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IN-DEPTH INVESTIGATION OF CRASHES
IN MICHIGAN INVOLVING CHILDREN

Final Report

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16. Abstract <p>A study was conducted of motor vehicle crashes involving children between the ages of 0 and 4 years. Crashes were investigated in Michigan using professional accident investigators. The purpose of the study was to assess the effectiveness of child safety restraints in real-life crash situations, as well as determine how they are used and misused.</p> <p>Clinical case study reports were prepared on 43 crashes involving 60 child occupants. The crashes investigated were selected from more than 1,000 notifications of crashes provided through the League General Insurance Company and the Automobile Club of Michigan.</p> <p>Child safety restraints were often unused and misused by parents for reasons of expediency and convenience. The presence of nonrestrained passengers in a vehicle with a restrained child poses a threat to the child through occupant-to-occupant contact in a crash. Evidence from crashes investigated in this study suggests that the safest location for a restrained child in a passenger car is the center of the rear seat. In general, the study results support the idea that properly used child restraints offer children a significant degree of protection.</p>			
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1.0 INTRODUCTION

This is a summary report of a study of motor vehicle accidents involving children between 0 and 4 years old. The study, sponsored by the National Highway Traffic Safety Administration and conducted from September, 1981, to May, 1984, entailed in-depth investigation of selected crashes in Michigan by experienced, professional accident investigators.

The purpose of the study was to assess the effectiveness of child safety restraints in real-life crash situations and to determine how they are used and misused. Such careful observation of a select number of crashes involving young children may serve as the basis for recommendations to improve child safety in motor vehicle crashes.

A total of 60 child occupants were involved from 43 crashes which were investigated in-depth. Each investigation resulted in a separate clinical case report of the crash. Crashes selected for investigation came from more than 1,000 notifications of such crashes within Michigan provided by two insurance carriers. Crashes investigated included those in which restrained children were injured, restrained children were uninjured, unrestrained children were injured, and unrestrained children were uninjured.

Each accident investigation report addressed areas relevant to the child safety problem brought out by the investigation. Individual reports of each accident have been published separately. In addition to presenting summary conclusions, this document will serve as an index to the original reports.

2.0 BACKGROUND

Data regarding motor vehicle accidents and their consequences have become more complete, more refined, and more accurate in recent years. These data have confirmed that children constitute a special problem in highway safety. Children up to and including age five account for about 2% of all fatalities in motor vehicle accidents.

The purpose of this project was to contribute to the knowledge of child safety through in-depth, clinical studies of selected crashes involving child occupants who were contained properly in child safety devices, or were improperly contained in child safety devices, as well as crashes where no child safety device was used.

The project was initially planned as a companion effort to a League General Insurance Company program that provides free child safety seats to policyholders who have children under four years old. League General has about 35,000 policyholders in Michigan. Through the cooperation of their policyholders who have children, League General screened incoming reports of accidents and alerted UMTRI to crashes involving young children.

One problem with the investigation of small-child injuries in past accident studies has been inadequate identification of the children involved. Also, projects such as the NHTSA-sponsored National Crash Severity Study (NCSS) and the National Accident Sampling System (NASS), which are based on a sampling of accidents from a specific regional accident population, yielded numbers too small to conduct any meaningful analysis. Sometimes multidisciplinary accident investigation teams would learn of the involvement of a child in an accident they were investigating, but the child would not have been adequately identified in the police report. Police reporting forms

often omit the presence of a child in an accident-involved vehicle unless the child is injured. Thus identifying young children in accidents has in the past been a special problem for accident researchers.

The number of crashes to be investigated in this study depended on the accident experience of policyholders of League General Insurance Company. When the project was begun, the number of crashes with young children in League General's accident population was found to be far smaller than had been initially estimated. Many crashes reported to the insurer--crashes involving young children--were reported as being more severe than they actually were. It became apparent that when the low-energy "fender bender" crashes were eliminated, accidents selectable for in-depth investigation would be too few to satisfy the needs of this project. To overcome this problem, a second insuring organization with wider accident experience involving young children was invited to participate in the project.

The second insurer was the Automobile Club of Michigan (AAA), which has about 1.2 million policyholders in Michigan. The AAA cooperated by having its field offices report to its headquarters all crashes involving young children. AAA headquarters notified UMTRI of all such crashes, except for some that were low energy. This change in the project significantly increased the number of crashes available for investigation.

3.0 DESIGN OF THE ACCIDENT INVESTIGATION PROGRAM

In-depth investigations of selected motor vehicle crashes search out, observe, measure, and record up to 700 discrete data elements relating to the precrash, crash, and postcrash phases of an accident. Since this accident investigation project was concerned primarily with young children and how they were affected in crashes, data elements were selected on the basis of their relevancy to the objectives of the project. Data selected were in four categories:

- (1) Basic Crash Descriptors: crash time, date, location, number of vehicles involved, vehicle type(s), number of occupants involved, occupant age, sex, seated location, overall crash severity, overall injury severity.
- (2) Vehicle Examination: damage characteristics, damage measurements, occupants' interior contacts, restraint use or non-use, change in vehicle velocity at impact (Delta-V*).
- (3) Child Injuries: child physical characteristics, inventory of individual child injuries, movement of child within vehicle, child kinematics, specific interior areas and/or objects of vehicle contacted by child.
- (4) Child Safety Restraints: restraint type, make, model, restraint performance, attachment security, where located, overall relevance, and performance in crash.

These data elements were organized to provide an efficient and complete protocol for the investigation of selected crashes, complete in those areas

*Delta-V, the abrupt change of vehicle velocity in a crash, is used as an indicator of crash severity.

of most interest and value as they relate to the safety of the child occupant. Various field data forms were designed to ensure that vital information was systematically collected and organized. These data forms also formed the major portion of each accident case report which was the resulting work-product of the entire effort. Data forms used in the study are included in Appendix B.

In addition to the use of field data forms, photographs were taken of the vehicle and accident site, and where possible, with parental consent, of the actual child seated in the child restraint involved in the crash. In each case, these data were organized so as to protect the identity of all individuals. Completed case study reports were "sanitized" to eliminate all personal identifying information.

4.0 FIELD INVESTIGATION OF CRASHES

Alerting to crashes involving young children originated from either the League General Insurance Company main office, in Southfield, Michigan, or the Automobile Club of Michigan headquarters located in Dearborn, Michigan. Whenever a policyholder reported a crash in which children 0 to 4 years old were involved, the insuring organization would relay the information to UMTRI by telephone. Information initially received from each policyholder in this manner included the following, when available:

- Date and time of crash.
- Location of crash.
- Type of crash.
- Crash severity (general characterization).
- Number of child occupants 0-4 years.
- Child, or children, injured or noninjured.
- Age and sex of child occupants.
- Child restraint involved, or if used.
- Indication of cooperative attitude of the reporting person relative to further follow-up of the crash by UMTRI.
- Whether the crash-involved vehicle was driveable after the crash.
- Additional comments, when possible, their relationship (if any), and a general overview of the crash and damage involved.

This alerting information regarding crashes, from which in-depth investigations could be initiated, was recorded in the order that the calls were received. Based upon the information received, a decision was then made whether any additional information was needed before the crash could be considered for an in-depth investigation, or whether it should be disregarded

in favor of an alternate selection with desirable features more consistent with the objectives of the study. Crashes that were low-energy "fender benders" would typically be discarded at this point.

Where additional information was needed before a decision to proceed was made, the party who had reported to the insurer was called by phone and interviewed. A decision was then made whether to proceed with an in-depth investigation of that crash. When a crash was selected, arrangements were made through the same phone interview, or a follow-up call, to examine the child safety restraint (when involved) and the crash-involved vehicle (when in the possession of the reporting party).

Field investigation data forms also served as a guide for conducting the investigation. They were augmented by further questioning of the parents or guardians, when possible, during the examination of the vehicle and/or child restraint.

Report preparation followed, in which child injuries were coded, a diagram of the crash scene prepared, photographs edited and indexed, a reconstruction of the crash energy, or "Delta V," completed (where applicable), and the case report assembled. Each report also included a narrative summary that included relevant findings.

5.0 DISCUSSION OF CASES

Summaries of the crashes investigated in this project are in Appendix A. No statistical analysis of injuries in those crashes would be meaningful, both because of the small number of cases and because they were not selected to constitute a representative sample of all such crashes occurring in Michigan. But the cases investigated do constitute a judgment sample of the various types of crashes involving young children. When organized in terms of child injuries and restraint use, they are represented by the tabulation in TABLE 5-1.

A few illustrative cases are summarized here in terms of their child protective and nonprotective features.

TABLE 5-1

<u>Case Report</u>	<u>Children Unrestrained & Uninjured</u>	<u>Children Unrestrained & Injured</u>	<u>Children Restrained & Uninjured</u>	<u>Children Restrained & Injured</u>
101	X			
102	X			
104	X	X		X
140			X	
141			X	
142			X	
143 (V1)			X	
143 (V2)				X(*)
144		XX		
180			X	
204			X	
276				X(*)
350			X	XX
359		X		X
391				X
393			XX	
406				X(*)
462		XX		
470			X	
479				X(*)
495				X
564		X		
588			XX	
610		XX		X(*)
631			X	
649	X			
658			X	
669			XX	
690		X		
713		X		
716			X	
761			X	
762			XX	
764		X		X
829	X			
830				X
855			XXX	
879		X		
901	X			
924			X	
976				X
977		X		
1023		X		
1031		X		
Totals	6	16	24	14

(*) - Child not secured in safety seat and/or safety seat not secured to vehicle.

5.1 Crashes in Which Restrained Children Were Uninjured

The four cases summarized here are representative of crashes in which child protective devices performed as desired and provided a significant level of protection to the child. They might be viewed as "success stories" — collisions severe enough to result in moderate or greater injury to adult occupants, but with the properly restrained child well protected.

Case 141

This single-vehicle loss-of-control rollover accident involved an intermediate-size passenger car driven by a 36-year-old mother on a major four-lane divided highway just outside a large city. The driver lost control of her car when a stone thrown up from the wheels of a tractor-trailer combination ahead of her struck the car's windshield. Her car swerved off the roadway, into the median area, and rolled over. The unrestrained driver received moderate-to-serious injuries. Her two-year-old child, securely restrained in a child safety seat in the right front, was uninjured.

Case 142

This crash involved a one-year-old female child riding in a sub-compact passenger car with her mother. The car became involved in a four-vehicle crash. The child was securely restrained in a child safety seat, and her mother, the 25-year-old driver, was similarly restrained by the vehicle's lap and shoulder restraint. The vehicle was impacted frontally while they attempted to negotiate a left turn within an urban intersection. The driver received moderate-to-serious injuries, while the child was uninjured. Occupants in the other crash-involved vehicles received moderate-to-serious injuries.

Case 855

This crash involved two compact-size vehicles that collided in an angle impact within an urban intersection. One vehicle, containing four young children ages 1, 2, 3, and 10 seated in the rear seat, was struck in the right side by the other vehicle, which entered the intersection late on a caution signal. All occupants were restrained with the vehicle's belt restraints except the one-year-old child, who was contained in a child safety seat and was uninjured. The safety seat was partially secured to the vehicle,

with the child securely belted into the safety seat. The two front-seated and restrained adults received minor injuries, primarily because of excessive slack in their belt restraints. The four rear-seated and restrained children were uninjured.

Case 470

This crash, an intersection angle type impact between an intermediate size sports coupe and a pickup truck, involved a one-year-old child restrained in a child safety seat. The 27-year-old driver of the sports coupe, and mother of the child, was unrestrained. The child was securely contained in a child safety seat located in the right front. The driver of the pickup truck failed to yield the right of way and impacted the right side of the passenger car in the area near where the child was seated.

At impact and during the subsequent rollover, the unrestrained driver contacted the lower instrument panel and windshield header, which resulted in loss-of-consciousness from a concussion, accompanied by other injuries. The restrained child was uninjured and prevented from moving about the vehicle interior and contacting various interior surfaces and objects. Clothing worn by the child, consisting of blue jeans, gym shoes, a zipped-up winter jacket with hood up and tied, with a pacifier in the child's mouth, also prevented lacerations from flying glass fragments and other interior objects.

5.2 Crashes in Which Restrained Children Were Injured

Crashes summarized here resulted in injuries to a restrained child, but where the child was not properly secured within the protective device or the device not properly secured to the vehicle. The injuries incurred could have been eliminated, or reduced in severity, had the child and protective device been properly secured.

Case 406

This was a severe crash in which one adult occupant of an intermediate-size coupe was killed, and a two-year-old female child was injured. The vehicle containing the child was impacted in the left side by a stake truck whose driver failed to yield the right of way in an urban intersection. The 27-year-old driver and mother of the child sustained fatal injuries. The child was located in the left rear, seated in a child safety seat. The safety seat was properly secured to the vehicle but the child was not secured within the safety seat.

Crash forces resulted in moving the child laterally across the rear seat and contacting the right side rear glass, where she

received a minor head laceration. The child safety seat was crushed where it was attached to the left rear seat of the vehicle from crash forces and intrusion into the left side of the interior.

The investigator believed that had the child been properly secured within the child safety seat, her injuries would have been significantly greater and possibly fatal. This case must be viewed as that rare exception where the usage of an occupant restraint, because of the circumstances of the crash, could adversely affect occupant safety.

Case 479

This crash occurred on a major suburban arterial when the driver of an intermediate-size sedan, a 28-year-old mother with her four-year-old child, had her view obstructed by a city bus turning within a major intersection. A collision resulted with an oncoming vehicle as she initiated her turn. The child was contained in a "booster" type child seat in the right front seat position. However, due to the lack of lap and shoulder belt restraints in the vehicle, it was not possible to attach the child and the child seat to the vehicle. The impact resulted in the child's moving into the right side interior of the vehicle, where he received a minor forehead contusion, and facial lacerations of moderate severity from shattered right-side glass fragments. The driver and mother of the child received a minor forehead contusion from contact with the instrument panel. Investigators believed that proper securing of the booster (and child) would have minimized the injuries sustained.

Case 610

This crash resulted in the death of a two-year-old child while two other children ages one and four years received serious injuries. The vehicle with the children, an intermediate-size sports coupe, was struck in the right side by a pickup truck within a major suburban intersection. The crash occurred when the driver of the pickup truck entered the intersection without the right of way, striking the right side of the sports coupe.

All five occupants in the sports coupe, which included the mother driving and the father in the right front seat, were injured. Principal crash forces were to the right side of the vehicle, which resulted in fatal injuries to the father, seated in the right front seat, and a two-year-old male child seated in the right rear seat. A one-year-old female child was contained in a safety seat, but was not secured within the seat, which was also not attached to the vehicle's belt system. The mother had placed the child and seat on the rear backglass convenience shelf. Impact forces caused the child and seat to move forward, resulting in serious injuries to the child. The free-floating child and child safety seat also struck the four-year-old male child in the left rear seat, inflicting severe injuries to the child. The one-year-old child was injured critically. Investigators believed that proper securing of seat and child would have lessened injuries to both the 1 and 4 year olds.

Case 359

This crash, also an intersection angle type impact, involved an intermediate-size two-door sedan which was struck in the right side by a pickup truck whose driver initiated a turn movement to enter a ramp leading onto an Interstate highway. The crash resulted when the pickup driver pulled into the path of the sedan, whose driver was initiating a right turn on an entrance ramp. This resulted in a frontal impact to the sedan, which had four occupants.

The driver, a 21-year-old female, was unrestrained, as was a 24-year-old female right front passenger. A four-year-old female occupant was seated in the left rear, also unrestrained and lying face down on the seat. The fourth occupant, a 20-month-old female, was restrained in a child safety seat in the center rear. The driver and right front adult passenger received serious and moderate injuries, with the unrestrained four-year-old child also receiving serious injuries. The 20-month-old restrained child did receive a laceration on the forehead, bloody nose, and right-side mouth contusion and abrasion. The child did remain securely within the child safety seat.

5.3 Crashes in Which the Vehicle's Seat Belts Failed to Protect Young Children

Two crashes are summarized here in which children were restrained by the vehicle's belt system and sustained injuries. Use of an appropriate child protective device would have been more effective.

Similarly, a properly secured child safety seat would most probably have avoided injury to the one small child.

Case 495

This crash involved two vehicles in an urban intersection angle-type crash. An intermediate-size station wagon, with a 35-year-old driver and mother of a four-year-old male child riding in the vehicle's right front seat, entered the intersection without yielding the right of way as required by traffic controls. The vehicle was struck on the left front by a smaller sub-compact vehicle making a left turn.

Both the mother and the four-year-old child were restrained with the vehicle's three-point belt restraints. Both moved violently to the right from the impact. The child contacted the interior right-side door armrest and sustained a minor head contusion. The restrained driver received a minor pelvic contusion from the lap belt portion of her restraint.

Case 276

This crash involving two vehicles occurred on a residential intersection in a major city. A foreign-made compact sedan with two adults and two children, ages five and two years, was struck in the left side by a pickup truck whose driver failed to yield the right of way. Both front-seat occupants in the sedan, parents of the children, were unrestrained and were injured. The five-year-old male child was seated in the left rear and buckled-in with the lap belt for the seated position. The two-year-old female child was located in the left rear but secured within a child safety seat. However, the safety seat was improperly attached to the vehicle, permitting the child and seat to move about from crash forces. This resulted in a severe laceration to the head of the two-year-old from contacting the side window frame of the vehicle. The lap-belt-restrained five-year-old in the right rear was also injured from contacting the rear interior of the vehicle.

5.4 Crashes in Which an Unrestrained Occupant Injured a Restrained Child

Occupant-to-occupant contact in a crash can result in one occupant inflicting injury upon another. This is particularly true when one occupant is free to move as a result of crash forces while an adjacent occupant is restrained. Two cases are summarized here in which an unrestrained occupant, one an adult and another a three-year-old child, contacted and injured an effectively restrained child.

Case 391

This crash, which involved a mother and eight-month-old child, resulted in moderate-to-severe injuries to the child from the mother's movement within the vehicle during the crash. The mother was unrestrained. The crash involved a full-size sedan struck by a compact coupe in an intersection angle-type collision. The child was securely contained within a child safety seat in the front center seating area of the vehicle, but received a fractured femur from contact by her mother, who sustained minor injuries to her leg, back, and head.

Case 764

In this crash two children, ages one and three, were injured. One child was restrained; the other child was unrestrained. The vehicle with the children, an intermediate-size two-door coupe, was struck in the right side by an errant vehicle of the same approximate size.

There were four occupants in the vehicle struck by the errant and out-of-control vehicle. These were a 35-year-old unrestrained male driver, a 35-year-old unrestrained female passenger in the right front seat, a three-year-old female unrestrained child in the right rear seat, and a one-year-old child restrained in a child safety seat in the center rear. The unrestrained child was forced against the restrained child, with both sustaining minor injuries. Both adult front-seated passengers similarly sustained minor injuries from striking interior portions of the vehicle.

5.5 A Severe Crash That Injured a Restrained Child

As with all safety features or devices associated with motor vehicles, the protection they offer occupants is often not sufficient in high-severity, catastrophic crashes involving penetration of occupant space and deformation of seats. These are crashes in which the design features of the vehicle, intended to contain and protect its occupants, are not commensurate with the severity of the crash.

Case 350

This crash resulted in serious injury to a nine-month-old child, even though the child was securely and properly contained within a child safety seat. The intermediate-size two-door sports coupe in which the child was a passenger was struck in the rear by a similar size vehicle, and then moved forward so as to contact a smaller vehicle ahead in a chain-type front-rear collision.

The child was located in the left rear seat and sustained a skull fracture from contact with the front seat as it deformed rearward from crash forces. A four-year-old male child was seated in front between two adults, restrained in a lap belt. The four-year-old received a minor injury from contact by the driver.

5.6 A Crash Involving Nonsecurement of the Child Seat

Here is a case in which the child occupant was injured because the mother failed to check to ensure that the vehicle's seat belt was buckled.

Case 716

In this crash a 9 1/2-month-old female child was secured in a child safety seat, but the child seat moved forward upon impact and struck the windshield and instrument panel, resulting in facial contusions and lacerations. The vehicle, a full-size luxury sedan, struck a trailer in tow by a vehicle ahead.

The movement of the child in the crash, and her injuries, resulted from the child safety seat's separation from its attachment to the vehicle. The lap seat belt of the vehicle was attached as required through the child safety seat, but was not properly locked within the retractor mechanism assembly of the vehicle's seat belt system. The 3-point belt system provided with the vehicle contained an electro-mechanical retractor to allow the driver and/or passenger lap belts to freely move in and out on the retractor reel until the "D" ring, or latch plate, is fastened in the belt buckle.

6.0 FINDINGS AND CONCLUSIONS

An early finding in this study is that parents reporting a crash to the insurance carrier frequently overstated the crash severity and the danger to the child occupants. This was evident from the initial reports and follow-ups. Often the crash was so minor that there was little potential for harm to the child. Key indicators such as injuries to other occupants, if any, and a description of damage to the vehicles involved, were used to screen incoming reports of crashes.

A second finding was that child restraints were often not used because parents found them to be inconvenient. In some instances neither the child nor safety seat was secured. This suggests that parents are not sufficiently motivated to make the effort involved in properly using a child safety seat. It suggests that on short trips, or travel where little danger is perceived, the parent and/or guardian may not feel the urgency of properly securing the child and safety seat.

Thirdly, the presence of nonrestrained passengers (children or adults) in a vehicle containing restrained young children poses a threat to the restrained children. This is because the unrestrained occupants can become "unguided missiles" in a crash and can inflict injury on those restrained.

The best location for securing a child in a child seat in a vehicle seems to be the center rear. This places the child away from the two sides of the vehicle and in an area surrounded by seat cushions and seat backs--relatively forgiving structures. Securing the child in a child safety seat restricts its movement within the vehicle during a collision. In case 406, summarized earlier here, the child seat secured in the left rear seat was crushed and the unsecured child was flung to the right. If the child seat

had been secured in the center of the rear seats, and the child secured in it, the child would probably have sustained no injuries or only a minor injury.

In general, this study has provided useful evidence that child safety devices offer young children significant protection, provided the devices are properly used.

APPENDIX A

Summaries of the Cases Investigated

CASE NO. PCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA		RESTRAINT	INJURIES	MAX. AIS		ISS	VEHICLE/CDC	CRASH3	COMMENTS
			LOCATION	LOC.			LOC.	LOC.				
101 RI	Frontal impact with deer	30 Yr. F	Driver	None	Uninjured	0	0	0	1979 Ford Granada 12-FDMW-1	N.A.	The 3-year-old child was not restrained and was uninjured. The effect of the lack of restraint is minimal in this minor accident used as an introduction to the project.	
		31 Yr. M	Right Front	None	Uninjured	0	0					
		8 Yr. M	Left Rear	None	Uninjured	0	0					
		3 Yr. M	Center Rear	None	Uninjured	0	0					
102 RI	Angle parking lot collision	27 Yr. F	Driver	Lap & Shld.	Uninjured	0	0	0	1977 Chevrolet Vega 2-door	No	The effect of the child's lack of restraint was minimal in this minor accident. Since both vehicles were traveling about 5 mph, the potential for injury was small.	
		33 Yr. F	Driver	None	Uninjured	0	0					
		13 Yr. M	Right Front	None	Uninjured	0	0					
		3 Yr. F	Center Rear	Century Trav-L Guard*	Uninjured	0	0					
104 RI	Front-to-rear collision with parked vehicle	27 Yr. M	Driver	None	Fractured left arm	2	-	-	1979 Chevrolet Monte Carlo 01-FDEM-5	No	The 9-month-old child was prevented from injury by the cushioning effect of his mother. Restraint use would have reduced or prevented injury. The rear edge of the Monte Carlo's hood penetrated the windshield.	
		31 Yr. F	Right Front	None	Head, knee & back	1	-					
		9 Mon. F	Right Front in mother's arms	None	Uninjured	0	0					
		3 Yr. F	Left Rear	None	Concussion	1	-					
		2 Yr. M	Center Rear	None	Uninjured	0	0					
		Adult F	Right Rear	None	Uninjured	0	0					
140 RI	Head-on intersection collision	22 Yr. F	Driver	None	Contus. & Lac. all over	1	-	-	1978 Chevrolet Chevette	No	"Success story" - child seat prevented the child from being injured.	
		1 Yr. F	Right Front	Strolee child seat	Uninjured	0	0					
		18 Yr. F	Driver	None	Uninjured	0	0					
									1975 Pontiac Grand Prix	No		

CASE NO. WCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA LOCATION	RESTRAINT	INJURIES	MAX. AIS	ISS	VEHICLE/CDC	CRASH/3	COMMENTS
141 RI	Rock struck windshield - driver lost control - vehicle left roadway and rolled over	36 Yr. F	Driver	None	Head and neck cont.	2	9	1980 Chevrolet Citation	No	"Success story" - child seat prevented the child from being injured.
		2 Yr. F	Right Front	GM Luv child seat	Uninjured	0	0			
142 RI	Angle intersection collision 4-vehicle crash	29 Yr. M	Driver	None	Severe	Unk.	Unk.	1970 Dodge Charger	No	"Success story" - the child seat prevented the child from being injured while others involved in the crash received moderate-to-severe injuries.
		25 Yr. F	Driver	Lap & Shldr.	Contusions all over	1	8	1978 Ford Fiesta 2-door 02-FDEM-3	No	
		1 Yr. F	Right Front	Strolette child seat	Uninjured	0	0	06-BZEM-1	No	
		22 Yr. M	Driver	None	Severe	Unk.	Unk.	1978 Suzuki Motorcycle	No	
		25 Yr. F	Driver	Lap & Shldr.	Uninjured	0	0	1978 Plymouth Arrow 2-door	No	
143 RI & R*1	Front-to-rear collision 4-vehicle crash	18 Yr. M	Driver	None	Uninjured	0	0	1976 Mercury Marquis 4-dr.	No	The 3-year-old male child in the Honda was wearing a lap belt but it was improperly adjusted, allowing him to move forward into the front seatback. The 1.5-year-old child in the Oldsmobile Cutlass was prevented from injury by the use of the seat belt, as were all the occupants of that vehicle. All other injuries would have been prevented with the use of restraints.
		25 Yr. F	Driver	None	neck, back, & knee lac. & contus. head, chest cont. & lacerat.	1	Unk.	1982 Honda Civic 2-door	No	
		8 Yr. M	Right Front	None	facial con.	1	Unk.			
		3 Yr. M	Left Rear	Lap belt	facial inj.	1	Unk.			
		8 Yr. M	Right Rear	None	facial con.	1	Unk.			
		6 Yr. M	Center Rear	None	facial con.	1	Unk.			
		35 Yr. M	Driver	Lap & shldr.	Uninjured	0	0	1974 Pontiac Grand Prix	No	
27 Yr. F	Driver	Lap & shldr.	Uninjured	0	0	1981 Oldsmobile Cutlass	No			
32 Yr. M	Right Front	Lap & shldr.	Uninjured	0	0					
1.5 Yr. M	Right Rear	Lap belt	Uninjured	0	0					
7 Yr. M	Right Rear	Lap belt	Uninjured	0	0					

CASE NO. MCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA			RESTRAINT	INJURIES	MAX. AIS	TSS	VEHICLE/CDC	CRASH3	COMMENTS
			LOCATION	LOCATION	LOCATION							
144 RI	Mechanical malfunction, loss-of-control, head-on collision 4-vehicle crash	25 Yr. F	Driver	None	Face, chest & hand lacerations & cont.	2	12	1970 Oldsmobile Delta 88 12-FDEM-5 11-LZLM-2	21.6 mph	The children in the Oldsmobile were not restrained and thus were allowed to move forward in the vehicle, contacting interior objects, resulting in injury. The severity of the injuries in the Oldsmobile would have been reduced with the use of restraints.		
		3 Yr. F	Right Front	None	Face, chest & hand lacerations & cont.	3	29					
		5 Yr. M	Center Rear	None	Face, chest & arm lacerations & cont.	3	25					
		34 Yr. F	Driver	Lap & shldr.	Severe	Unk.	Unk.					
		21 Yr. M	Driver	None	Minor	Unk.	Unk.	1981 Pontiac T-1000	No			
		19 Yr. F 20 Yr. M 64 Yr. M	Center Front Right Front Driver	None None Unknown	Injured Injured Uninjured	Unk. Unk. 0	Unk. Unk. 0	1972 Pontiac Sedan	No			
180 RI	Angle intersection collision	35 Yr. F	Driver	None	Minor	Unk.	1977 Chevrolet Nova 2-door	No	"Success story" - the child in the Oldsmobile was prevented from injury by the proper use of the child restraint.			
		30 Yr. F 11 month M	Driver Right Front	None GM Luv child safety seat	head lacer. Uninjured	1 0	1 0	1978 Oldsmobile Cutlass 2-door 03-RPEM-3		24.8 mph		
204 RI	Loss-of-control, left roadway rollover crash	29 Yr. M 29 Yr. F 5 week M	Driver Right Front Right Rear	None None Bobby Mac child seat	Minor cont. Uninjured Minor forehead abras.	Unk. 0 1	0 0 1	1980 Plymouth Horizon 4-door 03-RDAM-3 43-TZDM-4	N.A.	"Success story" - the child remained secured in the child seat. The vehicle came to rest on its roof - the child was hanging upside down, still in the seat, and was uninjured because of the proper use of the child seat.		

CASE NO. MCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA		RESTRAINT	INJURIES	MAX		ISS	VEHICLE/CDC	CRASH3	COMMENTS
			LOCATION				ATS	ISS				
276 R*1	Angle intersection collision	30 Yr. M	Driver	None	Uninjured	0	0	0	1979 Ford Ranchero pickup	No	The 2-year-old child in the Volvo was contained in the child seat, but the restraint straps were not properly fastened, allowing the child to move and contact the side window.	
		39 Yr. F	Right Front	None	Uninjured	0	0	0				
		31 Yr. M	Driver	None	Uninjured	0	0	0	1974 Volvo 2-dr 10-LZAS-2	20.6 mph		
		30 Yr. F	Right Front	Lap belt	Uninjured	0	0	0				
		5 Yr. M	Right Rear	Cosco-Peter-son child seat*	Head lac. Forehead lacer.	1	1	1				
2 Yr. F	Left Rear	None	None	1	1	1						
350 RI & RI	Front-to-rear collision 3-vehicle crash	66 Yr. M	Driver	Lap & shldr.	Uninjured	0	0	0	1978 Ford Thunderbird	No	The 4-year-old child in the Pontiac received injury from contact with the driver's elbow. The injured 9-month-old child received his skull fracture from the front seat, which came off of its track and moved rearward, contacting the child's head and causing injury. The proper use of restraints had no effect on the injuries suffered by these children, but it did prevent the other 9-month-old child from being injured.	
		39 Yr. M	Right Front	Lap & shldr.	Uninjured	0	0	0				
		25 Yr. M	Driver	None	Neck inj.	2	4	4	1978 Pontiac Grand Prix Sed 06-BDEM-3	27.7 mph		
		26 Yr. F	Right Front	None	Uninjured	0	0	0				
		4 Yr. M	Center Front	Lap belt	Minor fore head lac.	1	1	1	12-FRME-1	4.6 mph		
		9 Month M	Left Rear	Child seat	Fractured skull	3	9	9				
		9 Month M	Right Rear	Century child seat	Uninjured	0	0	0				
29 Yr. M	Driver	None	Uninjured	0	0	0						
359 RI & RI	Angle intersection collision	57 Yr. M	Driver	Lap & shldr.	Minor	Unk.	Unk.	Unk.	1982 Chevrolet Scottsdale P/u 10-LPEM-2	15.7 mph	The 20-month-old child in the Oldsmobile was properly secured in a child seat. Her injuries were received from loose objects in the vehicle interior - the use of the restraint had no effect on her injuries. The 4-year-old would have received less severe injuries with the use of restraints.	
		21 Yr. F	Driver	None	Head cont. & lac., wrist fx. Cont. & lacer.	3	16	16	1977 Oldsmobile Cutlass 2-door 12-FDEM-3	21.4 mph		
		24 Yr. F	Right Front	None	Skull frac.	2	12	12				
		4 Yr. F	Left Rear	None	head lac. & cont.	2	5	5				
		20 month F	Center Rear	Bobby Mac child seat	Skull frac. head lac. & cont.	2	7	7				

CASE NO. MCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA			MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS
			LOCATION	RESTRAINT	INJURIES					
391 RI	Angle intersection crash	16 Yr. M	Driver	None	Severe	Unk.	Unk.	1982 Ford Mustang II	No	The 8-month-old child's injury was received as a result of being struck by the driver adjacent to her. The seat, which was in proper use, had no effect on the injury.
		16 Yr. F	Right Front	None	Injured	Unk.	Unk.			
16 Yr. M	Left Rear	None	Injured	Unk.	Unk.					
16 Yr. M	Right Rear	None	Injured	Unk.	Unk.					
		27 Yr. F	Driver	None	Cont., lac & concuss	2	9	1980 Oldsmobile Delta 88 82-FREW-3 03-RDEW-2	14.7 mph	
		8 month F	Center Front	Bobby Mac child seat	Frac. femur	3	9			
393 RI	Angle intersection collision	21 Yr. F	Driver	None	Injured	Unk.	Unk.	1974 Plymouth Duster	No	"Success story" - the child seats prevented the children from being injured.
		48 Yr. M	Right Front	Restrained	Injured	Unk.	Unk.			
		21 Yr. M	Left Rear	None	Uninjured	0	0			
		20 Yr. M	Right Rear	None	Injured	Unk.	Unk.			
		22 Yr. F	Driver	None	Lacerat.	1	2	1972 Pontiac Catalina 4-dr	12.1 mph	
		1 Month M	Center Front	Child seat	Uninjured	0	0			
44 Yr. F	Right Front	None	Contusions	1	3					
27 Yr. M	Center Rear	None	Back strn.	1	1					
4 Yr. M	Right Rear	Kantwet child seat	Uninjured	0	0					
406 R*1	Stake truck struck passenger car Angle intersection collision Fatal	25 Yr. M	Driver	None	Uninjured	0	0	1978 Ford LN-700 Stake Trck	No	*The driver of the Chevrolet was killed. The child was contained in the child seat, but was not secured in the seat. The crash forces caused the child to be thrown from the child seat to the right side of the vehicle, where she contacted the side window, resulting in a minor head laceration. In this instance, the child escaped serious injury as the seat was crushed by the damage after the child was thrown from it.
		27 Yr. F 2 Yr. F	Driver Left Rear	None Contained in child seat*	Killed Forehead lacer.	6 1	Unk. 1	1978 Chevrolet Monte Carlo 09-LYAW-3	32.4 mph	

CASE NO. MCA-	DESCRIPTOR	OCCUPANT DATA				MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS
		AGE/SEX	LOCATION	RESTRAINT	INJURIES					
462 RI	Front-to-rear collision with stalled semi truck 3-vehicle crash Fatal	Unoccupied	----	----	----	---	----	IHC Semi Truck-Trailer Combin.	No	The 11-month-old in the Lincoln was killed. The lack of use of restraints for all occupants of the Lincoln resulted in all receiving moderate-to-fatal injuries where had restraints been worn the injury severity would have been reduced. The 11-month-old was seated on the lap of another occupant - this resulted in fatal injuries to the 11-month-old and minor injuries to the other occupant because of the cushioning effect of the body of the infant.
		32 Yr. F	Driver	None	Lac. & cont. Frac. teeth	2	10	1978 Lincoln Mark V 2-door	N.A.	
		11 Month F	Right Front on lap of 8-year-old female	None	Brain hemotoma; many lacerat.	4	18	12-FRAW-6	16.6 mph	
		8 Yr. F	Right Front	None	Lacer. & muscle str.	1	6	03-RPEW-3	No	
		5 Yr. M	Center Rear	None	Lac. & cont. fr. thigh	3	12	03-RBMN-1	No	
		3 Yr. M	Right Rear	None	Uninjured	0	0		No	
28 Yr. M	Driver	Unrestrained	Uninjured	0	0	1976 Oldsmobile Cutlass	No			
470 RI	Angle intersection collision Left roadway, hit fixed objects Rollover 3-vehicle crash	38 Yr. M	Driver	Restrained	Uninjured	0	0	1976 Ford F150 Pickup Truck	No	"Success story" - the child remained secured in the child seat throughout the crash. His clothing, including a hood, also prevented injury by keeping glass off of his face and body.
		27 Yr. F	Driver	Unrestrained	Concussion & lacer.	2	12	1974 Chevrolet Chevelle Malibu	11.7 mph	
		1 Yr. M	Right Rear	GM Toddler child seat	Uninjured	0	0	02-RDEW-3 12-FLLW-1 00-TYDO-3 01-RFMN-1	8.7 mph N.A. Too minor	
		Unoccupied	-----	-----	-----	---	---	1981 Ford Esc.	No	
479 R*I	Angle intersection crash	28 Yr. F	Driver	None	Forehead contus.	1	1	1980 Pontiac Grand Prix	N.A.	*The child was contained in a "booster" type child seat. Seat belts to anchor the child seat to the vehicle's seat were unavailable, resulting in the child contacting objects in the frontal interior, resulting in injury.
		4 Yr. M	Right Front	Contained in "booster seat"	Fac. cont. & lacer.	2	5			
		49 Yr. F	Driver	Unknown	Uninjured	0	0	1976 Ford Granada	No	

CASE NO. MCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA		INJURIES	MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS
			LOCATION	RESTRAINT						
495 RI	Angle intersection collision	35 Yr. F	Driver	Lap & shldr.	minor cont. from belts	1	1	1979 Ford Fairmont Wagon 82-RFEW-3	6.5 mph	Because the vehicle in which the child was contained was struck in the right side, where the child was located, the child was forced to his right, and contacted the right side window, resulting in minor injury. In this case, the restraint had no effect.
		4 Yr. M	Right Front	Lap & shldr.	Contusion of head	1	1			
		64 Yr. M 37 Yr. M	Driver Right Front	Lap & shldr. Lap & shldr.	Uninjured Uninjured	0 0	0 0	1979 Volkswagen Rabbit	No	
564 RI	Angle Intersection collision impact with tree	36 Yr. F	Driver	None	Head & leg	2	14	1983 Chevrolet Impala Wagon 01-RZEW-2 12-FCEN-3	5.7 mph 16.0 mph	All occupants, including the children, were unrestrained, which allowed them to move forward, contacting objects in the interior, resulting in minor-to-severe injuries. The impact with the tree was the major impact. Restraint usage would have reduced injury severity.
		33 Yr. F	Right Front	None	Head, arm, & leg	2	11			
		14 Month F	Right front - in lap of other occupant	None	Lac. & cont. Frac. Tibia & Fibula	1	1			
		7 Yr. M	Left Rear	None	Lac. & cont. thumb; fx wrist	2	8			
		9 Yr. F	Right Rear	None	Lac. & cont. thumb; fx wrist	2	10			
		5 Yr. M	Cargo Area	None	Head cont.	1	1			
		46 Yr. M 46 Yr. F 22 Yr. M	Driver Center Front Right Front	Belted None None	Uninjured Uninjured Uninjured	0 0 0	0 0 0	1981 Chevrolet Caprice 4-door	No	
588 RI	Sideswipe	43 Yr. F 2 Yr. M	Driver Right Front	None	Uninjured	0	0	1982 Ford Escort 3-door 06-LDES-2 12-FDWW-3	N.A. No	The use of restraints by all children prevented them from being injured.
		5 Yr. M	Left Rear	Montgomery Ward's Teddy Tot child seat	Uninjured	0	0			
		3 Yr. M	Right Rear	Lap belt Lap belt	Uninjured Uninjured	0 0	0 0			
		31 Yr. M	Driver	Unrestrained	Uninjured	0	0	1978 IHC Semi Truck-Trailer	No	

CASE NO. PCA	DESCRIPTOR	AGE/SEX	OCCUPANT DATA LOCATION	RESTRAINT	INJURIES	MAX. AIS	ISS	VEHICLE/CDC	CRASH	COMMENTS
610 RI & R-1	Angle intersection crash 3-vehicle crash Fatal	18 Yr. F	Driver	None	Head; face	1	3	1979 Ford Bronco Ranger 70-FDEM-3 11-LBMS-1 09-LBEE-2	18.6 mph 0.9 mph 3.3 mph	*The 1-year-old child in the Pontiac was contained in a Dyn-0-Mite child safety seat but was not strapped in. The seat was also placed on the rear window ledge - upon impact, the seat and the child fell forward to the floor, resulting in serious injury. The right front adult and the right rear child were killed; it appears from the damage that restraints would have had no effect on their injuries; however, the others would have had less severe injuries with the use of restraints.
		25 Yr. F	Driver	None	Neck & head inj. Fatal head & torso	1	2	1974 Pontiac Grand Prix	18.1 mph 6.4 mph 0.9 mph	
		32 Yr. M	Right Front	None	Fatal head & torso	5	68	02-RVAV-4 10-LBEM-4		
		2 Yr. M	Right Rear	None	Fatal head injuries	5	34	03-RBLE-1		
		1 Yr. F	Center Rear*	Contained in Dyn-0-Mite child seat*						
		4 Yr. M	Left Rear	None	Serious head inj. Head & fac	5	26			
631 RI	Angle intersection collision Left roadway, contacted fence	68 Yr. F	Driver	None	Minor inj.	1	2	1978 Dodge Aspen Wagon 12-FLAE-2 11-LBEM-2	7.9 mph 4.1 mph	"Success story" - the child was properly secured in her child seat, and the seat prevented her from being injured, while the front seated adults all received moderate-to-severe injuries. *Front end of Oldsmobile removed prior to inspection.
		20 Yr. F	Driver	None	Minor	Unk.	Unk.	1976 Pontiac Ventura 71-LFEM-3 09-LBEM-1	N.A. 4.1 mph	
		25 Yr. F	Driver	None	Face, knee wrist inj.	2	8	1977 Oldsmobile Cutlass 99-9999-9 02-RDEM-2 99-9999-9 (from fence)	N.A. 4.1 mph N.A.	
		3 Mo F	Right Rear	GM Love Seat	Uninjured	0	0		N.A.	
649 RI	Angle intersection collision Rollover	16 Yr. F	Driver	None	Internal Uninjured	3	27	1977 Pontiac Sunbird	14.0 mph N.A. Too minor	The child in the Pontiac was being moved from the right rear to the right front, in the adult occupant's arms. The adult occupant cushioned the child before the collision.
		20 Yr. M 2 Yr. M	Right Front Changing from right rear to right front - in arms of right frt. occ. Driver	None None	Uninjured	0	0	10-LYEM-3 00-TYDO-2 03-RPEM-1		
		35 Yr. F	Driver	None	Cont. & fac.	2	19	1980 Datsun 99-9999-9	N.A.	

CASE NO. MCA-	DESCRIPTOR	OCCUPANT DATA			MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS	
		AGE/SEX	LOCATION	RESTRAINT						INJURIES
658 RI & RI	Rear end and angle crash 3-vehicle collision	32 Yr. M	Driver	None	Uninjured	0	0	1980 Buick Regal	No	The child in the Pontiac was restrained in a handicapped- type of child seat, which preven- ed injury to the child.
		31 Yr. F	Right Front	None	Fac. inj.	1	3			
		5 Yr. F	Left Rear	None	Back sprn.	1	1			
		13 Yr. F	Rt. center rear	None	Leg cont.	1	1			
		10 Yr. F	Lft. cntr. rear	None	Uninjured	0	0			
		12 Yr. F	Right rear	None	Ankle & Eye inj.	1	2			
		18 Yr. F	Driver	None	Minor inj.	Unk.	Unk.	1978 Subaru Catastrophic damage	N.A.	
		26 Yr. M Child	Driver Left Rear	Lap belt Handicapped child seat	Uninjured	0	0	1974 Pontiac Bonneville 11-FYEW-7	N.A.	
		2 other adults	Right Front Right Rear	Lap belt None	Uninjured Uninjured	0 0	0 0			
669 RI	Angle intersection crash	61 Yr. M	Driver	None	Uninjured	0	0	1976 Ford Torino	No	The children were both in child seats, which prevented them from receiving possible minor injury.
		27 Yr. M	Driver	None	Uninjured	0	0	1973 Plymouth Duster 70-LFEE-3	9.5 mph	
		20 Yr. F	Center Front	None	Head cont.	1	1			
		23 Yr. F	Right Front	None	Arm cont.	2	4			
		2 Yr. M	Left Rear	Peterson child seat	Uninjured	0	0			
		1 Yr. F	Right Rear	Child seat	Uninjured	0	0			
690 RI	Angle intersection crash	70 Yr. M	Driver	None	Injured	Unk.	Unk.	1979 Chevrolet Caprice	No	The lack of restraint for the child allowed her to contact the adjacent occupant on her right, resulting in minor injury.
		70 Yr. F	Right Front	None	Minor inj.	Unk.	Unk.			
		25 Yr. F	Driver	None	Neck & leg	2	6	1979 Cadillac DeVille 02-RPEW-3	17.4 mph	
		2 Yr. F	Center Front	None	Fac. inj.	1	1			
		28 Yr. F	Right Front	None	Injured	Unk.	Unk.			
		36 Yr. M	Right Rear	None	Injured	Unk.	Unk.			
713 RI	Angle intersection crash	31 Yr. F	Driver	None	Contusions all over	1	9	1979 American Motors Spirit 10-LFEW-3	8.1 mph	The child in the AMC was unres- trained, which allowed her to move inside the vehicle, result- ing in injury.
		4 Yr. F	Right Front	None	Fac. inj.	1	3			
		22 Yr. M	Driver	None	Uninjured	0	0	1974 Ford Maverick 01-FDEW-1	7.6 mph	
24 Yr. F	Right Front	None	Uninjured	0	0					

CASE NO. PCA	DESCRIPTOR	OCCUPANT DATA			RESTRAINT	INJURIES	MAX. AIS		ISS	VEHICLE/CDC	CRASH	COMMENTS
		AGE/SEX	LOCATION	LOC			ISS					
716 RI	Rear-end collision w/ boat & trailer. Restraint failure	27 Yr. F 10 Month F	Driver Right Front	Lap & shldr. Lap & shldr. belt which failed*	Uninjured Facial injuries	0	0	0	1977 Cadillac Deville 12-FDMW-1 (Veh. repaired)	N.A.	*The child's lap and shoulder belt retractor did not lock once the restraint was fastened, allowing the child and the child seat in which the child was secured to move forward, contacting the dashboard and the windshield.	
		26 Yr. F	Driver	None	Uninjured	0	0	0	1977 Ford Thunderbird towing boat & trailer	N.A.		
761 RI	Loss-of-control of vehicle towing trailer, rollover crash	49 Yr. M 47 Yr. F	Driver Right Front	Lap & shldr. Lap & shldr.	Uninjured Torso cont from belt	0	0	0	1982 Dodge Ram Charger towing 22' travel trailer	0.9 mph N.A.	"Success story" - all occupants were restrained, including the child, who was properly restrained in a child seat, and all were protected from severe injury by the restraints. The only injury was from the restraint webbing when the vehicle rolled onto its roof.	
		21 Yr. F 7 Month M	Right Rear Left Rear	Lap belt Bobby Mac child seat	Uninjured	0	0	0	12-RBES-1 00-TDDO-3			
		55 Yr. M 56 Yr. F	Driver Right Front	None None	Moderate Moderate	2 1	7 2	0	1982 Chevrolet Malibu Wagon 08-LDAM-4 12-FDEW-1	11.8 mph 6.3 mph		
762 RI	Angle intersection crash Run-off-road	27 Yr. F 6 week F	Driver Center Front	None GM Infant child seat	Uninjured	0	0	0	1975 Dodge Van 01-FYEM-2	9.6 mph	* "Success story" - both children were contained in child seats which functioned properly and prevented serious injury. The only injury was a minor bruise on the 18-month-old from contact with the side of the child seat.	
		18 Month F	Right Front	Sears child seat	Uninjured Minor cont. from side of seat*	0	0	1				
		18 Yr. M 35 Yr. M 35 Yr. F 1 Yr. M	Driver Right Front Center Rear	None None Cosco One- Step child seat	Uninjured Wrist sprn Knee cont. Head cont. from cont. act with adj. occ. Head cont.	0 1 1	0 1 1	0	1972 Pontiac LeMans 1980 Buick Regal 11-LDEM-2 12-FRWN-3 12-FRWN-9 12-FLMN-9	No 14.2 mph No No No		
764 RI & RI	Angle collision	3 Yr. F	Right Rear	None	None	1	1	1			The restrained child received his injury from contact with the adjacent unrestrained child. The restraint had no effect on the child's injury; however, had the adjacent child been restrained, injury to both would probably have been prevented.	

CASE NO. #CA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA LOCATION	RESTRAINT	INJURIES	MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS
829 RI	Angle intersection collision	20 Yr. M 22 Yr. M	Driver Right Front	None None	Uninjured Uninjured	0 0	0 0	1978 Oldsmobile Cutlass 81-FZEM-2	14.2 mph	The unrestrained child occupant was prevented from injury by the body of the adjacent occupant which cushioned him.
830 RI	Loss-of-control Impacted tree	58 Yr. M 20 Yr. F 28 Yr. F 1 Yr. M	Driver Right Front Right Rear Center Rear	None None None None	Uninjured Hand cont. Minor inj. Uninjured	0 1 Unk. 0	0 1 Unk. 0	1971 Pontiac Grand Ville 10-LPEM-3	10.4 mph	
855 RI	Angle intersection crash	24 Yr. M 32 Yr. M 31 Yr. F 3 Yr. F 2 Yr. F 1 Yr. F	Driver Driver Right Front Left Rear Center Rear Rt. Centr. Rear	None None Strolee child seat	Frac. skull & lacer. Fractured vertebrae Abras. & cont. from contact w/ sides of child seat	2 2 1	6 4 3	1979 Chevrolet Monza Coupe 32-FZEM-2	17.0 mph	The child was properly secured in the child seat; the seat functioned properly, preventing the child from receiving serious injuries. The child was injured from contact with the sides of the child seat.
		24 Yr. M 32 Yr. M 31 Yr. F 3 Yr. F 2 Yr. F 1 Yr. F	Driver Driver Right Front Left Rear Center Rear Rt. Centr. Rear	Lap & shldr. Lap & shldr. Lap & shldr. Lap belt Lap belt Child seat (seat's back strap was hooked over seat but the seat was not anchored by veh.'s belt Lap belt	Uninjured Minor inj. Head inj. Uninjured Uninjured	0 1 2 0 0	0 - 0 0 0	1980 Datsun 510 1981 Dodge Omn Miser 02-RFEM-3	10.9 mph 10.1 mph	All occupants were restrained in belts or child seats, and were protected from severe injury by the restraints. The right front adult received her injuries from contact with the low roof header. The child seat was secured to the vehicle's seat by the back strap only, as there was no lap belt in the seat location to secure the child seat to the vehicle's seat.
		10 Yr. F	Right Rear		Uninjured Uninjured	0 0	0 0			

CASE NO. MCA-	DESCRIPTOR	AGE/SEX	OCCUPANT DATA LOCATION	RESTRAINT	INJURIES	MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS
879 RI	Loss-of-control, contact with median barrier	29 Yr. M	Driver Center Front	None	Injured Severe Injuries	-	-	1979 Chevrolet Van 01-FZEM-2 01-RPEM-1	9.0 mph 3.3 mph	Child's injuries could have been prevented or reduced with restraint usage.
		4 Yr. F								
901 RI	Angle intersection collision 3-vehicle crash	20 Yr. F	Driver	None	Severe	-	-	1983 Chrysler LeBaron 01-FZEM-2	16.0 mph	Child in the Chrysler Newport was braced by the adjacent right front occupant prior to the collision and was prevented from being injured. Other unrestrained occupants in the vehicle were injured.
		24 Yr. F	Driver	None	Uninjured	0	0	1978 Pontiac Bonneville		
		28 Yr. M	Driver	None	Injured	-	-	1977 Chrysler Newport		
		37 Yr. F 4 Yr. F 18 Yr. F	Right Front Center Front Right Rear	None None None	Uninjured Uninjured Injured	- - -	- - -	70-LFEM-4	8.7 mph	
924 RI	Angle intersection Run-off-roadway, contact with concrete wall	27 Yr. F	Driver	None	Head & face injuries Uninjured	2	7	1982 Buick Regal 01-RYEM-3 11-FLEM-2 1979 Plymouth Horizon 10-FYEM-2	9.8 mph 16.5 mph 14.7 mph	"Success story" Child was restrained in lap-and-shoulder harnesses which prevented him from contacting objects in the vehicle and protected him from injury while the adjacent front seat occupant received severe injuries.
		3 Yr. M	Right Front	Lap & shldr.	Uninjured	0	0			
		30 Yr. M	Driver	Lap & shldr.	Minor	-	-			
976 RI	Angle collision	29 Yr. F 10 month F	Driver Center Front	None Century 200 child seat	Chest, face head & back	1 1	1 2	1976 Chevy Pickup 07-LYAM-2	N.A.	Child's injuries from contact with sides and back of child seat. The seat had little effect on the child's injuries.
		24 Yr. M	Driver	None	Uninjured	0	0	1979 International Tanker truck 12-FRES-3	N.A.	

CASE NO. #CA-	DESCRIPTOR	OCCUPANT DATA			RESTRAINT	INJURIES	MAX. AIS	ISS	VEHICLE/CDC	CRASH3	COMMENTS
		AGE/SEX	LOCATION								
977 RI	Angle inter-section crash	18 Yr. M	Driver	None	Uninjured	0	0	1962 Buick	6.9 mph 6.4 mph	Children located in the cargo area in the rear of the Ford, which is not a seating area. No restraints were available, which, if used, would have prevented their injuries.	
		12 Yr. M	Right Front	None	Uninjured	0	0	LeSabre			
		13 Yr. M	Right Rear	None	Uninjured	0	0	12-FREE-1 10-FYEM-1			
		34 Yr. M	Driver	None	Back-neck	1	2	1982 Ford EXP			
		32 Yr. F	Right Front	None	Contusions	2	13	01-RFEM-2 03-RZEM-3			
		7 Yr. F	Left Rear	None	all over	1	3				
5 Yr. F	Center Rear	None	Head	2	4						
3 Yr. F	Right Rear	None	Face	2	6						
3 Yr. F	Right Rear	None	Skull fx.	2	6						
1023 RI	Angle inter-section crash	64 Yr. F	Driver	None	Injured	-	-	1979 Dodge	9.4 mph 2.6 mph	The child moved forward and to the right, contacting the glove compartment, causing injury. Lap restraints were unavailable. Had they been utilized the child would have been uninjured.	
		30 Yr. M	Driver	None	Head, neck, & back	1	3	St. Regis			
		2 Yr. M	Center Front	None	Mouth lac.	1	1	70-LFEM-4 09-LZEM-2			
								1976 Pontiac Ventura			
1031 RI	Loss-of-control, rollover	25 Yr. F	Driver	None	Injured	-	-	1979 AMC Spirit	10.0 mph 2.8 mph	All occupants contacted the roof and other objects during the rollover and were severely injured.	
		19 Yr. F	Right Front	None	Injured	-	-				
		18 Yr. F	Right Rear	None	Injured	-	-				
1 Yr. F	Left Rear	None	Injured	-	-						

APPENDIX B

Data Forms Used in the Study

CASE NUMBER _____

INVESTIGATOR _____

INCIDENT SUMMARY - FIELD FORM

DAY & TIME OF DAY OF INCIDENT: _____

ORIGIN-DESTINATION OF TRIP: _____

VEHICLE MAKE/MODEL/YEAR: _____

VIN#: _____

OVERALL VEHICLE CONDITION (DESCRIBE, INCLUDE INTERIOR FOREIGN OBJECTS AND MATERIALS IF PRESENT) _____

VEHICLE MOTION AT TIME OF INJURY:

___ TRAVELING DOWN ROADWAY

___ GOING OVER POTHOLE OR RUT

___ ACCELERATING

___ GOING OVER BUMP

___ BRAKING

___ TRAVELING UP INCLINE

___ SWERVING

___ TRAVELING DOWN SLOPE

___ OTHER, DESCRIBE _____

CHILD ACTIVITY WHEN INJURY RECEIVED:

___ SITTING QUIETLY

___ STANDING ON SEAT

___ STANDING & ACTIVE

___ STANDING ON FLOOR

___ SITTING, BENT OVER

___ CHANGING POSITION

___ KNEELING ON SEAT

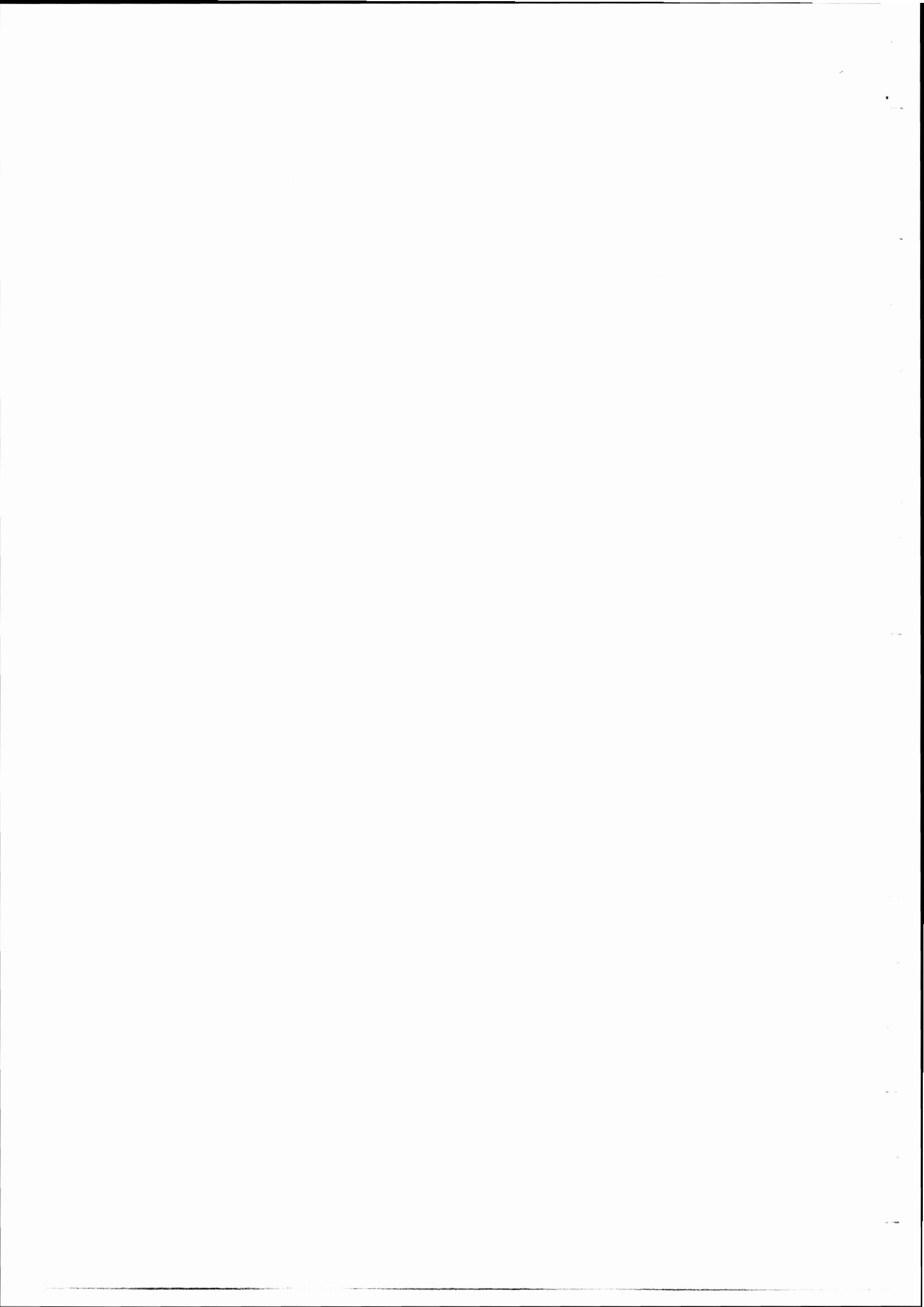
___ COMBINATION OF ABOVE

___ OTHER, DESCRIBE _____

___ FACING ()FRONT; ()REAR; () SIDE OF VEHICLE

___ RESTRAINED

COMMENTS _____



CHILD SAFETY SEAT SUPPLEMENT - FIELD FORM

(TO BE COMPLETED IF THE CHILD INJURIES ARE RECEIVED WHILE CONTAINED IN A CHILD SAFETY SEAT)

INVESTIGATOR: _____ DATE: _____

A. PRE-ACCIDENT CONDITION

1. Was the child restraint systems harness used?

Yes _____ No _____

Were they tight? Yes _____ No _____

Explanation: _____

2. Was the child restraint system fastened in the car with the car's belt system?

Yes _____ No _____

Was it tight? Yes _____ No _____

Explanation: _____

3. Was the child restraint system's back strap fastened to the car?

Yes _____ No _____

Was it tight? Yes _____ No _____

Explanation: _____

B. POST-ACCIDENT CONDITION

1. Look for traces of child restraint shell plastic on the adult lap belt and corresponding slippage marks on each side of the restraint system.

Observation: _____

2. Look for child harness slippage marks on belts and restraint system.

Observation: _____

3. Look for whitening inside and outside.

Observation: _____

4. Look for belt slippage.

Observation: _____

5. Look for deformation of back strap anchor hook.

Observation: _____

6. Look for deformation of back straps anchor mount or parcel shelf.

Observation: _____

7. Look for damage to all buckles and slides.

Observation: _____

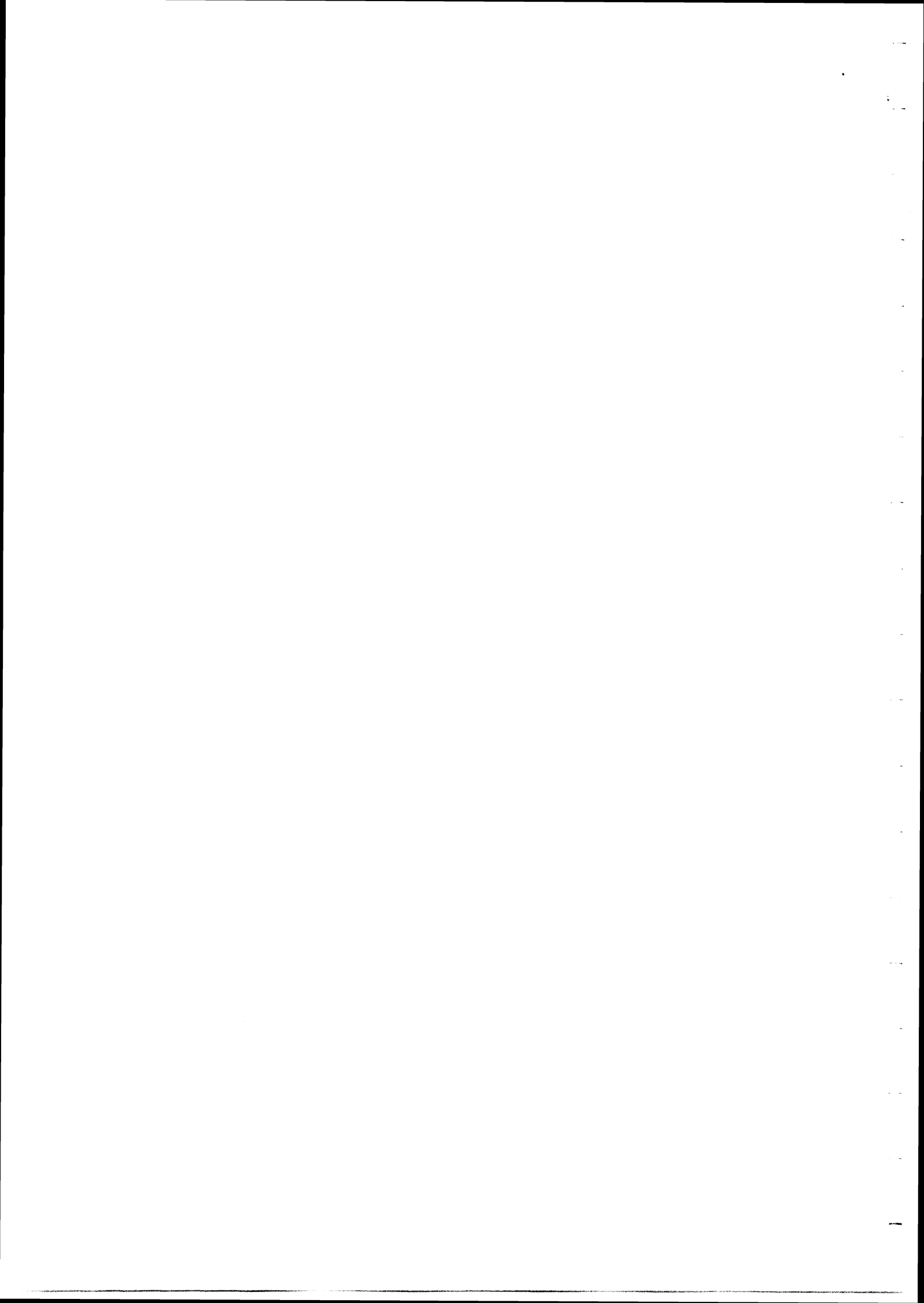
8. Look for whitening inside and outside on both sides.

Observation: _____

9. Look for any damage to restraint system not covered in specifics above.

Observation: _____

10. Overall condition of restraint system: _____



VEHICLE CRASH DATA - FIELD FORM (TO BE COMPLETED IF CHILD INJURY SUSTAINED IN MOTOR VEHICLE CRASH)

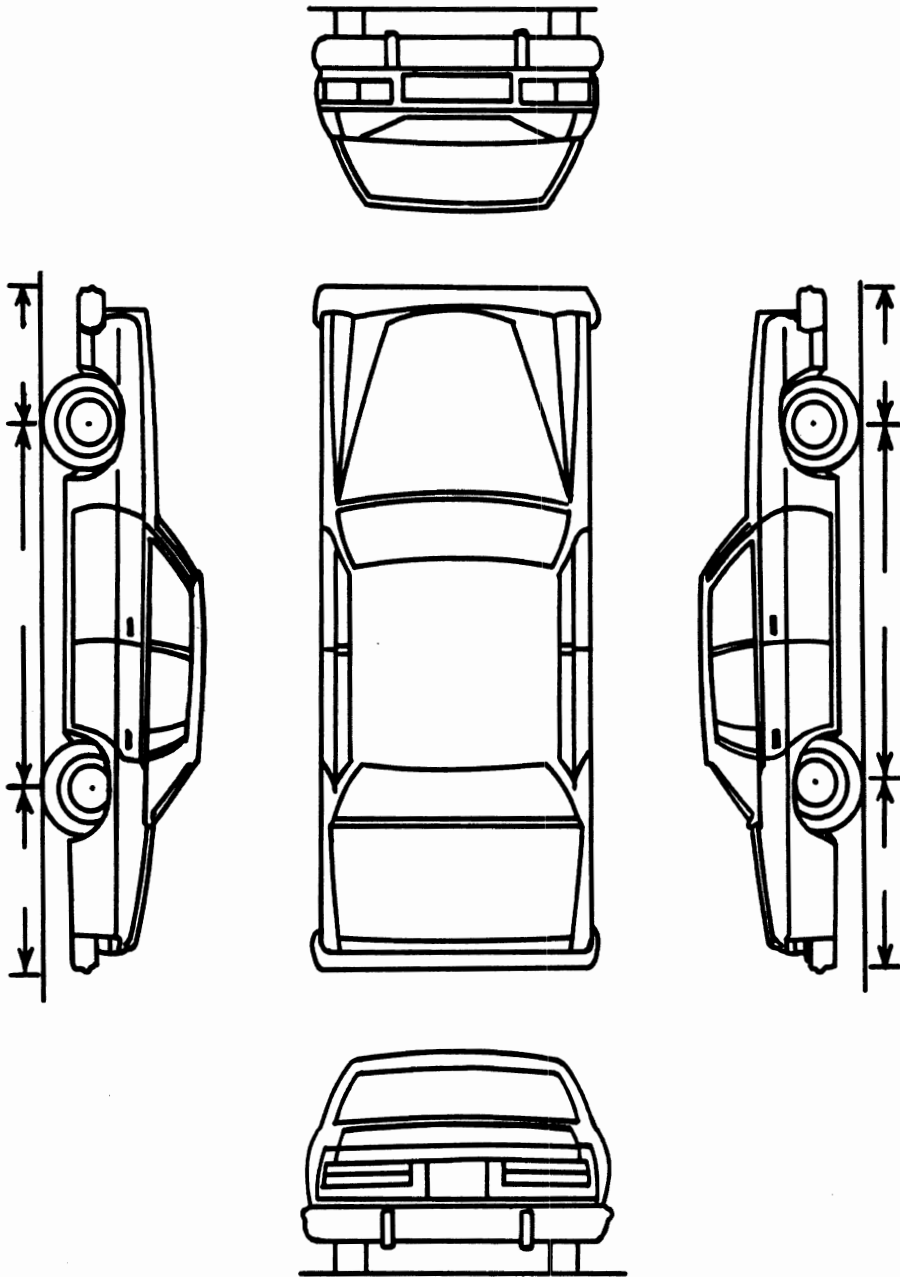
VEHICLE MAKE/MODEL/YEAR _____

TRANSMISSION MANUAL
 AUTOMATIC

VIN# _____

ODOMETER _____

MEASUREMENTS AND DAMAGE DESCRIPTION-----

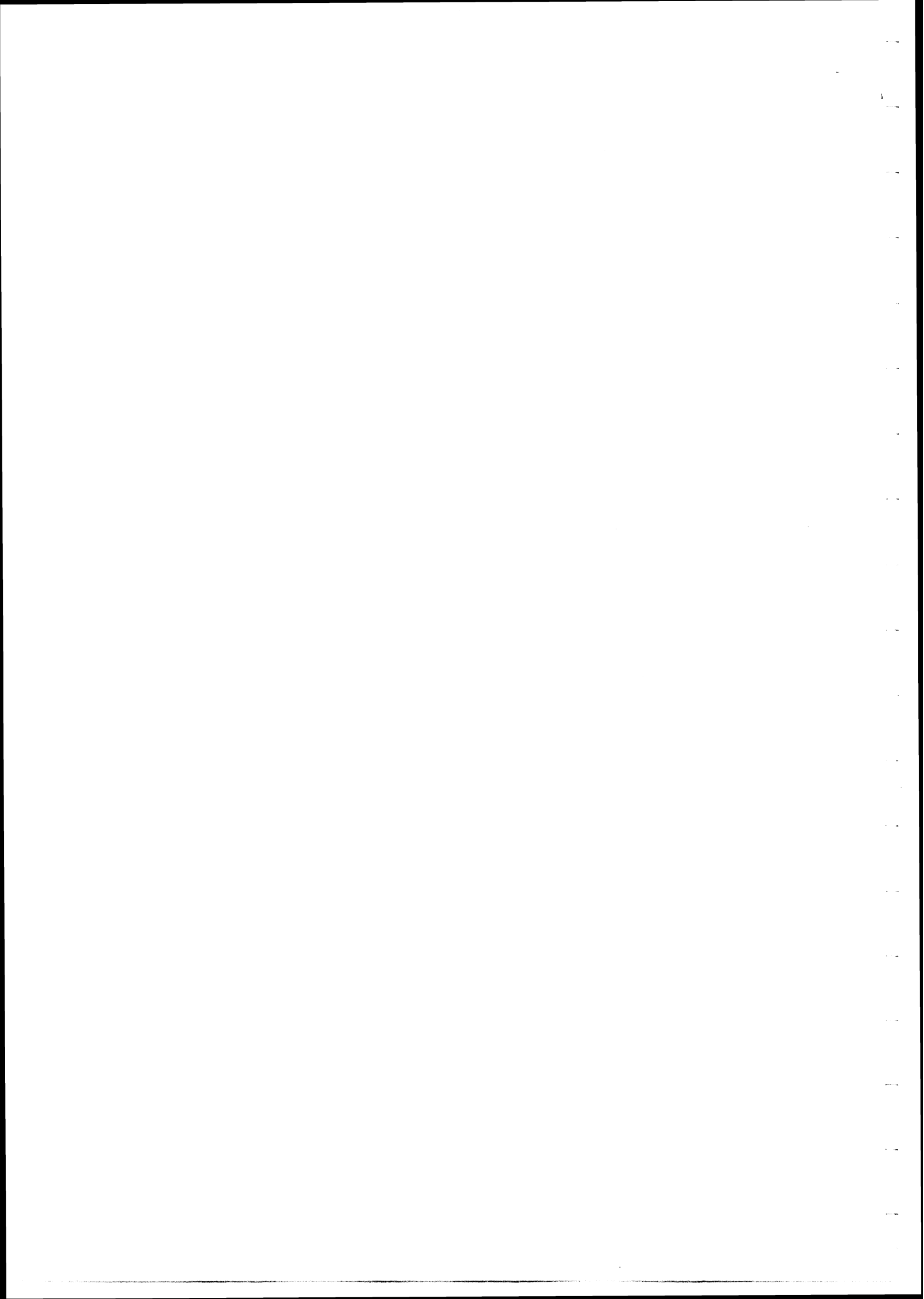


DIRECT L	DIRECT D±	IMPACT NUMBER	L	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	D±
-------------	--------------	------------------	---	----------------	----------------	----------------	----------------	----------------	----------------	----

①										
②										

C.D.C. (FIRST IMPACT) _____ C.D.C. (SECOND IMPACT) _____

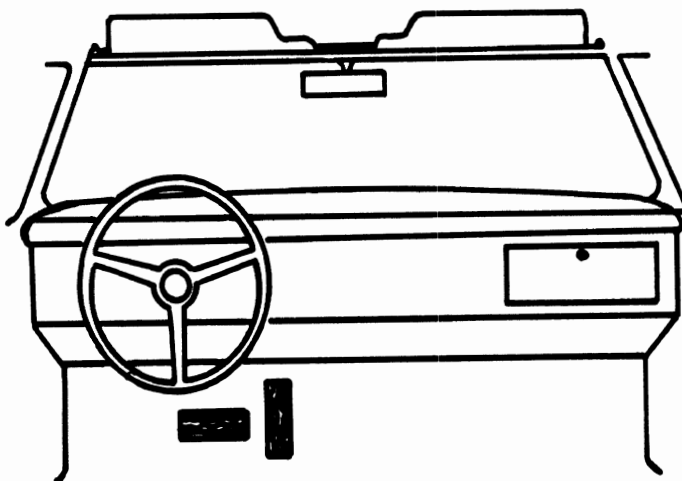
USE REVERSE SIDE FOR ADDITIONAL DESCRIPTION



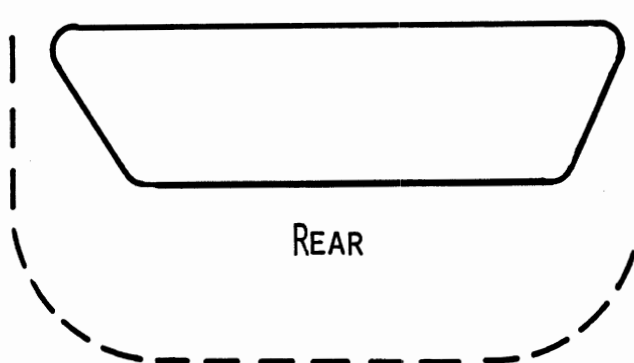
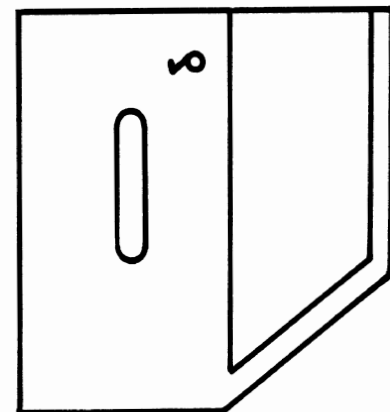
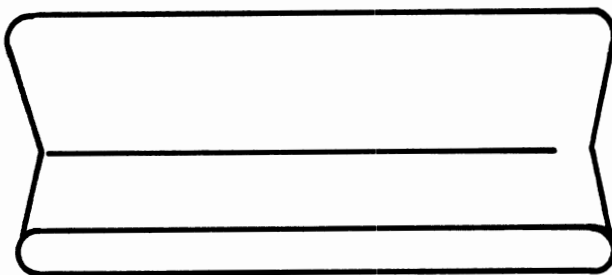
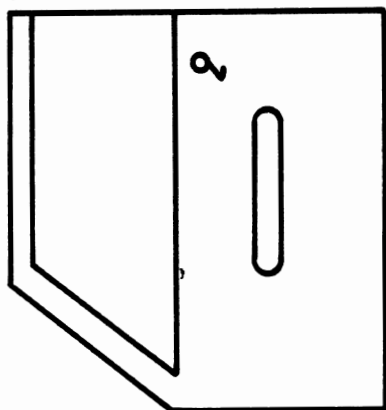
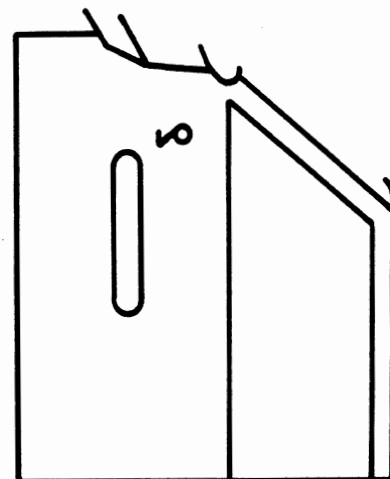
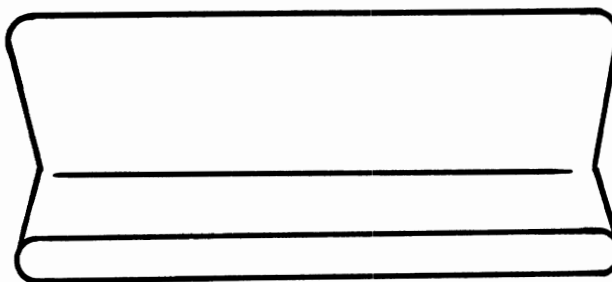
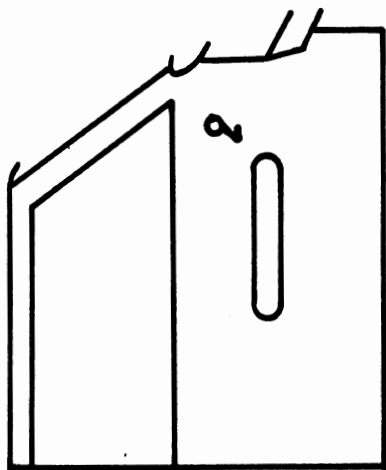
LOCATE & DESCRIBE INJURY SOURCES, CHILD OCCUPANT CONTACTS AND ASSOCIATED PHYSICAL EVIDENCE (DENTS, TISSUE, HAIR, ETC.)

FORWARD

LEFT SIDE



RIGHT SIDE



REAR

SEE INSTRUCTIONS ON REVERSE SIDE-----

USE THE REVERSE SIDE OF THIS SHEET TO NOTE INFORMATION RELATING TO CHILD POSITION, MOVEMENT, CONTACT, RESTRAINT STATUS, AND FINAL REST

- * IDENTIFY CHILD PRE-INJURY AND POST-INJURY LOCATION IN VEHICLE.
- * INDICATE SEATED POSITION OF CHILD AND ALL OTHER OCCUPANTS OF VEHICLE.
- * DESCRIBE SAFETY RESTRAINTS AVAILABLE AND USED AT EACH SEATED LOCATION.
- * DESCRIBE RESTRAINT TYPES AVAILABLE.
- * NOTE ALL RELEVANT INFORMATION ON CHILD POSITION, POSTURE, MOVEMENT, AND RESTRAINT USE OR NON-USE.
- * IF EJECTED, NOTE EJECTION PORTAL.
- * NOTE ALL AFTER-MARKET ADDITIONS OR CHANGES TO INTERIOR IF RELEVANT TO INJURY PRODUCTION (I.E., CB RADIO, STEREO, AIR CONDITIONER, ETC.).

OCCUPANT CONTACT AREAS

FRONT OF PASSENGER COMPARTMENT

WINDSHIELD
SUNVISOR, FITTING(S) &/OR TOP MOULDING
INSTRUMENT PANEL
UPPER, MIDDLE, LOWER
ASH TRAY
GLOVE COMPARTMENT AREA, DOOR, HDWE
BENEATH INSTRUMENT PANEL
PARCEL TRAY
KNEE RESTRAINT
VERTICAL CONSOLE
FOOT CONTROLS
STEERING ASSEMBLY, WHEEL, COLUMN
TRANSMISSION LEVER
INSTRUMENTS
IGNITION KEY
MIRROR
HEATER OR A/C DUCTS
A/C OR VENTILATION OUTLETS
RADIO
ADD-ON TAPE DECK, RADIO, A/C

FLOOR

CONSOLE BETWEEN SEATS
TRANSMISSION LEVER ON FLOOR OR CONSOLE
FOOT CONTROLS

ROOF

ROOF OR CONVERTIBLE TOP SUNVISOR, FITTING(S)
&/OR TOP MOULDING ROOF SIDE RAIL COAT HOOK
DOME LIGHT BACKLIGHT HEADER

INTERIOR-GENERAL

FRONT SEAT-BACK(S)
FRONT SEAT CUSHION
REAR SEAT CUSHION & BACK
HEAD RESTRAINT
ARMREST ON SEAT
UNDER SEAT BOTTOM
RESTRAINT SYSTEM HARDWARE
RESTRAINT SYSTEM WEBBING
KNEE RESTRAINT
HEAD RESTRAINT
INTERIOR LOOSE OBJECT
OTHER OCCUPANTS
INTERIOR FLYING GLASS (ANY SOURCE)

SIDES

SURFACE OF SIDE INTERIOR
HDWE ON DOOR SIDE
ARMREST OF DOOR SIDE
COAT HOOK
WINDOW GLASS
WINDOW FRAME
ROOF SIDE RAIL
A-PILLAR
B-PILLAR
C-PILLAR
D-PILLAR

ADMINISTRATIVE/ENVIRONMENTAL - 1

Year of Accident
19 _____

Month of Accident

_____ January	_____ July
_____ February	_____ August
_____ March	_____ September
_____ April	_____ October
_____ May	_____ November
_____ June	_____ December

Day of Week

_____ Sunday	_____ Thursday
_____ Monday	_____ Friday
_____ Tuesday	_____ Saturday
_____ Wednesday	_____ Unknown

Investigating Police Agency

County of Accident

Road or Street

Hour of Day

Time of accident military

Number of Vehicle _____ s:

For each vehicle:

Vehicle Make, Model, Year

1. _____
2. _____
3. _____
4. _____

Number of occupants

(V-1)	1	2	3	4	5	6	7	8
(V-2)	1	2	3	4	5	6	7	8
(V-3)	1	2	3	4	5	6	7	8
(V-4)	1	2	3	4	5	6	7	8

Police Reported Accident Severity

_____ K - Killed
_____ A - Incapacitating injury
_____ B - Nonincapacitating injury
_____ C - Possible injury
_____ O - No injury

Accident Severity

_____ Fatal
_____ Injury - overnight hospitalization
_____ Injury-transport
_____ No transport

First Harmful Event

Non - Collision
_____ Overturn
_____ Fire or explosion
_____ Immersion
_____ Gas inhalation
_____ Fell from vehicle
_____ Injured in vehicle
_____ Other non - collision

Collision with:

_____ Pedestrian
_____ Pedal cyclist
_____ Railway train
_____ Animal
_____ Motor vehicle in transport
 (same roadway)
_____ Motor vehicle in transport
 (other roadway)
_____ Parked motor vehicle
_____ Other type non-motorist
_____ Other object (not fixed)

Collision with Fixed Object

_____ Building
_____ Culvert or ditch
_____ Curb or wall
_____ Divider
_____ Embankment
_____ Fence
_____ Guard rail
_____ Light Support
_____ Sign Post
_____ Tree or Shrubbery
_____ Utility Pole
_____ Other pole or support
_____ Impact attenuator
_____ Other fixed object

ADMINISTRATIVE/ENVIRONMENTAL - 2

First Harmful Event (cont.)

- Bridge or overpass
(passing under)
- Bridge or overpass
(passing over)

Manner of Collision
(Based on First Harmful Event)

- Not collision with vehicle
in transport
- Rear-end
- Head-on
- Rear-to-rear
- Angle
- Sideswipe, same direction
- Sideswipe, opposite direction

Relation to Roadway

- On roadway
- On shoulder
- In median
- On roadside
- Outside right-of-way
- Off roadway-location unknown
- In parking lane

Number of Travel Lanes

- One Five
- Two Six
- Three Seven or more
- Four Unknown

Trafficway Division and Median Type

- Undivided
- Divided (median with \geq to four feet)
paved flush—painted or unpainted
(i.e., not curbed)
- Curbed
- Unpaved, uncurbed median
(e.g., grass, gravel, etc.)
- Median barrier
- Other median type:

Access Control

- Full
- Partial
- Uncontrolled

Direction of Travel Flow

- One way
- Two way

Shoulder Presence

- No shoulder
- One shoulder
- Two shoulders

Roadway Alignment

- Straight
- Curve

Roadway Profile

- Level
- Grade
- Hillcrest
- Sag

Surface Type

- Concrete
- Bituminous
- Brick or block
- Slag, gravel, or stone
- Dirt
- Other: _____

Surface Condition

- Dry
- Wet
- Snow, slushy
- Icy
- Other (e.g., sand, dirt, oil):

Junction Traffic Controls

- No control
- Control not functioning
- Control Functioned
- Traffic signal
- Stop sign or yield sign
- Railroad crossing control
- Other traffic control

Speed Limit

- m.p.h.

Light Conditions

- Daylight
- Dark
- Dark, but lighted
- Dawn
- Dusk

ADMINISTRATIVE/ENVIRONMENTAL - 3

Atmospheric Conditions

- Normal (no adverse atmospheric related driving conditions)
- Raining
- Sleet
- Snow falling
- Fog
- Other (e.g., smog, smoke, blowing sand or dust, etc.):

Area Type

- Rural
- Urban

Class Trafficway

- Interstate
- Other limited access
- Other U.S. route
- Other state route
- Other major artery
- County road
- Local road
- Other road:

Roadway Section Type

- Non-junction
- Three leg intersection
- Four leg intersection
- More than four leg intersection
- Intersection related
- Interchange area
- Driveway, alley access, etc.
- Railroad grade crossing
- Unknown

RESTRAINT USAGE/STATUS

RESTRAINT SYSTEM		Front Seat: Left	Front Seat: Middle	Front Seat: Right	Second Seat: Left	Second Seat: Middle	Second Seat: Right	Third Seat: Left	Third Seat: Middle	Third Seat: Right	Other Position or Unit
ACTIVE	Availability	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	Indication of Usage	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
PASSIVE	System	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	Defeated	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Active Restraint System
- Availability

- (1) None
- (2) Lap belt and shoulder harness
- (3) Lap Belt
- (4) Shoulder harness
- (5) Helmet
- (6) Child safety seat
- (7) Other restraint :
- _____
- (9) Unknown

Active Restraint System
- Indication of usage

- (1) None (includes unavailability)
- (2) Lap belt and shoulder harness
- (3) Lap belt
- (4) Shoulder harness
- (5) Helmet
- (6) Child safety seat - in proper use
- (7) Other restraint used
- (9) Unknown

Passive Restraint System

- (1) None Available
- (2) Air bag - deployed
- (3) Air bag - did not deploy
- (4) Passive belt
- (5) Other restraint: _____
- (9) Unknown

Passive Restraint Defeated

- (1) No (includes unavailability)
- Yes
- (2) Passive belt not worn
- (3) Air bag disconnected
- (4) Air bag not reinstalled
- (5) Other restraint
- (9) Unknown

* Specify the other Position or Unit referenced:

OCCUPANT

OCCUPANT

____ Driver
____ Passenger

Occupant's Age
____ Year(s)

Occupant's Sex
____ Male
____ Female

Occupant's Height
____ inches

Occupant's Weight
____ pounds

Treatment - Mortality

____ Fatal
____ Nonfatal
____ Hospitalization
____ Transported and released
____ Treatment-other:

____ No treatment

Occupant's Seat Position

____ Front seat-left side
____ Front seat-middle
____ Front seat-right side
____ Second seat-left side
____ Second seat-middle
____ Second seat-right side
____ Third seat-left side
____ Third seat-middle
____ Third seat-right side
____ Front seat-additional
passenger
____ Second seat or beyond-
additional passenger
____ Other enclosed area:

If occupant is a child (0-4 yrs)

____ Sitting height
Describe child's apparel

CHILD ACTIVITY WHEN INJURY RECEIVED:

____ SITTING QUIETLY
____ STANDING & ACTIVE
____ SITTING, BENT OVER
____ KNEELING ON SEAT
____ OTHER, DESCRIBE _____

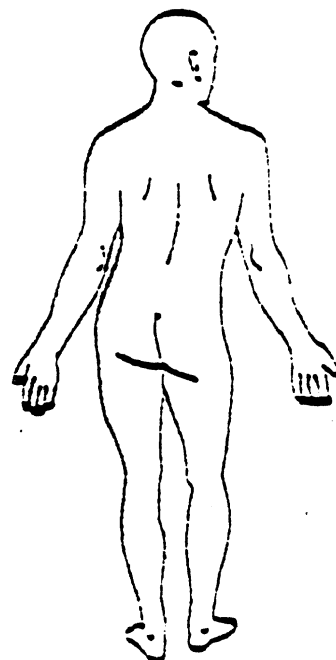
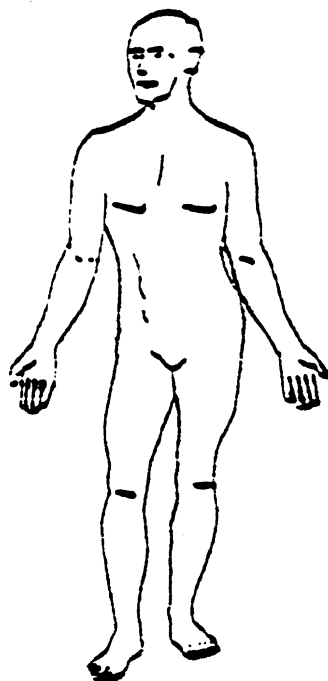
____ STANDING ON SEAT
____ STANDING ON FLOOR
____ CHANGING POSITION
____ COMBINATION OF ABOVE

____ FACING () FRONT; () REAR; () SIDE OF VEHICLE
____ RESTRAINED

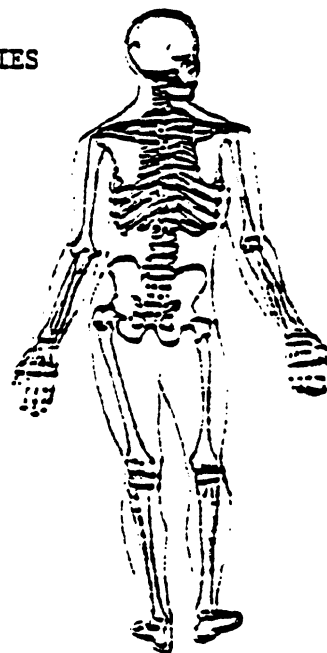
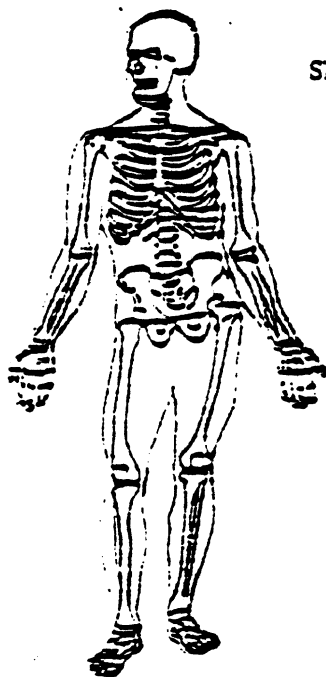
OCCUPANT INJURIES

INDICATE THE NATURE AND LOCATION OF ALL INJURIES

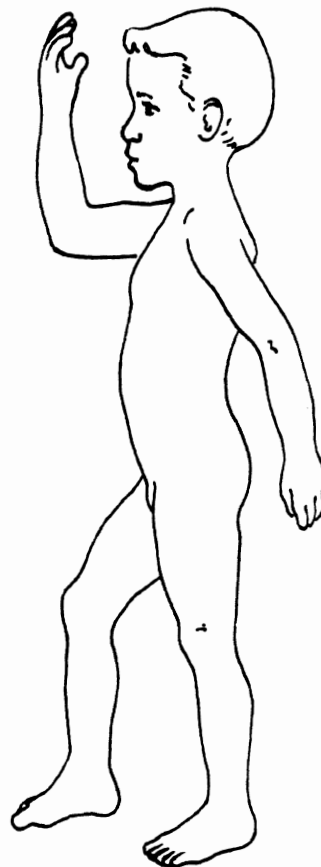
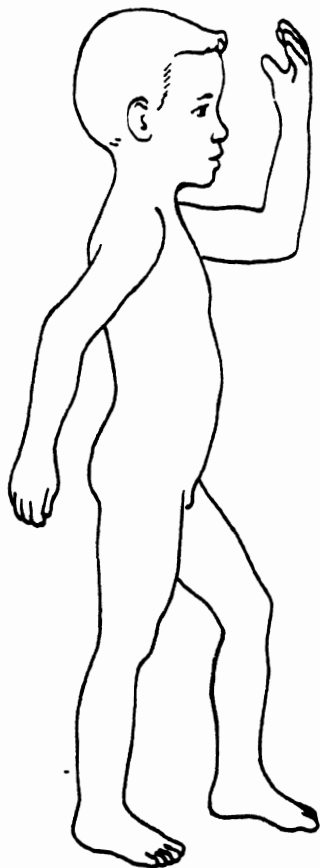
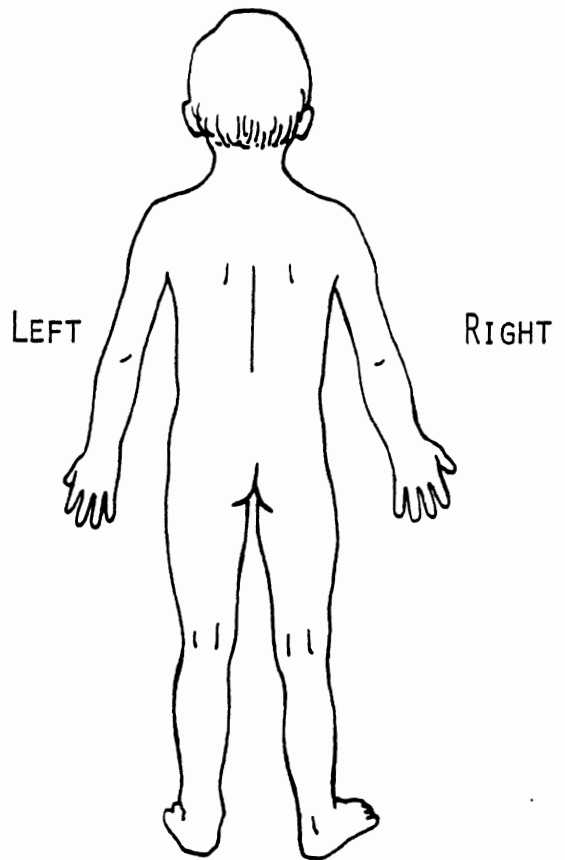
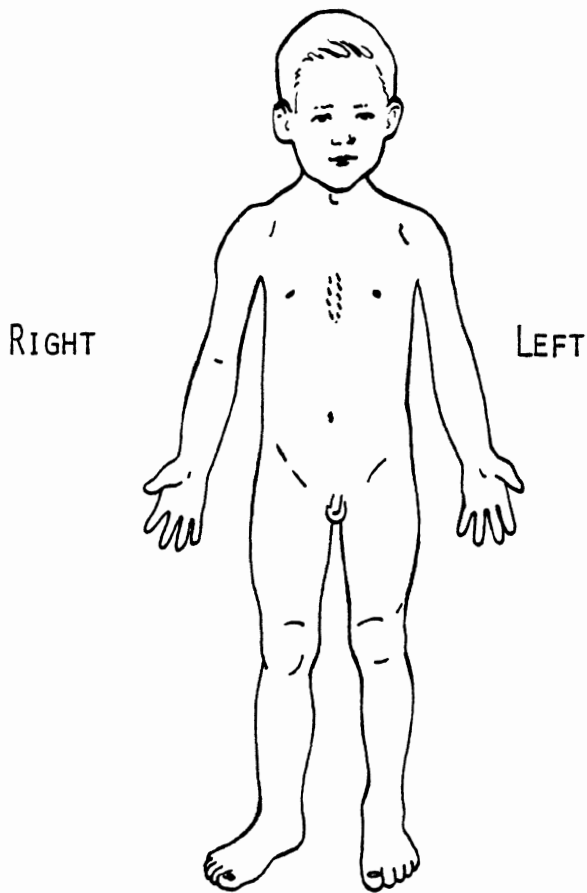
SOFT TISSUE INJURIES



SKELETAL INJURIES

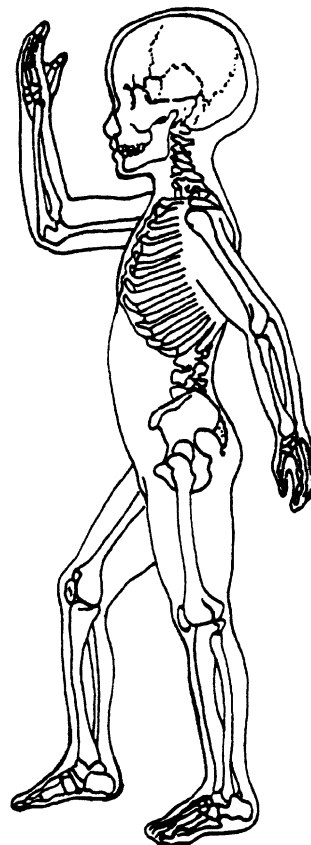
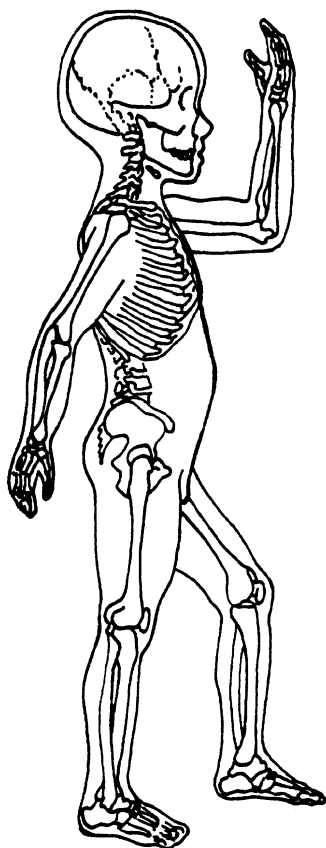
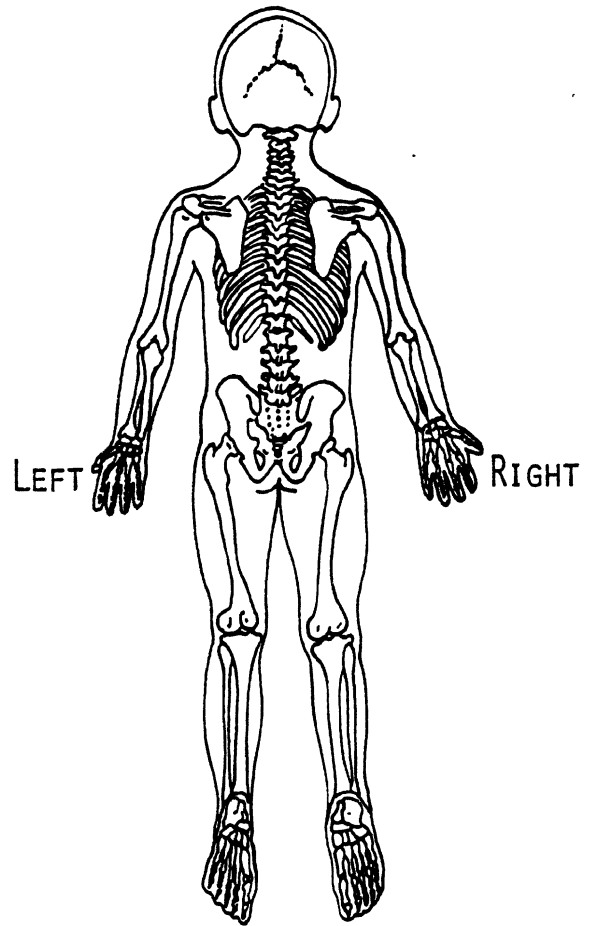
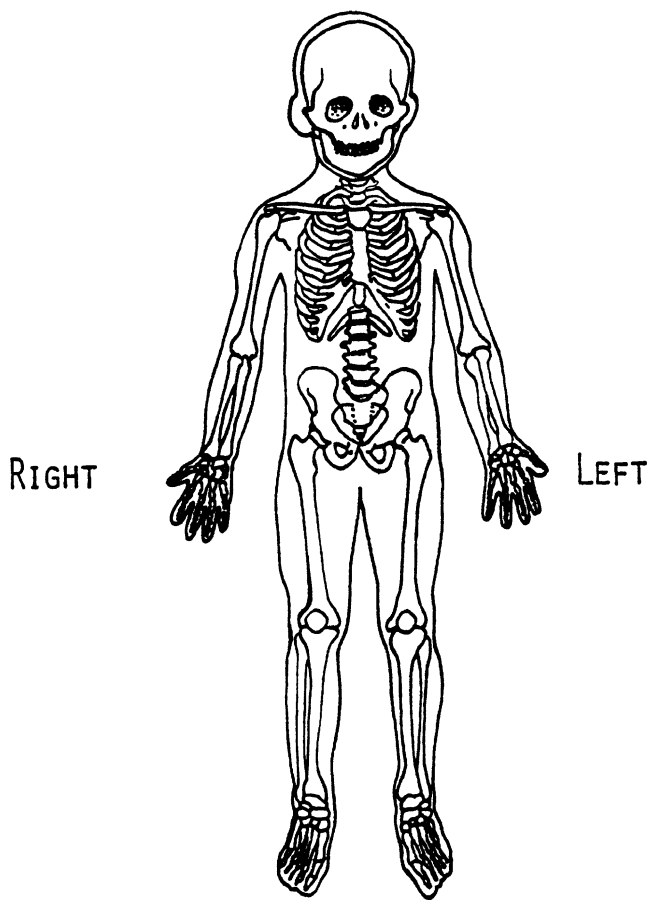


INDICATE LOCATION OF INJURIES
SOFT TISSUE AND INTERNAL ORGAN INJURIES



SKELETAL INJURIES ON REVERSE SIDE

INDICATE LOCATION OF INJURIES
SKELETAL INJURIES



(OIC)
OCCUPANT INJURY CLASSIFICATION

OCCUPANT ()
 INJURY SUMMARY DATA - MEDICAL FORM

OCCUPANT INJURY CLASSIFICATION

<u>BODY REGION</u>	<u>ASPECT</u>	<u>LESION</u>	<u>SYSTEM OR ORGAN</u>	<u>ALS SEVERITY</u>	<u>INJURY SOURCE</u>	<u>Confidenc Factor*</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

INJURY SEVERITY SCORE (ISS) _____

COMMENTS _____

* Confidence Factor - Certainty of Injury Source:
 1 = Definite
 2 = Probable
 3 = Possible

EJECTION

INDICATIONS OF EJECTION

NOT ejected
NOT applicable

NOTE: If ejection is suspected or reported, indicate the avenue. For multiple avenues number them & utilize the same numbers consistently throughout.

- ___ Open
- ___ Separation
- ___ Closed, closed when damaged
- ___ Status unknown

EJECTION AREA

- ___ Windshield
- ___ Left front
- ___ Right front
- ___ Left rear
- ___ Right rear
- ___ Rear
- ___ Roof (Convertible or Sun Roof)
- ___ Other area (e.g., sidecar, back of pickup, etc)
- ___ Unknown

EJECTION MEDIUM

- ___ Door
- ___ Open roof structure
- ___ Fixed windows
- ___ Other medium type
- ___ Unknown

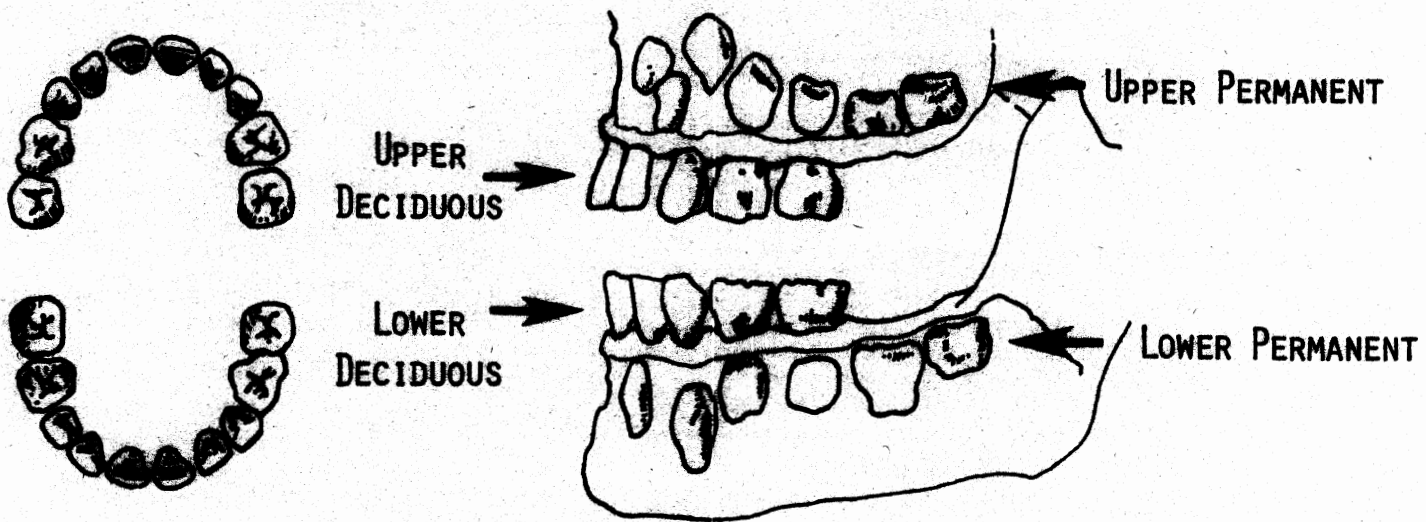
OPERABLE WINDOWS

- ___ Roll down type
- ___ Hinged type
- ___ Sliding type
- ___ Other type window

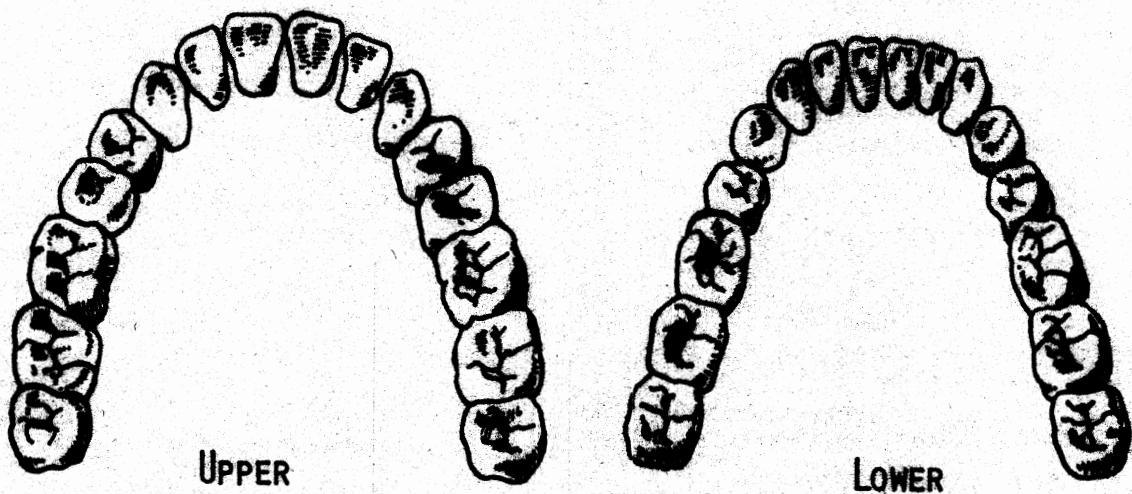
NOTES

ORAL INJURIES - MEDICAL FORM

DECIDUOUS



PERMANENT



NOTE TOOTH DAMAGE AND/OR LOSS ON DIAGRAM. DESCRIBE ORAL INJURIES:

USE REVERSE SIDE FOR ADDITIONAL INFORMATION

