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PEDESTRIAN SAFETY
The Identification of Precipitating Factors and Possible Countermeasures

Appendices

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16. Abstract

The study objective was to identify causes and countermeasures relevant to pedestrian accidents. Behavioral and descriptive data were collected by interviews and on-scene observations for over 2,000 pedestrian accidents in 13 major cities. Subsequent analyses emphasized individual case causation and accident type classification relevant to countermeasure implementation. Cases were divided into accident types on the basis of causal factors and target groups, to provide a basis for countermeasure identification. The five most frequent types accounted for over 50% of the sample cases. Countermeasures relevant to each accident type are discussed.

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PREFACE

This is the second part of a two-volume document that constitutes the final report under contract FH 11-7312. The report is designed and organized, not only to meet contractual requirements and provide an archival record for the interested scientific community, but also to serve as an easily understandable source of information and guidance to various decision-makers whose actions can save lives and reduce pedestrian injuries.

Volume I presents the study findings and describes possible corrective measures that were developed from the analysis.

This volume contains more detailed documentation of the findings. Data gathered are presented in table form in seven appendices and the manner in which findings were developed is described in detail.

ACKNOWLEDGEMENTS

Because of the broad scope of this project, many individuals were involved and contributed to its success. The continued support and assistance of Mr. Peter N. Ziegler of the National Highway Safety Bureau, who served as contract manager, deserves special note.

Mr. Waldorf Pletcher, Mr. Seymour Bergsman, Dr. Robert Knaff, and Dr. Leroy Dunn of the Federal Highway Administration and National Highway Safety Bureau provided useful reviews of project plans during various phases of the study.

Many police officers throughout the country contributed day-to-day assistance and cooperation throughout the data collection effort. Their efforts are sincerely appreciated as is the cooperation of the police chiefs and other police department officials in the following cities: Baltimore, Boston, Chicago, Denver, Houston, Los Angeles, New Orleans, New York, Philadelphia, Seattle, St. Louis, San Francisco, and Washington, D. C.

The project team for Operations Research, Inc. (ORI) was headed by Dr. Monroe B. Snyder, principal investigator, and Mr. Richard L. Knoblauch, assistant project director, authors of this report. Administrative support and guidance was provided by Dr. William J. Leininger, vice president and Mr. Gabriel Markisohn, program director. The following members of the technical staff contributed to the data collection and analysis effort: Mr. John Avila, Miss Margery Fisk, Miss Beverly Johns, Mr. William Liggett, Miss Suzanne Shaffer, and Mrs. Thomasina Theis. In addition, Mr. Bryan Robinson of Louis Berger, Inc. (a Leasco company) performed on-site engineering evaluations of selected sites.

The contribution of the accident investigation staff and approximately 2,000 citizens who supplied information is, of course, obvious. The former are identified in Appendix G; the latter must remain nameless.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

APPENDIX A

SAMPLING AND DATA COLLECTION METHODS

INTRODUCTION

A.1 This appendix describes the operations and methods used to secure data about individual pedestrian accident cases. This material on sampling and data collection is designed to answer two basic questions:

a. How were individual cases selected for inclusion in the study?

b. What procedures were followed to secure data about each selected case?

SAMPLING

Sampling Objectives

A.2 The key objectives of the sampling approach were as follows:

a. Selection of cases from cities generally in proportion to expected pedestrian accident frequencies, modified to achieve sufficient data from smaller cities

b. Maximum coverage of fatal pedestrian accidents

c. Maximum coverage of recent cases

d. Random coverage by area and time of day, or, if preculuded by other objectives or constraints, coverage of high accident times and areas.

Sampling Among Cities

A.3 Thirteen major cities were identified by NHSB. It was possible to investigate accidents in 12 of these. Milwaukee, Wisconsin, was not included because the police department did not want to participate. A substitute city was then selected. This purposeful sample of 13 cities, although restricted to those with populations of about half a million and over, covered a range of city characteristics. The list of cities and some descriptive data are shown in Table A.1.

A.4 Data collection started in the fall of 1969 and ended in the summer of 1970. (Local approval was not received from New York until the spring of 1970 and thus the sample from that city covered a shorter period.)

A.5 Cases were sampled from among the 13 cities roughly in proportion to the number of pedestrian accidents expected. The percentage of the total cases in 1968 that occurred in a given city determined the proportion of accident investigation effort assigned to that city. However, an upper limit of 30% and a lower limit of 4% of total effort was set for any one city. The lower limit was set because it was not feasible to conduct the study in a city with a smaller effort. (Because of the late start in New York, it received a smaller proportion of total study effort than would be expected with this procedure.)

A.6 Within each city, accidents were selected from those reported to the city police department. In three of the larger cities, operational considerations resulted in a further restriction. In Los Angeles, only cases in the "metro area" were included. (Outlying areas within the city limits were not included.) In New York and Philadelphia, only cases investigated by the special accident investigation unit were sampled. This excluded all but fatalities and serious injuries in those cities.

Basic Case Initiation Methods

A.7 Two basic operating procedures for securing data within the sampling plan were used during the course of the study. Field investigators (FIs) were assigned blocks of on-duty hours during which they would monitor police radio broadcasts and go to the scene of pedestrian accidents when they occurred. When this procedure was followed, an on-scene-initiated (OSI) accident report resulted. At other times the FI would begin investigating an accident on the basis of a written police accident report. This resulted in a follow-up-initiated (FUI) accident report. As will be discussed in detail later, the same investigation procedure was used in OSI and FUI reports. Identical interviews were conducted and the same set of on-scene observations was made.

Operational Case Initiation Procedures

A.8 Specific operating procedures were developed to utilize the two basic methods of case initiation and a finite amount of investigation hours in order to achieve the sampling objectives described earlier.

TABLE A.1

POPULATION, PEDESTRIAN FATALITIES, AND PEDESTRIAN ACCIDENTS IN 13 STUDY CITIES

City	Population of 1960	Number of Pedestrian Accidents, 1968	Number of Pedestrian Fatalities, 1968
Baltimore	939,024	2,871	58
Boston	697,197	608	38
Chicago	3,550,404	8,674	151
Denver	493,887	464	27
Houston	938,219	830	49
Los Angeles	2,479,015	3,154	168
New Orleans	627,525	884	38
New York City	7,781,984	15,000	450
Philadelphia	2,002,512	4,472	104
San Francisco	740,316	1,446	36
Seattle	557,087	624	28
St. Louis	750,026	1,429	45
Washington, D.C.	763,956	2,097	50
Total	22,321,152	42,553	1,242

A.9 It was obvious that most fatal accidents would have to be initiated from written police records since 24-hour-monitoring was not feasible. However, a review of historical data on pedestrian accident frequency by time of day indicated the apparent feasibility of securing the remainder of the cases by monitoring during peak frequency hours.

A.10 The data showed a consistent frequency pattern by time of day across cities. Figure A.1 shows this pattern for some of the sample cities. During the peak periods in the afternoon pedestrian accidents occur frequently enough to expect one every 3 hours. Initially field investigators were assigned to these peak periods with the expectation that they would be able to initiate at least one OSI report during each time block. Within each city, field investigation time was assigned to time blocks in the same proportion as the occurrence of pedestrian accidents. Thus if 2:00-4:00 p.m. accounted for 20% of the accidents and 4:00-6:00 p.m. accounted for 40%, twice as much time was assigned to the latter time period. Such an assignment of FI hours resulted in a sample of accidents from those time periods that accounted for the biggest problems.

A.11 A number of practical problems were encountered that reduced the expected OSI case input:

- Rush hour traffic delays
- Communication system problems
- Quick cleanup of the scene and removal of the parties
- Day-to-day variability (bunching) of accidents (e.g., three in 1 hour on a given day, and none the next).

A.12 Thus procedures were adapted to utilize proportionally more FUI cases, while still minimizing the time between the accident and investigation.

A.13 Four basic modes of operation were developed to which a field investigator could be assigned:

A.14 Mode 1-Monitoring Only Mode. In this mode the field investigator is stationed at a monitor suitably located for access to high accident areas. He monitors and responds to pedestrian calls within reach. In this mode he never leaves the radio unless he becomes involved in an on-scene-initiated case.

A.15 Mode 2-Primary Monitor Mode. In this mode the field investigator travels within reach of the high accident area, monitoring police radio calls. At times he leaves the car to do on-scene observations or follow-up interviews from previously initiated cases. However, priority is given to responding to any new cases heard on the monitor while in his car.

A.16 Mode 3-Primary Follow-up Mode. This mode calls for the investigator to conduct interviews and make observations to complete cases for which the accident scene has been cleared. Such cases could be (a) those initiated on

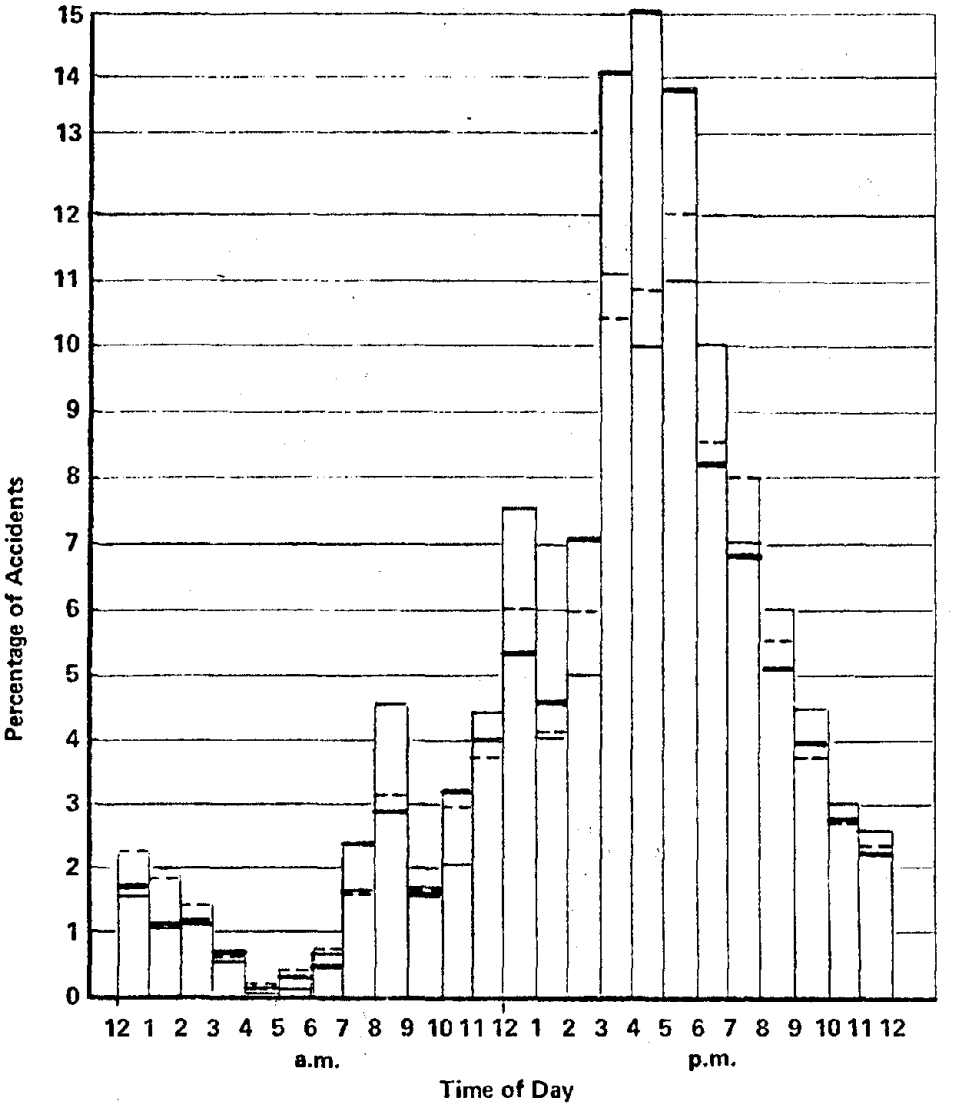

FIGURE A.1. DISTRIBUTION OF PEDESTRIAN ACCIDENTS BY TIME OF DAY

scene previously, or (b) those cases initiated by written police records. The investigator will monitor his radio and respond to new calls within reach as they occur. However, he does not limit his travel within the city as he follows up cases.

A.17 Mode 4-Follow-up Only Mode. In this mode, the field investigator initiates a case upon receipt of a written police report after the scene has been cleared. No radio monitoring is involved.

A.18 The 13 cities were divided into three basic types of operational situations for which a particular mode or combination of modes would be appropriate:

Type A Cities

A.19 Type A cities included Baltimore, St. Louis, San Francisco, and Washington, D.C. These cities had more than 1,000 but less than 2,000 pedestrian accidents last year. During peak hours FIs in Washington and St. Louis operated in monitor only mode (1) and those in Baltimore and San Francisco operated in primary monitor mode (2). During other hours they operated in the primary follow-up mode (3) to complete cases already initiated.

Type B Cities

A.20 Type B cities included Boston, Denver, Houston, New Orleans, and Seattle. These cities all have less than 1,000 pedestrian accidents annually. Due primarily to the low rate of police calls in these cities, it was not practical to continue the use of Mode 1 (monitoring only mode). Mode 3 (primary follow-up) was used instead.

A.21 Using written police accident reports as source material, local FIs contacted pedestrians, drivers, and witnesses as soon after the accident as possible. In the Type B cities, ORI had access to police accident records as soon as 1 day and seldom longer than 3 or 4 days after the accident. Thus it was possible to investigate the accident before it became "cold."

Type C Cities

A.22 Type C cities included Chicago, Los Angeles, Philadelphia, and New York, the four largest in the country. Each has a large police department, covers a large geographical area, and has a large number of accidents and heavy traffic.

A.23 In Chicago and Los Angeles, field investigators operated in the primary monitoring mode (2) during peak hours. In addition, the primary follow-up mode (3) was used during other hours working from a random sample of police reports.

A.24 In Philadelphia ORI had official police cooperation but was unable to develop a workable oral accident reporting system to support OSI cases. Therefore, local FIs did follow-up reports (Mode 4) working from the accident investigation unit's accident report forms. Philadelphia had an excellent follow-up operation in that ORI had access to these forms at the end of each shift. Thus, the FIs were able to begin a follow-up investigation as soon as 8 hours after the accident occurred.

A.25 Official permission from the New York City Police Department was not received until approximately half-way through the study. ORI received copies of all pedestrian accidents covered by the Accident Investigation Squad. This included all fatal and serious injury accidents occurring in New York City. This permitted ORI to operate in Mode 4, follow-up only.

Contact and Initiation

A.26 When cases were selected from police records for follow-up investigation great care was taken to avoid bias. In the smaller cities (i.e., Seattle, Denver), the field investigator would visit the station several times a week (i.e., Monday, Wednesday, and Friday during 1 week and Tuesday and Thursday the next) and initiate an investigation on every case available during that day.

A.27 In the larger cities (e.g., Chicago) where the FI had access to all pedestrian accident reports for a given day, the local FI would select enough cases to fill out his assigned time allotment using a table of random numbers.

Interviewing Procedures

A.28 The interviewing of persons who had recently, often only minutes before, been involved in an event as traumatic as a pedestrian-auto accident requires great flexibility and skill. The persons involved in pedestrian accidents tend to come from widely divergent age and educational levels and socio-economic backgrounds. The accident situations also vary greatly. In addition, the present study was the first in-depth examination of the behavioral sequence of individuals involved in an accident. At the onset, to attempt to predict the type and range of responses would have been largely conjecture.

A.29 For the foregoing reasons a standard questionnaire was not feasible. To phrase a given question so that it could be understood and answered by any person involved in any accident would have been very cumbersome. Thus the data collection instrument specified the information that the FI was to obtain on each accident. (This information consisted of the groups of data items discussed in detail in Appendix B.)

A.30 One very general interviewing procedure was followed by all field investigators. They would identify and locate the persons involved in the accident, introduce themselves, often showing an official identification card bearing their picture, explain the purposes of the project and ask the person for his help. Upon acceptance, the FI would ask the person to relate what happened in the order that it happened. As might be expected, such a request would produce responses varying from, "I ran into the street and the car hit me," to a prolonged discourse. The FI would record the relevant parts of the interviewee's response and proceed to probe for responses to the behavioral sequence items (see Appendix B). After achieving a good understanding of the behavioral sequence, the FI would ask the interviewee specific questions for which responses had not been volunteered in order to complete those items about the origin and destination of his trip, his occupation, etc.

In cases where the pedestrian was very young, often friends or family might provide responses to these questions.

Observation Procedures

A.31 The FIs collected on-scene descriptive data on each case they covered. For OSI cases these observations were made while the FI was at the scene shortly after the accident. For FUI cases the FI would go to the scene at the same time of day and day of week that the accident occurred. The on-scene observations included both stable environmental conditions and traffic flow data. (See Appendix B.)

A.32 In addition to the regular on-scene data collected on all cases, a traffic engineer visited many of the apparent "problem" accident scenes for a further check of possible environmental factors. These scenes consisted of intersections or street locations that had more than one accident during the course of the present study.

DATA QUALITY CONTROL

Staff Selection and Training

A.33 Field investigators were recruited through professional contacts and local universities. They were selected on the basis of formal training, appearance and personal interview performance, all of which were considered in relation to their ability to secure cooperation and information from police and residents. The majority were graduate psychology students, although several law students with behavioral science undergraduate backgrounds and several mature individuals with B.A. or B.S. degrees in social science were also selected.

A.34 After selection future field investigators were given an intensive training session by an ORI staff member. This training included:

- Orientation and indoctrination to the project's purpose and objectives
- Explanation of the data collection procedures, OSI and FUI methods of case initiation, and the proper procedures for case selection
- Explanation of the on-scene observation and traffic flow sections of the data form
- Detailed review of the information to be obtained from pedestrian, driver, and witness interviews.
- Role-playing of the interviewing situation
- On-the-scene review of the on-scene observations and traffic flow sections of the data form

- "On-the-job" instruction at the police station regarding procedures to be followed there
- Training in monitoring the police communications system
- Complete runthrough of all tasks in sequence followed by feedback from the instructor.

Management of Field Operations

A.35 Each of the larger cities with more than one field investigator had one FI designated as the senior investigator. It was his responsibility to interact with the police records section, disseminate reports to his coworkers and contact ORI staff whenever problems developed in his city.

A.36 Every FI was on a biweekly report schedule. Every 2 weeks they would submit daily logs for the period. These daily logs specified the FI's activities on each day assigned, including:

a. Time block worked

b. Locations visited, including accident scene, hospitals, principals' homes, police department, etc.

c. Cases worked

d. Interviews granted and refused

e. Accident calls heard, including time, location and disposition

f. Mileage covered.

A.37 This information permitted ORI staff members to determine which type of operation would be most effective in each city. Completed accident reports of cases investigated were also submitted biweekly. The review of these reports by a senior member of the project team provided the basis for immediate feedback to the field staff. In some cases the report was returned for correction or completion to the FI.

APPENDIX B

DATA ITEMS

INTRODUCTION

B.1 The specific items of data to be collected about pedestrian accidents were chosen as a result of a systematic analysis of the pedestrian accident process, a review of previous accident investigation studies, and consultation with NHSB personnel. The kinds of accident information collected and their relation to a conceptualization of pedestrian crashes is shown in the models presented in Section III of Volume I.

DATA TYPES FOR EACH CASE

B.2 The specific items have been organized into the framework shown in Table B.1. The remainder of Appendix B consists of a description and detailed breakdown of each of the data types.

TABLE B.1

DATA TYPES
(for each case)

1. IDENTIFICATION
   - a. TIME, PLACE, AND CODES
   - b. OPERATOR CHARACTERISTICS
   - c. PEDESTRIAN CHARACTERISTICS
   - d. VEHICLE CHARACTERISTICS

2. BEHAVIORAL SEQUENCE
   - a. PEDESTRIAN REPORT
   - b. DRIVER REPORT
   - c. WITNESS REPORT
   - d. FI REPORT

3. PARTICIPANT AND WITNESS ATTITUDE
   - a. PEDESTRIAN
   - b. DRIVER
   - c. WITNESS

4. TRIP AND PRINCIPAL DESCRIPTION
   - a. PEDESTRIAN
   - b. DRIVER

5. REPORT AND WITNESS VALIDITY
   - a. WITNESS DATA
   - b. PEDESTRIAN VALIDITY
   - c. DRIVER VALIDITY
   - d. WITNESS VALIDITY

6. ENVIRONMENTAL OBSERVATION
   - a. STABLE CONDITIONS
   - b. TRAFFIC FLOW

7. CAUSAL CONCLUSIONS
   - a. FI CONCLUSIONS
   - b. ANALYST CONCLUSIONS

8. COUNTERMEASURES

9. RESEARCH PROCEDURE INFORMATION

1. IDENTIFICATION

B.3 The identification items consist of those descriptive factors that were collected on each accident to delineate the time and place of occurrence and the descriptive characteristics of the principals. The majority of the information was obtained from police accident reports or by direct observation by field investigators.

a. Time, place factors; city code number

1. Date accident occurred
2. Time of day accident occurred
3. Day of week accident occurred
4. Severity of injury to pedestrian
5. Other.

b. Operator characteristics

1. Operator's sex
2. Operator's age
3. Operator's possession of a driver's license or chauffeur's license
4. Restrictions on operator's driver's license with respect to type of vehicle or equipment required on vehicle
5. Race of operator
6. Physical restrictions or limitations on operator
7. Indication of operator having been under the influence of alcohol
8. Blood alcohol level of operator
9. Test used to determine blood alcohol level of operator
10. Indication of operator having been under influence of medication
11. Indication of operator having been under influence of narcotics
12. Operator charged by police for violation.

c. Pedestrian characteristics

1. Pedestrian's sex
2. Pedestrian's age

3. Pedestrian's possession of a driver's license or chauffeur's license

4. Restrictions on pedestrian's driver's license with respect to the type of vehicle or equipment required on vehicle

5. Race of pedestrian

6. Physical restrictions or limitations on pedestrian

7. Indication of pedestrian having been under the influence of alcohol

8. Blood alcohol level of pedestrian

9. Test used to determine blood alcohol level of pedestrian

10. Indication of pedestrian having been under the influence of medication

11. Indication of pedestrian having been under the influence of narcotics

12. Pedestrian charged by police for violation.

d. Vehicle characteristics

1. Vehicle make

2. Vehicle model

3. Year of vehicle

4. Color of vehicle

5. Condition of vehicle

6. Pre-involvement vehicle speed

7. Vehicle speed at impact

8. Distance traveled after impact

9. Vehicle behavior prior to evasive action.

2. BEHAVIORAL SEQUENCE

B.4 The behavioral sequence items were structured so that information on similar items was obtained from the pedestrian, the operator and the witnesses. After interviewing all the principals in a given accident, the field investigator would provide what he considered to be the most reasonable response to most items. Thus, for each behavioral sequence item, as many as three different responses could have been reported. For example, for the item "Pedestrian's direction of attention prior to selection of the collision course," the pedestrian's report (PR), the witnesses' report (WR) and the field investigator's report (FIR) were recorded. Likewise, for the similar item "Driver's direction of attention prior to selection of the collision course," the driver's report (DR), the witnesses' report (WR) and the field investigator report (FIR) were recorded.

	PR	DR	WR	FIR
a. Pedestrian report				
1. Pedestrian's direction of attention prior to selection of the collision course	x		x	x
2. Pedestrian's object of attention (traffic) prior to selection of collision course	x		x	x
3. Pedestrian's object of attention (non-traffic) prior to selection of collision course	x		x	x
4. Pedestrian's reason for collision course	x		x	x
5. Pedestrian's direction of attention after collision course started	x		x	x
6. Pedestrian's object of attention (traffic) after collision course started	x		x	x
7. Pedestrian's object of attention (non-traffic) after collision course started	x		x	x
8. Pedestrian's movement characteristics, collision course prior to evasive action	x		x	x
9. Pedestrian's location of movement, collision course prior to evasive action	x		x	x

		PR	DR	WR	FIR
10.	Pedestrian's direction of movement, collision course prior to evasive action	x		x	x
11.	When pedestrian recognized need for evasive action	x		x	x
12.	Where pedestrian recognized need for evasive action	x		x	x
13.	How pedestrian recognized need for evasive action	x		x	x
14.	Pedestrian's evasive action decision	x		x	x
15.	Basis for pedestrian's evasive action decision	x		x	x
16.	Rationale behind pedestrian's evasive action decision	x		x	x
17.	Pedestrian's evasive movement	x		x	x
18.	Pedestrian's direction of evasive movement relative to traffic	x		x	x
19.	Pedestrian's evasive movement made relative to the intended crossing	x		x	x
20.	Pedestrian's conclusions on pedestrian causal factors in this accident	x			
21.	Pedestrian's conclusions on driver causal factors in this accident	x			
22.	Pedestrian's perception of cause, driver-pedestrian interaction, and contributing or predisposing factors	x			
23.	Stimulus interference on part of pedestrian	x		x	x
24.	Pedestrian's perception of when the driver first saw the pedestrian	x			

		PR	DR	WR	FIR
25.	Pedestrian's perception of where the driver first saw the pedestrian	x			
26.	Pedestrian's perception of the driver's intent	x			
27.	Pedestrian's perception of whether the driver was behaving in the right way.	x			
b.	Driver report				
1.	Driver's direction of attention prior to selection of the collision course		x	x	x
2.	Driver's object of attention (driving) prior to selection of collision course		x	x	x
3.	Driver's object of attention (environment) prior to selection of collision course		x	x	x
4.	Driver's reason for collision course selection		x	x	x
5.	Driver's direction of attention after collision course started		x	x	x
6.	Driver's object of attention (driving) after collision course started		x	x	x
7.	Driver's object of attention (environment) after collision course started		x	x	x
8.	Vehicle movement characteristics, collision course prior to evasive action		x	x	x
9.	Vehicle location of movement, collision course prior to evasive action		x	x	x
10.	When driver recognized need for evasive action		x	x	x
11.	Where driver recognized need for evasive action		x	x	x

		PR	DR	WR	FIR
12.	How driver recognized need for evasive action		x	x	x
13.	Driver's evasive action decision		x	x	x
14.	Basis for evasive action decision		x	x	x
15.	Rationale behind driver's evasive action decision		x	x	x
16.	Vehicle response to driver's action		x	x	x
17.	Driver's conclusions on pedestrian causal factors in this accident		x		
18.	Driver's conclusions on driver causal factors in this accident		x		
19.	Driver's perception of cause, pedestrian-driver ir teraction or predisposing factors		x		
20.	Stimulus interference on part of driver		x	x	x
21.	Driver's perception of when the pedestrian first saw the vehicle		x		
22.	Driver's perception of where the pedestrian first saw the vehicle		x		
23.	Driver's perception of the pedestrian's intent		x		
24.	Driver's perception of whether the pedestrian was behaving in the right way.		x		
c.	Witness report				
1.	Witness conclusions on pedestrian causal factors in this accident			x	
2.	Witness conclusions on driver causal factors in this accident			x	
3.	Witness perception of cause, driver-pedestrian interaction and contributing or predisposing factors in this accident.			x	
d.	Field investigator report				
	All FI items are contained under pedestrian and driver reports.				

3. PARTICIPANT AND WITNESS ATTITUDE

B.5 In addition to the information in the particular accident being investigated, certain attitude information was obtained from the pedestrian, the driver, and the witness during the course of the interview. The data items concern the participants' attitudes towards pedestrian accidents in general.

a. Pedestrian

1. Pedestrian's perception of whether people like drivers usually behave properly
2. Pedestrian's perception of the role of driver in pedestrian accidents in general
3. Pedestrian's perception of the role of pedestrians in pedestrian accidents in general
4. Pedestrian's perception of driver-pedestrian interaction factors in pedestrian accidents in general
5. Pedestrian's perception of the role of environmental factors in causing pedestrian accidents in general
6. Pedestrian's perception of what can be done with pedestrians to prevent pedestrian accidents in general
7. Pedestrian's perception of what can be done with drivers to prevent pedestrian accidents in general
8. Pedestrian's perception of what can be done with the environment to prevent pedestrian accidents in general
9. Pedestrian's perception of what he might do to prevent pedestrian accidents.

b. Driver

1. Driver's perception of whether people like self usually behave properly
2. Driver's perception of the role of drivers in pedestrian accidents in general
3. Driver's perception of the role of pedestrians in pedestrian accidents in general
4. Driver's perception of driver-pedestrian interaction factors and predisposing and/or environmental factors in pedestrian accidents in general
5. Driver's perception of the role of environmental factors in causing pedestrian accidents in general
6. Driver's perception of what can be done with pedestrians to prevent pedestrian accidents in general
7. Driver's perception of what can be done with drivers to prevent pedestrian accidents in general
8. Driver's perception of what can be done with the environment to prevent pedestrian accidents in general
9. Driver's perception of what he might do to prevent pedestrian accidents.

c. Witness

1. Witness perception of the role of drivers in pedestrian accidents in general

2. Witness perception of the role of pedestrians in pedestrian accidents in general

3. Witness perception of what can be done with pedestrians to prevent pedestrian accidents in general

4. Witness perception of what can be done with drivers to prevent pedestrian accidents in general

5. Witness perception of what can be done with the environment to prevent pedestrian accidents in general

6. Witness perception of what he might do to prevent pedestrian accidents.

4. TRIP AND PRINCIPAL DESCRIPTION

B.6 During the course of each interview the field investigator obtained information on each principal's trip characteristics as well as some personal characteristics.

a. Pedestrian

1. Pedestrian's specific trip destination
2. Pedestrian's trip destination (type)
3. Distance from accident scene to pedestrian's destination
4. Pedestrian's specific activity purpose
5. Purpose of pedestrian's activity (type)
6. Pedestrian in a hurry
7. Pedestrian's specific trip origin
8. Pedestrian's trip origin (type)
9. Distance from accident scene to pedestrian's trip origin (in blocks)
10. Distance from accident scene to pedestrian's home (in blocks)
11. Distance from accident scene to pedestrian's school (in blocks)
12. Time (in minutes) pedestrian had been walking prior to accident
13. Number of times pedestrian at accident scene within past 12 months
14. Number of times pedestrian in the area of accident scene within the past 12 months
15. Number of days pedestrian was a pedestrian in the city during the last 12 months
16. If had been pedestrian fewer than 24 times in last 12 months, number of times as pedestrian in this city

17. Occupation of pedestrian

18. Physical condition

19. Pedestrian involvement in other accident(s), not just auto, within past 2 years

20. Type of accident(s) pedestrian had within last 2 years

21. Pedestrian received traffic tickets with past 5 years

22. Pedestrian licensed to drive

23. Number of years of driving experience

24. Color of pedestrian's clothing

25. Size of target or visual image pedestrian presented to driver

26. Extent of pedestrian's injuries

27. Amount of time pedestrian hospitalized, in days

28. Source of estimate on amount of time pedestrian to be hospitalized

29. Restrictions on pedestrian's post-accident activity.

b. Driver

1. Driver's specific trip destination

2. Driver's trip destination

3. Distance from accident scene to driver's destination

4. Driver's specific activity purpose

5. Purpose of driver's activity

6. Driver in a hurry

7. Driver's specific trip origin

8. Driver's trip origin (type)

9. Distance from accident scene to driver's trip origin (in miles)

10. Distance from accident scene to driver's home (in miles)

11. Distance from accident scene to driver's school (in miles)

12. Time (in minutes) driver had been driving prior to accident

13. Number of times driver at accident scene within past 12 months

14. Number of times driver in the area of accident scene within the past 12 months

15. Number of days driver was a driver in the city during the last 12 months

16. If had been driver fewer than 24 times in last 12 months, number of times as driver in this city

17. Occupation of driver

18. Physical condition

19. Driver involvement in other accident(s) not just auto, within past 2 years

20. Type of accident(s) driver had within last 2 years

21. Driver received traffic tickets within past 5 years

22. Driver licensed to drive

23. Number of years of driving experience

24. Color of vehicle

25. Size of vehicle

26. Extent of driver's injuries

27. Amount of time driver hospitalized, in days

28. Source of estimate on amount of time driver to be hospitalized

29. Restrictions on driver's post-accident activity.

5. REPORT AND WITNESS VALIDITY

B.7 Information was collected on the factors that might influence the validity of the information obtained in the interviews. This includes personal data on the witness as well as the field investigator's evaluation of the validity of information obtained in the three interviews. It should be noted that information indicated here referred only to the general validity of the information. Since the field investigator provided what he considered to be the most reasonable or probable version of the behavior sequence, the information indicated in this section does not refer to any possible disagreements between the pedestrians', drivers', or witnesses' versions of the accident.

a. Witness data

   1. Witness—years' driving experience
   2. Age of witness
   3. Sex of witness
   4. Witness lives in neighborhood of accident
   5. Witness familiarity with area
   6. Witness knows driver
   7. Witness knows pedestrian
   8. Witness familiarity with driver and/or pedestrian
   9. Witness possession of driver's license.

b. Pedestrian validity

   1. Quality of information from pedestrian interview
   2. Source of information on pedestrian.

c. Driver validity

   1. Quality of information from driver interview
   2. Source of information on driver.

d. Witness validity

   1. FI interpretation of bias shown by witness
   2. Basis for witness response
   3. FI evaluation of witness validity.

6. ENVIRONMENTAL OBSERVATION

B.8 The field investigator collected information at the scene of the accident either immediately after or during a similar time of day and day of week at a later date. For some data items containing information of a perishable nature (i.e., weather) for FUI cases, the data was obtained from police records.

a. Stable conditions

1. Type of area in which the accident occurred
2. Type of intersection at which the accident occurred
3. Type of location at which the accident occurred
4. Roadway surface type at the accident scene
5. Roadway surface condition at the accident scene
6. Nature or character of the road at the accident scene
7. Condition of the pavement at the accident scene
8. One-way or two-way street at the accident scene
9. Type of road at the accident scene
10. Number of driving lanes in each direction of traffic flow at the accident scene
11. Activities allowed in roadway lanes at accident scene on the accident side of the street
12. Activities allowed in roadway lanes at accident scene on the other (opposite of accident) side of the street
13. Curb or gutter present at accident scene
14. Height of curb at the accident scene
15. Distance of guardrail from accident scene

16. Type of guardrail in area of accident scene

17. Traffic volume in the area of the accident scene

18. Posted speed limit at the accident scene

19. Estimated average speed of the traffic flow at the accident scene

20. Width of the pedestrian's attempted crossing

21. Duration of the traffic signal, if present, at the accident scene for pedestrian's intended crossing.

22. Distance to the nearest proper pedestrian crossing

23. Environmental visual obstructions

24. Traffic signs/signals defective

25. Lighting conditions at accident scene

26. Weather at time of accident

27. Temperature at the time of the accident

28. Vehicular control devices present at accident scene

29. Type of channelization present at accident scene

30. Type of turning signals present at accident scene

31. Parking regulations at accident scene

32. Pedestrian crossing assistance or restrictions provided at scene

33. Type of control pedestrian signal present at scene

34. Driver warning of pedestrian crossing

35. Pedestrian vision of vehicle obscured by non-traffic objects

36. Pedestrian vision obscured by traffic objects

37. Driver vision obscured by non-traffic objects

38. Driver vision obscured by traffic objects

39. Physical condition of pedestrian

40. Physical condition of driver

41. Characteristics of the attempted pedestrian crossing

b. Traffic flow

1. Nature of traffic flow at the accident scene

2. Driver and/or pedestrian actions dependent upon signalization or other cues

3. Difficulty of the attempted pedestrian crossing

4. Pedestrian within 100 feet of intersection

5. Pedestrian crossing the intersection diagonally

6. Pedestrian crossing one-way street

7. Direction of traffic flow on one-way street

8. Traffic flow on cross-street

9. Pedestrian exposure to turning vehicle traffic

10. Stimulus dependency present

11. Amount of traffic flow across pedestrian's intended path, total and by lane.

7. CAUSAL CONDITIONS

B.9 Conclusions on causal conditions were obtained from the field investigator after he completed his investigation as well as from the data analyst after he completed his review, editing, and coding of all the other data items in the report.

a. FI conclusions

1. Summary descriptions
2. Driver causal factors
3. Pedestrian causal factors
4. Driver-pedestrian interaction and contributing or predisposing factors.

b. Analyst conclusions

1. Accident type
2. Primary precipitating factors
3. Secondary precipitating factors
4. Predisposing precipitating factors
5. How accident could have been avoided.

8. COUNTERMEASURES

B.10 Both the field investigator and the data analyst were asked to suggest potential countermeasures that might be effective in a given accident.

a. FI-suggested countermeasures
b. Analyst-suggested countermeasures.

9. RESEARCH PROCEDURE INFORMATION

B.11 During the course of the data collection phase, information on the research procedure was collected.

a. Report initiation method
b. Persons present at scene upon FI arrival
c. Time of interview
d. Time of interview refusal
e. Location of interview or refusal
f. Cooperation shown during interview
g. Reason given for interview refusal.

APPENDIX C

DATA ANALYSIS METHODS

DATA CODING AND EDITING PHASE

Objectives

C.1 The data collection form was arranged at the onset of the project to permit the field investigators to code certain data items with specific responses and provide for open-ended responses to other items. The purpose of the data coding and editing process was to translate these open-ended responses into meaningful categories coded for machine processing.

Mechanisms

C.2 Data Analyst Selection and Training. All of the data coding and editing was done at ORI's Silver Spring, Maryland, office by personnel with qualifications similar to those of the field investigators (see p. A-8).

C.3 Each analyst received a half-day introductory training session during which the purposes of the project in general and their role in particular was explained in detail. They were introduced to the procedures which were followed by the field investigators so they could better understand and assimilate the responses provided by the FIs. Then they were given a detailed explanation of each data item on the data collection form and the response categories in the coding manual. Following the introductory training session, the analyst spent several days coding actual accident report forms and then reviewed them with the assistant project director.

C.4 Early in the coding and editing phase, several analysts demonstrated superior understanding of the project goals and the data coding procedures. These individuals were designated as senior analysts and played a role in the quality control procedures.

C.5 After a period of on-the-job training, coded reports were reviewed by the assistant project director in detail and only those analysts with consistently high quality work were selected to analyze the project data.

Procedures

C.6 Systematic procedures were created to ensure the precise and uniform coding of the accident report forms.

C.7 All reports were checked by a senior analyst for obvious errors or omissions. The coded reports were grouped for further checking. Some reports were randomly selected and completely recoded by a senior analyst. Any discrepancies between the original coding and the recoding were noted and the analyst was given feedback during his daily check-in session.

C.8 The coded reports were then reviewed and checked for quality by either the assistant project director or the principal investigator before being keypunched.

C.9 The quality control check entailed a quick check on certain data items and a detailed review of the coding of accident type, primary and secondary precipitating factors, and predisposing factors.

DATA REDUCTION PHASE

Objectives

C.10 The basic objectives of the data reduction and analysis were:

- Identify the frequency of precipitating factors, predisposing factors, and situational factors in pedestrian accidents.
- Determine the factors associated with specific accident types.
- Identify other useful combinations of causal factors not developed as part of the typing procedure.
- Tabulate the results for selected target groups of interest or of hypothesized causal factors (e.g., alcohol).

Mechanisms

C.11 Data Analysis Phase. Three data reduction techniques were selected as useful and relevant to project objectives:

- Typing of accidents and accident characteristics
- Tabulation programs
- Branching analysis programs.

C.12 Typing of Causal Patterns. In the early stages of the project, it became apparent that certain classes or types of pedestrian accidents had some common elements and characteristics. The data collection effort was aimed at determining those causal factors behind pedestrian accidents that are amenable to countermeasures.

C.13 After reviewing a sample of several hundred accident reports, a number of causal types were identified. These types were defined and the data analysts were provided with rules for assigning cases to classification. After reading each report and coding the descriptive and quantitative information, the data analyst placed the report into an accident type. Each of these decisions was in turn reviewed by the assistant project director or the principal investigator. If a given case did not fit into an existing type description, either an additional category was created or it was labeled as having an "infrequent or unidentifiable causal pattern."

C.14 The following groups of causal types were identified:[1/]

- Typical pedestrian situation—dart-outs and dashes
- Other typical situations
- Situations with specific predisposing factors
- Nonstreet locations
- Atypical pedestrian activities
- Miscellaneous
- Atypical causes—not pedestrian countermeasure corrective
- Causes not studied
- Infrequent or unidentifiable pattern.

C.15 Tabulation Programs. A series of programs was developed to tabulate the frequency of occurrence of all data items across the entire sample of accidents and certain items for selected subsets of the sample.

C.16 Some of the subsets used for tabulation included:

- Pedestrian's age
- Pedestrian's physical limitations
- Operator's physical limitations

1/ Volume I of this report contains a detailed discussion of each accident type.

- Lighting conditions
- Roadway width
- Vehicle speed at accident scene.

C.17 In addition some cross-tabulations of interest were made, including

- Alcohol presence by alcohol as a predisposing factor
- Location of accident by accident type
- Light conditions by accident type
- City by accident type
- Alcohol presence in pedestrian by alcohol presence in driver.

C.18 These tabulation programs permit the examination of selected relationships between variables. The results of a number of selected tabulation and cross-tabulation runs appear in Appendix E.

C.19 Branching Analysis. Nonsymmetrical branching analysis is an unusual statistical technique[2/] that was designed for use in research directed at producing implementable results rather than reporting descriptive statistics. Two versions of branching analysis were written:

- PED-AID program
- Severity analysis program.

Procedures

C.20 The PED-AID program was used to identify:

- Major groups of cases with certain common characteristics
- Splinter groups of cases which differ sharply from the major groups of cases with respect to one or more variables.

PED-AID achieved these ends by successive branching splits which minimized the variability in each of the two groups. PED-AID was a modification of the original AID program that was set up to deal with data without a dependent variable. The results of this analysis were compared with the type classifications to determine if any useful combinations of factors had been overlooked. None were.

2/ John A. Sonquist and James N. Morgan, The Detection of Interaction Effects—A Report on a Computer Program for the Selection of Optimal Combinations of Explanatory Variables, Monograph No. 35, Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Michigan, 1964.

C.21 The severity analysis program, unlike PED-AID, performed the successive branching process based on variance analysis techniques, to subdivide the sample into a series of subgroups which maximize one's ability to predict values of the dependent variable—the injury severity of the accident. The program was helpful in the analysis of factors associated with the severity of injury. (See Appendix E for some representative examples.)

APPENDIX D

METHODOLOGICAL RESULTS

PURPOSE

D.1 The purpose of this appendix is twofold:

- To describe how the data collection procedures may have influenced the sample of accidents.
- To describe selected research procedure results that would be useful for planning future accident research.

STUDY SAMPLE

D.2 Appendix A contains a discussion of how the manpower effort was allocated among the 13 cities included in the study.

Table D.1 shows how many cases were collected in each city and expresses that number as a percentage of the total number of 1968 pedestrian accidents occurring in that city.

D.3 Figure D.1, on the other hand, shows the percentage of the ORI study sample that was contributed by each city. The portion from New York City is relatively small because official permission for the study was not received until more than halfway through the data collection phase.

D.4 Figure A.1 (p. A-5) shows the distribution of pedestrian accidents by time of day for the study sample and for 1968 data from two of the study cities. From this figure it appears that the sample is reasonably close to the 1968 expected time of day data, with slightly increased frequency during peak afternoon hours.

TABLE D.1

CITY SAMPLE SIZE AS A PERCENTAGE OF
1968 TOTAL PEDESTRIAN ACCIDENTS
IN EACH CITY

City	Number of Pedestrian Accidents	Number in Study Sample	Estimated Percent of Sample
New York	15,000	120	.1
Chicago	8,674	443	5.1
Philadelphia	4,472	292	6.5
Los Angeles	3,154	218	6.9
Baltimore	2,871	102	3.6
Washington, D.C.	2,097	176	8.4
San Francisco	1,446	217	15.0
St. Louis	1,429	88	6.2
New Orleans	884	84	9.5
Houston	830	104	12.5
Seattle	624	68	10.9
Boston	608	73	12.0
Denver	464	171	36.9

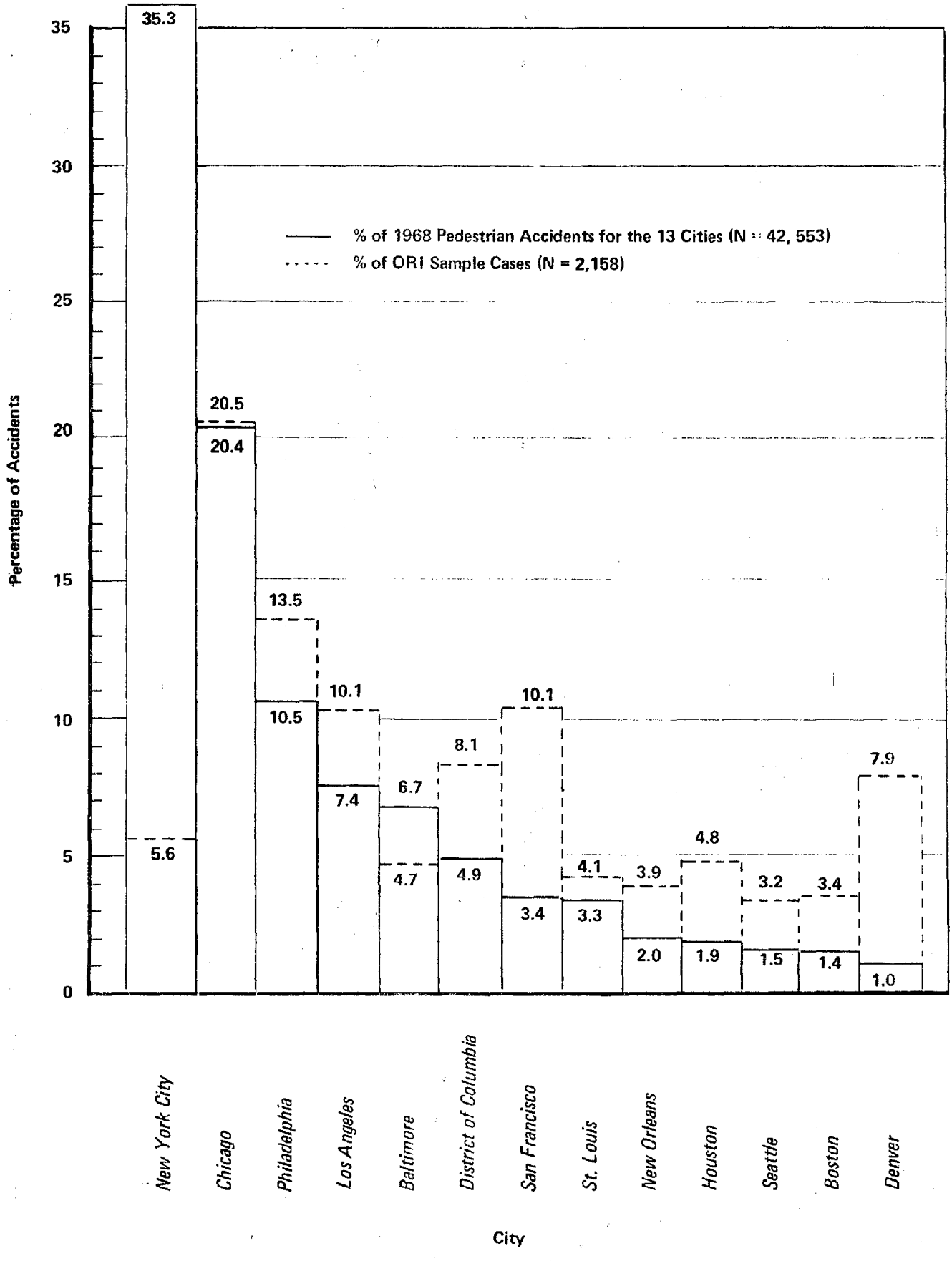

FIGURE D.1. COMPOSITION OF THE STUDY SAMPLE, BY CITY

D.5 Day of week data for a reasonable sample of pedestrian accidents were not available at this writing; however, a comparison of the day of week data for the present sample with similar figures for all 1969 motor vehicle fatalities is interesting:

Day Of Week	ORI All Cases N = 2,117	ORI Fatalities N = 258	All 1969 Motor Vehicles N = 56,400
Sunday	8%	10%	18%
Monday	16	15	11
Tuesday	16	11	10
Wednesday	15	12	11
Thursday	15	14	12
Friday	16	18	16
Saturday	14	20	22

The figures are quite consistent. The slight deviations occurring over the weekend period might be due to our selection of OSI cases from peak time periods during the week, but it could also be due to an inherent difference between pedestrian accidents and all motor vehicle accidents. The fact that the distribution of fatalities in the ORI sample (which were not subjected to the OSI bias of selection) also differs from the distribution for all motor vehicle fatalities, supports the second possibility.

INTERVIEWS GRANTED AND REFUSALS RECEIVED

D.6 Table D.2 gives a breakdown, by respondent type, of interviews conducted during the study. Of the 2,158 accidents investigated, a total of 2,051 interviews were distributed among 1,427 cases. Tables D.3 through D.5 provide more detail on the characteristics of the interviews and refusals.

D.7 When examining the number of interviews obtained during the study it should be remembered that there were 265 pedestrian fatalities and 209 hit and run operators who could not be interviewed. Among those who refused to be interviewed, 5.5% of the pedestrians and 13.4% of the drivers reported that they were following the advice of their lawyer or insurance agent.

D.8 Table D.6 compares the refusal rates for accidents with different severity levels. It is not surprising that the less serious the accident the more likely persons were to grant an interview.

TABLE D.2

CASES WITH INTERVIEWS, NUMBER OF INTERVIEWS IN SAMPLE

Number of Interviews Granted by:	
Pedestrians	752
Drivers	751
Witnesses	548
Total	2,051
Number of Cases with Interviews Granted by:	
Pedestrian only	330
Driver	291
Pedestrian and driver	258
Witness only	257
Witness and pedestrian	89
Witness and driver	117
Witness, pedestrian and driver	85
Total	1,427

TABLE D.3

TIME AFTER ACCIDENT TO INTERVIEW CONTACT

Time After Accident	Pedestrian	Driver	Witness 1	Witness 2	All Persons
<2 hrs	14.2	17.7	16.3	13.6	15.9
<24 hrs	8.7	8.9	6.8	6.8	8.4
<48 hrs	6.1	4.2	3.1	2.3	4.6
< 1 wk	17.4	15.4	16.8	15.9	16.4
< 2 wk	21.4	19.9	20.3	8.5	20.0
> 2 wk	32.2	33.8	36.6	52.8	34.6
Total	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE D.4

SITE OF INTERVIEWS AND INTERVIEW REFUSALS

Site	Pedestrian	Driver	Witness 1	Witness 2	All Persons
At scene or hospital	18.9	17.7	15.0	10.7	17.4
Home, office	50.8	42.0	45.0	46.2	46.1
Telephone	30.3	40.2	39.9	43.0	36.5
Total	100.0	100.0	100.0	100.0	100.0

TABLE D.5

COOPERATION SHOWN DURING INTERVIEWS

Degree of Cooperation	Pedestrian	Driver	Witness 1	Witness 2	All Persons
Cooperative (NFS) *	70.0	59.2	61.2	65.6	63.9
Very cooperative	17.4	27.5	30.9	32.3	24.8
Reluctant, hesitant	7.4	6.7	5.8	—	6.4
Very defensive	2.5	2.6	1.2	2.0	2.2
Terminated interview	2.7	4.0	0.9	—	2.7

* NFS; not further specified.

TABLE D.6

INTERVIEW REFUSAL RATES COMPARED
BY INJURY SEVERITY

Interview Refusal	Injury Severity				
	Fatal %	Serious %	Moderate %	Slight %	None %
Pedestrian; Refusal	97.2*	66.4	62.2	43.7	48.4
Driver; Refusal	76.8	64.3	57.4	52.9	51.1
Witness 1; Refusal	53.1	48.5	47.6	40.5	28.6
Witness 2; Refusal	67.6	67.7	73.2	64.2	33.3

*Occasionally a pedestrian was interviewed before he died.

D.9 Table D.7 compares the interview rates (percentage granting an interview) for persons contacted from 2 hours to 2 weeks after the accident. As might be expected, a greater percentage of persons contacted immediately after the accident granted interviews. Also, those contacted at the scene or at the hospital were more likely to permit an interview than those contacted at their homes or by telephone.

COMPARISON OF OSI AND FUI CASES

D.10 Tables D.8 and D.9 contain selected descriptive data on the OSI and FUI cases in the sample. Certain differences are apparent, especially in time of day and the percentage of interviews obtained. For OSI cases 79% of the drivers and 57% of the pedestrians were interviewed; for FUI cases these figures were 28.6% and 32.5%, respectively. Except for time of day variations and increased interview rates, these two types of cases appear to be similar.

TABLE D.7

INTERVIEW RATE COMPARED BY TIME AFTER ACCIDENT
AND LOCATION OF INTERVIEW

Interviewee	<2 hrs	>2 hrs but <24 hrs	>24 hrs but <48 hrs	>48 hrs but <1 wk	>1 wk but <2 wks	More Than 2 wks	Total, All Time Periods	At Scene or Hospital	At Home or Work	By Phone	Total, All Locations
Pedestrian	69.5	34.2	34.5	59.5	48.5	50.7	52.1	68.5	60.3	35.1	54.3
Driver	83.6	55.9	36.2	52.3	40.3	39.2	50.9	85.7	53.0	37.2	52.5
Witness 1	95.9	82.0	43.7	65.0	71.5	59.2	69.8	98.8	71.6	63.5	72.5
Witness 2	81.8	91.7	100.0	57.1	56.2	48.3	57.0	94.1	56.5	59.1	61.8
All Persons	80.7	52.0	35.4	57.7	49.4	47.6	54.8	80.5	59.3	42.5	56.9

TABLE D.8

BASIC DESCRIPTIVE DATA FOR ON-SCENE-INITIATED CASES, N = 279

Percentage of Cases with Data Available Falling into Each Category

Characteristic (No. and % of Cases with Data Available)																					Total
Pedestrian Age * (not tabulated)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89			100%
Time of Day * (n = 98.9%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
			0.4									0.7	1.4	4.7	9.4	26.4	29.0	21.7	5.1	0.7	0.4				
Pre-Involvement Speed * (n = 90.3%)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70						100%
	7.1	6.7	9.5	13.9	23.8	20.2	13.5	3.2	0.4	0.8	0.4	0.4									
Area ** (n = 98.9%)	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park												100%
	31.1	1.8	17.4	38.0	6.5	0.4	2.2	2.5													
Traffic Flow (n = 96.0%)	1 Light			2 Normal							3 Congested										100%
	24.6			49.2							26.1										
Type of Location (n = 96.4%)	1–4 Intersection										5 Midblock										100%
	48.7										51.3										
Severity of Injury (n = 93.2%)	1 Fatal		2 Serious			3 Moderate					4 Slight					5 No Injury					100%
	4.6		11.5			23.5					54.6					5.8					
Light Condition (n = 98.6%)	1 Daytime		2 Dawn			3 Dusk					4,7, & 8 Dark, No Lighting					5,6 Dark, Lighting					100%
	90.2					4.7					0.7					4.4					
Pedestrian Alcohol (n = 92.5%)	1 No					2 Yes										3 Not Known					100%
	94.2					1.5										4.3					
Driver Alcohol (n = 90.3%)	1 No					2 Yes										3 Not Known					100%
	96.8					0.4										2.8					

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

N = 279	TABLE D.8 (Cont)							Total
Day of Week n = (97.6 %)	Sunday 2.2	Monday 16.1	Tuesday 18.3	Wednesday 16.5	Thursday 16.1	Friday 15.4	Saturday 15.4	100%
	No		Yes		No Data			
Pedestrian Interview n = (100 %)	38.3		57.0		4.7			100%
Driver Interview n = (100 %)	17.2		78.8		4.0			100%
Witness 1 Interview n = (100 %)	7.9		37.6		54.5			100%
Witness 2 Interview n = (100 %)	4.6		7.9		87.5			100%
	Less than 2 hours	Within 24 hours	Within 48 hours	Within 1 week	Within 2 weeks	More than 2 weeks		
Pedestrian Interview Time n = (79.2 %)	73.3	5.9	2.3	4.5	4.5	9.5		100%
Driver Interview Time n = (89.6 %)	81.2	5.2	0.4	5.2	2.4	5.6		100%
Witness 1 Interview Time n = (39.1 %)	71.5	6.4	1.8	11.9	3.7	4.6		100%
Witness 2 Interview Time n = (9.0 %)	68.0	12.0		12.0	4.0	4.0		100%

TABLE D.9

Characteristic — No. and % of Cases with Data Available	BASIC DESCRIPTIVE DATA FOR FOLLOW-UP-INITIATED CASES, N = 1,680 Percentage of Cases with Data Available Falling into Each Category																						Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89					
n = (%)																							100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n = (99.6%)	1.8	0.8	0.9	0.5	0.1	0.3	0.5	2.7	3.0	1.6	3.8	4.4	5.5	4.3	6.6	11.3	11.2	11.6	7.9	7.0	5.2	4.0	2.6	2.1	100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70										
n = (69.8%)	7.2	8.6	8.8	13.9	18.2	19.8	13.7	4.9	2.2	1.4	0.9	0.2	0.1												100%
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park																
n = (97.7 %)	40.7	2.8	21.0	16.0	8.0	1.7	2.0	7.3	0.4																100%
Traffic Flow	1 Light				2 Normal												3 Congested								
n = (92.0%)	26.7				57.9												15.5								100%
Type of Location	1—4 Intersection																5 Midblock								
n = (95.8%)	49.7																50.3								100%
Severity of Injury	1 Fatal			2 Serious				3 Moderate					4 Slight					5 No Injury							
n = (95.2 %)	14.1			17.1				27.0					36.6					5.2							100%
Light Condition	1 Daytime			2 Dawn				3 Dusk					4,7, & 8 Dark, No Lighting					5,6 Dark, Lighting							
n = (98.1 %)	70.8			0.4				5.6					4.1					19.1							100%
Pedestrian Alcohol	1 No							2 Yes									3 Not Known								
n = (94.4 %)	83.9							4.9									11.2								100%
Driver Alcohol	1 No							2 Yes									3 Not Known								
n = (89.8 %)	84.1							3.0									12.9								100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

N = 1,680	TABLE D.9 (Cont)							Total
Day of Week n = (99.4 %)	Sunday 8.9	Monday 16.3	Tuesday 15.8	Wednesday 15.0	Thursday 15.7	Friday 15.3	Saturday 12.9	100%
Pedestrian Interview n = (100 %)	No 51.6		Yes 32.5		No Data 15.9			100%
Driver Interview n = (100 %)	56.1		28.6		15.3			100%
Witness 1 Interview n = (100 %)	18.4		18.7		62.9			100%
Witness 2 Interview n = (100 %)	11.4		4.5		84.1			100%
Pedestrian Interview Time n = (67.7 %)	Less than 2 hours 2.1	Within 24 hours 9.5	Within 48 hours 6.8	Within 1 week 20.7	Within 2 weeks 25.4	More than 2 weeks 35.6		100%
Driver Interview Time n = (67.6 %)	3.7	9.8	5.0	18.1	24.1	39.2		100%
Witness 1 Interview Time n = (22.7 %)	3.3	7.3	3.1	17.6	24.7	44.0		100%
Witness 2 Interview Time n = (8.6 %)	4.2	5.5	1.4	17.4	9.7	61.8		100%

APPENDIX E

SELECTED DATA

INTRODUCTION

E.1 This appendix provides selected data summaries that (a) permit the reader to examine in more detail the data upon which Volume I is based; and (b) provide a base of data on pedestrian accidents for reference use by those who are concerned with particular aspects of the problem. The material is presented in 10 independent sections:

- General descriptive data—all cases
- General descriptive data—by accident type
- Alcohol involvement in pedestrian accidents
- Precipitating and predisposing factors for all cases
- Basic descriptive data by accident type
- Major behavioral items reported by accident type
- Primary and secondary descriptive data by accident type
- Predisposing factors by accident type
- Sample branching analysis program results.

GENERAL DESCRIPTIVE DATA—ALL CASES

E.2 The following graphs and tables provide general descriptive information on all cases in the present sample. Similar descriptive information on each accident type is contained in a later section. Most of the tables are self-explanatory, with the following exception:

- "Physical Limitations" (Tables E.2 and E.3) were defined as deviations from a normal condition.
- The "Other" response category includes mental retardation, mental illness, and responses that did not fit in any of the defined response categories.

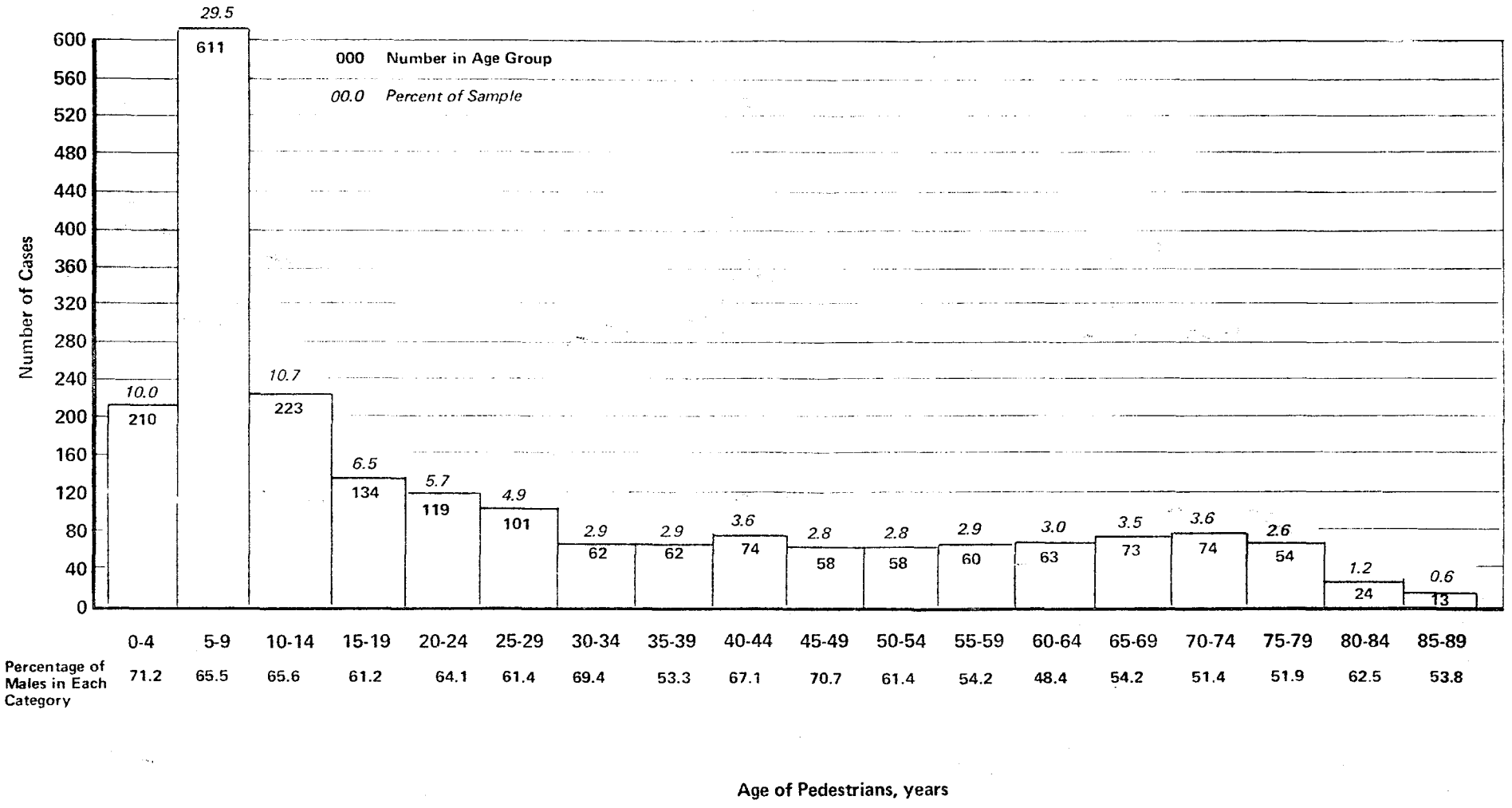

FIGURE E.1. AGE AND SEX OF PEDESTRIANS INVOLVED IN ACCIDENT STUDY (N = 2,072)

TABLE E.1

LICENSED DRIVERS AND PEDESTRIANS IN STUDY SAMPLE
COMPARED WITH TOTAL U.S. POPULATION

1a.

Age Group	Percentage Distribution of Licensed Drivers Among Age Groups	
	Total U.S.A. 1968	Study Sample (Drivers)
under 16	.1	.3
16	1.4	.9
17	2.1	1.7
18	2.4	2.5
19	2.5	3.7
20-24	12.4	17.4
25-29	11.1	14.8
30-34	9.9	10.3
35-39	10.1	7.3
40-44	10.3	8.9
45-49	9.5	8.9
50-54	8.3	7.3
55-59	6.9	6.1
60-64	5.3	4.3
65-69	3.7	2.9
over 70	4.1	2.5
total	100.0	100.0

1b.

Age Group	Percent of Age Group with License		
	Estimated Total U.S.A. 1969*	Study Sample (Pedestrians)	
under 16	——	——	
16		28.6	
17	59.1	25.0	42.4
18		26.4	
19		72.2	
20-24	74.7	54.1	
25-29	83.7	50.9	
30-34	89.5	55.6	
35-39	93.0	54.4	
40-44	91.1	61.3	
45-49	86.6	66.7	
50-54	82.9	45.2	
55-59	71.6	44.8	
60-64	63.6	33.3	
65-69	60.9	36.4	
over 70	16.4	23.3	

* Derived from p. 47, Pocket Data Book, U.S. Department of Commerce (for population by age, 1968) and p. 54, Accident Facts, 1970, National Safety Council (for number of drivers by age, 1969).

TABLE L.2
PERCENTAGE AND NUMBER OF PEDESTRIANS IN
EACH AGE GROUP WITH A DISABILITY
N = 1,479

Disability	Age																		
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	All Ages
1. Vision																			
No.	5	4	4	2	2	1	1	1	2	2	2	4	6	7	7	6	4	1	61
%	3	1	2	2	2	1	2	2	4	5	6	11	18	15	17	25	21	17	
2. Hearing																			
No.	1	2	1									1		2	1	1	3		12
%	1	0	1									3		4	2	4	16		
3. Physical Disability																			
No.		3		1						2			2						8
%		1		1						5			6						
4. Other																			
No.	4	3	2	3	4	2	2			3	4	1		2	6	3		1	40
%	2	1	1	3	5	3	5			8	12	3		4	15	13		17	
5. None Required																			
No.	153	458	169	93	78	72	40	41	46	31	27	31	25	36	27	14	12	4	1357
%	94	97	96	94	93	96	93	98	96	82	82	83	73	77	66	58	63	66	
First Three Above																			
No.													1						1
%													3						
Total																			
No.	163	470	176	99	84	75	43	42	48	38	33	37	34	47	41	24	19	6	
%																			
Disability Rate																			
No.	6	3	4	6	7	4	7	2	4	13	18	17	27	23	34	42	37	34	
%																			

TABLE E.3
PERCENTAGE AND NUMBER OF OPERATORS IN
EACH AGE GROUP WITH A DISABILITY
N = 1,498

Disability	Age																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	All Ages
1. Vision																			
No.			1	18	11	9	5	3	10	11	7	19	5	9	11	1	1	1	122
%			25	13	4	4	3	3	7	8	6	20	8	23	46	12	14	33	
2. Hearing																			
No.						1											1		2
%						1											14		
3. Physical Disability																			
No.			1					1	1		1		1			1			6
%			25					1	1		1		2			13			
4. Other																			
No.					2	2	3		2	2	3	2			1				17
%					1	1	2		1	2	3	2			4				
5. None Reported																			
No.	1		2	121	242	204	152	99	126	122	101	73	53	30	12	6	5	2	1351
%	100		50	87	95	94	95	96	91	90	90	78	90	77	50	75	72	67	
First Three Above																			
No.																			
%																			
Total																			
No.	1		4	139	255	216	160	103	139	135	112	94	59	39	24	8	7	3	
%	100		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Disability Rate																			
%	0		50	13	5	6	5	4	9	10	10	22	10	23	50	25	28	33	

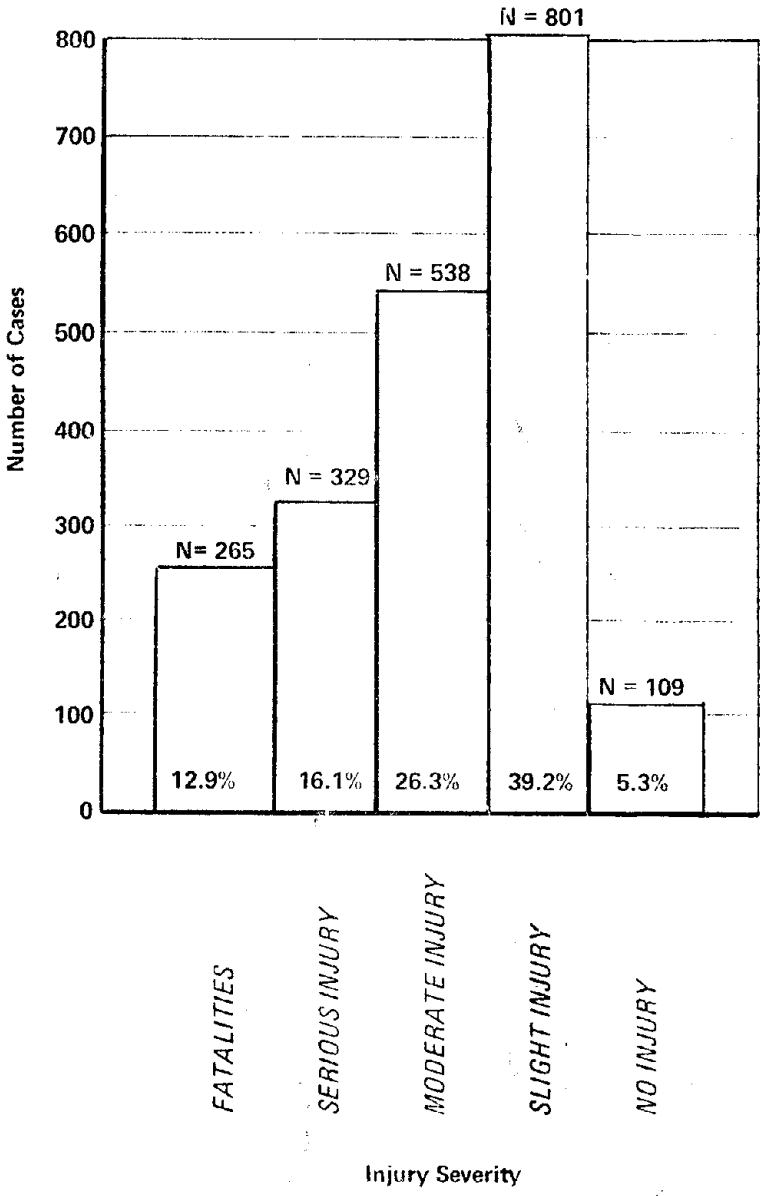

FIGURE E.2. DISTRIBUTION OF INJURY SEVERITY (N=2,042)

TABLE E.4

ESTIMATED AVERAGE TRAFFIC SPEED AT SITES OF PEDESTRIAN ACCIDENTS
(N = 1,984)

Average Speed, mph	No. of Cases	Total Reporting (%)
0	2	.1
5	33	1.7
10	47	2.4
15	123	6.2
20	337	17.0
25	609	30.7
30	539	27.2
35	202	10.2
40	59	3.0
45	14	.7
50	10	.5
55	6	.3
60	3	.1
65	- -	- -
70	- -	- -
Total	1,984	100 %

TABLE E.5

WIDTH OF ATTEMPTED PEDESTRIAN CROSSING
(N = 1,787)

Width of Attempted Crossing, ft	No. of Cases	Total Reporting (%)
0	12	.7
5	2	.1
10	8	.4
15	42	2.3
20	57	3.2
25	79	4.4
30	286	16.0
35	199	11.1
40	339	19.0
45	144	8.0
50	178	10.0
55	62	3.5
60	159	9.0
65	68	3.8
70	69	3.9
80	55	3.1
90	28	1.6
Total	1,787	100 %

GENERAL DESCRIPTIVE DATA — BY ACCIDENT TYPE

E.3 The following section contains a comparison of accident types along a number of selected parameters, including

- Location—type of intersection or midblock
- Type of area—residential, commercial, etc.
- Light conditions—daytime, dark, etc.
- Severity of injury—fatal, nonfatal
- City
- Pedestrian age.

Table E.6 shows the frequency of occurrence of each accident type.

E.4 Type 28 has been excluded from the data breakdowns by accident type because it was found that only three cases existed.

TABLE E.6

FREQUENCY OF ACCIDENT TYPES
(N = 2,147)

Accident Type	Percent	No.
A1 Dart-outs and dashes		
(01) Dart-out first half	24.1	518
(02) Dart-out second half	8.9	193
(10) Pedestrian strikes vehicle	4.0	86
(27) Intersection dash	8.4	180
Total	45.5	980
A2 Other typical pedestrian situations		
(07) Multiple threat situation	3.2	69
(14) Pedestrian waiting to cross in roadway	0.6	14
(24) Vehicle turn/merge with attention conflict	6.4	137
(26) Multiple pedestrian split	0.3	7
Total	10.5	227
B Situations with specific predisposing factors		
(06) Vendor-ice cream truck	1.5	32
(20) Pedestrian exiting from vehicle	0.9	19
(23) Bus stop related	2.6	56
(29) Backing up	1.7	37
Total	6.7	144
C Non-street locations		
(09) Non-pedestrian activity not in roadway	0.9	19
(15) Freeway-expressway—from car	0.2	4
(16) Freeway-expressway—crossing	1.1	23
(25) Off-street parking	0.9	19
Total	3.1	65
D Atypical pedestrian activity		
(08) Non-pedestrian activity in roadway	2.2	48
(21) Pedestrian walking in roadway	1.1	24
(31) Working on vehicle	0.3	6
Total	3.6	78

TABLE E.6 (Cont)

Accident Type	Percent	No.
E Miscellaneous		
(13) Rear wheel: truck or bus	0.5	10
(19) Weird	1.2	26
Total	1.7	36
F Atypical causes—not pedestrian counter-measure corrective		
(03) Precipitated by illegal antisocial act to pedestrian	1.1	24
(04) Precipitated by illegal antisocial act by pedestrian	0.9	19
(05) Hot pursuit	0.1	2
(18) Result of auto-auto crash	2.6	55
(22) Driverless vehicle	0.4	9
Total	5.1	109
G Causes not studied		
(11) Inadequate information: non-fatal	2.6	56
(12) Inadequate information: fatal	0.8	17
(17) Ped operating bike or cart	2.2	47
Total	5.6	120
H Infrequent or unidentifiable pattern	17.4	374
Total, All Cases	100.0	2,147

TABLE E.7

LOCATIONS OF ACCIDENTS COMPARED BY ACCIDENT TYPE

Accident Type	Location						
	4 Leg Intersection	T Intersection	Y Intersection	Other Intersection	Total of all Types of Intersections	Midblock	Total
A1. Dart-outs & dashes							
01 Dart-out 1st half	6.9	5.5	0.8	—	13.3	86.7	100.0
02 Dart-out 2nd half	14.5	9.3	0.5	1.5	25.9	74.1	100.0
10 Ped strikes veh	48.3	4.6	—	4.6	57.5	42.5	100.0
27 Intersection dash	74.4	19.3	1.1	4.0	98.9	1.1	100.0
Total	24.6	8.8	0.7	1.4	35.6	64.4	100.0
A2. Other typ ped situations							
07 Multiple threat	59.4	15.9	—	4.3	79.7	20.3	100.0
14 Ped waiting to cross	35.7	28.6	—	—	64.3	35.7	100.0
24 Veh turn-merge conflict	83.0	7.4	0.7	4.4	95.5	4.5	100.0
26 Multiple ped split	57.1	14.3	—	—	71.4	28.6	100.0
Total	72.0	11.6	0.4	4.0	88.0	12.0	100.0
B. Situations w/specific predisposing factors							
06 Vendor-ice cream truck	9.1	9.1	—	—	18.2	81.8	100.0
20 Ped exiting from veh	11.1	11.1	—	—	22.2	77.8	100.0
23 Bus stop related	64.1	9.4	1.9	—	81.1	18.9	100.0
29 Backing up	40.0	10.0	—	3.3	53.3	46.7	100.0
Total	38.0	9.7	0.7	3.0	51.5	72.1	100.0
C. Non-street locations—total	16.3	9.3	—	2.3	27.9	72.1	100.0
D. Atypical ped activity—total	23.9	7.0	1.4	—	32.4	67.6	100.0
E. Misc—total	25.8	9.7	—	6.4	41.9	58.1	100.0
F. Atypical causes—not ped C/M corrective—total	35.2	6.9	1.0	2.0	45.1	54.9	100.0
G. Causes not studied—total	36.0	12.3	0.9	3.5	52.6	47.4	100.0
H. Infrequent or unidentified patterns—total	56.9	11.5	0.8	3.5	72.7	27.3	100.0

TABLE E.8

TYPE OF AREA COMPARED BY ACCIDENT TYPE

Accident Type	Area									
	Commercial	*Industrial*	*Residential – One Family Houses*	*Residential – Multi/Family Houses*	*Residential – Apartments*	*Open*	*School*	*Mixed Commercial - Residential*	*Park*	*Total*
A1. Dart-outs and Dashes										
01 Dart-out First Half	16.2	1.2	32.2	31.2	10.2	0.4	2.0	6.1	0.6	100.0
02 Dart-out Second Half	35.4	3.1	18.2	23.9	9.9	1.6	3.6	4.2	–	100.0
10 Pedestrian Strikes Vehicle	40.7	2.3	25.6	17.4	7.0	–	2.3	4.6	–	100.0
27 Intersection Dash	48.5	1.1	13.9	20.2	6.3	0.6	3.5	5.8	–	100.0
Total	28.1	1.7	25.6	26.4	9.1	0.6	2.6	5.5	0.3	100.0
A2. Other Typical Pedestrian Situations										
07 Multiple Threat	65.2	–	13.0	4.3	5.8	–	2.9	8.7	–	100.0
14 Pedestrian Waiting to Cross	64.3	–	–	7.1	14.3	–	–	14.3	–	100.0
24 Vehicle Turn-merge Conflict	73.7	2.2	8.0	10.2	5.1	–	–	0.7	–	100.0
26 Multiple Pedestrian Split	71.4	–	–	14.3	–	–	–	14.3	–	100.0
Total	70.5	1.3	8.8	26.4	5.7	–	0.9	4.4	–	100.0
B. Situations with/Specific Predisposing Factors										
06 Vendor-Ice Cream Truck	3.0	–	42.4	36.4	12.1	–	6.1	–	–	100.0
20 Pedestrian Exiting From Vehicle	22.2	5.5	33.9	11.1	16.7	–	–	5.5	–	100.0
23 Bus Stop Related	61.8	1.8	16.4	7.3	5.4	–	1.8	5.4	–	100.0
29 Backing Up	45.9	2.7	16.2	16.2	5.4	–	–	10.8	2.7	100.0
Total	39.2	2.1	25.2	16.8	8.4	–	2.1	5.6	0.7	100.0
C. Nonstreet Locations - Total	33.3	4.4	6.7	2.2	–	22.2	2.2	28.9	–	100.0
D. A Typical Pedestrian Activity - Total	43.0	5.5	19.4	18.0	4.2	1.4	1.4	6.9	–	100.0
E. Miscellaneous - Total	44.1	5.9	17.6	11.8	8.8	–	–	11.8	–	100.0
F. A Typical Causes - Not Pedestrian C/M Corrective - Total	34.3	5.7	15.2	21.9	10.5	2.8	2.8	6.7	–	100.0
G. Causes Not Studied - Total	31.6	1.7	26.5	17.9	6.0	–	1.7	13.7	0.8	100.0
H. Infrequent or Unidentified Patterns - Total	53.3	2.7	15.3	10.2	7.5	1.9	1.6	7.2	0.3	100.0

TABLE E.9
FREQUENCY OF LIGHT CONDITIONS BY ACCIDENT TYPE
N=2,014

Accident Type	Daytime	Dawn	Dusk	Dark		Total
				No Street Light	Street Lights	
A1. Dart-outs & dashes						
01 Dart-out 1st half	79.5	—	7.9	3.2	9.4	100.0
02 Dart-out 2nd half	71.7	—	10.3	2.6	15.4	100.0
10 Ped strikes veh	81.6	1.1	2.3	2.3	12.7	100.0
27 Intersection dash	76.8	1.1	4.5	1.1	16.4	100.0
Total	77.7	0.3	7.2	2.6	12.2	100.0
A2. Other typ ped situations						
07 Multiple threat	83.6	—	7.5	—	8.9	100.0
14 Ped waiting to cross	50.0	—	25.0	16.7	8.3	100.0
24 Veh turn-merge conflict	70.9	0.7	6.0	1.5	20.9	100.0
26 Multiple ped split	42.9	—	14.3	—	42.9	100.0
Total	72.7	0.4	7.7	1.8	17.3	100.0
B. Situations w/specific predisposing factors						
06 Vendor-ice cream truck	97.0	—	3.0	—	—	100.0
20 Ped exiting from veh	88.2	—	—	5.9	5.9	100.0
23 Bus stop related	80.4	—	—	3.9	15.7	100.0
29 Backing up	88.9	—	—	—	11.1	100.0
Total	87.6	—	5.1	2.2	9.5	100.0
C. Nonstreet locations—total	60.0	—	—	17.8	22.2	100.0
D. Atypical ped activity—total	67.1	—	1.3	14.5	17.1	100.0
E. Misc—total	71.4	—	2.9	14.3	11.4	100.0
F. Atypical causes—not ped C/M corrective—total	73.8	—	3.7	5.6	16.8	100.0
G. Causes not studied—total	65.8	—	4.3	2.6	27.4	100.0
H. Infrequent or unidentified patterns—total	64.0	0.8	3.0	2.4	30.0	100.0

TABLE E.10

FREQUENCY OF FATAL AND NONFATAL ACCIDENTS BY ACCIDENT TYPE
N = 2,147

Accident Type	Severity of Injury %		
	Fatals	Non-fatals	Total
A1. Dart-outs & dashes			
01 Dart-out 1st half	8.3	91.7	100.0
02 Dart-out 2nd half	10.4	89.6	100.0
10 Ped strikes veh	2.3	97.7	100.0
27 Intersection dash	6.7	93.3	100.0
Total	7.8	92.2	100.0
A2. Other typ ped situations			
07 Multiple threat	5.8	94.2	100.0
14 Ped waiting to cross	14.3	85.7	100.0
24 Veh turn-merge conflict	8.8	91.2	100.0
26 Multiple ped split	14.3	85.7	100.0
Total	14.5	85.5	100.0
B. Situations w/specific predisposing factors			
06 Vendor—ice cream truck	12.5	87.5	100.0
20 Ped exiting from veh	—	100.0	100.0
23 Bus stop related	17.9	82.1	100.0
29 Backing up	5.4	94.6	100.0
Total	11.1	88.9	100.0
C. Nonstreet locations—total	29.2	80.8	100.0
D. Atypical ped activity—total	11.5	88.5	100.0
E. Misc—total	36.1	63.9	100.0
F. Atypical causes—not ped C/M corrective—total	19.3	80.7	100.0
G. Causes not studied—total	18.3	81.7	100.0
H. Infrequent or unidentified patterns—total	17.9	82.1	100.0

TABLE E.11

FREQUENCY OF ACCIDENT TYPES BY CITY (%)

Accident Type	City												
	Balto	Bost	Denv	Hous	N Orl	S.F.	Seatt	St. L	D.C.	Chic	L.A.	N.Y.	Phila
01	36.3	37.5	25.0	25.6	23.4	23.7	20.0	43.0	30.0	24.9	24.8	27.3	41.4
02	13.2	9.4	10.1	8.5	7.8	7.1	7.3	11.4	17.5	15.4	8.3	7.9	7.3
03	1.1	0	2.7	3.6	1.6	1.8	0	0	1.2	1.1	2.9	0	0.4
04	2.2	0	1.3	2.4	0	1.8	3.6	0	0.6	0.5	0.6	2.3	0.8
05	0	0	0	0	0	0	0	0	1.2	0	0	0	0
06	0	1.6	5.4	1.2	1.6	0	0	1.3	3.1	1.3	1.8	3.4	1.7
07	2.2	0	4.0	1.2	3.1	10.0	10.9	1.3	5.0	2.2	10.0	0	0.4
08	2.2	6.2	0.7	3.6	1.6	2.4	1.8	1.3	1.9	2.7	4.1	1.1	5.1
09	1.1	0	0.7	2.4	0	0	0	1.3	0.6	1.1	0.6	2.3	1.7
10	5.5	6.2	6.7	6.1	7.8	5.9	5.4	2.5	5.6	5.4	3.5	2.3	2.1
11	1.1	17.2	1.3	1.2	3.1	2.9	0	2.5	2.5	2.2	1.2	3.4	6.4
12	0	0	0	0	0	0.6	0	0	0.6	1.9	0.6	6.8	0.4
13	0	0	0	0	0	1.2	0	0	0	0.8	0	3.4	0.8
14	1.1	1.6	0.7	2.4	1.6	0.6	0	0	0.6	0.3	0.6	1.1	1.3
15	0	0	0.7	0	0	0	0	0	0	0.8	0	0	0
16	0	0	0	2.4	6.2	0	0	1.3	1.9	1.3	0	9.1	0
17	8.8	0	5.4	1.2	3.1	1.8	3.6	0	8.7	1.3	0.6	1.1	0.8
18	2.2	1.6	2.7	8.5	3.1	2.4	3.6	1.3	2.5	2.7	3.5	7.9	2.1
19	1.1	0	0.7	1.2	4.7	0.6	0	0	3.1	1.9	1.8	2.3	0.8
20	0	1.6	2.0	2.4	1.6	0.6	1.8	1.3	0.6	0.3	2.4	1.1	0.8

TABLE E.11 (Cont)

Accident Type	City												
	Balto	Bost	Denv	Hous	N Orl	S.F.	Seatt	St.L.	D.C.	Chic	L.A.	N.Y.	Phila
21	0	6.2	0.7	6.1	3.1	0.6	0	0	0.6	0.8	2.9	0	0.8
22	0	1.6	1.3	0	0	1.2	0	0	0	0	1.8	1.1	0
23	0	0	0	4.9	4.7	6.5	3.6	2.5	1.9	5.4	1.2	2.3	3.0
24	5.5	3.1	12.8	6.1	0	14.8	10.9	6.3	1.9	8.7	10.6	2.3	6.4
25	0	0	2.0	1.2	3.1	0.6	3.6	1.3	0	1.1	1.2	1.1	0.8
26	0	0	0.7	0	3.1	0	0	0	0	0.3	1.8	0	0
27	11.0	4.7	9.4	3.6	14.1	9.5	21.8	21.5	7.5	11.4	8.3	9.1	8.1
29	5.5	1.6	0.7	1.2	0	1.8	0	0	0.6	2.7	2.9	0	4.3
30	0	0	0.7	0	1.6	0.6	0	0	0	0.3	0	1.1	1.3
31	0	0	0	2.4	0	0.6	0	0	0	0.3	0.6	0	0.4
32	0	0	1.3	0	0	0	1.8	0	0	0.5	0.6	0	0
33	11.0	14.1	15.5	25.6	26.6	28.4	23.6	11.4	11.2	19.5	26.6	36.4	24.3

Insufficient number of Accident Type 28 identified to tabulate.

TABLE E.12

PEDESTRIANS IN EACH AGE GROUP (%) FOR EACH ACCIDENT TYPE

Accident Types by Group	Age Groups																		
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	Total
Group A-1. Dart-outs and Dashes – Subtotals	18.6	48.1	12.0	3.9	2.2	2.9	0.9	1.1	1.3	1.3	1.7	0.9	1.0	1.3	1.0	0.9	0.2	0.2	956
01 Dart-out First Half	23.0	52.5	11.5	2.7	0.6	1.9	1.0	1.0	1.2	0.4	1.0	1.0	0.8	0.6	0.2	0.6	–	–	512
02 Dart-out Second Half	16.4	49.7	10.6	4.2	3.7	2.1	1.0	0.5	1.0	2.1	2.1	1.0	1.6	2.1	0.5	0.5	0.5	–	189
10 Pedestrian Strikes Vehicle	15.2	34.2	12.6	5.1	2.5	7.6	1.3	1.3	1.3	2.5	1.3	–	2.5	1.3	5.1	3.8	1.3	1.3	79
27 Intersection Dash	9.2	39.9	15.0	6.3	4.6	4.6	0.6	2.3	2.3	2.9	3.5	1.1	0.6	2.9	2.3	1.1	–	0.6	173
Group A-2. Other Type Ped Situations – Subtotal	1.8	6.9	8.7	8.3	9.7	8.7	5.5	3.2	5.1	1.4	2.8	6.9	4.6	8.7	8.3	5.1	3.2	1.8	217
07 Multiple Threat	3.0	14.9	20.9	8.9	7.5	11.9	4.5	–	6.0	1.5	1.5	–	3.0	6.0	4.5	3.0	–	3.0	67
14 Pedestrian Waiting to Cross	–	7.1	7.1	7.1	21.4	7.1	14.3	–	21.4	–	7.1	–	–	–	–	–	7.1	–	14
24 Vehicle Turn-merge Conflict	1.5	2.3	1.5	6.9	9.2	7.6	5.3	5.3	3.0	1.5	3.0	11.4	6.1	10.7	11.4	6.9	4.6	1.5	131
26 Multiple Pedestrian Split	–	20.0	40.0	40.0	20.0	–	–	–	–	–	–	–	–	20.0	–	–	–	–	5
Group B. Situations w/Spec Pred Factor – Subtotal	5.1	24.1	8.7	5.8	6.6	5.8	4.4	5.8	2.2	5.8	7.3	2.9	3.6	3.6	4.4	2.2	1.4	–	137
06 Vendor - Ice Cream Truck	10.3	69.0	10.3	3.4	3.4	–	–	–	–	–	–	–	–	3.4	–	–	–	–	29
20 Pedestrian Exiting From Vehicle	5.3	10.5	–	21.0	5.3	10.5	10.5	10.5	–	10.5	10.5	–	–	–	5.3	–	–	–	19
23 Bus Stop Related	1.9	13.2	17.0	3.8	7.5	5.7	5.7	5.7	3.8	5.7	3.8	3.8	7.5	3.8	5.7	3.8	1.9	–	53
29 Backing up	5.5	11.1	–	2.8	8.3	8.3	2.8	8.3	2.8	8.3	16.7	5.5	2.8	5.5	5.5	2.8	2.8	–	36
Group C. Non-street Locations	4.9	4.9	11.5	14.7	9.8	4.9	8.2	6.5	8.2	3.3	1.6	8.2	4.9	3.3	3.3	–	1.6	–	61
Group D. Atypical Pedestrian Activity	4.5	11.9	10.4	16.4	7.5	8.9	8.9	1.5	7.5	13.4	7.5	4.5	3.0	3.0	3.0	3.0	–	–	67
Group E. Miscellaneous	–	21.9	12.5	3.1	6.2	3.1	3.1	–	12.5	3.1	3.1	–	9.4	9.4	6.2	6.2	–	–	32
Group F. Atypical Causes not Ped C/M Corrective	1.0	10.9	6.9	10.9	15.8	6.9	8.9	4.0	9.9	2.0	5.9	4.9	2.9	4.0	4.0	1.0	–	–	101
Group G. Causes not Studied	3.4	31.0	19.0	9.6	5.2	3.4	0.9	2.6	4.3	1.7	0.9	1.7	4.3	5.2	3.4	3.4	–	–	116
Group H. Infrequent Pattern	2.8	9.7	8.3	7.7	9.1	6.6	3.6	5.8	4.7	5.0	3.3	4.7	5.8	5.0	7.2	6.1	3.0	1.7	361
Percent of All Accidents	9.8	28.5	13.7	6.3	5.6	5.7	2.9	2.8	3.4	2.7	2.7	2.8	2.9	3.4	3.5	2.5	1.1	0.6	100%
N	210	608	292	134	119	100	62	59	73	58	58	60	62	72	74	54	23	12	2,130

ALCOHOL INVOLVEMENT IN PEDESTRIAN ACCIDENTS

E.5 Information on the possible involvement of alcohol in the cases studied was obtained by the field investigator, generally from written police reports. If the police report contained no information on alcohol, the FI recorded the presence or absence of this factor only when he had a sound basis for doing so. When it was not possible to determine beyond a reasonable doubt whether or not alcohol was involved, the FI indicated "not known." If no data were available on the involvement of alcohol, as in the case of a hit and run driver, "no data" was indicated.

E.6 Table E.13 shows the percentage of cases in which alcohol involvement was indicated for either the driver or pedestrian and, as a cross-tabulation, indicates combinations of alcohol involvement. In 0.3% of all the cases alcohol was positively identified in both the pedestrian and the driver.

E.7 Table E.14 shows the involvement of alcohol in fatal and nonfatal cases. In addition to the FIs' indication of alcohol presence, the data analyst, after reading and coding the entire report, indicated whether alcohol was a predisposing factor in the accident. The results of this judgment also are given in Table E.14.

E.8 Table E.15 compares the analysts' indication of alcohol as a predisposing factor with the field investigators' indication of alcohol presence in either the pedestrian or the driver. In 70.5% of the cases in which the analysts considered alcohol to be a predisposing factor, the police report had indicated that alcohol was present.

E.9 Tables E.16 and E.17 compare the involvement of alcohol in the various accident types for drivers and pedestrians. For pedestrians over 15 years old the percent of cases with alcohol presence reported was as follows:

	No	Yes	Not Known	No Data	Total
Pedestrians over 15 yrs old	70.1	8.3	16.2	5.4	100.0

TABLE E.13

COMBINATIONS OF PEDESTRIAN AND DRIVER ALCOHOL PRESENCE INDICATED IN ALL CASES
(N = 2,156)

Driver	Pedestrian				
	No	Yes	Not Known	No Data	Total
No	65.6	2.5	5.2	3.6	76.9
Yes	1.2	0.3	0.5	0.2	2.3
Not known	6.3	0.8	2.9	0.4	10.3
No data	7.1	0.5	0.8	1.9	10.5
Total	80.2	4.1	9.4	6.2	100.0

TABLE E.14

PERCENTAGE OF FATAL AND NONFATAL ACCIDENTS WITH ALCOHOL PRESENCE INDICATED

Severity of Injury	Alcohol Presence Indicated								Alcohol Indicated as Predisposing Factor	
	Pedestrian				Driver					
	Yes	No	Not Known	No Data	Yes	No	Not Known	No Data	Ped	Driver
Fatals N = 265	6.8	48.3	32.1	12.8	7.5	68.7	12.8	10.9	6.8	6.0
Nonfatals N = 1,891	3.8	84.8	6.1	5.3	1.6	78.1	10.0	10.3	3.3	1.5
All cases N = 2,156	4.1	80.3	9.4	6.2	2.3	77.0	10.3	10.4	3.8	2.0

TABLE E.15

ALCOHOL AS A PREDISPOSING FACTOR COMPARED WITH OBSERVED ALCOHOL PRESENCE

Alcohol Presence	Alcohol as Predisposing Factor, %		
	Listed	Not Listed	Total Observed
Driver			
Yes	70.5	0.9	2.3
No	2.3	78.4	76.9
Not known	15.8	10.2	10.3
No data	11.4	10.5	10.5
Total Predisposing	100.0 (N=44)	100.0 (N=2,112)	(N=2,156)
Pedestrian			
Yes	81.5	1.1	4.1
No	6.2	83.2	80.3
Not known	8.6	9.4	9.4
No data	3.7	6.3	6.2
Total Predisposing	100.0 (N=81)	100.0 (N=2,075)	(N-2,156)

TABLE E.16
ACCIDENT TYPES COMPARED BY OBSERVED PRESENCE OF ALCOHOL INVOLVEMENT (PEDESTRIAN)

Accident Type	Pedestrian Alcohol Present									
	No		Yes		Unknown		No Data		Total in Accident Type	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(01) Dart-out First Half Crossing	461	21.5	10	0.5	23	1.1	24	1.1	518	24.1
(02) Dart-out Second Half Crossing	171	7.9	5	0.2	9	0.4	8	0.4	193	9.0
(03) Precipitated by Illegal Antisocial Act to Pedestrian	16	0.7	3	0.1	3	0.1	2	0.1	24	1.1
(04) Precipitated by Illegal Antisocial Act by Pedestrian	11	0.5	0	–	4	0.2	4	0.2	19	0.9
(05) Hot Pursuit	2	0.1	0	–	0	–	0	–	2	0.1
(06) Vendor-Ice Cream Truck	29	1.3	0	–	2	0.1	1	–	32	1.5
(07) Multiple Threat Situation	59	2.7	2	0.1	6	0.3	2	0.1	69	3.2
(08) Non-Pedestrian Activity in Roadway	40	1.9	2	0.1	3	0.1	3	0.1	48	2.2
(09) Non-Pedestrian Activity Not in Roadway	13	0.6	0	–	3	0.1	3	0.1	19	0.9
(10) Pedestrian Strikes Vehicle	68	3.2	7	0.3	6	0.3	5	0.2	86	4.0
(11) Inadequate Information: Non-Fatal	45	2.1	1	–	6	0.3	4	0.2	56	2.6
(12) Inadequate Information: Fatal	5	0.2	1	–	9	0.4	2	0.1	17	0.8
(13) Rear Wheel: Truck or Bus	4	0.2	1	–	3	0.1	2	0.1	10	0.5
(14) Pedestrian Waiting to Cross in Roadway	10	0.5	0	–	3	0.1	1	–	14	0.6
(15) Freeway-Expressway – From Car	3	0.1	0	–	1	–	0	–	4	0.2
(16) Freeway-Expressway – Crossing	9	0.4	2	0.1	6	0.3	6	0.3	23	1.1
(17) Pedestrian Operating Bike, Cart, Wagon	43	2.0	1	–	1	–	2	0.1	47	2.2
(18) Result of Auto-Auto Crash	39	1.8	0	–	11	0.5	9	0.4	55	2.6
(19) Weird	19	0.9	1	–	3	0.1	3	0.1	26	1.2
(20) Pedestrian Exiting From Vehicle	17	0.8	1	–	0	–	1	–	19	0.9
(21) Pedestrian Walking in Roadway	15	0.7	4	0.2	2	0.1	3	0.1	24	1.1
(22) Driverless Vehicle	9	0.4	0	–	0	–	0	–	9	0.4
(23) Bus-Stop Related	46	2.1	2	0.1	6	0.3	2	0.1	56	2.6
(24) Vehicle Turn/Merge With Attention Conflict	114	5.3	9	0.4	8	0.4	6	0.3	137	6.4
(25) Off Street Parking	14	0.6	0	–	4	0.2	1	–	19	0.9
(26) Multiple Pedestrian Split	5	0.2	0	–	2	0.1	0	–	7	0.3
(27) Intersection Dash	152	7.1	5	0.2	13	0.6	10	0.5	180	8.4
(29) Backing Up	31	1.4	2	0.1	3	0.1	1	–	37	1.7
(30) Probable Non-Accident	6	0.3	1	–	1	–	0	–	8	0.4
(31) Working on Vehicle	4	0.2	0	–	1	–	1	–	6	0.3
(32) Excluded	5	0.2	0	–	0	–	1	–	6	0.3
(33) Infrequent or Undeterminable Pattern	254	11.8	29	1.3	58	2.7	33	1.5	374	16.1
Total	1,722	80.2	89	4.1	200	9.3	136	6.3	2,147	

TABLE E.17
ACCIDENT TYPES COMPARED BY OBSERVED PRESENCE
OF ALCOHOL INVOLVEMENT (DRIVER)

Accident Type	Driver Alcohol Present									
	No		Yes		Unknown		No Data		Total in Accident Type	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
(01) Dart-out First Half Crossing	436	20.3	2	0.1	34	1.6	46	2.1	518	24.1
(02) Dart-out Second Half Crossing	162	7.5	4	0.2	22	1.0	5	0.2	193	9.0
(03) Precipitated by Illegal Antisocial Act to Pedestrian	12	0.5	1	–	6	0.3	5	0.2	24	1.1
(04) Precipitated by Illegal Antisocial Act by Pedestrian	16	0.7	0	–	0	–	3	0.1	19	0.9
(05) Hot Pursuit	1	–	0	–	1	–	0	–	2	0.1
(06) Vendor-Ice Cream Truck	29	1.3	0	–	2	0.1	1	–	32	1.5
(07) Multiple Threat Situation	61	2.8	1	–	7	0.3	0	–	69	3.2
(08) Non-Pedestrian Activity in Roadway	33	1.5	4	0.2	5	0.2	6	0.3	48	2.2
(09) Non-Pedestrian Activity not in Roadway	13	0.6	1	–	1	–	4	0.2	19	0.9
(10) Pedestrian Strikes Vehicle	73	3.4	1	–	7	0.3	5	0.2	86	4.0
(11) Inadequate Information: Non-Fatal	32	1.5	1	–	8	0.4	15	0.7	56	2.6
(12) Inadequate Information: Fatal	6	0.3	1	–	3	0.1	7	0.3	17	0.8
(13) Rear Wheel: Truck or Bus	9	0.4	0	–	0	–	1	–	10	0.5
(14) Pedestrian Waiting to Cross in Roadway	7	0.3	1	–	3	0.1	3	0.1	14	0.6
(15) Freeway-Expressway – From Car	3	0.1	0	–	0	–	1	–	4	0.2
(16) Freeway-Expressway – Crossing	16	0.7	1	–	4	0.2	2	0.1	23	1.1
(17) Pedestrian Operating Bike, Cart, Wagon	33	1.5	0	–	8	0.4	6	0.3	47	2.2
(18) Result of Auto-Auto Crash	36	1.7	6	0.3	11	0.5	2	0.1	55	2.6
(19) Weird	22	1.0	0	–	3	0.1	1	–	26	1.2
(20) Pedestrian Exiting From Vehicle	15	0.7	0	–	2	–	2	0.1	19	0.9
(21) Pedestrian Walking in Roadway	12	0.5	0	–	4	0.2	8	0.4	24	1.1
(22) Driverless Vehicle	7	0.3	0	–	0	–	2	0.1	9	0.4
(23) Bus-Stop Related	44	2.0	0	–	6	0.3	6	0.3	56	2.6
(24) Vehicle Turn/Merge (With Attention Conflict)	113	5.3	1	–	12	0.5	11	0.5	137	6.4
(25) Off-Street Parking	12	0.5	2	0.1	4	0.2	1	–	19	0.9
(26) Multiple Pedestrian Split	5	0.2	0	–	2	0.1	0	–	7	0.3
(27) Intersection Dash	146	6.8	4	0.2	16	0.7	14	0.6	180	8.4
(29) Backing Up	28	1.3	0	–	6	0.3	3	0.1	37	1.7
(30) Probable Non-Accident	6	0.3	0	–	1	–	1	–	8	0.4
(31) Working on Vehicle	1	–	1	–	0	–	4	0.2	6	0.3
(32) Excluded	4	0.2	0	–	1	–	1	–	6	0.3
(33) Infrequent or Undeterminable Pattern	257	12.0	17	0.8	41	1.9	59	2.7	374	16.1
Total	1,653	76.7	49	2.3	220	10.2	225	10.5	2,147	

PRECIPITATING AND PREDISPOSING FACTORS FOR ALL CASES

E.10 Both precipitating and predisposing factors were identified for each case whenever sufficient information existed. The conceptual basis for the classification and identification of these factors is explained in Volume I.

E.11 Precipitating factors were identified as either "primary" or "secondary" by the data analysts during the coding and editing process. Secondary precipitating factors are those which contributed to the crash, but were not judged to be as important (i.e., alone they might not have resulted in a crash if the primary factor had been absent). Table E.18 contains the frequency of occurrence of each primary precipitating factor. E.19 shows the frequency for those factors selected as being secondary.

E.12 By grouping the specific factors into more general groups (e.g., by combining all of the pedestrian course failures into one group), Table E.20 was created to summarize the frequency of occurrence of the primary precipitating factors. It was then determined that certain specific precipitating factors frequently occurred together, as illustrated in Table E.21.

E.13 Just as it was found that certain combinations of specific factors tended to occur frequently, it was found that different factors from within one summary group tended to appear together with factors from another summary group (e.g., pedestrian course factors and pedestrian search factors tended to occur together). Table E.22 presents those groups of primary precipitating factors. Table E.23 shows the percentage of primary precipitating factors that were attributed to either pedestrians or drivers. Table E.24 shows the combinations of driver and pedestrian primary factors that were cited together.

E.14 Finally, the distribution of predisposing factors for the entire accident sample are shown in Table E.25.

TABLE E.18

FREQUENCY OF PRIMARY PRECIPITATING FACTORS

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(01) Ped course (risk taking), high exposure to vehicles	3.80	81
(02) Ped course (risk taking), poor target, slow speed	1.20	26
(03) Ped course (risk taking), poor target, short-time exposure	31.40	67
(04) Ped course (risk taking), poor target, unexpected or unusual place	3.00	64
(05) Ped course (risk taking), poor target, running	9.90	214
(06) Ped course (risk taking), poor target, crossing against light	6.50	141
(07) Ped course (risk taking), poor target, back to traffic	0	1
(08) Ped course (risk taking), poor target, poor location, sitting on curb	0.05	1
Total ped course failures = 1,206		
(10) Ped search, and detection, not further specified (NFS)*	14.10	304
(11) Ped search, overload	0.20	5
(12) Ped search, distraction (NFS) *	5.70	122
(13) Ped search, inattention	13.00	281
(14) Ped search, inadequate search	10.70	231
(1F) Ped search, distraction, traffic signal	0.50	10
(1G) Ped search, distraction, traffic during first half of crossing	1.10	24
(1H) Ped search, distraction, traffic during second half of crossing	0.60	13

* Not further specified

TABLE E.18(Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(1J) Ped search, distraction, hostile person or animal	1.30	27
(1K) Ped search, distraction, play activity	4.60	99
Total ped search failures = 1,161		
(15) Ped detection, not explainable, adequate search but detection failure	1.30	28
(16) Ped detection, perceptual interference, parked car	5.40	116
(17) Ped detection, perceptual interference, traffic	0.70	16
(18) Ped detection, perceptual interference, post	0.30	6
(19) Ped detection, perceptual interference, street furniture	0.05	1
(1A) Ped detection, perceptual interference, buiiding	0.10	3
(1B) Ped detection, perceptual interference, sun	0.05	1
(1C) Ped detection, perceptual interference, poor lighting	0.10	3
(1D) Ped detection, perceptual interference, standing traffic	2.10	46
(1E) Ped detection, perceptual interference, stopped bus	0.80	8
Total ped detection failures = 238		
(21) Ped evaluation, misperception of driver's intent	3.40	77

TABLE E.18(Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(22) Ped evaluation, poor prediction of vehicle/ped path	3.4	81
Total ped evaluation failures = 238		
(31) Ped decision and avoidance intent	0.8	17
(32) Ped avoidance action, environment	0.2	4
(33) Ped avoidance action, self-limits	0.7	15
Total ped avoidance action failures = 19		
(41) Driver course (risk taking), limitation of avoidance response, speed	4.9	106
(42) Driver course (risk taking), unexpected course, attempt to beat light	0.9	20
(43) Driver course (risk taking), unexpected course, run stop sign	0.5	11
(44) Driver course (risk taking), unexpected course, run red light	1.9	40
(45) Driver course (risk taking), unexpected course, wrong side of road	0.2	4
Total driver course failures = 181		
(5U) Driver search (and detection), not further specified	8.6	185
(51) Driver search, overload	0.6	14
(52) Driver search, distraction	3.9	85
(53) Driver search, inattention	4.0	86
(54) Driver search, inadequate search	6.5	140
Total driver search failures = 510		

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(55) Driver detection, perceptual interference, parked cars	6.0	130
(56) Driver detection, perceptual interference, traffic	1.4	31
(57) Driver detection, perceptual interference, posts	0.5	10
(58) Driver detection, perceptual interference, street furniture	0.2	4
(59) Driver detection, perceptual interference, buildings	0.3	6
(5A) Driver detection, perceptual interference, sun	0.9	20
(5B) Driver detection, perceptual interference, poor lighting	0.9	19
(5C) Driver detection, perceptual interference, standing traffic	2.2	48
(5D) Driver detection, perceptual interference, stopped bus	0.9	19
(5E) Driver detection, perceptual interference, blinding headlight	0.1	3
(5F) Driver detection, perceptual interference, trees	0	0
(5G) Driver detection, perceptual interference, splashed water	0.05	1
(5H) Driver detection, perceptual interference, snow on windshield	0.05	1
Total Driver Detection Failure = 292		
(71) Driver evaluation, misperception of ped's intent	2.7	58

TABLE E.18 (Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(72) Driver evaluation, poor prediction ped/ vehicle path	1.1	24
Total driver evaluation failures = 82		
(5X) Driver lost control of vehicle, (NSF)	3.5	75
(61) Driver and pedestrian interaction, failure to match evasive action	0.4	9
Total system failures identified =3,948		

TABLE E.19

FREQUENCY OF SECONDARY PRECIPITATING FACTORS

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(01) Ped course (risk taking), high exposure to vehicles	0.2	4
(02) Ped course (risk taking), poor target, slow speed	0.5	10
(03) Ped course (risk taking), poor target, short-time exposure	0.9	19
(04) Ped course (risk taking), poor target, unexpected or unusual place	0.3	7
(05) Ped course (risk taking), poor target, running	1.0	21
(06) Ped course (risk taking), poor target, crossing against light	0.1	3
(07) Ped course (risk taking), poor target, back to traffic	0	0
(08) Ped course (risk taking), poor target, poor location, sitting on curb	0	0
Total ped course failures = 64		
(10) Ped search, (and detection), not further specified (NFS)*	1.3	29
(11) Ped search; overload	0.1	2
(12) Ped search; distraction (NFS)*	1.0	21
(13) Ped search; inattention	1.7	36
(14) Ped search, inadequate search	2.3	50
(1F) Ped search, distraction, traffic signal	0.1	3
(1G) Ped search, distraction, traffic during first half of crossing	0.2	5
(1H) Ped crossing, distraction, traffic during second half of crossing	0	0

* Not further specified

TABLE E.19 (Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(1J) Ped search, distraction, hostile person or animal	0.10	3
(1K) Ped search, distraction, play activity	0.60	13
Total ped search failures = 162		
(15) Ped detection, not explainable, adequate search but detection failure	0.10	2
(16) Ped detection, perceptual interference, parked car	6.40	138
(17) Ped detection, perceptual interference, traffic	0.90	20
(18) Ped detection, perceptual interference, post	0.50	20
(19) Ped detection, perceptual interference, street furniture	0.20	4
(1A) Ped detection, perceptual interference, building	0.20	5
(1B) Ped detection, perceptual interference, sun	0.05	7
(1C) Ped detection, perceptual interference, poor lighting	0.30	7
(1D) Ped detection, perceptual interference, standing traffic	1.60	35
(1E) Ped detection, perceptual interference, stopped bus	6.00	13
Total ped detection failures = 235		
(21) Ped evaluation, misperception of driver's intent	1.10	23

TABLE E.19 (Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(22) Ped evaluation, poor prediction of vehicle/ped path	0.60	.14
Total ped evaluation failures = 37		
(31) Ped decision and avoidance intent	0.10	3
(32) Ped avoidance action, environment	0.05	1
(33) Ped avoidance action, self-limits	0.10	2
Total ped avoidance action failures = 3		
(41) Driver course (risk taking), limitation of avoidance response, speed	2.80	60
(42) Driver course (risk taking), unexpected course, attempt to beat light	0.10	2
(43) Driver course (risk taking), unexpected course, run stop sign	0	0
(44) Driver course (risk taking), unexpected course, run red light	0	0
(45) Driver course (risk taking), unexpected course, wrong side of road	0	0
Total driver course failures = 62		
(5U) Driver search (and detection), not further specified	2.40	52
(51) Driver search, overload	0.20	5
(52) Driver search, distraction	1.00	22
(53) Driver search, inattention	0.90	19
(54) Driver search, inadequate search	1.90	41
Total driver search failures = 139		

TABLE E.19 (Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(55) Driver detection, perceptual interference, parked cars	12.60	272
(56) Driver detection, perceptual interference, traffic	2.20	47
(57) Driver detection, perceptual interference, posts	0.40	8
(58) Driver detection, perceptual interference, street furniture	0.40	9
(59) Driver detection, perceptual interference, buildings	0.30	6
(5A) Driver detection, perceptual interference, sun	0.50	11
(5B) Driver detection, perceptual interference, poor lighting	2.40	52
(5C) Driver detection, perceptual interference, standing traffic	0.70	15
(5D) Driver detection, perceptual interference, stopped bus	0.05	1
(5E) Driver detection, perceptual interference, blinding headlight	0.05	1
(5F) Driver detection, perceptual interference, trees	0.10	2
(5G) Driver detection, perceptual interference, splashed water	0.05	1
(5H) Driver detection, perceptual interference, snow on windshield	0	0
Total driver detection failure = 469		
(71) Driver evaluation, misperception of ped's intent	1.40	31

TABLE E.19 (Cont)

System Failure Description	Cases in Which Factor Was Identified	
	Percent	No.
(72) Driver evaluation, poor prediction ped/ vehicle path	0.30	7
Total driver evaluation failures = 38		
(5X) Driver lost control of vehicle,(NFS)	0.10	2
(61) Driver and pedestrian interaction, failure to match evasive action	0.40	8
Total system failures identified =1,222		

TABLE E.20

FREQUENCY OF PRIMARY PRECIPITATING FACTOR IDENTIFICATIONS WITHIN FACTOR GROUPS
(N = 2,147 cases)

Factor	Number of Times Selected	Percent of Factors Selected
Ped course	1,206	31.0
Ped search and detection	1,116	28.6
Ped detection	238	6.1
Ped evaluation	158	4.0
Ped decision	17	.4
Ped action	19	.5
Driver course	181	4.6
Driver search and detection	510	13.1
Driver detection	292	7.5
Driver evaluation	82	2.1
Driver control-action	75	1.9
Driver and ped interaction	9	.2
Total	3,903	100%

TABLE E.21

COMBINATIONS OF SPECIFIC PRIMARY PRECIPITATING FACTORS

Combination	No.	Description	% of 1,667
03	47	Pedestrian course, poor target, short-time exposure	2.8
0310	66	Pedestrian course, short-time exposure, pedestrian search and detection, not further specified (NFS) failure	4.0
0312	16	Pedestrian course, short-time exposure, pedestrian search, distraction	0.9
0313	82	Pedestrian course, short-time exposure, inattention, not attending to anything	4.9
0314	37	Pedestrian course, short-time exposure, inadequate search	2.2
0316	23	Pedestrian course, short-time exposure, pedestrian visual, parked car	1.4
031K	23	Pedestrian course, short-time exposure, pedestrian distraction, play activity	1.4
0355	15	Pedestrian course, short-time exposure, driver visual, parked car	0.9
031055	17	Pedestrian course, short-time exposure, pedestrian search and detection, NFS, driver visual, parked car	1.0
03105U	14	Pedestrian course, short-time exposure, pedestrian search and detection, NFS, driver search and detection, NFS	0.8
031655	41	Pedestrian course, short-time exposure, pedestrian detection, visual, parked car, driver visual, parked car	2.4
05	17	Pedestrian course, poor target, running	1.0
0513	15	Pedestrian course, running, pedestrian search, inattention	0.9
0514	16	Pedestrian course, running, pedestrian search, inadequate search	0.9
0510	20	Pedestrian course, running, pedestrian search and detection failure, NFS	1.2

TABLE E.21 (Cont)

Combination	No.	Description	% of 1,667
105U	31	Pedestrian search and detection failure, NFS; driver search and detection failure, NFS	1.9
12	23	Pedestrian search, distraction	1.4
13	24	Pedestrian search, inattention, not attending to anything	1.4
14	41	Pedestrian search, inadequate search	2.4
1454	21	Pedestrian search, inadequate search; driver search and detection, inadequate search	1.3
54	21	Driver search and detection, inadequate search	1.3
5U	35	Driver search and detection failure, NFS	2.1
5X	25	Driver control of vehicle, lost control, NFS	1.5
99	66	Insufficient information	4

TABLE E.22

COMBINATIONS OF PRIMARY PRECIPITATING FACTOR GROUPS

Combinations of Factor Types	%[2]	No.
Ped course, ped search, driver detection	13.6	294
Ped course, ped search	11.3	245
Ped search, driver search	9.9	214
No factors identified	8.1	176
Ped course, ped search, driver search	6.3	136
Ped course, ped detection, driver detection	5.7	123
Ped search, driver detection	3.9	84
Driver search	3.6	77
Ped course	3.7	81
Ped search	3.6	77
Ped evaluation, driver search	2.4	53
Ped search, driver course, driver search	1.7	37
Ped course, driver detection	1.7	36
Ped course, driver search	1.6	35
Driver evaluation	1.5	33
Ped course, ped search, driver control action	1.3	29
Ped course, ped search, driver course	1.3	28
Driver course	1.2	25
Ped detection, driver detection	1.2	25
Ped search, driver control action	1.1	23
Ped search, driver detection	1.1	23

[1] In at least 10% of the sample of N=2,157.

[2] Percentage of all cases (N=2,157) that had the indicated combination of factors.

TABLE E.23

PERCENTAGE OF PRIMARY PRECIPITATING FACTORS ATTRIBUTED TO PEDESTRIANS AND DRIVERS

Number of Primary Precipitating Factors Selected for a Single Case	Factors	
	Driver	Pedestrian
One factor selected (N = 395)	40%	60%
Two factors selected (N = 842)	25%	75%
Three factors selected (N = 430)	32%	68%
All factors	30%	70%

TABLE E.24

COMBINATIONS OF DRIVER AND PEDESTRIAN PRIMARY FACTORS

Primary Precipitating Factor Combinations	% of Cases In Which Combination Appeared (N = 1,667)
One pedestrian	14.2
One driver	9.5
Two pedestrian	29.3
One pedestrian and one driver	17.1
Two driver	4.0
Three pedestrian	5.5
Two pedestrian and one driver	16.5
One pedestrian and two driver	3.5
Three driver	.3

TABLE E.25

FREQUENCY OF PREDISPOSING FACTORS

Predisposing Factors	Cases in Which Factor Was Identified	
	%	No.
Limitations on driver's search, vehicle projections	.8	21
Inducement to risk - signal timing	2.3	50
Heavy exposure, high risk, traffic control, ped vehicle turns	6.8	146
Heavy exposure, high risk, traffic control, ped vehicle conflicts	2.4	51
Heavy exposure, high risk, traffic control, safety zone design	.6	12
Heavy exposure, high risk, adult supervision of children - improperly supervised	6.9	148
Heavy exposure, high risk, adult supervision of children - unattended	6.5	140
Total heavy exp, high risk factors = 497		
Pedestrian human factors, alcohol	3.8	81
Pedestrian human factors, old age	3.6	78
Pedestrian human factors, NFS	1.9	40
Pedestrian human factors, narcotics, drugs	.05	1
Total ped human factors = 200		
Driver human factors, alcohol	2.0	44
Driver human factors, NFS	.9	19
Driver human factors, old age	.6	13
Total driver human factors = 76		

TABLE E.25(Cont)

Predisposing Factors	Cases in Which Factor Was Identified	
	%	No.
Environment - parked cars	21.2	457
Environment - weather, visibility	3.1	66
Environment - weather, slippery conditions	2.4	51
Environment - control, domestic animals	.1	2
Environment - streetcar tracks	.1	2
Total environmental factors = 578		
Vehicle condition - poor brakes	.3	7
Vehicle condition - NFS	.1	2
Vehicle design - NFS	.05	1
Total vehicular factors = 10		

BASIC DESCRIPTIVE DATA BY INJURY, SEVERITY, CLASS, AND ACCIDENT TYPE

E.15 The following section contains basic descriptive data tabulated for the entire accident sample and most accident types. Each table identifies the accident type, and the number of cases of that type that are in the sample. For each type the number of cases for which data were available is indicated, along with the percentage of all cases of that type which the number represents. The tables are presented as a series, after a brief explanation of their content.

E.16 Ten data items are covered in each table:

a. Pedestrian age was grouped into 5-year intervals with the upper limit of the interval shown. Thus the first interval includes all pedestrians from 0-4 years, the second includes pedestrians 5-9 years old, etc.

b. Time of day that the accident occurred is indicated by the upper limit of the time period. Thus the first interval includes all accidents that occurred between 12:01 p.m. and 1:00 a.m., the second interval includes those that occurred between 1:01 a.m. and 2:00 a.m., etc.

c. Pre-involvement speed indicates the speed that the vehicle was traveling before any action to avoid collision was taken. As in the case of (a) and (b) above, the upper limit of the interval is shown. The entries in the 0-mph pre-involvement speed indicate accidents in which the vehicle was proceeding from a stop and struck the pedestrian or those in which the vehicle was stationary when the pedestrian made contact with it.

d. Area indicates the predominant type of land use at the accident scene.

e. Traffic flow indicates the estimated relative density of traffic at the accident scene at the time of the accident. Field investigators were not given absolute vehicle-per-minute (vpm) values for each response, but were instructed to rate the traffic flow at the scene relative to other similar areas or locations.

f. Type of location indicates whether the accident occurred midblock or within the direct influence of an intersection.

g. Severity of injury indicates how severely injured the pedestrian was. The responses are relative judgments on the part of the field investigator. "Fatal" includes all deaths that occurred immediately after the accident

or while the accident was still under investigation locally. If a pedestrian died after the report was sent to the ORI Silver Spring office, the injury severity rating was not changed. "Serious" includes injuries that were severe enough to require hospitalization. "Moderate" covers the range of injuries that required professional medical treatment but did not involve hospitalization for a longer period than was necessary to provide such treatment. "Slight" injuries include bumps, bruises, and abrasions that may have received professional treatment but seldom more than that provided by a nurse or intern in the emergency room of the hospital or a local doctor's office. "None" indicates cases in which there was no visible injury or complaint of injury.

It is difficult to provide concise medical descriptions of injury severity because of the interdependence between this factor and the pedestrian's age and physical condition. A broken arm may only be a moderate injury to a healthy teenager but it may be a severe injury to an ailing elderly person.

h. Light condition indicates the amount of light at the accident scene. "Daytime," "dawn," and "dusk" are self-explanatory categories. Dark—lighting, and dark—no lighting indicate nighttime conditions with and without artificial streetlights.

i. Pedestrian alcohol, driver alcohol share identical response categories. "No" indicates that the police accident report or direct observation by the FI showed that the pedestrian or driver had not been drinking. "Yes" indicates that there was positive information indicating that the driver or pedestrian had been drinking. "Not known" was coded when there was either inadequate or contradictory information, making it impossible to be certain that either "no" or "yes" was true.

BASIC DESCRIPTIVE DATA FOR ALL ACCIDENT TYPES (N = 2,158)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																			Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	
n=2073(96 %)	10	29	11	6	6	5	3	3	4	3	3	3	3	3	4	3	1	1	100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n=2146 (99%)	1	---	---	---	---	2	2	1	3	4	5	4	7	14	14	13	7	6	4	3	2	2	2	1	100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70				
n=1541(73 %)	7	9	9	14	19	20	13	4	2	1	1	---	---	---	---				100%
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park										
n=2094(99 %)	39	2	21	19	8	1	2	7	–										100%
Traffic Flow	1 Light		2 Normal				3 Congested												
n=1965(93 %)	27		56				17												100%
Type of Location	1–4 Intersection						5 Midblock												
n=2053(97 %)	50						50												100%
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury										
n=2042(95 %)	13		16		26		39		5										100%
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting										
n=2099(99 %)	73		–		6		4		17										100%
Pedestrian Alcohol	1 No				2 Yes				3 Not Known										
n=2022(94 %)	86				4				10										100%
Driver Alcohol	1 No				2 Yes				3 Not Known										
n=1931(90 %)	86				3				11										100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR FATAL CASES (N = 265)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																					Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89			
n = 235 (89 %)	7	19	3	3	2	4	1	2	6	4	6	5	7	8	6	11	3	2			100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n = 264 (99 %)	1	1	0	0	3	3	2	1	3	5	3	4	8	6	4	11	7	8	6	5	4	3	4	1	100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70						
n = 165 (60 %)	6	5	4	6	19	16	21	8	5	4	4	1	1	—	—						100%
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park												
n = 259 (97 %)	42	4	8	16	10	5	1	13	—												100%
Traffic Flow	1 Light				2 Normal								3 Congested								
n = 240 (90 %)	28				57								14								100%
Type of Location	1–4 Intersection												5 Midblock								
n = 249 (91 %)	49												51								100%
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury												
n = 265 (100 %)	100		—		—		—		—												100%
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting												
n = 262 (98 %)	56		1		3		7		33												100%
Pedestrian Alcohol	1 No				2 Yes				3 Not Known												
n = 231 (88%)	55				8				37												100%
Driver Alcohol	1 No				2 Yes				3 Not Known												
n = 236 (89 %)	77				8				14												100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR "SERIOUS" INJURY CASES (N=329)
(% of Cases with Data Available Falling into Each Category)

Characteristic / Number of Cases with Data Available																							Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89					
n = 319 (97 %)	10	29	8	7	6	3	6	3	3	3	1	4	4	4	4	1	1	1					100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n = 327 (99 %)	2	1	0	0	0	1	1	1	3	5	4	3	6	9	14	9	10	9	5	5	3	3	3	1	100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70										
n = 208 (63 %)	6	5	7	8	20	20	19	10	2	2	1	0	0	0	0										100%
Area **	1 Commercial		2 Industrial		Residential 3 One–Family		Residential 4 Multi–Family		5 Apartments		6 Open		7 School		8 Mixed Coml/Res		9 Park						
n = 319 (97 %)	38		2		24		17		9		1		2		7		0						100%
Traffic Flow	1 Light						2 Normal						3 Congested										
n = 299 (90 %)	26						60						14										100%
Type of Location	1–4 Intersection										5 Midblock												
n = 316 (96 %)	45										55												100%
Severity of Injury	1 Fatal				2 Serious				3 Moderate				4 Slight				5 No Injury						
n = 329 (100 %)	—				100				—				—				—						100%
Light Condition	1 Daytime				2 Dawn				3 Dusk				4,7, & 8 Dark, No Lighting				5,6 Dark, Lighting						
n = 316 (96 %)	69				0				3				4				23						100%
Pedestrian Alcohol	1 No						2 Yes						3 Not Known										
n = 306 (91 %)	82						6						12										100%
Driver Alcohol	1 No						2 Yes						3 Not Known										
n = 296 (90 %)	89						3						7										100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR "MODERATE" INJURY CASES (N = 542)
(% of Cases with Data Available Falling into Each Category)

Characteristic Number of Cases with Data Available																								Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89						100%
n=531 (98 %)	7	19	7	4	3	3	1	1	2	1	2	2	2	1	2	1	1	0						
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n=542 (100%)	1	---	---	---	---	3	3	1	3	3	3	3	9	14	15	14	8	7	4	3	2	1	1	---	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70										100%
n=404 (74 %)	5	9	9	17	17	23	13	4	2	1	---	---	---	---	---										
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park																100%
n=534 (99 %)	39	2	26	16	7	1	3	6	0																
Traffic Flow	1 Light				2 Normal						3 Congested														100%
n=495 (91 %)	26				56						18														
Type of Location	1—4 Intersection										5 Midblock														100%
n=519 (96 %)	50										50														
Severity of Injury	1 Fatal		2 Serious			3 Moderate			4 Slight			5 No Injury													100%
n=542 (100%)	---		---			100			---			---													
Light Condition	1 Daytime		2 Dawn			3 Dusk			4,7, & 8 Dark, No Lighting			5,6 Dark, Lighting													100%
n=536 (99 %)	75		0			7			3			15													
Pedestrian Alcohol	1 No				2 Yes						3 Not Known														100%
n=520 (96 %)	92				3						5														
Driver Alcohol	1 No				2 Yes						3 Not Known														100%
n=493 (91 %)	88				2						10														

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR "SLIGHT" INJURY CASES (N=800)
(% of Cases with Data Available Falling into Each Category)

Characteristic and No. and % of Cases with Data Available																			Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	100%
n = 787 (98 %)	9	33	13	7	7	6	2	4	3	2	2	2	2	2	3	1	1	0	
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 797 (99 %)	---	---	---	---	---	2	3	1	3	3	6	5	6	16	16	15	6	3	4	2	1	1	1	1	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70				100%
n = 605 (76 %)	8	10	10	16	20	22	11	2	1	0	0	0	0	---	---				
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park										100%
n = 781 (98 %)	38	3	20	23	8	1	2	5	0										
Traffic Flow	1 Light		2 Normal				3 Congested												100%
n = 732 (91 %)	28		54				18												
Type of Location	1–4 Intersection						5 Midblock												100%
n = 772 (98 %)	52						48												
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury										100%
n = 800 100 %)	–		–		–		100		–										
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting										100%
n = 784 (98 %)	79		0		6		3		11										
Pedestrian Alcohol	1 No		2 Yes		3 Not Known														100%
n = 770 (96 %)	92		4		4														
Driver Alcohol	1 No		2 Yes		3 Not Known														100%
n = 718 (90 %)	86		1		12														

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR "NO INJURY" CASES (N = 110)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
n = 100 (91%)	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 110 (100%)	1					2	1	1	4	4	9	4	4	15	17	11	7	8	7	1	1	2	1	1	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n = 90 (82%)	11	13	12	12	30	9	10	12	0	0	0	0	0	0	0					
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n = 108 (98%)	47	3	17	21	5	0	3	4	1											
Traffic Flow	1 Light		2 Normal				3 Congested													100%
n = 103 (94%)	27		52				20													
Type of Location	1–4 Intersection						5 Midblock													100%
n = 105 (95%)	49						51													
Severity of Injury	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
n = 110 (100%)					100															
Light Condition	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
n = 108 (98%)	78	-	3	2	18															
Pedestrian Alcohol	1 No		2 Yes		3 Not Known															100%
n = 96 (87%)	90		5		5															
Driver Alcohol	1 No		2 Yes		3 Not Known															100%
n = 98 (89%)	85		1		14															

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: DART-OUT, FIRST HALF CROSSING—01 (N = 520)
(% of Cases with Data Available Falling into Each Category)

Characteristic / Number of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
n = 512 (99 %)	23	52	12	3	1	2	1	1	1	-	1	1	1	1	-	1	-	-		
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 516 (99 %)	--	--	--	--	--	1	1	--	2	4	4	4	8	17	15	15	9	9	7	2	1	1	--	--	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n = 399 (79 %)	1	2	10	17	28	27	12	1	--	--	--	--	--	--	--					
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n = 507 (99 %)	16	1	32	31	10	-	2	6	1											
Traffic Flow	1 Light			2 Normal			3 Congested													100%
n = 489 (95 %)	42			52			6													
Type of Location	1–4 Intersection					5 Midblock														100%
n = 505 (99 %)	13					87														
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury											100%
n = 497 (96 %)	9		16		27		43		5											
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting											100%
n = 507 (99 %)	79		-		8		3		9											
Pedestrian Alcohol	1 No			2 Yes			3 Not Known													100%
n = 496 (95 %)	93			2			5													
Driver Alcohol	1 No			2 Yes			3 Not Known													100%
n = 474 (91 %)	92			-			8													

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: DART-OUT SECOND HALF—02 (N=193)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																							Total
Pedestrian Age * n = 189 (98 %)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89					100%
	16	50	11	4	4	2	1	0	1	2	2	1	2	2	0	—	—	—					
Time of Day * n = 193 (100 %)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	—	—	—	—	—	3	1	—	1	2	4	3	5	18	24	15	6	7	3	2	2	2	—	—	
Pre-Involvement Speed * n = 144 (74 %)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70								100%
	2	3	6	19	16	22	20	6	3	1	1	—	—	—	—								
Area ** n = 192 (99 %)	1 Commercial		2 Industrial		Residential 3 One–Family		Residential 4 Multi–Family		5 Apartments		6 Open		7 School		8 Mixed Comm/Res		9 Park						100%
	35		3		18		24		10		2		4		4		—						
Traffic Flow n = 181 (93 %)	1 Light						2 Normal						3 Congested										100%
	22						56						22										
Type of Location n = 193 (100 %)	1–4 Intersection										5 Midblock												100%
	26										74												
Severity of Injury n = 186 (96 %)	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury														100%
	11		20		28		37		4														
Light Condition n = 194 (100 %)	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting														100%
	72		—		10		3		15														
Pedestrian Alcohol n = 185 (96 %)	1 No						2 Yes						3 Not Known										100%
	92						3						5										
Alcohol n = 188 (97 %)	1 No						2 Yes						3 Not Known										100%
	86						2						12										

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: PED STRIKES VEHICLE—10 (N = 87)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																								Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89						100%
n=79 (91%)	15	34	13	5	2	8	1	1	1	2	1	-	2	1	5	4	1	1						
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n=86 (99%)	-	-	-	-	1	3	2	1	1	3	7	3	14	15	8	20	5	7	3	2	1	1	-	-	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70										100%
n=67 (77%)	13	9	10	7	25	19	12	1	-	1	-	-	-	-	-										
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Comt/Res	9 Park																100%
n=86 (99%)	41	2	26	17	7	-	2	5	-																
Traffic Flow	1 Light		2 Normal				3 Congested																		100%
n=79 (92%)	29		52				19																		
Type of Location	1—4 Intersection										5 Midblock														100%
n=87 (100%)	57										43														
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury																100%
n=83 (95%)	2		8		23		54		12																
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting																100%
n=87 (100%)	82		1		2		2		13																
Pedestrian Alcohol	1 No				2 Yes				3 Not Known																100%
n=82 (94%)	84				8				7																
Driver Alcohol	1 No				2 Yes				3 Not Known																100%
n=82 (94%)	90				1				8																

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: INTERSECTION DASH—27 (N=180)
(% of Cases with Data Available Falling into Each Category)

Characteristic / Number of Cases with Data Available																					Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89			100%
n = 173 (96 %)	9	40	15	6	5	5	1	2	2	3	3	1	1	3	2	1	-	1			
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 180 (100%)	2	---	---	---	---	3	2	2	3	5	8	5	5	13	15	17	8	2	4	2	3	---	2	---	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70						100%
n = 139 (78 %)	5	5	6	16	21	23	16	4	4	---	---	---	---	---	---						
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park												100%
n = 173 (97 %)	49	1	14	20	6	1	3	6	-												
Traffic Flow	1 Light				2 Normal								3 Congested								100%
n = 166 (93 %)	10				67								23								
Type of Location	1—4 Intersection												5 Midblock								100%
n = 176 (98 %)	99												1								
Severity of Injury	1 Fatal		2 Serious			3 Moderate			4 Slight			5 No Injury									100%
n = 170 (95 %)	7		12			31			42			8									
Light Condition	1 Daytime		2 Dawn			3 Dusk			4,7, & 8 Dark, No Lighting			5,6 Dark, Lighting									100%
n = 177 (89 %)	77		1			4			1			16									
Pedestrian Alcohol	1 No				2 Yes								3 Not Known								100%
n = 171 (95 %)	89				3								8								
Driver Alcohol	1 No				2 Yes								3 Not Known								100%
n = 166 (91 %)	88				2								10								

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: MULTIPLE THREAT—07 (N = 69)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		
n = 67 (98%)	3	15	21	9	7	12	4	-	6	1	1	-	3	6	4	3	-	3		100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 68 (99%)	3	---	---	---	---	1	3	4	3	6	4	1	6	16	18	21	4	---	3	3	---	---	---	---	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n = 59 (85%)	5	2	8	7	22	32	12	8	3	---	---	---	---	---	---					
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n = 69 (100%)	65	-	13	4	6	-	3	9	-											
Traffic Flow	1 Light		2 Normal				3 Congested													100%
n = 65 (94%)	5		51				44													
Type of Location	1—4 Intersection						5 Midblock													100%
n = 69 (100%)	80						20													
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury											100%
n = 66 (97%)	6		17		41		33		3											
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting											100%
n = 67 (98%)	84		-		7		-		9											
Pedestrian Alcohol	1 No		2 Yes				3 Not Known													100%
n = 66 (97%)	88		3				9													
Driver Alcohol	1 No		2 Yes				3 Not Known													100%
n = 68 (99%)	88		2				10													

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: PED WAITING TO CROSS—14 (N = 14)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																			Total
Pedestrian Age * n = 14 (100%)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	100%
	-	7	7	7	21	7	14	-	21	-	7	----	----	----	----	----	7	-	
Time of Day * n = 14 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	---	---	---	---	---	---	7	7	---	7	---	---	7	---	---	7	21	---	21	---	7	7	---	7	
Pre-Involvement Speed * n = 9 (64 %)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70				100%
	-	11	11	-	22	22	22	-	11	----	----	----	----	----	----				
Area ** n = 14 (100%)	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Com'l/Res	9 Park										100%
	64	-	-	7	14	-	-	14	-										
Traffic Flow n = 14 (100%)	1 Light		2 Normal				3 Congested												100%
	14		64				21												
Type of Location n = 14 (100%)	1—4 Intersection						5 Midblock												100%
	64						36												
Severity of Injury n = 14 (100%)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury														100%
	14	21	14	50	-														
Light Condition n = 12 (86 %)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting														100%
	50	-	25	17	8														
Pedestrian Alcohol n = 13 (93 %)	1 No		2 Yes		3 Not Known														100%
	77		-		23														
Driver Alcohol n = 11 (79 %)	1 No		2 Yes		3 Not Known														100%
	64		9		27														

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: VEHICLE TURN-MERGE CONFLICT - [illegible] (N=139)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		
n=131 (95 %)	1	2	1	7	9	8	5	5	3	1	3	11	6	11	11	7	5	1		100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 137 (99 %)	1	—	1	—	—	6	4	3	5	4	6	5	9	9	11	8	11	6	4	2	1	3	1	1	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n=106 (76%)	11	26	24	22	10	2	4	—	—	—	1	—	—	—	—					
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n = 137 (99%)	74	2	8	10	5	—	—	1	—											
Traffic Flow	1 Light				2 Normal					3 Congested										100%
n=127 (91 %)	8				63					29										
Type of Location	1–4 Intersection									5 Midblock										100%
n=135 (97 %)	96									4										
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury											100%
n=126 (91 %)	9		15		29		43		3											
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting											100%
n = 134 (96 %)	71		1		6		1		21											
Pedestrian Alcohol	1 No				2 Yes					3 Not Known										100%
132 (96 %)	87				7					6										
Driver Alcohol	1 No				2 Yes					3 Not Known										100%
n=127 (92 %)	90				1					9										

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: MULTIPLE PED SPLIT—26 (N = 7)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																								Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89						100%
n=7 (100%)	–	14	29	29	14	–	–	–	–	–	–	–	–	14	–	–	–	–						
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n=7 (100%)	–	–	–	–	–	–	–	–	14	–	14	–	–	–	–	14	14	14	14	–	–	–	14	–	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70										100%
n=7 (100%)	–	–	–	17	17	–	–	50	–	17	–	–	–	–	–										
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park																100%
n=7 (100%)	71	–	–	14	–	–	–	14	–																
Traffic Flow	1 Light			2 Normal			3 Congested																		100%
n=6 (86%)	14			86			–																		
Type of Location	1–4 Intersection						5 Midblock																		100%
n=7 (100%)	71						29																		
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury																100%
n=7 (100%)	29		–		29		29		14																
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting																100%
n=7 (100%)	43		–		14		–		43																
Pedestrian Alcohol	1 No			2 Yes			3 Not Known																		100%
n=7 (100%)	71			–			29																		
Driver Alcohol	1 No			2 Yes			3 Not Known																		100%
n=7 (100%)	71			–			29																		

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: VENDOR—ICE CREAM TRUCK—06 (N = 31)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																			Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	
n = 29 (94%)	10	69	10	3	3	---	---	---	---	---	---	---	---	4	---	---	---	---	100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n = 31 (100%)	---	---	---	---	---	---	---	---	---	3	---	---	13	16	26	23	10	10	---	---	---	---	---	---	100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70				
n = 25 (81%)	8	4	4	16	24	20	20	---	---	---	---	4	---	---	---				100%
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park										
n = 31 (100%)	3	-	42	36	12	-	6	---	---										100%
Traffic Flow	1 Light		2 Normal		3 Congested														
n = 31 (100%)	47		53		-														100%
Type of Location	1—4 Intersection		5 Midblock																
n = 31 (100%)	18		82																100%
Severity of Injury	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury														
n = 29 (94%)	14	28	28	31	-														100%
Light Condition	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting														
n = 31 (100%)	96	-	4	---	---														100%
Pedestrian Alcohol	1 No		2 Yes		3 Not Known														
n = 30 (97%)	97		-		3														100%
Driver Alcohol	1 No		2 Yes		3 Not Known														
n = 30 (97%)	97		-		3														100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: PED EXITING FROM VEHICLE—20 (N 19)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																			Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	100%
n = 19 (100%)	5	10	-	21	5	10	10	10	-	10	10	---	---	---	5	---	---	---	
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 19 (100%)	---	---	---	---	---	---	16	---	---	10	5	5	---	21	16	10	---	5	---	5	---	---	---	5	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70				100%
n = 13 (68%)	---	---	8	23	15	38	8	8	---	---	---	---	---	---	---				
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park										100%
n = 18 (95%)	22	6	39	11	17	-	-	6	-										
Traffic Flow	1 Light				2 Normal					3 Congested									100%
n = 14 (74%)	43				29					29									
Type of Location	1–4 Intersection									5 Midblock									100%
n = 18 (95%)	22									78									
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight			5 No Injury									100%
n = 16 (84%)	-		12		37		44			6									
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting			5,6 Dark, Lighting									100%
n = 18 (95%)	83		-		5		6			6									
Pedestrian Alcohol	1 No				2 Yes					3 Not Known									100%
n = 18 (95%)	94				6					-									
Driver Alcohol	1 No				2 Yes					3 Not Known									100%
n = 17 (90%)	88				-					12									

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: BUS-STOP RELATED—23 (N=57)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
n = 53 (93 %)	2	13	17	4	7	6	6	6	4	6	4	4	7	4	6	4	2	-		
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 56 (98 %)	---	---	---	---	---	5	9	---	2	2	9	5	4	21	7	16	7	4	2	2	---	5	---	---	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n = 51 (72 %)	18	16	8	4	14	12	8	2	---	---	---	---	---	---	---					
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n = 55 (97 %)	62	2	16	7	5	-	2	5	-											
Traffic Flow	1 Light		2 Normal				3 Congested													100%
n = 53 (93 %)	15		57				28													
Type of Location	1—4 Intersection						5 Midblock													100%
n = 53 (93 %)	81						19													
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury											100%
n = 53 (93 %)	19		11		19		47		4											
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting											100%
n = 55 (97 %)	74		-		7		4		14											
Pedestrian Alcohol	1 No				2 Yes				3 Not Known											100%
n = 55 (97 %)	85				4				11											
Driver Alcohol	1 No				2 Yes				3 Not Known											100%
n = 51 (72 %)	88				-				12											

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: BACKING UP—29 (N = 37)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age * n = 36 (97%)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
	6	11	-	3	8	8	3	8	3	8	17	6	3	6	6	3	3	-		
Time of Day * n = 37 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	---	---	---	3	---	3	---	3	8	11	5	5	8	8	8	11	11	8	---	---	---	3	3	3	
Pre-Involvement Speed * n = 27 (73%)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
	15	52	26	4	4	---	---	---	---	---	---	---	---	---	---					
Area ** n = 37 (100%)	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
	46	3	16	16	5	-	-	11	3											
Traffic Flow n = 31 (84%)	1 Light		2 Normal		3 Congested															100%
	35		42		23															
Type of Location n = 30 (81%)	1–4 Intersection		5 Midblock																	100%
	53		47																	
Severity of injury n = 34 (92%)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
	6	12	23	41	18															
Light Condition n = 37 (100%)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
	86	-	3	-	11															
Pedestrian Alcohol n = 36 (97%)	1 No		2 Yes		3 Not Known															100%
	86		6		8															
Driver Alcohol n = 34 (92%)	1 No		2 Yes		3 Not Known															100%
	82		-		18															

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR NON-PEDESTRIAN ACTIVITY NOT IN ROADWAY—09 (N = 19)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		
n = 17 (89.5%)	11.7	5.9	11.7	17.6	11.7	11.7	11.7		5.9	5.9		5.9								100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n = 19 (100%)				5.3	10.5	5.3							5.3		26.3	10.5	5.3	10.5	10.5	5.3		5.3			100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					
n = 10 (53 %)				30	10	10	20	10	10		10									100%
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park											
n = 19 (100%)	21.0	10.5	15.8	26.3	5.3	10.5	5.3	5.3												100%
Traffic Flow	1 Light		2 Normal		3 Congested															
n = 16 (84 %)	37.5		50		12.5															100%
Type of Location	1—4 Intersection		5 Midblock																	
n = 16 (84 %)	81.2		18.8																	100%
Severity of Injury	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															
n = 18 (95 %)	11.1	33.3	27.8	22.2	5.5															100%
Light Condition	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															
n = 18 (95 %)	72.2	5.5		11.1	11.1															100%
Pedestrian Alcohol	1 No		2 Yes		3 Not Known															
n = 16 (84 %)	81.2				18.7															100%
Driver Alcohol	1 No		2 Yes		3 Not Known															
n = 15 (79 %)	86.7		6.7		6.7															100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR FREEWAY EXPRESSWAY FROM CAR — 15 (N = 4)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age * n = 4 (100%)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
				25					25				25				25			
Time of Day * n = 4 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
						25										25	25		25						
Pre-Involvement Speed * n = 4 (100%)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
								25		50	25									
Area ** n = 4 (100%)	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
						50		50												
Traffic Flow n = 4 (100%)	1 Light		2 Normal			3 Congested														100%
			50			50														
Type of Location n = 4 (100%)	1–4 Intersection					5 Midblock														100%
						100														
Severity of Injury n = 4 (100%)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
	75		25																	
Light Condition n = 4 (100%)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
	25				75															
Pedestrian Alcohol n = 4 (100%)	1 No	2 Yes	3 Not Known																	100%
	75		25																	
Driver Alcohol n = 3 (75 %)	1 No	2 Yes	3 Not Known																	100%
	100																			

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: FREEWAY-EXPRESSWAY CROSSING—16 (N = 23)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																			Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89	
n = 22 (96%)	-	9	18	9	4	4	9	9	14	---	---	9	4	4	4	---	---	---	100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	
n = 23 (100%)	4	4	---	---	---	---	4	4	---	---	9	---	---	4	17	13	---	9	9	---	4	4	13	--	100%
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70				
n = 15 (61%)	---	---	---	---	---	7	7	-	7	47	20	7	---	---	---				100%
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park										
n = 22 (96%)	4	4	9	-	-	36	-	45	-										100%
Traffic Flow	1 Light		2 Normal				3 Congested												
n = 20 (87%)	20		45				35												100%
Type of Location	1–4 Intersection						5 Midblock												
n = 18 (78%)	6						94												100%
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury										
n = 21 (91%)	52		29		9		9		-										100%
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting										
n = 22 (96%)	54		-		-		14		32										100%
Pedestrian Alcohol	1 No				2 Yes				3 Not Known										
n = 17 (74%)	53				12				35										100%
Driver Alcohol	1 No				2 Yes				3 Not Known										
n = 21 (91%)	76				5				19										100%

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: OFF-STREET PARKING OR LOADING—25 (N = 19)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		
n = 18 (95%)	5	-	5	16	16	-	5	10	-	5	5	10	5	5	5	---	---	---		100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 19 (100%)	---	---	---	---	---	---	---	---	---	10	5	10	21	---	21	5	---	5	5	10	5	---	---	---	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n = 15 (79%)	20	47	13	7	7	---	---	---	---	---	7	---	---	---	---					
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n = 19 (100%)	74	5	5	5	---	---	5	5	-											
Traffic Flow	1 Light		2 Normal		3 Congested															100%
n = 14 (74%)	79		14		7															
Type of Location	1–4 Intersection		5 Midblock																	100%
n = 5 (26%)	40		60																	
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury											100%
n = 19 (100%)	16		5		37		37		5											
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting											100%
n = 19 (100%)	74		-		-		26		-											
Pedestrian Alcohol	1 No		2 Yes		3 Not Known															100%
n = 18 (95%)	78		-		22															
Driver Alcohol	1 No		2 Yes		3 Not Known															100%
n = 18 (95%)	67		11		22															

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

NOT REPRODUCIBLE

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: NON-PED ACTIVITY IN ROADWAY 08 (N = 49)

(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age * n = 48 (98 %)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
	6	17	6	17	6	8	10	2	6	6	6	—	4	2	—	2	—	—		
Time of Day * n = 49 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	2	2	---	2	---	---	2	---	4	2	6	8	6	8	16	12	10	4	---	4	6	2	2	---	
Pre-Involvement Speed * n = 32 (66 %)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
	6	19	6	9	22	12	9	9	3	3	—	—	—	—	—					
Area ** n = 45 (92 %)	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
	42	7	15	24	4	—	—	7	—											
Traffic Flow n = 45 (92 %)	1 Light		2 Normal				3 Congested													100%
	31		56				13													
Location n = 47 (96 %)	1–4 Intersection						5 Midblock													100%
	43						57													
Severity of Injury n = 47 (96%)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
	11	19	23	45	2															
Light Condition n = 49 (100%)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
	67	—	2	14	16															
Pedestrian Alcohol n = 46 (94 %)	1 No		2 Yes				3 Not Known													100%
	89		4				6													
Driver n = 43 (88 %)	1 No		2 Yes				3 Not Known													100%
	79		9				12													

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: PED WALKING IN ROADWAY—21 (N=24)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age * n = 24 (100%)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
	—	—	17	8	8	8	—	—	8	17	8	12	—	4	4	4	—	—		
Time of Day * n = 21 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	4	—	—	—	—	—	4	4	—	4	4	—	8	8	12	4	8	8	8	8	8	—	4	4	
Pre-Involvement Speed * n = 10 (42 %)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
Area ** n = 22 (92 %)	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
	36	4	32	9	4	—	4	9	—											
Traffic Flow n = 22 (92 %)	1 Light		2 Normal				3 Congested													100%
	41		36				23													
Type of Location n = 21 (88 %)	1—4 Intersection						5 Midblock													100%
	14						86													
Severity of Injury n = 23 (96 %)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
	4	30	26	39	—															
Light Condition n = 22 (92 %)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
	64	—	—	14	23															
Pedestrian Alcohol n = 21 (88 %)	1 No		2 Yes		3 Not Known															100%
	71		19		9															
Driver Alcohol n = 16 (67 %)	1 No		2 Yes		3 Not Known															100%
	75		—		25															

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: WORKING ON VEHICLE—31 (N = 6)

(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		
n=5 (83 %)	-	-	-	20	-	-	20	-	-	40	-	-	-	-	20	-	-	-		100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n=5 (83 %)	-	-	-	-	-	-	20	-	-	-	-	-	20	-	20	-	20	-	-	-	-	-	20	-	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n=4 (67 %)	50	25	25	-	-	-	-	-	-	-	-	-	-	-	-					
Area **	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
n=5 (83 %)	80	-	-	-	-	20	-	-	-											
Traffic Flow	1 Light		2 Normal			3 Congested														100%
n=4 (67 %)	50		50			-														
Type of Location	1–4 Intersection					5 Midblock														100%
n=3 (50 %)	-					100														
Severity of Injury	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
n=5 (83 %)	60	-	40	-	-															
Light Condition	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
n=5 (83 %)	80	-	-	20	-															
Pedestrian Alcohol	1 No		2 Yes		3 Not Known															100%
n=5 (83 %)	80		-		20															
Driver Alcohol	1 No		2 Yes		3 Not Known															100%
n=2 (34 %)	50		50		-															

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: REAR WHEEL TRUCK OR BUS - 13 — (N=10)

(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age * n = 8 (80%)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		100%
	-	25	---	---	---	12	---	---	---	---	---	---	13	12	13	25	---	---		
Time of Day * n = 10 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	---	---	---	---	---	---	---	---	---	---	---	20	20	10	---	20	10	--	---	20	---	20	---	---	
Pre-Involvement Speed * n = 7 (70%)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
	43	29	---	---	---	14	14	---	---	---	---	---	---	---	---					
Area ** n = 10 (100%)	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Coml/Res	9 Park											100%
	50	10	10	10	---	---	---	10	-											
Traffic Flow n = 10 (100%)	1 Light				2 Normal					3 Congested										100%
	20				50					30										
Type of Location n = 10 (100%)	1—4 Intersection									5 Midblock										100%
	50									50										
Severity of Injury n = 10 (100%)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury															100%
	100	---	---	---	---															
Light Condition n = 10 (100%)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting															100%
	60	---	---	10	30															
Pedestrian Alcohol n = 8 (80%)	1 No			2 Yes						3 Not Known										100%
	50			13						37										
Driver Alcohol n = 9 (90%)	1 No			2 Yes						3 Not Known										100%
	100			---						---										

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: WEIRD —19 (N = 27)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																								Total
Pedestrian Age * n = 24 (89 %)	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89						100%
	–	21	17	4	8	–	4	–	17	4	4	–	8	8	4	– – –	– – –	– – –						
Time of Day * n = 27 (100%)	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
	– – –	– – –	– – –	– – –	– – –	– – –	7	4	4	– – –	7	– – –	7	26	15	7	7	4	4	7	– – –	– – –	– – –	– – –	
Pre-Involvement Speed * n = 19 (70 %)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70										100%
	26	26	–	26	5	5	5	– – –	– – –	5	– – –	– – –	– – –	– – –	– – –										
Area ** n = 24 (89 %)	1 Commercial	2 Industrial	Residential 3 One–Family	Residential 4 Multi–Family	5 Apartments	6 Open	7 School	8 Mixed Comm/Res	9 Park																100%
	5	4	21	12	12	–	–	8	–																
Traffic Flow n = 22 (82 %)	1 Light				2 Normal					3 Congested															100%
	41				59					–															
Type of Location n = 21 (82 %)	1–4 Intersection									5 Midblock															100%
	38									62															
Severity of Injury n = 26 (96 %)	1 Fatal	2 Serious	3 Moderate	4 Slight	5 No Injury																				100%
	11	35	31	19	4																				
Light Condition n = 25 (93 %)	1 Daytime	2 Dawn	3 Dusk	4,7, & 8 Dark, No Lighting	5,6 Dark, Lighting																				100%
	76	–	4	16	4																				
Pedestrian Alcohol n = 24 (89 %)	1 No			2 Yes					3 Not Known																100%
	83			4					12																
Driver Alcohol n = 25 (93 %)	1 No			2 Yes					3 Not Known																100%
	88			–					12																

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

BASIC DESCRIPTIVE DATA FOR ACCIDENT TYPE: INFREQUENT OR UNIDENTIFIABLE PATTERN—33 (N=379)
(% of Cases with Data Available Falling into Each Category)

Characteristic No. and % of Cases with Data Available																				Total
Pedestrian Age *	4	9	14	19	24	29	34	39	44	49	54	59	64	69	74	79	84	89		
n = 361 (95%)	3	10	8	8	9	7	4	6	5	5	3	5	6	5	7	6	3	2		100%
Time of Day *	1AM	2	3	4	5	6	7	8	9	10	11	12	1PM	2	3	4	5	6	7	8	9	10	11	12	100%
n = 377 (100%)	1	2	---	---	---	4	3	2	6	4	6	4	5	10	8	10	7	6	5	7	2	2	4	2	
Pre-Involvement Speed *	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70					100%
n = 252 (68%)	-	9	9	5	12	17	15	10	4	0	2	0	---	---	---					
Area **	1 Commercial	2 Industrial	Residential 3 One—Family	Residential 4 Multi—Family	5 Apartments	6 Open	7 School	8 Mixed Com/Res	9 Park											100%
n = 373 (100%)	53	3	15	10	7	2	2	7	0											
Traffic Flow	1 Light		2 Normal		3 Congested															100%
n = 345 (92%)	18		65																	
Type of Location	1—4 Intersection		5 Midblock																	100%
n = 374 (100%)	73		27																	
Severity of Injury	1 Fatal		2 Serious		3 Moderate		4 Slight		5 No Injury											100%
n = 358 (95%)	19		19		23		35		4											
Light Condition	1 Daytime		2 Dawn		3 Dusk		4,7, & 8 Dark, No Lighting		5,6 Dark, Lighting											100%
n = 372 (100%)	64		1		3		2		30											
Pedestrian Alcohol	1 No		2 Yes		3 Not Known															100%
n = 345 (91%)	74		8		17															
Driver Alcohol	1 No		2 Yes		3 Not Known															100%
n = 319 (84%)	81		6		13															

* Upper Limit of Interval Shown

** Numbers Preceding Category Description Indicates Response Codes.

MAJOR BEHAVIORAL ITEMS REPORTED BY ACCIDENT TYPE

E.17 The following section contains tabulations of the major behavioral sequence items for the most common accident types. The following data items concerning both the pedestrian and the driver are included:

a. Direction of attention after collision course started

b. Object of attention after collision course started, including traffic items

c. Object of attention after collision course started, including nontraffic items

d. Movement characteristics of both vehicle and pedestrian

e. When both pedestrian and driver recognized the need for evasive action.

E.18 Generally the most frequent responses to these data items were selected for inclusion in the tables; however, certain response categories were included regardless of their frequency.

TABLE E.26

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ALL CASES
(N = 2,147)

Item	%	No.
Direction of Attention		560
Straight ahead	64.5	
To side(s)	21.9	
Object of Attention (Traffic)		520
Specifically indicated not attending to traffic	47.3	
Collision veh (NFS)*	21.5	
Moving traffic (NFS)	17.3	
Standing traffic (NFS)	8.6	
Other potentially threatening vehicle (NFS)	8.1	
Object of Attention (Non-traffic)		644
General street or sidewalk ahead	25.9	
Squeal of brakes	22.5	
Movement		1,857
Running	44.0	
Walking normally	26.9	
Walking rapidly	3.2	
When Recognized Need for Evasive Action		1,348
Need not recognized	66.6	
Just prior to impact	22.4	
Just after ped began collision course	5.7	
Just after driver began collision course	5.3	

* Not further specified

TABLE E.27

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ALL CASES
(N = 2,147)

Item	%	No.
Direction of Attention		545
Straight ahead	59.1	
To side(s)	19.6	
Object of Attention (Traffic)		674
Proceeding, normal caution	37.1	
Turning corner	20.0	
Object of Attention (Non-traffic)		907
Future victim(s)	24.4	
Movement		1,763
Proceeding, sustained speed	55.2	
When Recognized Need for Evasive Action		1,301
Just prior to impact	41.7	
Need not recognized-did not see ped	26.9	
Just after ped began collision course	26.1	
Just after driver began collision course	5.3	

TABLE E.28

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 01 DART-OUT FIRST HALF
(N = 520)

Item	%	No.
Direction of Attention	72.4	116
Straight ahead	72.4	
To side(s)	12.9	
Object of Attention (Traffic)		115
Specifically indicated not attending to traffic	74.8	
Collision vehicle (NFS)	10.4	
Moving traffic (NFS)	6.9	
Other potentially threatening vehicle (NFS)	3.4	
Standing traffic (NFS)	0.8	
Object of Attention (Non-traffic)		162
Friend(s) or family	29.0	
Playing, not attending to traffic	22.8	
Movement		461
Running	78.9	
Moving	9.9	
Walking normally	7.1	
Walking rapidly	0.8	
When Recognized Need for Evasive Action		311
Need not recognized	76.2	
Just prior to impact	15.1	
Just after ped began collision course	7.1	
Just after driver began collision course	0.9	

TABLE E.29

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 01 DART-OUT FIRST HALF (N = 520)

Item	%	No.
Direction of Attention		154
Straight ahead	64.3	
General search activity	22.7	
To side(s)	11.0	
Object of Attention (Traffic)		152
Proceeding, normal caution	59.2	
Object of Attention (Non-traffic)		246
Future victim(s)	25.6	
General street or sidewalk ahead (NFS)	23.9	
Movement		426
Proceeding, sustained speed	76.3	
When Recognized Need for Evasive Action		353
Just prior to impact	41.9	
Just after ped began collision course	38.2	
Need not recognized	16.1	
Just after driver began collision course	3.1	

TABLE E.30

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 02 DART-OUT SECOND HALF (N = 193)

Item	%	No.
Direction of Attention		69
Straight ahead	65.2	
To side(s)	18.8	
Object of Attention (Traffic)		69
Specifically indicated not attending to traffic	39.1	
Moving traffic (NFS)	24.6	
Other potentially threatening vehicles (NFS)	15.9	
Collision vehicle (NFS)	8.7	
Standing traffic (NFS)	8.7	
Object of Attention (Non-traffic)		36
Friend(s) or family	38.8	
General street or sidewalk ahead	36.1	
Movement		184
Running	79.3	
Walking normally	10.8	
Walking rapidly	2.7	
When Recognized Need for Evasive Action		131
Need not recognized	63.3	
Just prior to impact	25.2	
Just after ped began collision course	9.9	
Just after driver began collision course	1.5	

TABLE E.31

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 02 DART-OUT SECOND HALF (N = 193)

Item	%	No.
Direction of Attention		62
Straight ahead	69.3	
To side(s)	17.7	
Object of Attention (Traffic)		55
Turning corner	56.3	
Object of Attention (Non-traffic)		100
General street or sidewalk ahead (NFS)	19.0	
Traffic (NFS)	16.0	
Traffic moving	11.0	
Pedestrian (NFS)	10.0	
Future victim(s)	26.0	
Movement		169
Proceeding, sustained speed	75.7	
When Recognized Need for Evasive Action		133
Just prior to impact	44.3	
Just after ped began collision course	39.8	
Just after driver began collision course	3.0	
Need not recognized	12.8	

TABLE E.32

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 10 PED STRIKES VEHICLE (N = 87)

Item	%	No.
Direction of Attention		26
Straight ahead	50.0	
To side(s)	88.4	
Object of Attention (Traffic)		26
Specifically indicated not attending to traffic	50.0	
Other potentially threatening vehicle (NFS)	23.1	
Collision vehicle (NFS)	15.4	
Standing traffic (NFS)	3.8	
Moving traffic (NFS)	0	
Object of Attention (Non-traffic)		29
Friend(s) or family	44.8	
Movement		82
Running	46.3	
Walking normally	31.7	
Walking rapidly	3.6	
When Recognized Need for Evasive Action		69
Need not recognized	73.9	
Just prior to impact	17.4	
Just after ped began collision course	5.7	
Just after driver began collision course	2.9	

TABLE E.33

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 10 PED STRIKES VEHICLE (N = 87)

Item	%	No.
Direction of Attention	57.7	26
Straight ahead	57.7	
To side(s)	15.8	
Object of Attention (Traffic)		29
Proceeding, normal caution	44.8	
Proceeding, special caution	27.6	
Object of Attention (Non-traffic)		51
Future victim(s)	39.2	
Movement		80
Proceeding, sustained speed	51.2	
When Recognized Need for Evasive Action		66
Need not recognized	48.5	
Just after ped on collision course	27.3	
Just prior to impact	16.7	
Just after driver on collision course	7.6	

TABLE E.34

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 27 INTERSECTION DASH
(N = 179)

Item	%	No.
Direction of Attention		57
Straight ahead	64.9	
To side(s)	18.0	
Object of Attention (Traffic)		54
Specifically indicated not attending to traffic	25.9	
Moving traffic (NFS)	18.5	
Standing traffic (NFS)	14.8	
Collision vehicle (NFS)	12.9	
Other potentially threatening vehicles (NFS)	7.4	
Object of Attention (Non-traffic)		48
Friend(s) or family	35.4	
General, street or sidewalk ahead (NFS)	29.2	
Movement		167
Running	72.4	
Walking normally	14.4	
Walking rapidly	7.2	
When Recognized Need for Evasive Action		120
Need not recognized	68.3	
Just prior to impact	19.2	
Just after ped on collision course	8.3	
Just after driver on collision course	4.2	

TABLE E.35

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 27 INTERSECTION DASH
(N = 179)

Item	%	No.
Direction of Attention		55
Straight ahead	74.5	
To side(s)	7.2	
Object of Attention (Traffic)		56
Proceeding, normal caution	58.9	
Object of Attention (Non-traffic)		101
Future victim(s)	19.8	
General, street or sidewalk ahead (NFS)	18.8	
Movement		162
Proceeding, sustained speed	60.5	
When Recognized Need for Evasive Action		128
Just prior to impact	46.8	
Just after ped began collision course	32.0	
Need not recognized	16.4	
Just after driver began collision course	4.8	

TABLE E.36

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 07 MULTIPLE THREAT
(N = 69)

Item	%	No.
Direction of Attention		20
Straight ahead	50	
To side(s)	45	
Object of Attention (Traffic)		39
Standing traffic (NFS)	41.0	
Moving traffic (NFS)	17.9	
Other potentially threatening vehicles (NFS)	23.1	
Specifically indicated not attending to traffic	10.2	
Collision vehicle (NFS)	2.6	
Object of Attention (Non-traffic)		20
General, street or sidewalk ahead (NFS)	30.0	
Movement		67
Running	41.8	
Walking normally	41.8	
Walking rapidly	7.5	
When Recognized Need for Evasive Action		64
Need not recognized	51.6	
Just prior to impact	37.5	
Just after ped began collision course	3.1	
Just after driver began collision course	7.8	

TABLE E.37

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 07 MULTIPLE THREAT (N = 69)

Item	%	No.
Direction of Attention		23
Straight ahead	73.9	
To side(s)	13.0	
Object of Attention (Traffic)		27
Proceeding, normal caution	37.0	
Object of Attention (Non-traffic)		50
Traffic, standing	26.0	
Movement		64
Proceeding, sustained speed	57.8	
When Recognized Need for Evasive Action		56
Just prior to impact	62.5	
Need not recognized	21.4	
Just after ped began collision course	7.1	
Just after driver began collision course	8.9	

TABLE E.38

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 14 PED WAITING TO CROSS
(N = 14)

Item	%	No.
Direction of Attention		6
General search	33.3	
To side(s)	50.0	
Object of Attention (Traffic)		7
Moving traffic (NFS)	42.8	
Collision vehicle (NFS)	28.6	
Other potentially threatening vehicle (NFS)	28.6	
Standing traffic (NFS)	0	
Specifically indicated not attending to traffic	0	
Object of Attention (Non-traffic)		4
General street or sidewalk ahead (NFS)	50.0	
Movement		12
Not moving	91.7	
Walking normally	8.3	
Walking rapidly	0	
When Recognized Need for Evasive Action		10
Need not recognized	70.0	
Just prior to impact	20.0	
Just after driver began collision course	0	
Just after ped began collision course	0	

TABLE E.39

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 14 PED WAITING TO CROSS (N = 14)

Item	%	No.
Direction of Attention		2
Straight ahead	50.0	
General search activity	50.0	
To side(s)	0	
Object of Attention (Traffic)		5
Turning corner	60.0	
Object of Attention (Non-traffic)		5
Red, green, amber signal	40.0	
Movement		11
Proceeding, sustained speed	54.5	
When Recognized Need for Evasive Action		7
Just prior to impact	71.4	
Need not recognized	28.6	
Just after driver began collision course	0	
Just after ped began collision course	0	

TABLE E.40

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 24 VEHICLE TURN MERGE CONFLICT (N = 57)

Item	%	No.
Direction of Attention		51
Straight ahead	82.3	
To side(s)	13.6	
Object of Attention (Traffic)		35
Collision vehicle (NFS)	37.1	
Specifically indicated not attending to traffic	31.4	
Moving traffic (NFS)	17.1	
Standing traffic (NFS)	8.6	
Other potentially threatening vehicles (NFS)	2.8	
Object of Attention (Non-traffic)		53
General street or sidewalk ahead (NFS)	43.4	
Red, green, amber signal	28.3	
Movement		130
Walking normally	72.3	
Walking rapidly	6.9	
When Recognized Need for Evasive Action		102
Need not recognized	54.9	
Just prior to impact	35.3	
Just after driver began collision course	8.8	
Just after ped began collision course	0.9	

TABLE E.41

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 24 VEHICLE TURN MERGE CONFLICT (N = 57)

Item	%	No.
Direction of Attention		44
Right side	31.8	
Left side	29.5	
One side, unspecified	0	
Object of Attention (Traffic)		79
Turning corner	87.3	
Object of Attention (Non-traffic)		62
Traffic, moving	33.9	
Movement		134
Executing turn	76.9	
When Recognized Need for Evasive Action		96
Just prior to impact	43.7	
Need not recognized	41.7	
Just after driver began collision course	12.5	
Just after ped began collision course	2.1	

TABLE E.42

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 26 MULTIPLE PED SPLIT (N = 7)

Item	%	No.
Direction of Attention		2
Straight ahead	50.0	
To side(s)	50.0	
Object of Attention (Traffic)		2
Specifically indicated not attending to traffic	100	
Moving traffic (NFS)	0	
Collision vehicle (NFS)	0	
Other potentially threatening veh (NFS)	0	
Standing traffic	0	
Object of Attention	100	4
General, street or sidewalk ahead	50.0	
Movement		7
Running	71.4	
Walking normally	14.3	
Walking rapidly	0	
When Recognized Need for Evasive Action		4
Just prior to impact	50.0	
Need not recognized	25.0	
Just after driver began collision course	25.0	
Just after ped began collision course	0	

TABLE E.43

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 26 MULTIPLE PED SPLIT (N = 7)

Item	%	No.
Direction of Attention		2
Straight ahead	100	
To side(s)	0	
Object of Attention (Traffic)		4
Proceeding, normal caution	100	
Object of Attention (Non-traffic)		5
General street or sidewalk ahead (NFS)	40.0	
Movement		7
Proceeding, sustained speed	100	
When Recognized Need for Evasive Action		6
Just after ped began collision course	66.7	
Just prior to impact	33.3	
Need not recognized	0	
Just after driver began collision course	0	

TABLE E.44

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 06 ICE CREAM TRUCK
(N = 33)

Item	%	No.
Direction of Attention		11
Straight ahead	72.7	
To side(s)	18.2	
Object of Attention (Traffic)		12
Ice cream truck	66.7	
Moving traffic (NFS)	16.7	
Collision traffic (NFS)	8.3	
Other potentially threatening vehicles (NFS)	0	
Standing traffic (NFS)	0	
Object of Attention (Non-traffic)		9
General street or sidewalk ahead (NFS)	22.2	
Friend(s) or family	22.2	
Street furniture	22.2	
Movement		31
Running	74.1	
Walking normally	3.2	
Walking rapidly	0	
When Recognized Need for Evasive Action		24
Need not recognized	79.2	
Just prior to impact	8.3	
Just after ped began collision course	8.3	
Just after driver began collision course	4.2	

TABLE E.45

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 06 ICE CREAM TRUCK
(N = 33)

Item	%	
Direction of Attention		11
Straight ahead	45.5	
To side(s)	9.1	
Object of Attention (Traffic)		12
Proceeding, normal caution	33.0	
Object of Attention (Non-traffic)		18
Traffic (NFS)	22.2	
Future victim(s)	22.2	
Movement		29
Proceeding, sustained speed	62.1	
When Recognized Need for Evasive Action		25
Need not recognized	20.0	
Just prior to impact	40.0	
Just after ped began collision course	0	
Just after driver began collision course	40.0	

TABLE E.46

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 20 PED EXIT FROM VEHICLE (N = 19)

Item	%	No.
Direction of Attention		5
Straight ahead	60.0	
To side(s)	20.0	
Object of Attention (Traffic)		8
Specifically indicated not attending to traffic	62.5	
Collision vehicle (NFS)	25.0	
Moving traffic (NFS)	0	
Other potentially threatening vehicles (NFS)	0	
Standing traffic (NFS)	0	
Object of Attention (Non-traffic)		7
General street or sidewalk ahead	42.8	
Movement		18
Moving	22.2	
Walking normally	22.2	
Walking rapidly	16.7	
When Recognized Need for Evasive Action		15
Need not recognized	66.7	
Just after driver began collision course	20.0	
Just prior to impact	6.7	
Just after ped began collision course	6.7	

TABLE E.47

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 20 PED EXIT FROM VEHICLE (N = 19)

Item	%	No.
Direction of Attention		6
Straight ahead	33.3	
General search	33.3	
To side(s)	16.7	
Object of Attention (Traffic)		6
Proceeding, normal caution	50.0	
Object of Attention (Non-traffic)		9
Future victim(s)	33.3	
Movement		14
Proceeding, sustained speed	64.3	
When Recognized Need for Evasive Action		8
Just prior to impact	50.0	
Just after ped began collision course	37.5	
Need not recognized	12.5	
Just after driver began collision course	0	

TABLE E.48

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 23 BUS STOP RELATED (N = 57)

Item	%	No.
Direction of Attention		11
Straight ahead	45.4	
To side(s)	45.4	
Object of Attention (Traffic)		21
Bus	66.7	
Specifically indicated not attending to traffic (NFS)	19.0	
Collision vehicle (NFS)	4.8	
Other potentially threatening vehicles (NFS)	4.8	
Standing traffic (NFS)	4.8	
Moving traffic (NFS)	0	
Object of Attention (Non-traffic)		13
General street or sidewalk ahead	38.5	
Specific activity or event (NFS)	23.1	
Movement		49
Walking normally	34.7	
Running	32.6	
Walking rapidly	10.2	
When Recognized Need for Evasive Action		39
Need not recognized	56.4	
Just prior to impact	30.8	
Just after driver began collision course	10.2	
Just after ped began collision course	2.6	

TABLE E.19

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 23 BUS STOP RELATED (N = 57)

Item	%	No.
Direction of Attention		14
Straight ahead	64.3	
To side(s)	21.4	
Object of Attention (Traffic)		20
Accelerating from stop	30.0	
Proceeding, normal caution	30.0	
Object of Attention (Non-traffic)		28
Red, green, amber signal	25.0	
Traffic (NFS)	21.4	
Movement		49
Proceeding from stop	34.7	
Proceeding, sustained speed	34.7	
When Recognized Need for Evasive Action		34
Just prior to impact	52.9	
Need not recognized	32.3	
Just after ped began collision course	11.8	
Just after driver began collision course	2.9	

TABLE E.50

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 29 BACKING UP
(N = 37)

Item	%	No.
Direction of Attention		6
Straight ahead	33.3	
To side(s)	50.0	
Object of attention (Traffic)		6
Moving traffic (NFS)	50.0	
Collision veh (NFS)	0	
Other potentially threat-ening vehicle (NFS)	0	
Standing traffic (NFS)	0	
Specifically indicated not attending to traffic	0	
Object of Attention (Non-traffic)		11
General street or sidewalk ahead (NFS)	27.3	
Movement		31
Walking normally	54. 8	
Walking rapidly	3.2	
When Recognized Need for Evasive Action		20
Need not recognized	75.0	
Just prior to impact	15.0	
Just after ped began collision course	5.0	
Just after driver began collision course	5.0	

TABLE E.51

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE 29 BACKING UP
(N = 37)

Item	%	No.
Direction of Attention		13
Behind	69.2	
To side(s)	15.4	
Object of Attention (Traffic)		27
Backing up	70.4	
Object of Attention (Non-traffic)		5
Traffic (NFS)	40.0	
Movement		34
Backing up	94.1	
When Recognized Need for Evasive Action		21
Need not recognized	80.9	
Just prior to impact	14.3	
Just after driver began collision course	4.8	
Just after ped began collision course	0	

TABLE E.52

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE C NON-STREET LOCATIONS (N = 65)

Item	%	No.
Direction of Attention		17
Straight ahead	41.2	
To side(s)	41.2	
Object of Attention (Traffic)		20
Specifically indicated not attending to traffic	45.0	
Moving traffic (NFS)	15.0	
Collision veh (NFS)	35.0	
Other potentially threatening vehicle (NFS)	0	
Standing traffic (NFS)	0	
Object of Attention (Non-traffic)		16
General street or sidewalk ahead (NFS)	31.2	
Movement		51
Not moving	29.4	
Walking normally	19.6	
Walking rapidly	1.9	
When Recognized Need for Evasive Action		35
Need not recognized	62.8	
Just prior to impact	22.8	
Just after ped began collision course	2.8	
Just after driver began collision course	11.4	

TABLE E.53

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE C NON-STREET LOCATIONS (N = 65)

Item	%	No.
Direction of Attention		12
Straight ahead	50.0	
To side(s)	8.3	
Object of Attention (Traffic)		19
Maneuver (NFS)	31.6	
Object of Attention (Non-traffic)		19
Future victim(s)	47.4	
Movement		52
Proceeding, sustained speed	55.8	
When Recognized Need for Evasive Action		31
Need not recognized	29.0	
Just prior to impact	35.4	
Just after ped began collision course	9.7	
Just after driver began collision course	25.8	

TABLE E.54

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE D ATYPICAL PED ACTIVITY (N = 79)

Item	%	No.
Direction of Attention		17
Straight ahead	47.0	
To side(s)	29.4	
Object of Attention (Traffic)		28
Running	10.7	
Moving traffic (NFS)	10.7	
Collision veh (NFS)	21.4	
Other potentially threatening vehicle (NFS)	0	
Standing traffic	0	
Object of Attention (Non-traffic)		39
Working, not attending to traffic	33.3	
Movement		68
Not moving	36.8	
When Recognized Need for Evasive Action		50
Need not recognized	78.0	
Just prior to impact	16.0	
Just after ped began collision course	2.0	
Just after driver began collision course	4.0	

TABLE E.55

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE D ATYPICAL PED ACTIVITY
(N = 79)

Item	%	No.
Direction of Attention		9
Straight ahead	44.4	
To side(s)	33.3	
Object of Attention (Traffic)		13
Proceeding, normal caution	30.8	
Object of Attention (Non-traffic)		22
Future victim(s)	31.8	
Movement		51
Proceeding, sustained speed	47.0	
When Recognized Need for Evasive Action		33
Need not recognized	45.4	
Just prior to impact	36.4	
Just after ped began collision course	9.1	
Just after driver began collision course	9.1	

TABLE E.56

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE E MISCELLANEOUS
(N = 37)

Item	%	No.
Direction of Attention		5
Straight ahead	40.0	
To side(s)	40.0	
Object of Attention (Traffic)		12
Specifically indicated not attending to traffic	50.0	
Moving traffic (NFS)	8.3	
Collision veh (NFS)	25.0	
Other potentially threatening vehicle (NFS)	0	
Standing traffic (NFS)	0	
Object of Attention (Non-traffic)		12
An accident	16.7	
Toy, ball, other object in roadway	16.7	
Movement		30
Not moving	30.0	
Walking normally	10.0	
Walking rapidly	6.7	
Moving	13.3	
When Recognized Need for Evasive Action		27
Need not recognized	85.2	
Just prior to impact	7.4	
Just after ped began collision course		
Just after driver began collision course	7.4	

TABLE E.57

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE E MISCELLANEOUS
(N = 37)

Item	%	No.
Direction of Attention		7
Straight ahead	71.4	
To side(s)	0	
Object of Attention (Traffic)		13
Accelerate from stop	46.1	
Object of Attention (Non-traffic)		15
Red, green, amber signal	26.7	
General street or sidewalk ahead (NFS)	26.7	
Movement		28
Proceeding sustained speed	35.7	
Proceeding from stop	28.6	
When Recognized Need for Evasive Action		25
Need not recognized	72.0	
Just prior to impact	16.0	
Just after ped began collision course	4.0	
Just after driver began collision course	8.0	

TABLE E 58

MAJOR PEDESTRIAN BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE INFREQUENT OR UNIDENTIFIABLE PATTERNS (N = 379)

Item	%	No.
Direction of Attention		100
Straight ahead	69.0	
To side(s)	15.0	
Object of Attention (Traffic)		84
Specifically indicated not attending to traffic	33.3	
Moving traffic (NFS)	17.8	
Collision veh (NFS)	26.1	
Other potentially threatening vehicles (NFS)	8.3	
Standing traffic (NFS)	8.3	
Object of Attention (Non-traffic)		105
General street or sidewalk ahead (NFS)	34.2	
Movement		317
Walking normally	54.9	
Moving	14.5	
Walking rapidly	2.2	
Walking slowly	14.5	
When Recognized Need for Evasive Action		227
Need not recognized	63.4	
Just prior to impact	24.7	
Just after ped began collision course	4.8	
Just after driver began collision course	7.0	

TABLE E.59

MAJOR DRIVER BEHAVIORAL ITEMS REPORTED FOR ACCIDENT TYPE INFREQUENT OR UNIDENTIFIABLE PATTERNS
(N = 379)

Item	%	No.
Direction of Attention		64
Straight ahead	56.2	
To side(s)	28.1	
Object of Attention (Traffic)		90
Turning corner	32.2	
Object of Attention (Non-traffic)		99
Future victim(s)	34.3	
Movement		297
Proceeding, sustained speed	50.5	
When Recognized Need for Evasive Action		189
Need not recognized	27.5	
Just prior to impact	47.1	
Just after ped began collision course	6.3	
Just after driver began collision course	19.0	

PRIMARY AND SECONDARY PRECIPITATING FACTORS BY ACCIDENT TYPE

E.19 The following section contains tables of selected primary and secondary precipitating factors for the most common accident types. The factors were selected for inclusion in the tables on the basis of absolute frequency and expected frequency as determined by the frequency of each accident type.

E.20 For a primary precipitating factor to be selected it had to

- Occur at least five times in a given accident type
- Account for at least 5% of the factor identifications for that type.

It should be noted, however, that all factors identified solely on the basis of the second selection criterion above were not included unless the percentage of total identifications of the failure was at least as large as the percentage of total cases falling into the accident type.

E.21 Secondary precipitating factors were selected on a similar basis, and it will be noted that some factors were selected as both primary and secondary for the cases in a given accident type while others were selected as one or the other.

TABLE E.60

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
01 DART-OUT FIRST HALF
(N = 518; 24.1%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Slow	375	35.4	55.0	6		31.6
Ped Search & Detection (NFS)	99	9.4	32.2			
Ped Search, Inattention	91	8.6	32.4	12		32.4
Ped Search, Inadequate	68	6.4	29.3			
Ped Detection, Parked Car	75	7.1	64.1	104	23.5	74.3
Ped Search, Distraction, Play	52	4.9	51.5	7		53.8
Driver Detection, Parked Cars	88	8.3	67.2	200	45.1	73.0
Driver Search, Distraction (NFS)	36		28.8			
Driver Search, Distraction, Hostile	14		51.9			
Driver Course, Speed				15		25.0
Driver Search, Inattention				9		47.4

TABLE E.60 (Cont)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Driver Misperception of Ped Intent	5					
Driver Search, Distraction				9		40.9
Driver Search, Inattention						

TABLE E.61

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
02 DART-OUT SECOND HALF
(N = 193; 8.9% of Total)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	88	21.2	12.9			
Ped Course, Running	65	15.6	30.4			
Ped Search & Detection (NFS)	32	7.7	10.4			
Ped Search, Inattention	26	6.3	9.3			
Ped Search, Inadequate	32	7.7	13.8	8	5.2	16.0
Ped Detection, Parked Car	12		10.3	15	9.8	10.7
Ped Detection, Traffic	7		43.8	7		35.0
Ped Detection, Standing Traffic	6		13.0	8	5.2	22.9
Ped Search, Traffic 1st Halt	9		37.5			
Ped Search, Distraction, Play	16		15.8			

TABLE E.61 (Cont)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Poor Prediction of Veh/ Ped Path	13		16.0			
Ped Detection, Parked Cars	16		12.2	25	16.3	9.1
Ped Detection, Traffic	8		25.8	20	13.1	42.6
Driver Detection, Standing Traffic	5		10.4	10	6.5	22.2
Driver Misperception of Peds Intent	6		10.3	8	5.2	25.8
Driver Search, Inadequate				8	5.2	19.0
Driver Search & Detection (NFS)				8	5.2	15.1
Driver Detection, Poor Lighting				6		11.3

TABLE E.62

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
10 PED STRIKES VEHICLE
(N = 86; 4% of Total)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	8	5.5				
Ped Course, Running	20	13.8	9.3			
Ped Search and Detection (NFS)	15	10.3	4.9			
Ped Search, Distraction (NFS)	9	6.2	7.2			
Ped Search, Inadequate	17	11.7	6.0			
Ped Course, Distraction Signal	10	6.9	4.3			
Ped Search, Distraction Play	8	5.5	7.9			
Ped Course, Against Signal	7		5.0			
Ped Detection, Not Explainable	6		21.4			
Ped Misperception of Driver Intent	6		7.4			
Driver Misperception of Ped Intent	6		10.3			

TABLE E.62 (Cont)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Detection, Parked Car				6	16.7	4.3
Driver Detection, Parked Cars				8	22.2	

TABLE E.63

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
27 INTERSECTION DASH
(N = 179; 8.4%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	68	16.9	10.0			
Ped Course, Running	52	12.9	24.3			
Ped Course, Against Signal	56	13.9	39.7			
Ped Search and Detection (NFS)	29	7.2	9.4			
Ped Search, Inattention	36	9.0	12.8			
Ped Search, Inadequate	24	6.0	10.3			
Driver Search and Detection (NFS)	21	5.2	11.1	10	9.2	18.9
Ped Search, Distraction	12		9.6			
Ped Detection, Standing Traffic	6		13.0			
Ped Misperception of Driver Intent	10		13.0			
Ped, Poor Prediction of Veh/ Ped Path	12		14.8			

TABLE E.63 (Cont)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Driver Course, Speed				8	7.3	13.3
Driver Course, Attemot To Beat Light	6		30.0			
Driver Course, Standing Traffic	6		12.5			
Driver Detection, Parked Cars				12	11.0	4.4
Driver Detection, Traffic				9	8.3	19.1
Driver Search, Inadequate				5		11.9
Driver Detection, Poor Lighting				5		9.4
Driver Misperception of Ped Intent				5		16.1

TABLE E.64

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
07 MULTIPLE THREAT
(N = 69; 3.2%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	29	18.0	4.3			
Ped Course, Running	8	5.0	3.7			
Ped Search, Inadequate	12	7.5	5.2			
Ped Detection, Standing Traffic	23	14.3	50.0	18	29.0	51.4
Driver Detection, Standing Traffic	28	17.4	58.3	20	32.3	44.4
Ped Course, High Exposure	5		6.2			
Ped Course, Against Signal	7		5.0			
Driver Course, Speed	6		5.6			
Driver Search, Inadequate	7		5.0			
Driver Detection, Traffic	6		19.4	5	8.1	10.6

TABLE E.65

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
14 PED WAITING TO CROSS
(N = 14; .6%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, High Exposure	2	7.1	2.5			
Ped Course, Unusual Place	2	7.1	3.1			
Ped Search, Distraction (NFS)	2	7.1	1.6			
Ped Search, Inadequate	2	7.1	.9			
Ped Search, Traffic Second Half	2	7.1	15.4			
Driver Course, Speed	2	7.1	1.9			
Driver Search, Inattention	4	14.3	4.6			
Ped Course, Against Signal				1	14.3	33.3
Ped Detection, Parked Car				1	14.3	.7
Driver Detection, Poor Lighting				2	28.6	3.8

TABLE E.66

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
24 VEH TURN-MERGE CONFLICT
(N = 137; 6.4% of Total)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Search and Detection (NFS)	25	10.0	8.1	6	9.1	20.7
Ped Search, Inattention	14	5.6				
Ped Search, Inadequate	16	6.4	6.9	7	10.6	14.0
Ped Misperception of Driver Intent	14	5.6	18.2	7	10.6	29.2
Driver Search, Distraction	23	9.2	27.1			
Driver Search, Inadequate	38	15.2	27.1			
Driver Search and Detection (NFS)	39	15.6	20.5			
Driver Course, Speed	7		6.5			
Ped Search, Overload	6		42.9			
Driver Search, Inattention	8		9.2			
Driver Detection, Sun	8		40.0			
Ped Course, Slow	5		7.6	5		50.0
				5	7.6	9.4

TABLE E.67

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
26 MULT PED SPLIT
(N = 7; .3%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	2	13.3	.3			
Ped Search, Inattention	2	13.3	.7			
Driver Search, Distraction	2	13.3	2.4			
Driver Misperception of Ped Intent	2	13,3	3.4			
Ped Search, Distraction Play				1	20	7.7
Ped Misperception of Driver Intent				1	20	4.2
Poor Prediction of Veh/Ped Path				1	20	7.1
Driver Course, Speed				1	20	1.7
Driver & Ped Failure to Match				1	20	12.5

TABLE E.68

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
06 VENDOR - ICE CREAM TRUCK
(N = 32; 1.5%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	21	31.3	3.1			
Ped Search & Detection (NFS)	5	7.5	1.6			
Ped Search, Inattention	9	13.4	3.2			
Ped Search, Inadequate	7	10.4	3.0			
Ped Detection, Parked Car	5	7.5	4.3			
Driver Detection, Parked Car	5	7.5	3.8	7	43.8	2.6

TABLE E.69

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
20 PED EXITING FROM VEHICLE
(N = 19; .9%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	7	18.9	1.0			
Ped Search, Inattention	5	13.5	1.8			
NOT REPRODUCIBLE						

TABLE E.70

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
23 BUS STOP RELATED
(N = 56; 2.6%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Short Time	19	15.3	2.8			
Ped Course, Against Signal	8	6.5	5.7			
Ped Search, Inattention	13	10.5	4.6			
Ped Detection, Bus	14	11.3	77.8	10	25.0	76.9
Driver Detection, Stopped Bus	14	11.3	73.7	11	27.5	68.8

TABLE E.71

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
29 BACKING UP
(N = 37; 1.7%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Search and Detection (NFS)	5	8.5				
Driver Search, Inattention	6	10.2	6.9			
Driver Search, Inadequate	18	30.5	12.9			
Driver Search and Detection (NFS)	6	10.2	3.2			
				5	35.7	10.0

TABLE E.72

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
09 NON PED ACTIVITY NOT IN ROADWAY
(N = 19; .9%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Driver Course, Speed	6	21.4	5.6			
Driver Lost Control	11	39.3	14.5			

TABLE E.73

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
15 FREEWAY-EXPRESSWAY FROM CAR
(N = 4; .2%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, High Exposure	1	14.3	1.2			
Ped Course, Short Time	1	14.3	.1			
Ped Course, Unusual Place	2	28.6	3.1			
Ped Search & Detection, (NFS)	1	14.3	.3			
Ped Search, Inattention	1	14.3	.4			
Driver Detection, Splashed Water	1	14.3	100			
Driver Course, Speed				2	66.7	3.3
Driver Detection, Traffic				1	33.3	2.1

TABLE E.74

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
16 FREEWAY-EXPRESSWAY CROSSING
(N = 23; 1.1%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, High Exposure	12	24.5	14.8			
Ped Course, Unusual Place	18	36.7	28.1			
Ped, Poor Prediction of Veh/ Ped Path	5	10.2	6.2			

TABLE E.75

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
25 OFF-STREET PARKING OR LOADING
(N = 19; .9%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course Short Time	1	2.9	.1			
Ped Course Unusual Place	1	2.9	1.6			
Ped Search and Detection (NFS)	2	5.7	.7	1	12.5	3.4
Ped Search, Distraction (NFS)	1	2.9	.8	1	12.5	4.5
Ped Search, Inattention	2	5.7	.7			
Ped Search, Inadequate	1	2.9	.4			
Ped Detection, Parked Car	4	11.4	3.4			
Ped Misperception of Driver Intent	4	11.4	5.2			
Ped Poor Prediction of V/P Path	1	2.9	1.2			
Ped Avoidance Intent	1	2.9	5.9			
Driver Course, Speed	1	2.9	.9	1	12.5	1.7
Driver Search, Inadequate	2	5.7	1.4			

TABLE E.75 (Cont)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Driver Detection, Parked Car	3	8.6	2.3	2	25.0	.7
Driver Detection, Posts	1	2.9	10.0			
Driver Detection, Poor Lighting	1	2.9	5.3			
Driver Search Detection, (NFS)	4	11.4	2.1	1	12.5	1.9
Driver Lost Control	3	8.6	3.9			
Driver Misperception & Ped Intent	1	2.9	1.7			
Ped Detection, Poor Lighting				1	12.5	14.3
Ped Detection, Posts				1	12.5	10.0

TABLE E.76

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
08 NON-PED ACTIVITY IN ROADWAY
(N = 48; 2.2%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Unusual Place	12	14.8	18.8			
Ped Search, Distraction (NFS)	7	8.6	5.6			
Ped Search, Distraction, Play	7	8.6	6.9			
Driver Search, Inattention	5	6.2	5.7			
Driver Search, Inadequate	5	6.2	3.6			
Driver Search & Detection (NFS)	7	8.6	3.7			
Driver, Poor Prediction Ped/ Veh Path	5	6.2	20.8			

TABLE E.77

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
21 PED WALKING IN ROADWAY
(N = 24; 1.1%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Search, Inattention	6	13.6	2.1			
Driver Course, Speed	5	11.4	4.7			

TABLE E.78

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
31 WORKING ON VEHICLE
(N = 6; .3%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Misperception of Driver Intent	1	25	1.3			
Ped Poor Prediction of Veh/ Ped Path	1	25	1.2			
Driver Course, Speed	1	25	.9			
Driver Lost Control	1	25	1.3			

TABLE E.79

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
13 REAR WHEEL TRUCK OR BUS
(N = 10; .5%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, High Exposure	2	18.2	2.5			
Ped Course, Short Time	2	18.2	.3			
Ped Course, Unusual Place	2	18.2	3.1			
Ped Course, Against Signal	1	9.1	.7			
Ped Search, Inattention	1	9.1	.4			
Ped Misperception of Driver Intent	1	9.1	1.3			
Ped Avoidance Action-Self Limits	1	9.1	6.7			
Driver Search & Detection (NFS)	1	9.1	.5	2	50.0	3.6
Driver Search, Inadequate				1	25.0	2.4

TABLE E.80

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
19·WEIRD
(N = 26; 1.2%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Unusual Place	7	20.6	10.9			
Ped Course, High Exposure	3	8.8	3.7			
Ped Course, Short Time	2	5.9	.3			
Ped Search, Distraction (NFS)	2	5.9	1.6	2	15.4	9.1
Driver Search, Inattention	2	5.9	2.3			
Driver Search, & Detection	3	8.8	1.6			
Driver Lost Control	3	8.8	3.9			
Driver Detection, Poor Lighting				3	23.1	5.7

TABLE E.81

PRIMARY AND SECONDARY PRECIPITATING FACTORS FOR ACCIDENT TYPE
33 INFREQUENT OR UNIDENTIFIABLE PATTERN
(N = 374; 17.4%)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped Course, Against Signal	38	5.8	27.0			
Ped Search and Detection (NFS)	63	9.6	20.5	6		20.7
Ped Search, Inattention	35	5.4	12.5	11	6.8	29.7
Ped Search, Inadequate	33	5.1	14.2	9	5.6	18.0
Driver Search, Inadequate	39	6.0	27.9	9	5.6	21.4
Driver Search, Detection (NFS)	61	9.3	32.1	10	6.2	18.9
Ped Course, High Exposure	16		19.8			
Ped Course, Slow	17		63.0			
Ped Misperception of Driver Intent	24		31.2	8		33.3
Driver Course, Speed	31		29.0	15	9.3	25.0
Driver Course, Attempt to Beat Light	8		40.0			
Driver Course, Run Stop Sign	7		63.6			

TABLE E.81 (Cont)

System Failure	As a Primary Factor			As a Secondary Factor		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Driver Course, Run Red Light	31		75.6			
Driver Search, Distraction	29		34.1			
Driver Search, Inattention	26		29.9			
Driver Detection, Sun	7		35.0			
Driver Detection, Poor Lighting	7		36.8	15	9.3	28.3
Driver Misconception of Ped Intent	23		39.7	7		22.6
	10			10	6.2	35.7

PREDISPOSING FACTORS BY ACCIDENT TYPE

E.22 The following section contains tables of selected predisposing factors for the most common accident types. The factors were selected for inclusion by one of two principles:

- All predisposing factors occurring at least five times within a given accident type were chosen.
- For each accident type that failed to list any factors by the first method, the most frequent factors for that type were listed, up to a maximum of 10 factors.

TABLE E.82

PREDISPOSING FACTORS FOR ACCIDENT TYPE 01 DART-OUT FIRST HALF

(N = 518; 24.1% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Unattended children	76	14.6	54.3
Improperly supervised children	83	16.0	56.1
Parked vehicles	318	61.2	69.3
Ped human factors (NFS)	10	—	24.4
Ped human factors, alcohol	9	—	11.1
Weather, slippery conditions	7	—	13.5

TABLE E.83

PREDISPOSING FACTORS FOR ACCIDENT TYPE 02 DART-OUT SECOND HALF
(N = 193; 8.9% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Unattended children	19	15.3	13.6
Improperly supervised children	23	18.5	15.5
Weather visibility	10	8.1	15.2
Parked vehicles	46	37.1	10.0
Weather, slippery conditions	6	—	11.8

TABLE E.84

PREDISPOSING FACTORS FOR ACCIDENT TYPE 10 PED STRIKES VEHICLE
(N = 86; 4.0% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Unattended children	9	20.5	6.4
Ped human factors (NFS)	5	11.4	12.2
Ped human factors, old age	5	11.4	6.4
Ped human factors, alcohol	7	15.9	8.6
Parked vehicles	6	13.6	—

TABLE E.85

PREDISPOSING FACTORS FOR ACCIDENT TYPE 27 INTERSECTION DASH
(N = 179; 8.4% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Signal timing	15	16.5	30.0
Ped/Veh conflicts	7	7.7	13.7
Unattended children	12	13.2	8.6
Improperly supervised children	16	17.6	10.8
Weather visibility	5	5.5	7.6
Parked vehicles	17	18.7	—

TABLE E.86

PREDISPOSING FACTORS FOR ACCIDENT TYPE 07 MULTIPLE THREAT
(N = 69; 3.2% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Signal timing	7	33.3	14.0

TABLE E.87

PREDISPOSING FACTORS FOR ACCIDENT TYPE 14 PED WAITING TO CROSS
(N = 14; .6% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped/Veh conflicts	1	14.3	2.0
Ped/Veh turns	1	14.3	.7
Unattended children	1	14.3	.7
Driver human factors (NFS)	1	14.3	5.0
Driver human factors, alcohol	2	28.6	4.4
Parked vehicles	1	14.3	.2

TABLE E.88

PREDISPOSING FACTORS FOR ACCIDENT TYPE 24
VEHICLE TURN-MERGE CONFLICT
(N = 137; 6.4% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped/Veh conflicts	8	5.1	15.7
Ped/Veh turns	105	66.5	71.4
Ped-human factors, old age	10	6.3	12.8
Weather, visibility	10	6.3	15.2

TABLE E.89

PREDISPOSING FACTORS FOR ACCIDENT TYPE 26 MULTIPLE PED SPLIT
(N = 7; .3% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
None listed			

TABLE E.90

PREDISPOSING FACTORS FOR ACCIDENT TYPE 06 VENDOR - ICE CREAM TRUCK
(N = 32; 1.5% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Unattended children	5	22.7	
Parked vehicles	13	59.1	

TABLE E.91

PREDISPOSING FACTORS FOR ACCIDENT TYPE 20 PED PED EXITING FROM VEHICLE
(N = 19; .9% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Vehicle projections	1	14.3	4.8
Safety zone design	1	14.3	8.3
Improperly supervised children	1	14.3	.7
Driver human factors, (NFS)	1	14.3	5.0
Driver human factors, alcohol	1	14.3	2.2
Weather, slippery conditions	1	14.3	2.0
Parked vehicles	1	14.3	.2

TABLE E.92

PREDISPOSING FACTORS FOR ACCIDENT TYPE 23 BUS STOP RELATED *
(N = 56; 2.6% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Safety zone design	2	13.3	16.7
Ped human factors (NFS)	2	13.3	4.9
Ped human factors, alcohol	2	13.3	2.5
Parked vehicles	2	13.3	.4

* Only factors appearing more than one time are recorded here.

TABLE E.9

PREDISPOSING FACTORS FOR ACCIDENT TYPE 29 BACKING UP *
(N = 37; 1.7% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Vehicle projections	4	25.0	19.0
Ped/Veh conflicts	2	12.5	3.9
Unattended children	2	12.5	1.4
Parked vehicles	4	25.0	.9

* Only factors appearing more than one time are recorded here.

TABLE E.94

PREDISPOSING FACTORS FOR ACCIDENT TYPE 09 NON-PED ACTIVITY NOT IN ROADWAY
(N = 19; .9% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped/Veh conflicts	1	14.3	2.0
Driver human factors (NFS)	3	42.9	15.0
Driver human factors, alcohol	1	14.3	2.2
Weather, slippery conditions	1	14.3	2.0
Vehicle condition, poor brakes	1	14.3	14.3

TABLE E.95

PREDISPOSING FACTORS FOR ACCIDENT TYPE 15 FREEWAY-EXPRESSWAY-FROM CAR
(N = 4 ; .2% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped human factors, old age	1	50.0	1.3
Weather, slippery conditions	1	50.0	2.0

TABLE E.96

PREDISPOSING FACTORS FOR ACCIDENT TYPE 16 FREEWAY-EXPRESSWAY CROSSING
(N = 23; 1.1% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Unattended chilfren	1	14.3	.7
Ped human factors (NFS)	1	14.3	2.4
Ped human factors, alcohol	3	42.9	3.7
Driver human factor, alcohol	1	14.3	2.2
Weather visibility	1	14.3	1.5

TABLE E.97

PREDISPOSING FACTORS FOR ACCIDENT TYPE 25 OFF-STREET PARKING OR LOADING
(N = 19; .9% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Vehicle projections	1	9.1	4.8
Ped/Veh conflicts	1	9.1	2.0
Improperly supervised children	1	9.1	.7
Ped human factors, old age	2	18.2	2.6
Driver human factors (NFS)	1	9.1	5.0
Driver human factors, alcohol	2	18.2	4.4
Parked vehicles	2	18.2	.4
Vehicles condition, poor brakes	1	9.1	14.3

TABLE E.98

PREDISPOSING FACTORS FOR ACCIDENT TYPE 08 NON-PED ACTIVITY IN ROADWAY
(N = 48; 2.2% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Vehicle projections	2	11.1	9.5
Ped/Veh conflicts	1	5.6	2.0
Ped/Veh turns	1	5.6	.7
Unattended children	1	5.6	.7
Improperly supervised children	1	5.6	.7
Ped human factors (NFS)	2	11.1	4.9
Ped human factors, alcohol	3	16.7	3.7
Driver human factors (NFS)	1	5.6	5.0
Driver human factors, alcohol	3	16.7	6.7
Weather-slippery conditions	1	5.6	2.0
Parked vehicles	2	11.1	.4

TABLE E.99

PREDISPOSING FACTORS FOR ACCIDENT TYPE 21 PED WALKING IN ROADWAY
(N = 24; 1.1% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped/Veh conflict	4	33.3	7.8
Ped human factor, alcohol	4	33.3	4.9
Weather visibility	2	16.7	3.0
Weather, slippery conditions	1	8.3	2.0
Parked vehicles	1	8.3	.2

TABLE E.100

PREDISPOSING FACTORS FOR ACCIDENT TYPE 31 WORKING ON VEHICLE
(N = 6; .3% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Driver human factor, alcohol	1	50	2.2

TABLE E.101

PREDISPOSING FACTORS FOR ACCIDENT TYPE 13 REAR WHEEL TRUCK OR BUS
(N = 10; .5% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Ped/Veh turns	1	12.5	.7
Safety zone design	1	12.5	8.3
Improperly supervised children	2	25.0	1.4
Ped human factors, old age	2	25.0	2.6
Ped human factors, alcohol	1	12.5	1.2
Weather, slippery conditions	1	12.5	2.0

TABLE E.102

PREDISPOSING FACTORS FOR ACCIDENT TYPE 19 WEIRD
(N = 26; 1.2% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Improperly supervised children	1	9.1	.7
Ped human factors (NFS)	3	27.3	7.3
Ped human factors, alcohol	4	36.4	4.9
Weather visibility	1	9.1	1.5
Parked vehicles	1	9.1	.2
Vehicle design (NFS)	1	9.1	100

TABLE E.103

PREDISPOSING FACTORS FOR ACCIDENT TYPE 33 INFREQUENT OR UNIDENTIFIABLE PATTERNS
(N = 374; 17.4% of cases)

Predisposing Factor	Frequency		
	N	Identifications For This Type (%)	Total Identifications of This Failure (%)
Signal timing	19	7.4	38.0
Ped/Veh turns	30	11.7	20.4
Ped human factors, old age	38	14.8	48.7
Ped human factors, alcohol	31	12.1	38.3
Driver human factors, alcohol	17	6.6	37.8
Weather, visibility	24	9.3	36.4
Weather, slippery conditions	17	6.6	33.3
Parked vehicles	22	8.6	
Vehicle projections	8		38.1
Driver human factors, old age	6		46.2
Ped/Veh conflicts	9		17.6
Unattended children	9		6.4
Improperly supervised children	9		6.1
Ped human factors (NFS)	5		12.2
Driver human factors (NFS)	5		25.0

ILLUSTRATIVE BRANCHING ANALYSES

E.23 This section illustrates the results of some typical PED-AID and severity analysis program runs. Figure E.3 shows the PED-AID branching analysis of the sample of 2,162 cases on the field investigators report of the behavioral sequence items. (See Appendix B; Data Items.) By following the successive branches from group 1 to 2 to 4 to 8 and finally to group 10, one is able to trace a common sequence of behavior. It is the case of the pedestrian, running across traffic at midblock, who is struck by a vehicle moving at a sustained speed. This situation is the typical "dart out." The combinations of behavioral sequence items resulting from this analysis are conceptually similar to those used for typing.

E.24 Figure E.4 illustrates the severity analysis branching technique applied to accident descriptive factors. The most severe injury cases are contained in the right-hand box of each successive split. The results of the first split indicate that nighttime accidents tend to be more severe than those occurring during the day. The second one indicates that pedestrians who were struck during the day and run over by a wheel tended to be more seriously injured than those struck by the front or sides. The third split shows that nighttime accidents in industrial, mixed residential, and open areas tend to be more severe than those in other areas.

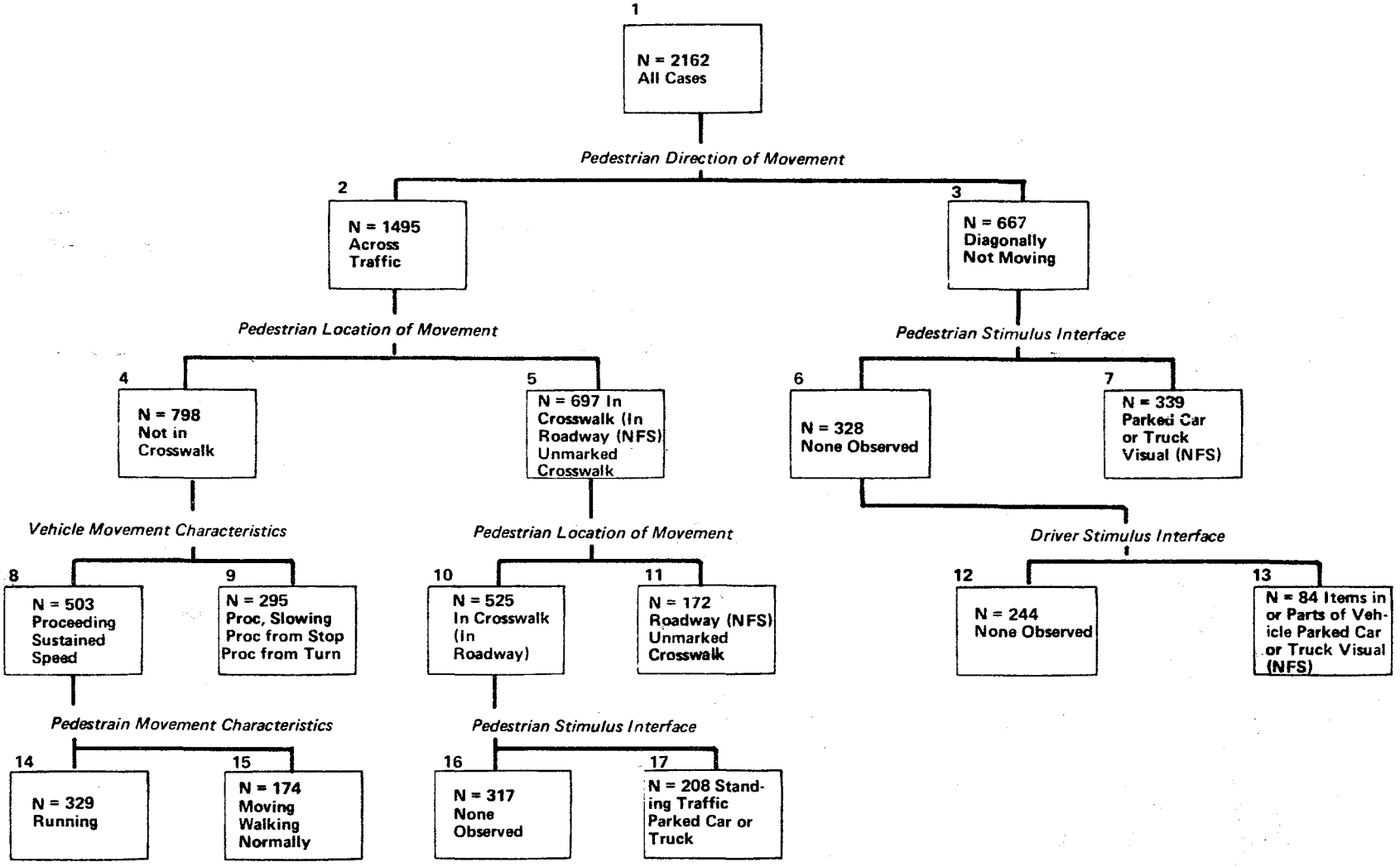

FIGURE E.3. PED-AID-BEHAVIORAL SEQUENCE ITEMS

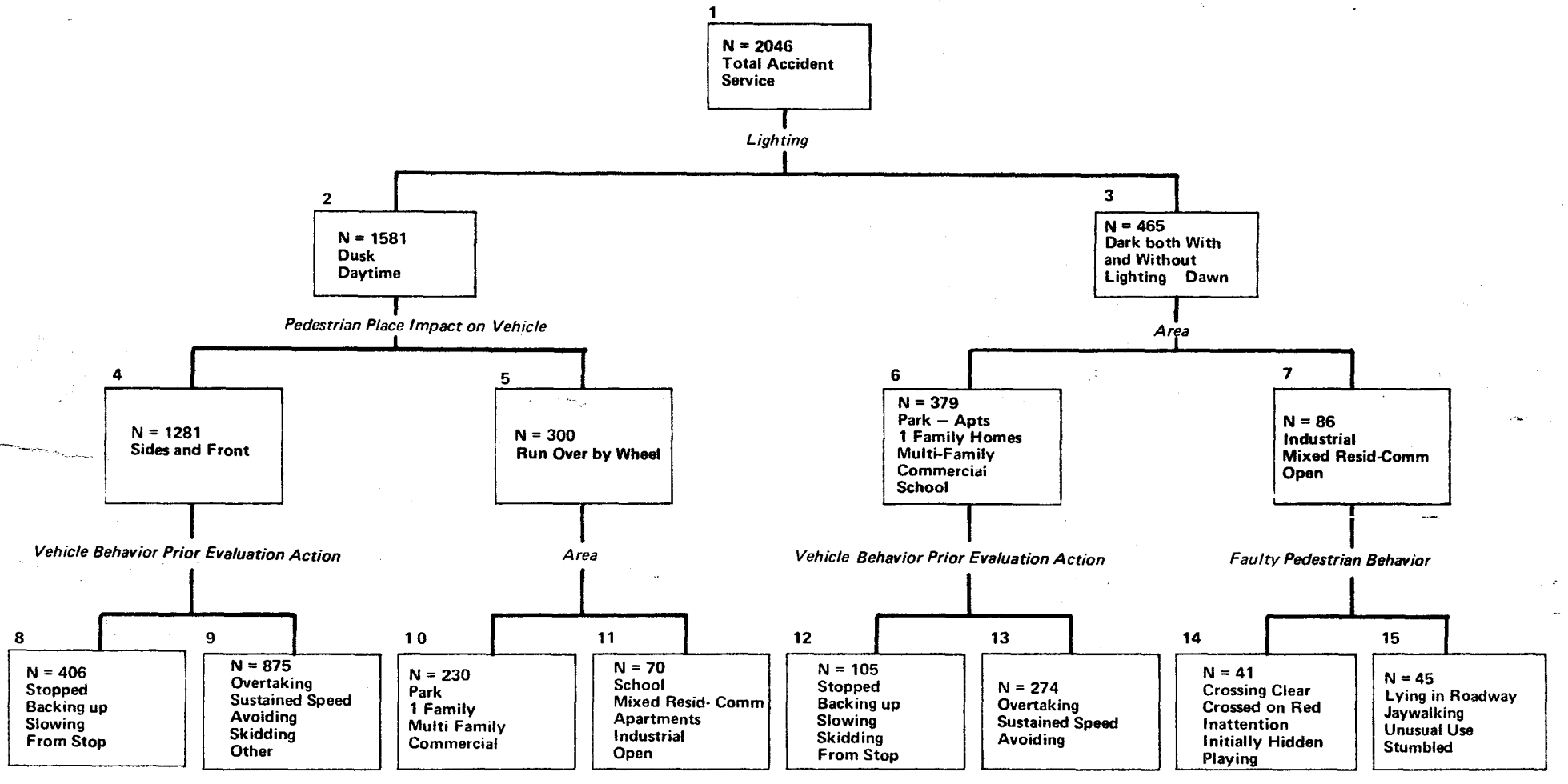

FIGURE E.4. SEVERITY ANALYSIS—DESCRIPTIVE FACTORS

APPENDIX F

PEDESTRIAN ACCIDENT INFORMATION REQUIREMENTS

F.1 This appendix outlines the basic information that should be collected on pedestrian accidents to permit effective monitoring of their occurrence and deployment of relevant countermeasures. Basically two purposes should be served in collecting this information:

- Identification of targets—locations and people
- Identification of causal factors relevant to countermeasure deployment.

F.2 Existing report forms collect adequate target information on the people involved, location, traffic control, etc.; thus a supplemental form would be directed at the identification of causal factors.

F.3 The following precipitating and predisposing factors would provide the minimum required data.

F.4 In addition to the selected precipitating and predisposing factors, an effective, but not essential, way to handle many of the cases would be to report causal types. Some of the more common types with easily understandable causal patterns are:

- Dart-out
- Intersection dash
- Vehicle turn with attention conflict
- Multiple threat.

PRECIPITATING FACTORS

COURSE CAUSAL FACTORS - PEDESTRIAN [1]

- Short time exposure
- Unusual place
- Running
- Caught by light change
- Against light
- Other_____

SEARCH CAUSAL FACTORS - PEDESTRIAN AND DRIVER

- Inattention
- Inadequate search
- Distracted by_____
- Other_____

DETECTION CAUSAL FACTORS - PEDESTRIAN AND DRIVER

- Vision blocked, moving traffic
- Vision blocked, standing traffic
- Vision blocked, parked cars
- Other_____

EVALUATION - PEDESTRIAN AND DRIVER

- Misperception vehicle/pedestrian path
- Other_____

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[1] Driver course (risk-taking) factors usually involve violations (e.g., speeding, running) and would be covered elsewhere in the accident report.

PREDISPOSING FACTORS

Signal timing

Turn conflict

Child, unattended

Child, improperly supervised

Pedestrian human factors, alcohol

Pedestrian human factors, old age

Pedestrian human factors, other_____

Driver human factors, alcohol

Driver human factors, old age

Driver human factors, other_____

Weather, visibility

Weather, slippery conditions

Visual obstructions, parked cars

Visual obstructions, other_____

Vehicle condition, specify_____

APPENDIX G

PROJECT PERSONNEL

G.1 The project team for Operations Research, Inc. (ORI), was headed by Dr. Monroe B. Snyder, principal investigator and Mr. Richard L. Knoblauch, assistant project director. Administrative support and guidance was provided by Dr. William J. Leininger, vice president, and Mr. Gabriel Markisohn, program director.

G.2 A number of members of the technical staff contributed to the data collection and analysis effort, and the actual collection of data in the field was done by local field investigators in the 13 cities. Each of these people worked closely with the police, made on-scene observations, and conducted pedestrian, driver, and witness interviews during the course of the study.

G.3 The editing and coding of raw data were performed by a staff of editors operating out of ORI's Silver Spring office. This group was responsible for translating the field investigators' interviews and observations into the appropriate codes.

G.4 Resumes of the project leadership and technical support staff follow. Other participants are then listed by area of contribution.

DR. WILLIAM J. LEININGER _____ QUANTITATIVE ECONOMIST

Education:

B.A., Notre Dame University, Economics -1959
Ph.D., Purdue University, Economics -1963

Experience:

1967- Operations Research, Inc. . . . . Vice President

1969 - Vice President, Operations Research Industries (ORI), Ltd. Provides technical and management direction for all activities of the Canadian operation. Major technical efforts include:

Forestry and Recreational Investment Models. Definition and development for the Department of Lands and Forests, Ontario, of economic models for use in analyzing investments related to forestry and outdoor recreation within the context of the planning-programming-budgeting (PPB) system to be implemented by the Department.

Support of Computer Operations Improvements. Provision of assistance to the Electronic Computer Branch, Department of Highways, Ontario, in the investigation of administrative and management problem areas, e.g., scheduling procedures, rate structure, and the implementation of remedial measures.

Facility Improvement Evaluation Methodology. Definition and demonstration, for the Canadian Department of Transportation, of methodologies for evaluating the monetizable and nonmonetizable benefits of improvements in airport terminal facilities.

1969- Director, Economic Analysis Division. Provides technical and management direction for all division activities. Major technical efforts include:

Demonstration of Cost-Effectiveness System in Five States. Collection and processing for the National Highway Safety Bureau (NHSB) of all data required to implement the highway safety cost-effectiveness evaluation system for most of the highway safety standards in the five states, including needed modifications and refinements of the expanded three-model system.

Integrated Facilities Requirements Study. As a part of a larger study for the Naval Facilities Command, development of a cost model to identify, for the Naval Air Training Command, the total training system operating cost of given pilot training programs as well as the facility requirements, the potential excesses and deficiencies, and the construction cost for remedying the imbalances.

Longitudinal Evaluation of Manpower Training. Quantitative analysis for the Office of Economic Opportunity of five major Federal manpower training programs to determine relative and absolute cost effectiveness of each program on basis of data collected from a control and a participant group and on the program components and operating environment over a 3-year period.

Car Rental Econometric Forecasting Model. Identification and programming, in a time-sharing mode, of multivariant relationships characteristic of Hertz car rentals and U.S. economic fluctuations as a basis for short-term forecasts.

1968- Director, Economic Analysis Program. Major Technical efforts included:

Quantitative Evaluation of Concentrated Employment Programs (CEPs). Development of effectiveness measures for quantifying the impact of CEPs and definition of the costs incurred in implementing the programs. Determination of the cost effectiveness of the program absolutely and relative to competing programs.

Highway Safety Cost Effectiveness. Definition and development of models and techniques for evaluating cost effectiveness of potential accident countermeasures and development of a model for National Highway Safety Bureau (NHSB) allocation of a safety budget.

Definition of Goals and Objectives for DOT Research and Technology. Delineation of the goals and objectives of DOT research and development, and definition of the information needs of the Assistant Secretary for Research and Technology to meet his share of the goals and objectives; demonstration of the validity of the goals by specification of the FY69 research budget in terms of the dimensions of the goals and objectives.

DR. WILLIAM J. LEININGER _____QUANTITATIVE ECONOMIST

1967- Project Leader. Managed conduct of projects such as the following:

Foreign Development Program Management Methodology. Design, in conjunction with Litton-Benelux, S.A., of the framework and implementation methodology for a PPB system to be used in managing the Greek-Litton Development Program.

NHSB Integration Study. Documentation of NHSB operations, programs, plans, goals, and policy within the context of relevant laws and legislative history, including preparation of readings and briefing charts to be used in orienting government and private sector user groups.

Quantitative Economist. Developed the allocation scheme used in two Office of Civil Defense studies; one involved possible attack environments, and the other focused on minimizing the cost of readiness in existing local CD operations.

1966-67 Chrysler Corporation . . . . . Marketing Econometrician
Responsible for developing and supervising the quantitative modeling activities of the Marketing Operations Research Department; developed truck and auto forecasting systems which contained short-, intermediate-, and long-term dynamic demand projection models; developed a simultaneous equation approach to segment models of the auto industry; and initiated the Autometrics Review, which explores the impact of economic changes on the auto industry, as well as a market analysis to determine the auction price of lease vehicles at the end of the lease term.

Oakland University . . . . Lecturer in Quantitative Economics

1963-66 Humble Oil and Refining Company . . . Research Economist

Responsible for developing U.S. short- and long-term economic projections for Standard Oil Company, New Jersey and Humble Oil; published in the Quarterly Economic Review; developed a model to assess the short-run impact of economic changes on petroleum product demands; served as expert consultant to the industry group in the natural gas area rate proceedings before the FPC; and developed a long-term supply demand model of the world sulfur market.

DR. WILLIAM J. LEININGER _____ QUANTITATIVE ECONOMIST

1959-63 Purdue University . . . . . Instructor in Economics

Memberships: American Economic Association

Publications:

'An Empirical Production Function for Barge Towing Operations on the Ohio River," thesis submitted to the Faculty of Purdue University in partial fulfillment of the requirements for the degree of Doctor of Philosophy, August 1963.

"Forecasting in Autos," paper presented to the Ninth Annual Forecasting Meeting of ASA, New York Chapter, 28 April 1967.

Logistics of Debris Clearance and Removal (with others), (prepared for the Office of Civil Defense, Menlo Park, California), August 1967.

National Highway Safety Bureau: Mission, Objectives, Organization, and Programs (Preliminary Report), 1 September 1967.

Preliminary Report on the Development of a Planning-Programming-Budgeting System for the Economic Development Program of Greece (with D.S. Orkand), ORI TM 127-67 (prepared for Litton-Benelux, S.A., Athens, Greece), 17 September 1967.

Development of a Cost-Effectiveness System for Evaluating Accident Countermeasures: Interim Report, ORI TR 505 (prepared for National Highway Safety Bureau, Washington, D.C.), 25 April 1968.

Interim Report on Tasks 1 to 5 of the Quantitative Analysis of the Concentrated Employment Program, ORI TM 156-68 (prepared for Department of Labor, Washington, D.C.), 7 November 1968.

Inland Waterway Transportation: Studies in Public and Private Management and Investment Decisions (with others), Resources for the Future, Inc., 1969.

GABRIEL MARKISOHN_____ MANAGEMENT SYSTEMS ANALYST

Education: B.S., Princeton University, Civil Engineering -1956
Graduate study toward M.B.A., St. Louis University

Experience:

1966- Operations Research, Inc.

1969- Program Director. Provides technical and administrative direction for such major efforts as:

Design for Evaluating Total Occupational Education Effort in Metropolitan Areas. On-site investigation conducted in three areas, existing data banks examined, evaluation process reviewed in pilot study. Evaluation design being developed in follow-on effort for educational management use in restructuring programs to improve their correlation with needs.

Simulation Model for Use in Air Traffic Control (ATC) Planning. Development of computer simulation model for ATC planning. The model has the capability to determine manpower requirements on the basis of traffic projections at individual tower locations, to project training requirements to meet manpower needs, and to determine total cost of alternative manpower and personnel policies.

Extension of Integrated Facilities Requirements System (IFRS) Model. Incorporation of additional operations research capabilities into the ORI-developed management planning tool currently being used by the Navy, including the Office of the Chief of Naval Operations.

Analysis of Pedestrian Accident Precipitating Factors and Possible Countermeasures. This 13-month analysis involved on-site data collection in 10 cities regarding the human, vehicle, and roadway parameters of pedestrian accidents as a base for defining the precipitating factors and alternative countermeasures as guidelines for Bureau use in planning effective pedestrian safety programs.

1967-69 Technical Director, Operations Research Industries (ORI), Ltd. Provided technical direction for Ottawa Center. Specific projects included the design of

a PPB-oriented management information system for the Department of Manpower and Immigration, the performance of an ADP audit for the Central Data Processing Services Bureau of the Canadian Government, and PPB-related studies for the Departments of Highways and Lands and Forests of the Ontario Government.

1966-67 Senior Staff. Project Leader on a study for the Bureau of Naval Personnel of the effect of human performance on systems effectiveness and the quantification of human reliability. Participated in development of system design for the Total Information for Manpower Management Systems for the Department of the Navy and on the definition of a PPB and associated management information system for the Small Business Administration. Involved in the feasibility analysis of a public investment data system for the Economic Development Administration and in the development of an integrated management information system for the Office of Civil Defense.

1964-65 Martin Company, Orlando, Florida . . . . Finance Analyst Cost analysis and control of major weapon system programs, cost-effectiveness studies, development of cost models for system design, development of PERT cost system for financial control of weapon system program, and contract negotiations.

1958-63 The Emerson Electric Manufacturing Company, St. Louis, Missouri. Market analysis and research; management of major proposal efforts, contract administration and negotiations; stress analysis of aircraft and missile structures.

1956-57 I.T. Ryerson and Son, Chicago, Illinois. Time studies on steel warehousing operations and standards methods analysis.

Publications:

Description and Evaluation of Current SBA Program Formulation and Control System (with others), ORI TR 395, September 1966.

Feasibility Analysis of a Public Investment Data System (with others), ORI TR 426, May 1967.

Human Reliability Research (with Kenneth Haynam), ORI TR 430, September 1967.

Development of an Information System Design Concept (with others), ORI TR C-3, September 1968.

GABRIEL MARKISOHN_____MANAGEMENT SYSTEMS ANALYST

Study of the Central Data Processing Servicing Bureau (with others), ORI TR C-6, February 1969.

Reorganization of the Operations Branch and Administration Unit of the Computer Services Centre (Government of Ontario, Canada) (with others), ORI TR 586, May 1970.

Simulation Model for Use in ATC Planning (with others), ORI TR C-12, July 1970.

Problems of Coordination, Duplication, and Gaps in Occupational Education, ORI TR 630, October 1970.

Pedestrian Safety: The Identification of Precipitating Factors and Possible Countermeasures (with others), ORI TR 631, November 1970.

DR. MONROE B. SNYDER PSYCHOLOGIST

3/70

Education:

B.A., University of Florida, Psychology	-1954
M.A., University of Florida, Psychology	-1955
Ph.D., The Pennsylvania State University, Psychology	-1963

Experience:

1969- Operations Research, Inc. . . . . Principal Staff Project Manager for a study for the National Highway Safety Bureau to determine precipitating factors in pedestrian accidents and to identify appropriate countermeasures. Having reviewed previous research data and developed data requirements, data were collected in 13 major cities both from on the scene of accidents and from records. The data from about 2,000 cases will be analyzed to identify patterns of significant precipitating factors associated with pedestrian accidents. The results of the statistical analyses will be used to indicate the impact of potential countermeasures identified.

Also served as Project Manager for the Office of Education study concerning motivation to enter, remain in, or leave the field of special education and the impact of Public Law 85-926 on special education manpower. Students, student dropouts, practitioners and attritees in special education and related fields were surveyed by mail; an additional survey collected data from approximately 300 university departments of special education. All phases of content and questionnaire development and analysis were included.

For an OEO-sponsored longitudinal evaluation of five manpower programs (NYC, MDTA, JOBS, Job Corps, and New Careers), developed a program benefit model focusing on human, social, and quality-of-life benefits; specified benefit concept and relevance to program goals as well as measures to be used for data collection and analysis. Also specified control data needed to properly evaluate program effects.

Studied the management of the Department of Transportation R&D program. Identified salient R&D management responsibilities and the information required to accomplish them and defined a system to provide the requisite information.

In a study for the National Highway Safety Bureau, developed approaches for integrating systems effectiveness concepts in the research program planning process.

DR. MONROE B. SNYDER PSYCHOLOGIST

1965-68 Human Sciences Research, Inc. . . . . Senior Research Scientist and Program Director
Directed a research program in the areas of information science and behavioral systems, which included projects on demography and human behavior after nuclear attack.

Project Leader. Determined the information requirements and linkages necessary to conduct a large systems planning and prediction study; integrated currently available physical data with behavioral information to approximate a potential outcome.

Studied decision-making in the selection of science library materials. By survey, collected data on decision-making, environmental factors, operating procedures, and criterion data. Project outputs included a description of the current status at the surveyed institutions, a descriptive model of decision-making, and a set of guidelines for application by individual organizations.

Developed methods and techniques for postattack manpower utilization and made recommendations relevant to specific manpower functions for each postattack stage.

Evaluated test and evaluation studies conducted on document retrieval systems; results included development of a document retrieval systems model and frame of reference for reviewing studies, as well as an evaluation of the criterion concepts and measurement techniques that have been used to study these systems. A related company effort involved the development of approaches to the application of experimental and systems methods to the development of operational criterion measures.

Surveyed the functioning and performance of local area development committees; identified appropriate and measurable criteria for evaluation; developed indices of performance.

Contributed to a project on the utilization of human factors data in the early stages of system design.

Developed descriptive models relating decisions about the utilization of human capabilities in developing systems to a systems performance criterion hierarchy.

DR. MONROE B. SNYDER PSYCHOLOGIST

1958-65 HRB-Singer, Inc.

1964-65 Management Information Center . . . . . Manager. Responsible for the design, development, and implementation of coordinated management information systems.

1963-64 Company Information Systems Project . . . Director. Supervised an analysis of existing information systems, methods, procedures, and flow; recommended corrective measures and a plan for systematic development and improvement.

1958-63 Human Factors Section . . . . . Senior Psychologist. As Task Director for an Air Force airborne reconnaissance system development project, was responsible for systems-tasks analysis, determination of personnel training requirements and training recommendations, human engineering of ground support, and test equipment.

Developed methods for securing and analyzing task data and for relating task data to equipment design and training requirements.

Provided human factors support in systems development relative to man-machine control-display problems and human capabilities under unusual environmental conditions.

Directed a project which studied factors influencing the efficiency of visual information presentation and developed principles of increasing visual effectiveness.

Worked with company management in planning and implementing supervisor communication and training efforts and developed and documented company policy and procedures.

1955-58 Examinations Division, N.Y. State Department of Civil Service . . . . . Personnel Technician
Planned, developed, and evaluated selection tests for professional positions.

Memberships: American Psychological Association
Eastern Psychological Association
District of Columbia Psychological Association
Human Factors Society
American Society for Information Science
Systems Safety Society

DR. MONROE B. SNYDER PSYCHOLOGIST

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Committee on Accident Research (of APA Division 22)

Publications (partial list, unclassified reports only):

The Measurement and Control of Visual Display Efficiency, 288-F, HRB-Singer, August 1961.

Methods of Recording and Reporting Task Analysis Information, presented at Wright Air Development Center, October 1959. Also published in Uses of Task Analysis in Deriving Training and Training Equipment Requirements (WADD-TR-60-593), Wright Air Development Division, December 1960.

Can the Visual Effectiveness of Advertisements Be Controlled? presented at the American Psychological Association Convention, September 1962.

"The Measurement of Change in Utility as a Result of Labeling," unpublished Ph.D. dissertation, The Pennsylvania State University, 1963.

"Factors Affecting Perceptual Integration of Illustrated Material" (with J.M. McKendry and S. Gates), J. of Applied Psychology, XLVII, June 1963.

Methodology for Test and Evaluation of Document Retrieval Systems: A Critical Review and Recommendations, HSR-RR-66/-SK, Human Sciences Research, January 1966.

A Study of Local Leadership in Community Economic Planning (coauthor), HSR-RR-66/12-Ab, Human Sciences Research, April 1966.

Some Behavioral Aspects of Test and Evaluation, presented at the Conference on Electronic Information Handling: Testing and Evaluation, April 1967. Also appears as Chapter 19 in Electronic Handling of Information: Testing and Evaluation, A. Kent, et al. (eds.), Washington: Thompson Book Co., 1967.

Methodology for a Study of Decision-Making in the Selection of Scientific Information, presented at the American Library Association Convention, June 1967.

Methods and Techniques for Postattack Manpower Utilization, HSR-RR-67/11-Mn, Human Sciences Research, August 1967.

Decision-Making in the Selection of Science Library Materials for Higher Education: Empirical Findings and Guidelines (with Alfred J. Farina), HSR-RR-67/14-Mn, Human Sciences Research, November 1967.

"An Examination of Methods Used in a Study of Decision-Making," ALA Bulletin, LXI, 11 December 1967.

RICHARD L. KNOBLAUCH PSYCHOLOGIST

Education:

B.A., Rutgers University, Psychology -1965
Completed courses for M.A., Rutgers University, Psychology -1967

Experience:

1969- Operations Research, Inc. . . . . Senior Staff
Participating in pedestrian accident study being conducted in 13 major U.S. cities to determine causal and contributing factors in order to develop effective accident prevention countermeasures. Responsibilities include development of data collection procedures, specification of data requirements, recruitment and training of field investigators, and supervision of data collection phase (collecting quantitative and qualitative accident descriptions).

2/70

1969 INTEXT, Transportation Research Division . . . . Research Associate
Participated in a Department of Transportation project concerning attitudes, motivations, and behavior of drivers toward their vehicles. To achieve project goals, quantitative indices of owner maintenance behavior had to be developed. Primary responsibilities included identification of samples, determination of information requirements, and development of survey instruments for the portions of a national survey of motor vehicle maintenance practices related to motorcycles and trucks.

1967-68 Human Sciences Research, Inc. . . . . Research Associate
Completed analysis of decision-making criteria in library material selection for the American Library Association. Conducted a study of social and behavioral effects of nuclear attack for the Office of Civil Defense. Redesigned an automobile mechanics course for the Department of the Army.

1965-67 Rutgers University . . . . . Instructor/Assistant
Taught psychology and assisted professors with classes in social psychology, developmental psychology, and history of psychology. Investigated physiological manifestations of learning and the role of anxiety in avoidance learning; worked on systems approach to personality assessment; and tested patients and collected and evaluated data of patients at nearby mental hospitals.

1965	Warner Lambert Research Institute, Behavioral Research Division . . . . . Research Associate Designed and developed experimental psychological testing apparatus and supervised laboratory technicians.
Summers 1962, 1963 1964	Hazleton Laboratories, Inc. . . . . Laboratory Technician Operated behavioral testing apparatus in behavioral research group. Established and operated behavioral and psycho-pharmacological tests of fatigue, anxiety, and performance.

Publications:

Depiction of Postattack Events in City D (coauthor), Human Sciences Research, Inc., April 1968.

Postattack Detroit: A Preliminary Depiction of the First Year (with others), Human Sciences Research, Inc., July 1968.

Experimental Derivation of Instructional Standards (with others), Human Sciences Research, Inc., January 1969.

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