## Pedestrian Crash Types: A 1990's Informational Guide

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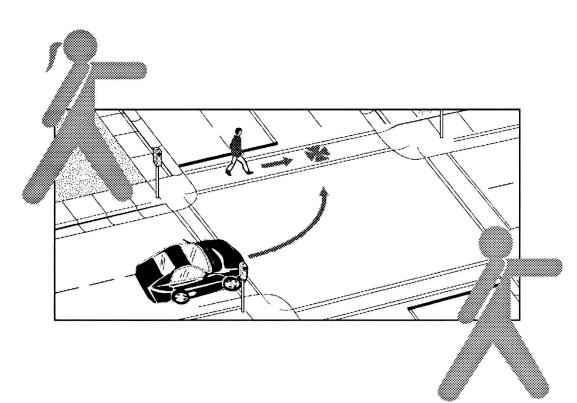


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Research and Development Turner-Fairbank Highway Research Center 6300 Georgetown Pike McLean, VA 22101-2296





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#### FOREWORD

Approximately one out of six highway fatalities in the United States is a pedestrian or bicyclist each year. Estimates for 1995 indicate that 84,000 pedestrians were injured and 5,585 were killed in traffic crashes. These crashes can be classified or "typed" by their precipitating actions, predisposing factors, and characteristic populations and/or location that can be targeted for intervention.

The information provided in the following guide is the result of a Federal Highway Administration (FHWA) research study that applied the basic National Highway Traffic Safety Administration (NHTSA) pedestrian and bicycle typologies to a sample of pedestrian- and bicycle-motor vehicle crashes from six States with the purpose of refining and updating the crash type distributions. Particular attention was given to roadway and locational factors in order to identify situations where engineering, educational, and/or regulatory countermeasures might be effectively implemented to reduce the frequency of the crashes.

This informational guide should be of interest to State and local pedestrian and bicycle coordinators, transportation planners, and transportation engineers involved in safety and risk management. Other interested parties include those in education, enforcement, and the medical profession.

ge Ostensen. Director

Office of Safety and Traffic Operations Research and Development

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		LENGTH					LENGTH	_		
in	inches	25.4	millimeters	mm	mm	millimeters	0.039	inches	in	
ft	feet	0.305	meters	m	m	meters	3.28	feet	ft	
yd mi	yards	0.914 1.61	meters	m	m	meters	1.09	yards	yd	
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ft²	square feet	0.093	square meters	m²	m²	square meters	10.764	square feet	ft²	
yď²	square yards	0.836	square meters	m²	m²	square meters	1.195	square yards	yd²	
ac	acres	0.405	hectares	ha	ha	hectares	2.47	acres	ac	
mi²	square miles	2.59	square kilometers	km²	km²	square kilometers	0.386	square miles	mi²	
		VOLUME					VOLUME	_		
fl oz	fluid ounces	29.57	milliliters	mL	mL	milliliters	0.034	fluid ounces	floz	
gal	gallons	3.785	liters	L	L	liters	0.264	gallons	gal	
ft <sup>3</sup>	cubic feet	0.028	cubic meters	m <sup>3</sup>	m <sup>3</sup>	cubic meters	35.71	cubic feet	ft <sup>3</sup>	
yď³	cubic yards	0.765	cubic meters	m <sup>3</sup>	m <sup>3</sup>	cubic meters	1.307	cubic yards	yd <sup>3</sup>	
NOTE: V	olumes greater than 100	00 I shall be shown in	m³.							
		MASS					MASS	_		
oz	ounces	28.35	grams	g	g	grams	0.035	ounces	oz	
lb	pounds	0.454	kilograms	kg	kg	kilograms	2.202	pounds	lb	
т	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")	Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000	lb) T	
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۴	Fahrenheit temperature	5(F-32)/9 or (F-32)/1.8	Celcius temperature	°C	°C	Celcius temperature	1.8C + 32	Fahrenheit temperature	٩F	
		JMINATION				IL	LUMINATION	_		
fc	foot-candles	10.76	lux	Ix	lx	lux	0.0929	foot-candles	fc	
fl	foot-Lamberts	3.426	candela/m <sup>2</sup>	cd/m²	cd/m²	candela/m <sup>2</sup>	0.2919	foot-Lamberts	fi	
	FORCE and PF	RESSURE or ST	RESS			FORCE and I	PRESSURE or	STRESS		
lbf	poundforce	4.45	newtons	N	N	newtons	0.225	poundforce	lbf	
lbf/in²	poundforce per square inch	6.89	kilopascals	N kPa	kPa	kilopascals	0.145	poundiorce poundforce per square inch	lbf/in²	

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\* SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.

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### **TABLE OF CONTENTS**

Pa	ge
ABOUT THIS INFORMATIONAL GUIDE	. 1
Background	. 1
The Crash Typology	. 2
Individual Crash Types	. 3
An Orientation to the Individual Crash Type Information	. 3
Pedestrian - Motor Vehicle Crash Types	9
Special Circumstances	9
Commercial Bus RelatedSchool Bus RelatedIce Cream VendorMailbox RelatedExiting or Entering Parked Vehicle	12 14 16
Vehicle Specific	21
Driverless Vehicle	24
Disabled/Emergency Vehicle Related	29
Disabled Vehicle Related	30
Working/Playing In Roadway	33
Working On RoadwayPlay Vehicle RelatedPlaying In Roadway	36
Walking Along Road/Crossing Expressway	41
Walking Along Road    Expressway Crossing	

iii

### MTA LIBRARY

### TABLE OF CONTENTS (Continued)

	Vaiting To Cross
1	ot In Roadway
Interse	ction Related
Ι	Iultiple Threat At Intersection
	ehicle Turn/Merge
	ntersection Dash
5	rapped
	Valked Into Vehicle At Intersection
I	Priver Violation At Intersection
]	ntersection—Other
Midblo	ck Related
I	Iultiple Threat At Midblock
I	Idblock Dart Out
Γ	Iidblock Dash
	Valked Into Vehicle At Midblock
	fidblock—Other
Other	or Inadequate Information
]	ying In Road
5	uicide
1	ssault With Vehicle
]	Oomestic/Dispute Related
]	edestrian On Vehicle
	Vehicle Crash
	ehicle-Object Crash
	Veird
]	nadequate Information

1

-

### LIST OF FIGURES

Figure	Page
1	Pedestrian age in "Commercial Bus Related" 10
2	Light condition, number of lanes, and speed limit in "Commercial Bus Related"
3	Pedestrian age in "School Bus Related" 12
4	Light condition, number of lanes, and speed limit in "School Bus Related" 13
5	Pedestrian age in "Ice Cream Vendor" 14
6	Light condition, number of lanes, and speed limit in "Ice Cream Vendor" 15
7	Pedestrian age in "Mailbox Related"
8	Light condition, number of lanes, and speed limit in "Mailbox Related" 17
9	Pedestrian age in "Exiting Or Entering Parked Vehicle"
10	Light condition, number of lanes, and speed limit in "Exiting Or
	Entering Parked Vehicle" 19
11	Pedestrian age in "Driverless Vehicle"
12	Light condition in "Driverless Vehicle"
13	Pedestrian age in "Backing Vehicle"
14	Light condition in "Backing Vehicle" 25
15	Pedestrian age in "Hot Pursuit"
16	Pedestrian age in "Disabled Vehicle Related"
17	Light condition, number of lanes, and speed limit in "Disabled Vehicle
	Related"
18	Pedestrian age in "Working On Roadway" 34
19	Light condition, number of lanes, and speed limit in "Working On Roadway" . 35
20	Pedestrian age in "Play Vehicle Related" 36
21	Light condition, number of lanes, and speed limit in "Play Vehicle Related" 37
22	Pedestrian age in "Playing In Roadway"
23	Light condition, number of lanes, and speed limit in "Playing In Roadway" 39
24	Pedestrian age in "Walking Along Road" 42
25	Light condition, number of lanes, and speed limit in "Walking Along Road" 43
26	Pedestrian age in "Expressway Crossing"
27	Light condition, number of lanes, and speed limit in "Expressway Crossing" . 45
28	Pedestrian age in "Waiting to Cross"
29	Light condition, number of lanes, and speed limit in "Waiting To Cross" 49
30	Pedestrian age in "Not In Roadway"
31	Light condition in "Not In Roadway"
32	Pedestrian age in "Multiple Threat At Intersection"
33	Light condition, number of lanes, and speed limit in "Multiple Threat At
24	Intersection"
34 25	Pedestrian age in "Vehicle Turn/Merge"
35	Light condition, number of lanes, and speed limit in "Vehicle Turn/Merge" 57
36	Pedestrian age in "Intersection Dash" 58

v

.

-

.

### LIST OF FIGURES (Continued)

### Figure

.

4

.

37	Light condition, number of lanes, and speed limit in "Intersection Dash" 59
38	Pedestrian age in "Trapped"
39	Light condition, number of lanes, and speed limit in "Trapped"
40	Pedestrian age in "Walked Into Vehicle At Intersection"
40	Light condition, number of lanes, and speed limit in "Walked Into
41	Vehicle At Intersection"
42	Pedestrian age in "Driver Violation At Intersection"
42 43	Light condition, number of lanes, and speed limit in "Driver Violation At
45	- · · · · · · · · · · · · · · · · · · ·
44	Intersection"
	Pedestrian age in "Intersection—Other"
45	Light condition, number of lanes, and speed limit in "Intersection—Other" 67
46	Pedestrian age in "Multiple Threat At Midblock"
47	Light condition, number of lanes, and speed limit in "Multiple Threat At
40	Midblock"
48	Pedestrian age in "Midblock Dart Out"
49 50	Light condition, number of lanes, and speed limit in "Midblock Dart Out" 73
50	Pedestrian age in "Midblock Dash"
51	Light condition, number of lanes, and speed limit in "Midblock Dash" 75
52	Pedestrian age in "Walked Into Vehicle At Midblock"
53	Light condition, number of lanes, and speed limit in "Walked Into Vehicle
51	At Midblock"
54	Pedestrian age in "Midblock—Other"
55	Light condition, number of lanes, and speed limit in "Midblock—Other" 79
56	Light condition in "Lying In Road"
57	Pedestrian age in "Lying In Road"
58 50	Light condition in "Suicide
59 60	Pedestrian age in "Suicide"
60	Light condition in "Assault With Vehicle"
61	Pedestrian age in "Assault With Vehicle"
62	Light condition in "Domestic/Dispute Related"
63	Pedestrian age in "Domestic/Dispute Related"
64	Light condition in "Pedestrian On Vehicle"
65	Pedestrian age in "Pedestrian On Vehicle"
66	Light condition in "Vehicle-Vehicle Crash"
67	Pedestrian age in "Vehicle-Vehicle Crash"
68	Light condition in "Vehicle-Object Crash"
69	Pedestrian age in "Vehicle-Object Crash"
70	Light condition in "Weird" 89
71	Pedestrian age in "Weird"
72	Light condition in "Inadequate Information"
73	Pedestrian age in "Inadequate Information"

#### ABOUT THIS INFORMATIONAL GUIDE

#### Background

This publication provides information about pedestrian-motor vehicle crash types of the early 1990's. The crash types follow closely the current National Highway Traffic Safety Administration (NHTSA) coding convention used with the General Estimates System (GES) data, whereby a stratified sample of crashes reported by police from across the United States are used to make national estimates of the occurrence and severity of pedestrian-motor vehicle crashes. The crash types are based on research carried out by Snyder and Knoblauch in the early-1970's. Thirty-seven distinct crash types are identified in the NHTSA typology. Examples include:

- ► Dart-out.
- Intersection dash.
- Walking along road.
- ► Backing vehicle.

The data for the publication are part of a research project carried out for the Centers for Disease Control, with funding provided by the Federal Highway Administration (FHWA). The purpose of this research was to apply the basic NHTSA crash typologies to a sample of recent crashes and to refine and update the crash type distributions with particular emphasis on roadway and locational factors. The parent research project covers 5,000 pedestrian- and 3,000 bicyclemotor vehicle crashes selected equally from six States (California, Florida, Maryland, Minnesota, North Carolina, and Utah) and reports findings pertinent to primary groups of crashes (see Hunter, Stutts, Pein and Cox, "Pedestrian and Bicycle Crash Types of the Early 1990's, FHWA-RD-95-163, February 1995). This informational guide provides detail on specific crash types and is concerned with only the 5,000 pedestrian-motor vehicle crashes from the six States. The pedestrian sample was derived by selecting more than 800 police-reported crashes from small, medium, and large communities within each State.

Police report hard copies were examined to code the specific crash type, as well as many other items. Additional items coded and analyzed included:

- Crash descriptors (motor vehicle-pedestrian pre-crash maneuvers, time of day, etc.).
- Locational descriptors (road feature, private property details, etc.).

1

- Pedestrian characteristics (age, special equipment used, etc.).
- Driver contributing factors (yield violation, alcohol use, etc.).
- Pedestrian contributing factors (jaywalking, ran into street, etc.).
- Motor vehicle contributing factors (defective brakes, unclear windshield, etc.).
- ► Roadway/environment contributing factors (weather condition, sun glare, etc.).
- ► Fault (driver only, pedestrian only, neither, etc.).

In addition to coding the crash type and other variables discussed above, the cases were linked to the basic crash file for each State. This enabled the use of many more variables in the analysis, such as age and gender of pedestrian and driver, other roadway descriptors, and motor vehicle variables. Upon completion of clean-up and file linkage, approximately 5,000 cases were available for analysis.

#### The Crash Typology

The crash types are broadly distributed into nine main categories. For this particular data set, the distribution of crashes was the following:

- Special circumstances (133 crashes, 2.6 percent of total).
- ► Vehicle specific (460 crashes, 9.1 percent of total).
- ► Disabled/Emergency vehicle-related (124 crashes, 2.4 percent of total).
- ► Working/Playing in roadway (152 crashes, 3.0 percent of total).
- ► Walking along road/Crossing expressway (400 crashes, 7.9 percent of total).
- ▶ Not in road (436 crashes, 8.6 percent of total).
- ► Intersection-related (1,630 crashes, 32.1 percent of total).
- ▶ Midblock (1,341 crashes, 26.4 percent of total).
- Other or inadequate information (397 crashes, 7.8 percent of total).

The intersection-related and midblock events were the most frequent, accounting for almost 60 percent of all crashes. Detailed results about these groups of crash types are contained in the final report for the project (Hunter, Stutts, Pein and Cox, 1995).

[Note: The appendix of this informational guide contains coding guidelines for pedestrian crash typing. These guidelines were adapted from NHTSA's "Manual Accident Typing for Pedestrian Accidents - Coder's Handbook." The Coder's Handbook can be found in Appendix A of the parent document, "Pedestrian and Bicycle Crash Types of the Early 1990's (FHWA-RD-95-163).]

#### **Individual Crash Types**

Within the 9 crash groups are 37 individual crash types. For example, the group of crashes entitled "Vehicle specific" is made up of the following individual crash types:

- Driverless vehicle—Pedestrian struck was driver of the vehicle.
- Driverless vehicle—Pedestrian struck was not the driver of the vehicle.
- **Backing vehicle**—Pedestrian struck by a vehicle which was backing.

• Hot pursuit—Pedestrian struck by a vehicle on an emergency/police mission, or by a vehicle being pursued.

The focus of the remainder of this document is detailed information about many of the 37 individual crash types. Two-page layouts (i.e., left and right facing pages) are used for each individual crash type to convey a variety of information. The order of the presentation parallels NHTSA's Coder's Handbook.

#### An Orientation to the Individual Crash Type Information

Each two-page layout basically contains the information presented below (a few differ because of small numbers of crashes). Examine the example pages for "Vehicle Turn/Merge" that follow for a more thorough orientation.

#### Left Side Page

► A <u>title bar</u>, with additional information about the <u>frequency</u> and <u>severity</u> of the crash. The severity is based on the typical "KABCO" scale used by police, where "K" is killed, an "A" injury is defined as serious, "B" moderate, "C" minor, and "O" no injury.

► A <u>sketch</u> that shows a simple depiction of the event. Various backgrounds are used,

3

such as an urban intersection, a rural intersection, a suburban location, a residential location, a rural location, etc.

• A <u>description</u> of the crash type.

► A <u>summary</u> of the crash type that includes a variety of information. Generally there are comments about the ages of the involved pedestrians, the light condition, number of lanes, speed limit, crash severity, alcohol use, etc. No exposure data were available for the analysis, so comparisons for a variable within a particular crash type are often made with all crashes combined (e.g., ages of pedestrians involved in "Vehicle Turn/Merge" compared with pedestrian age for all crashes). The same would be true for the other variables mentioned above. Overall, over 33 percent of the crashes resulted in severe and fatal (A+K) injuries to the pedestrian. The summary usually comments on whether the individual crash type was more or less severe than this average. It was normally the case that lower speed crashes (e.g., those occurring primarily in neighborhoods) resulted in less severity than higher speed crashes (e.g., those occurring more often on rural highways).

► A <u>bar chart</u> of the ages of the involved pedestrians for the particular crash type versus all crash types combined. Information for the crash type discussed on the two pages is always shown in green and the "all crash type" comparison is always shown in black.

#### **Right Side Page**

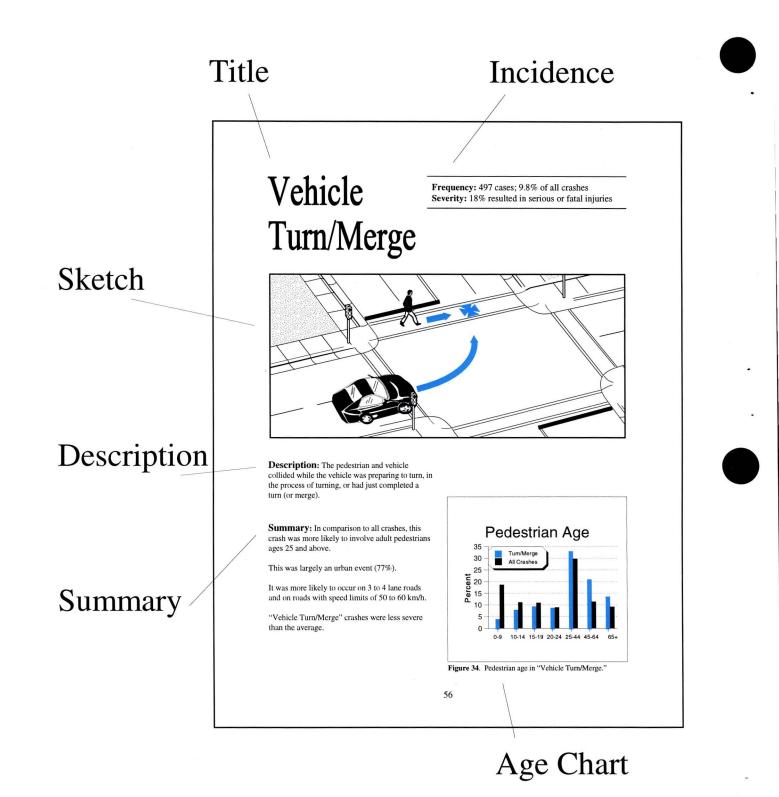
• <u>Graphs</u> of the <u>light condition</u>, the <u>number of lanes</u>, and the <u>speed limit</u> for the particular crash type (where applicable) versus all crash types combined. Again, the information for the crash type discussed on the two pages is shown in green and the "all crash type" comparison is shown in black.

"<u>Bullet" boxes</u> that pertain to variables of interest for this particular crash type.
 "<u>Alcohol Use</u>," "<u>Development Character</u>," (urban versus rural), "<u>Day of Week</u>," "<u>Road Feature</u>," and "<u>Pedestrian Location</u>" generally appear in this area.

All two-page layouts are generally similar for ease in comparison. However, differences may appear depending on the amount of detail available for a particular crash type. As an

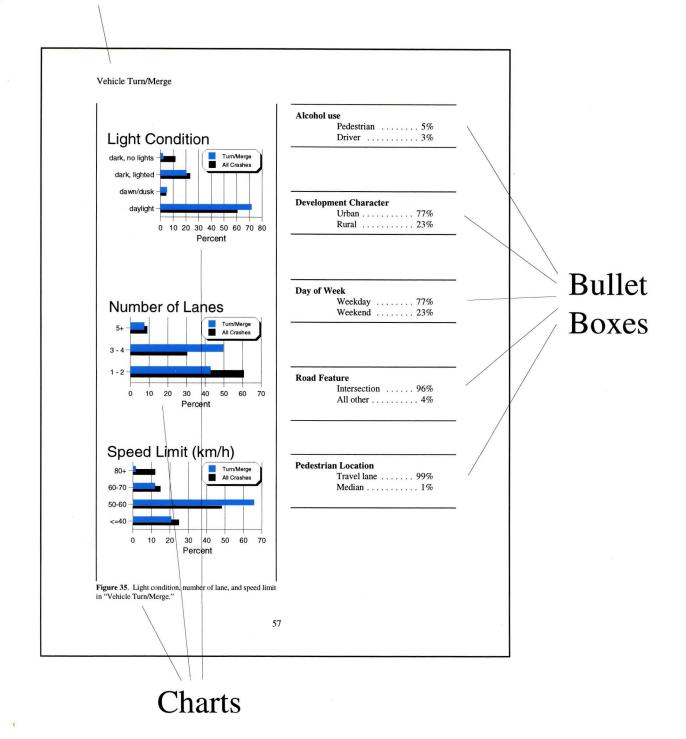
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example, the crash type labeled as "Other -Weird" contains no drawing of the event because circumstances could be so variable from one "weird" crash to another that a "typical" drawing is very difficult to define. The appendix describes the process followed in assigning a crash type code to the individual crash reports examined.

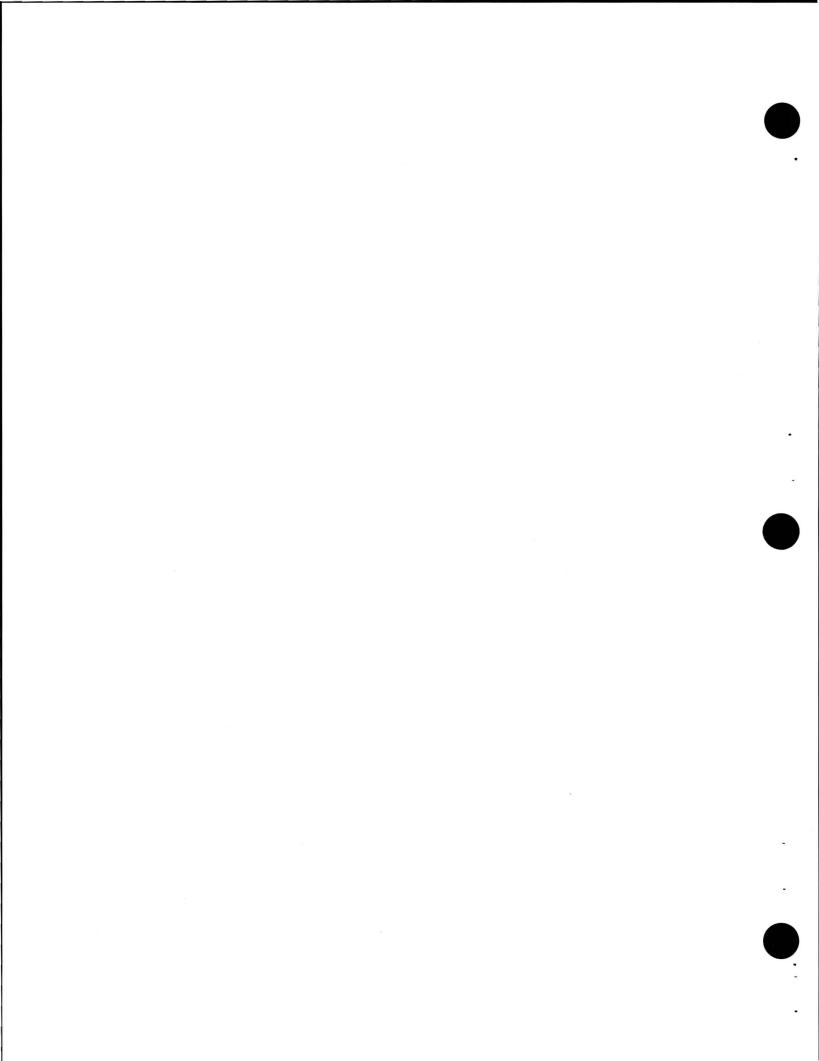


### Layout diagram - left side.

Title



Layout diagram - right side.

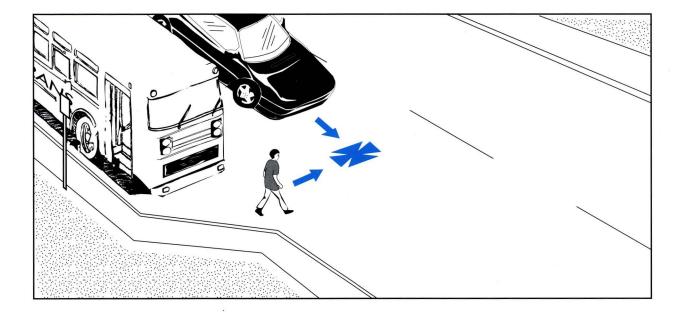


Pedestrian-Motor Vehicle Crash Types

# Special Circumstances

## Commercial Bus Related

**Frequency:** 22 cases; 0.4% of all crashes **Severity:** 23% resulted in serious or fatal injuries



**Description:** The pedestrian was struck by another vehicle while crossing in front of a commercial bus stopped at a marked bus stop.

**Summary:** In comparison to all crashes, this crash was more likely to involve youth (age 10 to 14) and especially teen (age 15 to 19) pedestrians who accounted for almost half of these events.

This was largely an urban event (77%). Eighty percent occurred on roads with a speed limit of 50 to 60 km/h (30 to 35 mi/h), and more than 40 percent occurred under dark, lighted conditions.

Alcohol involvement was lower than the average for pedestrians, but higher than the average for the motorist. This crash tended to be less severe than the average.

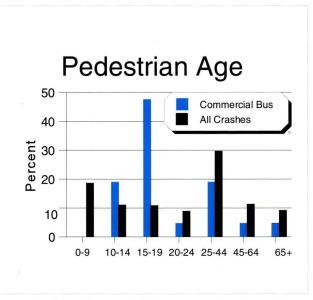
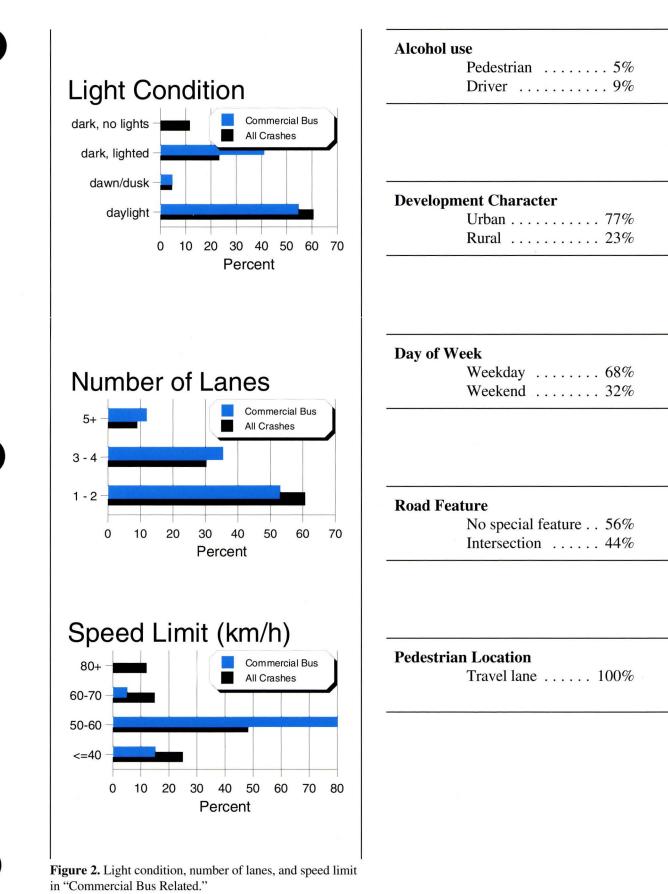


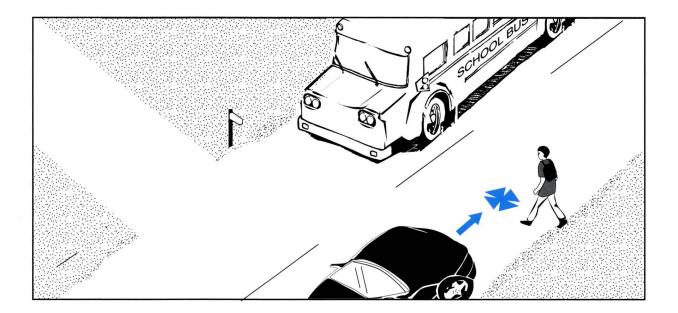
Figure 1. Pedestrian age in "Commercial Bus Related."



11

## School Bus Related

**Frequency:** 22 cases; 0.4% of all crashes **Severity:** 32% resulted in serious or fatal injuries



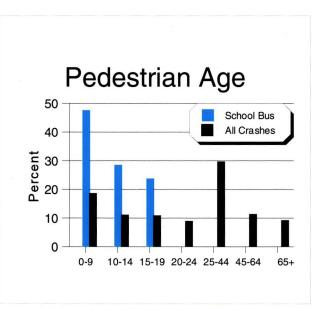
**Description:** The pedestrian was struck going to or from a school bus or school bus stop.

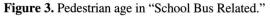
**Summary:** This crash involved only child (age 0 to 9), youth (age 10 to 14) and teen (age 15 to 19) pedestrians.

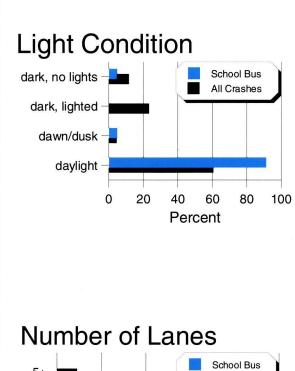
The vast majority of these crashes occurred during daylight hours. Most occurred on 1 to 2 lane roads and on roads with speed limits of 60 km/h or less.

More than 40 percent occurred in rural areas. None involved alcohol.

"School Bus Related" crashes were of average severity.







5+-				School Bu All Crashe						
3 - 4 -		Í								
1 - 2 -										
0	20	40 Per	60 cent	80	100					



**Figure 4.** Light condition, number of lanes, and speed limit in "School Bus Related."

### Alcohol use

 Pedestrian
 0%

 Driver
 0%

### **Development Character**

Urban	•	•		•	•			•	٠	59%
Rural	•	•	•	•	•	÷	•	•	•	41%

### Day of Week

Weekday		•	•			•	86%
Weekend	•	•	•	•	•	•	14%

### **Road Feature**

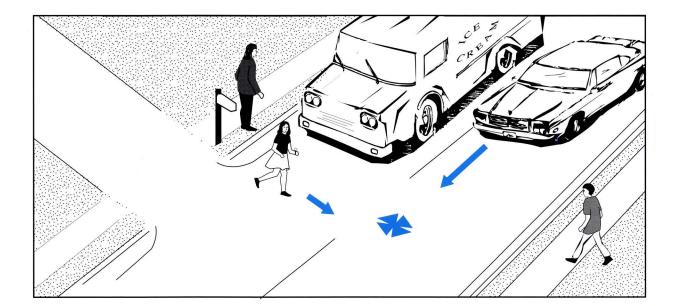
No special feature 52%
Intersection 38%
Public driveway 5%
Other 5%

### **Pedestrian Location**

Travel lane	,		•				95%
Shoulder .		•	•	÷	•	•	. 5%

## Ice Cream Vendor

**Frequency:** 40 cases; 0.8% of all crashes **Severity:** 21% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while going to or from an ice cream vendor and the striking vehicle was on the same street as the vendor.

**Summary:** In comparison to all crashes, this crash was more likely to involve child (age 0 to 9) and youth (age 10 to 14) pedestrians.

Daylight, 1 to 2 lane roads, and roads with a speed limit less than or equal to 40 km/h were strongly overrepresented. Urban areas were also overrepresented.

None of the pedestrians and only 5 percent of the motorists had been drinking.

"Ice Cream Vendor" crashs tended to be less severe than the average.

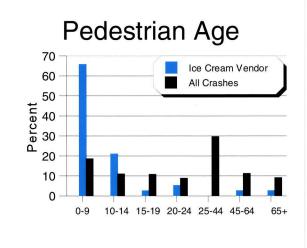


Figure 5. Pedestrian age in "Ice Cream Vendor."

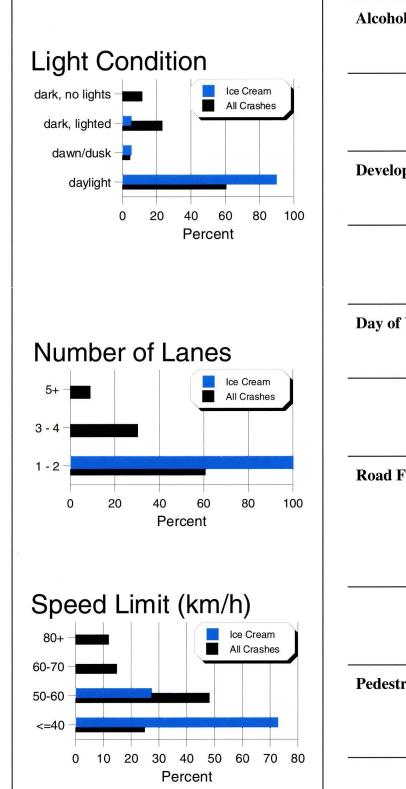


Figure 6. Light condition, number of lanes, and speed limit in "Ice Cream Vendor."

Al	coh	ol ı	ise

Pedestrian ..... 0% Driver ..... 5%

### **Development Character**

-	Urban	•		•	•		•	•	•		79%
	Rural		•	•	•	•	•	•	•	•	21%

**Day of Week** 

Weekday		•				•		64%
Weekend		•	•	•	•	•	•	36%

Feature	
No special feature 82%	
Intersection 6%	
Private driveway 6%	
Public driveway 3%	
Other 3%	

### **Pedestrian Location**

Travel lane ..... 95% Parking lot lanes . . . . 3% Parking lot unknown 3%

# Mailbox Related

**Frequency:** 16 cases; 0.3% of all crashes **Severity:** 50% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while going to or from a private residence mailbox or newspaper box.

**Summary:** In comparison to all crashes, this crash was more likely to involve child (age 0 to 9) and elderly (age 65+) pedestrians.

This was largely a rural event (63%). All took place on 1 to 2 lane roads, and higher speed roads were strongly overrepresented. Forty percent took place on roads with a speed limit of 80 km/h or greater.

Alcohol was generally not a factor in these crashes. Although the number of cases was small, this crash was much more likely than average to result in a serious or fatal injury.

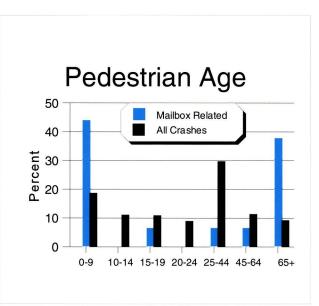
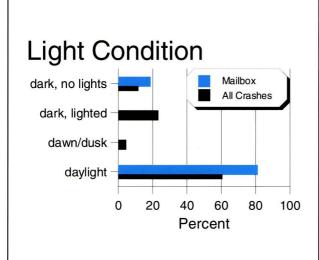


Figure 7. Pedestrian age in "Mailbox Related."

Mailbox Related



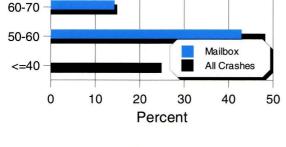
Alcohol use	
Pedestrian	0%
Driver	0%

### **Development Character**

Urban	•		•		•	•	•	ł	•	•	ě	38%
Rural	•	•	•	•	•	•	•	·	•	•	•	63%

Num	ber o	of La	ane	S	
5+ -	I			Mailbox All Crashe	s
3 - 4 -					
1 - 2 -					
0	20	40 Per	60 cent	80	100





**Figure 8.** Light condition, number of lanes, and speed limit in "Mailbox Related."

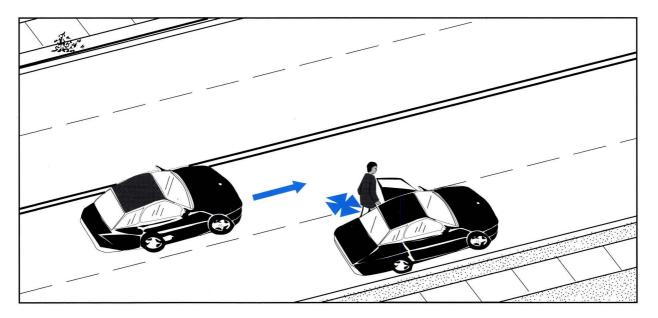
Day of Week		
Weekday	69%	
Weekend		

Road Feature No special feature . . 62% Private driveway . . . 31% Intersection . . . . . . 8%

Pedestrian Location Travel lane ..... 100%

# Exiting Or Entering Parked Vehicle

**Frequency:** 33 cases; 0.7% of all crashes **Severity:** 31% resulted in serious or fatal injuries



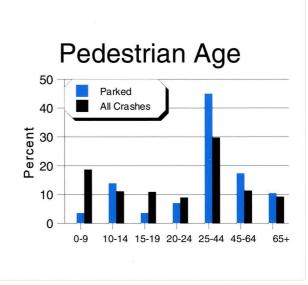
**Description:** The pedestrian was in the process of exiting or entering a parked or stopped vehicle and was struck in the adjacent traffic lane.

**Summary:** In comparison to all crashes, this crash was more likely to involve adult (age 25 to 44) and middle adult (age 45 to 64) pedestrians.

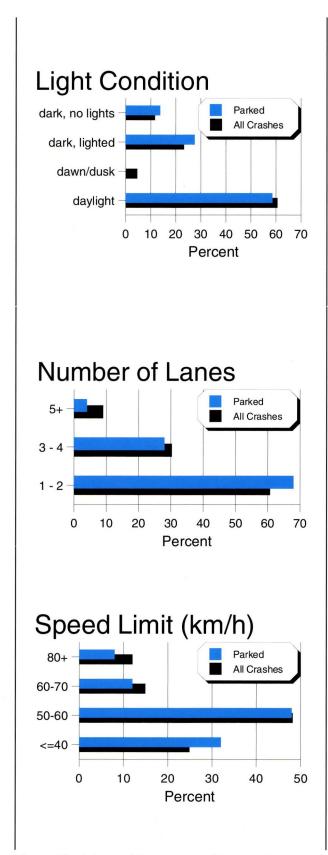
Almost half occurred on the weekend as compared to 35 percent for all crashes combined.

Fifteen percent of the drivers had been drinking but only 4 percent of pedestrians.

This crash type was of average severity.



**Figure 9**. Pedestrian age in "Exiting Or Entering Parked Vehicle."



**Figure 10.** Light condition, number of lanes, and speed limit in "Exiting Or Entering Parked Vehicle."

Alcohol use

 Pedestrian
 4%

 Driver
 15%

### **Development Character**

Urban			•		•						•	72%
Rural	•	•	•	•	•	•	•	•	•	•	•	28%

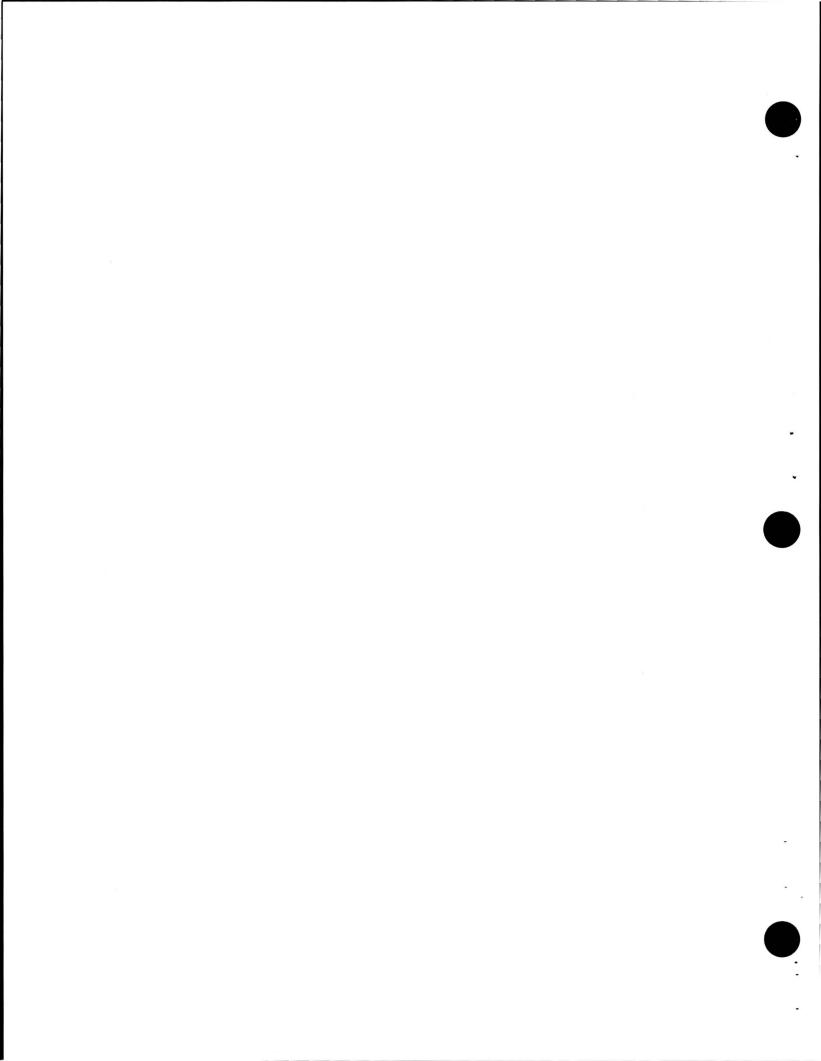
### Day of Week

Weekday	•	•	•	•	•	•	52%
Weekend	•	•	•	•	•	•	48%

Road Feature	
No special feature	78%
Intersection	19%
Other	. 3%

### **Pedestrian Location**

Travel lane 70%
On-street parking 18%
Parking lot lanes 3%
Shoulder 3%
Other 6%

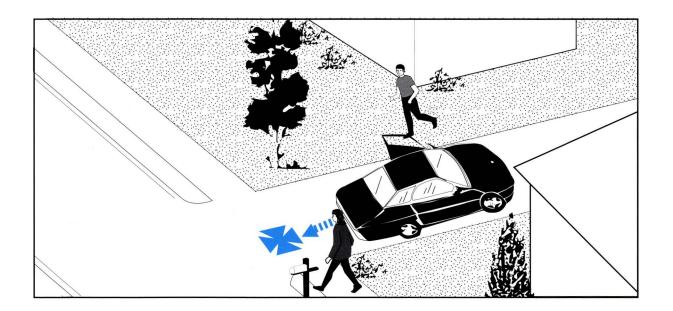


Pedestrian-Motor Vehicle Crash Types

# Vehicle Specific

## Driverless Vehicle

**Frequency:** 104 cases; 2.1% of all crashes **Severity:** 38% resulted in serious or fatal injuries



**Description:** The pedestrian was struck by a vehicle that was moving without a driver at the controls or was set into motion by the actions of a child.

**Summary:** In comparison to all crashes, this event was more likely to involve pedestrians age 25 and older.

In 77 percent of these crashes the struck pedestrian was **not** the original driver of the vehicle.

Thirty-seven percent happened in a parking lot, and an additional 20 percent in a driveway or alley.

More than 80 percent occurred during daylight. "Driverless Vehicle" crashes were slightly more severe than average.

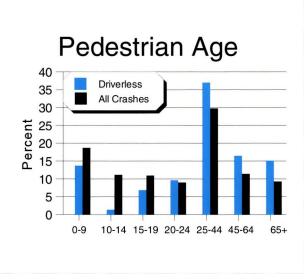
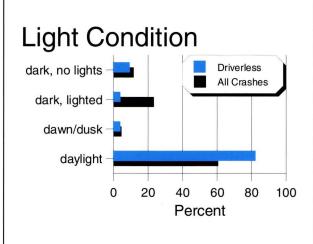


Figure 11. Pedestrian age in "Driverless Vehicle."

### **Driverless Vehicle**



### Alcohol use

 Pedestrian
 2%

 Driver
 0%

### **Development Character**

Urban	•	•		•	•	•		•	•	•	61%
Rural	•	•	•	•	•	•	•		•	•	39%

### Day of Week

Weekday	•	•	•	•	•	•	<u>69%</u>
Weekend		•					31%

### **Road Feature**

No special feature 35%
Private driveway 17%
Public driveway 6%
Intersection 5%
Alley 1%
All other

### **Pedestrian Location**

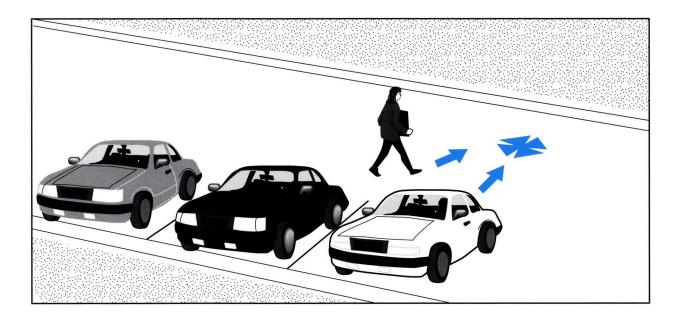
Travel lane
Parking lot space 25%
Alley/Driveway 20%
Parking lot lanes 8%
Parking lot, other 4%
All other 18%

Number of Lanes and Speed Limit graphs are not shown because this crash type most often occurs offroad.

Figure 12. Light condition in "Driverless Vehicle."

# Backing Vehicle

**Frequency:** 351 cases; 6.9% of all crashes **Severity:** 23% resulted in serious or fatal injuries



**Description:** The pedestrian was struck by a vehicle that was backing.

**Summary:** In comparison to all crashes, this crash was more likely to involve elderly (age 65+) pedestrians.

Forty-four percent occurred in a parking lot location, and 13 percent in a driveway or alley.

Overall, 11 percent of pedestrians had been drinking, and 19 percent of those ages 20 to 44.

"Backing" crashes were less severe than the average.

### Pedestrian Age

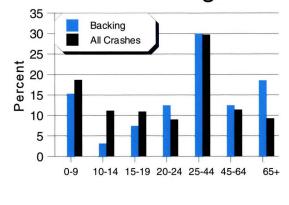
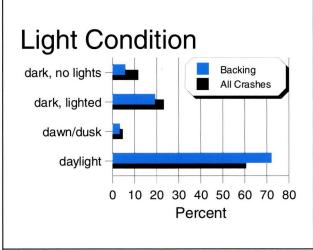


Figure 13. Pedestrian age in "Backing Vehicle."



A	CO	hol	use
	co.	101	ube

 Pedestrian
 11%

 Driver
 6%

### **Development Character**

Urban		•	•		•	•		•	•	62%
Rural	•	•	•	•	•	•		•	•	38%

Day of Week

Weekday		•	•	•	•	•		68%
Weekend	•	•	•		•		•	32%

### Number of Lanes and Speed Limit graphs are not shown because these variables are not relevant to this crash type.

### **Road Feature**

No special feature 19%
Private driveway 15%
Intersection 9%
Public driveway 9%
Alley 1%</td
All other 48%

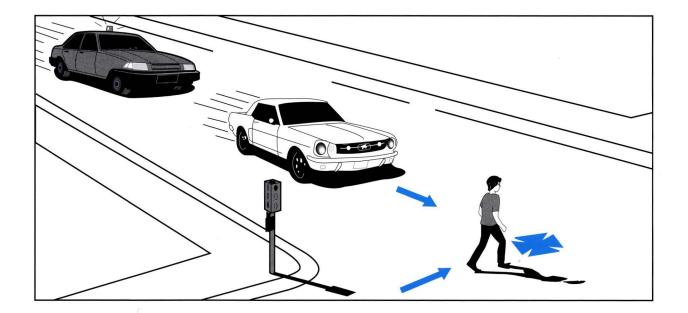
### **Pedestrian Location**

Parking lot space 31%
Travel lane 23%
Alley/Driveway 13%
Parking lot lanes 8%
Parking lot unknown 5%
All other 20%

Figure 14. Light condition in "Backing Vehicle."

# Hot Pursuit

**Frequency:** 5 cases; 0.1% of all crashes **Severity:** 60% resulted in serious or fatal injuries



**Description:** The pedestrian was struck by a vehicle on an emergency/police mission, or by a vehicle being pursued.

**Summary:** These few crashes happened exclusively to adult (age 25 to 44) pedestrians.

Four of the five cases occurred in an urban area, on a weekday, and during conditions of darkness. Three of the pedestrians had been drinking.

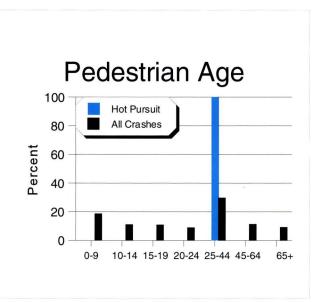
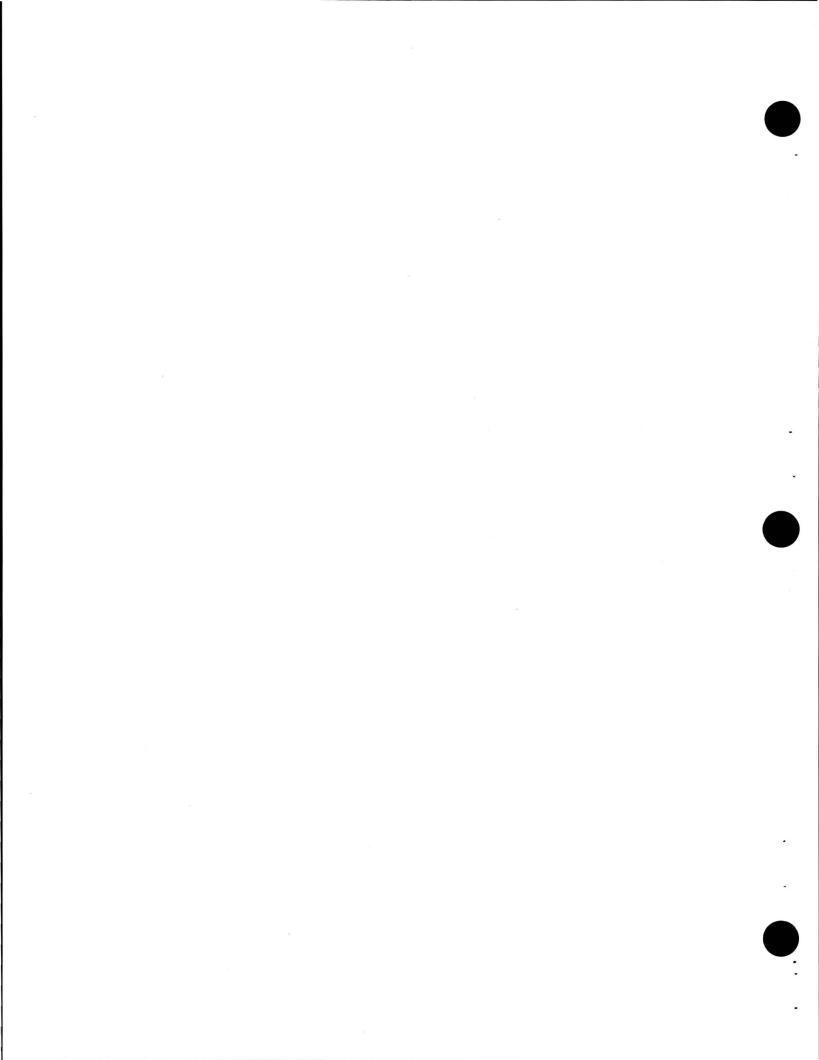


Figure 15. Pedestrian age in "Hot Pursuit."



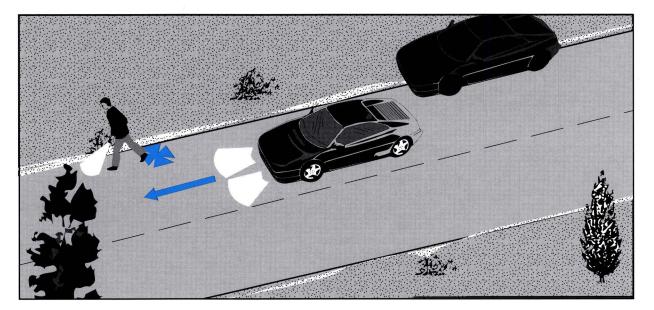
Pedestrian-Motor Vehicle Crash Types

### Disabled/Emergency Vehicle Related



### Disabled Vehicle Related

**Frequency:** 124 cases; 2.5% of all crashes **Severity:** 42% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while walking to or from (9 cases) or while near or next to (105 cases) a disabled vehicle (no emergency vehicle present), or while near an active police or emergency vehicle (10 cases).

**Summary:** In comparison to all crashes, this crash was more likely to involve adult (age 25 to 44) pedestrians.

Almost 40 percent occurred during dark, no lights conditions, and almost 20 percent took place on roads with 5 to 10 lanes. More than 50 percent happened on roads with a speed limit of 80+ km/h, and in 27 percent of the cases the pedestrian was on the shoulder.

Almost half occurred on the weekend.

Twelve percent of drivers had been drinking.

This crash type tended to more serious than the average.

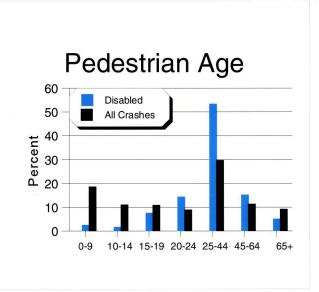
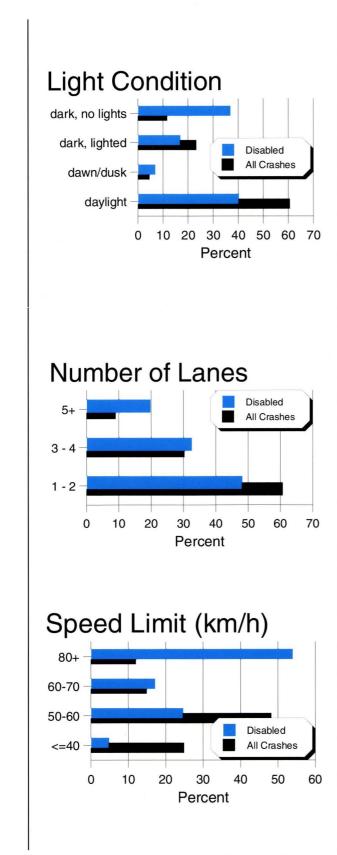


Figure 16. Pedestrian age in "Disabled Vehicle Related."

Disabled Vehicle Related



**Figure 17.** Light condition, number of lanes, and speed limit in "Disabled Vehicle Related."

Alcohol use

 Pedestrian
 7%

 Driver
 12%

### **Development Character**

Urban	•	•		•	•	•	•	•	•	•	•	56%
Rural	•	•	•	•	•	•		•	•	•	•	44%

### **Day of Week**

Weekday		•	•				•		55%
Weekend	•	•	•	•	•	•	•	•	45%

Road Feature	
No special feature 72%	e
Intersection 15%	ŝ
Private driveway <1%	ē
Public driveway $\ldots < 1\%$	0
Alley 0%	Ğ
All other	

### **Pedestrian Location**

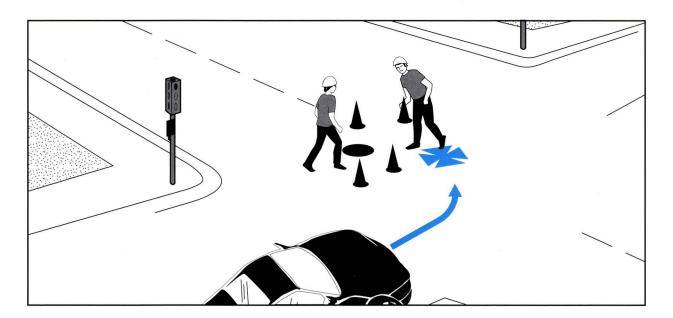
Travel lane	•	•		•	•	•	•	61%
Shoulder .	•	•			•	•		27%
Median	•	•	•		•	•	•	. 4%
All other	•	•	•	•	•	•	•	. 8%

Pedestrian-Motor Vehicle Crash Types

### Working/Playing In Roadway

### Working On Roadway

**Frequency:** 69 cases; 1.4% of all crashes **Severity:** 20% resulted in serious or fatal injuries



**Description:** The pedestrian (e.g., police/emergency personnel, flagman, road maintenance crew, etc.) was struck while working on, in, over, or under the roadway.

**Summary:** In comparison to all crashes, this crash was more likely to involve adult (age 25 to 44) and middle adult (age 45 to 64) pedestrians.

Eighty percent occurred during daylight conditions, and more than 25 percent happened on roads with a speed limit of 80+ km/h.

None of the pedestrians had been drinking.

This crash was less severe than the average.

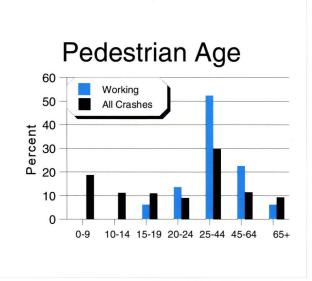
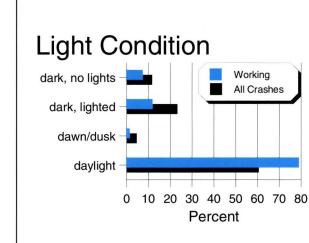


Figure 18. Pedestrian age in "Working On Roadway."



Number of Lanes

5+

3 - 4

1 - 2 -

0

10

Alcohol us	
	Pedestrian 0%
	Driver

### **Development Character**

Urban		•		•	•	•		•	•	60%
Rural	•	•	•	•	•	•	•	•	•	40%

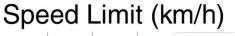
Day of Week

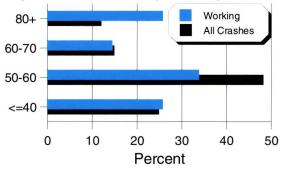
Weekday				•	•		•		76%
Weekend	•	•	•	•	•	•		•	24%

40 cent	50	60	70	Road Fea
	40 cent			

Working

All Crashes





**Figure 19.** Light condition, number of lanes, and speed limit in "Working On Roadway."

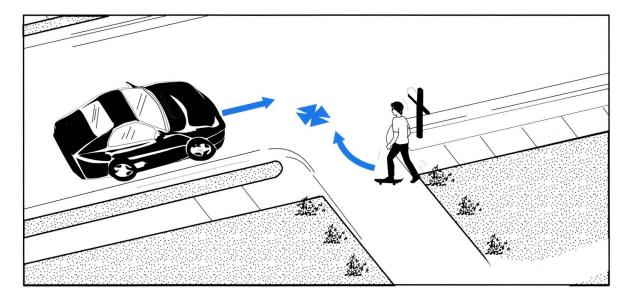
ad Feature No special feature . . 60% Intersection ..... 29% All other ..... 10%

### **Pedestrian Location**

Travel lane	71%
Shoulder	10%
Roadway, unknown	. 6%
All other	13%

### Play Vehicle Related

**Frequency:** 35 cases; 0.7% of all crashes **Severity:** 38% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while riding a play vehicle (e.g. wagon, sled, skateboard, skates, "big wheel" type tricycle, or tricycle).

**Summary:** In comparison to all crashes, this crash was more likely to involve child (ages 0 to 9) and youth (ages 10 to 14) pedestrians.

Eighty percent occurred during daylight conditions, and 11 percent during dawn/dusk. Almost all took place on roads with 1 to 2 lanes, and roads with a speed limit <= 40 km/h were strongly represented.

None of the pedestrians or drivers had been drinking.

This type of crash was slightly more severe than the average.

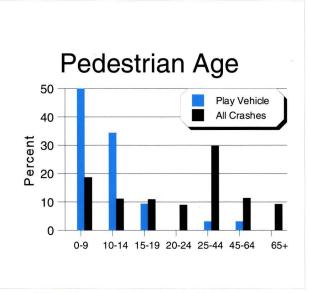
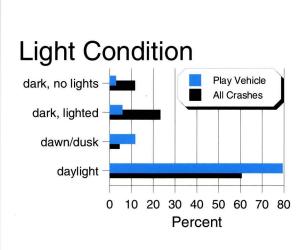


Figure 20. Pedestrian age in "Play Vehicle Related."



Alcohol us	e	
	Pedestrian (	)%
	Driver (	)%

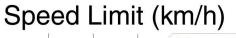
**Development Character** 

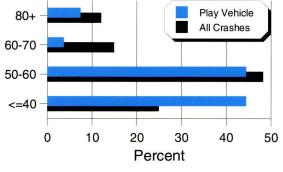
-	Urban				•		•		•	•	53%
	Rural	•	•	•	•	÷	•	•	•	•	47%

Day of Week

Weekday	•	÷	•	•	•	•	68%
Weekend	•		•	•		•	32%

Num	ber o	of La	anes	5	
5+-				Play Vehick All Crashes	
3 - 4 -		[			
1 - 2 -					
0	20	40 Per	60 cent	80	100





**Figure 21.** Light condition, number of lanes, and speed limit in "Play Vehicle Related."

Road	Feature

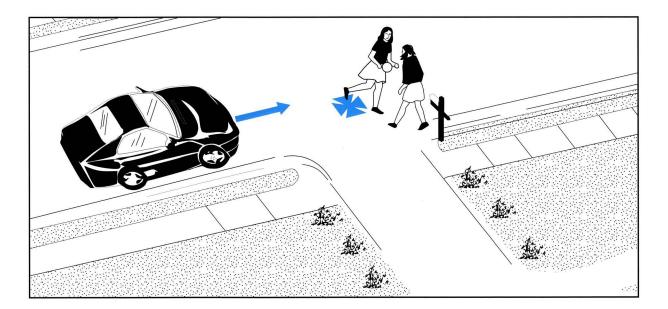
No special feature .	. 47%
Intersection	. 24%
Private driveway	. 15%
Alley	6%
All other	9%

### **Pedestrian Location**

Travel lane 91%
Alley/Driveway 3%
Parking lot lanes 3%
Ped/Multi-use path 3%

### Playing In Roadway

**Frequency:** 48 cases; 0.9% of all crashes **Severity:** 30% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while playing on foot in the roadway prior to the vehicle's appearance.

**Summary:** In comparison to all crashes, this crash was more likely to involve child (age 0 to 9) and youth (age 10 to 14) pedestrians.

Dawn/dusk was overrepresented with 15 percent of occurrences. Almost all took place on roads with 1 to 2 lanes, and roads with a speed limit <=40 km/h were strongly overrepresented.

Alcohol was generally not a factor in these crashes.

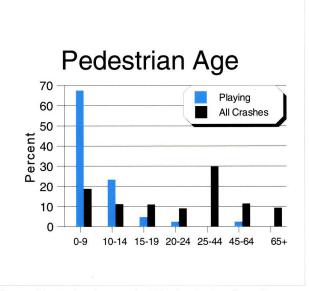
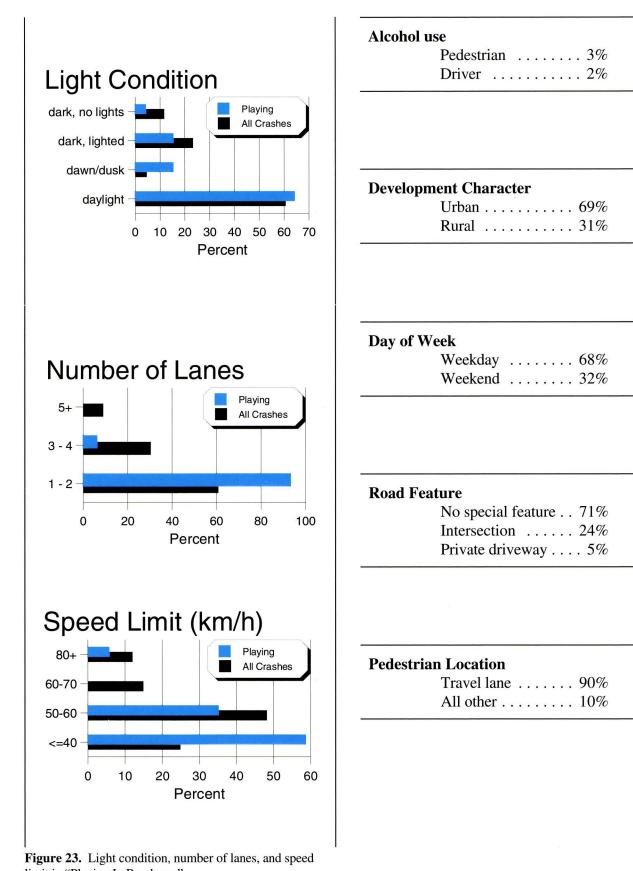
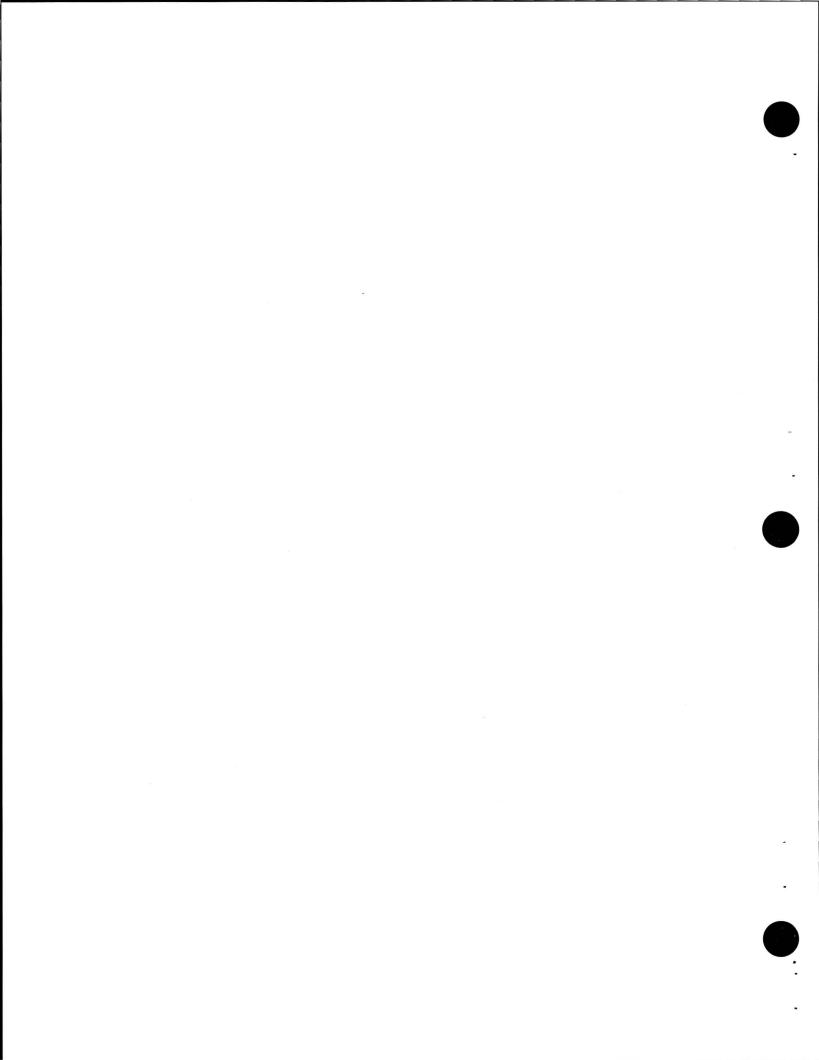


Figure 22. Pedestrian age in "Playing In Roadway."

Playing In Roadway



limit in "Playing In Roadway."

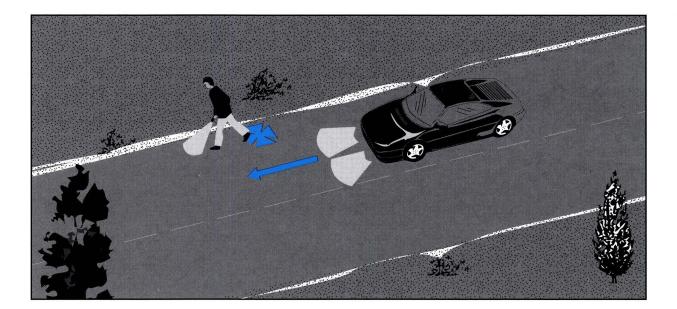


Pedestrian-Motor Vehicle Crash Types

### Walking Along Road/ Crossing Expressway

### Walking Along Road

**Frequency:** 375 cases; 7.4% of all crashes **Severity:** 37% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while walking (or running) along a road without sidewalks. The pedestrian may have been:

- hitchhiking (15 cases);
- walking with traffic and struck from behind (257 cases) or from the front (5 cases);
- walking against traffic and struck from behind (76 cases) or from the front (7 cases);
- walking along a road, but the details are unknown (15 cases).

**Summary:** In comparison to all crashes, this crash was more likely to involve teen (age 15 to 19), young adult (age 20 to 24), and adult (age 25 to 44) pedestrians.

About 40 percent occurred during dark, no lights conditions. Almost 80 percent were on 1 to 2 lane roads and more than 30 percent on roads with a

speed limit of 80+ km/h. Twenty-eight percent of pedestrians had been drinking.

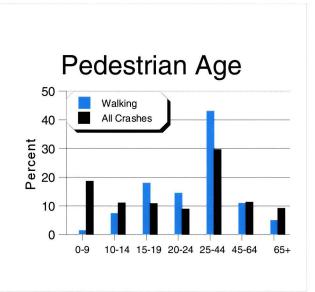
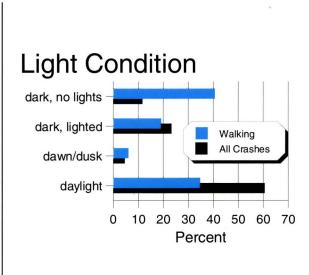
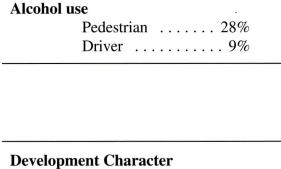


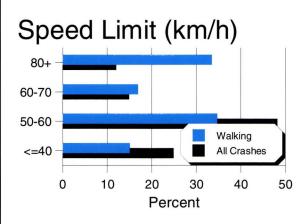
Figure 24. Pedestrian age in "Walking Along Road."

Walking Along Road





elopment Ch	a	ra	a	CI	e	r					
Urban		•	•	•	•				•	•	56%
Rural	•	•	•	•	•	•	•	•	•	•	44%



**Figure 25.** Light condition, number of lanes, and speed limit in "Walking Along Road."

Day of Week

Weekday		•					•	56%
Weekend	•	•	•	•	•	•	•	44%

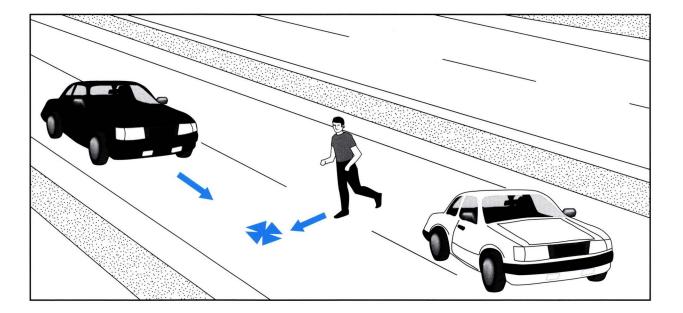
Road Feature
No special feature 87%
Intersection 8%
Public driveway 2%
Private driveway 1%
Alley 0%
All other

### **Pedestrian Location**

Travel lane	•	50%
Edge of lane	•	23%
Shoulder	•	21%
All other	•	. 6%

### Expressway Crossing

**Frequency:** 25 cases; 0.5% of all crashes **Severity:** 84% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while attempting to cross a limited access expressway.

**Summary:** This crash did not involve child (ages 0 to 9) or youth (age 10 to 14) pedestrians. Adult (age 25 to 44) and middle adult (age 45 to 64) pedestrians were strongly overrepresented in this crash type.

More than 80 percent occurred under dark conditions and on roads with a speed limit of 80+ km/h. Almost all occurred on multilane roads.

Almost half of the pedestrians had been drinking.

"Expressway Crossing" crashes were much more severe than the average.

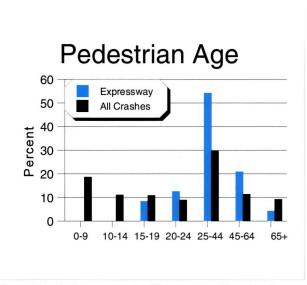


Figure 26. Pedestrian age in "Expressway Crossing."

**Expressway** Crossing

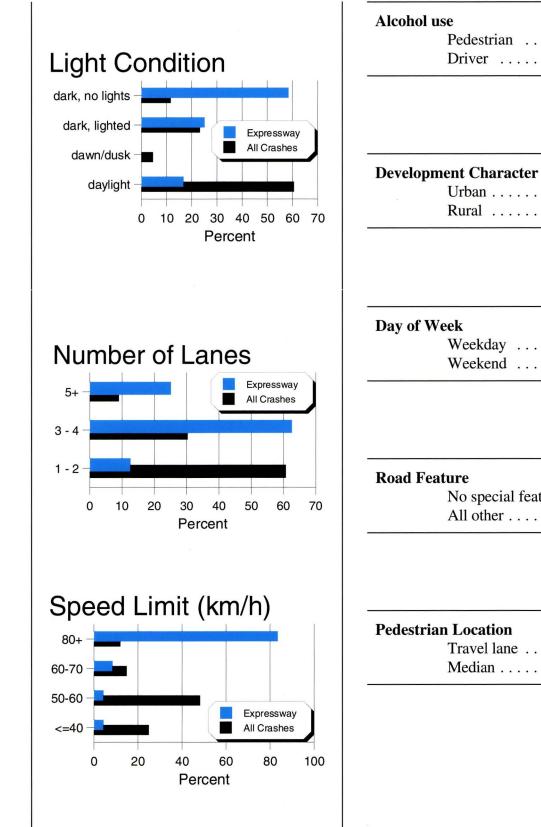


Figure 27. Light condition, number of lanes, and speed limit in "Expressway Crossing."

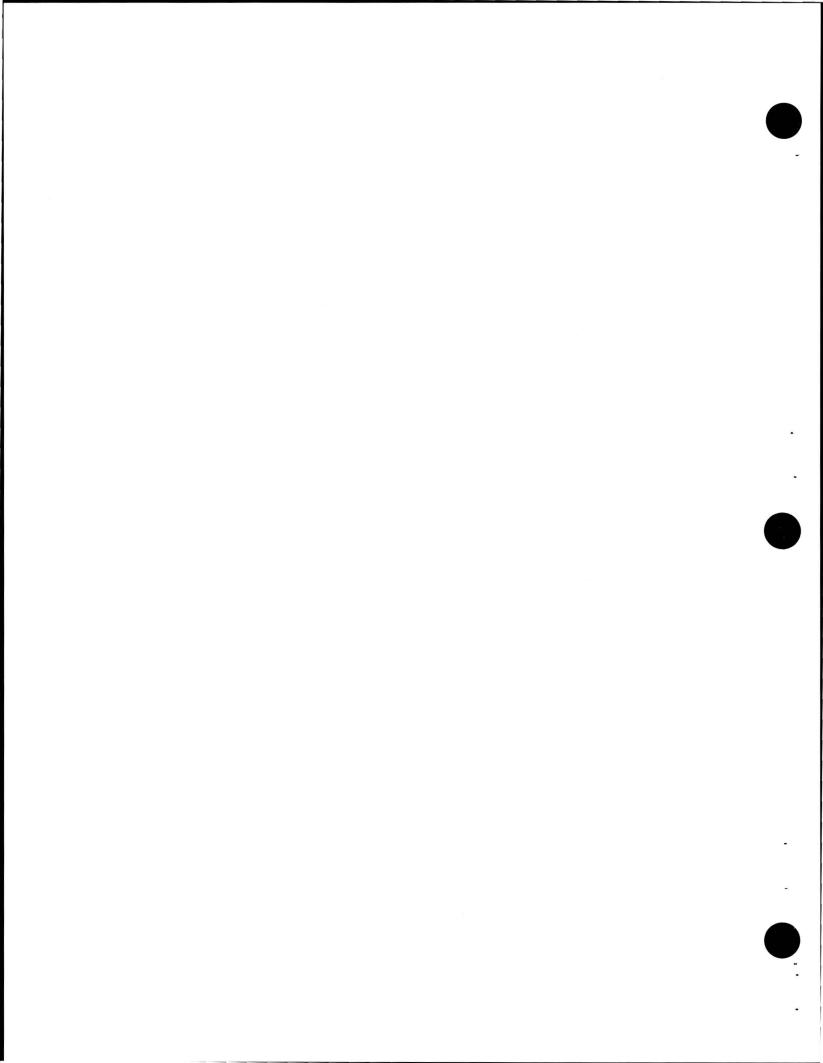
Pedestrian ..... 48% Driver ..... 4%

Urban	•	•	•	•		•	•	•		64%
Rural		•	•	•	•	•	•	•	•	36%

Weekday ..... 56% Weekend ..... 44%

No special feature . . 94% All other . . . . . . . . . . 6%

> Travel lane ..... 96%

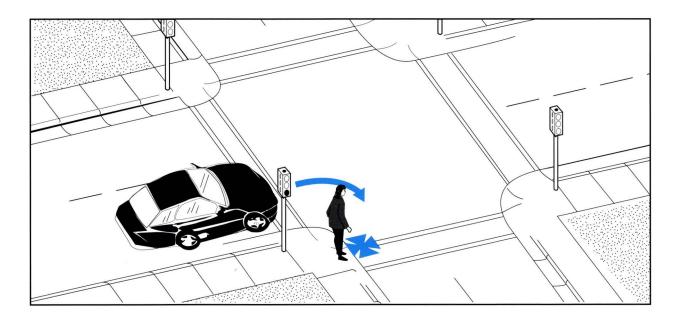


Pedestrian-Motor Vehicle Crash Types

### Not In Road

### Waiting To Cross

**Frequency:** 32 cases; 0.7% of all crashes **Severity:** 32% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while standing at or near the curb or roadway edge waiting to cross.

**Summary:** In comparison to all crashes, this crash was more likely to involve teen (age 15 to 19), adult (age 25 to 44), and middle adult (age 45-64) pedestrians.

Fifty-six percent of the striking vehicles were turning.

This crash tended to occur on lower speed roads and on 1 to 2 lane roads. The pedestrian was most often standing on a sidewalk (38 percent) or shoulder (31 percent).

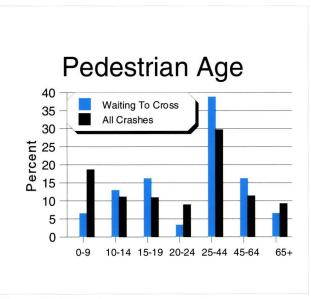
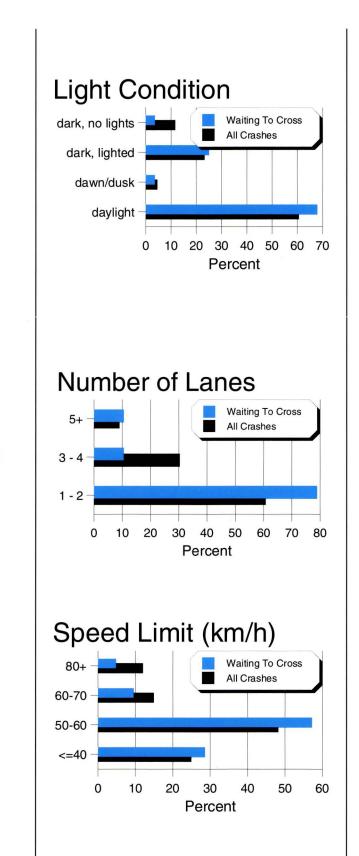


Figure 28. Pedestrian age in "Waiting To Cross."



**Figure 29.** Light condition, number of lanes, and speed limit in "Waiting To Cross."

### Alcohol use

 Pedestrian
 12%

 Driver
 8%

### **Development Character**

Urban	•	•	•	•	•		•	•	•	•		68%
Rural	•	•	•	•	•	•	•		•	•	•	32%

### **Day of Week**

Weekday	•	•		•	•		55%
Weekend	•	•	•	•	•	•	45%

### **Road Feature**

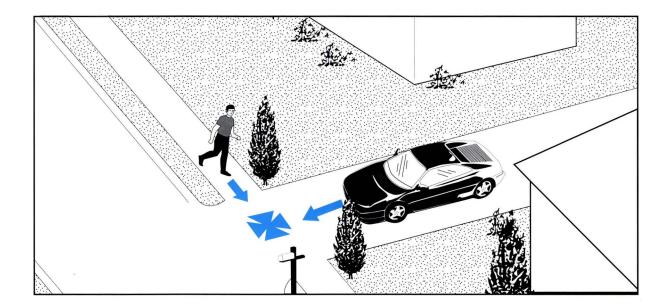
Intersection 59%
No special feature 11%
Public driveway 11%
Alley 4%
All other 15%

### **Pedestrian Location**

Sidewalk	•	•	•	•	•	•	•	•	38%
Shoulder	•	•		•	•	•	•		31%
Travel lane			•	•	•	•	•	•	18%
All other.	•	•	•	•	•	•	•	•	13%

### Not In Roadway

**Frequency:** 404 cases; 7.9% of all crashes **Severity:** 28% resulted in serious or fatal injuries



**Description:** The pedestrian was struck when not in the roadway. Areas included parking lots, driveways, private roads, sidewalks, service stations, yards, etc.

**Summary:** The pedestrian age profile for this crash closely followed that of all crashes.

In 84 percent of the cases, both the pedestrian and the vehicle were not initially in the roadway. The other 16 percent involved a vehicle that was on the roadway, but left it and struck the pedestrian. *Note: The Road Feature bullet box depicts data for these "left the roadway" events.* 

More than half of the pedestrians were in a parking lot location. *Note: Other crash types, in particular "Driverless Vehicle" and "Backing," may also have occurred in an off-road location.* 

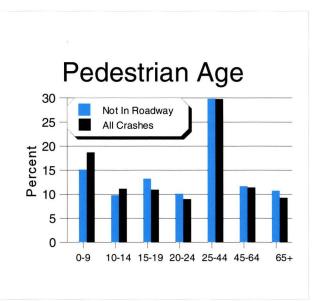
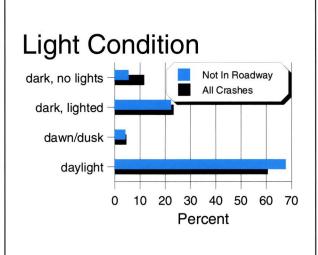


Figure 30. Pedestrian age in "Not In Roadway."



Alcohol us	se	
	Pedestrian 1	1%
	Driver	7%

### **Development Character**

Urban		•	•		•	•	•	•	•	•	•	63%
Rural	•	•		•	•	•			•	•		37%

### Day of Week

Weekday				•			63%
Weekend	•	•	•	•	•	•	37%

Number of Lanes and Speed Limit graphs are not shown because these variables are not relevant to this crash type.

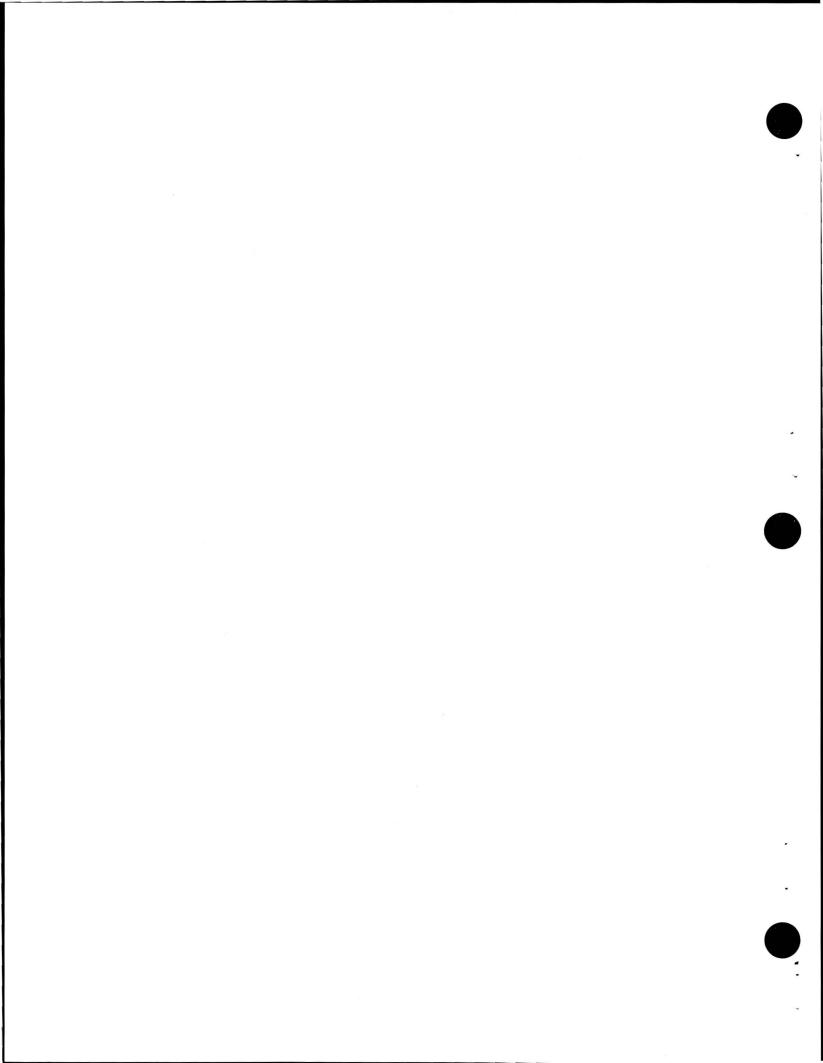
### **Road Feature**

Public driveway	15%
No special feature	11%
Private driveway	6%
All other	56%

### **Pedestrian Location**

Parking lot lanes 28%
Parking lot space 16%
Alley/Driveway 16%
Sidewalk 15%
Parking lot, other 9%
All other 16%

Figure 31. Light condition in "Not In Roadway."



Pedestrian-Motor Vehicle Crash Types

### Intersection Related

## Multiple Threat At Intersection

Frequency: 64 cases; 1.3% of all crashes

Severity: 28% resulted in serious or fatal injuries

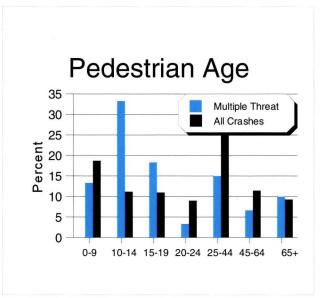
**Description:** At an intersection, the pedestrian entered the traffic lane in front of standing or stopped traffic and was struck by another vehicle traveling in the same direction as the stopped traffic.

**Summary:** In comparison to all crashes, this crash was more likely to involve youth (age 10 to 14) and teen (age 15 to 19) pedestrians.

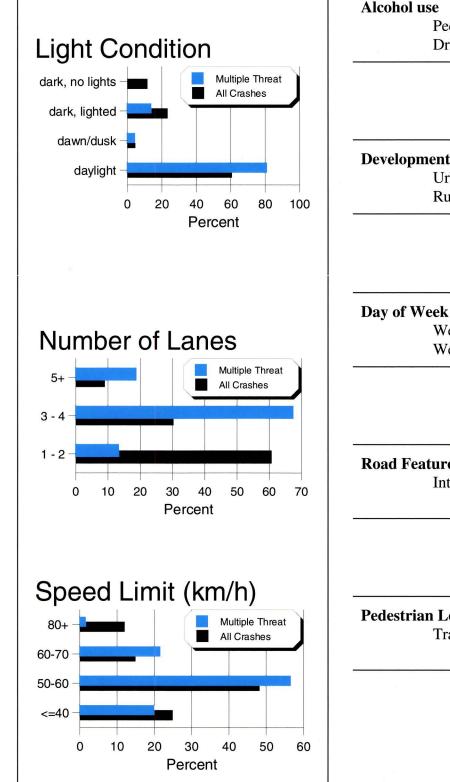
More than 80 percent occurred under daylight conditions.

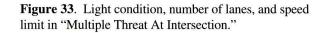
Nearly three-fourths occurred on multilane roads and almost 80 percent on roads with a speed limit between 50 and 70 km/h.

This crash was slightly less severe than the average.



**Figure 32**. Pedestrian age in "Multiple Threat At Intersection."





Alcohol use

Pedestrian ..... 4% Driver ..... 0%

### **Development Character**

Urban	•	•			•	•		•	•	70%
Rural	•	•	•	•	•	•	•	•	•	30%

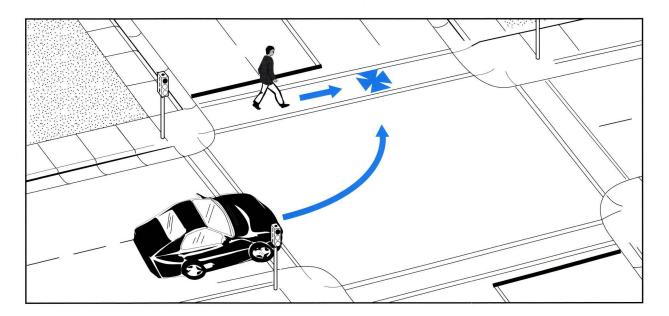
Weekday ..... 75% Weekend ..... 25%

**Road Feature** Intersection .... 100%

**Pedestrian Location** Travel lane ..... 100%

### Vehicle Turn/Merge

**Frequency:** 497 cases; 9.8% of all crashes **Severity:** 18% resulted in serious or fatal injuries



**Description:** The pedestrian and vehicle collided while the vehicle was preparing to turn, in the process of turning, or had just completed a turn (or merge).

**Summary:** In comparison to all crashes, this crash was more likely to involve adult pedestrians ages 25 and above.

This was largely an urban event (77%).

It was more likely to occur on 3 to 4 lane roads and on roads with speed limits of 50 to 60 km/h.

"Vehicle Turn/Merge" crashes were less severe than the average.

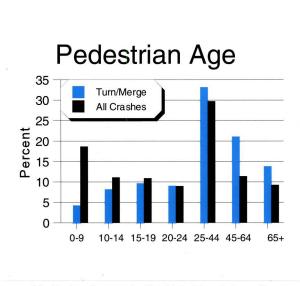
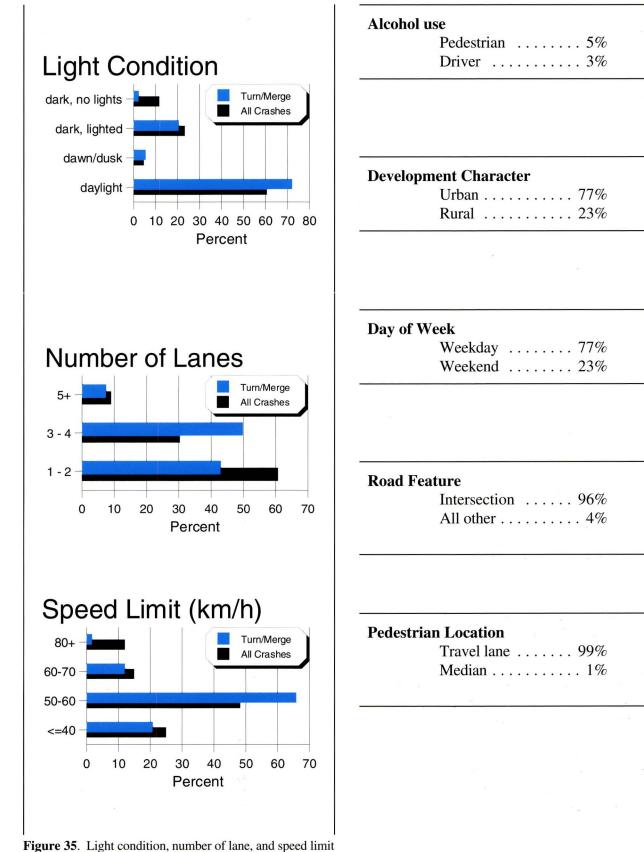


Figure 34. Pedestrian age in "Vehicle Turn/Merge."

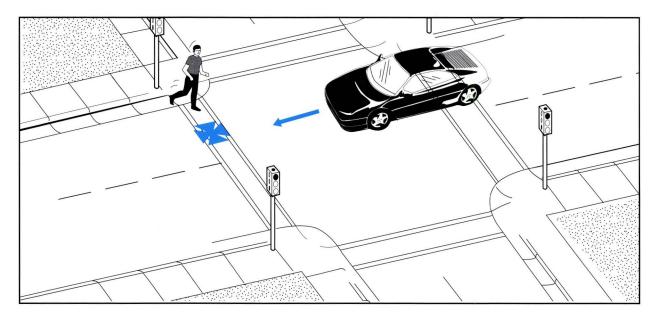
Vehicle Turn/Merge



in "Vehicle Turn/Merge."

### Intersection Dash

**Frequency:** 363 cases; 7.2% of all crashes **Severity:** 34% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while running through an intersection and/or the motorist's view of the pedestrian was blocked until an instant before impact.

**Summary:** In comparison to all crashes, this crash was much more likely to involve child (age 0 to 9) and youth (age 10 to 14) pedestrians.

More than 70 percent occurred under daylight conditions. Overall 9 percent of the pedestrians had been drinking, but 48 percent of those ages 25 to 44.

The "Number of Lanes" and "Speed Limit" variables were typical of all crashes, with greatest numbers occurring on 1 to 2 lane and 50 to 60 km/h roads.

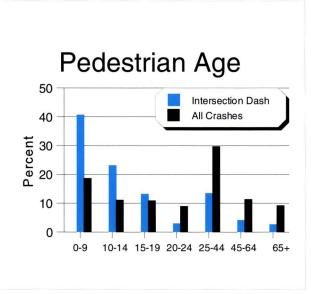
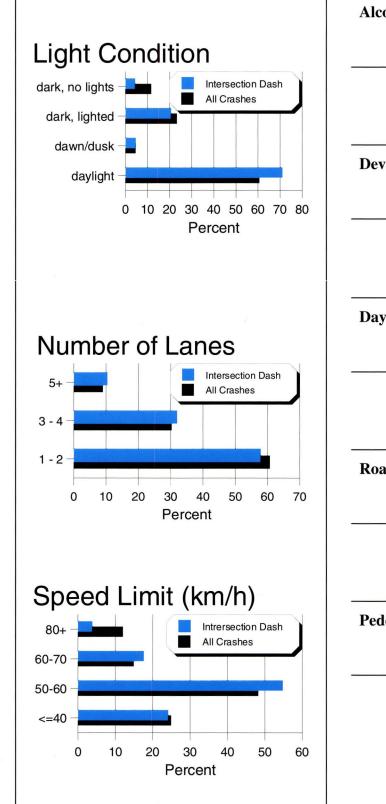


Figure 36. Pedestrian age in "Intersection Dash."

Intersection Dash



**Figure 37**. Light condition, number of lanes, and speed limit in "Intersection Dash."

Alcohol use

 Pedestrian
 9%

 Driver
 3%

### **Development Character**

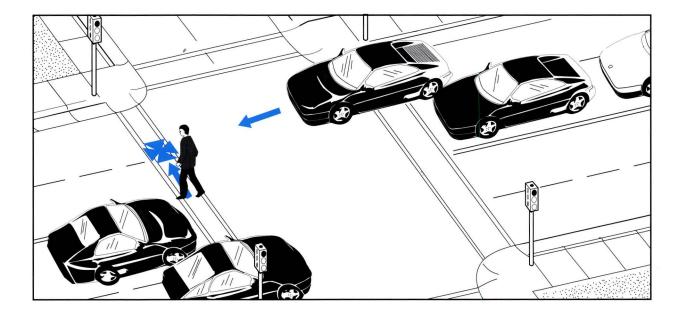
Urban	•	•	•	•	•		•	•	•	•	71%
Rural		•		•	•	•	•	•	•		29%

Road Feature Intersection ..... 100%

Pedestrian Location Travel lane ..... 100%

# Trapped

**Frequency:** 41 cases; 0.8% of all crashes **Severity:** 12% resulted in serious or fatal injuries



**Description:** The pedestrian was struck while crossing at a signalized intersection when the light changed and traffic started moving.

**Summary:** In comparison to all crashes, this crash was more likely to involve youth (age 10 to 14) and elderly (age 65+) pedestrians.

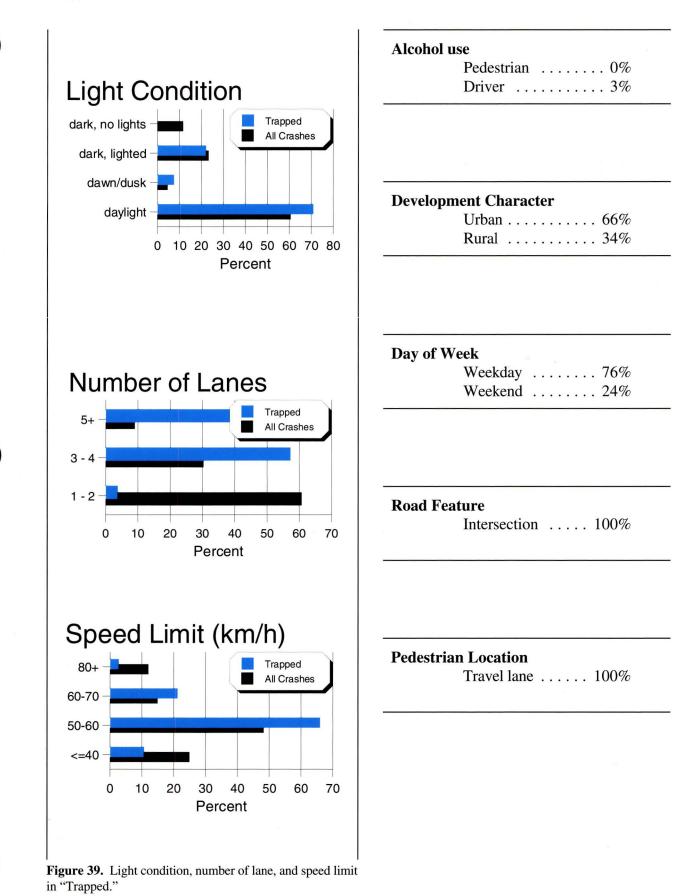
Multilane roads were stongly overrepresented in this crash type.

"Trapped" crashes were much less likely to result in serious injury than average.



Figure 38. Pedestrian age in "Trapped."

Trapped



### Walked Into Vehicle At Intersection

**Description:** The pedestrian walked into (i.e., struck) the vehicle at an intersection. The pedestrian may have stepped into the travel lane and instaneously collided with the vehicle (13 cases), or may have been walking in the lane prior to colliding with the vehicle (11 cases) (18 cases were undetermined).

**Summary:** The age profile for this crash generally followed that of all crashes combined.

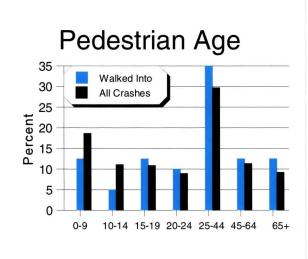
Almost half the crashes occurred on 3 to 4 lane roads. Most occurred on 50 to 60 km/h roads, but more than a fourth took place on 60 to 70 km/h roads.

Overall, 38 percent of the pedestrians had been drinking. Thirteen of the 21 (62 percent) pedestrians age 20 to 64 had been drinking.

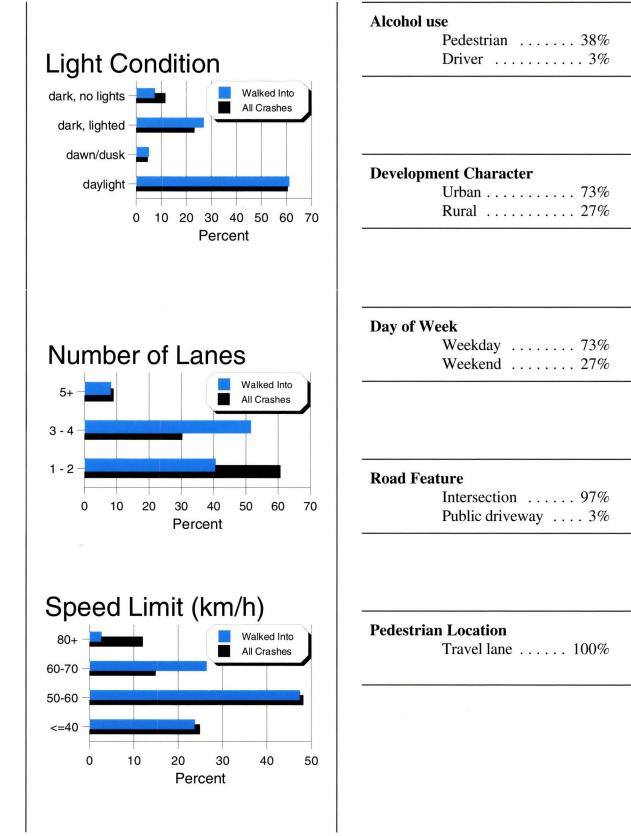
A lower percentage than average were seriously injured or killed.

Frequency: 42 cases; 0.9% of all crashes

Severity: 20% resulted in serious or fatal injuries



**Figure 40**. Pedestrian age in "Walked Into Vehicle At Intersection."



**Figure 41.** Light condition, number of lanes, and speed limit in "Walked Into Vehicle At Intersection."

### Driver Violation At Intersection

Frequency: 259 cases; 5.1% of all crashes

Severity: 28% resulted in serious or fatal injuries

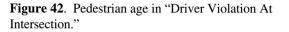
**Description:** The pedestrian was struck by a vehicle proceeding straight ahead and the report indicated that the driver committed a violation such as careless driving, failed to yield, signal/sign violation, speeding, or DWI, etc.

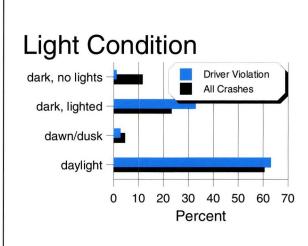
**Summary:** The age profile for this crash generally followed that of all crashes combined, though child (age 0 to 9) pedestrians were less likely to be involved.

Eighty percent occurred in urban areas, and lower speed roads were slightly overrepresented.

This crash resulted in somewhat less serious injuries than average.

# Pedestrian Age





Pede	strian
Drive	er 5%

#### **Development Character** Urban . . . . . . . . . . . . 80% Rural ..... 20%

Day of Week

Number of La	anes	
5+	Driver Violation All Crashes	
3 - 4 -		
1 - 2 -		Road H

0 10 20 30 40 50 60 70 Percent

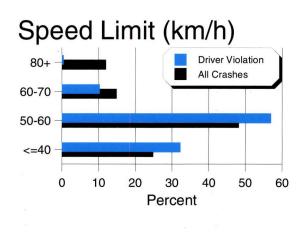


Figure 43. Light condition, number of lanes, and speed limit in "Driver Violation At Intersection."

Weekday ..... 74% Weekend ..... 26%

ad Feature Intersection ..... 100%

**Pedestrian Location** Travel lane ..... 100%

### Intersection— Other

**Description:** The crash occurred at an intersection but does not conform to any of the specified crash types.

**Summary:** In comparison to all crashes, this crash was **less** likely to involve child (age 0 to 9) pedestrians.

Forty-four percent of the involved pedestrians had been walking in the travel lane prior to impact, 4 percent had been standing in the roadway, 16 percent stepped into the travel lane and were instantaneously struck, and 7 percent misjudged the crossing gap. Thirty percent were undetermined.

More than 40 percent occurred under dark, lighted conditions. Multilane roads were also overrepresented.

Forty-two percent of pedestrians ages 25 to 64

had been drinking. These crashes were more severe than the average.

Frequency: 364 cases; 7.2% of all crashes

Severity: 42% resulted in serious or fatal injuries

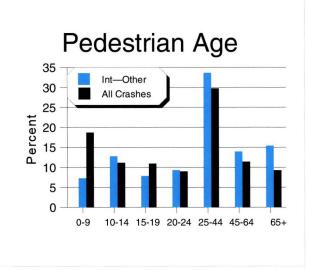
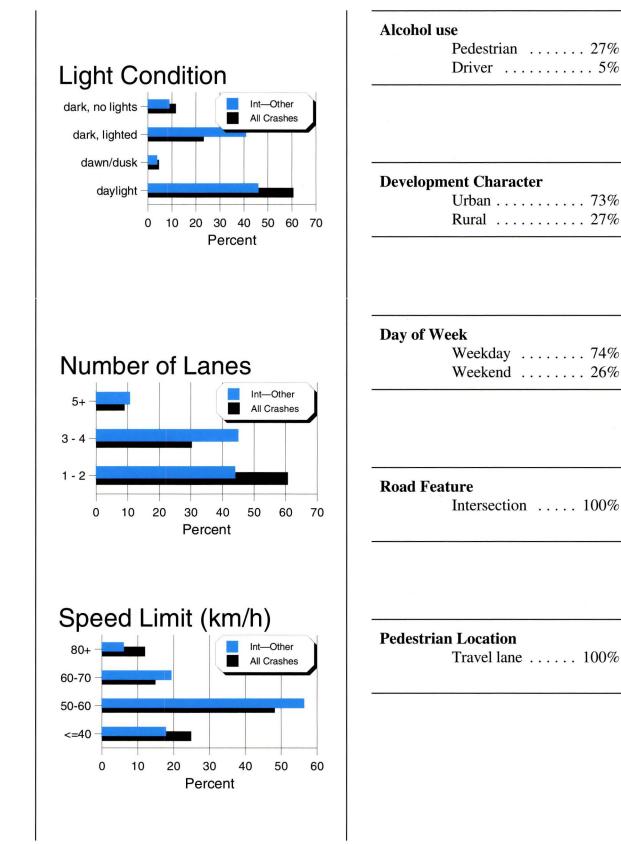


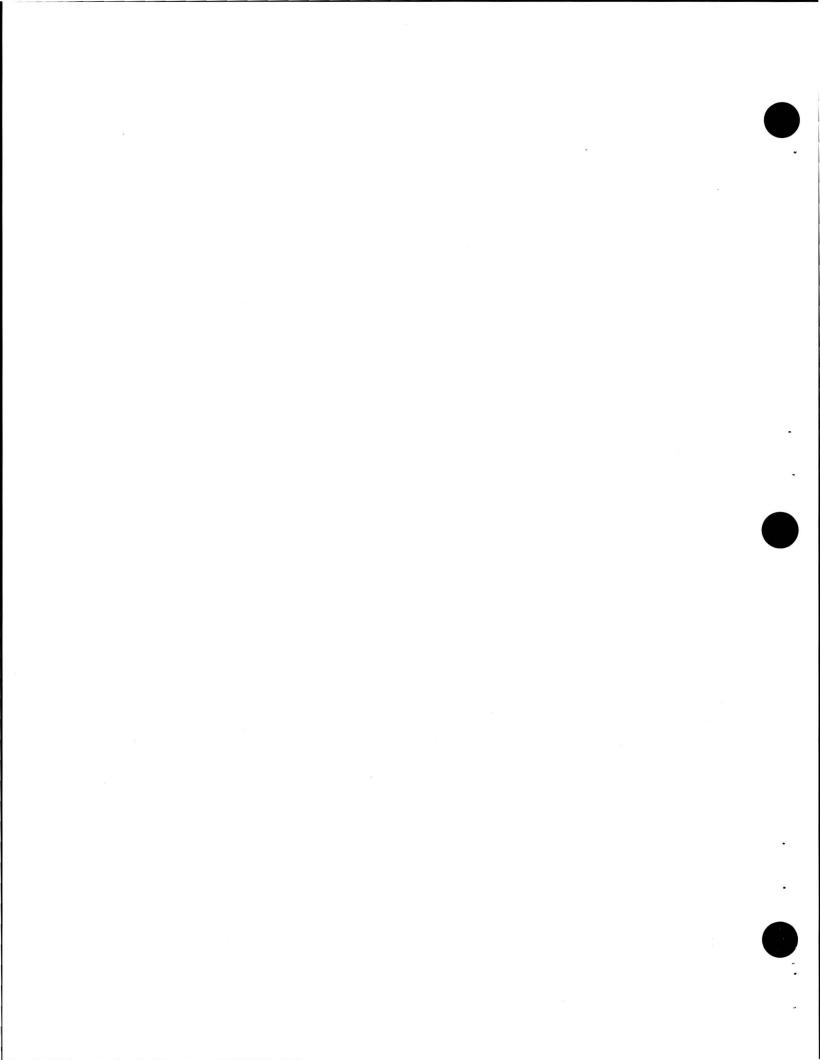
Figure 44. Pedestrian age in "Intersection—Other."

Intersection-Other



**Figure 45**. Light condition, number of lanes, and speed limit in "Intersection—Other."

67

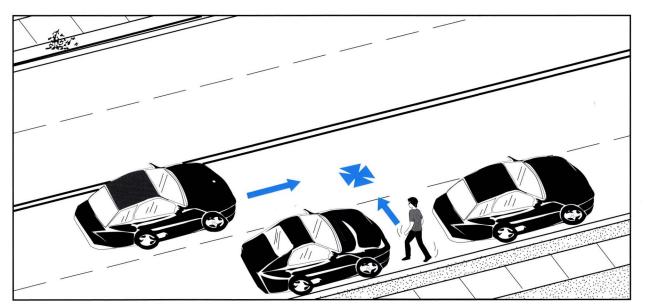


Pedestrian-Motor Vehicle Crash Types

### Midblock Related

### Multiple Threat At Midblock

**Frequency:** 46 cases; 0.9% of all crashes **Severity:** 41% resulted in serious or fatal injuries



**Description:** The pedestrian entered the traffic lane at midblock in front of standing or stopped traffic and was struck by another vehicle moving in the same direction as the stopped traffic.

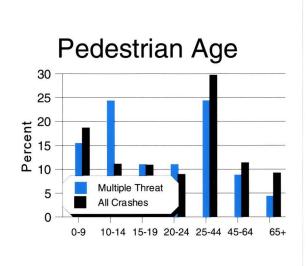
**Summary:** In comparison to all crashes, this crash was more likely to involve youth (age 10 to 14) pedestrians.

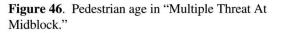
Almost 90 percent occurred under daylight conditions.

Multilane roads were, by definition, strongly overrepresented. This was also very likely to be a weekday rather than weekend event.

Alcohol was generally not a factor.

This crash tended to be more serious than the average.





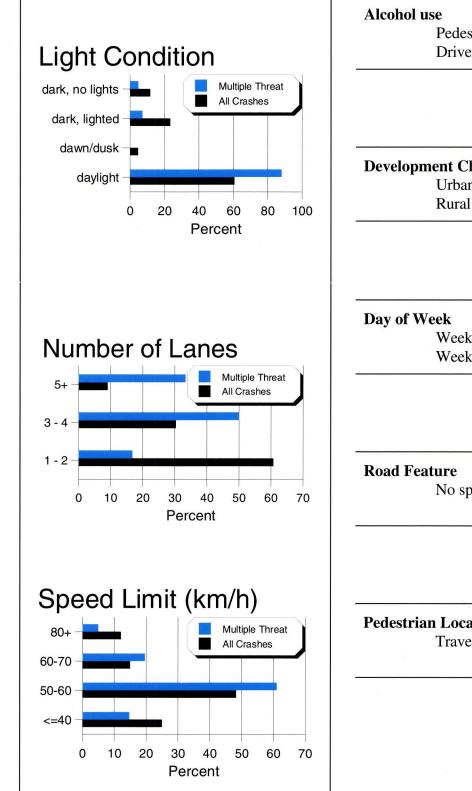


Figure 47. Light condition, number of lanes, and speed limit in "Multiple Threat At Midblock."

Pedestrian ..... 3% Driver ..... 0%

**Development Character** 

Urba	an	•	•	•	•	•	•	÷	•	62%
Rura	al		•	•		•	•		•	38%

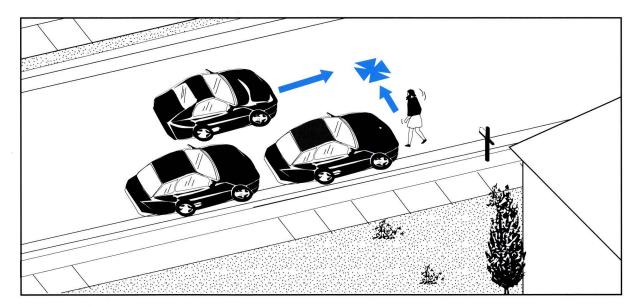
Weekday	•	•	•	•	•	•	×	•	87%
Weekend		•			•	•		•	13%

No special feature . 100%

**Pedestrian Location** Travel lane ..... 100%

### Midblock Dart Out

**Frequency:** 232 cases; 4.6% of all crashes **Severity:** 32% resulted in serious or fatal injuries



**Description:** At a midblock location, the motorist's view of the pedestrian was blocked until an instant before impact.

**Summary:** In comparison to all crashes, this crash was much more likely to involve child (age 0 to 9) pedestrians. Youth (age 10 to 14) were also slightly overrepresented.

Seventy-six percent of the pedestrians were struck in their first half of the roadway, 22 percent in their second half of the roadway, and 2 percent were unable to be specified.

This was largely an urban event (78 percent). Eighty percent occurred under daylight conditions. One to 2 lane roads and very low speed roads (<=40 km/h) were strongly overrepresented.

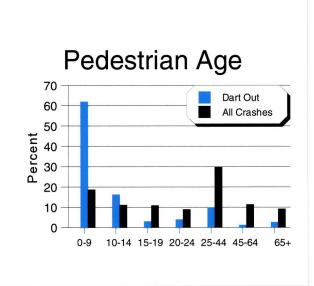
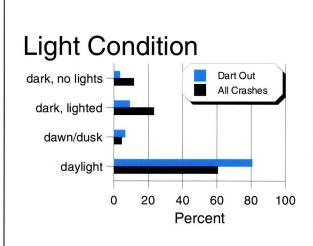


Figure 48. Pedestrian age in "Midblock Dart Out."

Midblock Dart Out



Alcohol use	
Pedestrian	3%
Driver	4%
	<u></u>

#### Development Character

Urban	•	•	•	•	•	•	•	•	•	•	78%
Rural	•		•	•	•	•	•	•		•	22%

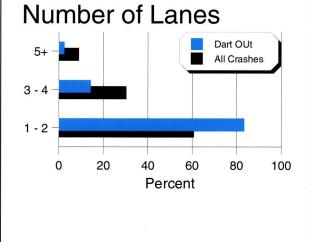
#### Day of Week

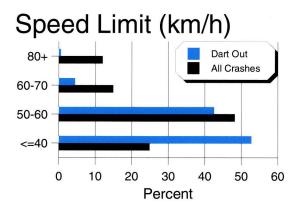
Weekday	•	•		•	•		63%
Weekend	•	•	•	•	•		37%

.

Road Feature No special feature . . 92% Private driveway . . . . 4% All other . . . . . . . . . . . . 4%

Pedestrian Location Travel lane ..... 100%

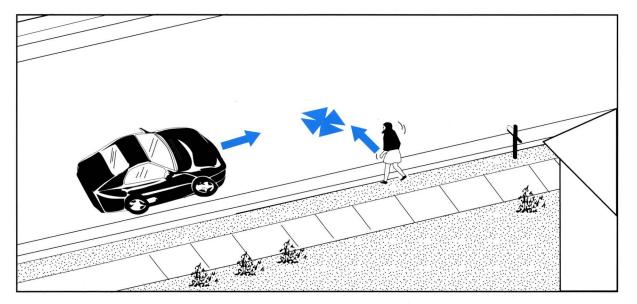




**Figure 49**. Light condition, number of lanes, and speed limit in "Midblock Dart Out."

### Midblock Dash

**Frequency:** 442 cases; 8.7% of all crashes **Severity:** 37% resulted in serious or fatal injuries



**Description:** At a midblock location, the pedestrian was struck while running and the motorist's view of the pedestrian was **not** obstructed.

**Summary:** In comparison to all crashes, this crash was much more likely to involve child (age 0 to 9) pedestrians. Youth (age 10 to 14) were also slightly overrepresented.

Although still occurring mostly on 1 to 2 lane roads, these crashes generally took place on higher speed roads than the "Midblock Dart Out" type crashes. Nearly a third occurred on roads with speeds of 60+ km/h.

Forty-five percent of adults ages 20 to 64 had been drinking.

"Midblock Dash" crashes were slightly more severe than average.

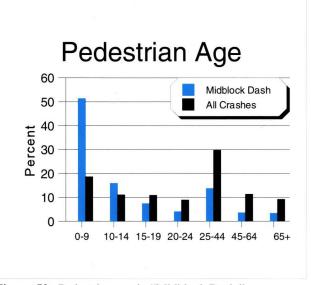
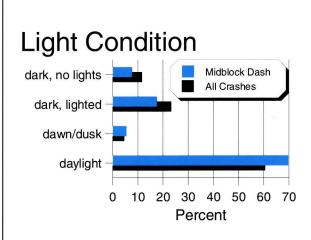


Figure 50. Pedestrian age in "Midblock Dash."

#### Midblock Dash



Alcohol use	
Pedestrian	10%
Driver	. 5%

**Development Character** 

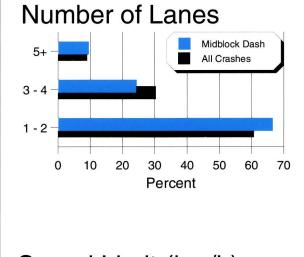
Urban										•		63%
Rural	•	•	•	•	•	•	•	•	•	•	•	37%

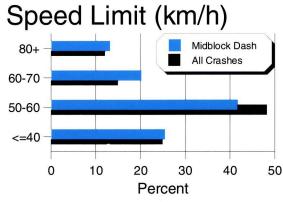
Day of Week

Weekday	÷	•			•	•	64%
Weekend		•			•		36%

**Pedestrian Location** 

Travel lane ..... 100%

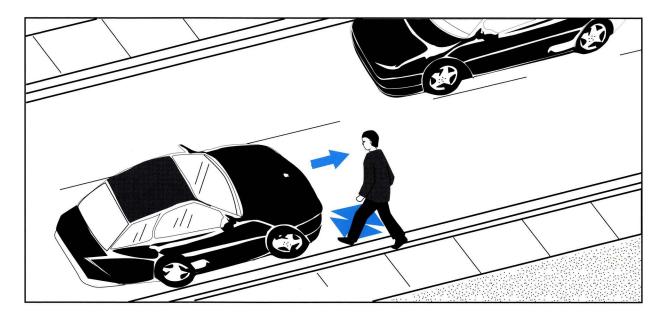




**Figure 51**. Light condition, number of lanes, and speed limit in "Midblock Dash."

## Walked Into

**Frequency:** 76 cases; 1.5% of all crashes **Severity:** 32% resulted in serious or fatal injuries

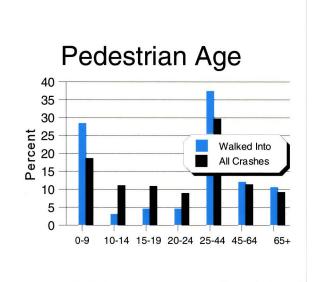


**Description:** The pedestrian walked into (i.e., struck) the vehicle at a midblock location. The pedestrian may have stepped into the travel lane and instantaneously collided with the vehicle (24 cases) or may have been walking in the lane prior to colliding with the vehicle (18 cases) (34 cases were undetermined).

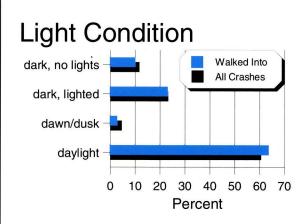
**Summary:** In comparison to all crashes, this crash was more likely to involve child (age 0 to 9) and adult (age 25 to 44) pedestrians.

The light condition and roadway variables generally followed the distribution for all crashes combined.

Fifty-seven percent of pedestrians ages 20 to 64 had been drinking.



**Figure 52**. Pedestrian age in "Walked Into Vehicle At Midblock."



Alcohol	use

 Pedestrian
 31%

 Driver
 0%

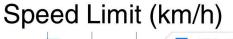
#### **Development Character**

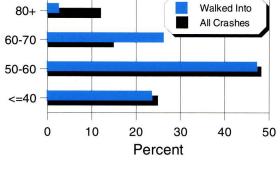
Urban	•	•	•	•	•	•	•	•	•	•	•	62%
Rural	•	•	÷	•	•	•	•	•	٠	•		38%

#### Day of Week

Weekday	•	•	•	•	•		•		61%
Weekend		•	•		•	•	•	•	39%

#### Stanes 5+ 3-4 1-2 0 10 20 30 40 50 60 70 Percent





**Figure 53**. Light condition, number of lanes, and speed limit in "Walked Into Vehicle At Midblock."

#### **Road Feature**

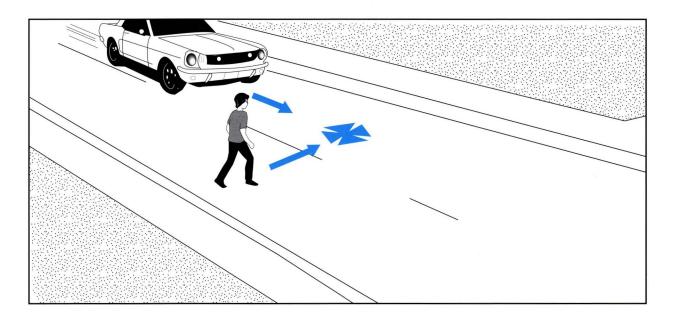
No special feature	89%
Public driveway	. 2%
Private driveway	. 2%
All other	. 7%

#### **Pedestrian Location**

Travel lane ..... 99% Parking lot lane .... 1%

#### **Frequency:** 548 cases; 10.8% of all crashes **Severity:** 49% resulted in serious or fatal injuries

### Midblock– Other



**Description:** The crash occurred at midblock but does not conform to any of the specified crash types.

**Summary:** In comparison to all crashes, this crash was more likely to involve adult pedestrians ages 25 and older.

Six percent of the pedestrians misjudged the crossing gap, 9 percent had been standing in the roadway, 11 percent stepped into the travel lane and were instantly struck, and 36 percent had been walking in the travel lane prior to impact. Thirty-eight percent were undetermined.

More than half of these crashes occurred under conditions of darkness, and 41 percent on weekends.

Overall, 33 percent of pedestrians had been drinking, and 45 percent of those ages 20 to 64.

These crashes were much more severe than average.

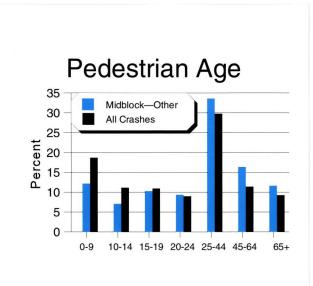
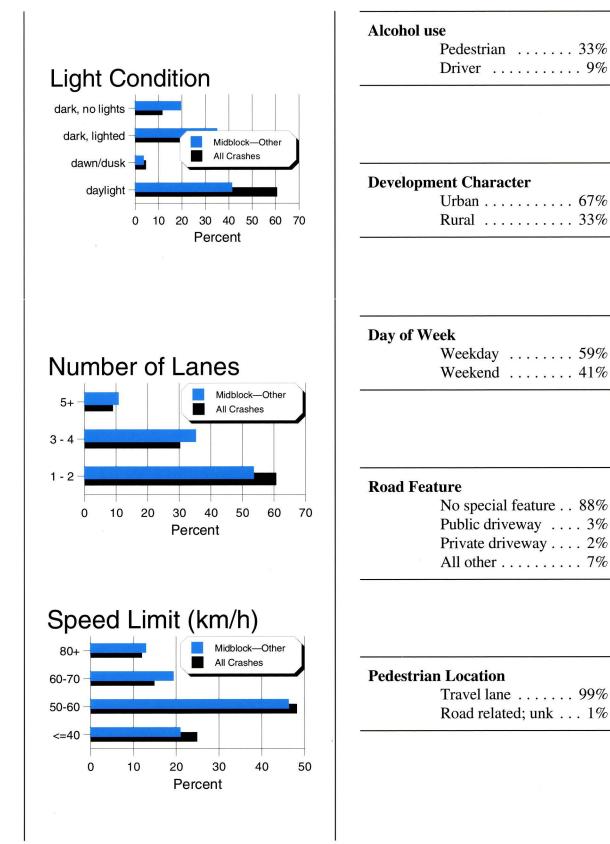


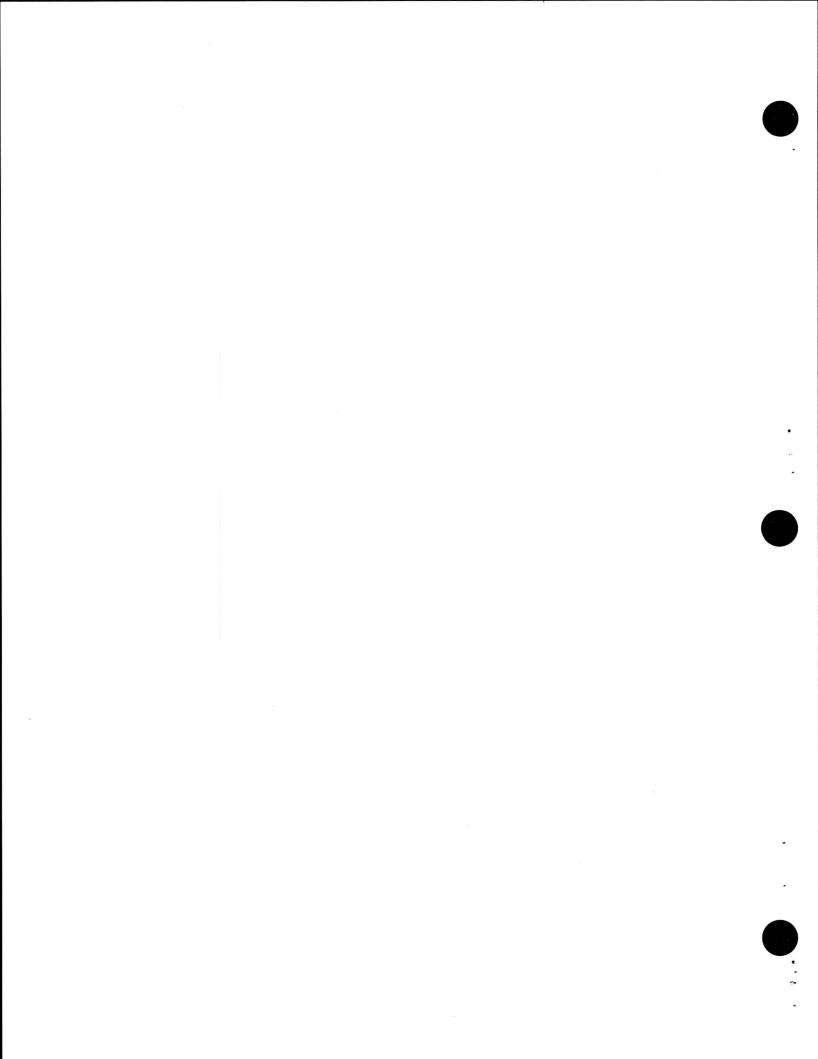
Figure 54. Pedestrian age in "Midblock—Other."

Midblock—Other



**Figure 55**. Light condition, number of lanes, and speed limit in "Midblock—Other."

79



Pedestrian-Motor Vehicle Crash Types

### Other Or Inadequate Information

### Lying In Road

**Frequency:** 22 cases; 0.4% of all crashes **Severity:** 67% resulted in serious or fatal injuries

**Description:** The pedestrian was lying in the road and was struck by a moving vehicle.

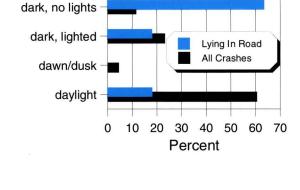
**Summary:** This crash involved primarily adult (age 25 to 44) pedestrians who accounted for more than 70 percent of the crashes.

More than 60 percent occurred under conditions of darkness, no lights.

Forty-two percent of the pedestrians had been drinking.

As would be expected, these crashes were much more likely than average to result in serious or fatal injuries.

#### Light Condition





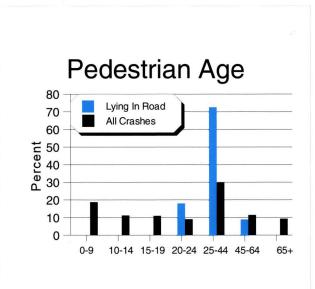


Figure 57. Pedestrian age in "Lying In Road."



### Suicide

**Frequency:** 6 cases; 0.1% of all crashes **Severity:** 100% resulted in serious or fatal injuries

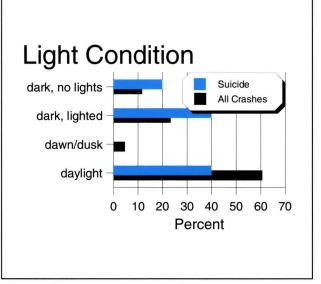
**Description:** The pedestrian committed suicide or attempted suicide by deliberately walking, running, jumping, etc. in front of a moving vehicle.

**Summary:** These few crashes occurred exclusively to pedestrians ages 15 to 44.

Dark light conditions were strongly overrepresented.

Half of the pedestrians had been drinking.

All resulted in severe or fatal injuries.





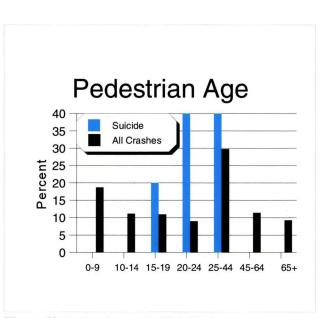


Figure 59. Pedestrian age in "Suicide."

### Assault With Vehicle

**Frequency:** 55 cases; 1.1% of all crashes **Severity:** 18% resulted in serious or fatal injuries

**Description:** The driver intentionally caused the vehicle to strike a pedestrian.

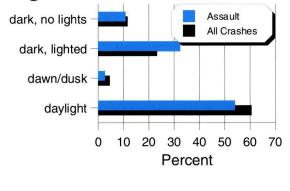
**Summary:** In comparison to all crashes, this crash was more likely to involve teen (age 15 to 19), young adult (age 20 to 24), and adult (age 25 to 44) pedestrians.

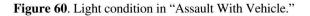
Nearly half of the pedestrians were in the travel lane, 18 percent were in a parking lot location, and 13 percent on the shoulder of the road.

Alcohol was not reported as a major factor in these crashes.

Only 18 percent resulted in a serious or fatal injury.

#### Light Condition





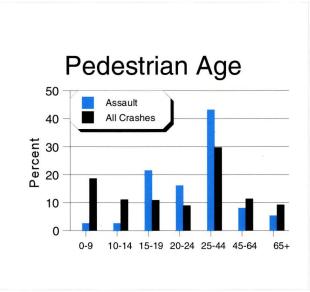


Figure 61. Pedestrian age in "Assault With Vehicle."

### Domestic/Dispute Related

**Frequency:** 76 cases; 1.5% of all crashes **Severity:** 23% resulted in serious or fatal injuries

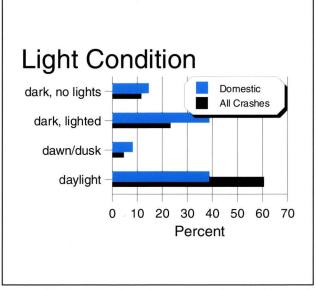
**Description:** The pedestrian was struck by a vehicle during the course of a domestic or other dispute.

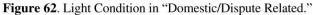
**Summary:** In comparison to all crashes, this crash was more likely to involve teen (age 15 to 19), young adult (age 20 to 24), and adult (age 25 to 44) pedestrians.

Half occurred under conditions of darkness, and more than 40 percent on very low speed (<= 40 km/h) roads.

Twenty-six percent of pedestrians had been drinking.

This crash tended to be less severe than the average.





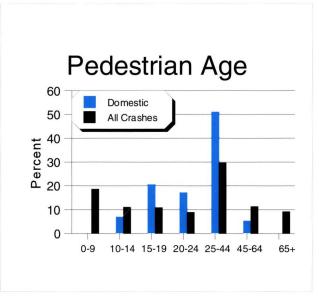


Figure 63. Pedestrian age in "Domestic/Dispute Related."

### Pedestrian On Vehicle

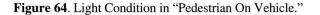
**Frequency:** 40 cases; 0.8% of all crashes **Severity:** 31% resulted in serious or fatal injuries

**Description:** The pedestrian was sitting on, leaning against, or clinging to a vehicle which began to move or was moving.

**Summary:** In comparison to all crashes, this crash was much more likely to involve youth (age 10 to 14) and teen (age 15 to 19) pedestrians.

Twenty-six percent of pedestrians and 15 percent of motor vehicle operators had been drinking.

#### Light Condition dark, no lights dark, lighted dawn/dusk daylight 0 10 20 30 40 50 60 70 Percent



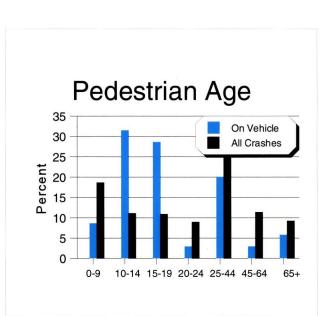


Figure 65. Pedestrian age in "Pedestrian On Vehicle."

#### Vehicle-Vehicle Crash

**Frequency:** 61 cases; 1.2% of all crashes **Severity:** 26% resulted in serious or fatal injuries

**Description:** The pedestrian was struck as a result of a prior vehicle-vehicle collision.

**Summary:** In comparison to all crashes, this crash was more likely to involve teen (age 15 to 19) and adult (age 25 to 44) pedestrians.

Twenty-one percent of pedestrians were on a sidewalk and 15 percent were in on-street parking when struck.

Fourteen percent of drivers had been drinking.

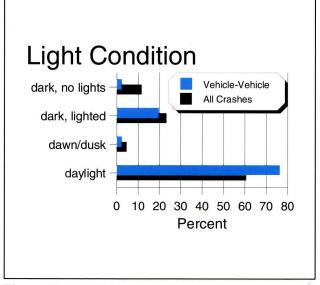


Figure 66. Light Condition in "Vehicle-Vehicle Crash."

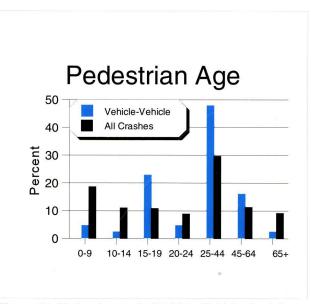


Figure 67. Pedestrian age in "Vehicle-Vehicle Crash."

#### Vehicle-Object Crash

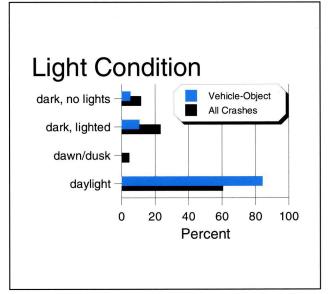
**Frequency:** 25 cases; 0.5% of all crashes **Severity:** 11% resulted in serious or fatal injuries

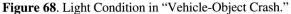
**Description:** The pedestrian was struck as a result of a prior vehicle-object (e.g. building; pole; sign, etc.) collision.

**Summary:** In comparison to all crashes, this crash was more likely to involve adult pedestrians age 25 and older. Middle (age 45 to 64) and elder adults (age 65+) were strongly overrepresented.

Alcohol was generally not a factor in these crashes.

Vehicle-Object Crashes were less severe than the average.





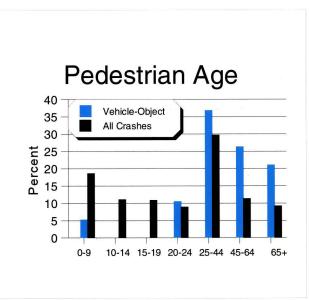


Figure 69. Pedestrian age in "Vehicle-Object Crash."



### Weird

**Frequency:** 85 cases; 1.7% of all crashes **Severity:** 45% resulted in serious or fatal injuries

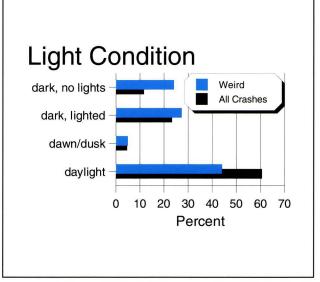
**Description:** The pedestrian was struck by a vehicle, but the circumstances were unusual and did not conform to any specified crash type.

**Summary:** In comparison to all crashes, this crash was more likely to involve teen (age 15 to 19), young adult (age 20 to 24), and adult (age 25 to 44) pedestrians.

Darkness, with and without lights, were overrepresented light conditions.

About two-third of these crashes took place on 1 to 2 lane roads.

Twenty-seven percent of pedestrians and 14 percent of drivers had been drinking.





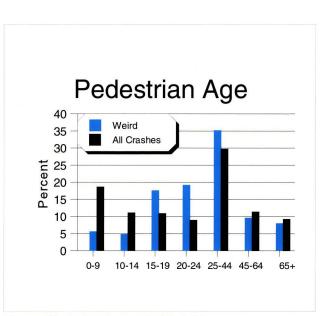


Figure 71. Pedestrian age in "Weird."

### Inadequate Information

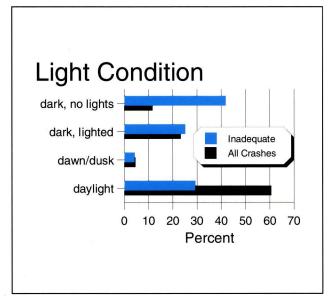
**Frequency:** 27 cases; 0.5% of all crashes **Severity:** 41% resulted in serious or fatal injuries

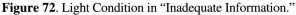
**Description:** Insufficient information was available to specify the crash type.

**Summary:** Pedestrians ages 10 to 44 were slightly overrepresented.

More than 40 percent occurred under conditions of darkness, no lights.

Forty percent of pedestrians and 13 percent of drivers had been drinking.





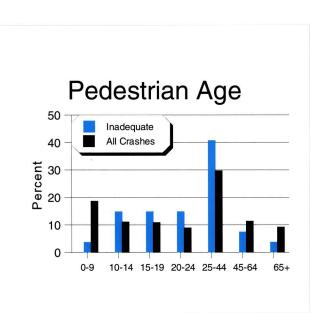


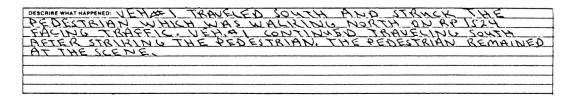
Figure 73. Pedestrian age in "Inadequate Information."

#### APPENDIX

#### **Coding Guidelines for Pedestrian Crash Typing**

Adapted from the NHTSA "Manual Accident Typing for Pedestrian Accidents - Coder's Handbook" \*

- 1. Read the police accident report carefully and completely:
  - First, read the narrative. In cases of conflicting stories give:
  - First priority to officer's conclusions.
  - Second priority to witness statements.
  - Third priority to pedestrian and driver statements.



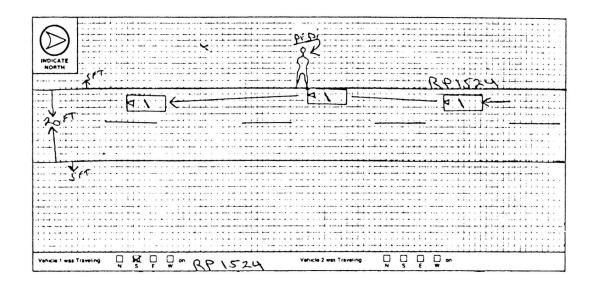
- Next, review the information in the specific information categories (i.e., the "check off" boxes) such as time, day, violations, weather, pedestrian age, driver age, and roadway information.

POINTISI OF INITIAL CONTACT Write Codes VEN. 1 VEJ. 2000 POINTISION ROLLOVER ROLLOV V450 No 10 V450 CRO3SED CRO35 MEDIAN MEDIA V450 V50 V450	ED N	12 12 1 1 2 1 1 2 12 1 1 2 1			2	Jornanih: 2 Franti 3 Center 4 Rest	, Мот	30 28 orccycle vcle or xed	27
		NFORMATION		T		DRIVER 2		YEH. 1	VEH. 2
1. Locality	1	8. Road Surface	14		DRIVER 1	OR PED.		VER. 1	
2. Development Type	7-7	9 Road Delects	7	14 Vision Obstruction	UNIZ		18. Vehicle Defects	7	NIA
3. Road Feeture	τġ-	10 Road Condition	T	15. Physical Condition	VINK	1	19. Spred Limit (for each vehicle)	55	
4. Road Character	7	11. Light Condition	5	16. Intoxication	NYK	1	20. Estimated Original Traveling Speed	UNK	~
5. Road Class	4	12 Weather	TI	17. Chemical Test	U Yes	O Yes	21. Estimated Speed at Impact	WMK	-
6. Number of Lanes	2	13. Traffic Control	111	Given	1 NO	SKNO	22. Tire Impressions Before Impect (ft.)	0	NIA
7. Road Configuration	2	Operating V			C Refused	Refused	23. Distance Traveled After Impact (ft.)	UNK	UNK

		CON	TRIBUT	TING	CIR	CUMSTANCES (Check as man	y #3 #0	ply)		
Ort	ver		Drt	ver			Drh	ner i		
1	2		1	2			1	2		
		1. No violation indicated			10.	Pass slopped school bus			19	Safe movement violation
		2. Alcohol use			11,	Passing on hill			20.	Following too closely
		3. Drug use			12.	Passing on curve			21.	Improper backing
		4. Yield			13.	Other improper passing			22.	Improper parking
		5. Stop sign			14.	Improper lane change			23	Unable to determine
		6. Traffic signal			15.	Use of improper lane			24	Left of center
		7. Exceeding speed limit			16.	Improper turn				Right turn on red
		8. Exceeding sale speed			17	Improper or no signal	8		26.	Other PENDING
		9 Minimum speed law			18	Improper vehicle equipment				

\* A version of this manual is included as Appendix A in the parent report for this project entitled "Pedestrian and Bicycle Crash Types of the Early 1990's" by William W. Hunter, Jane C. Stutts, Wayne E. Pein and Chante L. Cox (Report No. FHWA-RD-95-163). Finally, examine the diagram. Remember that diagrams are seldom drawn to scale. Although a diagram might appear to show an accident occurred at an intersection, for example, check the report form for the actual measurement of the point of impact from the nearest intersection.

Note that for pedestrian crashes, the boundaries of an intersection crash extend up to and including 50 feet from the corner. Alleys and driveways are only considered intersections when they are controlled by a traffic signal.



2. Review the descriptions of the Pedestrian Accident Type Categories page in order (see chart).

For the sample case shown, category 5 applies—pedestrian was struck while walking or running along roadway.

3. Turn to the tabbed page for that category and read down the accident type descriptions in order. Stop at the <u>first</u> category that fits the facts on the report. Refer to the Definitions and Diagrams for explanations of terms and examples.

In this case, the pedestrian was not hitchiking or crossing a limited access expressway (Types 510 and 520). He also was not walking or running along a road in the same direction as traffic (Type 531). However, he *was* walking or running along a road facing traffic (Type 532).

- 4. Enter the code for that accident type beside the report number on the data form.
- 5. If none of the types apply, refer back to the Pedestrian Accident Type Categories page and continue down the list until you find the next category that applies.

If more than one pedestrian is involved in an accident, the first pedestrian struck defines the accident. Consider only the circumstances surrounding the collision with the first pedestrian in determining the type.

F	
Tab 1	<ul> <li>Did motorist stike ped going to/from or crossing near:</li> <li>bus or bus stop?</li> <li>ice-cream vendor?</li> <li>rural residential mailbox?</li> <li>Or was ped exiting/entering a stopped or parked vehicle?</li> </ul>
Tab 2	Was the striking vehicle: driverless? backing? in pursuit, being pursued, or an emergency vehicle?
Tab 3	Was ped struck by motorist while going to/from or near/next to a: disabled vehicle? active police/emergency vehicle?
Tab 4	Was ped stuck while: working in roadway? playing in roadway prior to motorist's appearance? on a play vehicle?
Tab 5	Was ped struck by motorist while: hitchhiking? crossing a limited access expressway? walking or running along a road?
Tab 6	Did motorist stike ped: on/near curb or roadway edge? on sidewalk or other nonroadway location?
Tab 7	Did accident occur at or within 50 feet of an intersection?
Tab 8	Did the accident occur midblock (more than 50 feet from an intersection)?
Tab 9	Other type or inadequate information

