Remote Not In Traffic Surveillance Back Over Investigation
Dynamic Science, Inc. (DSI), Case Number DS08023
1999 Toyota Corolla
Washington
May 2008

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient Catalog No.
DS08023		

4. Title and Subtitle	5. Report Date
Remote Not in Traffic Surveillance Back Over Investigation	January 20, 2009
	6. Performing Organization Report No.

7. Author(s)	8. Performing Organization Report No.
Dynamic Science, Inc.	

9. Performing Organization name and Address	10. Work Unit No. (TRAIS)
Dynamic Science, Inc. 299 West Cerritos Avenue Anaheim, CA 92805	11. Contract or Grant no. DTNH22-07-00045

12. Sponsoring Agency Name and Address	13. Type of report and period Covered [Report Month, Year]
U.S. Dept. of Transportation (NVS-411) National Highway Traffic Safety Administration 1200 New Jersey Ave, SE Washington, DC 20590	14. Sponsoring Agency Code

15. Supplemental Notes

16. Abstract

This Remote Not in Traffic Surveillance (NITS) Back Over incident involved a 1999 Toyota Corolla and a 4-year-old non-motorist. The Toyota was parked in a parking stall. The driver began backing the vehicle out of the parking space. As the driver continued traveling in reverse, he steered to turn the vehicle in a clockwise direction. A 4-year-old male child was walking with his babysitter and a sibling from a church building across the parking lot and traveling generally eastbound. The child was holding the babysitter's hand. The babysitter indicated that at some point the child pulled away from her and either fell or laid down on the ground. The vehicle's left rear tire rolled over the child's abdomen/pelvis. The driver heard a witness scream and stopped his vehicle. The child was transported to a local hospital by ground ambulance. He sustained abrasions to his hips and abdomen. He was hospitalized overnight for observation.

17. Key Words	18. Distribution Statement
Back over, Remote Not in Traffic Surveillance, Injury	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No of pages	22. Price

Form DOT F 1700.7 (8_72) Reproduction of this form and completed page is authorized

Dynamic Science, Inc.
Crash Investigation
Case Number: DS08023

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BACKGROUND

This back over incident occurred in May 2008 at 1203 hours in the state of Washington. The subject vehicle was a 1999 Toyota Corolla four-door sedan (**Figure 1**), which was being driven by a 59-year-old male. The Toyota was parked in a parking stall. The driver began backing the vehicle out of the parking space. As the driver continued traveling in reverse, he steered to turn the vehicle in a clockwise direction. A 4-year-old male child was walking with his live-in babysitter/nanny and a sibling from a church building across the parking lot and traveling generally eastbound. The child was holding the babysitter's hand. The babysitter indicated that at some point the child pulled away from her and either fell or laid down on the ground. The vehicle's left rear tire rolled over the child's abdomen/pelvis. The driver heard a witness scream and stopped his vehicle. The child was transported to a local hospital by ground ambulance. He sustained abrasions to his hips and abdomen. He was hospitalized overnight for observation.

Figure 1. On-scene image showing 1999 Toyota Corolla at final rest

This Remote Not In Traffic Surveillance (NITS) Back Over Investigation was identified by the National Highway Traffic Safety Administration (NHTSA) from a review of online news articles. On May 14, 2008, DSI was sent the news article and instructed to attempt to gain cooperation. DSI obtained the police report on June 2, 2008 and obtained the on-scene police photos on June 23, 2008. DSI contacted in person the spouse of the driver of the subject vehicle. The spouse indicated they would not discuss the facts of the incident due to legal and insurance-related matters. DSI was instructed to continue the case as a remote investigation, and a case number was assigned. The incident site was inspected in person despite the remote status of the case during a visit to the area on a different investigation. According to the police records unit, this incident was reported to the state database. The following information was obtained from the police report, on-scene photos, a witness interview, and the news article.

SUMMARY

Incident Site

This back over incident occurred at 1203 hours. The weather was cloudy, the roadway was dry, and no unusual environmental conditions were present. The temperature at the nearest reporting station was 11.3 degrees C (52.3 degrees F). The wind was calm and the relative humidity was 47%. The incident occurred within the confines of a church parking lot (**Figure 2**). The parking lot was level and the surface was asphalt. The lot measured 15.2 m (50 ft) south to north. There was a church building on the north side of the lot. There were 2.4 m (8 ft) wide marked parking stalls on the south side of the lot. There was no posted speed limit and there were no traffic controls present.

Pre Incident

The 1999 Toyota Corolla was being driven by a 59-year-old male. The Toyota was parked in a parking stall and facing south. The 4-year-old male child was walking from a church building across the parking lot and traveling generally southeast (**Figure 3**). The child was accompanied by his babysitter and a sibling. The babysitter had driven to the church and was picking up the child. The child was holding the babysitter's right hand. He was wearing a dark blue hooded jacket, tan cargo pants, and black/yellow running shoes. The three non-motorists crossed behind the Toyota. The babysitter indicated that at some point the child pulled away from her and either fell or laid down on the ground. She stated that it was the child's practice to lay down when he was not getting his way. She was trying to get him back up onto his feet just prior to the incident. The driver of the Toyota began backing the vehicle out of the parking space while traveling in a northbound direction (**Figure 4**). As the driver continued traveling in reverse, he steered to turn the vehicle in a more northeasterly direction.

The vehicle was traveling approximately 9.8 km/h (6.1 mph). This was based on a post-impact skid distance of 0.54 m (1.8 ft) and a coefficient of friction of 0.7. The calculation is included as Attachment 2 to this report. The driver stated in the police interview that he never saw the child. The babysitter indicated that she observed the subject vehicle traveling toward the child and tried to pull the child out of the way. Based on contact evidence found on the child's clothing (**Figure 5**) and the location and orientation of his injuries, it was probable that the child was lying on the ground, on his back, perpendicular to the path of the left rear tire of the Corolla. The upper portion of his body would have been to the outside of the vehicle while the lower portion of his body was underneath the Corolla. Prior to impact, the child would have been in the driver's blind zone as he looked over his shoulder, but would have been visible through the left side mirror.

Figure 2. Overview of scene looking south

Figure 3. Path of non-motorists (southeast)

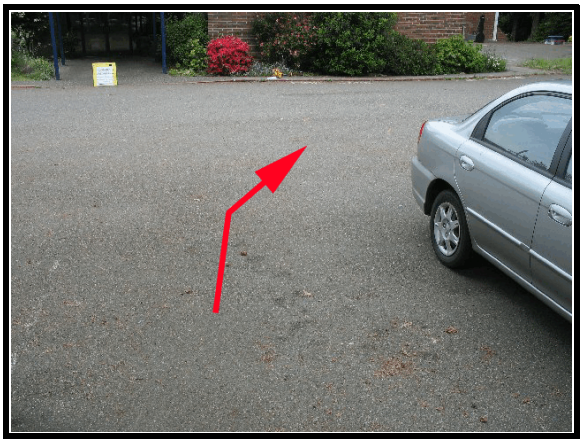


Figure 4. Path of Toyota Corolla

Incident

As the Corolla continued backing, the right rear tire rolled over the right/left anterior hip and abdomen area of the child. A witness screamed at that time and the driver of the Corolla braked sharply and came to rest facing southwest (**Figure 6**). The driver exited his vehicle because he did not know what was wrong. He was not aware that he had been involved a collision and it wasn't until he was out of the vehicle that he saw the child or the babysitter. The child came to rest with the lower half of his body beneath the vehicle and forward of the left rear tire. His right shoe had come off and was found beneath the vehicle.

Figure 5. Tire contact marks on non-motorist's pants

Post Incident

The 4-year-old child sustained abrasions to the left hip, abdomen, and right hip. There were contusions along the right hip and upper thigh. He was treated at the scene by paramedics and then transported from the scene to a local trauma center. Reportedly, he did not sustain any fractures or internal injuries. He remained in the trauma center overnight for observation.

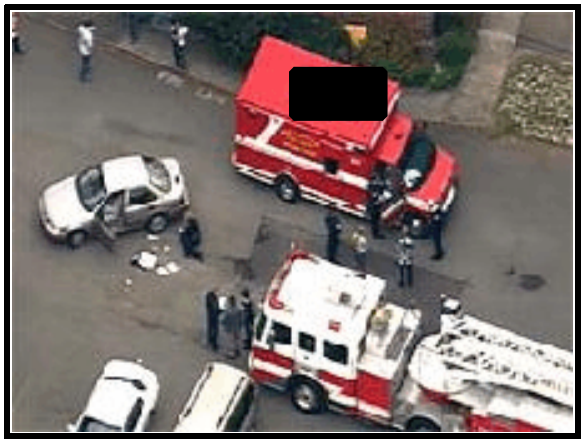


Figure 6. Overhead view of final rest

VEHICLE DATA - 1999 TOYOTA COROLLA

The 1999 Toyota Corolla CE was identified by the Vehicle Identification Number (VIN): 1NXBR12E2XZxxxxxx. The Corolla was a four-door sedan that was equipped with a 4-cylinder 1.8 liter engine, an automatic transmission, and front wheel drive. The vehicle was equipped with a Michelin X Radial P185/65R14 tire in the left rear position; there was no data for any of the other tires.

Parking Aids/Sensors

The 1999 Toyota Corolla was not equipped with any parking aids or sensors.

Vehicle Dimensions

Dimensions obtained from Canadian vehicle specifications and an exemplar vehicle. Seated eye height was estimated using a surrogate driver seated at the height of a 50th percentile male[1]. Eye position forward was estimated using the position of the surrogate driver with the seat in the middle track position.

Ground to belt line:	92 cm (36.2 in)
Ground to top of trunk/tailgate:	99 cm (38.9 in)
Ground to top of rear bumper:	60 cm (23.6 in)
Ground to bottom of rear bumper:	38 cm (14.9 in)
Surrogate driver's seated eye height from seat bottom:	75 cm (29.5 in)
Surrogate driver's seated eye height from ground:	112 cm (44.0 in)
Overall vehicle height:	139 cm (54.7 in)
Overall vehicle width:	170 cm (66.9 in)
Overall vehicle length:	442 cm (174.0 in)
Rear overhang:	107 cm (42.1 in)
Track width:	146 cm (57.3 in)
Longitudinal distance between rear most projection and front door latch pillar:	200 cm (78.7 in)
Distance from estimated eye position to rearmost projection	208 cm (81.9 in)

Rear Visibility Study

A visibility study was conducted in order to determine the nominal blind zone behind the vehicle as well as the nominal blind zones of both side view mirrors. The non-motorist would have been in the blind zone as viewed through the backlight, but may have been visible through the left outside mirror. Measurements were taken using an exemplary 1998 Toyota Corolla. The standard 71 cm (28 in) high target was used to obtain the measurements. The measurements were taken on a paved level surface.

The driver's estimated seated eye height when measured from the seat cushion was 75 cm (29.5 in) and when measured from the ground was 112 cm (44.1 in). The estimated seated eye height was

[1]The Measure of Man and Woman, Whitney Library of Design, 2001

based on the average height of an adult male in the United States, which was 175 cm (69 in). The SCI investigator duplicated the driver's seated eye height by measuring his own eye height from the seat cushion and ground.

Figure 7. Overview of over the shoulder view

The initial set of measurements was taken with the investigator looking over his right shoulder through the backlight (**Figure 7**). When the investigator looked over his right shoulder and through the backlight, the view down the vehicles longitudinal centerline was obscured by the vehicle's center stop lamp. The target was moved aft of the rear bumper along the vehicle's centerline until it became visible above the center stop lamp. The point at which the target became visible to the investigator measured 13.26 m (43.5 ft) aft of the rear bumper (**Figure 8**). That measurement was used as the point of origin for two sets of lateral measurements which was then taken. Measurements taken laterally to the left and right resulted in a visibile zone that could be viewed through the backlight. The lateral measurements were taken from the vehicle's center line to the left and right sides of the backlight until the target was out of view due to the presence of the second row head restraints and the C-pillars. The target was out of view due to the left head restraint and C-pillar at a distance of 0.75 m (2.46 ft) lateral to the vehicle's longitudinal center. The target was out of view due to the right head restraint and C-pillar at a distance of 4.9 m (16.08 ft) lateral to the vehicle's longitudinal center. At 13.26 m (43.5 ft) aft of the rear bumper, the visible zone from the left head restraint to the right head restraint measured 5.65 m (18.54 ft) in width, and 87 percent of the visible zone was to the right of the vehicle's longitudinal center.

Figure 8. View through right side view mirror. Arrow shows where target became visible.

A second set of measurements was taken with the investigator looking over his right shoulder through the backlight. When the investigator looked over his right shoulder and through the backlight, the view down the vehicle's centerline was obscured by the vehicle's center stop lamp. The target was moved aft of the rear bumper and slightly lateral to the stop lamp until it became visible to the investigator. The point at which the target became visible to the investigator measured 4.88 m (16 ft) aft of the rear bumper. That measurement was used as the point of origin for a set of lateral measurements which was then taken. Measurements taken laterally to the left and right resulted in a visibile zone that could be viewed through the backlight. The lateral measurements were taken from the vehicle's center line to the left and right sides of the backlight until the target was out of view due to the presence of the second row head restraints and C-pillars. The target was

out of view due to the left head restraint at a distance of 0.31 m (1.02 ft) lateral to the vehicle's longitudinal center. The target came within view between the left head restraint and C-pillar at 1.4 m (4.59 ft) lateral to the vehicle's center. The target was again out of view due to the left C-pillar at a distance of 1.96 m (6.43 ft) lateral to the vehicle's center. The target was out of view due to the right head restraint and C-pillar at a distance of 2.76 m (9.06 ft) lateral to the vehicle's longitudinal center. On the right side, there was no visible zone between the head restraint and the C-pillar. At 4.88 m (16 ft) aft of the rear bumper, the visible zone between the left head restraint and the C-pillar measured 0.56 m (1.84 ft) in width. The visible zone between the head restraints was 3.07 m (10.07 ft) in width, and 90 percent of the visible zone was to the right of the vehicle's longitudinal center.

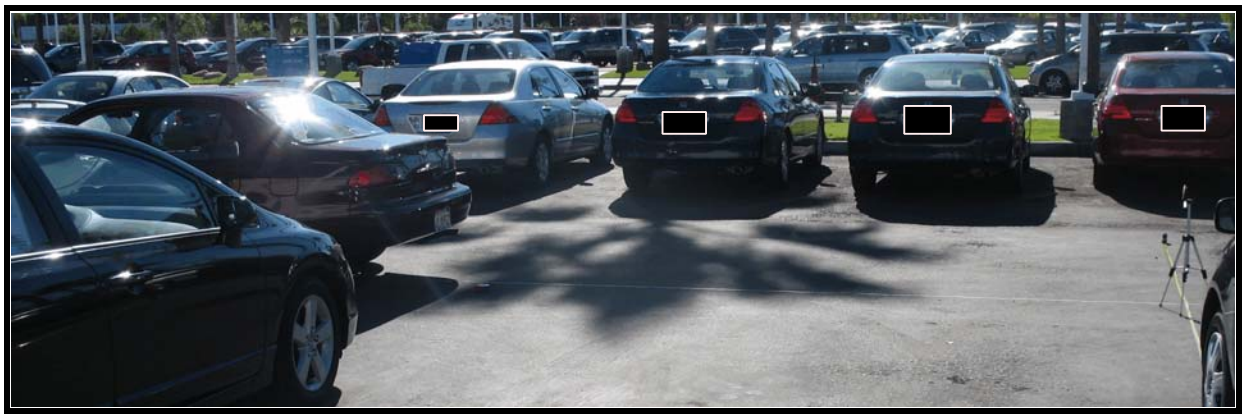


Figure 9. Distance from rear of vehicle to target when looking over shoulder

When viewed over the right shoulder, the roadway surface became visible at 17.07 m (56 ft) aft of the rear bumper.

A third set of measurements was taken with the investigator using the rear view mirror to look through the backlight. The point at which the target became visible to the investigator measured 4.57 m (15 ft) aft of the rear bumper. That measurement was used as the point of origin for a set of lateral measurements which was then taken. Measurements taken laterally to the left and right resulted in a visibile zone that could be viewed through the backlight. The lateral measurements were taken from the vehicle's center line to the left and right sides of the backlight until the target was out of view due to the presence of the second row head restraints and C-pillars. The target was out of view due to the left head restraint and C-pillar at a distance of 0.61 m (2 ft) lateral to the vehicle's longitudinal center. There was no visible zone between the left head restraint and C-pillar. The target was out of view due to the right head restraint at a distance of 1.02 m (3.35 ft) lateral to the vehicle's longitudinal center. At 2.1 m (6.89 ft), the target again was within view, between the head restraint and the C-pillar. At 2.46 m (8.07 ft) the target was again out of view due to the presence of the C-pillar. At 4.57 m (15 ft) aft of the rear bumper, the visible zone between the right head restraint and C-pillar measured and 0.36 m (1.18 ft) in width. The visible zone between the head restraints was 1.63 m (5.35 ft) in width, and 63 percent of the visible zone was to the right of the vehicle's longitudinal center.

When viewed through the rear view mirror, the roadway surface became visible at 14.02 m (46 ft) aft of the rear bumper.

A fourth set of measurements was then taken to calculate the left and right lateral visible zones when using the side view mirrors. From a seated posture, the side views were examined. Since the SCI investigator was using an exemplar vehicle, he adjusted the side mirrors appropriately for the driver's seated eye height. The target was placed at the left rear bumper. The target was moved laterally to the left until the target became visible through the left side view mirror. The target was then moved further to the left until the target was no longer visible. These measurements resulted in a visible zone which could be viewed through the side view mirror. The process was repeated on the right side of the vehicle. The visible zone lateral to the left bumper measured 0.66 m (2.17 ft) in width. The visibile zone lateral to the right bumper measured 1.66 m (3.38 ft) in width. The area between the left and right visible zones resulted in a blind zone which measured 1.62 m (5.25 ft) in width. The vehicle's maximum width measured 1.7 m (5.58 ft).

The target was then placed at 4.88 m (16.0 ft) aft of the rear bumper. Lateral measurements were taken to the left and right to the points at which the investigator could view the target through the side view mirrors. The area between the left and right visible zones resulted in a blind zone. At 4.88 m (16.0 ft) aft of the rear bumper, the left and right lateral visible zones measured 1.64 m (5.38 ft) and 2.4 m (7.87 ft), respectively. The right lateral visible zone was 46 percent greater in width than was the left lateral visible zone. The blind zone measured 1.63 m (5.35 ft) in width.

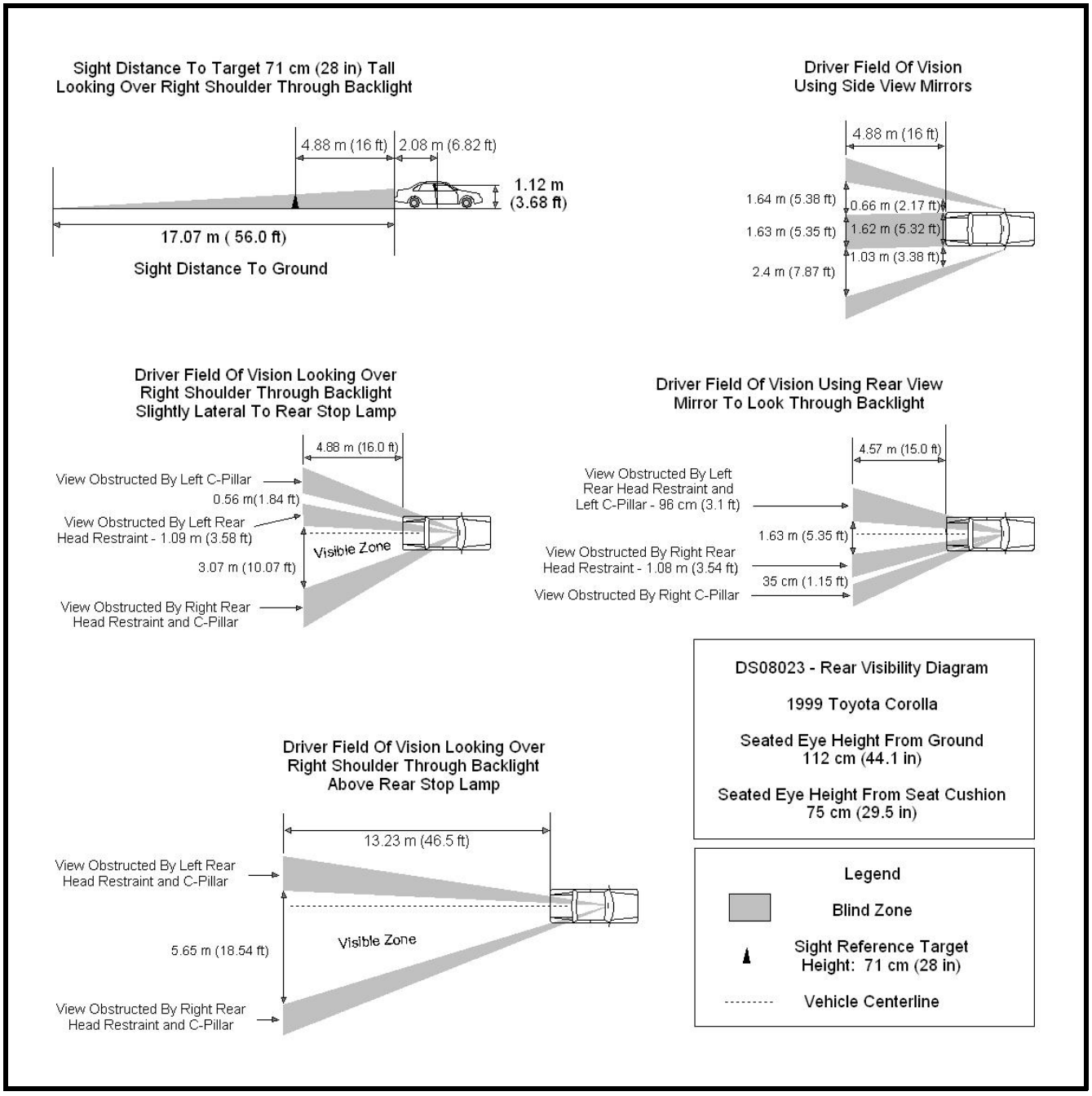


Figure 10. Nominal visibility diagram

Vehicle Damage

There was no damage and no evidence of non-motorist contact to the Toyota's back bumper or rear tires. There were several gouge marks to the rear bumper, but these were determined to not be related to this incident. Based on the witness description of the incident and the Collision Deformation Classification (CDC) guidelines for pedestrian impact, a CDC of 06BLWN4 was assigned to identify the tire contact.

Driver Data

The Toyota's driver was a 59-year-old male with an unknown height and weight. According to one witness, the driver was not wearing glasses at the time of the incident. It was not known if he had any vision problems. DSI contacted in person the spouse of the driver of the subject vehicle. The spouse indicated they would not discuss the facts of the incident due to legal and insurance-related matters.

Non-motorist Data

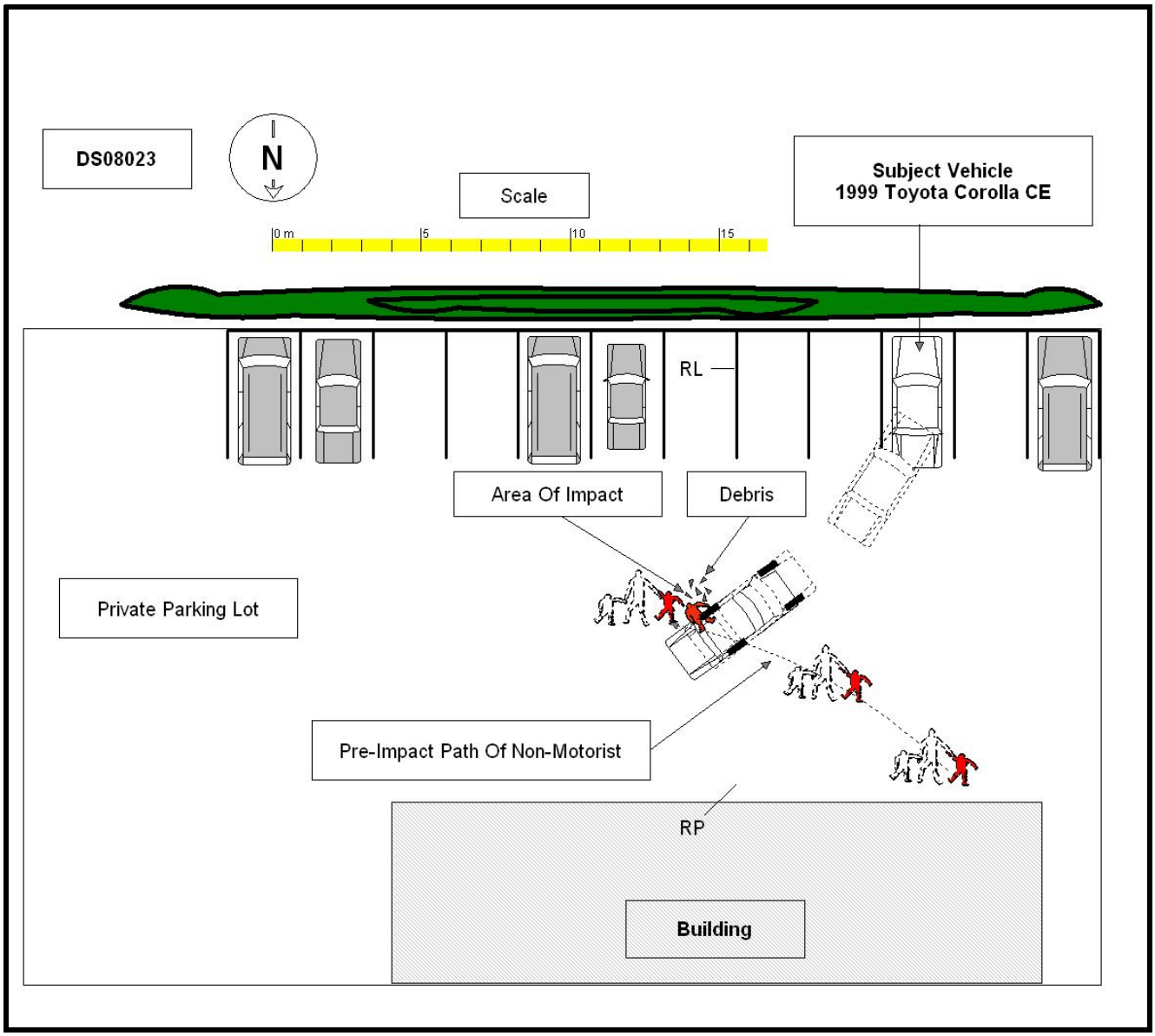
The non-motorist was a 4-year-old male who was 91 cm (36 in) tall and weighed 18 kg (40 lbs). He was wearing a dark blue hooded jacket, tan cargo pants, and black/yellow running shoes. He attends pre-school at the church where the incident took place. The babysitter/nanny reported that this child usually lays down when he doesn't want to do something.

Non-motorist Injuries

The non-motorist's injuries and injury mechanisms were based on the police report and on-scene photos and are described in the following table.

Injury	Injury Severity (AIS 90/Update 98	Injury Mechanism	Confidence Level
Abrasion, bilateral hip	890202.1,3	Left rear tire	Certain
Abrasion, abdomen, left	590402.1,2	Left rear tire	Certain

Attachment 1. Scene Diagram



Attachment 2. Calculation

*** * MINIMUM SPEED W/ KNOWN DRAG FACTOR * ***

$S = \sqrt{30 \times D \times f}$

$S = \sqrt{30 \times 1.80 \times 0.70}$

$S = \sqrt{37.80}$

$S = 6.14$

S = The Speed in MPH.
30 = A Constant.
D = The Distance in Feet.
f = The Adjusted Accel/Drag Factor.

INPUTS:	
The Acceleration/Drag Factor is:	0.70
The Distance in Feet is:	1.80

RESULTS:	
The Speed in MPH is:	6.14
The Velocity in FPS is:	9.00

7.70.6

Attachment 3. Field Data Forms

Not Applicable ☐

Reset Values | Print Forms

U.S. Department of Transportation
National Highway Traffic Safety Administration

SCENE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

D S 0 8 0 2 3

IDENTIFICATION

2. Date of Crash 0 5 / X X / 0 8

3. Time of Crash 1 2 0 3

Code reported military time of crash.

NOTE: Midnight = 2400
Unknown = 9999

AMBIENT CONDITIONS

4. Light Conditions

- ◉ Daylight
- ☐ Dark
- ☐ Dark but lighted
- ☐ Dawn
- ☐ Dusk
- ☐ Unknown

5. Atmospheric Conditions
(*Select all that apply)*

- ☐ Clear-No adverse conditions
- ◉ Cloudy
- ☐ Rain
- ☐ Snow
- ☐ Fog, Smog, Smoke
- ☐ Sleet, Hail (freezing rain or drizzle)
- ☐ Blowing Snow
- ☐ Severe Crosswinds
- ☐ Blowing Sand, Soil, Dirt
- ☐ Other (specify):_____
- ☐ Unknown

6. Temperature

- ☐ Below 0 degrees Celsius (Below 32 F)
- ☐ 1-10 degrees Celsius (33-50 F)
- ◉ >10-24 degrees Celsius (51-75 F)
- ☐ Over 24 degrees Celsius (Over 75 F)
- ☐ Unknown

SCENE INFORMATION

7. Type of area in which crash occurred
(*Select all that apply)*

- ☐ Single family residential
- ☐ Row houses/townhouses
- ☐ Multi family housing
- ◉ Commercial
- ☐ Industrial
- ☐ Rural
- ☐ Unknown

8. Driver exterior sightline obstructions
(*Select all that apply)*

- ◉ None
- ☐ Other vehicles
- ☐ Building
- ☐ Trees
- ☐ Shrubbery
- ☐ Other (specify)_____
- ☐ Utility poles
- ☐ Signs
- ☐ Glare
- ☐ Unknown
- ☐ No driver present

9. Crash location

- ☐ Driveway
- ◉ Parking Lot
- ☐ Sidewalk
- ☐ Alley
- ☐ Intersection of driveway and sidewalk
- ☐ Road / street
- ☐ Roadside / shoulder
- ☐ Other (specify)_____
- ☐ Unknown

10. Non motorist sightline obstructions
(*Select all that apply)*

- ◉ None
- ☐ Other vehicles
- ☐ Building
- ☐ Trees
- ☐ Shrubbery
- ☐ Utility poles
- ☐ Signs
- ☐ Glare
- ☐ Other (specify) _____
- ☐ Unknown

11. Grade at parked position + / - 0 0 0 %

12. Estimated distance from parked position to impact

0 0 8 . 8 m

13. Estimated speed at impact 0 1 1 kmph

14. Grade at impact +/ - 0 0 0 %

15. Estimated distance from impact to vehicle final rest

0 0 0 . 7 m

Unknown = 999 Reference Items 11,12, 13, 14, 15

Not Applicable ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

VEHICLE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number D S 0 8 0 2 3

VEHICLE IDENTIFICATION

2. VIN 1 N X B R 1 2 E 2 X Z X X X X X X

3. Model Year 1 9 9 9

4. Vehicle Make (specify): TOYOTA

5. Vehicle Model (specify): COROLLA CE

GLAZING

Location	Presence (check)	Status (select)	Clarity (select)	Tint (check)	Glazing Obstructions (specify if present)
Windshield	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
LF	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
RF	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
2nd Left	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
2nd Right	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
3rd Left	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
3rd Right	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Backlight	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Left Backlight	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Right Backlight	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Roof	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Other (specify)	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	

TIRE DATA

6. Vehicle Manufacturer Recommended Tire Size P185/65R14

7. LF Tire Size UNKNOWN

8. LR Tire Size P185/65R14

9. RF Tire Size UNKNOWN

10. RR Tire Size UNKNOWN

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	1	☑	Full Down / Mid / Full Up	UNKNOWN HR ADJUSTMENT
Front Middle	0	☐	Full Down / Mid / Full Up	
Front Right	1	☑	Full Down / Mid / Full Up	
2nd Left	3	☑	Full Down / Mid / Full Up	
2nd Middle	3	☐	Full Down / Mid / Full Up	
2nd Right	3	☑	Full Down / Mid / Full Up	
3rd Left	0	☐	Full Down / Mid / Full Up	
3rd Middle	0	☐	Full Down / Mid / Full Up	
3rd Right	0	☐	Full Down / Mid / Full Up	

Seat Type codes:

0 = No seat or seat folded down
1 = Bucket
2 = Bucket w/ folding back
3 = Bench
4 = Bench with folding back cushions
5 = Bench w/ folding back
6 = Split bench w/ separate back cushions
7 = Split bench w/ separate folding back
8 = Pedestal (i.e. column supported)
9 = Box mounted (i.e. van type)
10= Other seat type (specify)
99= Unknown seat type

VEHICLE MEASUREMENTS

Clearance Heights		Measurements (all from ground, and in centimeters	NOTES
Beltline		92	Muffler (right side) = 27 cm
Top of trunk/tailgate		99	
Bottom of bumper		38	
Trailer hitch (if applicable)		N/A	
Undercarriage			
	Sway bar	N/A	
	Axle	18	
	Differential	N/A	
	Other (specify): Trunk	27	
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

Not Applicable ☑

Undo Not Applicable

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

D S 0 8 0 2 3

PARKING AID PRESENCE

2. Type of backing/parking aid present

- ☐ OEM camera
- ☐ OEM ultrasonic/radar sensor
- ☐ OEM combination camera-ultrasonic/radar sensor
- ☐ OEM Fresnel lens
- ☐ OEM interior mirrors
- ☐ Aftermarket camera
- ☐ Aftermarket ultrasonic/radar sensor
- ☐ Aftermarket combination camera-ultrasonic radar sensor
- ☐ Aftermarket Fresnel lens
- ☐ Aftermarket interior mirrors
- ☐ Other (specify): _____

CAMERA INFORMATION

Specify field of view measurements on diagram

3. System make/model

_____

4. Video monitor type

- ☐ None present
- ☐ LCD (color)
- ☐ CRT (black & white)
- ☐ Unknown

5. Video display size _____ cm
(Diagonal)

6. Camera location

- ☐ None present
- ☐ Bumper
- ☐ License plate
- ☐ Tailgate/Hatch/Trunk
- ☐ Other (specify): _____

7. Video image quality under scene lighting conditions

- ☐ None present
- ☐ Good
- ☐ Average
- ☐ Poor (specify): _____
- ☐ Unknown

8. Was the camera functioning properly

- ☐ None present
- ☐ Yes
- ☐ No, poor image quality due to glare
- ☐ No, poor image quality due to atmospheric conditions
- ☐ No, camera turned off
- ☐ No, camera inoperable
- ☐ Unknown

ULTRASONIC/RADAR SENSOR

Specify object detection range on diagram

9. System make/model

_____

10. Auditory warning illumination

- ☐ No sensor present
- ☐ Yes
- ☐ No
- ☐ Unknown

11. Number of sensors ____

12. Sensor locations
(Select all that apply)

- ☐ No sensor present
- ☐ Left bumper
- ☐ Center bumper
- ☐ Right bumper
- ☐ License plate area
- ☐ Tailgate/Hatch/Trunk

13. Was warning system functioning properly

- ☐ No sensor present
- ☐ Yes, system alerted driver
- ☐ No, system did not alert driver
- ☐ No, system turned off
- ☐ No, system inoperable
- ☐ Unknown

14. Did driver react to warning

- ☐ No sensor present
- ☐ Yes
- ☐ No
- ☐ Unknown
- ☐ Sensor present, did not sound

15. Did driver report common false warnings

- ☐ No sensor present
- ☐ Yes
- ☐ No
- ☐ Unknown

Not Applicable

No Driver Present ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

DRIVER FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

D S 0 8 0 2 3

DRIVER PROFILE

2. Driver's Age 5 9
99 = Unknown

3. Driver's Sex
- ☉ Male
- ☐ Female
- ☐ Unknown

4. Driver's Height 9 9 9 cm
999 = Unknown

5. Driver's Weight 9 9 9 kg
999 = Unknown

6. Driver eyewear worn
(Select all that apply)
- ☐ None
- ☐ Eyeglasses
- ☐ Sunglasses
- ☐ Contacts
- ☉ Unknown

7. Driver vision deficiency condition
(Select all that apply)
- ☐ None
- ☐ Near sighted
- ☐ Far sighted
- ☐ Astigmatism
- ☐ Other (specify) _____
- ☉ Unknown

8. Non motorist's relationship to driver
- ☉ No relationship
- ☐ Child
- ☐ Grandchild
- ☐ Sibling
- ☐ Neighbor
- ☐ Friend
- ☐ Other (specify): _____
- ☐ Unknown

DRIVER ACTIONS

9. Driver approach to vehicle for entry
- ☐ From left front
- ☐ From left
- ☐ From left rear
- ☐ From right rear
- ☐ From right front
- ☐ Circled vehicle
- ☐ Return trip (backing into driveway/lot)
- ☐ Other (specify): _____
- ☐ N/A
- ☉ Unknown

10. Driver entry interruption
(Select all that apply)
- ☐ Direct trip from building to vehicle
- ☐ Loaded items into vehicle
- ☐ Spoke with family
- ☐ Spoke with neighbors
- ☐ Spoke with contacted nonmotorist
- ☐ Return trip (backing into driveway/lot)
- ☐ Other (specify): _____
- ☐ N/A
- ☉ Unknown

11. Purpose of backing
- ☉ Leaving parking space in parking lot
- ☐ Backing onto roadway from driveway
- ☐ Entering parking space in parking lot
- ☐ Backing into driveway from roadway
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

12. Where was driver going
Description:

UNKNOWN

13. Driver in a hurry
- ☐ Yes
- ☐ No
- ☐ N/A
- ☉ Unknown

14. How did driver check behind (rear area of vehicle) after vehicle entry
(Select all that apply)
- ☐ Did not look
- ☐ Checked mirrors
- ☐ Turned right and looked back
- ☐ Turned left and looked back
- ☐ Viewed Camera
- ☐ Listened for auditory/visual warning from system
- ☐ Other (specify): _____
- ☐ N/A
- ☉ Unknown

15. Estimated time between vehicle entry and start of backing
- ☐ 0-10 Seconds
- ☐ 11-30 Seconds
- ☐ 31-60 Seconds
- ☐ Over 60 Seconds
- ☐ N/A
- ☉ Unknown

16. What direction was the driver looking during backing maneuver
(Select all that apply)

- ☐ Straight ahead
- ☐ Right
- ☐ Left
- ☐ Rearward
- ☐ At object inside the car
- ☐ At mirrors
- ☐ Other (specify): _____
- ☐ N/A
- ☉ Unknown

17. Was the driver distracted during back up maneuver
(Select all that apply)

- ☐ No non-driving activities

External

- ☐ Looking at other vehicles
- ☐ Looking at other non motorist
- ☐ Looking at intended turn destination
- ☐ External focus, not specified
- ☐ Other external focus (specify): _____

Internal

- ☐ Looking at other occupant
- ☐ Talking to passenger
- ☐ Dialing phone
- ☐ Talking on phone
- ☐ Listening to radio/cd/portable playback device
- ☐ Adjusting radio/cd player
- ☐ Adjusting climate controls
- ☐ Using a device/controls integral to vehicle (specify): _____
- ☐ Reading/adjusting navigation system
- ☐ Eating or drinking
- ☐ Smoking related
- ☐ Retrieving fallen object (specify): _____
- ☐ Internal focus, not specified
- ☐ Focused on other internal object (specify): _____
- ☐ N/A
- ☉ Unknown

18. Driver avoidance actions prior to impact
(Select all that apply)

- ☉ None
- ☐ Braking
- ☐ Steering left
- ☐ Steering right
- ☐ Accelerating
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

19. Did driver see struck non motorist prior to impact
(Select all that apply)

- ☐ No, never saw non motorist
- ☐ Saw non motorist prior to entering vehicle
- ☐ Saw non motorist after entering vehicle
- ☐ Other (specify): _____
- ☐ N/A ☉ Unknown

20. Est time between start of backing and impact

- ☐ <2 or = 1 second
- ☉ 2-5 seconds
- ☐ 6-10 seconds
- ☐ > 10 seconds
- ☐ N/A ☐ Unknown

21. Driver interior sightline obstructions
(Select all that apply)

- ☉ Pillar
- ☉ Headrest
- ☐ Cargo
- ☐ Other occupant
- ☐ Other (specify) _____
- ☐ Unknown
- ☐ None

22. Recent experience driving this vehicle

- ☐ More than 10 times the last three months
- ☐ 6-10 times the last three months
- ☐ 2-5 times the last three months
- ☐ Less than 2 times the last three months
- ☐ First time driving this vehicle
- ☐ N/A
- ☉ Unknown

23. Frequency of driving in this parking lot/driveway

- ☐ Daily
- ☐ Weekly
- ☐ Several times a month
- ☐ Monthly
- ☐ Rarely
- ☐ First time in lot/driveway
- ☐ N/A ☉ Unknown

24. Driver Impairment
(Select all that apply)

- ☉ No drugs or alcohol present
- ☐ Alcohol present (specify BAC): _____
- ☐ Drugs present (specify):_____
- ☐ Unknown

25. Source of alcohol/drug results

- ☉ Police reported
- ☐ Medical record
- ☐ Other (specify)_____
- ☐ Not Tested
- ☐ Unknown if tested

Not Applicable ☐

U.S. Department of Transportation
National Highway Traffic Safety Administration

Non Motorist Form

Reset Values

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number
D S 0 8 0 2 3

NON-MOTORIST PROFILE

2. Non-motorist's Age — 0 4 ☐ Months ☉ Years
99 = Unknown

3. Non-motorist's Sex
☉ Male
☐ Female
☐ Unknown

4. Non-motorist's Height — 0 9 1 cm
999 = Unknown

5. Non-motorist's Weight — 0 1 8 kg
999 = Unknown

6. Medical outcome

☐ Not injured
☐ ER only
☉ Hospitalized 1-4 days
☐ Hospitalized 5 days or more
☐ Treatment later
☐ Fatal
☐ Unknown

7. Source of most severe injury
☐ Bumper
☉ Tire
☐ Undercarriage
☐ Other Specify:_____
☐ Ground
☐ N/A
☐ Unknown

8. Non-motorist impairment
(Select all that apply)
☉ No drugs or alcohol present
☐ Positive for alcohol (specify BAC): _____
☐ Positive for drugs (specify): _____
☐ Unknown

9. Source of alcohol/drug results
☉ Police reported
☐ Medical Report
☐ Other (specify) _____
☐ Not Tested
☐ Unknown if tested

NON-MOTORIST ACTIONS

10. Non-motorist attitude

☐ Standing
☐ Bending at waist
☐ Sitting
☐ Crouching
☐ Kneeling
☐ On skates/skateboard
☐ On bike/scooter
☉ Other (specify) On back
☐ Unknown

11. Non-motorist motion

☉ Not moving
☐ Walking slowly
☐ Walking rapidly
☐ Running or jogging
☐ Skipping/Hopping/Jumping
☐ Falling/Stumbling/Rising
☐ On skates/skateboard
☐ On bike/scooter
☐ Other (specify): _____
☐ Unknown

12. Non-motorist approach relative to rear of vehicle

☐ Stationary
☐ From left
☉ From right
☐ From behind
☐ Other (specify): _____
☐ Unknown

13. Non-motorist first avoidance action

☉ No avoidance actions
☐ Stopped
☐ Accelerated pace
☐ Ran away (along vehicle path)
☐ Jumped
☐ Turned away from vehicle
☐ Turned toward vehicle and braced
☐ Dove or fell away from vehicle
☐ Other (specify): _____
☐ Unknown

14. Non-motorist primary focus of attention

☐ Striking vehicle
☐ Play object
☉ Person
☐ Surrounding traffic
☐ Animal
☐ Handheld electronic (phone, MP3 player, etc.)
☐ Other Object (specify) _____
☐ Unknown

15. Were any other Non-motorists present?
(Select all that apply)

☐ Alone
☉ One adult present
☉ One other child present
☐ Multiple adults present
☐ Multiple children present
☐ Unknown

NON MOTORIST CLOTHING

NOTES:

- Specify Color, Fabric and Texture/Weight for outermost layer only
- Indicate "*NONE*" if applicable
- Available codes:

Colors		***Fabrics***	***Textures***	***Weights***
Black	Charcoal gray	Natural	Soft	Heavy
Lt gray/silver	Brown	Synthetic	Slick	Medium
Gold/tan	Purple	Blend	Coarse	Light
Dark blue	Light blue			
Dark green	Light green			
Maroon	Red			
Orange	Yellow			
White	Other (specify)			
Pink				

	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat	None			
	Helmet				
	Hood				
	Other (specify): _____				
	Unknown				
UPPER BODY	Short Sleeve				
	Long Sleeve				
	Light Jacket	Dark blue	Synthetic	Slick	Medium
	Heavy Jacket				
	Other (Specify): _____				
	Unknown				
LOWER BODY	Shorts				
	Pants	Other (specify)tan	Synthetic	Soft	Medium
	Shoes	Black	Synthetic	Coarse	Medium
	Other (specify): _____				
	Unknown				