funding for 1980 through 1984.

Inspection

Inspection (Figure 5-16) has accounted for 2.9% of 403 contract funding historically. (This does not include funding under the Automotive Fuel Economy and Consumer Information Act.) There will be no funding from 403 funds in the 1980-1984 period according to the plan.

SUMMARY

The proposed 403 plan envisions a change in overall contract funding from a historical average of $21.4 million per year (1970-1979) to $14.6 million per year (1980-1984). This is a reduction of $6.8 million or thirty-two percent. The actual decline in effort will be greater than this when inflation is taken into account. It is accounted for primarily by decreases in alcohol and drug programs of $10.7 million ($9.0 million of this for ASAP) and $0.5 million in Program Management. In addition, Inspection goes down $0.6 million. These decreases are partially offset by major increases in six program areas: $1.2 million for the NDR; $1.0 million for Occupant Restraints; $0.9 million for NCSA; $0.8 million for Motorcycle and Moped; $0.5 million for 55 mph Compliance and Other Unsafe Driving Acts; and $0.5 million for Driver Licensing.

The 403 Plan is not a radical departure from previous NHTSA activities, but rather a continuation of the past with some modifications. Some trends and programs continue. This includes a continued emphasis on programs with little increase in basic research. Demonstrations, the NDR, and NCSA continue to absorb significant portions of 403 funds. Although the latter two do not have continued increases throughout the plan period, their current funding levels are significantly above their historical averages. Demonstrations, although scheduled to decline in the latter part of the five-year plan are still at high levels.

Alcohol programs continue to decline. Other programs continue to be added or deleted and titles changed. This has gone on before and will

likely continue throughout the plan period.

A recent addition is the significant emphasis on Public Information and Education campaigns with highway safety RD&D funding. Although not new in the plan, the major emphasis given them starting in 1979 is a change from past practices.

The mandate of Section 403 of the Highway Safety Act was for the establishment of a broad-based research program to discover the basic underlying causes of highway accidents. If NHTSA is to meet this mandate it will need a strong research program. An adequately financed research program should lead to more effective applications through development, demonstrations, and other action programs. But the groundwork needs to be laid first.

Given the nature and extent of the problems in highway safety, it may be appropriate for more resources to be devoted to discovery research.

CHAPTER SIX
SUMMARY AND CONCLUSION

The federal highway safety programs initiated by the Highway Safety Act of 1966 were instituted to ameliorate highway safety problems. The need, as evidenced by increasing losses from fatalities, injuries, and property destruction, was for a broad approach to the social problems of highway safety. Federal intervention was perceived necessary, because fifty years of dependence on voluntary action by the states and the private sector had failed to achieve effective results.

Along with action programs, stimulated and funded in part by the federal government, a broad research program, emphasizing basic understanding of the underlying phenomena causing highway safety problems was needed. This was particularly true for those facets of highway safety that dealt with human behavior—the driver, the pedestrian, and the legal and administrative control systems. Knowledge on which to base corrective actions was particularly lacking in these areas. This research needed to be supplemented with programs to demonstrate the effectiveness of proposed countermeasures and with other programs to train and upgrade the capabilities of highway safety personnel throughout the country.

The congressional mandate in Section 403 of the Highway Safety Act of 1966 has charged the National Highway Traffic Safety Administration (NHTSA) with responsibility for conducting a research, development, and demonstration program to increase knowledge in the field of human-oriented highway safety. For thirteen years NHTSA has engaged in a broad program of RD&D to meet this mandate. The study described in this report has examined what NHTSA has done and plans to do. The funds dispersed under Section 403 during the 1970-1979 decade by NHTSA and the planned allocations for the 1980-1984 period have been used to measure this activity. The data that have been assembled come from

NHTSA's budget submissions, its proposed five-year plan, reports of RD&D contracts, and direct communication with NHTSA personnel. The data have limitations, and these have been discussed in the body of this report. Furthermore, funding is only one way to measure the course and composition of an RD&D program. Numbers of reports, utility of information produced, and quality of output are others. Recognizing the limitations of the data and the measure used, several conclusions follow from the analysis that has been made.

- The rapid and substantial increase of 403 RD&D funds in the 1970-1979 period represented a significant effort to meet the federal commitment in the Highway Safety Act of 1966 to improve the knowledge base in human-oriented highway safety. The increase of 138 percent in annual 403 funding between 1970 and 1979 is much greater than the 86 percent increase for all federal RD&D outlays. However, most of this increase occurred in the early years of the decade. Following the ending of the large-scale Alcohol Safety Action Program (ASAP) in the 1970s, annual 403 funding declined, and since 1977 the level has stabilized at just over $26 million. When the effects of inflation are taken into account, this represents a decline over the past three years in real effort.
- Within its over-all 403 RD&D program, NHTSA has chosen to emphasize the latter stages of the research-development-demonstration-action sequence in attacking human-oriented highway safety problems. Both in 1970 and in 1979 it allocated only twenty-five percent of its contract funds to research. In the midyears of the decade when the ASAP demonstration projects were in operation this proportion was considerably smaller. Across the decade most of NHTSA's 403 funds have been committed to demonstrations, manpower development and training, and accident data collection. A significant and increasing proportion of its funds (5.1% in 1970 and 11.2% in 1979) have been committed to the National Driver Registers, which many regard as an operational activity rather

than an RD&D program.

- The 1970-1979 data on funding of RD&D contracts in different program areas show that NHTSA has distributed its resources across a broad spectrum of major highway safety problems. The largest share of its 403 contract funds have been allocated to alcohol and drug RD&D. Other areas receiving major RD&D support have been law enforcement, driver education and control, highway safety manpower and management development, and pedestrian and bicycle safety. In the last ten years there have been some significant shifts in program emphasis. Alcohol related RD&D has tended to decline since the ASAPs, and the early emphasis on vehicle inspection programs has also diminished. These declines have been more than matched by a broadening of the 403 RD&D program into other significant problem areas, including pedestrian and bicycle safety, emergency medical services, and motorcycle safety.
- A significant problem in fulfilling the 403 mandate may result from the increasing proportion of funds absorbed in the administration and support of NHTSA programs. This component of NHTSAs 403 budget has increased from thirty percent in 1970 to forty-five percent in 1979. Funds used for this purpose are clearly not available for the RD&D contracts that have been the primary means used by NHTSA to expand human-oriented highway safety knowledge.
- Comparing the plan for the next five years with the history of the past ten, the most striking fact is the programmed decline in 403 RD&D contract programs. Following modest increases in 1980 and 1981, three years of decline are anticipated. The total in 1984 is $13.3 million, down from $14.5 million in 1979. This is a planned decline of nine percent for which no explanation is presented.
- The planned program does show changes of emphasis that appear to indicate a modest reallocation of effort toward the more exploratory stages of the RD&D process. Research and

development activities are programmed to increase absolutely over the life of its plan by over twenty-five percent. By 1984 they occupy a significantly larger proportion of 403 contract funding then they do in 1979 (42% versus 31%). Counterbalancing this increase is a sharp decline in planned demonstration projects. The funding for these decreases steadily from $3.7 million in 1979 to $1 million in 1984.

- The 1980-1984 plan also indicates significant shifts will take place in the allocation of resources among program areas. The major increases--in occupant restraint and motorcycle safety programs—give emphasis to areas that have received increasing attention in the highway safety community and in the Congress as priority problems to be attacked. The declines in programs related to unsafe driving acts, alcohol and drugs, the young driver, and pedestrian and bicycle safety are more difficult to explain. The problems addressed in these programs have certainly not been solved, and the most rational may be the requirements of meeting a limited total budget.

Looking at the total perspective—the history of the past ten years and the plans for the next five years—it is evident that NHTSA has mounted a substantial and wide-ranging RD&D effort to develop solutions to major problems in the human-oriented highway safety field. The leveling off of funding in the past three years is very likely related to efforts by the administration and the Congress to hold down the size of the federal budget. Less understandable is the decrease in 403 contract funding planned for the 1980-1984 period. Most human-oriented highway safety problems are far from solution. The need for better understanding of the problems and more effective countermeasures remains great. It does not seem justifiable for the responsible federal agency to propose a reduction in its effort.

A second point of concern is the relatively small proportion of resources NHTSA has allocated to the more exploratory stages of the RD&D process. Basic understanding of why people drive hazardously and how to control and improve driving behavior effectively is still limited.

This understanding is essential to the development of workable countermeasures.

The federal highway safety program is still relatively young. Most problems remain unsolved, and it is likely that others have yet to be identified. NHTSA has played a central role in the evolution of the field and will continue to do so. This study does raise questions about how NHTSA has allocated resources in the past and what it plans for the future. It does so recognizing that much has been accomplished since 1966 and that the agency is firmly committed to solving the important problems this country faces in highway safety. This analysis does lead to suggestions for change. However, these are essentially pointed at shifts of emphasis and in allocations within the total program. The basic thrust of NHTSA's approach as it has matured over the past ten years and as it is programmed to evolve over the next five years is appropriate and will hopefully continue to be strengthened.

FOOTNOTES

1. In the 1980 budget submission this is called Highway Safety Programs, a title it had in 1970 and earlier years. It is still generally referred to as Traffic Safety Programs and this term will be used in this report.

2. This office has been referred to as Research and Analysis in the past.

3. This information was found by associating each of the elements in the budget information with the authorizing legislation. When a line item was not broken into different public laws, the division was estimated on the basis of funding for that office by public law, provided by NHTSA staff. Since NHTSA does not give a complete breakdown of personnel by public law it was necessary to make estimates. Diagnostic Inspection in Traffic Safety Programs was funded by both the Highway Safety Act, Section 403 and the Motor Vehicle Information and Cost Savings Act. In Research and Development, Motor Vehicle and Fuel Economy was funded by both the Traffic and Motor Vehicle Act and the Motor Vehicle Information and Cost Savings Act. Similarly NCSA personnel had to be divided between the Traffic and Motor Vehicle Safety Act and the Highway Safety Act, Section 403. General Administration had to be divided among all four authorizations.

4. This was called Highway Safety Research in the 1980 budget submission.

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