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ON-SITE NOT-IN-TRAFFIC SURVEILLANCE BACK OVER INVESTIGATION

CASE NUMBER - IN-07-011
LOCATION - WISCONSIN
VEHICLE - 2002 KIA SEDONA
INCIDENT DATE - March 2007

Submitted:

May 18, 2007
Revised: October 12, 2007

Contract Number: DTNH22-07-C-00044

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
National Center for Statistics and Analysis
Washington, D.C. 20590-0003

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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

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15. *Supplementary Notes* On-site not-in-traffic surveillance back over investigation involving a 2002 Kia Sedona and a pedestrian.			
16. *Abstract* This report covers an on-site not-in-traffic surveillance back over investigation involving a 2002 Kia Sedona (case vehicle) and a pedestrian. This incident is of special interest because the case vehicle's driver backed over a pedestrian (6-year-old, male), who sustained a police-reported "A" (incapacitating) injury as a result of the incident. The Kia's driver was hauling bags of groceries to a local school for a cub scout event. The child (i.e., pedestrian) that was subsequently backed over and another child were sitting in the back of the van with the rear hatch open facing rearward with their feet dangling off the back of the vehicle. The Kia's driver drove into the school parking lot, drove partially into a parking space, and immediately after stopping, shifted the transmission to reverse, checked his rearview and side view mirrors, turned his head to the right looking over his right shoulder, and began to back up. Meanwhile, unknown to the driver, the pedestrian jumped out of the back of the Kia. Immediately as the driver began backing up, the back bumper struck the pedestrian and he fell to the ground. The Kia's right rear tire then struck the pedestrian and rolled partially up onto his chest. The pedestrian was transported by ambulance to a hospital and admitted overnight for treatment of a chest injury. The visibility observations showed that when looking through the rearview mirror or out of the open back hatch the Kia driver's view of the pedestrian was most likely blocked by the seat back of the second row right bucket seat.			
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BACKGROUND

IN-07-011

This incident was brought to NHTSA's attention on or before April 13, 2007 by NASS GES sampling activities. This incident involved a 2002 Kia Sedona (case vehicle) and a pedestrian. The incident occurred in March 2007, at 11:08 a.m., in Wisconsin and was investigated by the applicable city police department. The police completed a standard "Wisconsin Motor Vehicle Accident Report" and submitted a copy of the report to the state. This incident is of special interest because the Kia Sedona backed over a pedestrian [6-year-old, White (non-Hispanic) male], who sustained a police-reported "A" (incapacitating) injury as a result of the incident. This contractor inspected the scene and vehicle, and interviewed the Kia Sedona's driver on April 17, 2007. An exemplar vehicle (2003 Kia Sedona) was inspected on October 10, 2007. This report is based on the police crash report, scene and vehicle inspections, interview with the Kia's driver, interview with the pedestrian's mother, and this contractor's evaluation of the evidence.

SUMMARY

The Kia's driver was hauling bags of groceries to a local school for a cub scout event. The child (i.e., pedestrian) that was subsequently backed over and another child were sitting in the back of the van with the rear hatch open facing rearward with their feet dangling off the back of the vehicle. The Kia's driver drove into the school parking lot, drove partially into a parking space, and immediately after stopping, shifted the transmission to reverse, checked his rearview and side view mirrors, turned his head to the right looking over his right shoulder, and began to back up. Meanwhile, unknown to the driver, the pedestrian jumped out of the back of the Kia. Immediately as the driver began backing up, the back bumper struck the pedestrian and he fell to the ground. The Kia's right rear tire then struck the pedestrian and rolled partially up onto his chest. The pedestrian was transported by ambulance to a hospital and admitted overnight for treatment of a chest injury. The visibility observations showed that when looking through the rearview mirror or out of the open back hatch the Kia driver's view of the pedestrian was most likely blocked by the seat back of the second row right bucket seat.

CRASH CIRCUMSTANCES

Crash Environment: This incident occurred in a grade school parking lot. The parking lot was level bituminous. The parking spaces were all oriented in a north-south direction. At the time of the incident, the light condition was daylight, the atmospheric condition was cloudy and the parking lot surface was dry bituminous. The site of the incident was urban residential. See the Crash Diagram at end of this report.

Pre-Crash: The Kia Sedona's driver was hauling bags of groceries to a local school for a cub scout event. The third row bucket seats had been removed from the Kia to haul the groceries, but the two second row bucket seats were still in place. The child (i.e., pedestrian) that was subsequently backed over and another child (8-year-old, male) were sitting in the back of the van facing rearward with the rear hatch open and their feet dangling off the back of the vehicle. The child that was backed over was sitting behind the second row right bucket seat. The other child was seated to the pedestrian's right. The pedestrian's father was seated in the front right seat position. The Kia was initially southbound on a city street. The driver turned left into the school

parking lot (**Figure 1**). The driver then turned right (i.e., south) into one of the designated parking spaces (**Figure 2**). The driver's intention was to then back up eastbound toward the school to unload the groceries. The incident occurred as he was backing out of the parking space.

Crash: The Kia Sedona's driver stated that he only pulled partially into the parking space, stopped, immediately shifted the transmission to reverse, checked his rear view and side view mirrors, turned his head to the right looking over his right shoulder out of the open back hatch (**Figure 3** and **Figure 4** below), and began to back up. He estimated that the range of time between pulling into the parking space to backing up was 10 seconds or less. Meanwhile, unknown to the driver, the pedestrian had jumped out of the back of the Kia. Immediately as the driver began backing up, the back bumper struck the pedestrian. The pedestrian fell to the ground in the path of the right rear wheel, reportedly ending up on his back. Another adult, that was in the parking lot at the time, yelled at the driver to stop. Simultaneously, the driver felt the Kia make contact with something, and he stopped the Kia and pulled forward. The driver got out of the vehicle and discovered that the Kia's right rear tire (**Figures 5** and **6** below) had struck the pedestrian and rolled partially onto his chest. It was reported that the pedestrian was also momentarily unconscious. Based on the available information, it was estimated that the Kia had traveled backward from its stopped position to impact approximately 0.2 meter (0.7 foot), and had traveled from impact to final rest approximately 1.0 meter (3.3 feet). Based on the short distance traveled to impact, the Kia's impact speed was estimated to be 2 km.p.h (1.2 m.p.h.).

Figure 1: Overview of grade school parking lot where incident occurred, red arrow shows Kia Sedona in parking space driver initially pulled into, green arrow shows area driver was intending to back up to

Figure 2: Overview of Kia Sedona in parking space, Kia's driver stated he only pulled partially into the parking space at an angle on day of incident, red arrow shows driver's reported area of impact

Figure 3: Overview of exemplar vehicle (2003 Kia Sedona) with back hatch open and third row bucket seats removed

The Kia's driver gave no indication that the grocery bags in the back of Kia had hindered his vision. He indicated he just did not see that the pedestrian had jumped out of the Kia when he turned to look out the back of the Kia and began backing up.

Post-Crash: The pedestrian was transported by ambulance to a hospital and admitted overnight for treatment of his injuries.

Figure 4: View from driver's seat of exemplar Kia out of open back hatch

CASE VEHICLE

The 2002 Kia Sedona was a front wheel drive minivan (VIN: KNDUP131526------) equipped with a 3.5L, V6 engine and automatic transmission. The Kia was equipped with no after-market equipment, and was not equipped with any backup/parking aid. At the time of the incident, the third row bucket seats had been removed. There were two bucket seats equipped with head restraints installed in the second row. The Kia was also equipped with tinted windows in the second and third seating row as well as the backlight. However, since the rear hatch was open, the backlight played no role in the incident. The Kia's wheelbase was 291 centimeters (114.6 inches). The rear overhang was 105 centimeter (41.3 inches) and the overall length was 493 centimeters (194.1 inches). The distance from the ground to the bottom of the back bumper was 37 centimeters (14.5 inches).

Figure 5: Kia Sedona's right rear wheel and undercarriage

Figure 6: View of exemplar Kia's undercarriage and right rear tire, scale incremented in tenths of meter

CASE VEHICLE DAMAGE

There was no evidence of pedestrian contact to the Kia Sedona's back bumper. There was also no evidence of contact to any of the Kia's rear undercarriage components. Based on the available information indicating the pedestrian was struck by the back bumper, a Collision Deformation Classification was estimated to be: **06-BRLU-1** (**180** degrees). The Kia was driven from the scene.

The Kia Sedona's driver was a White (non-Hispanic) 45-year-old male. He was 188 centimeters (74 inches) tall and weighed 86 kilograms (190 pounds). He indicated that he drives the Kia daily. He also indicated that he had driven in the school parking lot approximately twice in the last year. The driver was wearing eyeglasses at the time of the incident.

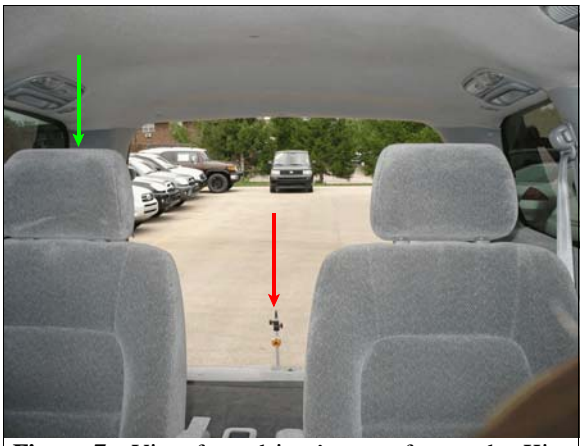


Figure 7: View from driver's seat of exemplar Kia out of open hatch, red arrow shows target in position Kia's driver said he could first see it as it was moved rearward from back bumper, pedestrian was seated behind second row right bucket seat (green arrow)

Figure 8: View of target set at location behind exemplar Kia where driver indicated he could first see it [55 centimeters (22 inches) back bumper to target] while looking over his right shoulder out of the open back hatch

CASE VEHICLE VISIBILITY STUDY

A visibility study was conducted during the Kia Sedona inspection. The study was conducted in the driveway of the driver's residence, which was approximately level. The purpose of the study was to determine the nominal blind zone behind the Kia. In addition, the visibility zones of the side view mirrors were also determined. The Kia's driver assisted the SCI investigator in making the visibility observations. The driver's eye height was 141 centimeters (55.5 inches) above the ground as he sat in the driver's seat. Since the Kia's back hatch was open at the time of the incident and the driver could directly see the standard 71 centimeters (28 inches) high target directly behind the back bumper with the back hatch open, it was decided to set the height of the target to 53 centimeters (21 inches). This placed the top of the target just below the top of the back bumper [back bumper height was 54 centimeters (21.3 inches)] and out of the driver's field of view. The target had to be moved 55 centimeters (21.7 inches) rearward, as well as 8 centimeters (3.1 inches) to the right of the Kia's centerline before the driver could see it (**Figures 7** and **8**). The driver's view out of the back left portion of the open hatch, when he was turned to the right and looking rearward as he did at the time of the incident, was blocked by the seat back of the second row left bucket seat (**Figure 7**). The target was then moved 70 centimeters (27.6 inches) to the right of the approximate centerline where it went out of the driver's view due to the second row right bucket seat (**Figure 7**).

The blind zone of the rearview mirror with the back hatch open and the third row bucket seats removed was assessed on the exemplar Kia Sedona. The surrogate driver's eye height above the ground as he sat in the driver's seat was 148 centimeters, (58.3 inches), which was 7 centimeters (2.8 inches) higher than the actual driver's eye height. The standard 71 centimeters

(28 inches) high target was used for the observations. The target had to be moved rearward 2.8 meters (9.2 feet) from the back of the exemplar Kia before the surrogate driver could see it in the rear view mirror (**Figure 9**). When the target was moved 0.5 meters (1.6 feet) to the right of the exemplar Kia's approximate centerline, it became obstructed by the seat back of the second row right bucket seat (**Figure 9**). When the target was moved 0.4 meters to the left of the approximate centerline, it became obstructed by the seat back of the second row left bucket seat (**Figure 9**). The observations through the rearview mirror indicated that the driver's view of the pedestrian was most likely blocked by the seat back of the second row right bucket seat.

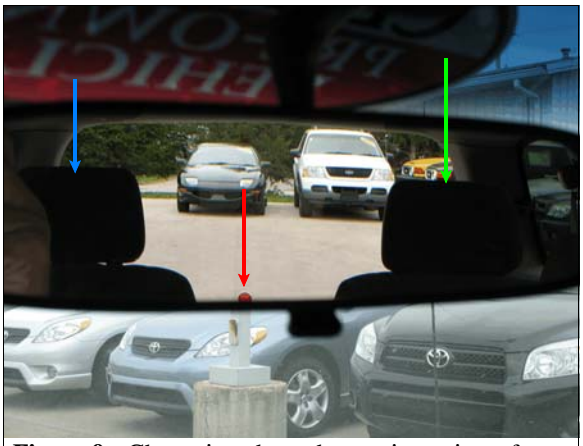


Figure 9: Close view through rearview mirror from driver's seat of exemplar Kia, red arrow shows target where it first came into surrogate driver's view, green arrow shows seat back of second row right bucket seat, blue arrow shows seat back of second row left bucket seat

In summary, the visibility observations showed that with the rear hatch open, the driver had a narrow zone of visibility for objects near the back of the Kia as he looked over his right shoulder out of the open back hatch due to the seat backs of the second row bucket seats. Specifically, the Kia's driver most likely did not see the pedestrian jump out of the back of the Kia because his view was blocked by the seat back of the second row right bucket seat (**Figure 7** above). In addition, when the driver looked through the rearview mirror, his view of the pedestrian was again most likely blocked by the seat back of the second row right bucket seat (**Figure 9**). See the Nominal Visibility Diagram at the end of this report.

PEDESTRIAN

The pedestrian [6-year-old, White (non-Hispanic) male]; 102 centimeters and 25 kilograms (40 inches, 55 pounds)] was reportedly wearing a blue shirt, black jacket, blue jeans and white sneakers. He was transported from the scene by ambulance to a hospital and was admitted overnight for treatment of his injuries.

PEDESTRIAN INJURIES

The pedestrian reportedly sustained a collapsed lung. The pedestrian's injury and injury mechanism is presented in the table below.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source (Mechanism)	Source Confidence	Source of Injury Data
1	Injury, blunt chest, with collapsed lung, not further specified	unknown 415099.7,0	Tire, right rear	Certain	Interviewee (same person)

IN-07-011

Nominal Visibilty Diagram
Case Vehicle = 2002 Kia Sedona Minivan

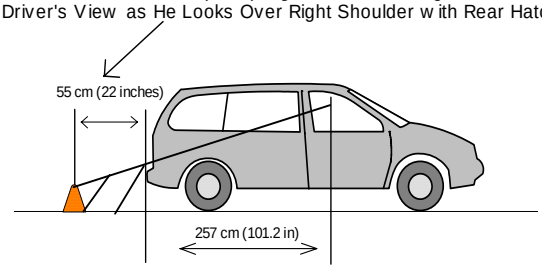
Kia Driver's Eye Height From Ground = 141 cm (55.6 in)
Observations Made with Rear Hatch Open

= Kia's Blind Zones

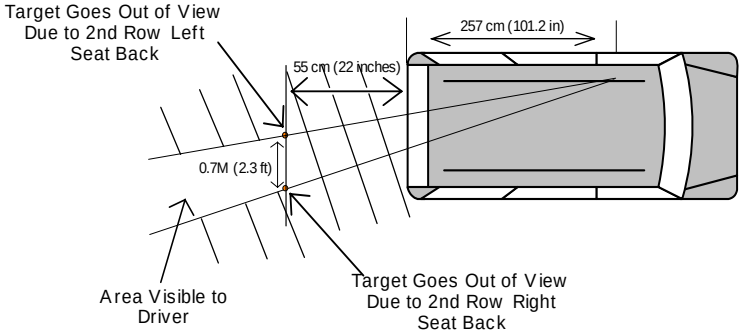
= Side View Mirror Visibility Zone

= 53 cm (21 in) High Target (Just Below Top of Back Bumper)

1. Distance Back of Kia
To Point a 53 cm (21 in) High Reference Target
Comes Into Driver's View as He Looks Over Right Shoulder w ith Rear Hatch Open

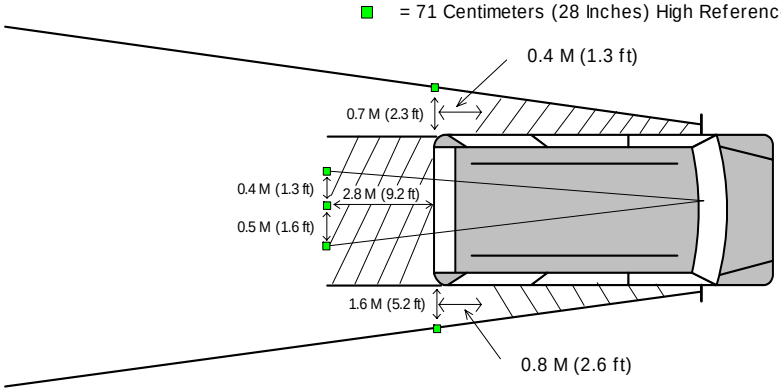


2. Kia's Driver Looking Over Right Shoulder, 2nd Row
Seat Backs Block View Out of Open Rear Hatch



3. Side View Mirrors Visibility Zones and Rearview Mirror Blind
Zone Using Standard 71 Centimeters (28 inches) High Target
[rearview mirror blind zone and beginning of side view mirrors
visibility zones assessed on exemplar 2003 Kia Sedona,
surrogate driver's eye height 148 cm (58.3 in)]

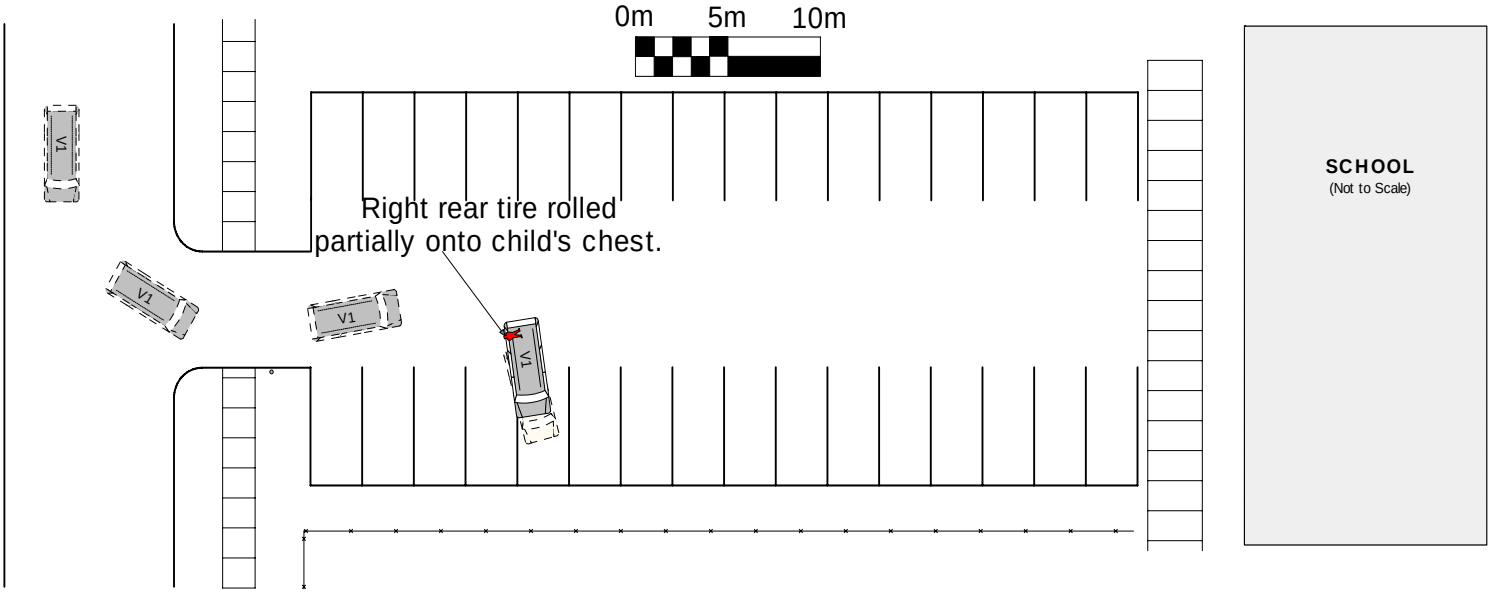
= 71 Centimeters (28 Inches) High Reference Target



IN-07-011

Daylight, Cloudy
Dry, Level, Bituminous Parking Lot
Estimated Coefficient of Friction: 0.75

V1 = 2002 Kia Sedona



Kia's driver pulls into parking space. Child riding in back right with rear hatch open jumps out. Driver immediately starts to back up and backs over child.

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

I N 0 7 0 1 1

IDENTIFICATION

2. Date of Crash 0 3 / x x / 0 7

3. Time of Crash 1 1 0 8

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 0 . 2 m

13. Estimated speed at impact 0 0 2 kmph

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

15. Estimated distance from impact to vehicle final rest

0 0 1 . 3 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 I N 0 7 0 1 1

VEHICLE IDENTIFICATION

2. VIN K N D U P 1 3 1 5 2 6 x x x x x x

3. Model Year 2 0 0 2

4. Vehicle Make (specify): Kia

5. Vehicle Model (specify): Sedona

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	☐	Hatch open
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 P215/70R15

7. LF Tire Size P215/70R15

8. LR Tire Size P215/70R15

9. RF Tire Size P215/70R15

10. RR Tire Size P215/70R15

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	
Front Middle	0	☐	☐ ☐ ☐ Full Down / Mid / Full Up	
Front Right	1	☑	☐ ☐ ☑ Full Down / Mid / Full Up	
2nd Left	1	☑	☑ ☐ ☐ Full Down / Mid / Full Up	
2nd Middle	0	☐	☐ ☐ ☐ Full Down / Mid / Full Up	
2nd Right	1	☑	☑ ☐ ☐ 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		109	
Top of trunk/tailgate		58	
Bottom of bumper		37	
Trailer hitch (if applicable)		N/A	
Undercarriage			
	Sway bar	N/A	
	Axle	18	
	Differential	N/A	
	Other (specify): _____	27	Other = Bottom of spare tire bracket
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

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

I N 0 7 0 1 1

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

15. Did driver report common false warnings

- ○ No sensor present
- ○ Yes
- ○ No
- ○ Unknown

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

I N 0 7 0 1 1

DRIVER PROFILE

2. Driver's Age 4 5
   99 = Unknown

3. Driver's Sex
   - ◉ Male
   - ○ Female
   - ○ Unknown

4. Driver's Height 1 8 8 cm
   999 = Unknown

5. Driver's Weight 0 8 6 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): Reposition to unload cargo
    - ○ N/A
    - ○ Unknown

12. Where was driver going
    Description:

    Driver was intending to back up to school building to unload cargo

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) Row 2 seats
- ○ 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
I N 0 7 0 1 1

NON-MOTORIST PROFILE

2. Non-motorist's Age — 0 6 ◉ Years ○ Months
99 = Unknown

3. Non-motorist's Sex
◉ Male
○ Female
○ Unknown

4. Non-motorist's Height — 1 0 2 cm
999 = Unknown

5. Non-motorist's Weight — 0 2 5 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)_____
◉ 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): Jumped out of hatch
○ 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)			

	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat				
	Helmet				
	Hood				
	Other (specify): _____				
UPPER BODY	Short Sleeve	Dark blue	Natural	Soft	Light
	Long Sleeve				
	Light Jacket	Black	Unknown	Unknown	Unknown
	Heavy Jacket				
	Other (Specify): _____				
LOWER BODY	Shorts				
	Pants	Light blue	Natural	Soft	Medium
	Shoes				
	Other (specify): _____				