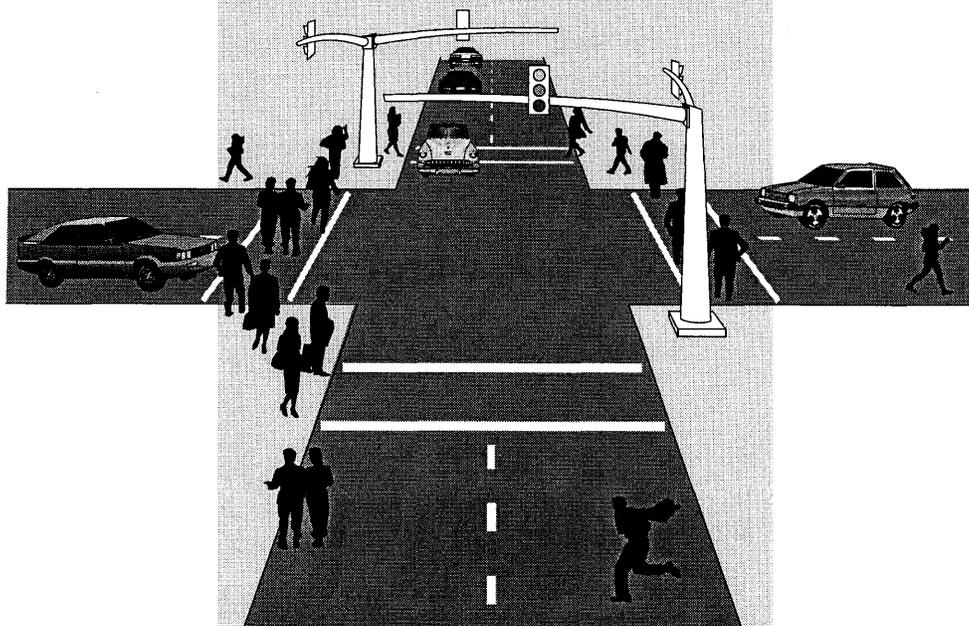


FINAL REPORT

**SAFE WALKING  
IN THE COMMONWEALTH:  
AN ANALYSIS OF THE ISSUES  
AND PROPOSED CLARIFICATIONS  
OF THE CODE OF VIRGINIA**



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Abstract  Public interest in measures to make walking a safer form of personal conveyance manifests itself every several years in Virginia's General Assembly. Since 1981, the Virginia Transportation Research Council has conducted at least six studies regarding pedestrian safety, and two dealt specifically with legal issues. None of them, however, led to changes to the Code of Virginia (the Code). This study of pedestrian legislation and traffic safety was undertaken at the request of the Commissioner of Virginia's Department of Motor Vehicles in response to concerns expressed to him by state and local government officials.  The authors reviewed the relevant literature, analyzed Virginia's pedestrian crash data, examined and critiqued Virginia's Code and those of other states with regard to pedestrian issues, reviewed the Uniform Vehicle Code, and surveyed the departments of education of all states to ascertain their efforts with regard to pedestrian safety education.  The study showed that a significant number of pedestrians continue to be killed and injured in Virginia and that many of these cases can be related to specific vehicle and pedestrian actions as well as the age of the victim. Annually, 10 to 12 percent of motor vehicle crash fatalities are pedestrians, an average of about 105 per year. The analysis of the Code revealed that particular sections are either confusing or ambiguous concerning the actions required by or prohibited to motorists, pedestrians, or both. The survey revealed that Virginia was doing about as well as other states in educating its public schoolchildren concerning pedestrian safety.  The authors recommend that Virginia revise its crash report form, modify and add to the pedestrian statutes in the Code, and institute public education and enforcement campaigns to address pedestrian safety issues. A separate document details the recommended additions and deletions to the Code in legislative format and is available upon request from the authors.				

**SAFE WALKING IN THE COMMONWEALTH:  
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(The opinions, findings, and conclusions expressed in this  
report are those of the authors and not necessarily those of  
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# EXECUTIVE SUMMARY

## Introduction

Pedestrian safety affects almost every citizen of Virginia. Many people walk to school or work or walk as a form of exercise. Walking is often considered a pleasant alternative to driving, and it also has the benefit of decreasing traffic. As rural communities develop, the number of people walking to stores and workplaces increases. In urban areas, people traveling within the city or commuting from the suburbs must often walk to bus stops or commuter stations.

However, the safety of pedestrians is a serious problem. Over the 1990-1994 period in Virginia, pedestrians were involved in less than 2 percent of crashes but between 10 and 12 percent of *fatal* crashes. In addition, although pedestrians were involved in only 2.6 percent of the injury crashes in each of the past 4 years, nearly 2,000 per year (21 per week) suffered injuries severe enough to warrant the filing of a crash report form by the investigating officer. Virginia's crash data also showed that the rates of pedestrian fatalities and injuries were different in urban and rural areas (see Figure 1). For example, in 1994, two thirds of the 2,202 pedestrian crashes occurred in urban areas. Nearly 60 percent of the fatalities occurred in rural areas, which have less than one half of Virginia's population. Nearly 70 percent of the injuries occurred in urban areas.

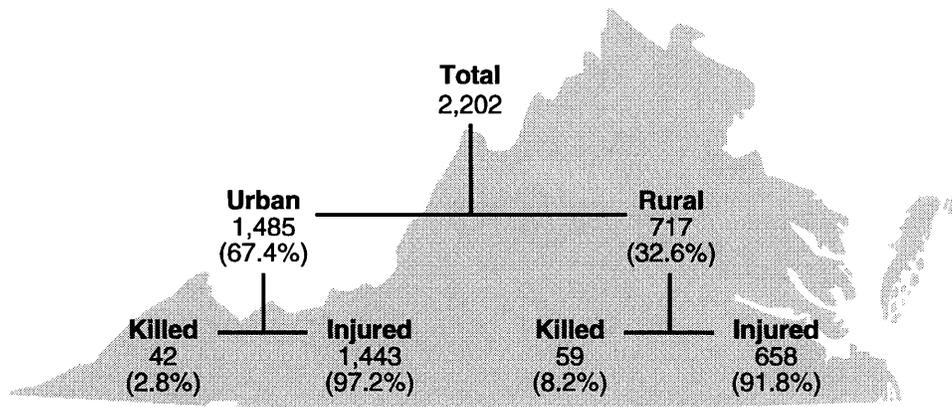


FIGURE 1. PEDESTRIAN FATALITIES AND INJURIES IN VIRGINIA IN 1994

When pedestrians and motorists share the roadway, the rights and responsibilities they have toward each other must be clear. Recently, Arlington County officials and a member of Virginia's General Assembly representing the 49th District expressed concerns over pedestrian safety. In response, the Commissioner of Virginia's Department of Motor Vehicles (DMV)

asked the Virginia Transportation Research Council (VTRC) to conduct this study on pedestrian legislation and traffic safety.

### **Purpose and Scope**

The purpose of this study was to review information on pedestrian safety, analyze Virginia's laws concerning pedestrians, examine factors associated with pedestrian crashes, and then, if appropriate, recommend changes in the laws, enforcement of the laws, and public information and education activities that would clarify the rights and responsibilities of pedestrians. The following objectives were accomplished to develop the requested recommendations:

- Conduct a literature review of reports concerning pedestrian safety published by VTRC, federal and state agencies, and research centers.
- Compare the pedestrian statutes in the *Code of Virginia* (the *Code*) with those in the *1992 Model Traffic Ordinance and Uniform Vehicle Code (UVC)*.
- Compare specific sections of the *Code* with the codes of 12 other jurisdictions: the five border states, the District of Columbia, and six states considered by the National Highway and Traffic Safety Administration to be especially conscious of pedestrian safety.
- Analyze Virginia pedestrian crash data from 1990 through 1994, studying the urban and rural data separately, to identify factors associated with pedestrian crashes.
- Conduct a survey of public school educational programs nationwide to determine whether other states have state standards, curriculum guidelines, and funding for teaching students about pedestrian safety.

### **Literature Review**

Several VTRC studies concluded that the *Code* was unclear in its designation of pedestrian rights and duties. Other studies found that senior citizens in urban areas in Virginia were especially vulnerable to being fatally injured by motor vehicles. This was often attributed to their impaired mobility, sight, and hearing. Nationwide, children (under the age of 16) were disproportionately represented in pedestrian-motor vehicle crashes. Some reasons given for this increased risk were their lack of knowledge of the laws concerning pedestrian rights and the fact that their judgment of the distance and speed of approaching vehicles was not fully developed.

The studies also discussed the importance of driver attitudes toward pedestrians. If drivers do not understand their responsibilities regarding pedestrians, they will not yield the right of way to them, even when it is required by law. Informing drivers of their responsibilities is

especially important when new signs and signals or pathways are used for the benefit of pedestrians. One example of such an engineering modification is the use of midblock crosswalks, which are often a source of confusion for both drivers and pedestrians.

## Results of Analyses

The results of studying the *Code*, reviewing other states' pedestrian statutes, and analyzing Virginia crash data were used to determine those sections of the *Code* in need of modification and how the *Code* could be changed to clarify the rights and duties of pedestrians. The analysis determined that the *Code* contained statutes that no other state studied had and that statutes could be added to the *Code* to clarify pedestrian rights. The results of the *UVC* analysis showed alternative ways to word modifications to the *Code* that had been identified to be necessary.

## Recommendations

1. *The UVC's definition of when pedestrians must yield to vehicles should replace part of § 46.2-923 of the Code. The phrase "carelessly and maliciously" should also be removed. The Code is unclear in its designation of when pedestrians can cross the road: "wherever possible, only at intersections or marked crosswalks." The UVC has a much clearer definition of when pedestrians must yield to vehicles, which simply states that if pedestrians are not within a crosswalk (either marked or unmarked), they must yield the right of way to approaching vehicles. Statewide, almost one third of the pedestrian deaths and injuries occurred when the pedestrian was crossing somewhere other than at an intersection. About 10 percent occurred when the pedestrian was crossing at an intersection. Section 46.2-923 also prohibits pedestrians from "carelessly or maliciously interfer[ing] with the orderly passage of vehicles." No other state studied included this prohibition on pedestrian behavior, which is a vague standard that does not clearly state the rights or duties of pedestrians.*
2. *An addition should be made to § 46.2-923 that would require pedestrians to cross at signalized intersections in the absence of marked crosswalks if they are within 150 feet of a signalized intersection. This recommendation is based on research results that showed that most pedestrian-motor vehicle crashes occur within 150 feet of an intersection. Although ideally, pedestrians would cross only at signalized intersections or marked crosswalks, asking them to walk further than 150 feet to cross the road is not realistic. This addition would not alter the pedestrian duties specified in Article 2, Right-of-Way.*
3. *The UVC's statute that clearly designates places and situations for pedestrians to walk, on either the sidewalk, the shoulder, or the road facing traffic, should replace the part of § 46.2-928 that pertains to where pedestrians should walk. Although this section of the Code describes how pedestrians should use the roadway, the language is confusing. It is not clear when they are required to move to the shoulder or walk facing traffic. One fifth of all*

pedestrian injuries and fatalities in Virginia from 1990 through 1994 occurred when the pedestrian was walking with or against traffic, working on the road, or standing or lying in the road. Pedestrians should be clearly informed of where they should walk.

4. *A provision should be added in Title 46.2 protecting the right of way of pedestrians while on sidewalks. An addition should be made to § 46.2-826 that requires drivers who are coming from the main road and entering private roads, driveways, alleys, or buildings to yield to pedestrians on sidewalks. Currently, the Code requires drivers to yield the right of way to pedestrians on sidewalks when the drivers are coming from a “private road, driveway, alley, or building” to turn onto a road. It should not matter in which direction a vehicle is traveling or whether it is entering or exiting a public or private road: a motorist should be required at all times to yield to pedestrians on sidewalks since it is reasonable for pedestrians to believe that a sidewalk is a “safety zone.” Statutes protecting the right of way of pedestrians on sidewalks exist in 6 of the 12 state codes analyzed and in UVC § 11-502(d).*
5. *An addition should be made to § 46.2-858 that expands on the rights given to pedestrians. According to the Code, drivers are prohibited from passing a vehicle when “pedestrians are passing or about to pass in front of . . . such vehicles.” However, this prohibition is currently included under the title of passing at a railroad grade crossing. The right of pedestrians in this regard would be made clearer if it were set apart in its own section. This section should clearly state that a motorist cannot pass another vehicle stopped at a marked crosswalk or an intersection to allow pedestrians to cross in front of it. This would not be conferring an additional responsibility on drivers because it is already required under the law. However, it is not clear in § 46.2-858 that drivers have this responsibility. Nine of the 12 states studied and the UVC include this law in their codes.*
6. *Although Virginia common law requires that drivers exercise due care in operating their vehicle, drivers should be explicitly required to use due care to avoid striking pedestrians. This should be clearly stated in a new section of the Code. Seven of the 12 states studied and the UVC explicitly require drivers to use due care to avoid striking pedestrians. This is a default rule that would apply whenever motor vehicles and pedestrians interact. There is a great difference in the vulnerability of pedestrians and drivers. When a vehicle strikes a pedestrian, usually only the pedestrian is injured or killed.*
7. *Definitions of six words and phrases used in the statutes should be included in § 46.2-100: pedestrian, sidewalk, marked crosswalk, unmarked crosswalk, traffic control device, and traffic control signal. These additions would further clarify the Code by promoting a clear understanding of what the law requires citizens to do.*
8. *After the Code is modified, the state’s safety authority (Office of the Governor’s Highway Safety Representative) should conduct a statewide public information and education campaign so that both motorists and pedestrians will be made aware of their legal rights and responsibilities and how the changes to the Code will help the citizens of Virginia.*

9. *Once the public information and education campaign has commenced, the state and localities should actively enforce the changes in the statutes.*
10. *The form that police officers use to report crash data should be examined to determine if the choices under the pedestrian action and traffic control categories are the most meaningful to describe the crash scene, and police officers should be instructed that it is important to complete the forms with as much specificity as possible. In order for future studies regarding pedestrian safety to be as accurate as possible, more complete crash data must be available. For example, in about one third of pedestrian injuries and fatalities, a specific traffic control device was not identified. In nearly 40 percent, no pedestrian action was identified. Although conclusions can be made from the available data, more accurate conclusions could be made with additional information.*

*NOTE: A separate document that details the recommended additions and deletions to the Code in legislative format is available upon request from the authors.*

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**INTRODUCTION**

Pedestrian safety has been a continuing concern of Virginia's legislators and community leaders. Many people enjoy walking as an alternative to driving or as exercise. In urban areas, the high cost of parking and extensive congestion are incentives for people to walk more often. It is estimated that 90 percent of the trips within the central business districts of cities are taken by walking. In rural areas, increasing population and development have led to increased walking.<sup>1</sup> Unfortunately, walking can be a dangerous activity. From 1990 through 1994, a total of 534 Virginia pedestrians were killed by motor vehicles, with the number ranging from 93 to 116 each year. During that same period, 10,244 pedestrians were injured by motor vehicles, with the number ranging from 1,869 to 2,224 each year. The number of pedestrians injured has risen each year since 1991.<sup>2</sup> In 1994, an average of 2 pedestrians were killed and 21 injured each week.

Studies have shown that elderly people and children are especially vulnerable to being struck by motor vehicles. Many elderly citizens are not able to drive and so must rely on other modes of transportation. They usually take longer to cross the street, which increases the time during which they are at risk of being hurt.<sup>3</sup> Their eyesight and hearing may also be impaired, lowering their ability to determine that a vehicle is approaching.<sup>4</sup> Children are usually not aware of motor vehicle and pedestrian laws, and their judgment of the speed and distance of motor vehicles is not fully developed. Playing in or near the street can also create hazards.

In addition to the harm done to pedestrians themselves, the risk of being injured affects other aspects of the transportation system. For example, mass transit has been suggested as one solution to traffic congestion. However, this involves people walking to and from bus and commuter train stops. If commuters do not feel safe crossing streets and intersections to get to these stops, they will be less likely to use the mass transit system. In addition, studies have shown that more people would walk to work if it were more safe and convenient.<sup>5</sup> If there was less confusion in the law about the duties and responsibilities of drivers with respect to pedestrians, safety would increase and people would feel more comfortable walking to work or commuter stops.

James B. Hunter III, a member of the Arlington County Board of Supervisors who was concerned about pedestrian safety in his area, asked Delegate L. Karen Darner to introduce a bill directing that a study of Virginia's pedestrian safety laws be conducted. In initial discussions between Delegate Darner and officials of the Virginia Department of Motor Vehicles (DMV), it was decided that a House Joint Resolution would be a more appropriate mechanism for obtaining a study. After further consideration and as a result of an agreement between Delegate Darner and officials at the DMV, it was determined that a resolution would not be necessary. The Virginia Transportation Research Council (VTRC) was asked to conduct this study.

## **PURPOSE AND SCOPE**

The purpose of this study was to review information on pedestrian safety, analyze Virginia's laws concerning pedestrians, examine factors involved in pedestrian crashes, and then, if appropriate, recommend changes in the laws, enforcement of laws, and public education activities that would clarify the rights and responsibilities of pedestrians. The following objectives were accomplished to develop the requested recommendations:

- Conduct a literature review of reports concerning pedestrian safety published by VTRC, federal and state agencies, and research centers.
- Compare the pedestrian statutes in the *Code of Virginia* (the *Code*) with those in the *1992 Model Traffic Ordinance and Uniform Vehicle Code (UVC)*.
- Compare specific sections of the *Code* with the codes of 12 other jurisdictions: the five border states, the District of Columbia, and six states considered by the National Highway and Traffic Safety Administration (NHTSA) to be especially conscious of pedestrian safety.
- Analyze Virginia pedestrian crash data from 1990 through 1994, studying the urban and rural data separately, to identify factors associated with pedestrian crashes.
- Conduct a survey of public school educational programs nationwide to determine whether other states have state standards, curriculum guidelines, and funding for teaching students about pedestrian safety.

## **RESEARCH METHODS**

*The first task in the project was to conduct a literature review.* The review included the reports published by VTRC on pedestrian safety. Reports published by federal and state

agencies and research centers were also reviewed to analyze the pedestrian safety problem further and expand the list of possible solutions.

*The second task was to analyze the sections of the Code that relate to pedestrians.* These sections were then compared with the model statutes in the *UVC*. Differences between the *Code* and the *UVC* did not necessarily mean that the *Code* was flawed; the comparison was made primarily to learn of possible alternative formats for statutes. Case law was also analyzed to understand how the statutory law has been applied.

*The third task was to compare specific sections of the Code with the codes of 12 other jurisdictions (11 states and the District of Columbia, hereinafter referred to as a state).* The laws of the 6 states that border Virginia (the District of Columbia, Kentucky, Maryland, North Carolina, Tennessee, and West Virginia) were analyzed first. Next, the laws of states that NHTSA considered to be especially conscious of pedestrian safety were examined. These states were California, Florida, Massachusetts, Montana, Oregon, and Washington. This comparison was made to determine whether Virginia's laws were different and, if so, in what way. It also served to identify examples of how statutes could be written regarding particular aspects of the law.

*The fourth task was to analyze Virginia's pedestrian crash data from 1990 through 1994.* The method used was different from past analyses in that rural data and urban data were viewed separately. When pedestrian safety was previously discussed in Virginia's legislature, representatives from urban and rural areas had different concerns. It is likely that some ways of improving pedestrian safety would be more appropriate in an urban setting than a rural setting, or vice versa.

The data were used to identify factors that were associated with pedestrian crashes and analyze trends in crashes as they have developed over the last 5 years. This information was vital to determining whether factors in pedestrian crashes could be addressed through changes in the law.

The data in Table 1 show census information for Virginia's population by age group from 1990 to 1992. Since the population for each age group remained relatively consistent over time, the assumption was made that they continued to be consistent through 1994. These data formed the basis for later comparisons to determine whether the percentage of pedestrians killed and injured in a specific age group was proportional to their representation in Virginia's population.

*The fifth task was to conduct a national survey of public school educational programs on pedestrian safety.* Delegate Darner expressed an interest in learning how other states educated students about pedestrian safety. The authors designed and mailed a questionnaire to the superintendent/commissioner of the department of education in all states to determine the existence of curriculum guides, instructional modules on pedestrian safety, and at which grade level(s) the instruction occurs.

**TABLE 1**  
**PERCENTAGE REPRESENTATION IN VIRGINIA'S POPULATION BY AGE GROUP (1990-1992)<sup>6</sup>**

Age Group	1990	1991	1992	Average
Preschool (0-4)	7.3	7.3	7.3	7.3
Elementary (5-14)	13.3	13.4	13.4	13.4
Secondary (15-18)	5.3	5.1	5.0	5.1
Young Adult (19-25)	11.9	11.5	11.1	11.5
Middle Adult (26-60)	48.3	48.7	49.1	48.7
Older Adult (over 61)	13.9	14.0	14.0	14.0

The questionnaire asked whether the state had standards for teaching students about pedestrian safety, whether safety education programs existed, and if so, how these programs were funded (see Appendix A). It also asked whether and to what extent there was coordination between the pedestrian safety programs and the student transportation system (e.g., training students to enter and exit buses safely).

*The sixth task was to develop recommendations on how the Code could be changed to clarify the rights and responsibilities of pedestrians and motorists.*

## LITERATURE REVIEW

### VTRC Studies on Pedestrian Law

VTRC has published two studies on the subject of pedestrian safety laws: one in 1981 and one in 1990. In 1981, Stoke and Williams found that the *Code* did not clearly define pedestrians' rights and duties regarding drivers. They also found that most pedestrians injured in crashes were over 15 years old. Since those over age 15 can understand their legal rights, they concluded that changes in the law could affect most pedestrian injuries.<sup>7</sup>

The standard used in Stoke's and Williams' report was that traffic laws should be comprehensive, understandable, and reasonable. Their recommendations were to add a "due care" provision, require pedestrians to obey traffic signals, allow crossing only at midblock crosswalks and intersections, grant the right of way to pedestrians on sidewalks, delete the "carelessly and maliciously interfere" standard and replace it with statutes specifically designating the right of

way, and designate “play streets” for children on which individuals could drive if they had a business or residence on the street, but only with the “greatest care.”<sup>7</sup>

In 1990, Stoke and Kelly found that fewer changes to the *Code* were necessary based on their analysis of crash data and the *Code*. Again, however, they determined that the *Code* was confusing concerning what level of care pedestrians were required to use. They also suggested definitions that should be added to explain specific terminology used in the statutes.<sup>8</sup>

### **Crash Location**

Stoke and Kelly found that one third of all pedestrian deaths and injuries occurred when the pedestrian was crossing somewhere other than at a crosswalk or was coming onto the road from between parked vehicles.<sup>8</sup> In 1993, 6,200 pedestrian deaths and 65,000 pedestrian injuries occurred nationwide as a result of crashes involving motor vehicles; 21 percent occurred at crosswalks, showing that using a crosswalk does not guarantee safety.<sup>9</sup> In another VTRC study, Worthington examined fatal urban pedestrian crashes in Virginia from 1987 through 1989 and found that in most, pedestrians had been crossing the street when they were struck by a vehicle.<sup>10</sup>

In their VTRC study, Garber and Lienau found that the most dangerous location for pedestrians within city limits was between the stop line at an intersection and 150 feet from the stop line. Outside city limits, the midblock zone was slightly more dangerous.<sup>1</sup>

### **Pedestrian Age**

Overall, people over age 55 are overrepresented as victims of pedestrian-motor vehicle crashes. Worthington found that this group made up 17.7 percent of the urban Virginia population in 1985 through 1987, but they made up 33.2 percent of the victims of fatal urban pedestrian crashes. Crossing the street can be especially dangerous for the elderly. Worthington found that pedestrians 55 years old or older were about 7 times more likely to be struck by a motor vehicle when they were crossing the street than when they were walking on or along the road. This was a much higher rate than for the under-55 pedestrian population, whose risk was only slightly more than double.<sup>10</sup> Studies have also shown that elderly pedestrians are 2 to 4 times more likely than their younger counterparts to die when they are struck.<sup>1</sup>

Nationwide, children (under age 16) are also overrepresented as victims of pedestrian-motor vehicle crashes.<sup>11</sup> Many children are pedestrians.<sup>9</sup> However, Worthington found that the fatality rate was lowest in this group and concluded that Virginia’s child safety programs might be helping to prevent serious injury among young children. He recommended that similar programs be instituted for the elderly to reduce fatal urban pedestrian crashes.<sup>10</sup> However, other VTRC studies found that overall, when injuries and rural areas are considered, children in Virginia are more likely to be involved in pedestrian-motor vehicle crashes.<sup>1,4</sup>

## Pedestrian and Driver Attitudes and Behavior

In the past, pedestrian behavior was determined to be a major factor in fatal urban pedestrian crashes. Worthington found that about 41 percent of all pedestrians and most of those between the ages of 20 and 64 were drinking before the crash.<sup>10</sup> In 36 percent of the crashes, the driver violated a law. However, 12 percent of these violations were hit and run, so it cannot be determined whether an illegal action was the actual cause of the crash.

In addition to pedestrian actions, it is important to consider driver attitudes. In a 1975 VTRC study of “right turn on red” for the Governor and General Assembly of Virginia, Parker et al. found that in Virginia, “the concept of pedestrian right-of-way may not be as well established as in states such as California.”<sup>12</sup> Concern for pedestrian safety was one of the main reasons certain guidelines were established when right turn on red was first instituted. The authors went on to state: “Perhaps the greatest problem is not with right turn on red but with driver attitudes toward pedestrians in general.”<sup>12</sup>

In an article for the *George Mason Law Review*, Belongia made the point that although both pedestrians and motorists have a responsibility to be aware of their actions, motorists have a far greater capacity to cause harm. When a vehicle strikes a pedestrian, the pedestrian is usually the only one who is injured or killed. Belongia argued that “this lack of mutuality of risk between motorists and pedestrians supports a statutory interpretation whereby the more vulnerable pedestrian is given the opportunity for a jury trial.”<sup>13</sup> This difference in vulnerability should be considered when statutes are being written and revised.

Driver expectations are especially important when new signals or pathways are used. A study on midblock crosswalks in Columbus, Ohio, concluded that they are usually unexpected by motorists.<sup>14</sup> A survey of both drivers and pedestrians found that “conflicting interpretations exist between pedestrians and motorists as to who has the right-of-way at any given time.” The study also determined that legislation can be a source of this confusion by its ambiguity. Because of this ambiguity, both pedestrians and motorists may think they have the right of way at a certain point.

There are a number of engineering decisions to be made regarding measures to increase pedestrian safety. For example, in the previous study, it was found that pedestrians and motorists did not like midblock crosswalks with pedestrian-activated traffic signals because they felt they created delays. However, midblock crosswalks without a traffic signal were proven to be less safe.<sup>14</sup> One pedestrian safety issue that arises is how to balance pedestrian safety and traffic convenience, taking into account the likelihood that the device in question will be obeyed. One study found that additional traffic controls and pedestrian signals did not result in a significant reduction of pedestrian crashes and that they might be unnecessary and inconvenient.<sup>15</sup> Another study recommended that pedestrian-activated signals at midblock crosswalks be used more frequently. This recommendation was based on findings that fatal crash rates are much higher at midblocks and that outside city limits, the crash rate is much higher at midblocks.<sup>1</sup>

## **Enforcement**

There is some concern that enforcement is more difficult when there are too many traffic laws. However, the laws that currently exist do not clearly state the duties of pedestrians and motorists. Once the laws are clarified, it will be easier for citizens to understand what their responsibilities are and for police officers to enforce the laws. Even California, which is known as having especially pedestrian conscious laws, is seriously considering revising the motor vehicle section of the state code. Maurice J. Hannigan, Commissioner of the California Highway Commission, said that clarifying traffic laws was necessary: “We will have to recodify our book and clean up the language . . . eliminate duplication and make necessary clarifications.”<sup>16</sup>

## **Education**

Education is an important aspect of pedestrian safety. Laws to ensure pedestrian safety are not effective unless citizens are aware that they exist. For example, one study found that in Kansas, only 14.4 percent of the population understood what the “school crossing” sign meant. This was the lowest comprehension rate of any of the 43 signs tested. This lack of understanding was consistent over differences of gender, age, ethnicity, and education. Most people recognized that the sign symbolized that there was a school crosswalk in the area but did not know that it meant they were being instructed to stop for pedestrians.<sup>17</sup>

Pedestrian and driver attitudes may be directly related to what they believe is expected of them. The American Automobile Association (AAA) conducted a nationwide study of driver and pedestrian understanding of pedestrian laws and found a “significant lack of knowledge” of pedestrian safety issues, especially concerning the rights of pedestrians to use crosswalks. Even some state officials answered questions incorrectly. The AAA noted that “if drivers and pedestrians do not understand their responsibilities or comprehend the meaning of the pedestrian related traffic control devices, then unsafe pedestrian-vehicle interaction may occur.”<sup>11</sup>

## **Clarity of Statutes**

Even 20 years ago, recommendations were made to clarify the *Code* because it did not clearly state the rights and responsibilities of pedestrians. Parker et al. recommended adding a “due care” provision that would require drivers to use due care regarding pedestrians. They also suggested that certain language be removed from the *Code*, such as that prohibiting pedestrians from acting “in disregard of traffic” or “carelessly and maliciously interfering with the orderly passage of vehicles.”<sup>12</sup> The studies of Stoke and Williams<sup>7</sup> and Stoke and Kelly<sup>8</sup> confirmed the need for clarity.

The Virginia Supreme Court has decided several cases on pedestrian laws, and these decisions are further evidence that the statutes are unclear.<sup>13</sup> *Belongia* stated that “Section

46.1-230(a) [now, § 46.2-923] of the *Code of Virginia* (1980) may appear clear upon a first reading, however, it is ambiguous when applied to certain factual situations.”<sup>13</sup> Belongia went on to point out that a pedestrian is allowed to cross streets at a diagonal angle if the intersection does not have marked crosswalks. However, the angle at which the pedestrian crosses may affect the risk he or she is taking because the pedestrian is in the roadway for a longer period. This could be a basis for a jury to find that a pedestrian “interfered with the orderly passage of vehicles” or did not exercise due care.<sup>13</sup> Therefore, although the law allows pedestrians to cross diagonally, they could still be liable for doing so, even though they took normal precautions. It is unrealistic to expect pedestrians to know the angle at which they may cross the street, especially because this can vary depending on a jury’s judgment.

### **ANALYSIS OF THE CODE**

Deviation from the statutes in the *UVC* or most of the 12 states studied is not a sufficient reason to amend the *Code*. However, the analysis uncovered additions that could be made to the *Code* to address problems that are not currently considered and ways to make the *Code* more clear. In order for laws to be obeyed and enforced, they must be written so that the rights and responsibilities of pedestrians and motorists regarding each other are clear and understandable.

#### **Virginia Statutes That Are Unclear or Differ From Those of Other States**

The *Code* statutes that seemed unclear or that greatly differed from statutes in the *UVC* and other states are analyzed here. Each statute is written in its current form, followed by an analysis of its meaning.

#### **§ 46.2-923. “When crossing highways, pedestrians shall not carelessly or maliciously interfere with the orderly passage of vehicles.”**

Neither the *UVC* nor any of the 12 states had similar language in their pedestrian laws. “Carelessly or maliciously interfere” is a vague standard. It does not clearly state the duty of pedestrians. A more clear standard would include explicit rules concerning what pedestrians can and cannot do. It would then be more realistic for pedestrians to know what is expected of them.

**(§ 46.2-923, cont.) “They [pedestrians] shall cross, wherever possible, only at intersections or marked crosswalks. Where intersections contain no marked crosswalks, pedestrians shall not be guilty of negligence as a matter of law for crossing at any such intersection or between intersections when crossing by the most direct route.”**

This passage is confusing. It does not say that pedestrians *must* cross only at intersections or at marked crosswalks; it requires that they do so “wherever possible.” The circumstances under which it is not “possible” are not stated. Also, the consequence of the second sentence is that if an intersection does not have a marked crosswalk, crossing the street at any point is legal, as long as the route is direct. The problem of legalized jaywalking is that drivers who are not approaching an intersection and are not alerted by a marked crosswalk do not expect to see pedestrians crossing. Also, if pedestrians can cross anywhere as long as the route is direct, this would suggest that diagonal crossing is allowed. However, the next paragraph in § 46.2-923 implies that diagonal crossing is permitted only when an ordinance allows it:

**The governing body of a town or city or the governing body of a county authorized by law to regulate traffic may by ordinance permit pedestrians to cross an intersection diagonally when all traffic entering the intersection has been halted by lights, other traffic control devices, or by a law-enforcement officer.**

The legal burden of watching for vehicles could be placed on pedestrians when crossing between intersections. The *UVC* does this in § 11-503(a): “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.”

One alternative is to create midblock crosswalks in urban areas, which would alert drivers to look for pedestrians crossing the street. However, this would encourage pedestrians to cross at that location. If a vehicle were to strike a pedestrian within the crosswalk, the pedestrian might attempt to hold the state or locality liable for his or her injuries.

The best solution may be to continue to allow pedestrians to cross midblock but to have a law that clearly states that they have the burden of watching for vehicles. Studies have shown that crossing the street at a point that is not at an intersection is safer.<sup>18</sup> This is because an intersection has many potential conflict points. With vehicles coming from up to four directions and making turns, it is more likely that a pedestrian will be struck.<sup>19</sup> Between intersections, a pedestrian has to look in only two directions to see oncoming vehicles.

Stating clearly that pedestrians have a greater burden to watch for vehicles when crossing between intersections would be consistent with case law in Virginia. Courts have reaffirmed the common law rule that pedestrians must exercise a higher degree of care when crossing at places other than an intersection. In *Brown v. Arthur*, the court ruled that neither the motorist nor the pedestrian has a right of way over the other, except as designated by statute. The opinion stated that “in the absence of such a statutory provision, the rights of motorists and pedestrians are equal and their duties are mutual and reciprocal.”<sup>20</sup> However, the *Brown* decision stated what was later reiterated in *Schutt v. Brockwell*, which is that “a pedestrian who undertakes to cross a street or highway between intersections is required to exercise a greater degree of vigilance than

is required when crossing at an intersection.” The level of care required is that of an “ordinarily prudent person.”<sup>21</sup>

**§ 46.2-924. “No pedestrian shall enter or cross an intersection in disregard of approaching traffic.”**

The *UVC* adds that if there are adjacent intersections with traffic control signals, pedestrians should not cross anywhere except at a marked crosswalk [§ 11-503(c)]. This could be further clarified to specify the distance the intersections would have to be from each other to be considered “adjacent.” This would enable the law to be more applicable in rural areas, where there are fewer intersections with signals.

The *Code* prohibits pedestrians from stepping into the street “in disregard” of vehicles. However, they are granted the right of way in crosswalks. If a pedestrian is standing on a curb waiting to cross at a crosswalk and an approaching vehicle is not slowing down, stepping into the street would be illegal for the pedestrian because it would be acting “in disregard” of approaching vehicles. However, the pedestrian has the right of way according to the law, and the driver of the vehicle is at fault if he or she does not yield.

**§ 46.2-926 “No pedestrian shall step into a highway . . . at any point between intersections where his presence would be obscured from the vision of drivers of approaching vehicles.”**

The *UVC*, West Virginia, Tennessee, Kentucky, Washington, Montana, and California have a similar statute, but its emphasis is that the pedestrian shall not “suddenly” move into the path of a vehicle.

**§ 46.2-928 “Pedestrians shall not use the roadways for travel, except when necessary to do so because of the absence of sidewalks which are reasonably suitable and passable for their use. If they walk on the hard surface, or the main traveled portion of the roadway, they shall keep to the extreme left side or edge thereof, or where the shoulders of the highway are of sufficient width to permit, they may walk on either shoulder thereof.”**

In this section, it seems clear that a pedestrian must use sidewalks if they are available, rather than walking on the road. However, it is not clear if pedestrians *must* walk on the shoulder if one exists or may walk on the roadway as long as they are on the left side (facing traffic). It seems to give pedestrians the choice of doing either, saying “they shall keep to the extreme left or . . . they *may* walk on either shoulder . . .” [emphasis added]. *UVC* § 11-506 explicitly ranks

where a pedestrian should walk, stating that a pedestrian should use a sidewalk where “its use is practicable” and:

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

The *UVC* statute clearly designates where pedestrians should walk and requires them to walk on the shoulder if one exists. It also explicitly assigns the right of way to vehicles. This is more understandable than § 46.2-928, which seems to give pedestrians the choice of using the shoulder. Since pedestrians should be encouraged to travel as far from moving vehicles as possible, they should be required to use the shoulder when necessary, and it should be clear that vehicles have the right of way.

Kentucky and Florida have statutes similar to the *UVC*. West Virginia, Montana, Maryland, and Washington have statutes similar to Virginia’s, which are more ambiguous regarding the use of the shoulder.

**§ 46.2-929 “Pedestrians shall not stand or stop in any roadway for the purpose of soliciting rides.”**

The *UVC* and Maryland, West Virginia, Kentucky, Washington, Florida, and California have a statute very similar to this. However, all of these states, except California, also prohibit standing in the roadway for the purpose of soliciting business.

**Other States’ Statutes That Are Not in the Code**

Section 11-509 of the *UVC* and the statutes of North Carolina, Kentucky, Washington, Oregon, Montana, and California require that drivers always yield the right of way to pedestrians on a sidewalk. The intent of these statutes is to protect pedestrians, who expect a sidewalk to be their “safety zone.”

Section 11-513 of the *UVC* and the statutes of Kentucky and Florida prohibit pedestrians from entering or remaining on a bridge after a bridge operation signal indication has been given and from passing through, around, over, or under any crossing gate or barrier to a railroad crossing while the barrier is closed. Seven states (Tennessee, North Carolina, Kentucky, Montana, Florida, West Virginia, and Washington) specifically require pedestrians to follow traffic control signals as they apply to pedestrians. The *Code*, in § 46.2-935, gives counties, cities, and towns the right to require pedestrians to obey signals for the purpose of directing traffic. However, it does not specifically require that pedestrians do so.

Section 11-502(d) of the *UVC* and the statutes of West Virginia, North Carolina, Tennessee, Kentucky, Washington, Florida, Montana, California, and Massachusetts require that when a vehicle is stopped at a marked or an unmarked crosswalk at an intersection to permit a pedestrian to cross the roadway, the driver of any other vehicle approaching from the rear shall not pass the stopped vehicle. To protect pedestrians' right to cross the street, it must be clear that when one vehicle stops, others behind it must also.

Section 11-504 of the *UVC* and the statutes of Maryland, Tennessee, Kentucky, West Virginia, Montana, California, and Florida require drivers to use due care. This is a default rule that would apply whenever there is a motor vehicle and pedestrian interaction. California law requires drivers to use due care when pedestrians are in crosswalks or unmarked crosswalks at intersections and requires pedestrians to use due care to avoid being struck by motor vehicles. Oregon also has a statute requiring pedestrians to use due care. Considering the huge difference in vulnerability between drivers and pedestrians, requiring due care toward pedestrians is logical.

Section 11-512 of the *UVC* and the statutes of Kentucky, the District of Columbia, and Montana prohibit pedestrians from walking on highways when intoxicated.

Section 11-510 of the *UVC* and the statutes of Maryland, Kentucky, Washington, and Florida grant the right of way to drivers of emergency vehicles.

## **ANALYSIS OF VIRGINIA CRASH DATA**

### **Pedestrian Fatality Rates of Virginia and Selected States**

Table B-1 (Appendix B) shows the pedestrian fatality rates over the last 4 years for Virginia and the 12 states whose pedestrian safety laws were compared with Virginia's. The rates were computed in two ways: pedestrian fatalities as a percentage of total motor vehicle fatalities and the number of fatalities per 100,000 population. Either way the rate was computed, Virginia had one of the lowest pedestrian fatality rates when compared with those of the 6 border states and the 6 states with a reputation for pedestrian safety. Virginia's rate was also lower than the national average.<sup>22</sup>

However, the pedestrian fatality rate does not indicate whether a state is truly safer for pedestrians since it does not take into account the particular characteristics of a state that could lead to an increased or decreased rate. For example, in some states, there is a much higher number of pedestrians at any given time. In other states, particular pedestrian characteristics make pedestrians more vulnerable to being struck by motor vehicles. For example, some states, such as Florida, have a higher percentage of elderly pedestrians, who have a greater chance of being struck by motor vehicles and are more likely to die when struck.<sup>23</sup> Some states, such as Florida and California, have a high tourism rate, which means there is a greater number of both motorists and pedestrians who are unfamiliar with the state and who may be unaware of the particular state traffic laws.

### **Changes in U.S. and Virginia Pedestrian Fatality Rates**

Pedestrian safety is improving nationwide. According to data published by NHTSA, from 1990 through 1994, pedestrian fatalities decreased by 15.2 percent nationwide.<sup>23</sup> However, in Virginia, this decrease was 12.9 percent.

In the last 5 years, 10,778 pedestrians were killed or injured in Virginia and pedestrian deaths accounted for 10.1 to 12.5 percent of all motor vehicle fatalities.<sup>2</sup> In addition, the number of crashes rose each year since 1991. In 1990, a particularly high number of pedestrians were either injured or killed (see Table 2). The number of crashes and injuries dropped sharply in 1991 but since then has increased steadily, averaging about 1,900 to 2,000 per year. However, although the number of injuries is on the increase, the number of fatalities has fluctuated each year since 1990 but has generally been on the decline.

**TABLE 2  
PEDESTRIAN-MOTOR VEHICLE CRASHES IN VIRGINIA**

Year	Crashes	Fatalities	Injuries
1990	2,213	116	2,224
1991	1,885	112	1,869
1992	1,997	93	1,995
1993	2,067	112	2,055
1994	2,091	101	2,101

## Factors Used in the Analysis

The crash analysis is divided into statewide, urban, rural, and a comparison of urban and rural rates. The definitions used for *urban* and *rural* were developed by the DMV, which provided the crash data. The DMV determines whether an area is urban or rural by using a computer program that codes each locality according to various characteristics.

Nine factors associated with pedestrian-motor vehicle crashes were analyzed statewide: (1) alcohol use by pedestrian, (2) light conditions, (3) weather conditions, (4) physical condition of the pedestrian, (5) mechanical condition of the vehicle, (6) vehicle action, (7) pedestrian action, (8) pedestrian age, and (9) existence of traffic controls. For each factor, the categories used in *Virginia Crash Facts*<sup>2</sup> were combined into fewer categories.

For *alcohol use by pedestrian*, the 5 categories were reduced to 2: drinking and not drinking. *Drinking* includes pedestrians who were impaired by their drinking, who were not impaired by it, and whose impairment was unknown.

For *light conditions*, the 5 categories were reduced to 3: full visibility, partial visibility, and minimal visibility. *Full visibility* is daylight. *Partial visibility* describes conditions when it is dark but the road is lighted. *Minimal visibility* comprises times when it is dawn, dusk, or dark and the road is not lighted.

For *weather conditions*, the 9 categories were combined into 2: favorable and unfavorable. *Favorable* indicates that the weather was clear and therefore was not a factor in visibility. *Unfavorable* indicates that the weather was cloudy, foggy, misty, raining, snowing, sleeting, or smoky. These are conditions that could affect the ability of the driver or the pedestrian to see each other.

For *physical condition of the pedestrian*, the 7 categories were combined into 4: not impaired, some impairment, other, and not stated. *Some impairment* describes pedestrians who were ill, fatigued, had a physical disability, or were apparently asleep.

For *mechanical condition of the vehicle*, the 8 categories were combined into 4: no defect, safety defect, other, and not stated. *Safety defect* indicates a problem with lights, brakes, steering, or tires. *Other* indicates a problem with the motor or any other defect.

For *vehicle action*, the 11 categories were regrouped into 5: going straight, turning, maneuvering, backing, and other. *Turning* includes vehicles that turned right or left. *Maneuvering* includes vehicles that were slowing, passing, changing lanes, or making U-turns. *Other* includes vehicles that ran off the road, vehicles that were stopped in traffic, and all other vehicle actions.

For *pedestrian action*, the 10 categories were combined into 4: crossing at intersection, crossing not at intersection, in roadway, and other. *Crossing at intersection* includes when the pedestrian crossed an intersection either with or against a signal. *Crossing not at intersection* includes when the pedestrian crossed at a point other than at an intersection or a crosswalk, attempted to cross the road by walking between parked vehicles, or was getting into or out of a vehicle. The category *in roadway* includes when the pedestrian was walking with traffic, walking against traffic, working on the road, or standing or lying on the road.

For *pedestrian age*, the 20 categories were combined into 6: *preschool* includes all pedestrians under 5 years of age, *elementary school* includes ages 5 to 14, *secondary school* includes ages 15 to 18, *young adult* includes ages 19 to 25, *middle adult* includes ages 26 to 60, and *older adult* includes ages 61 and older.

For *existence of traffic controls*, the 10 categories were combined into 4: no controls, traffic signals, signs, and other. *No controls* means that the crash occurred where no signs, signals, or other traffic controls existed. *Traffic signals* means that traffic lights were present at the site of the crash. *Signs* include signs for stopping, yielding, slow/warning, no passing zone, railroad warnings, and railroad gates.

The four factors of vehicle action, pedestrian action, pedestrian age, and existence of traffic controls had the most variance among categories. In each, there was no single category that could be identified as the primary factor of the pedestrian injury or fatality. They are also the factors that are most amenable to changes and clarification in statutes and changes in education and enforcement. For these reasons, these four factors were further analyzed according to whether pedestrian deaths or injuries occurred in rural or urban areas.

*NOTE: Due to the sample size, a small difference in the number of pedestrian deaths in any category between years could result in a large difference in the rate of occurrence from year to year. The fact to keep in mind is that pedestrian fatalities did not exceed 45 urban or 71 rural deaths in any year from 1990 through 1994.*

## **Statewide Analysis**

### **Alcohol Use by Pedestrian**

As can be seen in Table B-2 (Appendix B), most pedestrians were not drinking before being struck by a vehicle, with the yearly rate of nondrinking pedestrians varying from 69.8 to 75.2 percent. The percentage of pedestrians who were drinking steadily decreased, from 18.5 percent in 1990 to 13.7 percent in 1994. These data are especially significant since the drinking category includes pedestrians who were drinking but were not impaired.

However, the rates of alcohol use by pedestrians were higher when only fatalities were considered (see Table 3), from 30.7 to 43.4 percent of the crashes for which this factor was identified, with the highest rate occurring in 1993. Nationwide in 1994, 37 percent of pedestrians aged 16 and over who were killed by a motor vehicle had a blood alcohol concentration (BAC) of 0.10 percent or higher.<sup>24</sup>

**TABLE 3**  
**ALCOHOL USE BY PEDESTRIANS IN FATAL CRASHES IN VIRGINIA**

<b>Year</b>	<b>Drinking</b>	<b>Not Drinking</b>	<b>Total</b>
1990	36 (41.9%)	50 (58.1%)	86
1991	31 (36.9%)	53 (63.1%)	84
1992	22 (36.1%)	39 (63.9%)	61
1993	36 (43.4%)	47 (56.6%)	83
1994	23 (30.7%)	52 (69.3%)	75

### **Light Conditions**

Statewide, more than one half of all pedestrian injuries and fatalities occurred in broad daylight (full visibility), and about 80 percent occurred either in daylight or when it was dark but the road was lighted (partial visibility) (see Table B-3). Less than 20 percent occurred when there was minimal visibility. However, more people walk during daylight hours than at night.

### **Weather Conditions**

As seen in Table B-4, weather conditions were favorable in 70 percent of pedestrian injuries and deaths.

### **Physical Condition of Pedestrian**

In approximately 80 percent of pedestrian injuries and deaths, there was nothing physically wrong with the pedestrian (see Table B-5). Pedestrians were impaired in less than 5 percent. Data on the physical condition of the pedestrian were not available for the remainder of the cases.

## **Mechanical Condition of Vehicle**

Vehicle defects were even less common than physical problems of pedestrians. A vehicle safety defect was involved in less than 2.4 percent of the pedestrian deaths and injuries each year (see Table B-6).

## **Vehicle Action**

As seen in Table B-7, almost two thirds of vehicles were going straight when they struck a pedestrian. This is not too surprising, since most sections of roadway are straight. However, it does seem to indicate that the visibility of pedestrians may not be as much of a problem as motorist and pedestrian inattention and the lack of a clear understanding of the rights and duties of motorists and pedestrians. Visibility is also a problem because of pedestrian behavior, such as stepping onto the road from between parked vehicles. Turning vehicles were involved in about 12 percent of pedestrian deaths and injuries. Maneuvering and backing each accounted for about 6 percent of motor vehicle actions.

## **Pedestrian Action**

In nearly 40 percent of pedestrian injuries and fatalities, no pedestrian action was identified in *Virginia Crash Facts*.<sup>2</sup> In almost one third, pedestrians were crossing somewhere other than at an intersection (see Table B-8). The next largest identifiable action was *in roadway*, which occurred in about 20 percent of injuries and fatalities, whereas crossing at an intersection occurred in about 10 percent.

## **Pedestrian Age**

Table B-9 shows that persons between 5 and 25 years of age were overrepresented as pedestrians struck by motor vehicles. Statewide, over 20 percent were elementary school children, who comprise only 13.4 percent of Virginia's population. Approximately 8.5 percent were secondary school children, who comprise 5.1 percent of Virginia's population. Approximately 14 percent were young adults, who comprise about 11.5 percent of Virginia's population. Preschool children and middle and older adults were killed or injured by motor vehicles at a rate that was less than their percentage of Virginia's population.

## **Existence of Traffic Controls**

In about one third of pedestrian injuries and fatalities, a specific traffic control device was not identified in *Virginia Crash Facts*.<sup>2</sup> However, Table B-10 shows that in over one third, no

traffic control device was present. A traffic signal was present in about 15 percent of the cases, and in just over 10 percent, there was a sign at the site of the crash.

### Urban Crashes

Over the last 5 years, approximately 70 percent of the crashes in which a motor vehicle struck a pedestrian occurred in an urban area. During this period, about 70 percent of pedestrian injuries also occurred in urban areas, but only 40 percent of the fatalities. Of the 5 years of data in this report, the number of urban crashes, fatalities, and injuries was highest in 1990. All rates decreased in 1991. After a large increase in 1992, the number of crashes decreased slightly in 1993 and 1994 (see Table 4).

**TABLE 4**  
**URBAN PEDESTRIAN CRASHES IN VIRGINIA**

Year	Crashes	Fatalities	Injuries
1990	1,559	45	1,608
1991	1,369	37	1,392
1992	1,430	44	1,447
1993	1,417	44	1,432
1994	1,408	42	1,443

### Vehicle Action

Table B-11 shows that in the last 5 years, 64.9 to 84.1 percent of urban fatalities and 60.9 to 64.2 percent of urban injuries occurred when the vehicle was going straight (see Table B-12). This would seem to indicate that pedestrian visibility is probably not the main problem. However, increased driver awareness about when to expect pedestrians to be in the road and an understanding by drivers and pedestrians of their rights and responsibilities could decrease crashes in these cases. Also, most of the road network is straight, so the chance of pedestrians being struck in those areas is greater.

Vehicles that were turning or backing were involved in a significant percentage of urban injuries but only a small percentage of fatalities. Left and right turns were involved in 11.9 to 14.9 percent of urban injuries and 2.3 to 6.8 percent of fatalities. Backing was involved in 6.3 to 7.4 percent of urban injuries, but, in all years except 1991, it was involved in less than 3 percent of fatalities (or about one person per year). The higher percentage of injuries than fatalities when

vehicles are turning and backing is probably related to the slow speeds at which vehicles are traveling when making those actions.

### **Pedestrian Action**

In about 40 percent of the pedestrian injuries and about one third of the pedestrian deaths in urban areas, a specific pedestrian action was not identified. Of those that were, the most common was crossing the roadway at some point other than at an intersection. Table B-13 shows that this pedestrian action occurred in 28.6 to 42 percent of fatalities each year. In this situation, drivers may not see pedestrians until they are in the path of the vehicle, and they do not expect to see pedestrians crossing at places other than intersections. Pedestrians in the roadway comprised about one fourth of the urban fatalities. Pedestrians crossing at intersections have made up an increasing percentage of urban fatalities, from none in 1990 to 14.3 percent in 1994, although the number of deaths was relatively small each year.

The percentage of pedestrians injured while crossing at a place other than an intersection decreased slightly since 1992, from 33.2 to 30.6 percent (see Table B-14). Being in the road was involved in about 15 percent of urban injuries, and crossing at an intersection was involved in about 12 percent.

### **Pedestrian Age**

Table B-15 shows urban pedestrian fatalities categorized by age of pedestrian. From 1990 through 1994, when the fatality rate was compared to the population rate, preschool, elementary school, and secondary school children were underrepresented. There were fewer than 4 preschool, 4 elementary school, and 3 secondary school children killed each year. Young adults were underrepresented in 3 of the 5 years. Middle adults made up 48.7 percent of Virginia's population (see Table 3) but generally over 50 percent of the fatalities. Other adults comprised 14 percent of Virginia's population and a greater percentage of the fatalities in all years except 1991, nearly 30 percent in 1992 and 1993.

Over the last 5 years, the percentage injured, categorized by age group, was fairly consistent, with the yearly rates generally being within a 3-point range (see Table B-16). When the population in Virginia was considered, preschool, middle adult, and older adult pedestrians were underrepresented and elementary and secondary school children and young adults were overrepresented. Elementary school children comprised over 20 percent of those injured each year but only 13.4 percent of Virginia's population. Secondary school children comprised about 7 percent of those injured and 5.1 percent of Virginia's population. Young adults accounted for about 14 percent of those injured but only 11.5 percent of Virginia's population.

## Existence of Traffic Controls

Data concerning the presence of traffic controls are shown in Tables B-17 and B-18. In one third of the injuries, a specific traffic control device was not identified. Neither signs nor signals were present in 38.7 to 42.7 percent of injuries in urban areas, with the number slightly increasing each year since 1992. Traffic signals were present in about 17 percent. Injuries at signs have become slightly more common since 1992, increasing from 8.3 to 9.4 percent.

In more than one half of the fatalities, there was no designation of whether a traffic control device was present. There was neither a sign nor a signal present in 15.6 to 35.1 percent of fatalities in urban areas. However, over the last 3 years, urban fatalities have increasingly occurred at traffic signals, increasing from 13.6 to 16.7 percent. Urban fatalities at signed intersections have been infrequent, averaging fewer than 2 per year over the 1990-1994 period.

## Rural Crashes

Although fewer crashes occurred in rural areas, the crashes that did occur were much more likely to be fatal. Of pedestrian-motor vehicle crashes that occurred in the last 5 years, about 30 percent were in rural areas. However, approximately 60 percent of pedestrian fatalities occurred in rural areas.<sup>2</sup> Nationwide, this figure was about 45 percent.<sup>25</sup> In past reports, the higher fatality rate was attributed to the higher rate of speed in rural areas. The Insurance Institute for Highway Safety conducted a national study and found that in 1994, the ratio of pedestrian deaths to crashes was higher in rural areas.<sup>24</sup> As Table 5 shows, rural pedestrian injuries and crashes increased in Virginia over the last 4 years. This occurred during the same time that the number of crashes and injuries in urban areas stabilized or decreased (see Table 4).

TABLE 5  
RURAL PEDESTRIAN CRASHES IN VIRGINIA

Year	Crashes	Fatalities	Injuries
1990	652	71	614
1991	508	75	469
1992	560	49	540
1993	649	68	622
1994	683	59	658

## **Vehicle Action**

As can be seen in Tables B-19 and B-20, in up to one fourth of the rural deaths and injuries each year, a vehicle action was not identified. When there was a fatality, in most cases (73.2 to 84.7 percent) the vehicle was going straight. Most rural injuries also occurred when the vehicle was going straight, in 54.8 to 65.3 percent. Maneuvering has become an increasing problem and was involved in 5.3 to 8.5 percent of rural fatalities. It was also a factor in 5.2 to 9.4 percent of injuries. Backing was not a common vehicle action in rural fatalities, but it occurred more often when pedestrians were injured. Turning was a factor in only one death in rural areas in the 5 years studied but was the vehicle action in about 9 percent of rural injuries.

## **Pedestrian Action**

A specific pedestrian action was not identified in over one third of the rural injuries and 16 to 30 percent of the deaths. In rural areas, as in urban ones, pedestrians crossing somewhere other than at an intersection was one of the leading pedestrian actions (see Tables B-21 and B-22). Over the 1990-1994 period, this action occurred in 24.5 to 47.5 percent of rural fatalities. After dropping to its lowest rate in 1992, the rate rose in each of the past 2 years. This action was also present in 24.9 to 30.9 percent of rural injuries. However, being in the roadway was the most common action in 3 of the 5 years studied for both injuries and fatalities. Crossing at an intersection was involved in a very small percentage of crashes that resulted in either a fatality or an injury. This could reflect the fact that there are fewer intersections in rural areas and therefore less chance of pedestrians being struck. However, it could also indicate that it is much safer for pedestrians to cross at an intersection in rural areas.

## **Pedestrian Age**

Tables B-23 and B-24 show data categorized by age of pedestrian. Elderly pedestrians were particularly vulnerable to being killed; although they represented 14 percent of Virginia's population, they accounted for 16.9 to 32.2 percent of the rural fatalities each year. This percentage increased each year over the last 5 years. Preschool and elementary school children were slightly underrepresented in rural fatalities. The percentage of young adults killed in rural areas decreased over the last 4 years, dropping from 17.1 percent in 1991 to 3.4 percent in 1994. The fatality rate for middle adults was proportional to their percentage of Virginia's population, accounting for about one half of the deaths and the population.

Preschool children in rural areas made up a very small percentage of pedestrian injuries: 2.3 to 3.2 percent. Elementary school children were overrepresented; although they comprised 13.4 percent of Virginia's population, they accounted for 17.4 to 22.3 percent of the rural injuries. Secondary school children also were disproportionately injured. They comprised 5.1 percent of Virginia's population but only 8.7 to 12.4 percent of rural injuries. The percentage of

middle adults injured increased, from 39.9 percent in 1990 to 46.8 percent in 1994. However, their crash rate was approximately the same or less than their proportion of the population in the last 2 years. The percentage of older adults and young adults injured in rural areas decreased over the last 4 years.

### **Existence of Traffic Controls**

In approximately three fifths of the rural pedestrian fatalities, a traffic control device was not identified (see Table B-25). The pedestrian fatality rates for the other three categories of traffic control data varied considerably from year to year. When traffic control data were identified, there was no control in from 4.1 to 22.5 percent of the crashes, less than 9 percent in 1994. A traffic signal was present in 2.7 to 8.5 percent of fatalities. A sign was present in 14.1 to 24.5 percent of the fatalities and in nearly 19 percent in 1994.

In nearly 40 percent of the rural pedestrian injuries, a traffic control device was not identified (see Table B-26). When a sign or signal was identified, neither device was present in nearly one third of the injuries. A pedestrian injury occurred at a traffic signal in 6.8 to 13.3 percent of the cases and in more than 11 percent in 1994. A sign was present in nearly 16 percent of the injuries each year.

## **Rural/Urban Comparison**

### **Vehicle Action**

Over the past 5 years, approximately three fourths of the vehicles involved in both urban and rural pedestrian fatalities were going straight at the time of the crash. Vehicles were going straight in approximately 3 of 5 pedestrian injuries in both urban and rural areas.

The turning movement was identified in an average of 2 urban pedestrian fatalities per year but in no rural pedestrian fatalities since 1991 (there was 1 in 1990). Turning vehicles were more often identified as a factor in urban injuries than in rural injuries. Maneuvering and backing were identified slightly more often as a factor in urban fatalities than in rural fatalities. Backing was more often associated with urban injuries, and maneuvering was more prevalent in rural injuries.

The data showed that turning, maneuvering, and backing were associated with more pedestrian fatalities in urban areas than in rural areas, and turning and backing were associated with more pedestrian injuries in urban areas than in rural areas. Only the action of maneuvering was associated with more pedestrian injuries in rural areas than in urban areas.

## **Pedestrian Action**

Fatalities were almost 3 times as likely to occur when the pedestrian was crossing at an urban intersection rather than a rural intersection, although the numbers were relatively small in both areas. There was little difference in the rate of urban and rural fatalities when the pedestrian was crossing at a location other than an intersection. A fatality was more likely to occur in a rural area when the pedestrian was in the roadway.

An injury was twice as likely to occur at an urban intersection than a rural one. There was little difference in the rate of urban and rural injury when the pedestrian was crossing at a location other than an intersection. Being in the roadway was more likely to result in an injury in rural areas than in urban areas.

The data showed that being in the roadway was associated with more fatalities and injuries in rural areas than in urban areas, and crossing at an intersection was associated with more fatalities and injuries in urban areas than in rural areas. For crossing at places other than intersections, there was little difference between the urban and rural fatality and injury rates.

## **Pedestrian Age**

In both urban and rural areas, there were 3 or fewer persons killed in each of the preschool and secondary school categories in 4 of the 5 years studied. There were few (fewer than 3 per year on average) elementary school children killed per year in the urban areas, but as many as 7 per year (3 of the 5 years) in rural areas. The fatality rate of older adults in rural areas increased in each of the last 4 years and in 1994 accounted for nearly one third of all rural pedestrian deaths, a rate nearly double that for urban areas. When the age-based fatality rate was compared to the age-based population rate, the preschool, elementary school, and secondary school groups were underrepresented in fatalities, and the young adult and older adult groups were overrepresented.

When urban and rural injury rates by pedestrian age were compared, there were higher rates of injuries for preschool and elementary school persons in urban areas. The secondary school, young adult, and middle adult injury rates were higher in rural areas. The average older adult injury rate showed no clear distinction between urban and rural rates (8.1 and 7.9 percent, respectively). In both urban and rural areas, the preschool, middle adult, and older adult groups were underrepresented and the elementary school, secondary school, and young adult groups were overrepresented.

The data showed that young, middle, and older adults (those 19 years and older) accounted for most of the urban and rural pedestrian fatalities. The elementary school, young adult, and middle adult groups accounted for most of the injuries.

## **Existence of Traffic Controls**

For both urban and rural fatalities, a specific traffic control device was not identified in one half to three fourths of the cases. When these data were provided, a greater percentage (in most years, at least twice as many) of urban fatalities than rural fatalities occurred where there was no device. Fatalities were more prevalent at signalized intersections in urban areas. However, fatalities where signs were present occurred about 4 times more often in rural areas. This is probably due to the fact that rural areas have more intersections controlled by signs than by signals.

Over one third of both urban and rural pedestrian injuries occurred at locations where a specific device was not identified. When data were provided, injury rates were higher in urban areas at locations without a device. Urban pedestrian injury rates were higher when the crash site was controlled by a signal than when it was controlled by a sign. When the site was controlled by a sign, the rural areas had a higher percentage of pedestrian injuries than urban areas.

The data showed that locations without a traffic control device had more of a fatality and injury problem in urban than in rural areas. The data also showed that there were greater percentages of fatalities and injuries at signalized intersections in urban areas and at signed locations in rural areas. However, there are more signalized intersections in urban areas and more signed intersections in rural areas.

## **PEDESTRIAN SAFETY EDUCATION SURVEY**

Laws have no effect unless people are aware they exist. One of the ways through which the existence and meaning of laws can be taught is through pedestrian safety education in the public school system. This is especially important, since the rate of those aged 5 to 25 who are injured and killed is higher than their percentage of the population. Both pedestrians and motorists must clearly understand their rights and responsibilities regarding each other. To reduce the disproportionately high number of fatalities and injuries suffered by young people, they must be educated about how to protect themselves from being struck by motor vehicles.

Initially, 21 states returned the questionnaire. A second questionnaire was sent to the states that had not responded. Nineteen additional questionnaires were received, bringing the total to 40. The results, shown in Appendix C, indicated that Virginia is doing well in the field of public school safety education compared to other states.

More than one third of the responding states had standards for teaching students about pedestrian safety. Of these, 7 (including Virginia) considered their standards to be requirements and 7 considered them guidelines. The grade levels at which these standards were applicable varied. Virginia requires that specific lessons be taught for kindergarten through fourth grade

and from eighth through tenth grade. Each state applied the standards at least from kindergarten through third grade, and most continued to apply them at least through sixth grade.

Although only 14 of the responding states had standards for teaching students about pedestrian safety, 18 state departments of education distributed material concerning pedestrian safety to school divisions. This indicates a willingness to allow local school districts to decide whether to include a segment on pedestrian safety in their curriculum. However, it could be that developing standards would send a stronger message to school districts that teaching children about pedestrian safety is a priority.

About one third of the responding states had a funded pedestrian safety program, but the source of these funds varied. Several were sponsored by the state department of transportation, and others were funded by the state police, department of motor vehicles, or a state committee established for traffic safety. One half of the states coordinated their program with the student transportation system, usually by teaching students how to load and unload school buses safely, how to act while riding them, and what to do in emergencies.

Only 7 of the responding states had state board of education regulations or state laws with respect to pedestrian safety. Although Virginia is one, the provisions cited pertained to driver education and the fact that the standards for learning objectives were legislated.

## **SUMMARY OF FINDINGS**

### ***Analysis of the Code***

- None of the 12 states studied had a statute similar to that in § 46.2-923 of the *Code*, which states that pedestrians “shall not carelessly or maliciously interfere with the orderly passage of vehicles.”
- Six of the 12 states studied and the *UVC* explicitly grant pedestrians the right of way on sidewalks.
- Nine of the 12 states studied and the *UVC* prohibit a motorist from passing other vehicles that are stopped at a crosswalk to allow a pedestrian to cross.
- Eight of the 12 states studied and the *UVC* explicitly require drivers to use “due care” to avoid striking pedestrians.

## Virginia Crash Analysis

- From 1990 to 1994, a total of 10,244 pedestrians were injured and 534 were killed by motor vehicles.
- Pedestrians accounted for 10.1 to 12.5 percent of motor vehicle fatalities in each of the last 5 years.
- The number of pedestrians injured rose each year since 1991.
- Of all pedestrian crashes and injuries, 70 percent occurred in urban areas.
- Of all pedestrian fatalities, 60 percent occurred in rural areas.
- In over 90 percent of pedestrian fatalities and injuries, nothing was mechanically wrong with the vehicle or physically wrong with the pedestrian.
- Approximately three fourths of pedestrian fatalities and injuries occurred in favorable light and weather conditions.
- Fewer than 20 percent of the pedestrians had been drinking. This rate decreased from 18.5 percent in 1990 to 13.7 percent in 1994.
- Alcohol use by pedestrians who were killed decreased from 41.9 percent in 1990 to 30.7 percent in 1994.
- Individuals aged 5 to 25 were overrepresented in pedestrian injuries.
- Individuals older than 18 years were overrepresented in pedestrian fatalities.
- In a significant percentage of crashes, a specific pedestrian action (nearly two fifths) or a specific traffic control device (about one third) could not be identified as a factor due to the insufficiency of the data.
- In almost one third of crashes, the pedestrian was crossing the road somewhere other than at an intersection.
- In about 10 percent of crashes, the pedestrian was crossing at an intersection.
- About one third of the pedestrian injuries in rural areas occurred where there was no traffic signal or sign.

## **Pedestrian Safety Education Survey**

- More than one third of the 40 states that responded to the pedestrian education survey have state standards for teaching children about pedestrian safety.
- Almost one half of the responding states' departments of education distributed material concerning pedestrian safety to school divisions.

## **DISCUSSION**

The primary focus of this study involved a legal analysis of the *Code* and an analysis of Virginia crash data from 1990 through 1994. Some sections of the *Code* were found to be confusing and ambiguous. These sections should be clarified so that the rights and responsibilities of pedestrians and motorists are clearly stated. The crash data revealed specific pedestrian, vehicle, and roadway characteristics that were common in many pedestrian-motor vehicle crashes. The *Code* should be amended to address these characteristics.

### **Analysis of the *Code***

Several studies have concluded that in order for pedestrians and motorists to know their responsibilities, the laws must be clearly stated. The effectiveness of statutes depends in part on the comprehension people have of what the laws regulate. It is important that the statutes involving pedestrians and motorists clearly indicate what is meant when they prohibit action based on traffic designations, e.g., sidewalks, marked crosswalks. Thus the *legal* definitions of these and other words and phrases should be added to the *Code*.

The analysis of the *Code* and its comparison with the pedestrian statutes of 12 other states revealed that the *Code* is sometimes unclear in stating the duties of pedestrians and motorists regarding each other. Some standards used were vague, and others were technically logical but unnecessarily confusing to read. The analysis also showed that there were statutes in the codes of several other states that were not in the *Code*. Where Virginia crash data show that these additional statutes would address characteristics of pedestrian-motor vehicle crashes, they should be added to the *Code*.

### **Analysis of Virginia Crash Data**

Virginia's crash data showed that location is an important factor in pedestrian fatalities and injuries. Statewide, almost one third of the pedestrians killed or injured were crossing the street at a place *other* than an intersection. This was true in both urban and rural areas. In addi-

tion, about 10 percent of injuries and fatalities occurred when pedestrians were crossing at an intersection. However, the language in the *Code* does not clearly state where pedestrians have the right of way when crossing streets and highways. This should be changed.

The high incidence of pedestrians struck when they are crossing the road at an intersection indicates that more protection is needed for pedestrians crossing the road. Although the *Code* prohibits motorists from passing another vehicle stopped at an intersection to allow a pedestrian to cross, this prohibition is in a section of the *Code* pertaining to railroad grade crossings. Setting this part of the law apart in a separate statute would make it clear that drivers are not allowed to pass a vehicle stopped for pedestrians in specified situations. Nine of the 12 states studied and the *UVC* had such a provision.

Over 20 percent of pedestrians killed and injured were in the roadway. In urban areas, one fourth of the pedestrians killed and 15 percent of those injured were in the roadway. In rural areas, over one third of those killed and one fourth of those injured were in the roadway. The *Code* is not clear on when pedestrians should use the road or the shoulder. It should be revised so that it explicitly states where and when a pedestrian may use specified parts of the road.

In over three fifths of pedestrian injuries and over three fourths of fatalities, the vehicle that struck the pedestrian was going straight. In about 70 percent of pedestrian deaths and injuries, the weather and light conditions were favorable. These factors seem to indicate that crashes occurred when driver visibility should have been good. Since vehicle turning and weather and light conditions were not factors in most crashes, it is likely that driver or pedestrian inattention was. Although the common law in Virginia requires drivers to use due care when operating their vehicle, there is no explicit requirement in the *Code* for them to avoid striking pedestrians, as there is in the codes of 7 of the 12 states studied and in the *UVC*. Virginia should add such a statute.

There are several right-of-way issues that are factors in pedestrian fatalities and injuries. The primary factors (vehicles going straight and pedestrians crossing somewhere other than at an intersection) have already been addressed. However, there are several secondary factors of importance. The vehicle was turning in about 12 percent of pedestrian fatalities and injuries. The pedestrian was crossing at an intersection in about 10 percent. The vehicle was at a traffic signal or sign in about 25 percent. The right of way of pedestrians should also be protected when they are on sidewalks since believing that a sidewalk is a safety zone is reasonable for them. Since laws should enforce the legitimate expectations of drivers and pedestrians regarding their right of way, these factors should be addressed by changes in the *Code*.

## CONCLUSIONS

- The sections of the *Code* concerning how and where to cross, pedestrian right of way, and where to walk are unclear, and modifications to the *Code* are needed for both clarity and safety.
- The analysis of Virginia's crash data identified characteristics of pedestrian fatalities and injuries that can be ameliorated. These are pedestrian actions of crossing at locations other than at an intersection and being in the roadway, vehicle actions of turning and maneuvering, the presence of traffic control signs and signals, and older adult pedestrians.
- The public school educational efforts in pedestrian safety for persons in elementary and secondary schools in Virginia are better than those of most states and no worse than those of all states that furnished information.

## RECOMMENDATIONS

1. *The UVC's definition of when pedestrians must yield to vehicles should replace part of § 46.2-923 of the Code. The phrase "carelessly and maliciously" should also be removed. The Code is unclear in its designation of when pedestrians can cross the road: "wherever possible, only at intersections or marked crosswalks." The UVC has a much clearer definition of when pedestrians must yield to vehicles, which simply states that if pedestrians are not within a crosswalk (either marked or unmarked), they must yield the right of way to approaching vehicles. Section 46.2-923 also prohibits pedestrians from "carelessly or maliciously interfer[ing] with the orderly passage of vehicles." No other state studied included this prohibition on pedestrian behavior, which is a vague standard that does not clearly state the rights or duties of pedestrians.*
2. *An addition should be made to § 46.2-923 that would require pedestrians to cross at signalized intersections in the absence of marked crosswalks if they are within 150 feet of a signalized intersection. This recommendation is based on research results that showed that most pedestrian-motor vehicle crashes occur within 150 feet of an intersection. Although ideally, pedestrians would cross only at signalized intersections or marked crosswalks, asking them to walk further than 150 feet to cross the road is not realistic. This addition would not alter the pedestrian duties specified in Article 2, Right-of-Way.*
3. *The UVC's statute that clearly designates places and situations for pedestrians to walk, on either the sidewalk, the shoulder, or the road facing traffic, should replace the part of § 46.2-928 that pertains to where pedestrians should walk. Although this section of the Code describes how pedestrians should use the roadway, the language is confusing. It is not clear when they are required to move to the shoulder or walk facing traffic.*

4. *A provision should be added in Title 46.2 protecting the right of way of pedestrians while on sidewalks. An addition should be made to § 46.2-826 that requires drivers who are coming from the main road and entering private roads, driveways, alleys, or buildings to yield to pedestrians on sidewalks. Currently, the Code requires drivers to yield the right of way to pedestrians on sidewalks when the drivers are coming from a “private road, driveway, alley, or building” to turn onto a road. It should not matter in which direction a vehicle is traveling or whether it is entering or exiting a public or private road: a motorist should be required at all times to yield to pedestrians on sidewalks since it is reasonable for pedestrians to believe that a sidewalk is a “safety zone.”*
5. *An addition should be made to § 46.2-858 that expands on the rights given to pedestrians. According to the Code, drivers are prohibited from passing a vehicle when “pedestrians are passing or about to pass in front of . . . such vehicles.” However, this prohibition is currently included in the section concerning passing at a railroad grade crossing. The right of pedestrians in this regard would be made clearer if it were set apart in its own section. This section would clearly state that a vehicle could not pass another vehicle stopped at a marked crosswalk or intersection to allow pedestrians to cross in front of it. This would not be conferring an additional responsibility on drivers because it is already required under the law. However, it is not clear in § 46.2-858 that the driver has this responsibility.*
6. *Although Virginia common law requires that drivers exercise due care in operating their vehicle, drivers should be explicitly required to use due care to avoid striking pedestrians. This should be clearly stated in a new section added to the Code. This is a default rule that would apply whenever motor vehicles and pedestrians interact. There is a great difference in the vulnerability of pedestrians and drivers. When a vehicle strikes a pedestrian, usually only the pedestrian is injured or killed.*
7. *Definitions of six words and phrases used in the statutes should be included in § 46.2-100: pedestrian, sidewalk, marked crosswalk, unmarked crosswalk, traffic control device, and traffic control signal. These additions would further clarify the Code by promoting a clear understanding of what the law requires citizens to do.*
8. *After the Code is modified, the state’s safety authority (Office of the Governor’s Highway Safety Representative) should conduct a statewide public information and education campaign so that both motorists and pedestrians will be made aware of their legal rights and responsibilities and how the changes to the Code will help the citizens of Virginia.*
9. *Once the public information and education campaign has commenced, the state and localities should actively enforce the changes in the statutes.*
10. *The form that police officers use to report crash data should be examined to determine if the choices under the pedestrian action and traffic control categories are the most meaningful to describe the crash scene, and police officers should be instructed that it is important to*

*complete the forms with as much specificity as possible.* In order for future studies regarding pedestrian safety to be as accurate as possible, more complete crash data must be available. For example, in about one third of pedestrian injuries and fatalities, a specific traffic control device was not identified. In nearly 40 per-cent, no pedestrian action was identified. Although conclusions can be made from the available data, more accurate conclusions could be made with additional information.

*NOTE: A separate document that details the recommended additions and deletions to the Code in legislative format is available upon request from the authors.*

### **ACKNOWLEDGMENTS**

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**APPENDIX A**

**Letter and Questionnaire Sent to Superintendents/Commissioners  
of State Departments of Education**

**Letter**

June 22, 1995

(Name of Superintendent)  
(State) Department of Education  
(Address)

Dear Dr./Mr./Ms. (Superintendent's name):

Pedestrian safety issues have been a concern of Virginia state agencies and of the Virginia General Assembly for a number of years. We have been asked by a member of the General Assembly and by the Commissioner of the Virginia Department of Motor Vehicles to conduct a study to investigate how laws could be changed to clarify the rights and responsibilities of pedestrians and motorists.

In addition to revising statutes, an important aspect of pedestrian safety is the public's awareness of the laws concerning pedestrians and motorists. At a meeting with a member of the General Assembly and representatives from a major urban area in Virginia, an interest was expressed in education, since it is a key component through which pedestrian laws may be taught. In response to this, we are conducting a survey to discover how educators in other states are teaching children about pedestrian safety. We would also like to know the level of schooling at which certain information is taught.

Enclosed is the survey, which asks several questions about these issues. Please feel free to write on the back of it or enclose additional pages if you would like to provide us with any other information. Please return it to us by July 24, 1995.

Thank you very much for taking the time to complete this survey. Hopefully, an exchange of information will help us to develop laws and programs that increase pedestrian safety.

Sincerely,

Andrea M. Sullivan  
Graduate Legal Assistant

**VIRGINIA TRANSPORTATION RESEARCH COUNCIL**  
**Pedestrian Safety Education Survey**

1. Does your state have standards for teaching students about pedestrian safety? yes \_\_\_\_\_ no \_\_\_\_\_

2. Are these state standards considered to be: requirements \_\_\_\_\_ or guidelines \_\_\_\_\_?

3. At what grade levels are these standards applicable? (please check all that apply)

K _____	3 _____	6 _____	9 _____	12 _____
1 _____	4 _____	7 _____	10 _____	
2 _____	5 _____	8 _____	11 _____	

4. Does your state have any sponsored (funded) pedestrian safety programs? yes \_\_\_\_\_ no \_\_\_\_\_

If yes, are they funded by:

the Department of Education \_\_\_\_\_ ?

and/or other agencies (please specify): \_\_\_\_\_

\_\_\_\_\_

5. Is there coordination between the pedestrian safety programs and the student transportation system (i.e., training students to load and unload buses safely)? yes \_\_\_\_\_ no \_\_\_\_\_

If yes, *how* are the programs coordinated? \_\_\_\_\_

\_\_\_\_\_

6. Does the Department of Education disseminate materials and/or data to school divisions with respect to pedestrian safety? yes \_\_\_\_\_ no \_\_\_\_\_

If yes, please enclose an example.

7. Are there any State Board of Education regulations or state laws with respect to pedestrian safety education? yes \_\_\_\_\_ no \_\_\_\_\_

If yes, please specify their provisions and/or enclose a copy of the statute or its citation.

8. Please enclose a copy of your standards for teaching students about pedestrian safety. If you cannot enclose a copy of the standards, please write on a separate sheet of paper the pedestrian rules that are taught to students and at what grade level.

Your name \_\_\_\_\_ Title \_\_\_\_\_

Address \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_

*Please return the survey in the enclosed envelope. Thank you very much for your assistance.*

## **APPENDIX B**

### **Pedestrian Crash Data by Factors Associated with Crashes**

**TABLE B-1**  
**PEDESTRIAN FATALITY RATES FOR VIRGINIA AND SELECTED STATES**

	1991		1992		1993		1994	
	Percent of Total Fatalities	Fatalities per 100,000 Population	Percent of Total Fatalities	Fatalities per 100,000 Population	Percent of Total Fatalities	Fatalities per 100,000 Population	Percent of Total Fatalities	Fatalities per 100,000 Population
North Carolina	13.8	2.8	13.5	2.5	12.6	2.5	12.9	2.6
Maryland	20.2	2.9	14.9	2.0	19.2	2.6	19.8	2.6
Kentucky	6.3	1.4	10.2	2.2	7.5	1.7	6.9	1.4
Tennessee	9.1	2.0	8.8	2.0	7.2	1.6	8.0	1.9
West Virginia	8.0	1.8	8.1	1.9	7.7	1.8	8.1	1.6
District of Columbia	38.1	4.0	28.0	2.4	45.6	4.5	33.3	3.3
California	18.8	2.9	18.2	2.5	20.4	2.7	19.9	2.7
Florida	20.0	3.7	19.9	3.6	18.7	3.6	19.8	3.8
Massachusetts	19.2	1.8	20.2	1.6	17.1	1.4	19.3	1.4
Montana	7.0	1.7	7.3	1.7	6.2	1.4	5.4	1.3
Oregon	11.0	1.8	13.1	2.1	10.7	1.8	14.1	2.2
Washington	11.0	1.5	12.1	1.5	12.0	1.5	13.0	1.6
U.S. Total	14.0	2.3	14.1	2.2	14.1	2.2	13.5	2.1
Virginia	11.8	1.8	11.1	1.5	12.9	1.7	11.0	1.6

**TABLE B-2**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY ALCOHOL USE BY PEDESTRIANS**

Category	1990		1991		1992		1993		1994	
	No.	%								
Drinking	434	18.5	347	17.5	351	16.8	318	14.7	302	13.7
Not Drinking	1,651	70.6	1,383	69.8	1,495	71.6	1,598	73.7	1,655	75.2
Not Stated	255	10.9	251	12.7	242	11.6	251	11.6	245	11.1
Total	2,340	100.0	1,981	100.0	2,088	100.0	2,167	100.0	2,202	100.0

**TABLE B-3**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY LIGHT CONDITIONS**

Category	1990		1991		1992		1993		1994	
	No.	%								
Full Visibility	1,267	57.3	1,067	56.6	1,126	56.4	1,203	58.2	1,231	58.9
Partial Visibility	551	24.9	469	24.9	479	24.0	483	23.4	503	24.1
Minimal Visibility	380	17.2	341	18.1	384	19.2	374	18.1	349	16.7
Not Stated	15	0.7	8	0.4	8	0.4	7	0.3	8	0.4
Total	2,213	100.1	1,885	100.0	1,997	100.0	2,067	100.0	2,091	100.1

**TABLE B-4**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY WEATHER CONDITIONS**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Favorable	1,546	69.9	1,358	72.0	1,332	66.7	1,444	69.9	1,477	70.6
Unfavorable	658	29.7	517	27.4	654	32.7	609	29.5	605	28.9
Other	1	0.0	2	0.1	2	0.1	2	0.1	2	0.1
Not Stated	8	0.4	8	0.4	9	0.5	12	0.6	7	0.3
Total	2,213	100.0	1,885	99.9	1,997	100.0	2,067	100.1	2,091	99.9

**TABLE B-5**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY PHYSICAL CONDITION OF PEDESTRIAN**

Category	1990		1991		1992		1993		1994	
	No.	%								
Not Impaired	1,888	80.7	1,567	79.1	1,666	79.8	1,756	81.0	1,766	80.2
Some Impairment	98	4.2	95	4.8	92	4.4	82	3.8	62	2.8
Other	70	3.0	60	3.0	67	3.2	67	3.1	88	4.0
Not Stated	284	12.1	259	13.1	263	12.6	262	12.1	286	13.0
Total	2,340	100.0	1,981	100.0	2,088	100.0	2,167	100.0	2,202	100.0

**TABLE B-6**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY MECHANICAL CONDITION OF VEHICLE**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
No Defect	1,994	84.8	1,705	84.1	1,788	83.2	1,866	83.9	1,893	84.8
Safety Defect	33	1.4	48	2.4	48	2.2	45	2.0	38	1.7
Other	21	0.9	28	1.4	22	1.0	22	1.0	35	1.6
Not Stated	304	12.9	247	12.2	291	13.5	292	13.1	267	12.0
Total	2,352	100.0	2,028	100.1	2,149	99.9	2,225	100.0	2,233	100.1

**TABLE B-7  
STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY VEHICLE ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%								
Straight	1,521	65.0	1,223	61.7	1,311	62.8	1,347	62.2	1,376	62.5
Left and Right Turns	247	10.6	239	12.1	242	11.6	273	12.6	265	12.0
Maneuvers	99	4.2	108	5.5	110	5.3	123	5.7	130	5.9
Backing	137	5.9	116	5.9	143	6.8	131	6.0	127	5.8
Other	175	7.5	166	8.4	147	7.0	161	7.4	168	7.6
Not Stated	161	6.9	129	6.5	135	6.5	132	6.1	136	6.2
<b>Total</b>	<b>2,340</b>	<b>100.1</b>	<b>1,981</b>	<b>100.1</b>	<b>2,088</b>	<b>100.0</b>	<b>2,167</b>	<b>100.0</b>	<b>2,202</b>	<b>100.0</b>

**TABLE B-8  
STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY PEDESTRIAN ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Crossing at Intersection	224	9.6	195	9.8	216	10.3	228	10.5	225	10.2
Crossing not at Intersection	735	31.4	600	30.3	656	31.4	660	30.5	669	30.4
In Roadway	442	18.9	403	20.3	397	19.0	452	20.9	448	20.3
Other	870	37.2	695	35.1	733	35.1	760	35.1	818	37.1
Not Stated	69	2.9	88	4.4	86	4.1	67	3.1	42	1.9
<b>Total</b>	<b>2,340</b>	<b>100.0</b>	<b>1,981</b>	<b>99.9</b>	<b>2,088</b>	<b>99.9</b>	<b>2,167</b>	<b>100.1</b>	<b>2,202</b>	<b>99.9</b>

**TABLE B-9**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY PEDESTRIAN AGE**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Preschool	108	4.6	103	5.2	99	4.7	119	5.5	109	5.0
Elementary	523	22.4	410	20.7	468	22.4	461	21.3	448	20.3
Secondary	195	8.3	170	8.6	145	6.9	181	8.4	205	9.3
Young Adult	352	15.0	296	14.9	324	15.5	259	12.0	287	13.0
Middle Adult	954	40.8	784	39.6	826	39.6	911	42.0	928	42.1
Older Adult	175	7.5	192	9.7	186	8.9	192	8.9	187	8.5
Not Known	33	1.4	26	1.3	40	1.9	44	2.0	38	1.7
<b>Total</b>	<b>2,340</b>	<b>100.0</b>	<b>1,981</b>	<b>100.0</b>	<b>2,088</b>	<b>99.9</b>	<b>2,167</b>	<b>100.1</b>	<b>2,202</b>	<b>99.9</b>

**TABLE B-10**  
**STATEWIDE PEDESTRIAN DEATHS AND INJURIES BY TRAFFIC CONTROLS**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	864	36.9	753	38.0	772	37.0	779	35.9	850	38.6
Traffic Signal	337	14.4	272	13.7	312	14.9	338	15.6	327	14.9
Signs	246	10.5	207	10.5	221	10.6	227	10.5	251	11.4
Other	843	36.0	704	35.5	736	35.2	790	36.5	748	34.0
Not Stated	50	2.1	45	2.3	47	2.3	33	1.5	26	1.2
<b>Total</b>	<b>2,340</b>	<b>99.9</b>	<b>1,981</b>	<b>100.0</b>	<b>2,088</b>	<b>100.0</b>	<b>2,167</b>	<b>100.0</b>	<b>2,202</b>	<b>100.1</b>

**TABLE B-11**  
**URBAN PEDESTRIAN DEATHS BY VEHICLE ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Straight	35	77.8	24	64.9	32	72.7	37	84.1	29	69.0
Left and Right Turns	2	4.4	2	5.4	3	6.8	1	2.3	2	4.8
Maneuvers	3	6.7	5	13.5	2	4.5	3	6.8	4	9.5
Backing	1	2.2	1	2.7	4	9.1	1	2.3	0	0.0
Other	3	6.7	2	5.4	1	2.3	2	4.5	5	11.9
Not Stated	1	2.2	3	8.1	2	4.5	0	0.0	2	4.8
<b>Total</b>	<b>45</b>	<b>100.0</b>	<b>37</b>	<b>100.0</b>	<b>44</b>	<b>99.9</b>	<b>44</b>	<b>100.0</b>	<b>42</b>	<b>100.0</b>

**TABLE B-12**  
**URBAN PEDESTRIAN INJURIES BY VEHICLE ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Straight	1,033	64.2	879	63.1	898	62.1	872	60.9	894	62.0
Left and Right Turns	191	11.9	208	14.9	198	13.7	205	14.3	192	13.3
Maneuvers	60	3.7	55	4.0	63	4.4	72	5.0	73	5.1
Backing	102	6.3	87	6.3	107	7.4	105	7.3	94	6.5
Other	104	6.5	89	6.4	93	6.4	95	6.6	97	6.7
Not Stated	118	7.3	74	5.3	88	6.1	83	5.8	93	6.4
<b>Total</b>	<b>1,608</b>	<b>99.9</b>	<b>1,392</b>	<b>100.0</b>	<b>1,447</b>	<b>100.1</b>	<b>1,432</b>	<b>99.9</b>	<b>1,443</b>	<b>100.0</b>

**TABLE B-13**  
**URBAN PEDESTRIAN DEATHS BY PEDESTRIAN ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Crossing at Intersection	0	0.0	2	5.4	3	6.8	7	15.9	6	14.3
Crossing not at Intersection	19	42.2	11	29.7	14	31.8	16	36.4	12	28.6
In Roadway	12	26.7	10	27.0	7	15.9	11	25.0	9	21.4
Other	12	26.7	8	21.6	17	38.6	10	22.7	11	26.2
Not Stated	2	4.4	6	16.2	3	6.8	0	0.0	4	9.5
<b>Total</b>	<b>45</b>	<b>100.0</b>	<b>37</b>	<b>99.9</b>	<b>44</b>	<b>99.9</b>	<b>44</b>	<b>100.0</b>	<b>42</b>	<b>100.0</b>

**TABLE B-14**  
**URBAN PEDESTRIAN INJURIES BY PEDESTRIAN ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%								
Crossing at Intersection	187	11.6	171	12.3	174	12.0	173	12.1	174	12.1
Crossing not at Intersection	499	31.0	444	31.9	481	33.2	449	31.4	441	30.6
In Roadway	244	15.2	216	15.5	221	15.3	237	16.6	230	15.9
Other	632	39.3	511	36.7	516	35.7	538	37.6	576	39.9
Not Stated	46	2.9	50	3.6	55	3.8	35	2.4	22	1.5
<b>Total</b>	<b>1,608</b>	<b>100.0</b>	<b>1,392</b>	<b>100.0</b>	<b>1,447</b>	<b>100.0</b>	<b>1,432</b>	<b>100.1</b>	<b>1,443</b>	<b>100.0</b>

**TABLE B-15**  
**URBAN PEDESTRIAN DEATHS BY PEDESTRIAN AGE**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Preschool	4	8.9	2	5.4	0	0.0	2	4.5	2	4.8
Elementary	2	4.4	4	10.8	3	6.8	3	6.8	2	4.8
Secondary	0	0.0	2	5.4	1	2.3	0	0.0	3	7.1
Young Adult	6	13.3	4	10.8	5	11.4	1	2.3	6	14.3
Middle Adult	26	57.8	20	54.1	21	47.7	23	52.3	22	52.4
Older Adult	7	15.6	4	10.8	14	31.8	13	29.5	7	16.7
Not Known	0	0.0	1	2.7	0	0.0	2	4.5	0	0.0
Total	45	100.0	37	100.0	44	100.0	44	99.9	42	100.1

**TABLE B-16**  
**URBAN PEDESTRIAN INJURIES BY PEDESTRIAN AGE**

Category	1990		1991		1992		1993		1994	
	No.	%								
Preschool	82	5.1	84	6.0	85	5.9	101	7.1	89	6.2
Elementary	377	23.4	305	21.9	349	24.1	345	24.1	316	21.9
Secondary	119	7.4	122	8.8	94	6.5	102	7.1	124	8.6
Young Adult	247	15.4	196	14.1	224	15.5	170	11.9	199	13.8
Middle Adult	645	40.1	539	38.7	549	37.9	565	39.5	572	39.6
Older Adult	114	7.1	123	8.8	110	7.6	120	8.4	113	7.8
Not Known	24	1.5	23	1.7	36	2.5	29	2.0	30	2.1
Total	1,608	100.0	1,392	100.0	1,447	100.0	1,432	100.1	1,443	100.0

**TABLE B-17**  
**URBAN PEDESTRIAN DEATHS BY TRAFFIC CONTROLS**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	7	15.6	13	35.1	9	20.5	7	15.9	7	16.7
Traffic Signal	3	6.7	2	5.4	6	13.6	7	15.9	7	16.7
Signs	2	4.4	2	5.4	3	6.8	1	2.3	1	2.4
Other	33	73.3	19	51.4	24	54.5	29	65.9	27	64.3
Not Stated	0	0.0	1	2.7	2	4.5	0	0.0	0	0.0
Total	45	100.0	37	100.0	44	99.9	44	100.0	42	100.1

**TABLE B-18**  
**URBAN PEDESTRIAN INJURIES BY TRAFFIC CONTROLS**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	622	38.7	561	40.3	576	39.8	600	41.9	616	42.7
Traffic Signal	280	17.4	236	17.0	258	17.8	244	17.0	238	16.5
Signs	130	8.1	118	8.5	120	8.3	127	8.9	135	9.4
Other	534	33.2	447	32.1	460	31.8	436	30.4	432	29.9
Not Stated	42	2.6	30	2.2	33	2.3	25	1.7	22	1.5
Total	1,608	100.0	1,392	100.1	1,447	100.0	1,432	99.9	1,443	100.0

**TABLE B-19  
RURAL PEDESTRIAN DEATHS BY VEHICLE ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Straight	52	73.2	63	84.0	37	75.5	52	76.5	50	84.7
Left and Right Turns	1	1.4	0	0.0	0	0.0	0	0.0	0	0.0
Maneuvers	4	5.6	4	5.3	3	6.1	5	7.4	5	8.5
Backing	2	2.8	1	1.3	0	0.0	3	4.4	0	0.0
Other	8	11.3	5	6.7	4	8.2	4	5.9	1	1.7
Not Stated	4	5.6	2	2.7	5	10.2	4	5.9	3	5.1
Total	71	99.9	75	100.0	49	100.0	68	100.1	59	100.0

**TABLE B-20  
RURAL PEDESTRIAN INJURIES BY VEHICLE ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Straight	401	65.3	257	54.8	344	63.7	386	62.1	403	61.2
Left and Right Turns	53	8.6	29	6.2	41	7.6	67	10.8	71	10.8
Maneuvers	32	5.2	44	9.4	42	7.8	43	6.9	48	7.3
Backing	32	5.2	27	5.6	32	5.9	22	3.5	33	5.0
Other	60	9.8	70	14.9	49	9.1	60	9.6	65	9.9
Not Stated	36	5.9	42	9.0	32	5.9	44	7.1	38	5.8
Total	614	100.0	469	99.9	540	100.0	622	100.0	658	100.0

**TABLE B-21**  
**RURAL PEDESTRIAN DEATHS BY PEDESTRIAN ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Crossing at Intersection	2	2.8	1	1.3	2	4.1	4	5.9	3	5.1
Crossing not at Intersection	27	38.0	27	36.0	12	24.5	24	35.3	28	47.5
In Roadway	26	36.6	33	44.0	20	40.8	29	42.6	16	27.1
Other	14	19.7	14	18.7	12	24.5	9	13.2	12	20.3
Not Stated	2	2.8	0	0.0	3	6.1	2	2.9	0	0.0
<b>Total</b>	<b>71</b>	<b>99.9</b>	<b>75</b>	<b>100.0</b>	<b>49</b>	<b>100.0</b>	<b>68</b>	<b>99.9</b>	<b>59</b>	<b>100.0</b>

**TABLE B-22**  
**RURAL PEDESTRIAN INJURIES BY PEDESTRIAN ACTION**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Crossing at Intersection	34	5.5	20	4.3	34	6.3	44	7.1	42	6.4
Crossing not at Intersection	190	30.9	117	24.9	149	27.6	171	27.5	188	28.6
In Roadway	159	25.9	140	29.9	147	27.2	175	28.1	193	29.3
Other	212	34.5	160	34.1	185	34.3	202	32.5	219	33.3
Not Stated	19	3.1	32	6.8	25	4.6	30	4.8	16	2.4
<b>Total</b>	<b>614</b>	<b>99.9</b>	<b>469</b>	<b>100.0</b>	<b>540</b>	<b>100.0</b>	<b>622</b>	<b>100.0</b>	<b>658</b>	<b>100.0</b>

**TABLE B-23**  
**RURAL PEDESTRIAN DEATHS BY PEDESTRIAN AGE**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Preschool	3	4.2	2	2.6	0	0.0	2	2.9	0	0.0
Elementary	7	9.9	7	9.2	2	4.1	5	7.4	7	11.9
Secondary	3	4.2	5	6.6	1	2.0	2	2.9	3	5.1
Young Adult	9	12.7	13	17.1	5	10.2	6	8.8	2	3.4
Middle Adult	37	52.1	36	47.4	27	55.1	33	48.5	26	44.1
Older Adult	12	16.9	13	17.1	12	24.5	17	25.0	19	32.2
Not Known	0	0.0	0	0.0	2	4.1	3	4.4	2	3.4
Total	71	100.0	76	100.0	49	100.0	68	99.9	59	100.1

**TABLE B-24**  
**RURAL PEDESTRIAN INJURIES BY PEDESTRIAN AGE**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
Preschool	19	3.1	15	3.2	14	2.6	14	2.3	18	2.7
Elementary	137	22.3	93	19.8	113	20.9	108	17.4	123	18.7
Secondary	72	11.7	41	8.7	47	8.7	77	12.4	75	11.4
Young Adult	90	14.7	83	17.7	90	16.7	82	13.2	80	12.2
Middle Adult	245	39.9	184	39.2	226	41.9	289	46.5	308	46.8
Older Adult	42	6.8	50	10.7	48	8.9	42	6.8	48	7.3
Not Known	9	1.5	3	0.6	2	0.4	10	1.6	6	0.9
Total	614	100.0	469	99.9	540	100.1	622	100.2	658	100.0

**TABLE B-25**  
**RURAL PEDESTRIAN DEATHS BY TRAFFIC CONTROLS**

Category	1990		1991		1992		1993		1994	
	No.	%								
None	16	22.5	9	12.0	2	4.1	9	13.2	5	8.5
Traffic Signal	3	4.2	2	2.7	4	8.2	4	5.9	5	8.5
Signs	10	14.1	18	24.0	12	24.5	11	16.2	11	18.6
Other	42	59.2	46	61.3	31	63.3	44	64.7	37	62.7
Not Stated	0	0.0	0	0.0	0	0.0	0	0.0	1	1.7
Total	71	100.0	75	100.0	49	100.1	68	100.0	59	100.0

**TABLE B-26**  
**RURAL PEDESTRIAN INJURIES BY TRAFFIC CONTROLS**

Category	1990		1991		1992		1993		1994	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	219	35.7	170	36.2	185	34.3	163	26.2	222	33.7
Traffic Signal	51	8.3	32	6.8	44	8.1	83	13.3	77	11.7
Signs	104	16.9	69	14.7	86	15.9	88	14.1	104	15.8
Other	234	38.1	191	40.7	221	40.9	281	45.2	252	38.3
Not Stated	6	1.0	7	1.5	4	0.7	7	1.1	3	0.5
Total	614	100.0	469	99.9	540	99.9	622	99.9	658	100.0

## **APPENDIX C**

### **Summary of Responses to Pedestrian Safety Education Survey**

TABLE C-1  
SUMMARY OF RESPONSES TO PEDESTRIAN SAFETY EDUCATION SURVEY

State	State Standards	Standards Are Requirements	Standards Are Guidelines	Applicable Grade Levels	Any Funded Programs	Program Coordination	State DOE Materials	Regulations or Laws
Alabama	Y	N	Y	K-5	Y <sup>1</sup>	Y <sup>8</sup>	Y	N
Alaska	N	-	-	-	N	N	N	N
Arizona	NR*							
Arkansas	N	-	-	-	Y <sup>2</sup>	Y <sup>8</sup>	Y	N
California	N	-	-	-	N	N	N	N
Colorado	N	-	-	-	Y <sup>2</sup>	N	Y	N
Connecticut	Y	N	Y	NR	N	N	N	N
Delaware	N	-	-	-	N	Y <sup>8</sup>	N	N
District of Columbia	NR							
Florida	N	-	-	-	Y <sup>2</sup>	N	Y	N
Georgia	Y	Y	N	K-1	N	N	N	N
Hawaii	NR							
Idaho	Y	Y	N	K-6, 9-10	N	Y	Y	N
Illinois	NR							
Indiana	N	-	-	-	N	N	N	N
Iowa	N	-	-	-	N	Y <sup>8</sup>	N	N
Kansas	N	-	-	-	N	N	NR	N
Kentucky	Y	Y	N	K-12	Y <sup>3</sup>	Y <sup>9</sup>	Y	Y
Louisiana	Y	Y	N	K-8	N	Y	Y	Y
Maine	N	-	-	-	N	N	N	N

State	State Standards	Standards Are Requirements	Standards Are Guidelines	Applicable Grade Levels	Any Funded Programs	Program Coordination	State DOE Materials	Regulations or Laws
Maryland	N	-	-	-	Y <sup>4</sup>	Y <sup>10</sup>	N	N
Massachusetts	N	-	-	-	N	N	N	N
Michigan	NR							
Minnesota	Y	Y	N	K-10	N	Y <sup>9</sup>	N	N
Mississippi	N	-	-	-	N	Y <sup>8</sup>	N	N
Missouri	Y	N	Y	K-6	N	N	N	N
Montana	N	-	-	-	N	Y	Y	Y
Nebraska	NR							
Nevada	N	-	-	-	N	N	N	N
New Hampshire	N	-	-	-	N	N	N	N
New Jersey	N	-	-	-	N	Y <sup>8</sup>	N	N
New Mexico	NR							
New York	NR							
North Carolina	N	-	In preparation	K-5	Y <sup>2</sup>	Y <sup>6</sup>	Y	N
North Dakota	N	-	-	-	N	N	N	N
Ohio	Y	Y	N	K-10	Y <sup>5</sup>	Y <sup>8</sup>	Y	Y
Oklahoma	Y	N	Y	K-6	N	Y <sup>11</sup>	Y	Y
Oregon	N	-	-	-	Y <sup>6</sup>	Y <sup>9</sup>	Y	Y
Pennsylvania	NR							
Rhode Island	N	-	-	-	N	N	N	N

State	State Standards	Standards Are Requirements	Standards Are Guidelines	Applicable Grade Levels	Any Funded Programs	Program Coordination	State DOE Materials	Regulations or Laws
South Carolina	N	-	-	-	N	N	N	N
South Dakota	N	-	-	-	N	N	N	N
Tennessee	NR							
Texas	Y	N	Y	K-12	Y <sup>2</sup>	Y <sup>11</sup>	Y	N
Utah	Y	N	Y	K-3	Y <sup>6</sup>	Y <sup>10</sup>	Y	N
Vermont	Y	N	Y	K-12	N	N	Y	N
Virginia	Y	Y	N	K-4, 8-10	Y <sup>7</sup>	Y <sup>6</sup>	Y	Y
Washington	N	-	-	-	Y <sup>1</sup>	Y <sup>10</sup>	Y	N
West Virginia	NR							
Wisconsin	N	-	-	-	Y <sup>2</sup>	N	Y	N
Wyoming	N	-	-	-	N	N	N	N

NR = No response.

<sup>1</sup>Office of Governor's Representative.

<sup>2</sup>DOT.

<sup>3</sup>State Police.

<sup>4</sup>Locality.

<sup>5</sup>Office of Public Safety.

<sup>6</sup>Department of Education.

<sup>7</sup>DMV.

<sup>8</sup>School Bus Safety Program.

<sup>9</sup>School Districts.

<sup>10</sup>Transportation Supervisor.

<sup>11</sup>School Bus Driver Training.