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access alcohol impairment bicycles
child passenger safety crashes
crosswalks data driver distraction
driver behavior engineering evaluation
graduated drivers licensing highways
injury prevention medians
motor vehicles occupant protection
older drivers pedestrians public health
research roadway design safety
school travel seat belts sidewalks
traffic transportation walking

A Plan for Pedestrian
and Bicycle Traffic Safety
Programs in N.C. (1974)
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University of North
Carolina Highway Safety
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A Plan for Pedestrian and Bicycle
Traffic Safety Programs in N.C.

Prepared for the State of North Carolina,
Governor's Highway Safety Prog.
1974

UNC/HERC - FH/1/6

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FOREWORD

The University of North Carolina Highway Safety Research Center has developed, and herein documents, a plan to strengthen pedestrian and bicycle safety programs at state and local levels of government throughout North Carolina. The plan has been formulated under the sponsorship of the Governor's Highway Safety Program to establish a process for applying state and local resources in a coordinated statewide program to reduce the number of pedestrians and bicyclists killed and injured in traffic accidents.

The need for new organized efforts is characterized by a total of 3,500 pedestrians and bicyclists killed or injured as a result of traffic accidents during 1973. This problem is a matter of special concern because approximately 50% of these casualties are under fifteen years of age.

Specific objectives cited in this report for various elements of a statewide pedestrian and bicycle safety plan are responsive to provisions of Public Law 89-564, the National Highway Safety Act of 1966, to requirements of national standards for state highway safety programs, and to North Carolina Statute 147 (12) which authorizes the Governor to establish a comprehensive statewide highway safety program. Pedestrian and bicycle safety are facets of highway safety in which multi-discipline inputs and inter-governmental cooperation are key requisites for accomplishing program goals. With this in mind, the University of North Carolina Highway Safety Research Center calls particular attention to the importance of establishing a practical method of ensuring that adequate consideration is given to the designation of responsibility for coordinating implementation of statewide pedestrian and bicycle safety program activities incorporated in this plan.

Data provided by the North Carolina Department of Motor Vehicles in the course of this study and the cooperation extended in this regard by the Traffic Records Division are acknowledged with appreciation.

I. Summary

North Carolina's statewide highway safety program, authorized under North Carolina General Statute 147 (12) constitutes a systematic effort to reduce the incidence of traffic accidents, deaths, and injuries on all streets and highways throughout the state. All jurisdictions - municipal, county, regional, and state - are unified in concerted actions under a comprehensive plan which deals with each component of highway safety, namely:

- highway users (drivers, passengers, pedestrians, and cyclists);
- roadways/roadsides; and
- vehicles.

In the course of updating a four-year (fiscal 1974-77) comprehensive plan for the statewide highway safety program, the Governor's Highway Safety Program has determined that it is desirable and necessary to incorporate new planning strategies for pedestrian and bicycle safety to more adequately focus on these two parts of the highway user component of the program. The University of North Carolina Highway Safety Research Center was requested to assist in developing such strategies and herein submits findings and recommendations formulated pursuant to this study assignment.

A. Purpose

Simply stated, this study was conducted to develop a plan for statewide pedestrian and bicycle safety programs which will bring new multi-discipline skills and resources to bear on the goal of providing a safe highway traffic environment for pedestrians and bicyclists, thereby reducing the number of persons killed and injured as a result of pedestrian and bicycle traffic accidents.

B. Study Findings

The table below summarizes selected indicators of the nature and magnitude of pedestrian and bicycle safety problems in the state as determined through analysis of traffic accident profiles.

	<u>Pedestrians</u>		<u>Bicyclists</u>	
	<u>Killed</u>	<u>Injured</u>	<u>Killed</u>	<u>Injured</u>
1. Average Annual Experience 1970-73 Compared With 1966-69	Up 14%	Up 7%	Not Significantly Changed	Up 8%
2. Rural Involvements in 1973	242	783	24	425
3. Urban Involvements in 1973	88	1,319	2	604
4. Rural/Urban Involvements in % of Total Involvements in 1973	73/27%	37/63%	92/8%	41/59%
5. Involvements By Persons Under 15 Years of Age in 1973	93	1,100	17	692
6. Involvements By Persons 15 Years and Older in 1973	246	1,164	8	283
7. Involvements By Persons Under 15 Years/ Involvements By Persons 15 Years and Older in % of Total Involvements in 1973	27/73%	49/51%	68/32%	71/29%

It is noteworthy that, in addition to the serious increases in bicycle and pedestrian traffic accident casualties shown on line 1 in the table above, the number of bicyclists killed and injured (combined) have markedly increased by 26% from 1972 to 1973, notwithstanding that the effects of the energy crisis in 1973 produced only half the normal year-to-year increase in travel mileage, a measure of accident potential based on exposure; i.e., the number of vehicle-bicycle conflicts.

A review of the state's conformance with national standards for highway safety as they relate to pedestrian and bicycle safety, which was performed in parallel with studies of accident profiles, has led to the identification of certain areas, listed below, which should be considered in the course of planning actions to reduce pedestrian and bicycle involvements in traffic accidents:

- accident investigation, reporting, and analysis processes should be upgraded to include more detailed data on cause

and effect relationships associated with pedestrian and bicycle accidents;

- local governments should be furnished specific guidance towards applying community planning, engineering, education, and enforcement skills and resources to improve pedestrian and bicycle safety programs;
- traffic safety education programs should be developed for new K-9 classroom instruction in all schools and for other selected population groups experiencing high involvements in pedestrian and bicycle traffic accidents;
- statewide public information and education programs should be produced utilizing multi-media approaches towards familiarizing the public concerning pedestrian and bicycle safety hazards and corrective measures;
- motor vehicle traffic laws and ordinances should be updated to meet current pedestrian and bicycle safety needs with regard to rights and duties of pedestrians and bicyclists on public streets and highways; and
- an inter-disciplinary entity should be established to coordinate planning, implementation, prioritization, and evaluation of actions programmed under a statewide multi-year pedestrian and bicycle safety plan which involves selected state departments joined with local governments in both state level and community programs.

C. Recommended Plan

An eight-point plan identified below is recommended, with early initiation of unified program activities urged through the establishment, by executive order, of a Governor's Task Force on Pedestrian and Bicycle Traffic Safety Programs.

1. Designation of responsibility for new concerted actions to increase pedestrian and bicycle safety under a task force appointed to lead the state

and its communities in developing, implementing, and evaluating state level and local government programs.

2. Updated motor vehicle traffic laws relating to rights and duties of pedestrians and bicyclists,
3. Guidelines for state and community activities in pedestrian and bicycle traffic programs focusing on community development, highway and traffic engineering, traffic enforcement and public education,
4. A statewide system for investigation and analysis of pedestrian and bicycle traffic accidents that includes bilevel reporting techniques and selective case study procedures,
5. Innovative pedestrian and bicycle program curriculum and materials for classroom instruction of children in K through 9th grades,
6. Public education program directed towards specific issues concerning pedestrian and bicycle traffic safety programs in North Carolina,
7. Plans for improvement projects to assist pedestrian and bicycle traffic in selected communities under 10,000; 10,000 to 25,000; 25,000 to 50,000; and over 50,000 population, and
8. Training programs for bicyclists classified by trip purposes or by age groups.

It is suggested that the Governor's Highway Safety Program should be the source of day-to-day assistance in tasks required to meet goals and objectives of the Governor's Task Force; in effect, serving as staff to the task force.

II. Introduction

A. State Government Programs

No cohesive, systematic program designed to manage the human, environmental, and vehicular factors in pedestrian and bicycle safety exists today at the state government level in North Carolina. This is true even though vehicle-pedestrian and vehicle-bicycle collisions currently are a significant part of the traffic accident problem in the state, as documented in III-A and -B. An organized process to ameliorate this problem should now be established.

The Department of Motor Vehicles occasionally provides materials and furnishes personnel to conduct pedestrian and bicycle safety courses in schools and give presentations before civic groups, service associations and social organizations. For instance, the Traffic Safety Education Division of the Department of Motor Vehicles has developed slide presentations to supplement instruction by teachers in elementary grades for pupils assigned to ride school buses. Also, other divisions of the Department of Motor Vehicles, when requested, provide speakers for conferences on pedestrian and bicycle safety sponsored by groups such as Girl Scout and Boy Scout organizations and 4-H clubs.

The North Carolina Department of Public Instruction has advocated the inclusion of traffic safety instruction in existing elementary levels of education. Except in rare instances when certain schools recognize a specific need, this type of instruction is not provided.

Prior to 1972, traffic safety courses were not available to college and university students in North Carolina. Currently, three universities offer both undergraduate and graduate work in traffic safety education.

On the brighter side, at the state level, much is being accomplished to make the environment safer for pedestrians. This is especially true in areas with high vehicular-pedestrian traffic density. Transportation engineers at the state level, in developing highway construction plans, routinely incorporate special design features and traffic control devices for pedestrians, pedestrian safety islands, and other facilities to

accommodate pedestrian traffic (e.g., overcrossings, sidewalks, ingress and egress controls). Consideration is routinely given to the restriction of turning movements in connection with phasing and timing of traffic signals for pedestrians. When requested, State Division of Highways personnel provide consultation and advice to state and local school officials on selecting prospective school sites.

Prior to 1973, no special consideration was given to bicycling as a viable means of transportation in North Carolina. However, in 1973 the growing use of bicycles both for recreational purposes and as an economical mode of transportation has led the Department of Transportation and Highway Safety to establish a special unit for the planning of bicycle facilities.

B. Local Government Programs

Local highway safety programs currently are not oriented towards pedestrian and bicycle safety problems in North Carolina. More must be done by local officials and administrators to reduce the number of pedestrian and bicycle traffic accidents. Better analytical techniques must be applied to the identification of specific local needs to ensure proper use of remedial and preventive measures to counteract pedestrian and bicycle traffic accident problems.

Occasions arise when state and local governments jointly conduct information campaigns directed towards pedestrian and bicycle safety. In many instances, such campaigns are the result of a tragic accident and the resulting emotional reactions of a community. Instead, public education and information programs for pedestrian and bicycle safety should be evolved through a continuing program of traffic accident analysis.

Local governments are now addressing the special needs of pedestrians having physical handicaps and of older pedestrians in areas where special housing has been constructed for the aged. Recently promulgated engineering standards require curb ramps to assist the physically handicapped. Other safety improvement programs are under development in local areas.

to meet the increase in bicycle usage for recreational purposes and as a general mode of transportation.

C. Non-Governmental Programs

Pedestrian and bicycle safety programs of non-governmental/private sector organizations are largely supportive of the priorities established by state and local officials. Safety programs sponsored by insurance companies, automobile clubs and parent-teacher groups focus on the distribution of highway safety literature and information concerning specific highway safety needs.

Non-governmental organizations also sponsor traffic safety contests, bike rodeos, and bike safety inspections which are commendable activities that should be more closely coordinated with comprehensive programs.

D. Conclusions

Current pedestrian and bicycle safety programs in North Carolina can be characterized as fragmented at best. There is much to be accomplished in this area, both through the planning and implementation of countermeasures known to be effective and also through improved analysis techniques to measure pedestrian and bicycle traffic accident cause and effect relationships and to evaluate the effectiveness of program actions.

III. Problems and Needs

Figure 1 summarizes traffic accident experience and travel mileage in North Carolina from 1967 through 1973. The number of involvements by type of traffic accident and the involvement rates per 100 million vehicle miles of travel are presented, first to illustrate the actual losses incurred from year to year, and then to show how such losses may be compared annually, governed by a parameter dealing with exposure, i.e. travel mileage.

The annual mileage death and injury rates for all accidents in the state have decreased by 25% and by 9% respectively during the seven years following enactment by Congress of Public Law 89-564, the Highway Safety Act of 1966, and the state's initiation of a coordinated highway safety program under North Carolina General Statute 147 (12), which is responsive to PL 89-564. At the same time, the annual mileage death and injury rates for pedestrian accidents have decreased by 18% and by 32% respectively. Likewise, the annual mileage death and injury rates for bicycle accidents have decreased by 50% and by 12% respectively.

Nonetheless, the societal losses characterized by traffic accidents have increased substantially during the same seven year period, since annual numbers of traffic deaths and injuries resulting from all accidents have increased by 8% and by 32% respectively. The annual number of pedestrians killed is now 22% higher than in the mid-60's and the annual number of pedestrians injured remains approximately the same. Similarly, the annual number of bicyclists killed now is not significantly changed, whereas the annual number of bicyclists injured is 27% higher than during the mid-60's.

Thus, it is reasonable to assume that new and expanded programs in highway safety in recent years have produced a salutary effect evidenced through lives saved and injuries avoided in relation to losses that might have been expected with the growth in opportunities for accident involvements, as expressed in vehicle miles of travel. In the same perspective, it is clear that the actual number of persons killed or injured annually as a result of traffic accidents, including pedestrians and bicyclists, is significantly higher today than during the mid-60's. Figure 2, showing relative growth in highway fatalities

Figure 1

1967 - 1973 Traffic Accident Experience and Travel Mileage in North Carolina

	1967	1968	1969	1970	1971	1972	1973
All Accidents							
Fatalities	1,751	1,869	1,810	1,772	1,846	1,983	1,889
Injuries	54,433	55,133	58,610	58,622	61,370	65,421	72,072
Accidents	101,615	109,383	120,493	124,784	132,986	127,870	125,825
Pedestrian Accidents							
Fatalities	271	303	287	301	314	369	330
Injuries	2,130	2,105	2,102	2,330	2,325	2,273	2,102
Fatal Accidents	268	303	284	294	310	362	326
Injury Accidents	2,004	2,013	1,996	2,234	2,193	2,149	1,967
Bicycle Accidents							
Fatalities	35	38	29	28	28	32	26
Injuries	812	770	727	750	705	802	1,029
Fatal Accidents	35	35	27	28	27	32	24
Injury Accidents	743	720	662	701	666	749	963
Travel Mileage (millions of vehicle miles)	24,600	26,100	27,800	29,600	31,400	34,000	35,800
Mileage Death Rate ^{1/}							
All Accidents	7.1	7.2	6.5	6.0	5.9	5.8	5.3
Pedestrian Accidents	1.1	1.2	1.0	1.0	1.0	1.1	0.9
Bicycle Accidents	0.14	0.15	0.10	0.09	0.09	0.09	0.07
Mileage Injury Rate ^{1/}							
All Accidents	221.3	211.2	210.8	198.0	195.4	192.4	201.3
Pedestrian Accidents	8.7	8.1	7.6	7.9	7.4	6.7	5.9
Bicycle Accidents	3.3	3.0	2.6	2.5	2.2	2.4	2.9

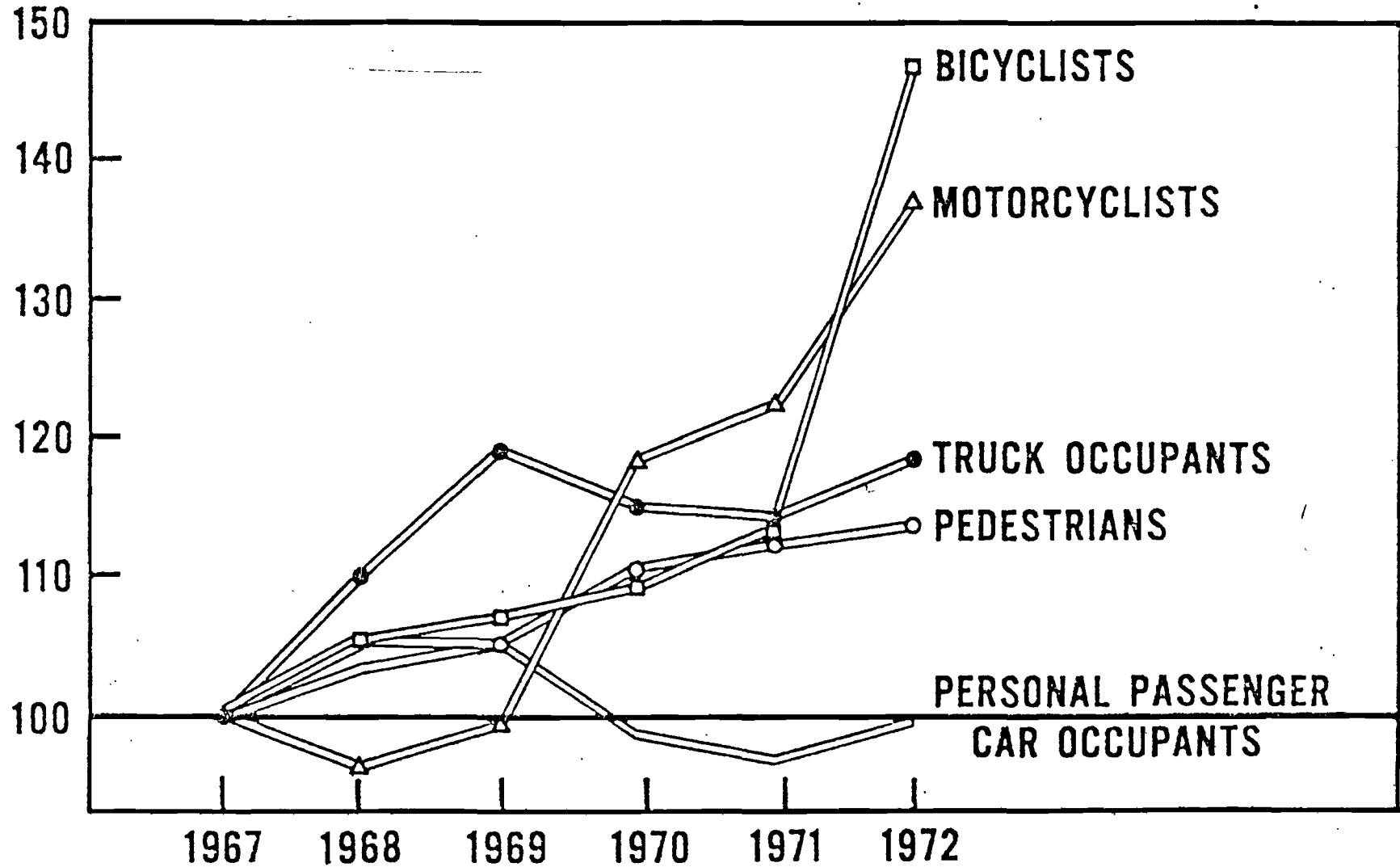
^{1/} Rates are per 100 million vehicle miles of travel.

Figure 2

RELATIVE GROWTH IN HIGHWAY FATALITIES

[1967=100]

1967--1972



experienced nationally from 1967 through 1972 for various categories of highway users, gives a readily comprehensible picture of the serious impact that traffic accidents continue to impose on our society.

A. Pedestrian Accidents

Figures 3 and 4 show selected characteristics of pedestrian accidents in North Carolina. It is noteworthy that, although the state is 55% rural and 45% urban in character, Figure 3 reveals that 42% of pedestrian accidents occur at rural locations and 58% at urban locations. With reference to accident severity, 73% of the pedestrian deaths occur at rural locations and 27% at urban locations, whereas 37% of the pedestrians injured are involved in rural and 63% in urban traffic accidents. From the above, it is apparent that both rural and urban locations in the state are experiencing pedestrian accidents of substantial proportions; e.g., 55% of the state (rural areas) experiences 73% of the pedestrian deaths, and 45% of the state (urban areas) experiences 58% of the pedestrian accidents and 63% of the pedestrian injuries occurring throughout North Carolina. Higher speeds in rural locations may be expected to cause more severe casualties in pedestrian accidents. Greater numbers of pedestrians in urban locations, on the other hand, increase the likelihood of pedestrian accidents although somewhat slower speeds may tend to diminish their severity taken overall.

Figure 4 documents a point of particular concern in that during the 1970's annually in North Carolina 27% of the pedestrians killed and nearly 49% of the pedestrians injured in traffic accidents are under 15 years of age. This serious toll of young persons is reflected again in Figures 5 and 6 which illustrate graphically the distributions of pedestrians killed and injured by age groups at both rural and urban locations across the state. These figures show accumulative rural and urban totals, so that the upper lines represent state-wide totals, the areas between upper and lower lines represent urban components of the totals, and the lower lines represent rural components

Figure 3

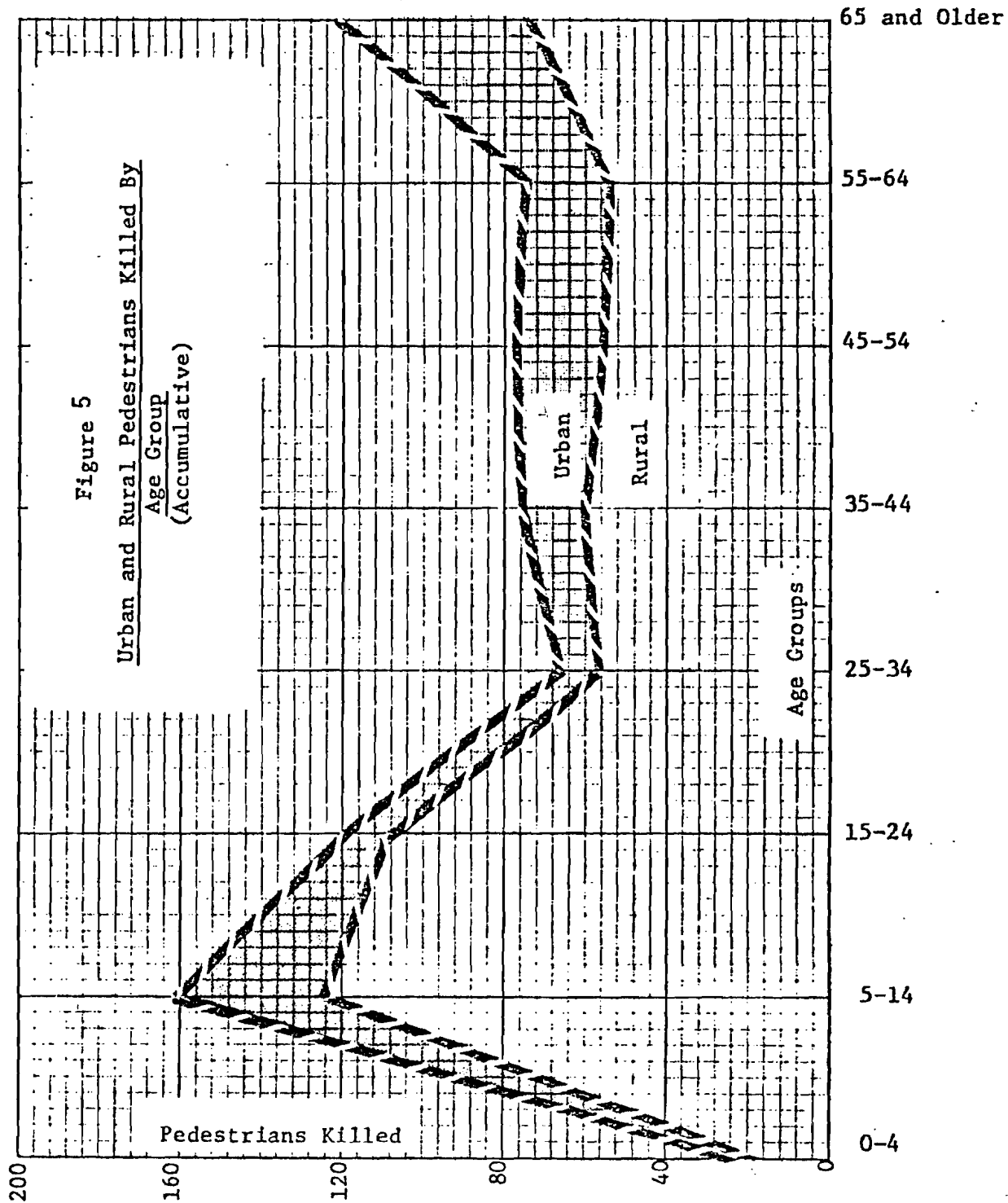
Rural and Urban Pedestrian Traffic Accident
Experience in North Carolina 1966-1973

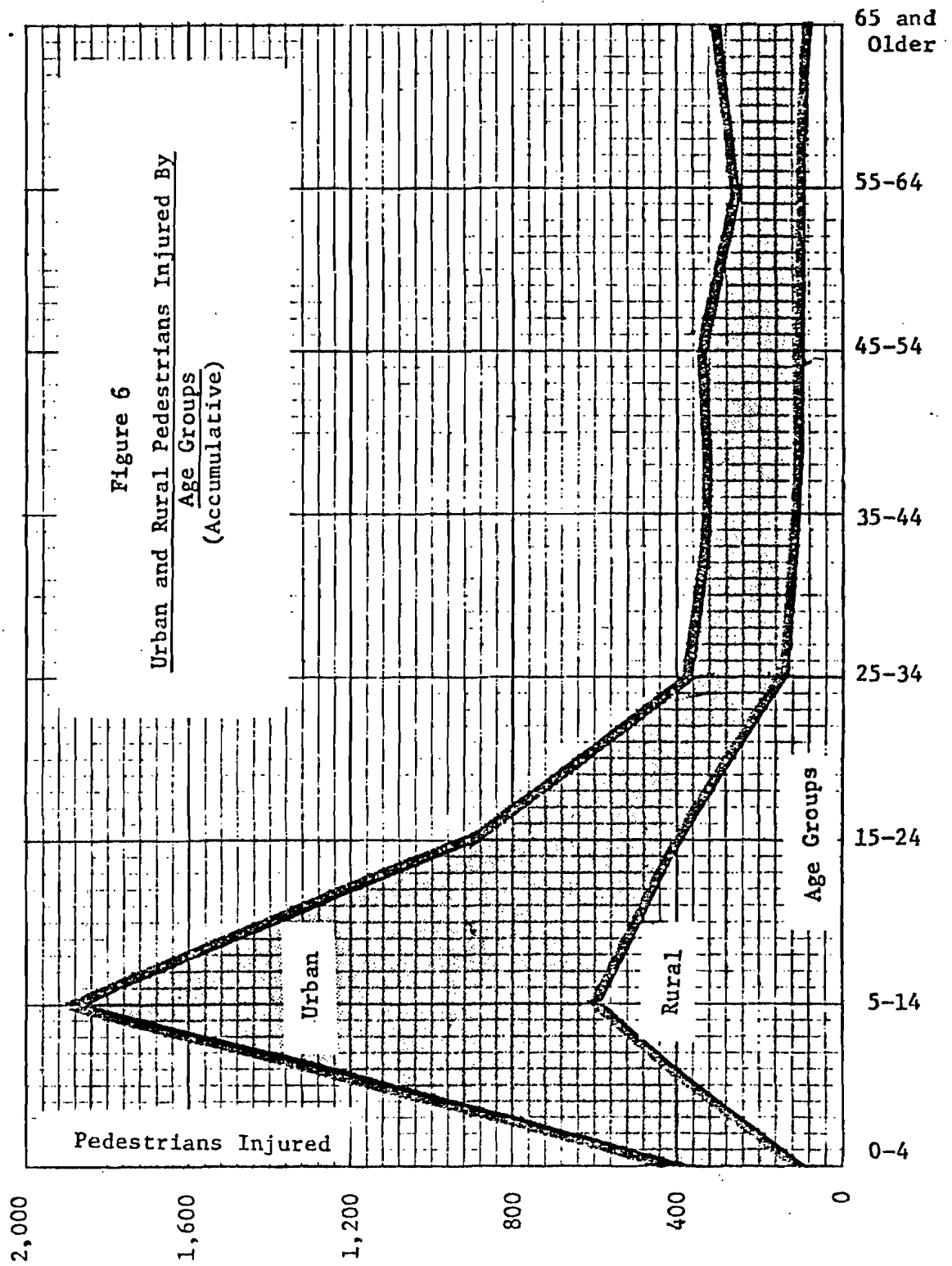
Year	Number of Accidents			Number of Persons	
	Total	Fatal	Injury	Killed	Total Injured
<u>Rural</u>					
1966	810	210	600	215	644
1967	774	196	578	199	623
1968	843	229	614	229	652
1969	816	196	620	199	668
1970	919	206	713	209	759
1971	935	229	706	232	763
1972	988	280	708	285	765
1973	957	240	717	242	783
<u>Urban</u>					
1966	1503	79	1424	79	1487
1967	1498	72	1426	72	1507
1968	1473	74	1399	74	1453
1969	1464	88	1376	88	1434
1970	1609	88	1521	92	1571
1971	1568	81	1487	82	1562
1972	1523	82	1441	84	1508
1973	1336	86	1250	88	1319

Figure 4

Pedestrians Under 15 Years of Age and 15 or Older Involved in
Traffic Accidents in North Carolina 1971-1973

Age	1971	1972	1973
<u>Pedestrians Killed</u>			
0-4	11	13	24
5-9	47	62	49
10-14	34	16	20
SUB-TOTAL	92	91	93
15 or Older	242	290	246
SUB-TOTAL	334	381	339
Age Not Stated	3	5	5
TOTAL	337	386	344
<u>Pedestrians Injured</u>			
0-4	183	203	204
5-9	661	610	600
10-14	331	295	296
SUB-TOTAL	1175	1108	1100
15 or Older	1284	1282	1164
SUB-TOTAL	2459	2390	2264
Age Not Stated	20	28	32
TOTAL	2479	2418	2296





of the totals. These two figures demonstrate clearly the nature of the pedestrian accident problem with respect to the high involvement of persons under 15 years of age and with regard to the relative severity of pedestrian accidents occurring at rural and urban locations. It should be noted that both figures portray the same age groupings; however, the ratio of the scales for pedestrians injured (Figure 6) to pedestrians killed (Figure 5) is ten to one which is done to permit intelligible data displays in each case. In the course of developing data summaries and pictorial representations of data in figures previously referenced, as well as in those which follow, it has been noted that there are only a few instances where age is not stated on accident reports and summaries from year to year. These occurrences have been discounted when calculations were made concerning age groupings.

The accident profiles discussed above offer straightforward insight into the continuing problems associated with pedestrian involvement in traffic accidents, namely that:

- the average number of pedestrian accidents annually in the four-year period, 1970-73, is over 7% higher than in the previous four-year period, 1966-69;
- the average number of pedestrian fatalities annually is approximately 14% higher on a similar basis;
- the average number of pedestrian injuries annually is approximately 7% higher on a similar basis; and
- typically, of all pedestrians killed or injured, approximately 27% and 49% respectively are under 15 years of age.

B. Bicycle Accidents

When addressing the issue of bicycle riders involved in traffic accidents, it is logical to consider their problems and needs together with those of pedestrians since:

- these are two groups of highway users who depend solely on physical capabilities to interact safely with motor vehicle traffic, and
- a bicyclist frequently becomes a pedestrian while in traffic when it is no longer possible to maintain the level of physical exertion required for cycling.

In like manner, the approaches which are useful in dealing with the problems and needs of pedestrians and bicyclists are compatible to a direct extent in many ways, such as:

- separation of pedestrian and bicycle traffic from conflicts with motor vehicles through provision of special rights-of-way,
- improvement in visibility of pedestrians and bicyclists to motor vehicle operators at crossing points as well as along roadways and roadsides,
- provision of consistent, adequate traffic laws and ordinances dealing with rights and duties of pedestrians and bicyclists in relationship to motor vehicle operators,
- educational programs aimed at selected age groups, notably persons under 15 years old, and
- application of traffic signs, markings, signals and channelizing devices which are designed for assisting pedestrian and bicycle traffic in an environment dominated by motor vehicles.

Figures 7 and 8 show selected characteristics of bicycle accidents in North Carolina. As discussed earlier relative to pedestrian accidents, it is significant that, although the state is 55% rural and 45% urban in character, Figure 7 reveals that 42% of bicycle accidents occur at rural locations and 58% at urban locations. With reference to accident severity, 92% of the bicyclists killed are involved in accidents at rural locations and 8% at urban locations, whereas

Figure 7

Rural and Urban Bicycle Traffic Accident Experience
in North Carolina 1966-1973

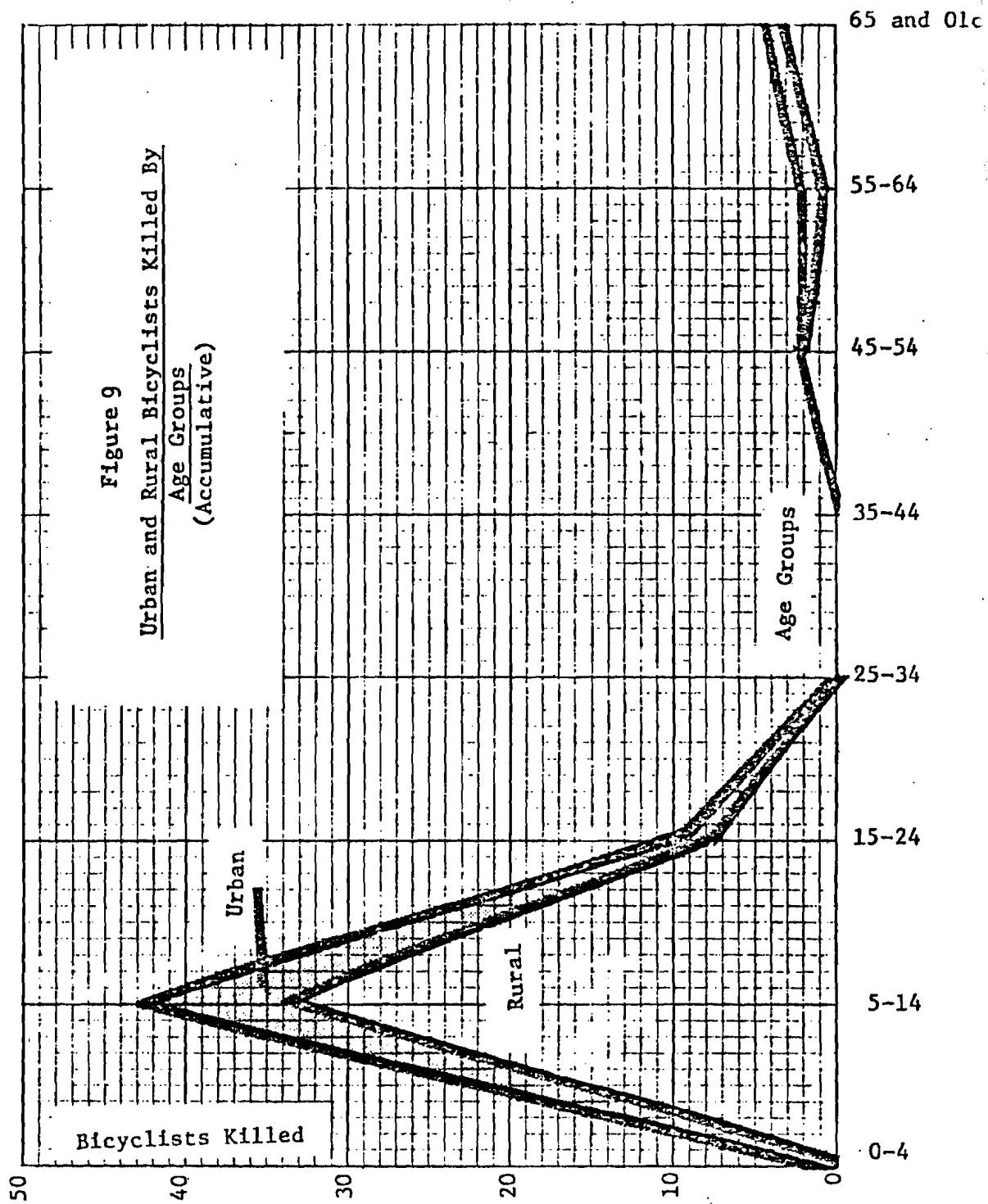
Year	Number of Accidents			Number of Persons	
	Total	Fatal	Injury	Killed	Total Injured
<u>Rural</u>					
1966	278	19	259	19	281
1967	278	31	243	31	275
1968	300	26	272	29	293
1969	282	24	254	26	286
1970	293	24	263	24	284
1971	290	20	267	21	290
1972	309	27	281	27	312
1973	415	22	388	24	425

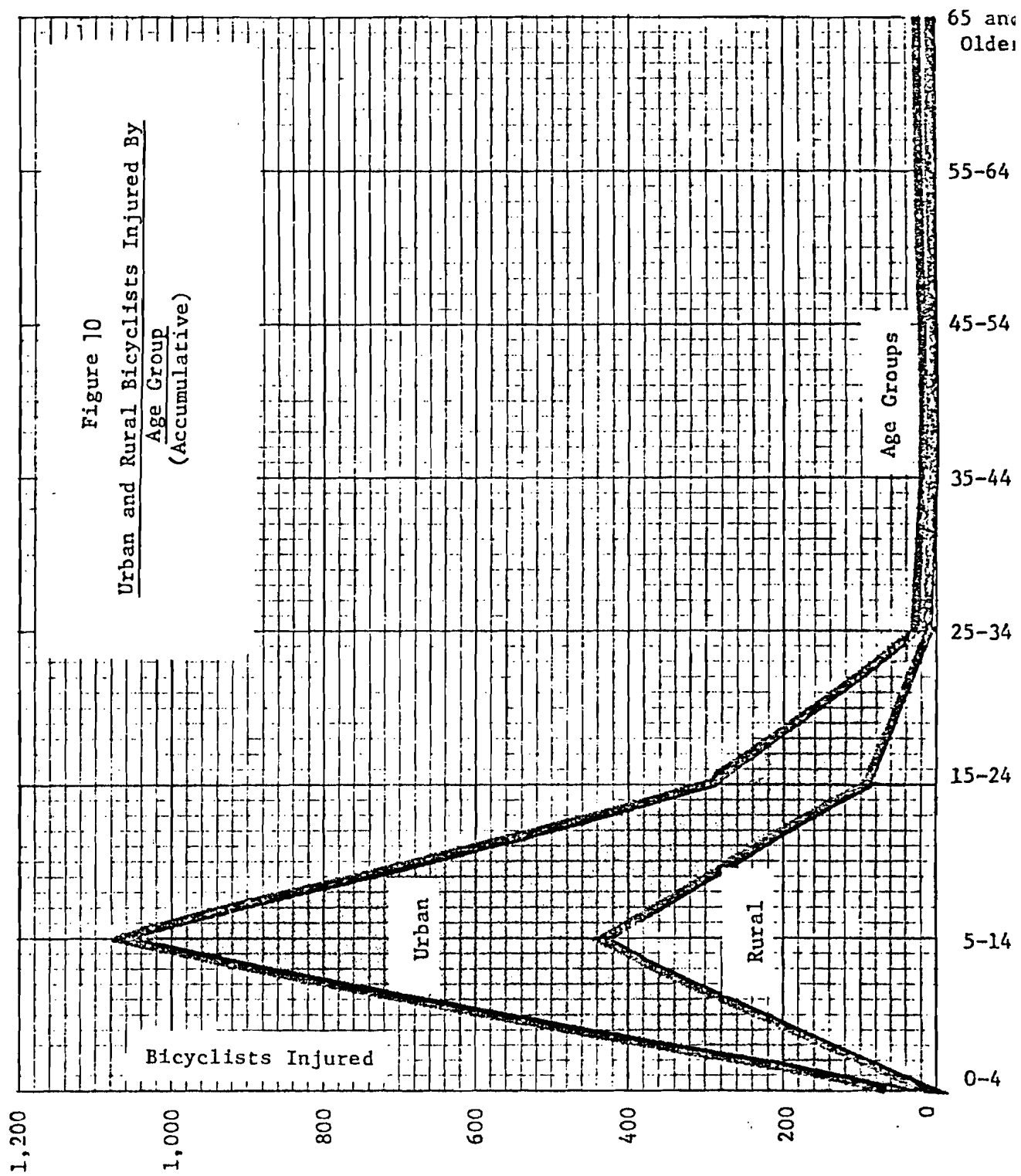
Year	Number of Accidents			Number of Persons	
	Total	Fatal	Injury	Killed	Total Injured
<u>Urban</u>					
1966	442	4	437	4	471
1967	504	4	500	4	537
1968	459	9	448	9	477
1969	412	3	408	3	441
1970	444	4	438	4	466
1971	409	7	399	7	415
1972	474	5	468	5	490
1973	580	2	575	2	604

Figure 8

Bicyclists Under 15 Years of Age and 15 or Older Involved in Traffic
Accidents in North Carolina 1971-1973

Age	1971	1972	1973
<u>Bicyclists Killed</u>			
0-4	1	-	-
5-9	10	11	6
10-14	9	13	11
SUB-TOTAL	20	24	17
15 or Older	8	8	8
SUB-TOTAL	28	32	25
Age Not Stated	-	-	-
TOTAL	28	32	25
Age	1971	1972	1973
<u>Bicyclists Injured</u>			
0-4	8	5	10
5-9	260	229	296
10-14	273	310	386
SUB-TOTAL	541	544	692
15 or Older	152	240	283
SUB-TOTAL	693	784	975
Age Not Stated	5	2	4
TOTAL	698	786	979





41% of the bicyclists injured are involved in rural and 59% in urban traffic accidents. These statistics show a remarkable similarity to figures that relate to pedestrian accidents reported in III-A. From the above, it is apparent that both rural and urban locations in the state are experiencing bicycle involvements in traffic accidents of substantial importance; e.g., 55% of the state (rural areas) experiences 92% of the bicycle traffic deaths, and 45% of the state (urban areas) experiences 58% of the bicycle accidents and 59% of the bicycle traffic injuries occurring throughout North Carolina. Higher speeds in rural locations again may be expected to cause more severe casualties as in pedestrian accidents. Also, greater numbers of bicyclists in urban locations, on the other hand, increase the likelihood of bicycle accidents although somewhat slower speed again may tend to diminish their severity taken overall.

With appreciable likeness to the incidence of pedestrian accidents discussed previously, Figure 8 reaffirms a point of particular concern in that during the 1970's annually in North Carolina 68% of the bicyclists killed and 71% of the bicyclists injured in traffic accidents are under 15 years of age. This is reflected again in Figures 9 and 10 which illustrate the distributions of bicyclists killed and injured by age groups at both rural and urban locations across the state. These figures show accumulative rural and urban totals, so that the upper lines represent statewide totals, the areas between upper and lower lines represent urban components of the totals and the lower lines represent rural components of the totals. Just as in the case of pedestrian accidents, these two figures demonstrate clearly that the bicycle accident problem is characterized by high involvement of persons under 15 years of age. Both figures again portray the same age groupings; however, the ratio of the scales for bicyclists injured (Figure 10) to bicyclists killed (Figure 9) is now twenty to one for ease of comprehension.

Referring to Figure 8, it is important to note that even though the energy crisis limited the annual growth in travel mileage in 1973

to only half of the average annual growth during previous years, bicycle traffic accidents resulted in an increase of more than 26% in bicyclists killed and injured (combined) in 1973 compared with 1972. This attests to the rapid rise in bicycle usage experienced currently and likely to continue in years immediately ahead. The accident profiles discussed above indicate areas of primary significance regarding characteristics of the bicycle traffic accident problem as listed below:

- during the four-year period, 1970-73, the average number of bicycle accidents experienced annually has increased 9% above the four-year period, 1966-69;
- whereas bicycle accident fatalities per year do not change significantly, the number of bicyclists injured annually has increased in excess of 8% for the same periods; and
- during 1973, bicyclists killed and injured (combined) have increased by 26% above the previous year, a startling rise in involvements considering that the energy crisis reduced the normal year-to-year increase in vehicle miles of travel by approximately 50%.

IV. Application of National Standards

There are currently 18 national highway safety standards, including the standard on pedestrian safety which is presented in Appendix A. A nineteenth standard that addresses bicycle safety is under development. These standards are issued by the Secretary of Transportation in accordance with Public Law 89-564, the Highway Safety Act of 1966. Section 402 (a) of PL 89-564 states in part:

"...Such uniform standards shall be promulgated by the Secretary so as to improve driver performance ... and to improve pedestrian performance ..."

North Carolina's conformance with the provisions of the standard on pedestrian safety is assessed in Figure 11.

The status of conformance presented in Figure 11 is not meant to imply that conformance to each provision of the standard is in itself an important goal. Rather, it is only a methodology to approach the task of identifying measures that may be likely direct or proxy contributors towards accomplishing the objective of saving lives and avoiding injuries.

North Carolina, under requirements of this standard, must develop a pedestrian and bicycle safety plan as part of the statewide safety program. Based on analyses of accident profiles in III-A and -B, an assessment of conformance with national standards represented by Figure 11, and a review of program coordination requirements across the state, a recommended plan is presented in part V.

It should be noted that while national safety standards offer some guidance to a state in developing comprehensive highway safety plans and programs, these standards in most instances only suggest minimum levels of performance and do not constitute a source of specific actions to be programmed for meeting a state's needs.

A. Pedestrian Safety Standard

Standard 14, Pedestrian Safety, is presented in its entirety in Appendix A. It is a useful source for identifying types of actions

Figure 11

ASSESSMENT OF CONFORMANCE WITH HIGHWAY SAFETY PROGRAM STANDARD 14 - PEDESTRIAN SAFETY

Provisions of Standard	Conformance		
	Full	Partial	No
There is a continuing statewide inventory of pedestrian-motor vehicle accidents, identifying specifically:			
The locations and times of all such accidents.	X	—	—
The age of all of the pedestrians killed or injured.	X	—	—
Where feasible, to determine whether the exterior features of the vehicle produced or aggravated an injury.	X	—	—
The color and shade of clothing worn by pedestrians when injured or killed, and the visibility conditions which prevailed at the time.	—	X	—
The extent to which alcohol is present in the blood of fatally injured pedestrians sixteen years of age and older.	X	—	—
Where possible, to determine the extent to which pedestrians involved in accidents have physical or mental disabilities.	X	—	—
There are established statewide operational procedures for improving the protection of pedestrians through reduction of potential conflicts with vehicles:			
By application of traffic engineering practices, including pedestrian signals, signs, markings, parking regulations, and other pedestrian and vehicle traffic control devices.	—	X	—
By land-use planning in new and redevelopment areas for safe pedestrian movement.	—	X	—
By provision of pedestrian bridges, barriers, etc., to physically separate pedestrian and vehicle pathways.	—	X	—

(Continued)

(Figure 11 Continued)

Provisions of Standard	Conformance		
	Full	Partial	No
By provision of environmental illumination of high pedestrian volume and/or potentially hazardous pedestrian crossings.	—	X	—
There is established a statewide program for familiarizing drivers with the pedestrian problem and ways to avoid pedestrian collisions.	—		
The program content shall include emphasis on:			
Behavior characteristics of the three types of pedestrians most commonly involved in accidents with vehicles: (1) children; (2) persons under the influence of alcohol; (3) the elderly.	—	X	—
Accident avoidance techniques that take into account the hazardous conditions and behavior characteristics displayed by each of the three high-risk pedestrian groups listed above.	—	X	—
Emphasis on this program content shall be included in:			
All driver education and training courses.	—	X	—
Driver improvement courses.	—	X	—
Driver license examinations.	—	X	—
There are statewide programs for training and educating all members of the public as to safe pedestrian behavior on or near streets and highways.	—		
For children, youths, and adults enrolled in schools, beginning at the earliest possible age.	—	—	X
For the general population via the public media.	—	—	X
There is a statewide program for the protection of children walking to and from school, entering and leaving school buses, and in neighborhood play.	—	X	—
There is a statewide program for establishment and enforcement of traffic regulations designed to achieve orderly pedestrian and vehicle movement and to reduce vehicle-pedestrian conflicts.	—	—	X

to reduce the vehicle-pedestrian collision problem, which involves a cross section of our society; especially children, persons who have alcohol impairments, older persons and the physically handicapped.

The need for a Pedestrian Safety standard was emphasized by Congress in the process of enacting the Highway Safety Act of 1966. House Report 1700, 89th Congress, states in part:

"No safety program will be adequate that does not include requirements with respect to pedestrian education beginning at the elementary school level, as well as signs and traffic signals specifically designed for pedestrian protection, construction of sidewalks as part of residential street construction, continuing enforcement of pedestrian traffic laws, and any other program that can be devised to keep both drivers and pedestrians aware that all the fatalities are not inside the cars ... We can require the construction of sidewalks whenever we construct streets, and we can require that when residential housing development permits are granted, they require that the development be planned to include sidewalks and to eliminate steep grades and sharp curves ... We can require that pedestrian protection features be incorporated in our roads and streets."

Standard 14 provides an orderly, multi-discipline process for developing a statewide plan to reduce the incidence of vehicle-pedestrian collisions and to stimulate application of proven techniques for pedestrian safety as integral, constant, and important elements of community planning and highway transportation.

The objectives of the pedestrian safety plan prepared in response to the standard are:

- to assemble data on vehicle-pedestrian collisions,
- to analyze cause and effect relationships associated with pedestrian-vehicle collisions, and
- to develop and implement appropriate countermeasures.

Additionally, standard 14 provides a strategy for joint planning by a state working in harmony with its local governments in moving forward with an effective pedestrian safety program.

B. Interface With Other National Standards

Traffic accident problems that grow out of the required interactions between persons who walk or use bicycles and persons who operate motor vehicles impact on many aspects of highway safety - community planning, engineering, education, and enforcement. It follows that the pedestrian safety standard and a soon to be issued bicycle safety standard must interface with many of the other seventeen national highway safety standards. Twelve such relationships are discussed below:

1. Driver Education

In the driver education standard, there is a requirement for instruction of new drivers in pedestrian safety. Because the driver education standard addresses for the most part persons in training to be licensed drivers, it affords an ideal opportunity to relate pedestrian and bicycle safety to driver responsibilities, attitudes, and behavior.

2. Driver Licensing

The driver licensing standard requires that each applicant for a vehicle operator's permit is to be given an examination in which the applicant must demonstrate knowledge of the rules of the road. The rules of the road correctly include responsibilities of drivers interacting with both pedestrian and bicycle traffic.

3. Codes and Laws

A provision for a plan to achieve uniform rules of the road in all jurisdictions is a requirement of the codes and laws standard. Uniformity in rules of the road enables all highway users (drivers, passengers, pedestrians, cyclists) to know and understand traffic regulations regardless of where they may be geographically.

4. Alcohol in Relation to Highway Safety

Just as persons who are impaired by alcohol consumption constitute serious hazards as drivers, such persons also present serious pedestrian problems. Therefore, the alcohol in relation to highway safety standard addresses the problem of alcohol abuse both for drivers and for pedestrians. This standard requires that quantitative tests be conducted on the bodies of all adult pedestrians who die within four hours of a traffic accident. While such a requirement is not directly a preventive countermeasure, it is important to meet a continuing need to develop a better understanding of alcohol/traffic accident relationships.

5. Identification and Surveillance of High Accident Locations

The identification and surveillance of high accident locations standard requires the establishment of a system that accurately identifies accident locations, including collisions in which pedestrians are involved. The standard specifically requires that accidents are to be accurately located by road sections and street and highway systems. This standard further requires continuing surveillance of potentially hazardous pedestrian accident locations and a system for implementing safety improvements.

6. Traffic Records

Another standard that interfaces with the pedestrian safety standard addresses traffic records. This standard requires the ready availability of data for statistical compilations and analyses. Such analyses should provide for timely information on types of accidents (vehicle-to-vehicle, single-vehicle, pedestrian-vehicle, bicycle-vehicle, etc.) and data on accident causation. Also required is a system that produces summaries, cross tabulations, trend analyses, and other useful data compilations.

7. Emergency Medical Services

An important relationship to pedestrian safety occurs in the emergency medical services standard. For example, this standard requires that persons employed as emergency medical technicians should be trained to deal with traumatic effects of traffic accidents. This is especially needed in the case of pedestrian and bicycle accidents, characterized by high incidence of trauma.

8. Police Traffic Services

Enforcement of pedestrian and bicycle traffic laws and regulations is an element that needs strengthening in most selective enforcement programs. For this reason, the police traffic services standard provides for the special training of police in pedestrian traffic safety.

9. Pupil Transportation Safety

The standard on pupil transportation safety accentuates many aspects of pedestrian safety. This standard provides guidance in establishing a safe home/school traffic plan. Also, the standard requires training pupils in safe practices in walking to and from school bus loading points.

10. Accident Investigation and Reporting

The accident investigation and reporting standard places emphasis on the need for an in-depth multi-disciplinary accident investigation system. Such a system provides for uniform, comprehensive investigations for all types of traffic accidents. Such investigations should produce essential data for upgrading traffic accident countermeasures to benefit pedestrians and bicyclists.

11. Highway Design, Construction and Maintenance

The highway design, construction and maintenance standard requires that safety design criteria be included in all highway construction programs. Such criteria should provide for

protection of pedestrians and bicyclists through overcrossings, protective fencing, sidewalks, safety zones, roadway lighting, and other selected roadway and roadside design features.

Especially important in this standard is a provision requiring roadway lighting on sections of streets and highways having high ratios of night-to-day vehicle-pedestrian accidents.

12. Traffic Engineering Services

A major aspect of a safe traffic environment centers around the need for easily understood signs, markings, and signals for traffic control, including pedestrian and bicycle components. This is addressed in the traffic engineering standard which requires that a system of traffic controls should conform in design and application with the Manual on Uniform Traffic Control Devices. The manual incorporates several devices for safety in regulating, warning and guiding pedestrian and bicycle traffic when interacting with motor vehicles in the traffic stream.

V. Recommended Plan

The societal impact of nearly 3,500 pedestrians and bicyclists killed or injured in traffic accidents annually, of which 50% are persons under 15 years old, clearly justifies instituting vigorous new efforts to focus available resources on the issue of inaugurating a statewide plan to increase the safety of pedestrians and bicyclists in the highway traffic environment. An eight-point pedestrian and bicycle safety plan for North Carolina is presented below:

A. Governor's Task Force

To provide a defined central point of responsibility for the initiation of statewide measures to reduce pedestrian and bicycle traffic accidents, deaths, and injuries, it is recommended that a Governor's Task Force on Pedestrian and Bicycle Safety Programs should be designated by executive order. The singular purpose of the Governor's Task Force would be to coordinate the development and the implementation of steps to increase pedestrian and bicycle traffic safety in North Carolina. Specific objectives would be to:

- document a unified statewide program for initiating specific, priority-ranked countermeasures directed towards reducing traffic accidents involving pedestrians and bicyclists through actions by state agencies, local governments, and the private sector,
- monitor progress in accomplishing planned and programmed countermeasures with a view towards resolving problems that may arise in the process of moving forward on schedule with a prioritized statewide pedestrian and bicycle safety program, and
- evaluate the effectiveness of countermeasures to assess directions that the program should take to achieve maximum benefits and to determine the need for initiating new activities based on experience

gained with the ongoing pedestrian and bicycle safety program.

The Governor's Task Force would be chaired by the Secretary of Transportation and Highway Safety; secretariat services would be furnished by the Governor's Highway Safety Program; and total membership would include representation for selected state and local governmental units and the private sector. Representation should include, but not be limited to, the listed below:

- Chairman (Secretary of the Department of Transportation and Highway Safety)
- Vice Chairman (to be designated by the Secretary of the Department of Transportation and Highway Safety from the membership of the Task Force)
- Secretary (Highway Safety Program Coordinator)
- Assistant Secretary (Planning) of the Department of Transportation and Highway Safety
- Commissioner of Motor Vehicles
- State Highway Patrol Commander
- Director, Traffic Engineering Section, Department of Transportation and Highway Safety
- Director of the Highway Safety Research Center of the University of North Carolina
- City Manager (appointed by the Secretary of the Department of Transportation and Highway Safety)
- County Manager (appointed by the Secretary of the Department of Transportation and Highway Safety)
- Representative of the Attorney General's Office
- Representative of the Department of Human Resources
- Representative of the Department of Public Instruction
- Representative of the State Board of Education
- Representatives of not more than five nongovernmental organizations associated with traffic and transportation programs (appointed by the Secretary of the Department of Transportation and Highway Safety)

The Governor's Task Force would not be an additional organizational unit of state government, and would not require new staff personnel. Rather, it would constitute a new inter-governmental and intra-governmental liaison group joining with the private sector to assemble existing multi-discipline skills in governmental agencies and in the private sector to address the goal of improving highway traffic safety for pedestrians and bicyclists.

A draft executive order establishing a Governor's Task Force on Pedestrian and Bicycle Safety Programs is presented in Appendix C.

B. Legislation

New traffic safety legislation should be enacted to update the motor vehicle traffic laws of North Carolina to meet current safety needs pertaining to rights and duties of pedestrians and bicyclists. Appendix B presents excerpts from the "Uniform Vehicle Code", prepared by the National Committee on Uniform Traffic Laws and Ordinances, which constitute model provisions for state laws on the subjects noted above.

Chapter 20, Article 3, Part 11 of the General Statutes of North Carolina is entitled Pedestrians' Rights and Duties. The sections that appear under Part 11 are for the most part the same as they were in 1937, when most of the current provisions were enacted. Part 11 should be updated through legislation prepared in full conformity with the Uniform Vehicle Code concerning the rights and duties of both pedestrians and bicyclists.

Bicyclists' rights and duties currently are not covered in Chapter 20, although bicycles are referred to in GS 20-38, which is entitled "Definitions of words and phrases". Under the definition of "Vehicle", bicycles are considered as vehicles and every rider of a bicycle upon a highway is subject to the provisions applicable to the driver of a vehicle.

Clearly, it is desirable and necessary to rewrite Part 11 of Article 3, Chapter 20, of the North Carolina General Statutes to be adequate and consistent with uniform provisions identified in Appendix B.

C. Guidelines for State and Community Programs

To provide technical guidance for state departments and local units of government, a series of consistent, inter-related guidelines should be developed and promulgated for state and community pedestrian and bicycle safety programs throughout North Carolina. The guidelines should document innovative concepts, accepted principles, and proven practices to apply in planning and programming activities to reduce pedestrian and bicycle traffic accidents, deaths, and injuries. These should be presented in four volumes intended for use by state and local officials, administrators and professional staff responsible for:

- community planning,
- highway and traffic engineering,
- traffic enforcement, and
- public information and education.

1. Community Planning

The volume on community planning should present approaches that focus on arranging the physical layout of a new community or a redeveloped neighborhood to provide for separation of pedestrians and bicyclists from involvement in vehicular conflicts and thus lessen potential for traffic accidents and injuries substantially. Substantive treatment should be given to developing systems of pedestrian pathways and bicycle trails that are not constrained in location to rights-of-way dedicated to motor vehicles, to use of malls and overcrossing structures, and to provisions for safe ingress and egress of pedestrians and bicyclists to and from major traffic generators such as schools, commercial and industrial centers, and recreational areas.

2. Highway and Traffic Engineering

The volume on highway and traffic engineering should devote particular attention to establishing criteria for

constructing separate facilities for pedestrians and bicyclists within existing highway rights-of-way, consistent with concepts for the safe accommodation of all highway users. Also, this volume should consider in detail how traffic controls - signs, markings, signals, and devices for traffic channelization - should be utilized to protect pedestrians and bicyclists. In this regard, the volume should address the provision of obstacle-free roadside areas at points where pedestrian and bicycle crossings occur to improve the visibility of pedestrians and bicyclists to motor vehicle operators and to remove impediments to safe entries of pedestrians and bicyclists into the roadway. The special needs of persons who are physically handicapped should be accounted for in this volume of the manual; e.g., provisions for construction of curb ramps at crosswalk locations.

3. Traffic Enforcement

The guidelines presented in the volume on traffic enforcement should provide procedures whereby selective enforcement measures may be applied to ensure that motor vehicle traffic laws and ordinances affecting the rights and duties of all highway users are operationalized to the extent necessary for accomplishing safe interaction of motor vehicles with pedestrian and bicycle traffic. The updating of motor vehicle traffic laws and ordinances to meet current safety requirements and the relationships between enforcement and adjudication processes should also be treated in this volume.

4. Public Information and Education

Guidelines in the volume on public information and education should offer multi-media approaches to informing all segments of the public concerning traffic safety problems, trends and the actions needed to diminish the likelihood of involvement in traffic accidents, or the severity of consequences if involved

in traffic accidents. Educational programs for persons under 15 years of age should be stressed through new K-9 traffic safety curriculum and instructional materials. In a similar manner, other high priority areas for public education should be addressed such as communications designed to influence public attitudes and behavior with regard to alcohol impairment and to encourage bicyclists to wear bright-colored clothing and clothing having reflectorized decals, appliques or fabrics.

D. Analysis System

A statewide system for surveillance and analysis of pedestrian and bicycle traffic accidents, including the initiation of bilevel reporting and special investigation procedures should be developed and operationalized.

E. K-9 Traffic Safety Curriculum

Innovative pedestrian and bicycle safety educational curriculum and materials should be developed for instruction of pre-school and school (K-9) children. A professional guide should be prepared for use by K-9 teachers in conducting classroom traffic safety instruction at each grade level emphasizing pedestrian, bicycle, motorcycle and passenger safety and, in 7-9th grades, also dealing with preparation for driver education and training. Also, a series of documents, activities, and audiovisual productions should be prepared to aid teachers in enlisting participation and response by pupils in the course of K-9 traffic safety instruction as outlined in curriculum guidelines.

F. Public Information and Education

A public information and education program directed towards specific issues concerning pedestrian and bicycle safety should be developed for use throughout the state.

G. Community Plans

Plans and projects for pedestrian and bicycle safety improvements should be formulated in selected communities under 10,000;

10,000 to 25,000; 25,000 to 50,000; and over 50,000 population.

H. Bicycle Safety Training Programs

Bicycle safety training programs should be developed for all age groups oriented towards use of bicycles both for recreation and as a mode of travel for various trip purposes.

VI. Plan Implementation

In accordance with recommendations presented in part V of this report, it is suggested that the state should program an eight-point plan embracing two categories of activities designed to reduce pedestrian and bicycle traffic accident deaths and injuries on North Carolina's public streets and highways, and a third category dealing with systematic analysis and evaluation techniques for program development and planning. These categories are:

- public knowledge, attitudes and behavior concerning safe interactions of drivers, pedestrians, and bicyclists in the highway traffic environment;
- provisions in the physical characteristics of roadways and roadsides, and in the operational measures used to regulate and control traffic, that are conducive to the safety of pedestrians and bicyclists; and
- measures to improve understanding of cause and effect relationships in pedestrian and bicycle traffic accidents.

A. Schedule

A proposed schedule for plan implementation is presented below:

<u>Priority</u>	<u>Activity</u>	<u>Schedule</u>
1	Establish Statewide Task Force by Executive Order	FY 1974-75
2	Enact Updated Motor Vehicle Traffic Laws	FY 1974-75
3	Prepare and Distribute Guidelines for State and Community Programs, involving Community Planning, Highway and Traffic Engineering, Traffic Enforcement, and Public Education	FY 1974-75
4	Develop and Conduct a Statewide System for Analysis of Pedestrian and Bicycle Traffic Accidents	FY 1975-77

<u>Priority</u>	<u>Activity</u>	<u>Schedule</u>
5	Prepare and Distribute Materials for Instruction of Pre-School and School (K-9) Children	FY 1975-78
6	Organize and Conduct Public Information Program Directed Towards Specific Issues Concerning Pedestrian and Bicycle Safety in North Carolina	FY 1975-76
7	Plan and Implement Programs of Pedestrian and Bicycle Safety Improvement Projects in Selected Communities of under 10,000; 10,000 to 25,000; 25,000 to 50,000; and over 50,000 population	FY 1975-78
8	Develop and Conduct Bicycle Safety Training Programs	FY 1975-78

B. Estimated Costs

Figure 12 presents estimated costs for implementation of the proposed eight-point plan. Total estimated costs are \$1,630,000 over four years, including \$815,000 from federal and \$815,000 from state and local funding sources.

C. Coordination

Overall coordination of plan implementation would be accomplished by a Governor's Task Force specified in a draft executive order presented in Appendix C. Day-to-day management of the program would be assigned to the Governor's Highway Safety Program. This is consistent with North Carolina General Statute 147-12 which provides that the Governor shall furnish assistance to departments and units of state and local governments relative to implementation of the National Highway Safety Act of 1966 and subsequent acts updating the original version. Such assistance is accomplished by the Governor's Highway Safety Program which provides professional services in:

- highway safety planning,
- project review and approval,
- technical guidance towards meeting highway safety standards,
- monitoring program progress,
- assessing program impact,
- evaluating results of implemented activities,
- developing programs for highway safety instruction and training, and
- communicating with the public concerning highway safety needs and improvements.

Figure 12

ESTIMATED COSTS

Proposed Eight-Point Plan	ESTIMATED COSTS (In Thousands)											
	FY 1974			FY 1975			FY 1976			FY 1977		
	TOTAL	S/L	FED.	TOTAL	S/L	FED.	TOTAL	S/L	FED.	TOTAL	S/L	FED.
1. Operations of Statewide Task Force	6	3	3	6	3	3	6	3	3	6	3	3
2. Preparation of Legislation and Supportive Documents	8	4	4									
3. Manual on Guidelines for State and Community Programs - Four volumes: a) Community Planning b) Highway and Traffic Engineering c) Traffic Enforcement d) Safety Education	64	32	32	8	4	4	8	4	4	8	4	4
4. Statewide System for Analysis of Pedestrian and Bicycle Accidents	30	15	15	60	30	30	60	30	30	60	30	30
5. Traffic Safety Curriculum and Materials K thru 9	40	20	20	80	40	40	100	50	50	100	50	50
6. Public Information and Education Program on Issues Concerning Pedestrian and Bicycle Safety in North Carolina				100	50	50				100	50	50
7. Community Plans for Improvement Programs in Selected Locations with Populations under 10,000; 10,000 to 25,000; 25,000 to 50,000; and over 50,000				100	50	50	200	100	100	300	150	150
8. Bicycle Safety Training Program	20	10	10	40	20	20	60	30	30	60	30	30
ANNUAL SUB-TOTALS	168	84	84	394	197	197	434	217	217	634	317	317
4-YEAR FEDERAL FUNDS							\$ 815,000					
4-YEAR STATE/LOCAL FUNDS							815,000					
4-YEAR TOTAL ALL FUNDS							\$1,630,000					

Appendix A

HIGHWAY SAFETY PROGRAM STANDARD NO. 14 - PEDESTRIAN SAFETY

PURPOSE

To emphasize the need to recognize pedestrian safety as an integral, constant and important element in community planning and all aspects of highway transportation and to insure a continuing program to improve such safety by each state and its political subdivisions.

STANDARD

Every state, in cooperation with its political subdivisions, shall develop and implement a program to insure the safety of pedestrians of all ages. The program shall provide, as a minimum, that:

- I. There is a continuing statewide inventory of pedestrian-motor vehicle accidents, identifying specifically:
 - A. The locations and times of all such accidents.
 - B. The age of all of the pedestrians killed or injured.
 - C. Where feasible, to determine whether the exterior features of the vehicle produced or aggravated an injury.
 - D. The color and shade of clothing worn by pedestrians when injured or killed, and the visibility conditions which prevailed at the time.
 - E. The extent to which alcohol is present in the blood of fatally injured pedestrians sixteen years of age and older.
 - F. Where possible, to determine the extent to which pedestrians involved in accidents have physical or mental disabilities.
- II. There are established statewide operational procedures for improving the protection of pedestrians through reduction of potential conflicts with vehicles:

- A. By application of traffic engineering practices, including pedestrian signals, signs, markings, parking regulations, and other pedestrian and vehicle traffic control devices.
 - B. By land-use planning in new and redevelopment areas for safe pedestrian movement.
 - C. By provision of pedestrian bridges, barriers, sidewalks, and other means of physically separating pedestrian and vehicle pathways.
 - D. By provision of environmental illumination at high pedestrian volume and/or potentially hazardous pedestrian crossings.
- III. There is established a statewide program for familiarizing drivers with the pedestrian problem and ways to avoid pedestrian collisions:
- A. The program content shall include emphasis on:
 - 1. Behavior characteristics of the three types of pedestrians most commonly involved in accidents with vehicles:
 - (1) children; (2) persons under the influence of alcohol; (3) the elderly.
 - 2. Accident avoidance techniques that take into account the hazardous conditions, and behavior characteristics displayed by each of the three high-risk pedestrian groups listed in subparagraph 1.
 - B. Emphasis on this program content shall be included in:
 - 1. All driver education and training courses.
 - 2. Driver improvement courses.
 - 3. Driver license examinations.
- IV. There are statewide programs for training and educating all members of the public as to safe pedestrian behavior on or near streets and highways:
- A. For children, youths, and adults enrolled in schools, beginning at the earliest possible age.
 - B. For the general population via the public media.

- V. There is a statewide program for the protection of children walking to and from school, entering and leaving school buses, and in neighborhood play.
- VI. There is a statewide program for establishment and enforcement of traffic regulations designed to achieve orderly pedestrian and vehicle movement and to reduce vehicle-pedestrian conflicts.
- VII. This program shall be periodically evaluated by the state, and the National Highway Traffic Safety Administration shall be provided with an evaluation summary.

Appendix B

EXCERPTS FROM THE "UNIFORM VEHICLE CODE"

1968/SUPP. 1972 - NATIONAL COMMITTEE ON UNIFORM TRAFFIC LAWS AND ORDINANCES

PEDESTRIANS

Pedestrian Obedience to Traffic-Control Devices and Traffic Regulations

A pedestrian shall obey the instructions of any official traffic-control device specifically applicable to him, unless otherwise directed by a police officer.

Pedestrians shall be subject to traffic and pedestrian-control signals.

Traffic-Control Signal Legend

Unless otherwise directed by a pedestrian-control signal, pedestrians facing any green signal, except when the sole green signal is a turn arrow, may proceed across the roadway within any marked or unmarked crosswalk.

Pedestrians facing a steady yellow signal, unless otherwise directed by a pedestrian-control signal are thereby advised that there is insufficient time to cross the roadway before a red indication is shown and no pedestrian shall then start to cross the roadway.

Unless otherwise directed by a pedestrian-control signal, pedestrians facing a steady red signal alone shall not enter the roadway.

Whenever special pedestrian-control signals exhibiting the words "Walk" or "Don't Walk" are in place, such signals shall indicate as follows:

Walk - Pedestrians facing such signal may proceed across the roadway in the direction of the signal and shall be given the right-of-way by the drivers of all vehicles.

Don't Walk - No pedestrian shall start to cross the roadway in the direction of such signal, but any pedestrian who has partially completed his crossing on the walk signal shall proceed to a sidewalk or safety island while the don't walk signal is showing.

Pedestrians' Right-of-Way in Crosswalks

When traffic-control signals are not in place or not in operation, the driver of a vehicle shall yield the right-of-way, slowing down or stopping

if need be to so yield, to a pedestrian crossing the roadway within a crosswalk when the pedestrian is upon the half of the roadway upon which the vehicle is traveling, or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.

No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close as to constitute an immediate hazard.

Crossing at Other Than Crosswalks

Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway.

Between adjacent intersections at which traffic-control signals are in operation pedestrians shall not cross at any place except in a marked crosswalk.

No pedestrian shall cross a roadway intersection diagonally unless authorized by official traffic-control devices; and, when authorized to cross diagonally, pedestrians shall cross only in accordance with the official traffic-control devices pertaining to such crossing movements.

Drivers to Exercise Due Care

Notwithstanding other provisions of this chapter or the provisions of any local ordinance, every driver of a vehicle shall exercise due care to avoid colliding with any pedestrian and shall give warning by sounding the horn when necessary and shall exercise proper precaution upon observing any child or any obviously confused, incapacitated or intoxicated person.

Pedestrians to Use Right Half of Crosswalk

Pedestrians shall move, whenever practicable, upon the right half of crosswalks.

Pedestrians on Highways

Where a sidewalk is provided and its use is practicable, it shall be unlawful for any pedestrian to walk along and upon an adjacent roadway.

Where a sidewalk is not available, any pedestrian walking along and upon a highway shall walk only on a shoulder, as far as practicable from the edge of the roadway.

Where neither a sidewalk nor a shoulder is available, any pedestrian walking along and upon a highway shall walk as near as practicable to an outside edge of the roadway, and, if on a two-way roadway, shall walk only on the left side of the roadway.

Except as otherwise provided in this chapter, any pedestrian upon a roadway shall yield the right-of-way to all vehicles upon the roadway.

Pedestrians' Right-of-Way on Sidewalks

The driver of a vehicle shall yield the right-of-way to any pedestrian on a sidewalk.

Pedestrians Yield to Authorized Emergency Vehicles

Upon the immediate approach of an authorized emergency vehicle making use of an audible signal and visual signals, or of a police vehicle properly and lawfully making use of an audible signal only, every pedestrian shall yield the right-of-way to the authorized emergency vehicle.

Bridge and Railroad Signals

No pedestrian shall enter or remain upon any bridge or approach thereto beyond the bridge signal, gate, or barrier after a bridge operation signal indication has been given.

No pedestrian shall pass through, around, over, or under any crossing gate or barrier at a railroad grade crossing or bridge while such gate or barrier is closed or is being opened or closed.

BICYCLISTS

Traffic Laws Apply to Persons Riding Bicycles

Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle.

Riding on Bicycles

A person propelling a bicycle shall not ride other than upon or astride a permanent and regular seat attached thereto.

No bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped.

Clinging to Vehicles

No person riding upon any bicycle, coaster, roller skates, sled or toy vehicle shall attach the same or himself to any vehicle upon a roadway.

Riding on Roadways and Bicycle Paths

Every person operating a bicycle upon a roadway shall ride as near to the right side of the roadway as practicable, exercising due care when passing a standing vehicle or one proceeding in the same direction.

Persons riding bicycles upon a roadway shall not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles.

Wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway.

Carrying Articles

No person operating a bicycle shall carry any package, bundle or article which prevents the driver from keeping at least one hand upon the handle bars.

Lamps and Other Equipment on Bicycles

Every bicycle when in use at nighttime shall be equipped with a lamp on the front which shall emit a white light visible from a distance of at least 500 feet to the front and with a red reflector on the rear of a type approved by the department which shall be visible from all distances from 100 feet to 600 feet to the rear when directly in front of lawful lower beams of head lamps on a motor vehicle. A lamp emitting a red light visible from a distance of 500 feet to the rear may be used in addition to the red reflector.

No person shall operate a bicycle unless it is equipped with a bell or other device capable of giving a signal audible for a distance of at least 100 feet, except that a bicycle shall not be equipped with nor shall any person use upon a bicycle any siren or whistle.

Every bicycle shall be equipped with a brake which will enable the operator to make the braked wheels skid on dry, level, clean pavement.

Appendix C

DRAFT
EXECUTIVE ORDER

GOVERNOR'S TASK FORCE ON PEDESTRIAN AND BICYCLE SAFETY PROGRAMS

WHEREAS, pedestrian traffic is a major component of street and highway transportation that requires the combined skills of several disciplines in state and local governments to ensure adequate provisions for convenient, safe accommodation of pedestrians in the total traffic environment; and,

WHEREAS, bicycle usage, an activity which has considerable similarity to pedestrian traffic in relation to convenient, safe accommodation in the total traffic environment, is undergoing a rapid increase in popularity in North Carolina; and,

WHEREAS, a new systematic process is required to unify and strengthen approaches to pedestrian and bicycle safety programs throughout North Carolina with a view towards formulating and implementing adequate plans for convenient, safe accommodation of pedestrian and bicycle traffic; and,

WHEREAS, since 1971, North Carolina has experienced a total of approximately 3,500 pedestrian and bicycle traffic deaths or injuries annually; and

WHEREAS, the impact of pedestrian and bicycle traffic deaths and injuries is characterized by high involvement of young persons in that 50% of pedestrians and bicyclists killed or injured are under 15 years old, constituting a serious toll in younger age groups of North Carolina's population; and,

WHEREAS, North Carolina General Statute 147-12 calls for coordination by the Governor of the activities of state departments and local units of government in the planning and implementation of a comprehensive statewide highway safety program; now therefore be it,

ORDERED, that a Governor's Task Force on Pedestrian and Bicycle Safety Programs is created for the State of North Carolina to enable and assist concerted actions to facilitate pedestrian and bicycle traffic and to reduce the number of persons killed or injured in pedestrian and bicycle traffic accidents throughout North Carolina; and be it,

FURTHER ORDERED, that the Governor's Task Force shall have the mission of determining more effective approaches to deal with issues concerning the facilitation of pedestrian and bicycle traffic and the reduction of pedestrian and bicycle traffic accidents, of unifying activities conducted by state and local governments to address these issues, of establishing priorities and schedules for implementing specific activities during a three-year period, of regularly assessing progress in completing scheduled activities, and of evaluating results with a view towards ensuring that effective steps are continued; and be it,

FURTHER ORDERED, that the Chairman of the Governor's Task Force shall be the Secretary of the Department of Transportation and Highway Safety, a Vice Chairman shall be designated by the Secretary of the Department of Transportation and Highway Safety, and the Governor's Task Force shall be provided with funding and support services necessary for its operations by the Governor's Highway Safety Program, which shall serve as the secretariat to the Governor's Task Force through the Highway Safety Program Coordinator who shall be the Secretary of the Governor's Task Force; and be it,

FURTHER ORDERED, that the members of the Governor's Task Force shall be as listed below:

- Chairman (Secretary of the Department of Transportation and Highway Safety)
- Vice Chairman (to be designated by the Secretary of the Department of Transportation and Highway Safety from the membership of the Task Force)
- Secretary (Highway Safety Program Coordinator)
- Assistant Secretary (Planning) of the Department of Transportation and Highway Safety
- Commissioner of Motor Vehicles
- State Highway Patrol Commander
- Director, Traffic Engineering Section, Department of Transportation and Highway Safety
- Director of the Highway Safety Research Center of the University of North Carolina
- City Manager (appointed by the Secretary of the Department of Transportation and Highway Safety)

- County Manager (appointed by the Secretary of the Department of Transportation and Highway Safety)
- Representative of the Attorney General's Office
- Representative of the Department of Human Resources
- Representative of the Department of Public Instruction
- Representative of the State Board of Education
- Representatives of not more than five nongovernmental organizations associated with traffic and transportation programs (appointed by the Secretary of the Department of Transportation and Highway Safety)

and be it,

FURTHER ORDERED, that the Chairman shall be empowered to name Committees, that the work plan of the Governor's Task Force shall consider any and all subjects relevant to its purpose and mission that its members find to be appropriate, and that the initial work plan shall incorporate consideration of the subjects listed below:

- updated motor vehicle traffic laws relating to rights and duties of pedestrians and bicyclists,
- guidelines for state and community activities in pedestrian and bicycle traffic programs focusing on community development, highway and traffic engineering, traffic enforcement and public education,
- a statewide system for investigation and analysis of pedestrian and bicycle traffic accidents that includes bilevel reporting techniques and selective case study procedures,
- innovative pedestrian and bicycle program curriculum and materials for classroom instruction of children in K through 9th grades,
- public education program directed towards specific issues concerning pedestrian and bicycle traffic programs in North Carolina,
- plans for improvement projects to assist pedestrian and bicycle traffic in selected communities under 10,000; 10,000 to 25,000; 25,000 to 50,000; and over 50,000 population, and
- training programs for bicyclists classified by trip purposes or by age groups; and be it,

FURTHER ORDERED, that the Governor's Task Force shall submit semiannual reports of its operations and the status of program development to the Governor not later than June 30th and December 31st of each year.