

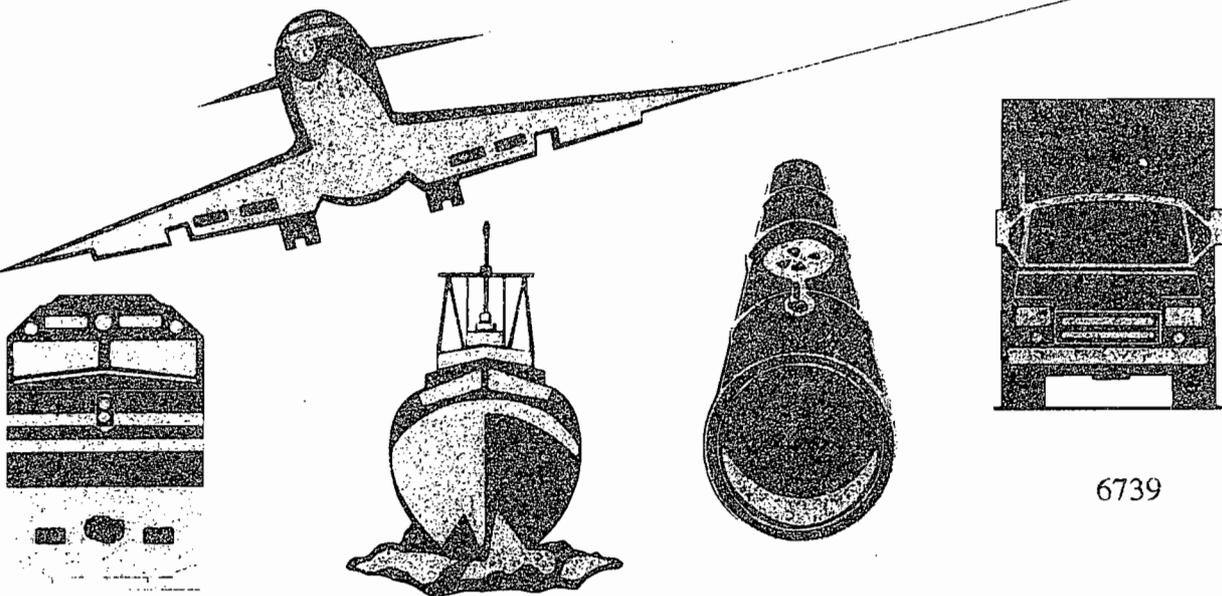
NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

SAFETY STUDY

THE PERFORMANCE AND USE OF
CHILD RESTRAINT SYSTEMS, SEATBELTS,
AND AIR BAGS FOR CHILDREN
IN PASSENGER VEHICLES

VOLUME 2: CASE SUMMARIES



National Transportation Safety Board. 1996. The performance and use of child restraint systems, seatbelts, and air bags for children in passenger vehicles. Volume 2: Case summaries. Safety Study NTSB/SS-96/02. Washington, DC.

Despite the effectiveness of child restraints and lap/shoulder belts to reduce the likelihood of severe and fatal injuries, accidents continue to occur in which restrained children are being injured and killed. The Safety Board conducted this study to examine the performance and use of occupant protection systems for children—child restraint systems, vehicle seatbelts, and air bags. The study analyzes data from 120 accidents involving at least one vehicle in which there was a child passenger younger than age 11 and in which at least one occupant was transported to the hospital. Volume 1 contains the Board's analysis of the data and its conclusions and recommendations. Volume 2 contains the summaries of the 120 accidents. The safety issues discussed in the report include (a) the dangers that passenger-side air bags pose to children; (b) factors that affect injury severity, including the use of an inappropriate restraint for a child's age, height, and weight, the improper use of the restraint, accident severity, and seat location; (c) the adequacy of Federal standards regarding the design and installation of child restraint systems; (d) the need to improve seatbelt fit for children; (e) the adequacy of public information and education on child passenger protection; and (f) the adequacy of State child restraint use laws. Safety recommendations concerning these issues were made to the National Highway Traffic Safety Administration, the Governors and legislative leaders of the 50 States, the U.S. Territories, and the Mayor of the District of Columbia; the domestic and international automobile manufacturers; and the child restraint manufacturers.

The National Transportation Safety Board is an independent Federal agency dedicated to promoting aviation, railroad, highway, marine, pipeline, and hazardous materials safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The Safety Board makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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**THE PERFORMANCE AND USE OF
CHILD RESTRAINT SYSTEMS, SEATBELTS,
AND AIR BAGS FOR CHILDREN
IN PASSENGER VEHICLES
VOLUME 2: CASE SUMMARIES**

Safety Study

Safety Study NTSB/SS-96/02
Notation 6739

National Transportation
Safety Board



Washington, D.C.
September 1996

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Conversion Factors for International Standard (SI) Units

<i>To convert from</i>	<i>to</i>	<i>multiply by</i>
inch (in)	centimeter (cm)	2.54
mile (U.S. statute)	kilometer (km)	1.609
foot (ft)	meter (m)	0.3048
pound (lb)	kilogram (kg)	0.454

Executive Summary

According to the National Highway Traffic Safety Administration (NHTSA), U.S. Department of Transportation, child restraints have been shown to be 69 percent effective in reducing the risk of death to infants and 47 percent effective for children between the ages of 1 and 4. The NHTSA also estimates that lap/shoulder belts reduce the risk of fatal injury by 45 percent and moderate to critical injury by 50 percent for passenger car occupants who are older than 5 years. Despite the effectiveness of child restraints and lap/shoulder belts to reduce the likelihood of severe and fatal injuries, accidents continue to occur in which restrained children are being injured and killed.

According to NHTSA's 1994 Fatal Accident Reporting System (FARS) data, 5,972 children younger than age 11 were passengers of motor vehicles in transport involved in accidents that resulted in at least one fatality. About 20 percent of the child passengers (1,203 of 5,972) were fatally injured. Restraint use was known for 1,114 of the 1,203 fatally injured children; about 54 percent of the fatally injured children (647 of 1,203) were unrestrained. Further, about 40 percent of all the children (2,402 of 5,972) involved in the fatal accidents were unrestrained; only 12 percent of these unrestrained children were not injured. These data show that the percentage of unrestrained children who were killed (26.9 percent) was almost double that of the percentage of restrained children who were killed (14.7 percent).

The National Transportation Safety Board, therefore, conducted this study to examine the performance and use of occupant protection systems for children—child restraint systems, vehicle seatbelts, and air bags. The study also examines the adequacy of relevant Federal Motor Vehicle Safety Standards, the comprehensiveness of State child restraint and seatbelt use laws, and the adequacy of public information and education on child passenger protection.

The Safety Board selected for study accidents involving at least one vehicle in which there was a child passenger younger than age 11 and in which at least one occupant was transported to the hospital. The Safety Board used a sampling strategy designed to obtain a predetermined number of children in specified age ranges and in certain types of restraint systems to ensure equal representation of ages and restraint categories in the sample. The Safety Board investigated a total of 133 accidents. A total of 13 accidents were omitted from the study: 12 because data required for this study could not be obtained, and 1 because the restraint system used in the vehicle was not designed for automobiles. The study, therefore, analyzes data from 120 vehicle accidents.

This volume (volume 2, NTSB/SS-96/02) of the report contains case summaries of the 120 vehicle accidents that provided the data analyzed in the Safety Board's study. Volume 1 (NTSB/SS-96/01) of the report contains the Board's analysis of the data, its conclusions, and recommendations issued to improve the protection of children in passenger vehicles.

Terminology Used and Case Summary Matrix

Measuring Collision Severity

Delta V is generally considered to be the single best indicator of collision severity. Delta V, as used in this study, is the estimated instantaneous velocity change experienced by the vehicle at impact. Delta V estimates (expressed in mph) have longitudinal and lateral vector components that are combined for a total Delta V. The total Delta V estimates cited in this study were determined using the EDCRASH computer simulation model, based on the Calspan Reconstruction of Accident Speeds on the Highway (CRASH 3) computer program.¹ This algorithm utilizes structural deformation measurements and vehicle crush coefficients as input, and analyzes parameters such as vehicle structural rigidity, force vectors with respect to vehicle center-of-mass, and vehicle weight to calculate the estimated crash dynamics.

The computer-generated Delta V is recognized as an estimate; however, it is a more accurate gauge of the forces affecting vehicle occupants than is vehicle damage alone. For example, the bodies of some vehicles crush at lower crash forces than others and, therefore, absorb these forces before they can be transmitted to the occupant.

For some case vehicles, such as those involved in a rollover or a sideswipe or that sustained only undercarriage damage, Delta V was not calculated.

Measuring Injury Severity

Each injury is described in medical terms and is also rated on the Abbreviated Injury Scale (AIS). The AIS is an anatomically based system that classifies individual injuries by body region on a six-point ordinal scale of risk to life. It was developed in 1990 by the Association for the Advancement of Automotive Medicine.

¹ Engineering Dynamic Corporation. 1989. EDCRASH: Reconstruction of Accident Speeds on the Highway. 5th ed. Lake Oswego, Oregon.

<u>AIS Code</u>	<u>Description</u>
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum
9	Unknown

The AIS does not assess the combined effect of multiple injuries. The maximum AIS (MAIS) is the highest single AIS code for an occupant with multiple injuries and is used in the case summaries to describe overall injury severity. For example, MAIS 4 means that the victim may have multiple injuries, but the most severe injury is AIS 4.

Case Summary Legend

Each case summary includes a diagram of the case vehicle(s), its collision orientation, and its occupants. Symbols used the diagram are defined in the legend below. The case vehicle is the one that contains a child occupant in this safety study; some accidents have more than one case vehicle.

-  = Occupant in Car
-  = Child restraint system
-  = Occupant had an air bag
-  = Occupant was wearing lap/shoulder belt
-  = Child occupant was in a booster
-  = Infant was in an infant seat
-  = Restraint use unknown
-  = Occupant was wearing lap belt only
-  = Occupant was wearing the shoulder belt only

The occupant's age, sex, and MAIS are shown near the circle. For example, 6-F-4 indicates a 6-year-old female whose most severe injury was AIS level 4.

Each case summary also includes a list of injuries for the injured child occupants in the study. Injuries sustained by other occupants in the crash are not included in the list.

Case Summary Matrix

The Safety Board investigated a total of 133 accidents for the safety study. A total of 13 accidents were omitted from the study: 12 because data required for this study could not be obtained, and 1 because the restraint system used in the vehicle was not designed for automobiles. The matrix on the following pages provides an overview of the 120 accidents analyzed for the study.

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
1	NRH-94-FH-C05	1	8	32	41.0	None	41.00	Rollover	Lapbelt	Belt-positioning booster
1	NRH-94-F-HC05	1	4	--	--	Severe	74.00	Rollover	None	Undetermined
1	NRH-94-FH-C05	1	5	--	--	Severe	70.00	Rollover	None	Undetermined
2	CRH-94-FH-C07	1	2	30	36.0	Minor	44.00	Rollover	Lapbelt	Forward-facing toddler or convertible
3	CRH-94-FH-C08	1	2	40	38.0	Moderate	42.00	18.60	Lapbelt	Forward-facing toddler or convertible
5	SRH-94-FH-C07	1	6	11	21.0	None	1.00	49.80	Rear-facing	Rear-facing, either type
6	SRH-94-FH-C08	1	9	85	55.0	None	120.00	15.40	None	Lap/shoulder belt if available, otherwise lapbelt
7	CRH-94-FH-C10	1	2	16	26.0	Fatal	3.50	25.30	Rear-facing	Rear-facing, either type
8	SRH-94-FH-C09	1	6	33	31.0	Minor	48.00	9.30	Shield booster	Forward-facing toddler or convertible
9	NRH-94-FH-C06	1	4	34	37.0	Fatal	31.00	53.50	Forward-facing convertible seat	Forward-facing toddler or convertible
9	NRH-94-FH-C06	1	5	--	--	Fatal	60.00	53.50	Lapbelt	Undetermined
9	NRH-94-FH-C06	1	6	--	--	Serious	72.00	53.50	Lapbelt	Undetermined
10	CRH-94-FH-C11	1	5	35	36.0	Minor	34.00	24.90	Lapbelt	Forward-facing toddler or convertible
10	CRH-94-FH-C11	1	8	70	50.0	Minor	76.00	24.90	Lapbelt	Lap/shoulder belt if available, otherwise lapbelt
12	CRH-94-FH-C13	1	4	24	30.0	Minor	12.00	Rollover	Forward-facing in an infant-only seat	Forward-facing toddler or convertible
12	CRH-94-FH-C13	1	6	60	42.0	Moderate	48.00	Rollover	None	Either type of booster okay, belt-positioning preferred
13	CRH-94-FH-C14	1	5	32	38.0	Moderate	50.00	31.50	Forward-facing convertible seat	Forward-facing toddler or convertible
14	SRH-94-FH-C10	1	6	39	42.0	Fatal	48.00	14.80	Lapbelt	Belt-positioning booster
15	WRH-94-FH-C04	1	3	15	21.0	None	9.00	9.00	Forward-facing convertible seat	Rear-facing, either type
16	WRH-94-FH-C05	1	3	55	46.5	Minor	72.00	41.80	None	Either type of booster okay, belt-positioning preferred

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
16	WRH-94-FH-C05	1	3	45	40.0	Moderate	48.00	41.80	None	Either type of booster okay, belt-positioning preferred
16	WRH-94-FH-C05	1	16	70	47.0	Serious	84.00	41.80	None	Lap/shoulder belt if available, otherwise lapbelt
17	WRH-94-FH-C06	1	4	30	39.0	None	24.00	10.40	Lapbelt	Forward-facing toddler or convertible
17	WRH-94-FH-C06	1	5	30	40.0	Minor	37.00	10.40	Lapbelt	Forward-facing toddler or convertible
17	WRH-94-FH-C06	1	6	12	21.0	None	9.00	10.40	On lap, unbelted	Rear-facing, either type
18	WRH-94-FH-C07	1	4	80	50.0	Serious	94.00	41.20	None	Lap/shoulder belt if available, otherwise lapbelt
18	WRH-94-FH-C07	1	5	80	50.0	Minor	108.00	41.20	None	Lap/shoulder belt if available, otherwise lapbelt
18	WRH-94-FH-C07	1	6	47	43.0	Moderate	69.00	41.20	Undetermined restraint, but not child restraint system	Either type of booster okay, belt-positioning preferred
19	SRH-94-FH-C12	1	3	12	22.0	Fatal	4.00	46.40	Rear-facing	Rear-facing, either type
20	SRH-94-FH-C11	1	6	32	37.0	None	24.00	18.80	Shield booster	Either type of booster okay, belt-positioning preferred
20	SRH-94-FH-C11	2	4	41	43.0	Fatal	51.00	19.60	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
21	CRH-94-FH-C16	1	4	31	35.0	Minor	24.00	22.10	None	Forward-facing toddler or convertible
21	CRH-94-FH-C16	1	16	23	26.0	Minor	9.00	22.10	None	Rear-facing but too large for currently available infant-only seats
22	WRH-94-FH-C08	1	3	45	36.0	Minor	35.00	20.00	Forward-facing convertible seat	Either type of booster okay, belt-positioning preferred
23	NRH-94-FH-C07	1	4	31	38.0	Minor	35.00	13.80	Undetermined restraint, but not child restraint system	Forward-facing toddler or convertible
23	NRH-94-FH-C07	1	6	34	42.0	Minor	58.00	13.80	Undetermined restraint, but not child restraint system	Belt-positioning booster
24	CRH-94-FH-C17	1	3	40	37.0	Moderate	46.00	34.00	Lapbelt	Forward-facing toddler or convertible

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
25	WRH-94-FH-C09	1	6	19	28.0	Moderate	6.00	48.40	Forward-facing convertible seat	Rear-facing convertible
25	WRH-94-FH-C09	1	5	40	38.0	Moderate	37.00	48.40	Lapbelt	Forward-facing toddler or convertible
25	WRH-94-FH-C09	1	5	50	43.0	Fatal	58.00	48.40	Lapbelt	Either type of booster okay, belt-positioning preferred
25	WRH-94-FH-C09	1	4	35	34.0	Fatal	24.00	48.40	On lap, belted	Forward-facing toddler or convertible
26	CRH-94-FH-C18	1	3	35	38.0	Moderate	20.00	44.60	Shield booster	Either type of booster okay, belt-positioning preferred
27	SRH-94-FH-C14	1	3	70	55.0	Minor	120.00	15.60	None	Lap/shoulder belt if available, otherwise lapbelt
29	SRH-94-FH-C13	1	4	70	46.0	Minor	84.00	11.70	None	Lap/shoulder belt if available, otherwise lapbelt
29	SRH-94-FH-C13	1	6	78	48.0	Minor	96.00	11.70	None	Lap/shoulder belt if available, otherwise lapbelt
30	WRH-94-FH-C10	1	5	33	35.0	Fatal	42.00	40.70	Lapbelt	Forward-facing toddler or convertible
31	WRH-94-FH-C11	1	3	45	36.0	Moderate	60.00	42.00	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
32	CRH-94-FH-C20	1	4	26	35.0	Serious	38.00	23.20	Shield booster	Forward-facing toddler or convertible
33	WRH-94-FH-C12	1	4	43	45.0	Minor	56.00	10.60	Shield booster	Either type of booster okay, belt-positioning preferred
33	WRH-94-FH-C12	1	6	40	40.0	None	36.00	10.60	Shield booster	Either type of booster okay, belt-positioning preferred
34	SRH-94-FH-C15	1	4	72	48.0	Severe	88.00	27.90	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
34	SRH-94-FH-C15	1	6	63	45.0	Moderate	61.00	27.90	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
35	WRH-94-FH-C13	1	3	35	34.0	Minor	24.00	15.80	On lap, unbelted	Forward-facing toddler or convertible
36	WRH-94-FH-C14	1	4	60	48.0	Fatal	86.00	11.40	None	Either type of booster okay, belt-positioning preferred

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
36	WRH-94-FH-C14	1	6	55	48.0	Minor	69.00	11.40	Undetermined restraint, but not child restraint system	Either type of booster okay, belt-positioning preferred
37	SRH-94-FH-C17	1	6	30	31.0	Minor	28.00	41.50	None	Forward-facing toddler or convertible
38	SRH-94-FH-C18	1	4	57	52.0	Minor	84.00	9.80	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
38	SRH-94-FH-C18	2	3	70	52.0	Minor	84.00	15.30	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
39	CRH-94-FH-C22	1	3	31	32.0	Moderate	22.00	27.60	Forward-facing convertible seat	Forward-facing toddler or convertible
40	SRH-94-FH-C19	1	6	32	33.0	None	30.00	12.70	Shield booster	Either type of booster okay, belt-positioning preferred
41	NRH-94-FH-C08	1	4	32	36.0	Fatal	43.00	38.30	Forward-facing convertible seat	Forward-facing toddler or convertible
41	NRH-94-FH-C08	1	6	21	31.0	Moderate	22.00	38.30	Forward-facing convertible seat	Forward-facing toddler or convertible
42	WRH-94-FH-C15	1	3	25	33.0	None	24.00	13.60	Forward-facing convertible seat	Forward-facing toddler or convertible
42	WRH-94-FH-C15	1	6	60	54.0	Minor	107.00	13.60	None	Either type of booster okay, belt-positioning preferred
43	SRH-94-FH-C20	1	3	-	-	None	69.00	19.10	Lap/shoulder belt	Undetermined
44	SRH-94-FH-C23	1	3	43	39.0	Severe	47.00	41.30	Lapbelt	Either type of booster okay, belt-positioning preferred
44	SRH-94-FH-C23	1	4	52	46.0	Serious	73.00	41.30	Lapbelt	Either type of booster okay, belt-positioning preferred
45	SRH-94-FH-C21	1	4	30	32.0	Minor	40.00	20.00	Lapbelt	Forward-facing toddler or convertible
45	SRH-94-FH-C21	1	5	22	26.0	None	24.00	20.00	Lapbelt	Forward-facing toddler or convertible
45	SRH-94-FH-C21	1	6	36	43.0	Minor	58.00	20.00	Lapbelt	Belt-positioning booster
47	SRH-94-FH-C24	1	5	42	40.0	None	36.00	11.50	Lapbelt	Either type of booster okay, belt-positioning preferred
48	SRH-94-FH-C25	1	6	32	38.0	Minor	34.00	34.90	Forward-facing convertible seat	Forward-facing toddler or convertible

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
48	SRH-94-FH-C25	1	3	45	46.0	Minor	61.00	34.90	Belt-positioning booster	Either type of booster okay, belt-positioning preferred
49	NRH-94-FH-C10	1	3	26	28.0	Moderate	16.00	38.00	Lapbelt	Forward-facing toddler or convertible
50	WRH-94-FH-C17	1	3	46	40.0	None	48.00	19.90	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
51	WRH-94-FH-C18	1	4	35	39.0	Minor	42.00	22.10	Lapbelt	Forward-facing toddler or convertible
51	WRH-94-FH-C18	1	6	33	37.5	Minor	30.00	22.10	Lapbelt	Forward-facing toddler or convertible
52	SRH-94-FH-C27	1	2	14	--	Severe	4.00	20.80	Rear-facing	Rear-facing, either type
52	SRH-94-FH-C27	1	3	--	--	Minor	94.00	20.80	On lap, unbelted	Undetermined
52	SRH-94-FH-C27	1	3	--	--	Minor	72.00	20.80	On lap, unbelted	Undetermined
53	WRH-94-FH-C20	1	3	12	23.0	Minor	3.00	11.60	On lap, unbelted	Rear-facing, either type
54	WRH-94-FH-C21	1	4	35	36.0	Minor	37.00	17.20	Shield booster	Either type of booster okay, belt-positioning preferred
55	SRH-94-FH-C29	1	4	34	37.0	Minor	36.00	22.90	None	Forward-facing toddler or convertible
55	SRH-94-FH-C29	1	6	38	40.0	Minor	58.00	22.90	None	Forward-facing toddler or convertible
58	SRH-95-FH-C02	1	4	18	24.0	None	17.00	12.90	Lapbelt	Rear-facing, either type
58	SRH-95-FH-C02	1	6	30	29.0	Minor	29.00	12.90	None	Forward-facing toddler or convertible
59	WRH-95-FH-C02	1	3	13	20.0	Critical	3.00	Sideswipe	Rear-facing	Rear-facing, either type
60	CRH-95-FH-C03	1	3	32	33.0	Serious	22.00	14.20	None	Forward-facing toddler or convertible
61	CRH-95-FH-C05	1	6	--	--	Minor	6.50	34.80	Rear-facing	Undetermined
61	CRH-95-FH-C05	1	4	26	--	Severe	21.00	34.80	Forward-facing convertible seat	Forward-facing toddler or convertible
61	CRH-95-FH-C05	1	3	--	--	Minor	42.00	34.80	Lap/shoulder belt	Undetermined
62	SRH-95-FH-C03	1	4	45	40.0	Minor	73.00	6.70	None	Either type of booster okay, belt-positioning preferred

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
62	SRH-95-FH-C03	1	6	22	26.0	Minor	21.00	6.70	None	Forward-facing toddler or convertible
63	SRH-95-FH-C04	1	3	-	-	Minor	38.00	19.40	Lap/shoulder belt	Undetermined
64	SRH-95-FH-C05	1	6	-	-	None	72.00	12.60	Lapbelt	Undetermined
65	SRH-95-FH-C06	1	3	32	30.0	Minor	21.00	19.90	None	Forward-facing toddler or convertible
66	SRH-95-FH-C08	1	3	60	54.0	Minor	110.00	10.80	Lapbelt	Either type of booster okay, belt-positioning preferred
66	SRH-95-FH-C08	1	6	50	48.0	None	84.00	10.80	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
68	SRH-95-FH-C10	1	2	40	42.0	Moderate	54.00	12.00	None	Either type of booster okay, belt-positioning preferred
68	SRH-95-FH-C10	1	2	50	44.0	Minor	66.00	12.00	None	Either type of booster okay, belt-positioning preferred
68	SRH-95-FH-C10	1	16	85	48.0	Minor	93.00	12.00	None	Lap/shoulder belt if available, otherwise lapbelt
69	SRH-95-FH-C11	1	4	40	44.0	Serious	61.00	21.40	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
70	WRH-95-FH-C01	1	4	50	42.0	Minor	79.00	21.00	Undetermined restraint, but not child restraint system	Either type of booster okay, belt-positioning preferred
71	WRH-95-FH-C03	1	6	24	31.0	Minor	20.00	19.90	Forward-facing convertible seat	Forward-facing toddler or convertible
71	WRH-95-FH-C03	1	4	70	53.0	Minor	96.00	19.90	None	Lap/shoulder belt if available, otherwise lapbelt
71	WRH-95-FH-C03	1	5	76	57.0	Minor	120.00	19.90	None	Lap/shoulder belt if available, otherwise lapbelt
72	WRH-95-FH-C04	1	3	78	48.0	Moderate	108.00	16.60	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
73	WRH-95-FH-C05	1	7	85	60.0	Minor	131.00	11.90	Lapbelt	Lap/shoulder belt if available, otherwise lapbelt
73	WRH-95-FH-C05	1	40	70	63.0	Minor	112.00	11.90	None	Lap/shoulder belt if available, otherwise lapbelt
73	WRH-95-FH-C05	1	9	58	43.0	Fatal	59.00	11.90	None	Either type of booster okay, belt-positioning preferred

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
73	WRH-95-FH-C05	1	16	90	48.0	Minor	101.00	11.90	None	Lap/shoulder belt if available, otherwise lapbelt
73	WRH-95-FH-C05	1	16	35	36.0	Moderate	48.00	11.90	On lap, unbelted	Forward-facing toddler or convertible
73	WRH-95-FH-C05	1	5	26	25.0	Minor	8.00	11.90	On lap, unbelted	Rear-facing but too large for currently available infant-only seats
73	WRH-95-FH-C05	1	8	23	32.0	Fatal	10.00	11.90	On lap, unbelted	Rear-facing but too large for currently available infant-only seats
74	CRH-95-FH-C08	1	5	35	30.0	None	24.00	17.00	Lapbelt	Forward-facing toddler or convertible
75	CRH-95-FH-C09	1	2	24	22.0	Minor	12.00	5.40	Lapbelt	Forward-facing toddler or convertible
75	CRH-95-FH-C09	1	2	30	28.0	Minor	24.00	5.40	None	Forward-facing toddler or convertible
76	NRH-95-FH-C03	1	4	60	50.0	None	84.00	15.00	None	Either type of booster okay, belt-positioning preferred
76	NRH-95-FH-C03	1	5	60	54.0	Minor	108.00	15.00	None	Either type of booster okay, belt-positioning preferred
77	NRH-95-FH-C05	1	3	62	48.0	Minor	96.00	14.10	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
77	NRH-95-FH-C05	1	4	50	39.0	Minor	60.00	14.10	None	Either type of booster okay, belt-positioning preferred
78	SRH-95-FH-C12	1	3	55	-	Minor	99.00	12.50	None	Either type of booster okay, belt-positioning preferred
79	SRH-95-FH-C13	1	3	35	37.0	None	24.00	8.20	Shield booster	Either type of booster okay, belt-positioning preferred
80	SRH-95-FH-C14	1	4	23	26.0	None	12.00	13.80	Forward-facing convertible seat	Forward-facing toddler or convertible
80	SRH-95-FH-C14	1	6	33	36.0	Minor	58.00	13.80	Lapbelt	Forward-facing toddler or convertible
80	SRH-95-FH-C14	1	3	55	48.0	None	84.00	13.80	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
81	SRH-95-FH-C15	1	6	90	51.0	Minor	126.00	17.50	Lapbelt	Lap/shoulder belt if available, otherwise lapbelt
81	SRH-95-FH-C15	1	4	32	--	Moderate	29.00	17.50	Undetermined child restraint system	Forward-facing toddler or convertible
82	SRH-95-FH-C17	1	5	--	--	None	24.00	15.00	Undetermined child restraint system	Undetermined
83	SRH-95-FH-C18	1	5	44	44.3	Serious	78.00	48.20	Lapbelt	Either type of booster okay, belt-positioning preferred
83	SRH-95-FH-C18	1	3	40	45.0	None	72.00	48.20	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
83	SRH-95-FH-C18	1	4	47	48.0	Moderate	60.00	48.20	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
83	SRH-95-FH-C18	1	6	46	45.0	None	72.00	48.20	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
84	WRH-95-FH-C06	1	4	102	58.0	None	108.00	10.50	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
84	WRH-95-FH-C06	1	6	120	60.5	Minor	120.00	10.50	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
85	WRH-95-FH-C07	2	3	35	37.0	None	33.00	13.00	Forward-facing convertible seat	Forward-facing toddler or convertible
85	WRH-95-FH-C07	1	6	50	48.0	Minor	83.00	14.90	Lapbelt	Either type of booster okay, belt-positioning preferred
85	WRH-95-FH-C07	1	3	65	50.0	None	96.00	14.90	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
86	WRH-95-FH-C08	1	4	40	39.5	None	48.00	16.00	None	Forward-facing toddler or convertible
86	WRH-95-FH-C08	1	6	45	41.0	None	48.00	16.00	None	Either type of booster okay, belt-positioning preferred
87	WRH-95-FH-C09	1	3	24	30.0	None	21.00	16.80	Forward-facing convertible seat	Forward-facing toddler or convertible
88	WRH-95-FH-C10	1	5	46	46.0	None	36.00	8.70	Lapbelt	Either type of booster okay, belt-positioning preferred
88	WRH-95-FH-C10	1	3	54	52.0	Minor	116.00	8.70	Undetermined restraint, but not child restraint system	Either type of booster okay, belt-positioning preferred

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
89	WRH-95-FH-C11	1	3	37	41.0	Minor	48.00	9.70	Lap/shoulder belt	Belt-positioning booster
90	WRH-95-FH-C12	1	5	42	48.0	Minor	84.00	18.10	Lapbelt	Either type of booster okay, belt-positioning preferred
90	WRH-95-FH-C12	1	6	40	45.5	Minor	60.00	18.10	Lapbelt	Either type of booster okay, belt-positioning preferred
91	WRH-95-FH-C13	1	3	48	42.0	Serious	47.00	19.40	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
92	WRH-95-FH-C14	1	3	49	44.5	Minor	64.00	16.80	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
94	WRH-95-FH-C16	1	4	19	29.0	None	10.00	10.10	On lap, unbelted	Rear-facing convertible
95	CRH-95-FH-C10	1	3	62	56.0	Fatal	118.00	17.50	Lapbelt	Lap/shoulder belt if available, otherwise lapbelt
95	CRH-95-FH-C10	1	6	40	42.5	Minor	48.00	17.50	Lapbelt	Either type of booster okay, belt-positioning preferred
96	NRH-95-FH-C06	1	2	52	47.0	Minor	82.00	4.70	Lapbelt	Either type of booster okay, belt-positioning preferred
97	SRH-95-FH-C19	1	2	29	34.0	Serious	33.00	46.20	Forward-facing convertible seat	Forward-facing toddler or convertible
98	SRH-95-FH-C21	1	3	60	47.0	Minor	96.00	10.90	None	Either type of booster okay, belt-positioning preferred
100	SRH-95-FH-C22	1	4	22	28.0	None	6.00	8.70	Rear-facing	Rear-facing but too large for currently available infant-only seats
101	NRH-95-FH-C07	1	3	42	40.0	Moderate	48.00	22.10	Lapbelt	Either type of booster okay, belt-positioning preferred
103	SRH-95-FH-C23	1	3	35	36.0	Critical	36.00	23.90	Lapbelt	Forward-facing toddler or convertible
105	SRH-95-FH-C24	1	3	10	19.0	Fatal	.50	30.80	Rear-facing	Rear-facing, either type
105	SRH-95-FH-C24	1	6	32	38.0	Minor	43.00	30.80	Lap/shoulder belt	Forward-facing toddler or convertible
105	SRH-95-FH-C24	1	4	24	32.0	Moderate	23.00	30.80	On lap, belted	Forward-facing toddler or convertible
106	NRH-94-FH-C09	1	6	32	31.0	None	15.00	18.10	Forward-facing convertible seat	Forward-facing toddler or convertible

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
107	WRH-95-FH-C17	1	5	21	27.0	Minor	5.00	21.10	Forward-facing convertible seat	Rear-facing but too large for currently available infant-only seats
108	WRH-95-FH-C18	1	3	60	47.0	Minor	62.00	25.60	None	Either type of booster okay, belt-positioning preferred
109	SRH-95-FH-C25	1	5	--	--	Minor	107.00	20.20	Lapbelt	Undetermined
110	WRH-95-FH-C19	1	4	15	22.0	Moderate	7.00	13.50	Forward-facing in an infant-only seat	Rear-facing, either type
110	WRH-95-FHC19	1	5	36	36.0	Minor	20.00	13.50	Undetermined restraint, but not child restraint system	Forward-facing toddler or convertible
110	WRH-95-FH-C19	1	6	33	41.0	Minor	47.00	13.50	Undetermined restraint, but not child restraint system	Belt-positioning booster
111	WRH-95-FH-C20	1	4	45	45.0	Minor	66.00	11.90	None	Either type of booster okay, belt-positioning preferred
111	WRH-95-FH-C20	1	6	20	27.5	Severe	9.00	11.90	On lap, unbelted	Rear-facing convertible
112	NRH-95-FH-C09	1	16	26	34.0	Fatal	24.00	39.40	None	Forward-facing toddler or convertible
113	SRH-95-FH-C30	2	5	31	39.0	None	36.00	12.80	Forward-facing convertible seat	Forward-facing toddler or convertible
113	SRH-95-FH-C30	1	5	25	31.0	Minor	24.00	9.80	Lapbelt	Forward-facing toddler or convertible
113	SRH-95-FH-C30	2	6	43	44.0	Minor	47.00	12.80	None	Either type of booster okay, belt-positioning preferred
114	WRH-95-FH-C21	1	2	25	24.0	Minor	11.00	9.70	None	Rear-facing but too large for currently available infant-only seats
114	WRH-95-FH-C21	1	16	57	50.0	Fatal	89.00	9.70	None	Either type of booster okay, belt-positioning preferred
114	WRH-95-FH-C21	1	16	40	36.0	Moderate	72.00	9.70	None	Forward-facing toddler or convertible
115	CRH-94-FH-C15	1	4	35	35.0	Serious	49.00	25.80	Forward-facing convertible seat	Forward-facing toddler or convertible
115	CRH-94-FH-C15	1	5	35	35.0	Minor	49.00	25.80	Forward-facing convertible seat	Forward-facing toddler or convertible

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
116	SRH-95-FH-C28	1	6	40	42.0	Minor	46.00	49.20	Shield booster	Either type of booster okay, belt-positioning preferred
118	WRH-95-FH-C23	1	3	45	45.0	Minor	74.00	15.20	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
119	SRH-95-FH-C33	1	4	29	33.0	Serious	32.00	29.50	Forward-facing convertible seat	Forward-facing toddler or convertible
119	SRH-95-FH-C33	1	3	75	49.0	Moderate	93.00	29.50	Lapbelt	Lap/shoulder belt if available, otherwise lapbelt
119	SRH-95-FH-C33	1	6	77	50.0	Critical	94.00	29.50	Lapbelt	Lap/shoulder belt if available, otherwise lapbelt
121	NRH-95-FH-C11	1	3	11	24.0	Fatal	.75	23.30	Rear-facing	Rear-facing, either type
123	WRH-95-FH-C25	1	6	30	32.0	None	12.00	8.90	Forward-facing convertible seat	Forward-facing toddler or convertible
123	WRH-95-FH-C25	1	4	70	54.0	Minor	108.00	8.90	None	Lap/shoulder belt if available, otherwise lapbelt
123	WRH-95-FH-C25	1	7	45	40.0	Minor	60.00	8.90	None	Either type of booster okay, belt-positioning preferred
123	WRH-95-FH-C25	1	8	50	47.0	Minor	99.00	8.90	None	Either type of booster okay, belt-positioning preferred
124	WRH-95-FH-C26	1	3	55	48.0	Moderate	84.00	14.90	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
124	WRH-95-FH-C26	1	4	42	39.0	None	48.00	14.90	Lap/shoulder belt	Either type of booster okay, belt-positioning preferred
125	WRH-95-FH-C27	1	5	60	48.5	Minor	86.00	6.50	Lapbelt	Either type of booster okay, belt-positioning preferred
125	WRH-95-FH-C27	1	6	38	41.0	Minor	50.00	6.50	Lapbelt	Belt-positioning booster
127	WRH-95-FH-C28	1	3	42	40.0	Serious	42.00	42.50	On lap, unbelted	Either type of booster okay, belt-positioning preferred
129	WRH-94-FH-C16	1	4	38	41.0	Minor	59.00	54.50	None	Belt-positioning booster
129	WRH-94-FH-C16	1	6	28	34.0	Minor	39.00	54.50	None	Forward-facing toddler or convertible
129	WRH-94-FH-C16	1	5	30	34.0	Moderate	40.00	54.50	None	Forward-facing toddler or convertible

Case Summary Matrix

Case number	NTSB number	Vehicle	Seating position ^a	Weight (lbs)	Height (in)	AIS	Age (months)	Delta V	Restraint used ^b	Restraint recommended
130	SRH-95-FH-C38	1	4	31	37.0	Minor	34.00	25.10	Shield booster	Either type of booster okay, belt-positioning preferred
130	SRH-95-FH-C38	1	3	37	43.0	Minor	53.00	25.10	Lap/shoulder belt	Belt-positioning booster
136	WRH-95-FH-O29	1	3	20	24.0	Fatal	5.00	7.40	Rear-facing	Rear-facing convertible
136	WRH-95-FH-O29	1	6	31	38.0	None	36.00	7.40	Shield booster	Either type of booster okay, belt-positioning preferred
137	WRH-96-FH-001	1	3	55	41.4	Fatal	61.00	Under-carriage	Lapbelt	Either type of booster okay, belt-positioning preferred
138	WRH-96-FH-C02	1	3	20	24.0	Serious	6.00	4.60	Rear-facing	Rear-facing convertible
139	NRH-96-FH-C01	1	3	55	51.0	Fatal	86.00	9.30	Lapbelt	Either type of booster okay, belt-positioning preferred
139	NRH-96-FH-C01	1	4	65	57.0	None	108.00	9.30	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
139	NRH-96-FH-C01	1	5	80	61.0	None	120.00	9.30	Lap/shoulder belt	Lap/shoulder belt if available, otherwise lapbelt
140	NRH-96-FH-C02	1	3	35	41.0	Critical	38.00	9.90	Belt-positioning booster	Belt-positioning booster
142	NRH-96-F-HC04	1	3	50	49.0	Minor	84.00	8.90	None	Either type of booster okay, belt-positioning preferred

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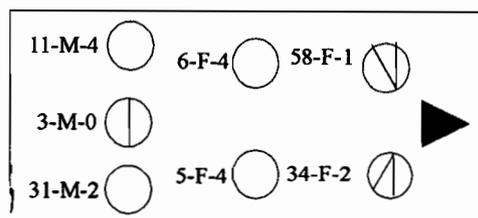
^a Seating position was numbered from left to right beginning with the front seat of the vehicle. The driver seat is seating position 1, the middle front passenger seat is seating position 2, the right front passenger seat is seating position 3. The numbering continues through the remaining rows.

^b Lapbelt indicates either the lap portion of the lap/shoulder belt or a lap-only belt.

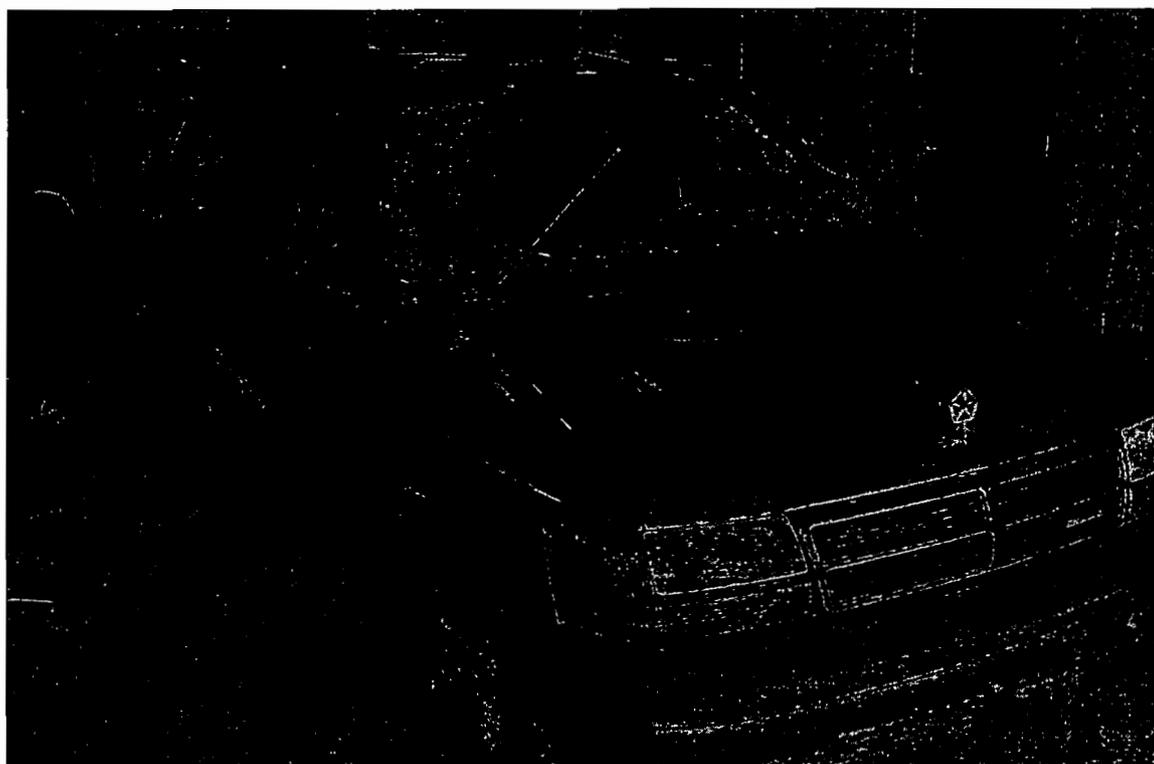
Case No. 1

Accident Number: NRH-94-FH-CO5
Date: April 5, 1994
Location: Carneys Point, New Jersey
Vehicle 1: 1994 Dodge Caravan
Delta V: NA

Collision Diagram



Rollover

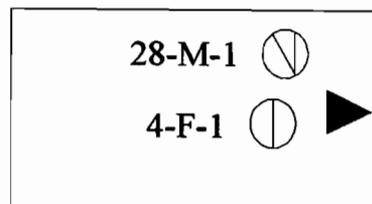


The Dodge Caravan drove off the right side of the roadway, re-entered the roadway, overturned onto its left side, rolled approximately 3 times and came to rest upright. During the overturn three child passengers were ejected. The driver was restrained by a lap/shoulder belt and sustained minor injuries. The right front seat passenger was also restrained by a lap/shoulder belt and sustained moderate injuries. An unrestrained adult passenger seated in the third row sustained moderate injuries. Two unrestrained child passengers seated in the second row and one unrestrained child seated in the third row were ejected; all of the ejected children sustained severe injuries. One child seated in the third row was restrained by a lapbelt, remained in the vehicle, and was not injured.

Occupant Location	Injuries	AIS	Probable Source
Row 2, left	Epidural hematoma	4	Pavement
	Frontal head abrasions	1	Pavement
Row 2, right	Small, left subdural hematoma	4	Pavement
	Post occipital fracture	2	Pavement
	Scalp avulsion	2	Pavement
	Elbow laceration	1	Pavement

Case No. 2

Accident Number: CRH-94-FH-CO7
Date: April 10, 1994
Location: Comfort, Texas
Vehicle: 1992 Ford Ranger
Delta V: NA

Collision Diagram

Rollover



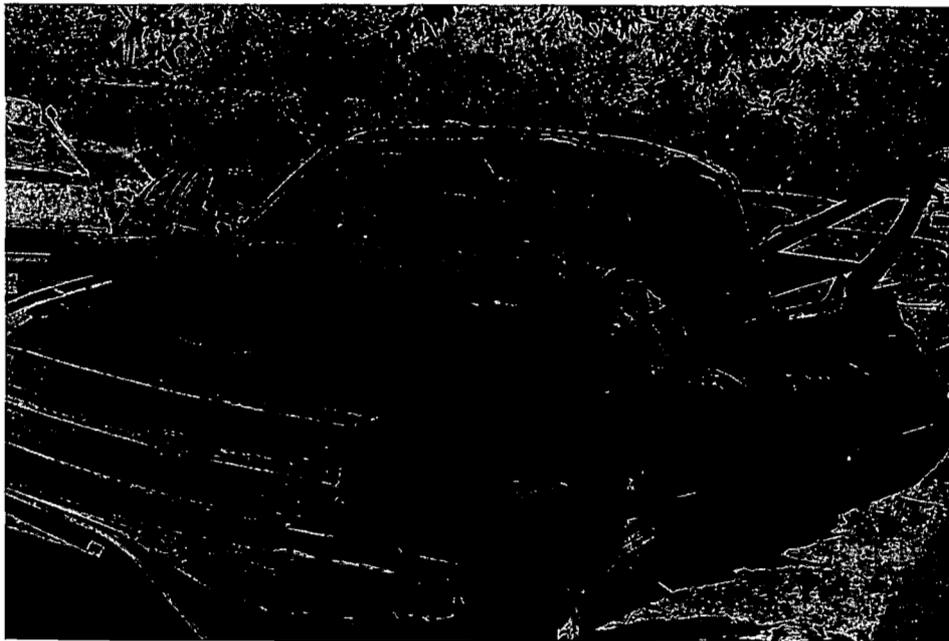
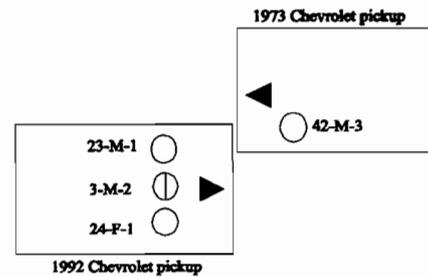
A Ford Ranger pick-up left the roadway and entered the center median. As the driver attempted to regain control, he overcorrected as he re-entered the roadway. The driver steered left, overcorrected again, and the vehicle rolled over several times before coming to rest in the outside median, facing northbound. The driver, restrained with a lap/shoulder belt, received minor injuries. The passenger, restrained with a loosely adjusted lap belt while sitting on the fold down armrest, was ejected through the rear window and received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Center front, on fold down armrest	Lacerations on head	1	Window
	Lacerations on ankles	1	Window and frame
	Abrasions, right arm	1	Window and frame
	Abrasions, right hip	1	Window and frame
	Bruises, right shoulder	1	Window and frame
	Bruises, left eye	1	Window and frame

Case No. 3

Accident Number: CRH-94-FH-CO8
Date: April 6, 1994
Location: Alvarado, Texas
Vehicle 1: 1992 Chevrolet pickup truck
Delta V: 18.6 mph
Vehicle 2: 1973 Chevrolet pickup truck
Delta V: 19.5 mph

Collision Diagram



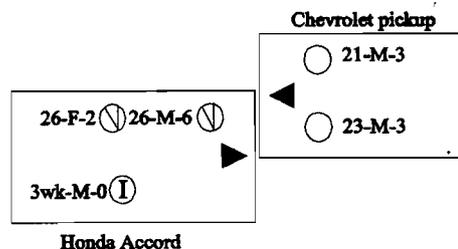
A 1973 Chevrolet pickup truck came out of a 10 degree curve on the wrong side of the road and collided head-on with the case vehicle, a 1992 Chevrolet pickup. At impact the units contacted each other left front to left front, with 12 inches of overlap. Neither adult in the case vehicle was restrained. A 3-year-old male was restrained by a lapbelt in the center front seating position. The adults received minor injuries and the child received moderate injuries. The unrestrained driver in the other pickup received serious injuries.

Occupant Location	Injuries	AIS	Probable Source
Center Front	Abdominal bruises	1	Lap belt
	Fractured clavicle	2	Gearshift selector
	Forehead abrasion	1	Instrument panel

Case No. 5

Accident Number: SRH-94-FH-CO7
Date: April 13, 1994
Location: Atlanta, Georgia
Vehicle 1: 1991 Honda Accord
Delta V: 49.8 mph
Vehicle 2: 1990 Chevrolet pickup truck
Delta V: 32.8 mph
Vehicle 3: 1985 Chevrolet Citation
Delta V: NA

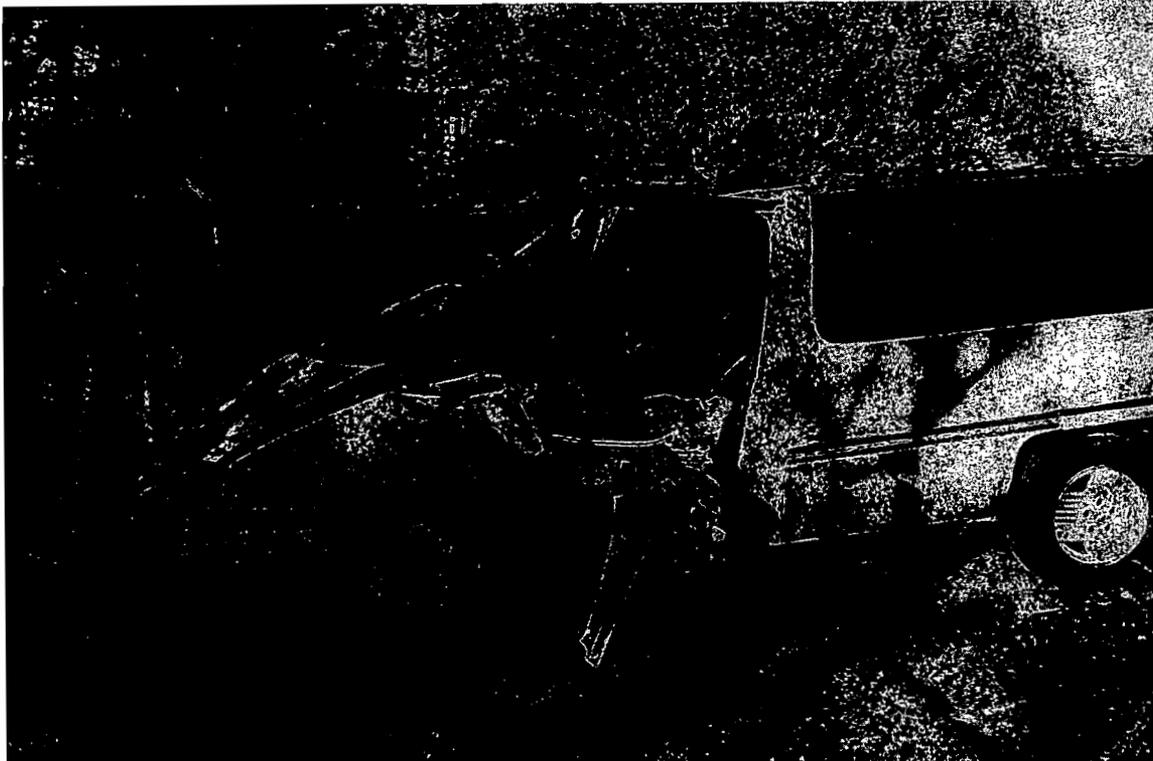
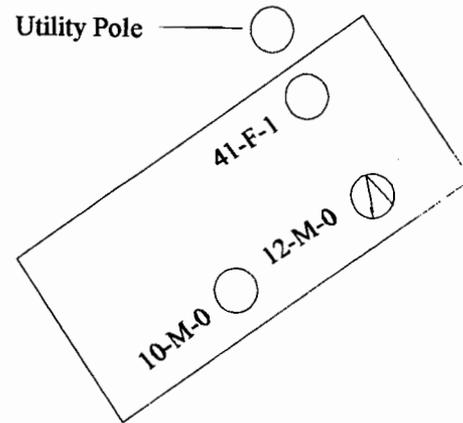
Collision Diagram



A 1991 Honda Accord was struck head-on by a 1990 Chevrolet pickup truck that crossed the center-line of a 4-lane roadway. After impact, the pickup crossed back to the right side of the roadway and was struck by a 1985 Chevrolet Citation. The restrained driver of the Honda received fatal injuries and the restrained left rear passenger received moderate injuries. A 3-week-old infant, seated in a Rock n' Ride infant seat at the right rear position, was found on the floorboard under the driver's legs at final rest. He was not injured. The two unrestrained occupants of the pickup were seriously injured. The driver of the Chevrolet was not injured.

Case No. 6

Accident Number: SRH-94-FH-CO8
Date: April 12, 1994
Location: Marietta, Georgia
Vehicle 1: 1991 Pontiac Transport
van
Delta V: 15.4 mph

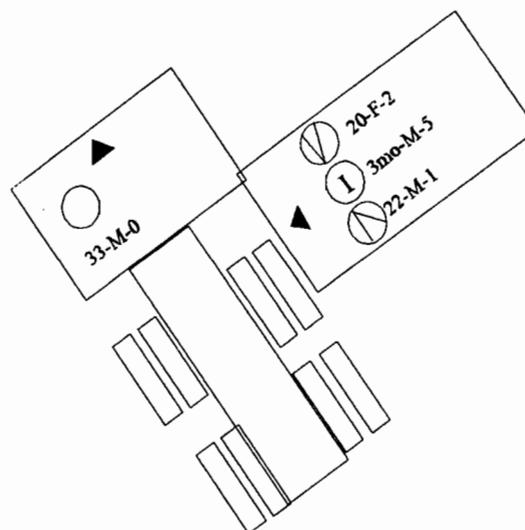
Collision Diagram

A 1991 Pontiac Transport van ran off a wet roadway, traveled a short distance down an embankment, and struck a utility pole. The driver of the Pontiac lost control of the vehicle as she applied the brakes before entering a left curve. The unrestrained driver received minor injuries. Two passengers, a 12-year-old who was seated in the right front and who was restrained by a lap/shoulder belt and a 10-year-old seated who was seated in the right rear and who was unrestrained, were not injured.

Case No. 7

Accident Number: CRH-94-FH-C10
Date: April 15, 1994
Location: El Campo, Texas
Vehicle 1: 1978 Buick LeSabre
Delta V: 25.3 mph
Vehicle 2: 1985 International truck tractor
Delta V: 2 mph

Collision Diagram



The truck tractor combination unit was traveling southbound in a heavy rain storm when it jackknifed across the median and collided with the northbound case vehicle. The combination unit was nearly stopped at impact. The front of the Buick contacted the right side of the truck tractor. Both outboard front occupants were restrained by their lap/shoulder belts. The driver received minor injuries and the passenger received moderate injuries. The infant passenger was seated in the front center in a rear facing Evenflo Joyride infant seat. The child restraint system was secured with the lapbelt. The infant's child restraint harness was loosely secured and the harness clip was positioned at navel level instead of armpit level as called for in the manufacturer's instructions. The infant received a fractured skull and died the following day.

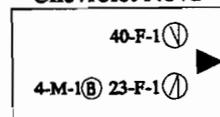
Occupant Location	Injuries	AIS	Probable Source
Center Front	Abrasions lower right jaw	1	Not Determined
	Abrasions right arm	1	Not Determined
	Occipital skull fracture with brain hemorrhage and infarction	4	Instrument panel
	Loss of consciousness with neurological deficit 6-24 hours	5	Instrument panel

Case No. 8

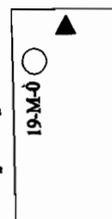
Accident Number: SRH-94-FH-CO9
Date: April 14, 1994
Location: Smyrna, Georgia
Vehicle 1: 1988 Chevrolet Nova
Delta V: 9.3 mph
Vehicle 2: 1972 Chevrolet pickup truck
Delta V: 4.3 mph

Collision Diagram

Chevrolet Nova



Chevrolet pickup



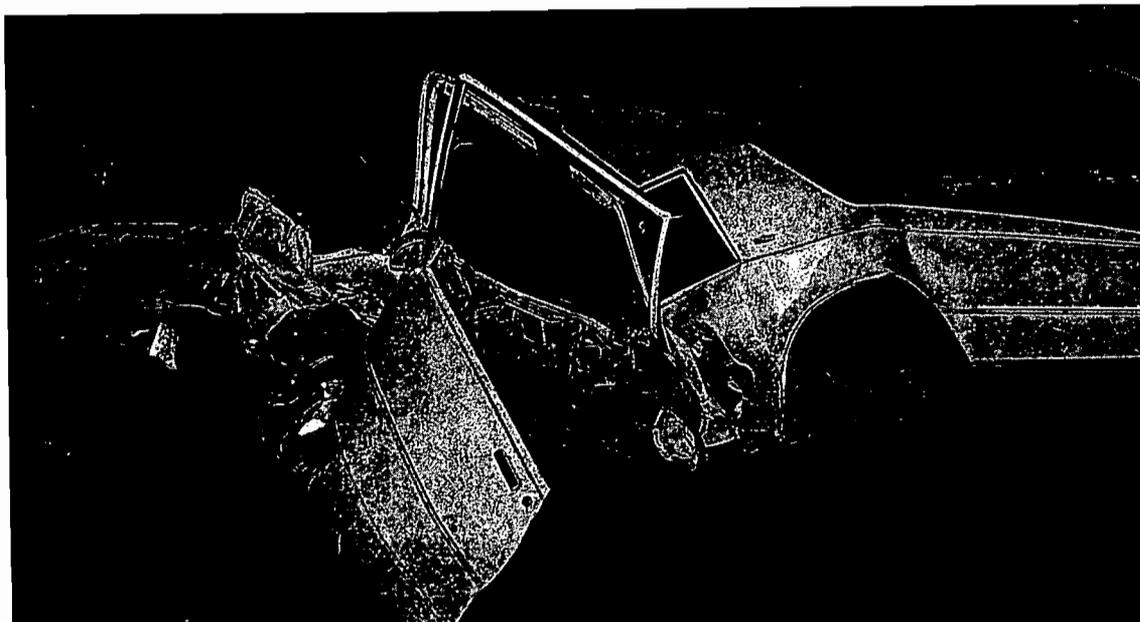
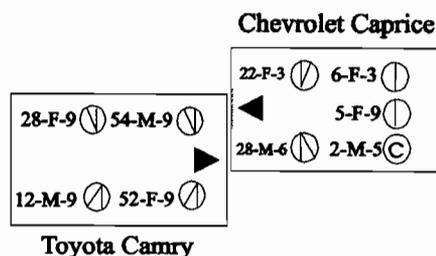
A Chevrolet Nova had stopped for an automatic traffic signal. When the Nova entered the intersection, it was struck in the right front by a Chevrolet pickup. At impact the Nova rotated counter clockwise about 180 degrees. During the rotation, there was a minor secondary impact. A 4-year-old child, who was seated in an Evenflo booster seat that was restrained in the right rear seat position by a lapbelt, suffered a minor bruise to the forehead. The two lap/shoulder belt restrained occupants of the Nova sustained minor injuries. The unrestrained pickup driver was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Rear	Contusion center Forehead	1	Right Rear door Window sill

Case No. 9

Accident Number: NRH-94-FH-CO6
Date: April 16, 1994
Location: Shandaken, New York
Vehicle 1: 1987 Chevrolet Caprice
Delta V: 53 mph
Vehicle 2: 1989 Toyota Camry
Delta V: 61 mph

Collision Diagram



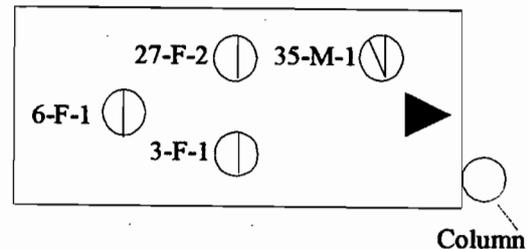
The Chevrolet was westbound when an eastbound 1989 Toyota crossed the center line and crashed head-on into the Chevrolet. The driver of the Chevrolet was restrained by a lap/shoulder belt and was killed. A female passenger was also restrained by a lap/shoulder belt and sustained serious injuries. A 2-year-old male seated in the left rear was restrained by a Gerry Guardian, convertible, forward-facing, child restraint system (CRS). The shoulder straps of the CRS were improperly routed through the metal adjuster allowing the left shoulder strap to pull free during the accident. The 2-year-old was partially ejected from the CRS and died several days later in the hospital. The 5-year-old female seated in the middle was restrained by a lapbelt and was also killed. The 6-year-old female, seated in the right rear seat, was also restrained by a lapbelt and sustained serious injuries. All four occupants of the Toyota were killed.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left Rear	Severe cerebral edema	5	Collapsed left "B" pillar
	Fracture left femur	3	Collapsed left side wall
	Fracture right clavicle	2	Right shoulder strap of CRD
	Fracture left tibia, fibula	2	Collapsed left firewall
	Fracture right radius	2	Unknown
	Abrasion, contusion left forehead		Collapsed left "B" pillar
Middle Rear	Child sustained fatal injuries. No medical examination or autopsy performed.	9	Unknown
Right Rear	Brain swelling	3	Back of front seat
	Fracture left tibia	2	Unknown
	Laceration left forehead	1	Back of front seat
	Abrasions abdomen	1	Lap belt
	Contusions pelvic area	1	Lap belt

Case No. 10

Accident Number: CRH-94-FH-C11
Date: April 17, 1994
Location: Arlington, Texas
Vehicle 1: 1989 Dodge Caravan
Delta V: 25 mph

Collision Diagram



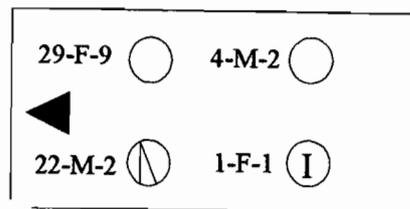
A Dodge Caravan collided head-on with a concrete bridge column. The driver, restrained with a lap/shoulder belt, received minor injuries when he struck the A-pillar, steering wheel, and knee bolster. The 27-year-old female, restrained with a lapbelt, received moderate injuries when her head struck a side window and her feet slid under the driver's seat. The 3-year-old female passenger, also restrained by a lapbelt, received minor injuries when her face struck her knees. The 6-year-old female passenger, improperly restrained by a lap belt, received minor injuries. She was lying down on the seat with the lapbelt worn loosely around her waist. She was injured when she was thrown forward into the seat in front of her and then back onto her seat, sustaining multiple lacerations and contusions on her head and face from contact with an arm rest on the driver side of the vehicle.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right side of center bench seat	Abrasions, chin	1	Knees
	Broken tooth, top jaw	1	Knees
Center of rear bench seat	Abrasions, abdomen	1	Lap belt
	Abrasions, right forearm	1	Back of center seat
	Abrasions, right leg	1	Back of center seat
	Lacerations, face	1	Armrest driver side
	Lacerations, scalp	1	Armrest driver side
	Lacerations, right leg	1	Back of center seat.

Case No. 12

Accident Number: CRH-94-FH-C13
Date: April 20, 1994
Location: Barstow, Texas
Vehicle: 1994 Ford Mustang
Delta V: NA

Collision Diagram



Rollover



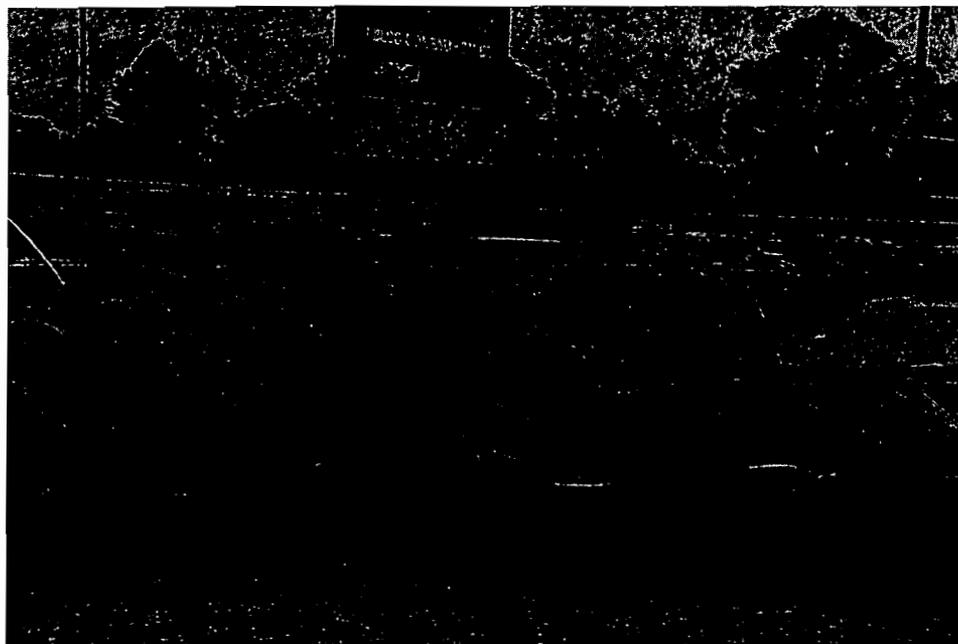
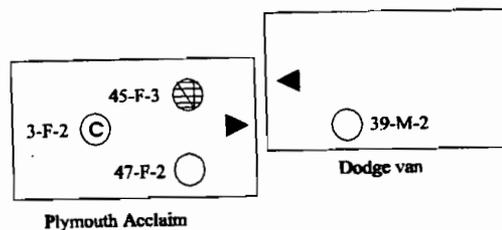
A Ford Mustang was traveling westbound on a 65 mph interstate roadway when the fatigued driver lost control of the vehicle and skidded into the highway median. The vehicle overturned while sliding sideways, crossed over the two eastbound lanes of travel, and came to rest along the south side of the roadway. The driver was restrained with the lap/shoulder belt, and remained in the vehicle. A 1-year-old female, seated behind the driver in a forward facing infant seat, remained in the child restraint system. The unrestrained adult occupying the right front bucket seat was ejected. An unrestrained 4-year-old male passenger was ejected from the right rear seat, and came to rest on the pavement of the roadway.

Occupant Location	Injuries	AIS	Probable Source
Left Rear	facial bruises	1	Rear of driver's seat
Right Rear	two broken legs	2	Ejection/ground contact

Case No. 13

Accident Number: CRH-94-FH-C14
Date: April 17, 1994
Location: Conway, Arkansas
Vehicle 1: 1992 Plymouth Acclaim
Delta V: 31.5 mph
Vehicle 2: 1982 Dodge van
Delta V: 30 mph

Collision Diagram



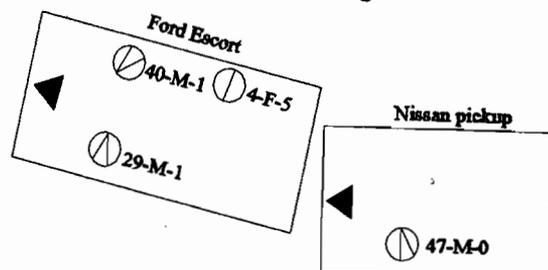
A Plymouth Acclaim collided head-on with a Dodge van. The Plymouth driver was restrained with a lap/shoulder belt and protected by an air bag that deployed at impact. She received serious injuries. The right front occupant was not restrained and received moderate injuries. The 3-year-old child was seated in a forward facing Fisher-Price convertible car seat, secured by a lapbelt in the center rear seat. She received moderate injuries. The impact forces disabled the automatic locking retractor on the child seat.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Center rear	Fractured left clavicle	2	Child Restraint System

Case No. 14

Accident Number: SRH-94-FH-C10
Date: April 27, 1994
Location: Marietta, Georgia
Vehicle 1: 1984 Ford Escort
Delta V: 14.8 mph
Vehicle 2: 1985 Nissan pickup truck
Delta V: 10.5 mph

Collision Diagram



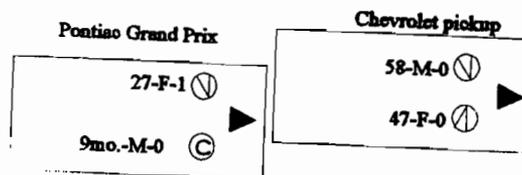
A Ford Escort was traveling eastbound, and was negotiating a left curve on a four lane undivided section of the highway, when the car crossed the center line into the left most westbound lane. The driver corrected the vehicle back to the right and when he was midway in the eastbound lanes the Escort was struck in the rear by an eastbound Nissan pickup. The lapbelt restrained 4-year-old child seated in the right rear seat sustained critical injuries and died 9 days after the accident. The driver and other adult passenger in the Escort sustained minor injuries. The driver and only occupant of the Nissan pickup was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Rear	Craniocervical dislocation	5	Right rear door window sill

Case No. 15

Accident Number: WRH-94-FH-CO4
Date: April 25, 1994
Location: Bellflower, California
Vehicle 1: 1983 Pontiac Grand Prix
Delta V: Delta V: 9.0 mph
Vehicle 2: 1992 Chevrolet pickup truck
Delta V: Delta V: 7.5 mph

Collision Diagram

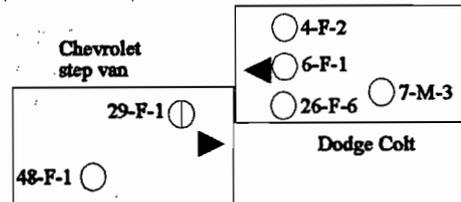


A Pontiac Grand Prix struck the rear end of the stopped Chevrolet pickup truck. The driver of the Pontiac was restrained by a lap/shoulder belt. A 9-month-old male, restrained in a Kolcraft Quikstep child restraint system, was in the right front seating position. The child seat was secured on the vehicle seat by a lap/shoulder belt. The only injury sustained by the driver of the Pontiac was an abrasion to the left side of her neck, caused by the rubbing of the seat belt. The child was not injured. The occupants of the Chevrolet were wearing their lap/shoulder belts. They were not injured.

Case No. 16

Accident Number: WRH-94-FH-CO5
Date: April 25, 1994
Location: South El Monte, CA
Vehicle 1: 1988 Dodge Colt
Delta V: 41.8 mph
Vehicle 2: 1984 Chevrolet step van
Delta V: 9.7 mph

Collision Diagram



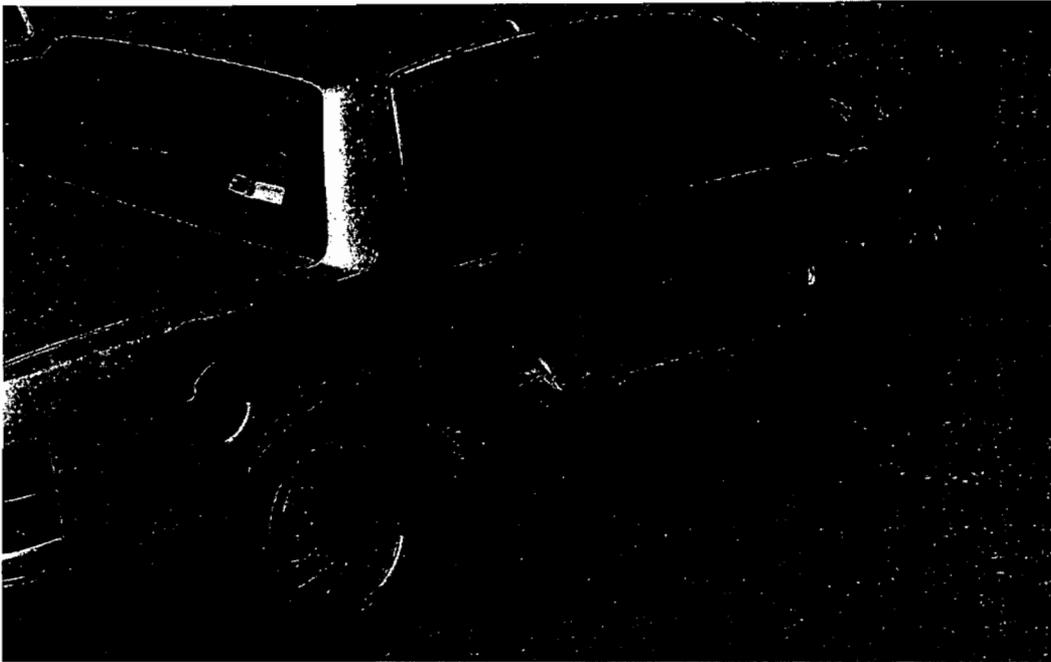
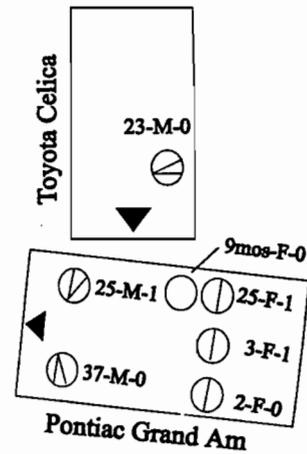
A Dodge Colt, crossed into the opposite lane of traffic and struck the front of a Chevrolet step van. Although both front bucket seats and both rear outboard positions of the Dodge Colt were equipped with lap/shoulder belts, none of the four occupants were restrained. The 26-year-old female driver died of multiple traumatic injuries. The right front bucket seat was being shared by two female children, ages 4 and 6. The 6-year-old received minor facial lacerations and the 4-year-old had moderate lacerations. A 7-year-old boy, believed to be laying down in the back seat, sustained a cervical spine fracture and a cerebral contusion. The lapbelted driver of the step van sustained minor injuries. The unrestrained passenger in the step van, seated on a "stool type" seat several feet behind the driver, sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right Front (near driver)	Facial laceration below lip	1	Dash
Right Front (near door)	Deep laceration over left eye	2	Windshield
	Facial abrasions		Dash and Windshield
Rear seat (laying down)	Cervical Spine Fracture (C-2)	2	Unknown
	Cerebral Contusion	3	Unknown
	Abrasions on right shoulder		Unknown
	and knee		

Case No. 17

Accident Number: WRH-94-FH-CO6
Date: April 30, 1994
Location: Santa Clarita, California
Vehicle 1: 1986 Pontiac Grand Am
Delta V: 11.9 mph
Vehicle 2: 1981 Toyota Celica
Delta V: 12.9 mph

Collision Diagram



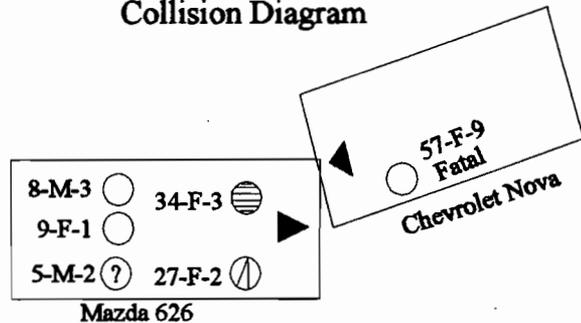
A Pontiac was struck on its right side by a Toyota as the Pontiac was making a left turn at an intersection. The driver of the Pontiac and the right front passenger were wearing their lap/shoulder belts. The right rear and left rear passengers were wearing their lapbelts. The 3-year-old female in the center rear seating position was wearing a lapbelt. The passenger in the right rear seating position was holding a 9-month-old female in her arms. The driver of the Pontiac sustained no injuries. The right front passenger sustained a laceration to his right hand, laceration to his right elbow and complaint of pain to his back. The left rear passenger did not sustain any injury. The center rear passenger sustained a bite on her tongue and complained of pain to her ear and neck. The right rear passenger sustained a laceration on her right eye lid, a contusion to her left ear, and right side of her shoulder. The child held in the passenger's arms did not sustain an injury. The driver of the Toyota did not sustain an injury.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center rear	Bit tongue	1	Bit tongue when hit in head by right rear passenger's head

Case No. 18

Accident Number: WRH-94-FH-CO7
Date: August 15, 1994
Location: Northridge, California
Vehicle 1: 1993 Mazda 626
Delta V: 41.2 mph
Vehicle 2: 1973 Chevrolet Nova
Delta V: 38.9 mph

Collision Diagram

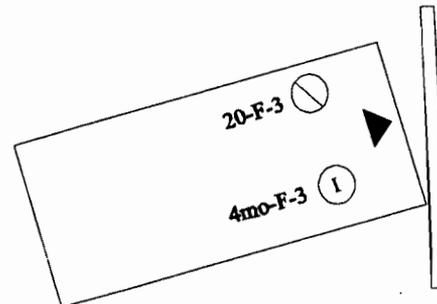


A Mazda 626 was struck head-on by a 1973 Chevrolet Nova. The 34-year-old female driver of the Mazda was unrestrained, but received protection from an airbag that deployed upon impact. A 27-year-old female right front passenger was restrained by a lap/shoulder belt. An 8-year-old male seated in the left rear and a 9-year-old female seated in the rear center position were unrestrained. It could not be determined if the 5-year-old male seated in the right rear was restrained. Both rear outboard positions were equipped with lap/shoulder belts and the rear center position was equipped with a lapbelt. All five occupants of the Mazda were transported to local hospitals. The driver sustained serious injuries, which included a comminuted fracture of the left femur and the fracture of both ankles. The right front adult passenger sustained a fractured right clavicle and multiple bruises and abrasions on various parts of the body. The male child riding in the left rear sustained serious injuries. The female child riding in the rear center position sustained minor injury. The male child riding in the right rear position suffered a broken right clavicle. The unrestrained driver of the Chevrolet died of multiple traumatic injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear seat	Contusion of left lung	3	Back of driver seat and/or B-pillar
	Brain Concussion (NFS)	2	Back of driver seat and/or B-pillar
	Right Mandibular Fracture	2	Back of driver seat and/or B-pillar
Center rear seat	Multiple abrasions and contusions on various parts of the body.	1	Back of front seats and/or console area
Right rear seat	Fractured right clavicle	2	Unknown

Case No. 19

Accident Number: SRH-94-FH-C12
Date: May 4, 1994
Location: Tarrant City, Alabama
Vehicle 1: 1990 Geo Prism
Delta V: 46.4 mph

Collision Diagram

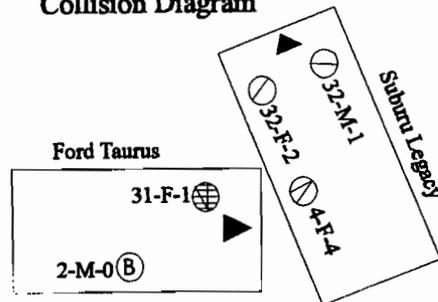
A Geo Prism struck a rock head-wall after it ran off the right side of the 4-lane roadway. The driver of the Prism lost control of the vehicle when she attempted to avoid a collision with a Pontiac that entered the roadway ahead of her. The Prism struck the right rear corner of the Pontiac, continued movement forward and to the right, crossed the shoulder, and collided head-on into the rock wall. The driver of the Prism, restrained with only a motorized shoulder belt, received serious injuries that were later fatal. A 4-month-old female, seated in an infant seat in the right front passenger seat, sustained serious injuries that were also fatal.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Skull Fracture (basilar) (Occipital bone)	3	Lower Dashboard

Case No. 20

Accident Number: SRH-94-FH-C11
Date: May 5, 1994
Location: Nashville, Tennessee
Vehicle 1: 1991 Ford Taurus
Delta V: 18.8 mph
Vehicle 2: 1991 Subaru Legacy
Delta V: 19.6 mph

Collision Diagram

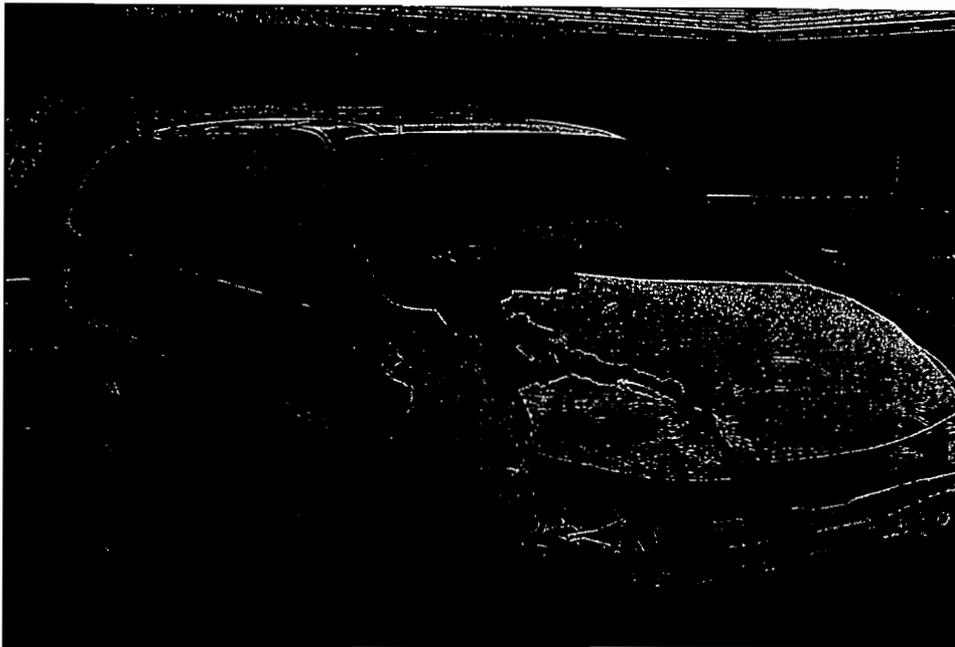
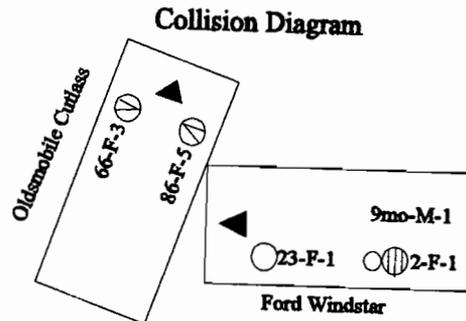


A Ford Taurus was struck by a Subaru Legacy that crossed the center-line of a 2-lane roadway. The driver of the Subaru had lost control of the vehicle after dropping off the edge of the pavement on the right side. The restrained driver of the Ford sustained minor injuries and a 2-year-old male, seated in a Gerry booster seat at the right rear position, was not injured. The driver of the Subaru, restrained with only a motorized shoulder belt, was partially ejected. She sustained moderate injuries. The right front passenger, also restrained with only a motorized shoulder belt, sustained minor injuries. A 4-year-old female, restrained with a lap/shoulder belt, was seated in the impact area in the left rear seat. She received fatal injuries in the accident.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 2 Left rear	Fractured Skull (Vault) complex	4	Interior side
	Fractured Alveolar ridge	2	Interior side

Case No. 21

Accident Number: CRH-94-FH-C16
Date: May 6, 1994
Location: Arlington, Texas
Vehicle 1: 1995 Ford Windstar
 Minivan
Delta V: 22.1 mph
Vehicle 2: 1983 Oldsmobile Cutlass
Delta V: 25.3 mph



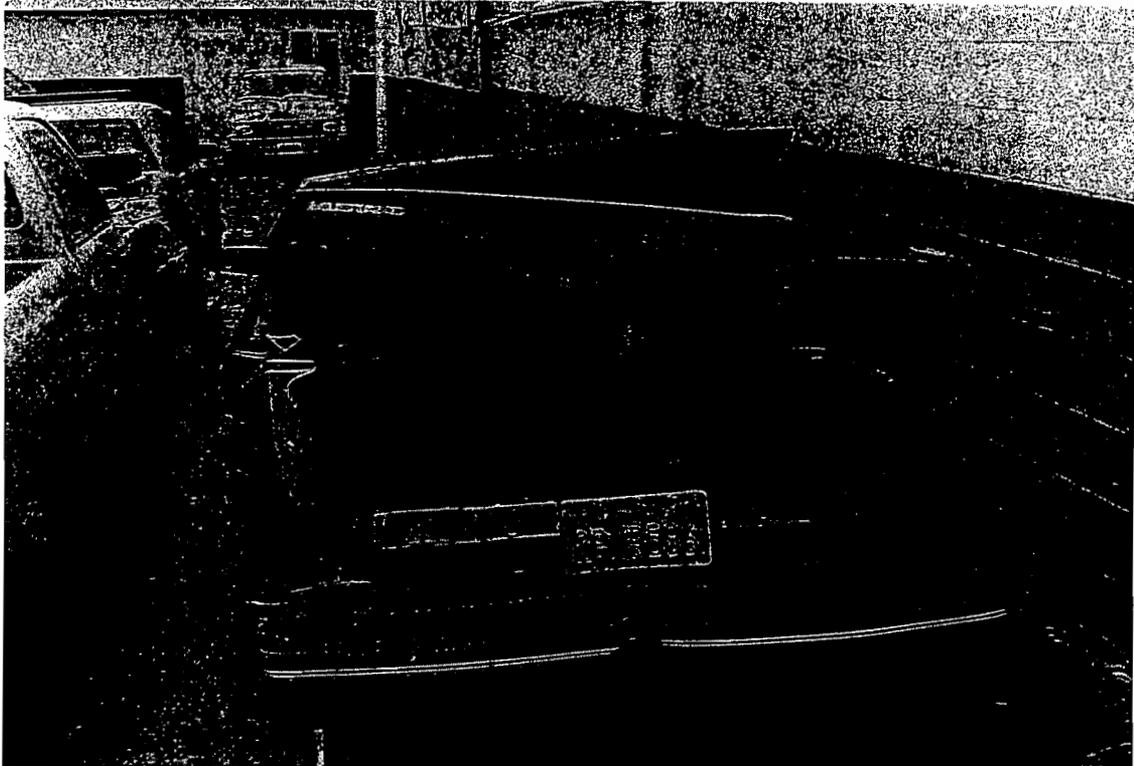
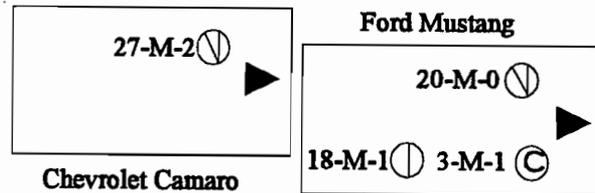
The 1995 Ford Windstar minivan collided head-on into the right side of a Oldsmobile Cutlass. The Ford's dual airbags deployed, and the unrestrained driver received minor injuries. Two unrestrained children in the rear of the minivan also received minor injuries. A 2-year-old female was unrestrained in the left rear seat behind the driver and a 9-month-old male was laying unrestrained in the floorboard behind the driver. There was an empty rear-facing Evenflo Joyride infant seat positioned in the right front seat in front of the passenger side airbag. When the airbag deployed it fractured the seat's carrying handle and shell. The driver of the Oldsmobile received serious injuries and the right front passenger was killed.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left Rear	Contusion on Head Contusion on Chest Contusion on Forearm	1 1 1	Driver's Seatback Driver's Seatback Rear Armrest
Left Rear Floorboard	Contusion on Left side of Head	1	Driver's Seatback

Case No. 22

Accident Number: WRH-94-FH-CO8
Date: May 8, 1994
Location: La Mirada, California
Vehicle 1: 1984 Ford Mustang
Delta V: 20 mph
Vehicle 2: 1986 Chevrolet Camaro
Delta V: 21.5 mph

Collision Diagram



A Ford Mustang was stopped and was struck in the rear by a 1986 Chevrolet Camaro. The driver of the Ford was wearing his lap/shoulder belt, and the male passenger in the right rear seat was wearing his lapbelt (only belt available). The 3-year-old male child was restrained in a Fisher-Price convertible child seat in the right front. The child seat was secured to the vehicle's seat by a lap/shoulder belt. The child seat was forward facing. The driver of the Ford complained of pain to his back, neck and left arm. The right rear passenger sustained a contusion to his forehead. The child sustained a laceration to his forehead. The driver of the Camaro was wearing his lap/shoulder seat belt. He sustained a broken right foot and a laceration to his nose.

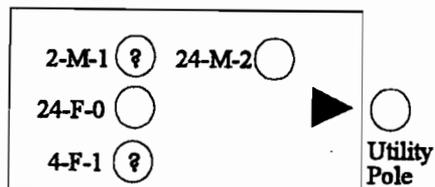
Occupant Location	Injuries	AIS	Probable Source
Right front	Laceration on forehead	1	Rear view mirror

Case No. 23

Accident Number: NRH-94-FH-CO7
Date: May 14, 1994
Location: Upper Salford Twp., PA
Vehicle 1: 1983 Pontiac Grand Prix
Delta V: 13 mph

Collision Diagram

Pontiac Grand Prix

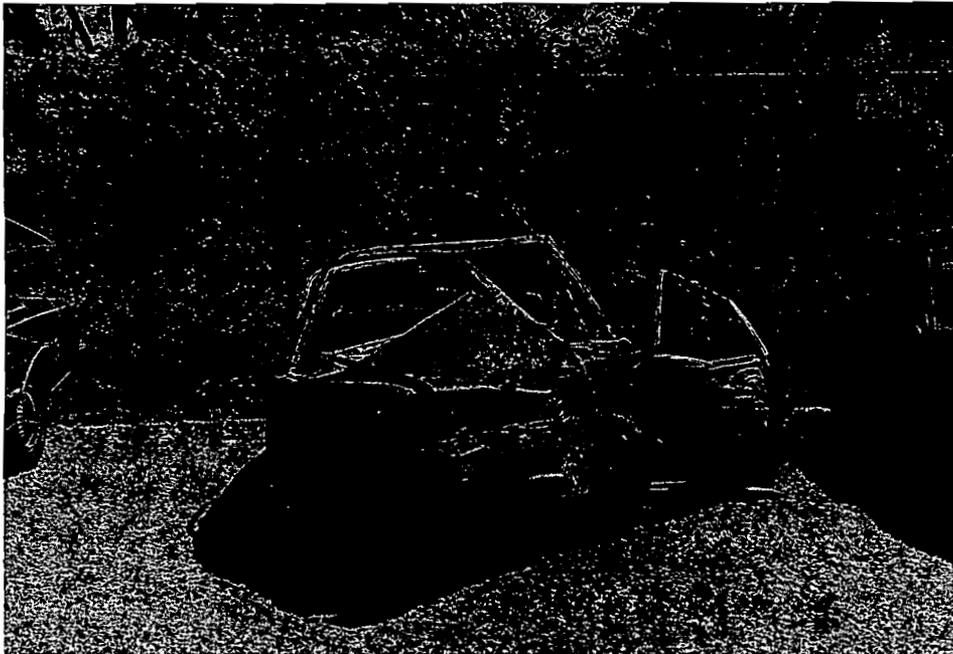
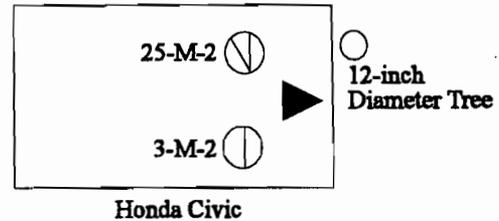


The Pontiac ran off the right side of the road, then struck and knocked down a wooden utility pole. The driver was unrestrained and sustained moderate injuries. The rear seat was occupied by an adult and 2 child passengers, ages 4 and 2. An adult female was seated in the middle and the children were seated on either side. The adult was unrestrained and it was undetermined whether or not the two children were restrained. The 2-year-old child and 4-year-old child both sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Left rear	Contusions, abrasions of the right orbital	1	Back of front seat or child's knees
Right rear	Abrasions in pelvic area	1	Unknown

Case No. 24

Accident Number: CRH-94-FH-C17
Date: May 15, 1994
Location: Arlington, Texas
Vehicle 1: 1979 Honda Civic
Delta V: 34 mph

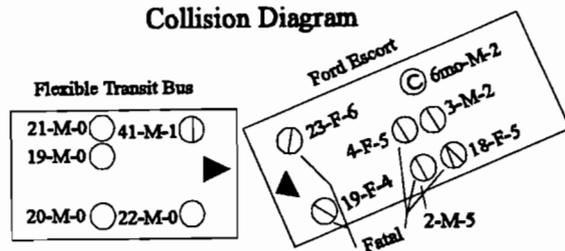
Collision Diagram

A Honda Civic collided head-on with a 12-inch diameter tree. The driver, restrained with a lap/shoulder belt, received moderate injuries when he struck the steering wheel and knee bolster. The 3-year-old male passenger, restrained with an improperly worn lap/shoulder belt, received moderate injuries. He had taken the shoulder strap and placed it behind his back. The only portion of the seat belt being utilized was the lap belt. He was injured when he struck his head on the instrument panel.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Lacerations on face	1	Dashboard
	Fractures to nasal cavities	2	Dashboard
	Contusions to abdomen	1	Lap belt
	Concussion LOC < one hour	2	Dashboard

Case No. 25

Accident Number: WRH-94-FH-CO9
Date: May 25, 1994
Location: Camp Pendleton, CA
Vehicle 1: 1993 Ford Escort
Delta V: 48.4 mph
Vehicle 2: 1981 Flexible transit bus
Delta V: 5.9 mph



A Ford Escort was descending a grade and rounding a right curve on wet pavement. The operator of the Ford lost control of the vehicle, went into the opposite lane of traffic, and struck the transit bus head-on. The 19-year-old female driver and the 23-year-old female right front passenger in the Ford were both wearing automatic shoulder belts, but without the lapbelt. The 18-year-old female left rear passenger was wearing a lap/shoulder belt. She had a two-year-old male seated on her lap and was sharing the lap portion of the belt with him. A 3-year-old male and 4-year-old female were sharing the center lap belt, with the female setting in front of the male. The right rear position was occupied by a 6-month-old male who was restrained in a forward facing child safety seat. The driver, right front passenger, both left rear passengers, and the 4-year-old female in the rear center position all received fatal injuries. The 3-year-old male in the rear center position and the 6-month-old male sustained moderate injuries. The bus driver, who was wearing a lap belt, sustained minor injuries. None of the four unrestrained bus passengers were injured. During the collision, the webbing for the left rear lap/shoulder belt completely separated due to dynamic overload. Also during the impact, the webbing for the center lapbelt pulled out and completely separated from the cinching latch plate.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear (2 year old male)	Transection of Abdominal Aorta	5	Lap Belt
	Vascular Avulsion (left kidney)	5	Lap Belt
	Vascular Avulsion (right kidney)	5	Lap Belt
	Transection of Spinal Cord and vertebral column (at L-1)	5	Lap Belt
	Transection of Inferior Vena Cava	4	Lap Belt
	Transection of Cauda Equina	4	Lap Belt
	Avulsion of right Renal Artery	4	Lap Belt
	Avulsion of left Renal Artery	4	Lap Belt
	Avulsion of right Renal Vein	4	Lap Belt
	Avulsion of left Renal Vein	4	Lap Belt
	Large laceration of Mesentery	4	Lap Belt
	Transection of right Ureter	3	Lap Belt
	Transection of left Ureter	3	Lap Belt
	Large tears of Peritoneum	2	Lap Belt
	Severe contusions and abrasion across abdomen	1	Lap Belt
	Bilateral Lung contusions	4	Back of driver seat, and or lap belt compression
	Fractures of 11th and 12th ribs with Hemothorax	3	Back of driver seat and/or lap belt compression
Laceration of left Diaphragm	3	Back of driver seat and or lap belt compression	
Laceration of right Diaphragm	3	Back of driver seat and/or lap belt compression	

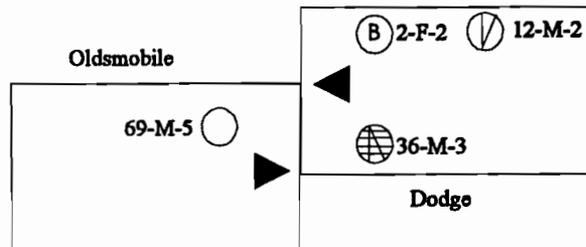
Occupant Location	Injuries	AIS	Probable Source
Center rear (3 year old male)	Transverse displaced fracture of right Femur	3	Back of driver seat
	Transverse displaced fracture of left Femur	3	Back of driver seat
	Displaced midshaft fracture of right Humerus	3	Back of driver seat
	Subarachnoid Hemorrhage	3	Back of driver seat
	Deep laceration on left front of scalp	2	Unknown
	Numerous documented contusions and abrasions about the about the head, torso and extremities	1	Multiple sources
	Cerebral concussion	2	Struck other passenger and/or back of right front passenger seat
	Facial abrasions	1	Struck other passenger and/or back of right front passenger seat
	Scalp laceration	1	front passenger seat
	Foot laceration	1	Struck other passenger or console area
Center rear (4 year old female)	Lap Belt abrasions on both sides of abdomen	1	Lap Belt
	Transection of spinal cord and thoracic vertebral column (at T- 11	5	Lap Belt
	Transection of Duodenum	5	Lap Belt
	Transection of right Renal artery	4	Lap Belt
	Transection of right Renal vein	4	Lap Belt
	Deep laceration of Liver	4	Lap Belt
	Large laceration of Mesentary	3	Lap Belt
	Lacerated Colon	2	Lap Belt
	Small laceration of Jejunum Ileum	2	Lap Belt
	Fractures of 10th, 11th, and 12th ribs with Hemothorax	3	Lap Belt (riding upward)

Occupant Location	Injuries	AIS	Probable Source
Right rear (infant in car seat)	Bilateral lung contusions	4	Lap Belt (riding upward)
	Lap belt contusions with lacerations of subcutaneous fat	2	Lap Belt
	Subarachnoid Hemorrhage	3	Back of right front passenger seat or console
	Large contusion on front of skull	1	Console
	Swelling of the Brain	3	Back of right front passenger seat or console
	Numerous abrasions and contusions on head, torso, and extremities	1	Multiple sources
	Mid fracture of right Clavicle	2	Car seat shoulder harness
	Abrasions on both shoulders and across the chest	1	Car seat shoulder harness
	Contusion on right Abdomen	1	Car Seat
	Small abrasion to upper forehead	1	Unknown

Case No. 26

Accident Number: CRH-94-FH-C18
Date: May 27, 1994
Location: Longview, Texas
Vehicle 1: 1993 Dodge Dynasty
Delta V: Delta V: 44.6 mph
Vehicle 2: 1983 Oldsmobile 98
Delta V: Delta V: 41 mph

Collision Diagram

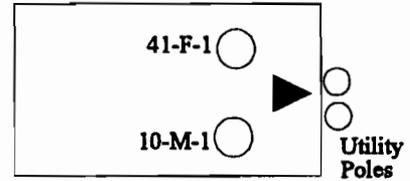
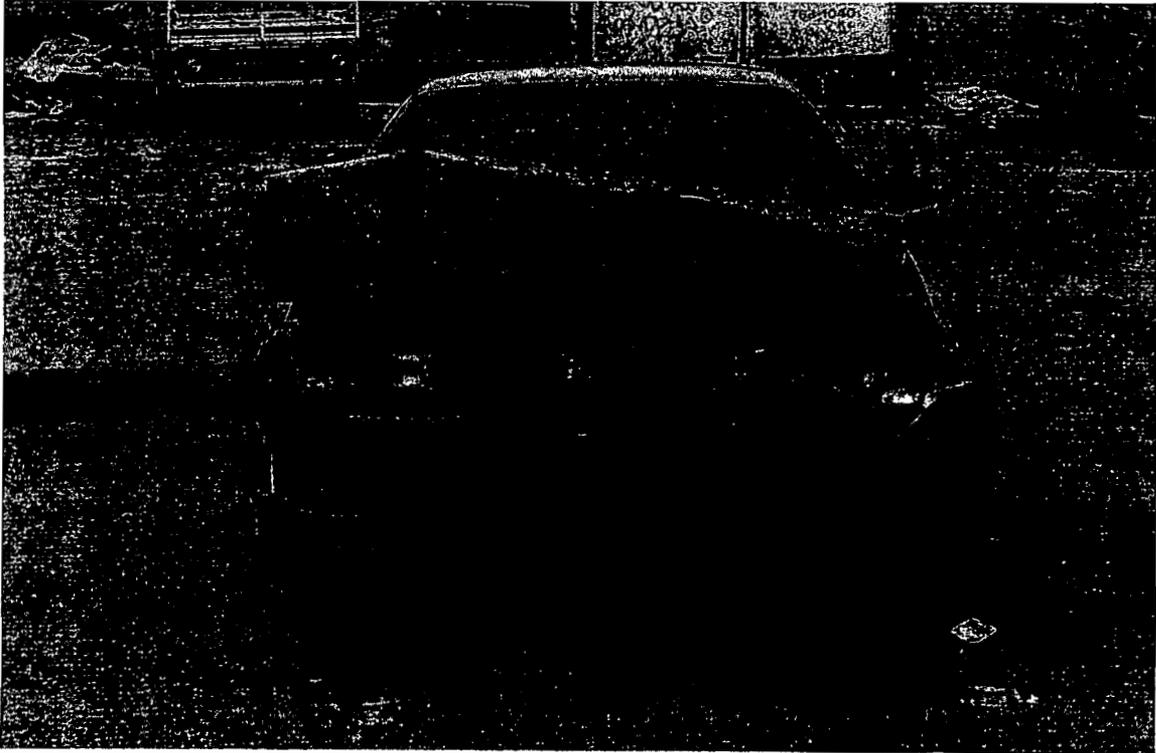


A Dodge Dynasty collided head-on with an Oldsmobile 98 on a curve near a hillcrest. The Dodge's air bag deployed and the lap/shoulder belt restrained driver received serious injuries. The 2-year-old female in the right front was restrained in a Fisher Price booster seat; she received moderate injuries. The lap/shoulder belt restrained 12-year-old male in the right rear also received moderate injuries. The unrestrained Oldsmobile driver received critical injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	12 cm. Scalp Laceration	2	Displaced Rearview Mirror
	Minor Arm and Abdomen Contusion	1	CRD Shield

Case No. 27

Accident Number: SRH-94-FH-C14
Date: May 26, 1994
Location: Austell, Georgia
Vehicle 1: 1989 Chevrolet Camaro
Delta V: 15.6 mph

Collision Diagram**Chevrolet Camaro**

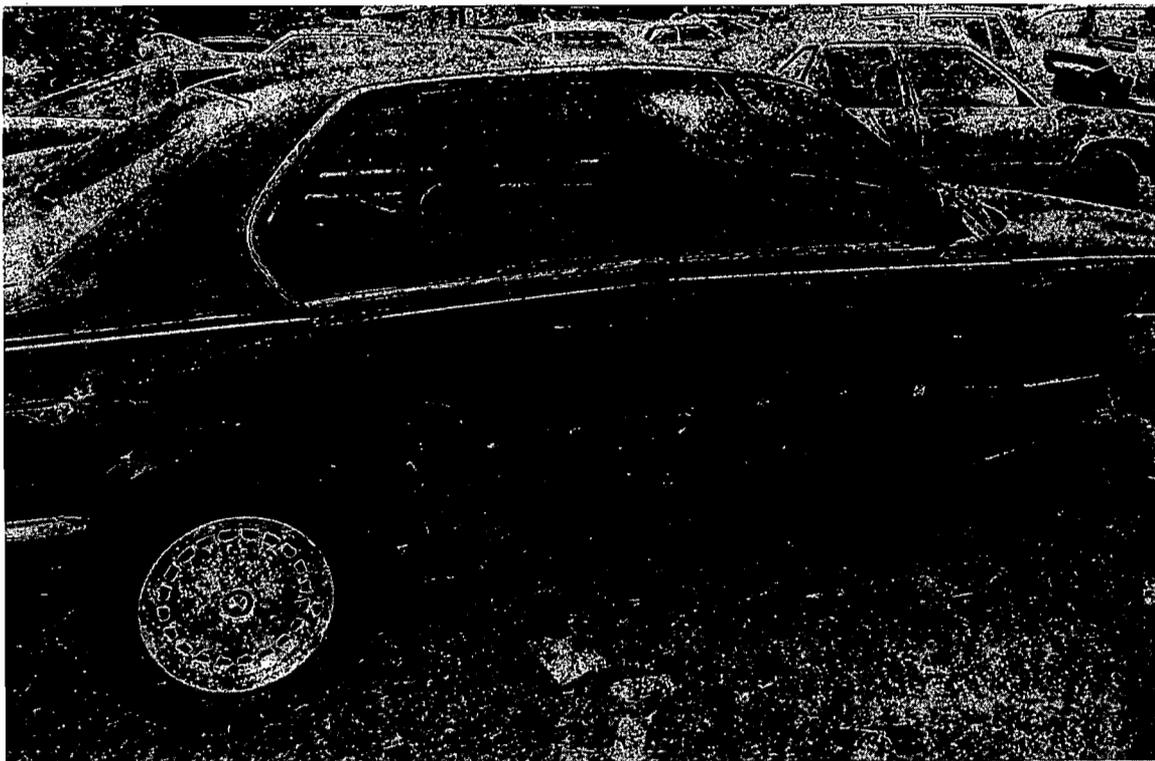
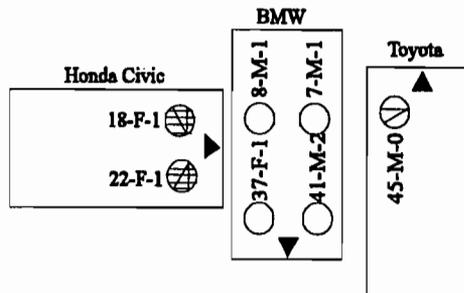
A 1989 Chevrolet Camaro ran off a wet roadway and crashed head on into two 10.5-inch diameter, side by side, utility poles. The driver and a 10-year-old male seated in the right front were not restrained. Both occupants received minor injuries

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right front	Laceration, left knee	1	Lower dashboard
Dislocation, 2 teeth		1	Upper dashboard

Case No. 29

Accident Number: SRH-94-FH-C13
Date: May 15, 1994
Location: Marietta, Georgia
Vehicle 1: 1988 BMW 735i Sedan
Delta V: 11.7 mph
Vehicle 2: 1994 Honda Civic
Delta V: 18.7 mph

Collision Diagram

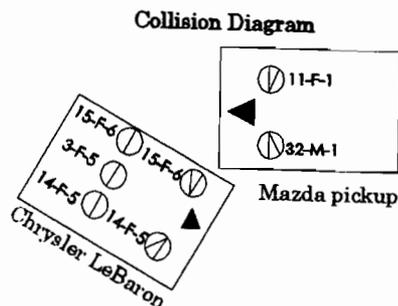


A BMW was struck in the right side by a 1994 Honda at a traffic signal intersection. The left rear fender of the BMW then contacted the left side of a 1992 Toyota that was also proceeding through the intersection. The BMW occupants were not restrained. The driver received a moderate injury, and the right front passenger and two male child passengers in the rear seat received minor injuries. The Honda air bags deployed at the driver and right front positions. Both occupants were lap/shoulder belted and received minor injuries. The Toyota driver was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Abrasion/contusion, right arm	1	Unknown
Right rear	Contusions, right shoulder and arm	1	Right door panel

Case No. 30

Accident Number: WRH-94-FH-C10
Date: June 1, 1994
Location: Santa Clarita, California
Vehicle 1: 1986 Chrysler Le Baron
Delta V: 40.7 mph
Vehicle 2: 1992 Toyota Landcruiser
Delta V: 25.3 mph
Vehicle 3: 1991 Mazda pickup truck
Delta V: N.A.



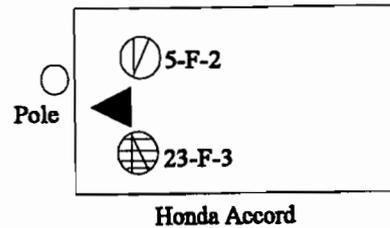
A Chrysler Le Baron crossed over the double yellow lines and into on-coming traffic. The Chrysler sideswiped a Toyota Landcruiser, and then struck a Mazda pickup truck, nearly head-on. All occupants of the Chrysler were wearing seat belts; front seat occupants wearing lap/shoulder belts and the rear seat occupants wearing lapbelts only. The driver was found pinned between the seat back and instrument panel and received fatal injuries. The left rear passenger was found pinned between the back seat and right side interior body and received fatal injuries. The center rear passenger was found underneath the two other rear seat passengers and received fatal injuries. The right front and right rear passengers received critical injuries, generally on the left side of their bodies. The center rear passenger was 3-years-old. The vehicle had no child restraint system. The Mazda occupants received minor injury. The driver of the Toyota and the right front seat passenger were both wearing their lap/shoulder belts. Both received minor abrasions to their heads.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center rear	Massive head and brain injury. Brain swelling.	5	Struck the displaced and deformed steering wheel or struck the bodies of each of the passengers next to her.
	Contusion to left leg femur	1	Back of driver's seat
	Contusions to back of both elbows	1	Seat back or passengers on either side of her

Case No. 31

Accident Number: WRH-94-FH-C11
Date: May 22, 1994
Location: Long Beach, California
Vehicle 1: 1992 Honda Accord
Delta V: 42 mph

Collision Diagram



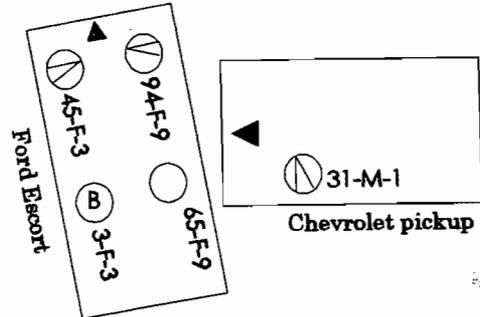
The Honda went off the roadway and the front of the car, near the center, struck a steel reinforced masonry surfaced utility pole. The 23-year-old female driver was restrained by a lap/shoulder belt. Additionally, the driver position was equipped with an airbag which deployed upon impact. Her most serious injuries were fractures to both ankles. Following the accident, she spent 11 days in the hospital. About one week later, she was readmitted to the hospital driver's with chest pain. It could not be determined if this was related to the accident. A 5-year-old female was seated in the right front bucket seat. She was restrained with a lap/shoulder belt with an adjustable D-ring that was found in the lowest position. Her injuries included a facial contusion, abdominal abrasions and internal bleeding in the pelvic area. She spent 2 days in the hospital.

Occupant Location	Injuries	AIS	Probable Source
Right front seat	Lateral abrasion across periumbilical area of abdomen	1	Lap portion of seatbelt
	Internal bleeding with blood and other fluids in the pelvic area	2	Lap portion of seatbelt
	Contusion on left mandibular area of face	1	Driver side airbag

Case No. 32

Accident Number: CRH-94-FH-C20
Date: June 11, 1994
Location: Harleton, Texas
Vehicle 1: 1983 Ford Escort
Delta V: 23.2 mph
Vehicle 2: 1979 Chevrolet pickup truck
Delta V: 13.1 mph

Collision Diagram



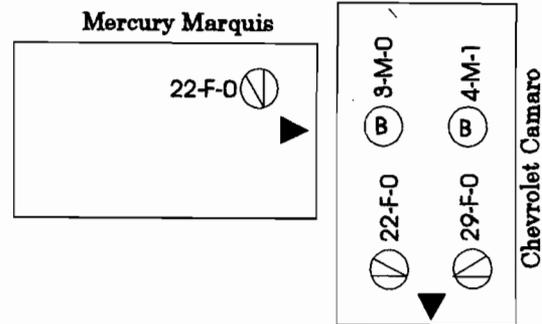
A Chevrolet pickup truck collided front first into the right side of a Ford Escort. The lap/shoulder belt restrained pickup driver received minor injuries. The lap/shoulder belt restrained 45-year-old Ford driver received serious injuries. The Ford adult passengers, a 94-year-old lap/shoulder belt restrained female and a 65-year-old unrestrained female were both killed. A 3-year-old female was seated in the left rear in a Century Commander booster seat that was secured with the lapbelt. The child was ejected from the seat and received serious injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left Rear	Left Lung Contusion	3	Contact with Right Rear Occupant
	Large Contusion on Head Face, and Right Shoulder,	2	Contact With Right Rear Occupant
	Ruptured Right Eardrum	1	Impact Forces

Case No. 33

Accident Number: WRH-94-FH-C12
Date: June 13, 1994
Location: Long Beach, California
Vehicle 1: 1980 Chevrolet Camaro
Delta V: 10.6 mph
Vehicle 2: 1983 Mercury Marquis
Delta V: 12.5 mph

Collision Diagram



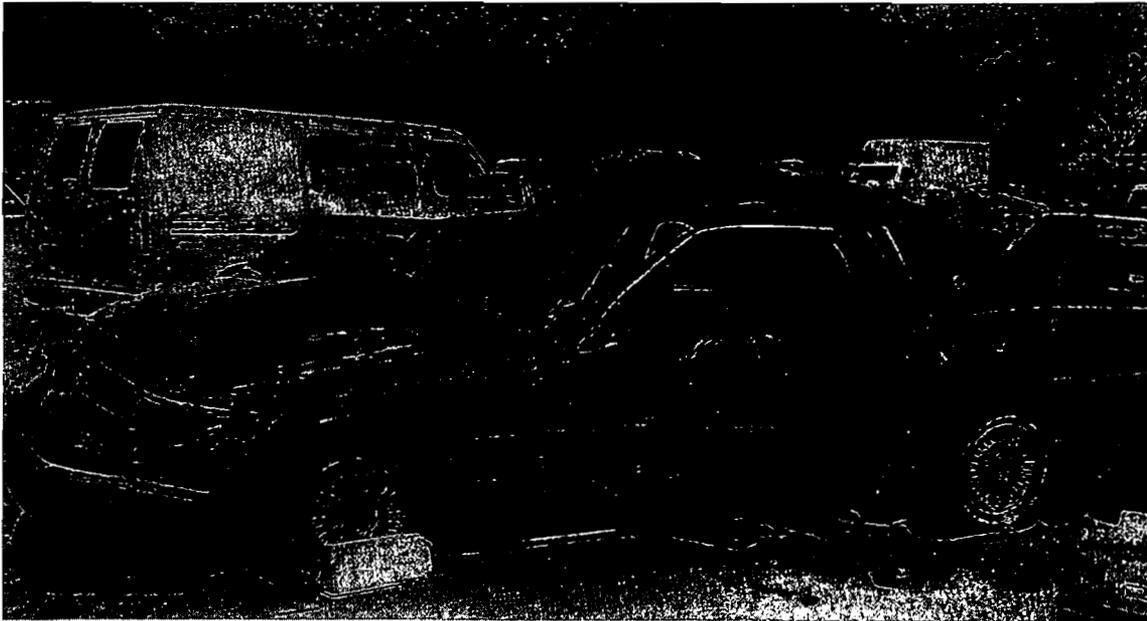
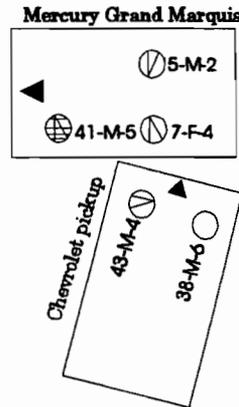
A Chevrolet Camaro was struck on the right side by a Mercury Marquis in an intersection. The driver of the Chevrolet and the right front seat passenger were both wearing their lap/shoulder belts. The 4-year-old left rear seat passenger and the 3-year-old right rear passenger were both seated in forward facing (identical) Kolcraft Quickstep child booster seats, with shields. The child seats were tightly secured to the vehicle's seat by lap belts routed across the shields. The right front 22-year-old female passenger was 8-months pregnant and complained of pain, but was subsequently diagnosed with no injury. The 4-year-old rear seat passenger sustained a laceration above his right eye. The occupant of the Mercury was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Laceration to right eye	1	Struck right front comer of booster seat

Case No. 34

Accident Number: SRH-94-FH-C15
Date: June 21, 1994
Location: Dacula, Georgia
Vehicle 1: 1992 Mercury Grand Marquis
Delta V: 27.9 mph
Vehicle 2: 1993 Chevrolet pickup truck
Delta V: 37.5 mph

Collision Diagram

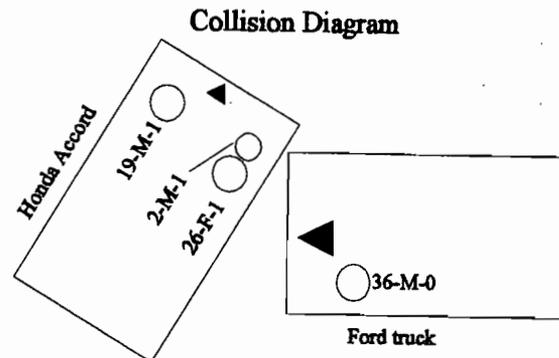


A Mercury Grand Marquis was struck in the left side by a Chevrolet pickup truck at a highway intersection. The Mercury occupants were restrained with the lap/shoulder belts, and the driver air bag deployed. The Mercury driver was killed, the 7-year-old female in the left rear was severely injured, and the 5-year-old male in the right rear sustained moderate injuries. The pickup driver was lap/shoulder belted, and the passenger was not restrained. The pickup driver sustained severe injuries, and the passenger was ejected and killed.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Abrasions, head and forehead	1	Left rear door
	Contusion, upper right arm	1	Unknown
	Laceration, left arm	2	Left rear door
	Abrasions, lower abdomen	2	Lap belt
	Cont/abrasion, left buttock and back	1	Lap/shoulder belt
	Contusion, upper right leg	1	Unknown
	Abrasions, left leg	1	Left rear door
	Laceration, spleen	4	Left rear door
	Fracture, right pubic ramus	2	Left rear door
	Fracture, right ankle	3	Lower rear of front seat
	Right rear	Undisplaced linear fracture, forehead	2
Abrasion, upper chest		1	Shoulder belt
Abrasion, across lower		1	Lap belt
Blunt abdominal trauma		9	Lap belt

Case No. 35

Accident Number: WRH-94-FH-C13
Date: June 15, 1994
Location: Carson, California
Vehicle 1: 1989 Honda Accord
Delta V: 15.8 mph
Vehicle 2: 1985 Ford F350 truck
Delta V: 5.2 mph



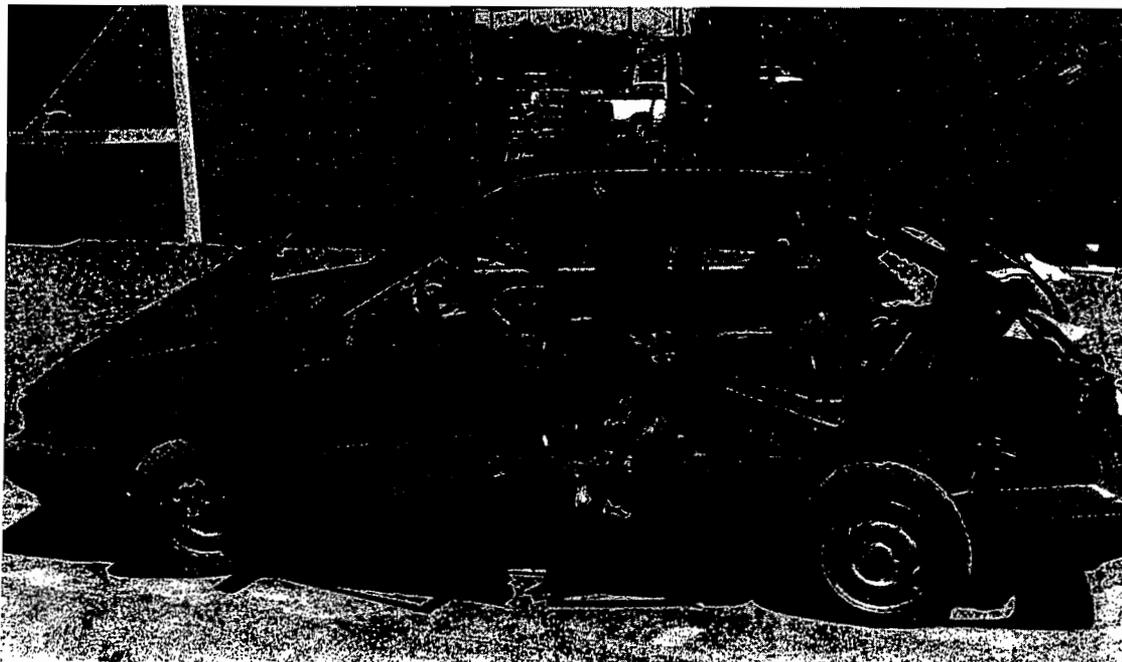
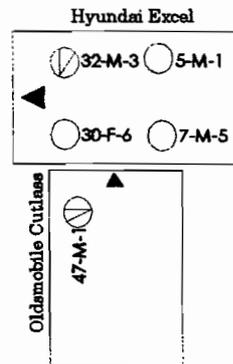
The Honda was eastbound and stopped at an intersection awaiting traffic to clear before making a left turn. A Ford truck was westbound approaching the intersection. There were conflicting versions of the color of the traffic light. The Honda turned left in front of the Ford and was struck on the right side, at the passenger's door. The impact pushed the Honda into another vehicle which was stopped northbound awaiting the light to turn green. This secondary impact was very minor, inflicting very minor damage to both vehicles. The driver of the Honda and the adult female passenger in the right front seat were not wearing their seat belts. The female in the right front seat was holding a 2-year-old male on her lap. All three occupants of the Honda received minor injuries. The driver of the Ford was not wearing his seat belt and was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front, on mother's lap	Laceration to forehead	1	Struck the "A" pillar or the dashboard

Case No. 36

Accident Number: WRH-94-FH-C14
Date: June 25, 1994
Location: Paramount, California
Vehicle 1: 1986 Hyundai Excel
Delta V: 11.4 mph
Vehicle 2: 1986 Oldsmobile Cutlass
Delta V: 7.8 mph

Collision Diagram



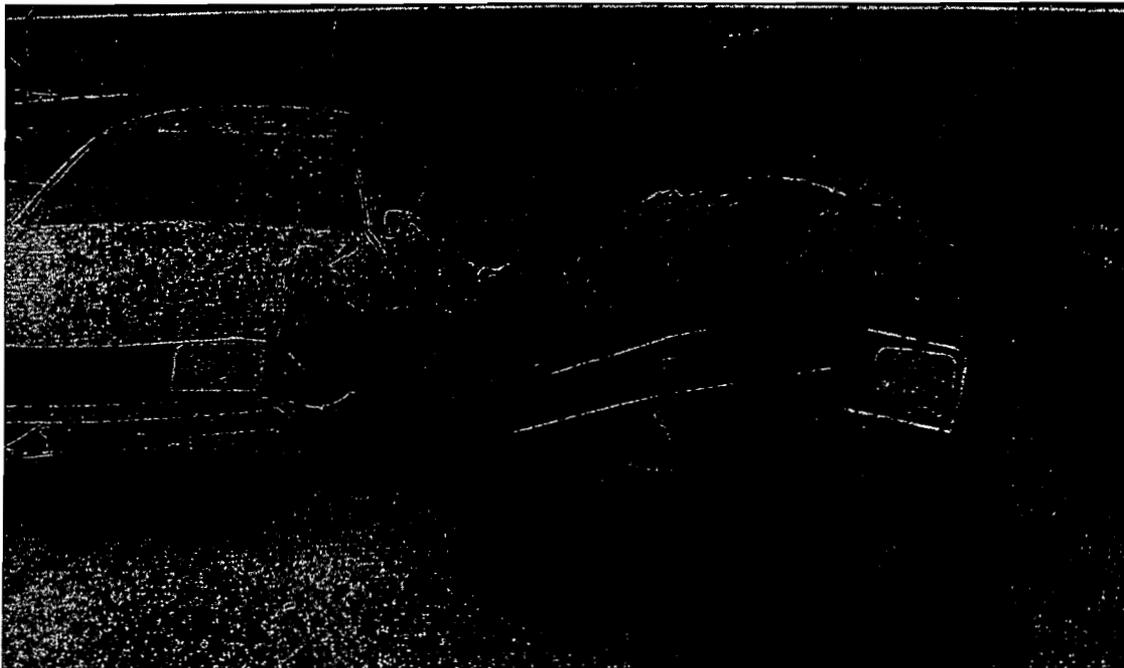
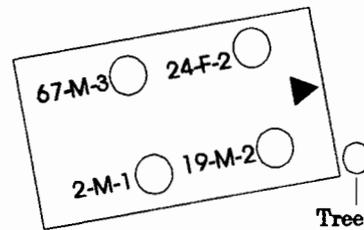
A Hyundai was northbound crossing through an intersection. An Oldsmobile was westbound crossing through the same intersection. The intersection is controlled by traffic signals. One of the vehicles entered against the red light. The Oldsmobile struck the Hyundai on the left side, at the driver's door. Both vehicles spun around, counterclockwise. Only one of the occupants of the Hyundai, the male right front passenger, was wearing seat belts. The 30-year-old female driver received fatal injuries. The 32-year-old male in the right front seat received serious injuries. The 7-year-old male passenger in the left rear seat received fatal injuries. The 5-year-old male passenger in the right rear seat received minor injuries. The driver of the Oldsmobile was wearing his lap/shoulder belt and received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle Left rear seat	Anterior dislocation of skull	4	Impact with interior of passenger's door
	Contusion and hemorrhage to right superior temporal gyrus, cerebrum	5	Same as above
	Brain stem herniation	5	Same as above
	Brain swelling severe	5	Same as above
Right rear seat	Contusion to head	1	Struck asphalt street
	Abrasions to knee	1	Same as above
	Abrasions to forearms	1	Same as above

Case No. 37

Accident Number: SRH-94-FH-C17
Date: July 6, 1994
Location: Hoover, Alabama
Vehicle 1: 1984 Chevrolet Chevette
Delta V: 41.5 mph

Collision Diagram



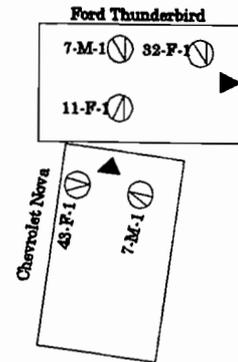
A Chevrolet Chevette was southbound on a 2-lane roadway in a residential area. The Chevette approached a southbound pickup that was towing a utility trailer. When the driver of the Chevette applied brakes and her vehicle did not slow she traveled off the right side of the roadway. The Chevette then passed the pickup truck and re-entered the roadway out of control. The Chevette crossed both lanes, traveled off the left side of the roadway, and struck a tree in the front yard of a residence. None of the occupants were restrained in the Chevette. The driver of the Chevette and an adult left rear seat passenger received fatal injuries. The right front seat passenger sustained moderate injuries and a 2-year-old male seated in the right rear, sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Rear	Laceration (2-3 cm) right frontal scalp	1	Interior sidewall
	Laceration (1 cm) left side of nose	1	Right front seat back
	Laceration lower right leg	1	Right front seat back
	Abrasion (2 cm) Thoraco lumbar area	1	Unknown

Case No. 38

Accident Number: SRH-94-FH-C18
Date: July 8, 1994
Location: Cumming, Georgia
Vehicle 1: 1990 Ford Thunderbird
Delta V: 9.8 mph
Vehicle 2: 1987 Chevrolet Nova
Delta V: 15.3 mph

Collision Diagram



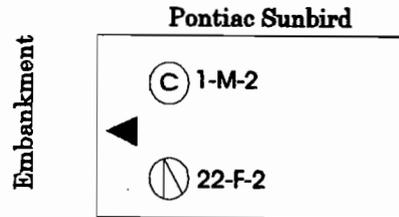
A Ford Thunderbird was struck on the right side by the front of a Chevrolet Nova, at a rural highway intersection. Both vehicles sustained extensive damage. The three occupants of the Thunderbird were restrained, including a lap/shoulder belted 7-year-old male in the left rear. The two occupants of the Nova were restrained, including a lap/shoulder belted 7-year-old male in the right front. All occupants of both vehicles sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left rear	Abrasions, lower left abdomen	1	Lap belt
Vehicle 2			
Right front	Abrasion, upper chest Strain, neck	1	Shoulder belt (Non-contact movement)

Case No. 39

Accident Number: CRH-94-FH-C22
Date: July 11, 1994
Location: Alvord, Texas
Vehicle 1: 1990 Pontiac Sunbird
Delta V: 27.6 mph

Collision Diagram



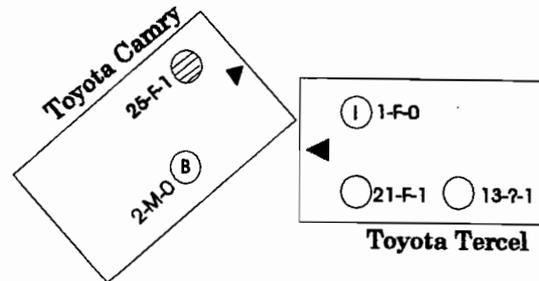
A Pontiac Sunbird collided front first into a dirt embankment. The collision forces separated the driver's shoulder belt and she struck the steering wheel, receiving a closed head injury, fractured thoracic vertebra, fractured sternum, and a fractured tibia and fibula. Laboratory tests showed that the shoulder strap met required strength standards and failed from overload stress. The 22-month-old child seated in a Fisher-Price child restraint system in the right front seat received moderate injuries. The child seat was not installed according to the instructions from Fisher-Price and from the Pontiac owner's manual.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Closed Head Injury with loss of consciousness Mandibular Ramus Fracture Toe Laceration	2 1 1	Glovebox and Dashboard Glovebox and Dashboard Glovebox and Dashboard

Case No. 40

Accident Number: SRH-94-FH-C19
Date: July 14, 1994
Location: Marietta, Georgia
Vehicle 1: 1992 Toyota Camry
Delta V: 12.7 mph
Vehicle 2: 1987 Toyota Tercel
Delta V: 19.4 mph

Collision Diagram

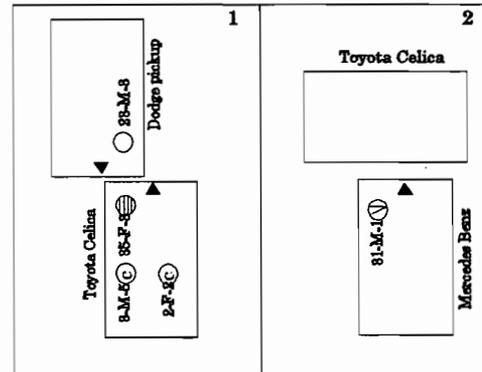


A Toyota Tercel was traveling southbound when a northbound Toyota Camry initiated a left turn at an intersection into the path of the southbound Tercel. The Tercel struck the Camry in the right front fender. The airbag on the Camry deployed on impact. The driver of the Camry sustained minor injuries. A 2-year-old child, secured in a child restraint system in the right rear seat of the Camry, was not injured. While the driver of the Tercel would not cooperate with the Safety Board's investigator, medical records indicate that the driver and 13-year-old left rear seat passenger of the Tercel sustained minor injuries, while the infant that was riding in the right front seat in a child restraint system was not injured.

Case No. 41

Accident Number: NRH-94-FH-CO8
Date: July 15, 1994
Location: Montgomery Township, PA
Vehicle 1: 1990 Toyota Celica
Delta V: 38 mph
Vehicle 2: 1986 Dodge pickup truck
Delta V: 38 mph
Vehicle 3: 1992 Mercedes Benz 190E
Delta V: 6 mph

Collision Diagrams



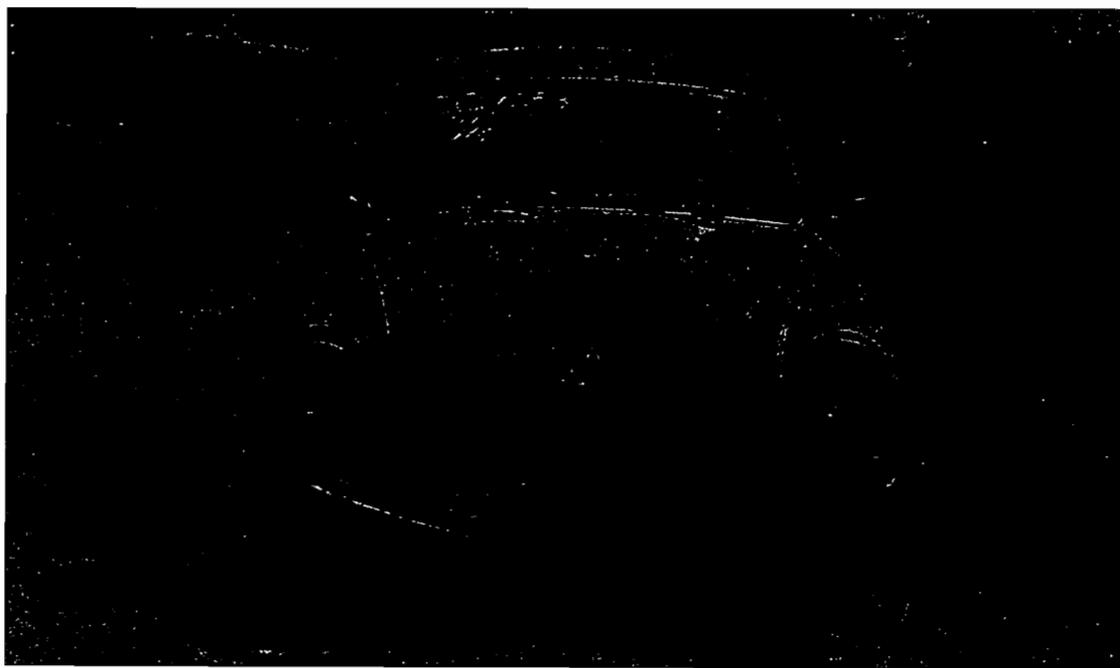
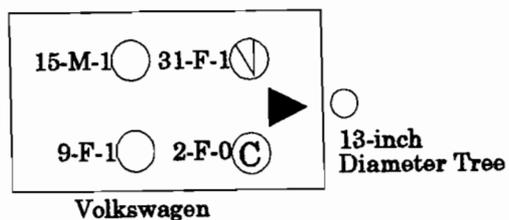
A Toyota Celica occupied by a 35 year-old female driver and two child passengers was northbound when it crossed into the southbound lane and struck head-on Dodge pickup truck. The Toyota rotated counterclockwise and was struck in the left rear side by a Mercedes Benz that was traveling behind the Toyota. The driver of the Toyota was restrained by the deployed airbag, but not restrained by the available lap/shoulder belt, and sustained serious injuries. The 3-year-old male seated in the left rear was restrained by a Evenflo Utara, convertible, forward facing child restraint system and sustained critical injuries. He later died in the hospital. A 2 year old female was seated in the right rear and restrained by a Fisher-Price, convertible, forward facing child restraint system and sustained moderate injuries. The driver of the Dodge pickup truck was unrestrained and sustained serious injuries. The driver of the Mercedes Benz was restrained by a lap/shoulder belt and sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left Rear	Brain stem hemorrhage	5	Hyperextension of the neck
Right Rear	Mild concussion	2	Head whip-lash, back against the CRD

Case No.42

Accident Number: WRH-94-FH-C15
Date: July 16, 1994
Location: Long Beach, California
Vehicle 1: 1971 Volkswagen
Delta V: 13.6 mph

Collision Diagram



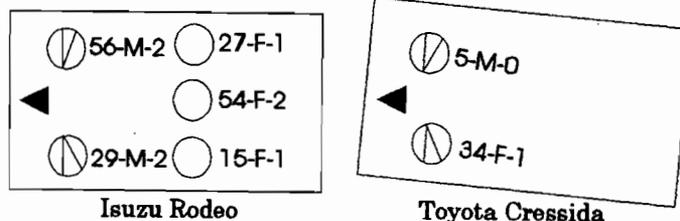
The Volkswagen ran off the roadway and the front of the vehicle struck a 13 inch diameter tree. The driver of the vehicle was wearing a lap/shoulder belt and a 2-year-old female, seated in the right front position, was restrained in a convertible child restraint system. A 15-year-old male in the left rear and a 9-year-old female in the right rear were both unrestrained. The 31-year-old female driver sustained moderate injuries. Both of the rear seat passengers received minor injuries. The 2-year-old child in the car seat was uninjured. The vehicle received heavy frontal damage. Although the seatbelt was properly routed through the metal frame of the child seat, it was not sufficiently tightened, thus allowing the child seat to move forward about 3 inches based on manual testing. Because of the relatively low Delta V, this did not influence the injury outcome of the occupant in the child restraint system.

Occupant Location	Injuries	AIS	Probable Source
Right rear	Contusion on right elbow and arm	1	Back of right front passenger seat
	Contusion on lower left leg	1	Back of right front passenger seat

Case No. 43

Accident Number: SRH-94-FH-C20
Date: July 24, 1994
Location: Cumming, Georgia
Vehicle 1: 1984 Toyota Cressida
Delta V: 19.1 mph
Vehicle 2: 1992 Isuzu Rodeo
Delta V: 14.6 mph

Collision Diagram

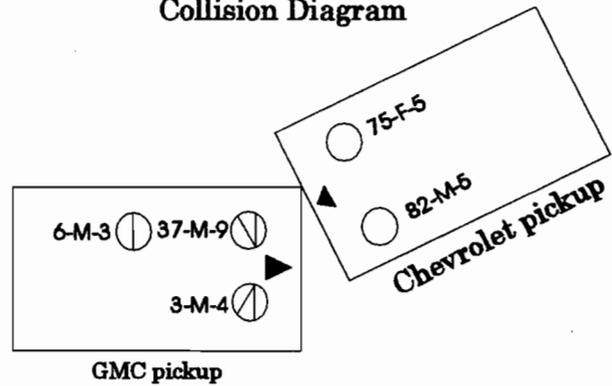


A Toyota Cressida was northbound in the left lane on a 4-lane highway in a rural area. An Isuzu Rodeo had slowed in the left northbound lane in front of the Toyota to make a left turn. The Toyota struck the Isuzu in the rear. After impact the Isuzu rotated counter-clockwise about its vertical axis, crossed the median, and overturned in the southbound lanes. The Toyota continued forward, remained upright, and was located in the median several feet beyond the point of impact. The occupants in the Isuzu were transported to the hospital and treated for moderate to minor injuries. The driver of the Toyota was transported for minor injuries. A 5-year-old male, restrained with a lap/shoulder belt in the right front seat, was not injured.

Case No. 44

Accident Number: SRH-94-FH-C23
Date: July 26, 1994
Location: Gainesville, Georgia
Vehicle 1: 1992 GMC pickup
Delta V: 41.3 mph
Vehicle 2: 1985 Chevrolet pickup
Delta V: 32.6 mph

Collision Diagram



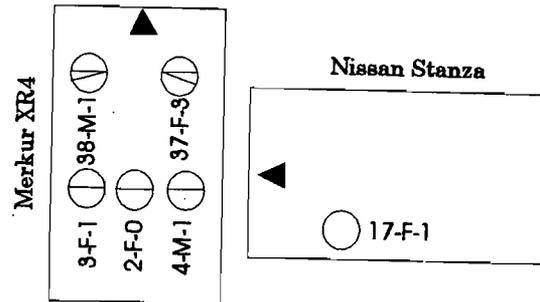
A GMC pickup crossed the center line of a two-lane highway and collided head-on with a Chevrolet pickup. Both vehicles were extensively damaged. The GMC driver was lap/shoulder belted, a 3-year-old male in the right front utilized the lap/shoulder belt with the shoulder portion behind his back, and a 6-year-old male in the left rear of the extended cab (right, side-facing seat) utilized the installed lap belt. The GMC driver was killed, the right front passenger was severely injured, and the left rear passenger was seriously injured. Both occupants of the Chevrolet pickup were unrestrained; the driver was killed and the passenger was critically injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right front	Closed head injury	9	Dash area
	Multiple skull fractures	4	Dash area
	Scalp laceration	2	Dash area
	Cerebral laceration	2	Dash area
	Intestinal perforation	1	Lap belt
	Laceration of small bowel mesentery	2	Lap belt
Left rear	Laceration back of scalp	2	Left sidewall/B pillar
	Multiple facial lacerations	1	Left sidewall/B pillar
	Closed head injury	9	Left sidewall/B pillar
	Contusions, left knee and ankle	1	Rear of driver's seat/seatback
	Lung contusion, lower right lobe	3	Left rear driver's seat/seatback

Case No. 45

Accident Number: SRH-94-FH-C21
Date: July 27, 1994
Location: Smyrna, Georgia
Vehicle 1: 1988 Mercury Merkur
Delta V: 19.9 mph
Vehicle 2: 1985 Nissan Stanza
Delta V: 27.0 mph

Collision Diagram



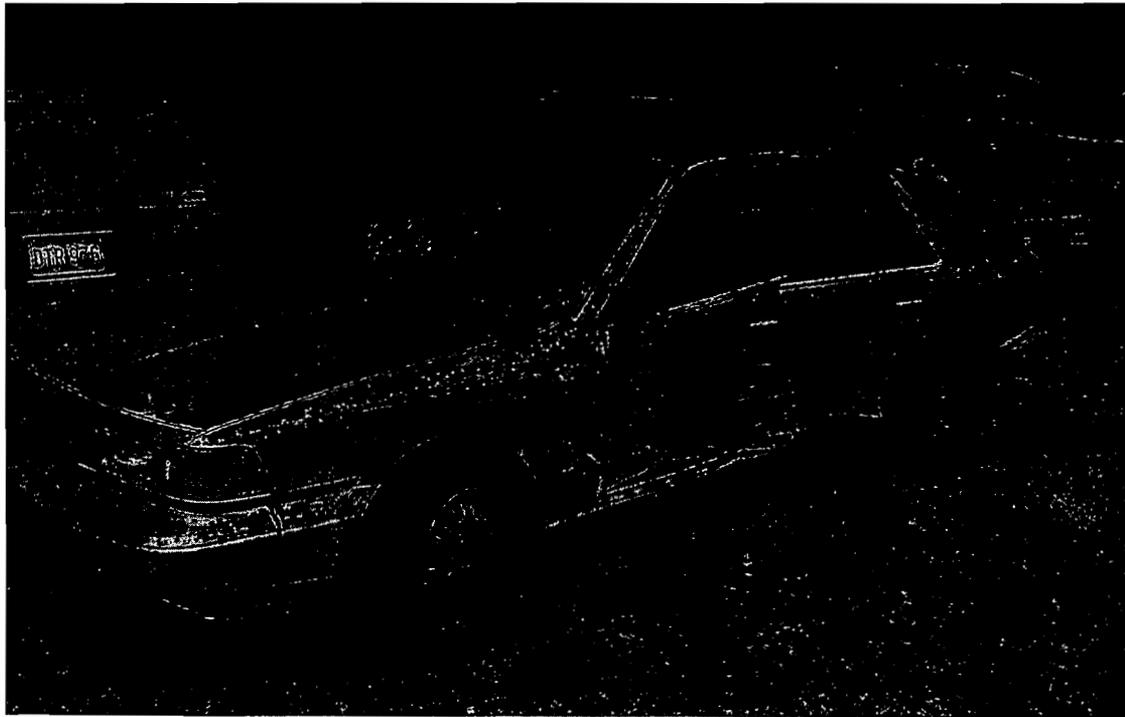
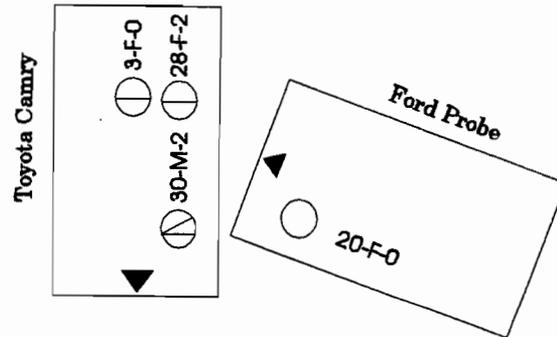
A Mercury Merkur, was traveling westbound on a two lane roadway. As the Merkur entered a signalized intersection it was struck in the right side by a southbound Nissan Stanza. From impact, the Merkur was redirected slightly to the left striking a 1982 Oldsmobile that was stopped in the eastbound turn bay. The Merkur came to rest against the left front fender of the Oldsmobile. The driver of the Merkur sustained a whiplash, but didn't seek medical treatment. The lap/shoulder belt restrained right front seat passenger, and the left and right rear seat lapbelt restrained children, were transported to the hospital for treatment. The child rear seat passengers were both released and the right front seat passenger was hospitalized for treatment. The drivers of all three vehicles sustained minor injuries, but didn't seek medical treatment. The child seated in the center rear seat was restrained by a lapbelt and was uninjured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left Rear	Strain and contusion to flank	1	Lapbelt
Right rear	Acute contusion left knee	1	Unknown

Case No. 47

Accident Number: SRH-94-FH-C24
Date: July 28, 1994
Location: Marietta, Georgia
Vehicle 1: 1987 Toyota Camry
Delta V: 11.5 mph
Vehicle 2: 1989 Ford Probe
Delta V: 11.7 mph

Collision Diagram

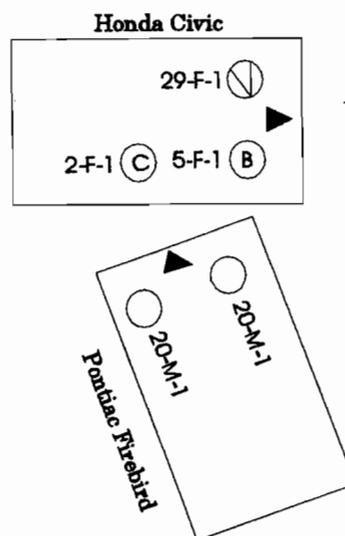


A Toyota Camry was traveling westbound on a multi-lane divided roadway. As the Camry entered a signalized intersection it was struck in the left side by an eastbound Ford Probe which was making a left turn to enter a freeway entrance ramp. The Camry was rotated in a counter clockwise direction and traveled across the roadway at an angle about 85 degrees to its original travel direction, mounted a curb at the edge of the roadway, and came to rest on it's wheels facing in an easterly direction. The driver, who was restrained by a lap/shoulder belt and the left rear seat passenger, who was restrained by a lap belt, sustained moderate injuries. The 3-year-old child, who was restrained by a lap belt in the rear center seat position, was not injured.

Case No. 48

Accident Number: SRH-94-FH-C25
Date: August 4, 1994
Location: Roswell, Georgia
Vehicle 1: 1988 Honda Civic
Delta V: 34.9 mph
Vehicle 2: 1975 Pontiac Firebird
Delta V: 23.1 mph

Collision Diagram

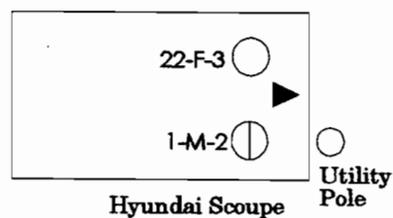


The right side of the Honda Civic was struck by the front of the Pontiac Firebird in an intersection. The Honda driver was lap/shoulder belted and sustained minor injuries. A 5-year-old female in a child restraint system (booster) in the right front received minor injuries. A 2-year-old female in a child restraint system in the right rear received minor injuries. Both occupants of the Pontiac sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right front	Closed head injury Laceration right frontal scalp/forehead Laceration/abrasion right face Ecchymosis around left anterior hip Abrasion right inner thigh Abrasion right lateral flank	9 1 1 1 1 1	Interior or right door Interior of right door/glass Interior of right door Lap belt Unknown Unknown
Right rear	Laceration right orbit & temporal region	1	Interior of right rear door

Case No. 49

Accident Number: NRH-94-FH-C10
Date: August 9, 1994
Location: Perkiomen Township, PA
Vehicle 1: 1994 Hyundai Scoupe
Delta V: 39 mph

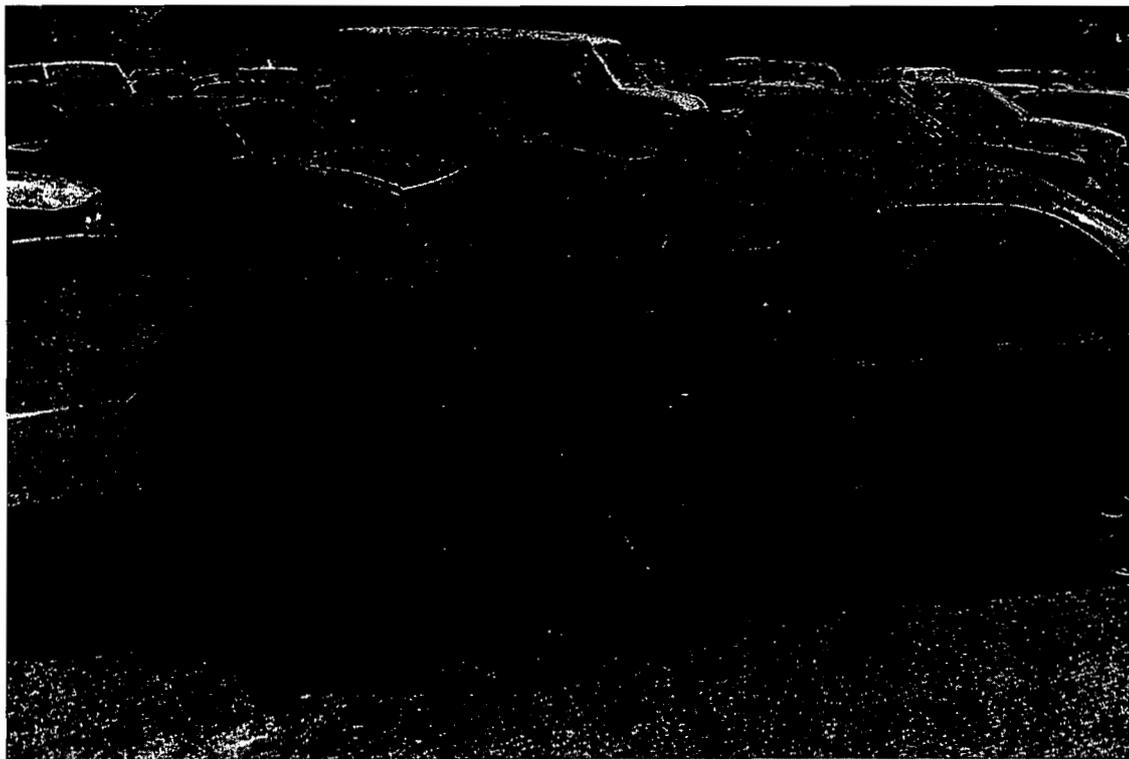
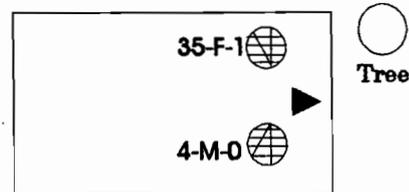
Collision Diagram

The Hyundai Scoupe was occupied by a 22-year-old female driver and a 1-year-old male when it ran off the right side of the road and struck a wooden utility pole. The driver was unrestrained and sustained serious injuries. The 1-year-old male in the right front passenger seat was lying down on a pillow, against a reclined seat, restrained by a lapbelt, and sustained moderate injuries. Both seating positions were equipped with detachable motorized shoulder belts that had been disconnected.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Closed head injury and traumatic seizure Right maxillary fracture Fracture, medial wall both orbits Left orbital roof fracture Lacerations, right and left parietal	2 2 2 2 1	Dashboard Dashboard Dashboard Dashboard Unknown

Case No. 50

Accident Number: WRH-94-FH-C17
Date: July 26, 1994
Location: Cerritos, California
Vehicle 1: 1994 Toyota Corolla
Delta V: 19.9 mph

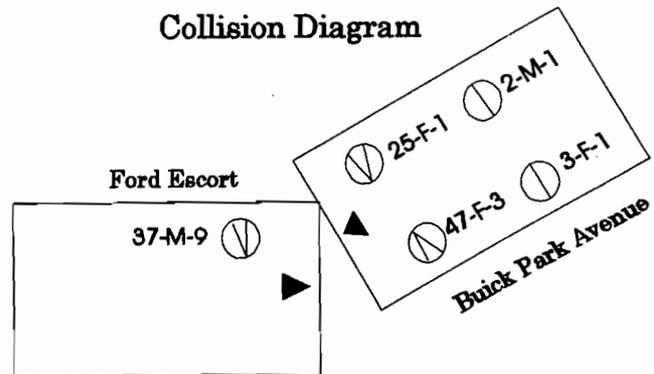
Collision Diagram

A Toyota was eastbound on a four lane, divided roadway. The 35-year-old female driver and 4-year-old male right front passenger were wearing their lap/shoulder belts. The driver was distracted and the vehicle drifted off the roadway and into a tree in the center divider. The vehicle struck the tree at the left front headlamp. Both driver and passenger air bags inflated. The driver received minor injuries and the right front passenger complained of pain in his left leg.

Case No. 51

Accident Number: WRH-94-FH-C18
Date: August 15, 1994
Location: Long Beach, California
Vehicle 1: 1986 Buick Park Avenue
Delta V: 22.1 mph
Vehicle 2: 1992 Ford Escort
Delta V: 30.3 mph.

Collision Diagram



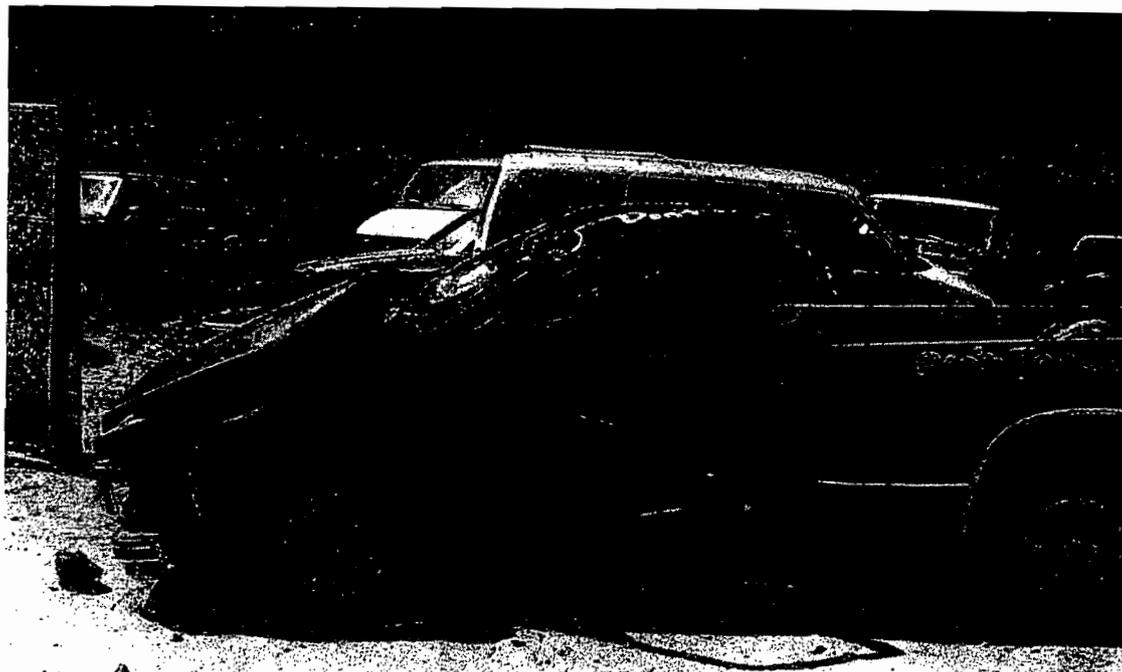
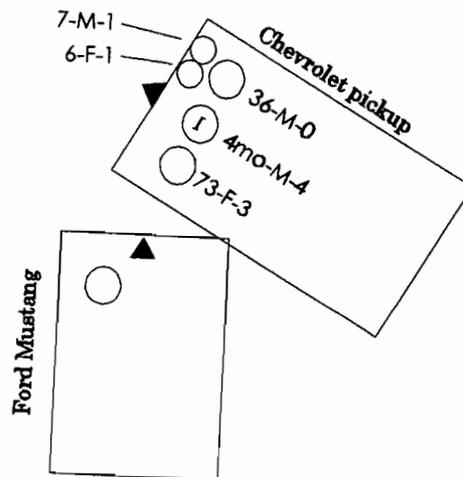
A Buick made a left turn in front of a Ford Escort. The front of the Buick struck the left front of the Ford. The 47-year-old female Buick driver and 25-year-old female right front passenger were restrained with lap/shoulder belts. A 3-year-old female seated in the left rear seat and 2-year-old male in the right rear seat were both restrained with lap belts. The driver was transported to a local hospital where she was admitted with serious injury and had a 16 day hospital stay. Her most serious injury was a fractured left femur. The other three passengers were treated and released. The lap/shoulder belted driver of the Ford Escort sustained at least minor injuries, but refused medical treatment.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear seat	Superficial Abrasion on forehead	1	Back of driver seat
Right rear seat	Abdominal Pain	9	Lap belt
	Periumbilical abdominal contusion	1	Lap belt

Case No. 52

Accident Number: SRH-94-FH-C27
Date: August 29, 1994
Location: Union City, Georgia
Vehicle 1: 1987 Chevrolet pickup
Delta V: 20.8 mph
Vehicle 2: 1989 Ford Mustang
Delta V: 17.7 mph

Collision Diagram



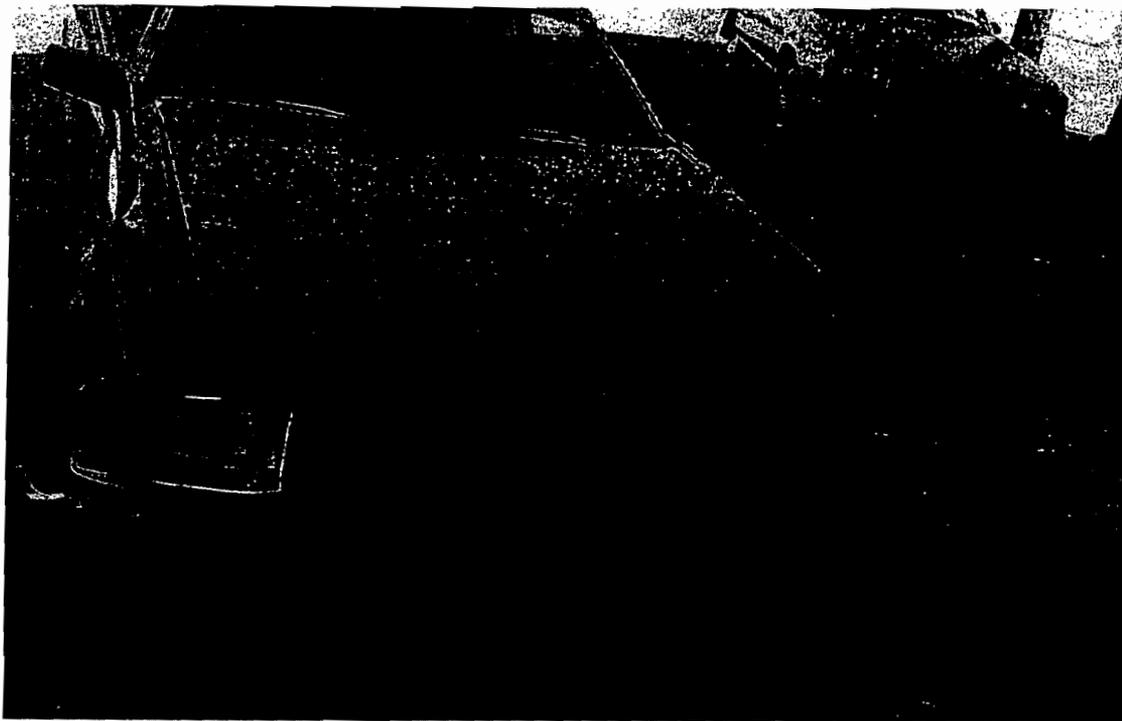
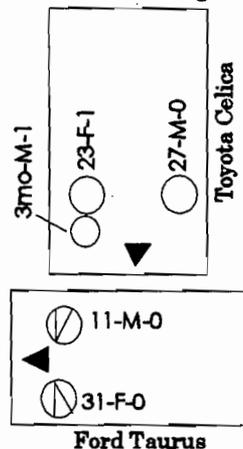
A Chevrolet pickup attempted a "u" turn from the southbound shoulder of a 2-lane roadway in an industrial area. Witnesses reported that the Ford Mustang was traveling at a high speed after it passed a vehicle. The Mustang struck the left side of the pickup. After impact, the pickup rotated 360 degrees about its vertical axis before it came to final rest on the southbound shoulder. All five occupants in the pickup, two adults and three children, were unrestrained and were ejected. A 4-month-old infant was in an unsecured child restraint system at the center position of the pickup, and a 6-year-old and 7-year-old were seated on the lap of the adult passenger. Four of the pickup occupants received severe to minor injuries. After impact, the Mustang departed the northbound side, traveled onto the earthen shoulder, and overturned onto its roof. The driver of the Mustang was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Center position(4-month-old)	Closed head injury with subdural hematoma	4	Rear window glass
	Laceration 4 1/2 cm left orbit rim	1	Rear window glass
	Laceration left cheek	1	Rear window glass
	right hip Contusion	1	Unknown
Right position			
(6-year-old)	Laceration on scalp	1	Unknown
	Laceration on left side of face	1	Unknown
	Abrasion to left upper back	1	Unknown
Right position	Laceration on forehead	1	Unknown
(7-year-old)			

Case No. 53

Accident Number: WRH-94-FH-C20
Date: August 30, 1994
Location: Norwalk, California
Vehicle 1: 1982 Toyota Celica
Delta V: 11.6 mph
Vehicle 2: 1986 Ford Taurus
Delta V: 10.6 mph

Collision Diagram



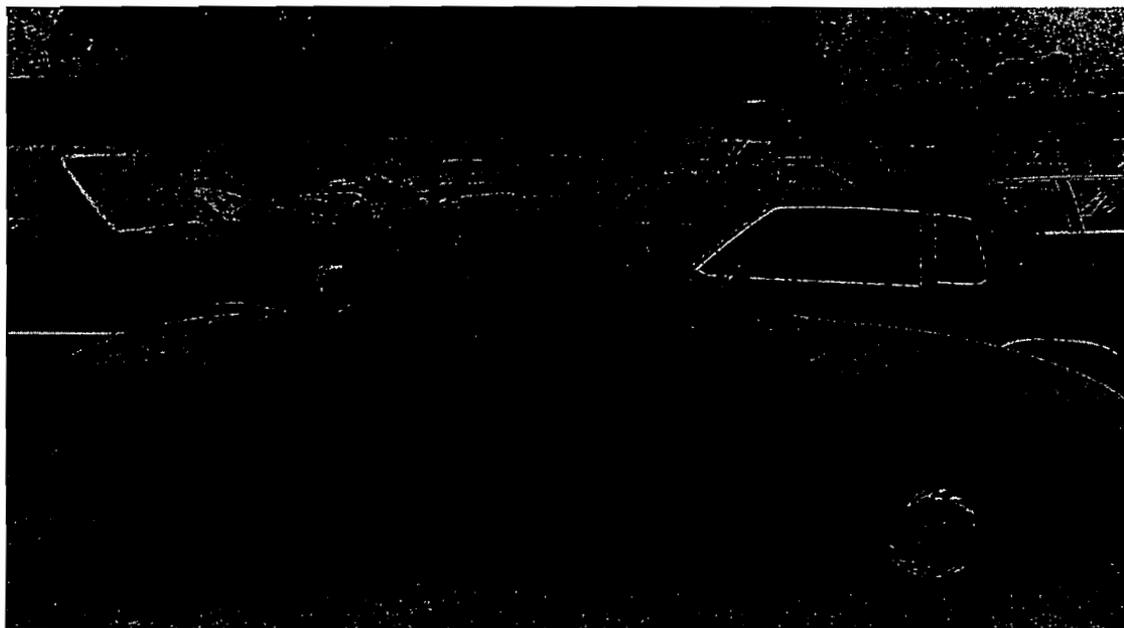
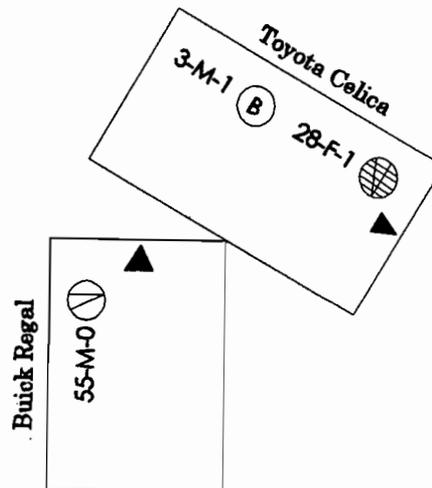
A Toyota Celica was southbound on a four lane roadway. A Ford Taurus was crossing the same roadway at an intersection. Both driver's view of each other was obscured by a tractor/semitrailer stopped southbound at the intersection waiting to make a left turn. The Toyota struck the Ford on the right side. Both vehicles spun around approximately 90 degrees in a clockwise direction. None of the occupants of the Toyota were wearing their belt systems. A 3-month-old male was being held by an adult female in the right front seat. The driver of the Toyota did not receive any injuries. The adult and child passenger received minor injuries. Both occupants of the Ford were wearing their lap/shoulder belts and were not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Contusion to forehead	1	Struck dashboard when mother moved forward and "sandwiched" the child between herself and the dashboard

Case No. 54

Accident Number: WRH-94-FH-C21
Date: September 7, 1994
Location: Carson, California
Vehicle 1: 1990 Toyota Celica
Delta V: 17.2 mph
Vehicle 2: 1981 Buick Regal
Delta V: 13.8 mph

Collision Diagram



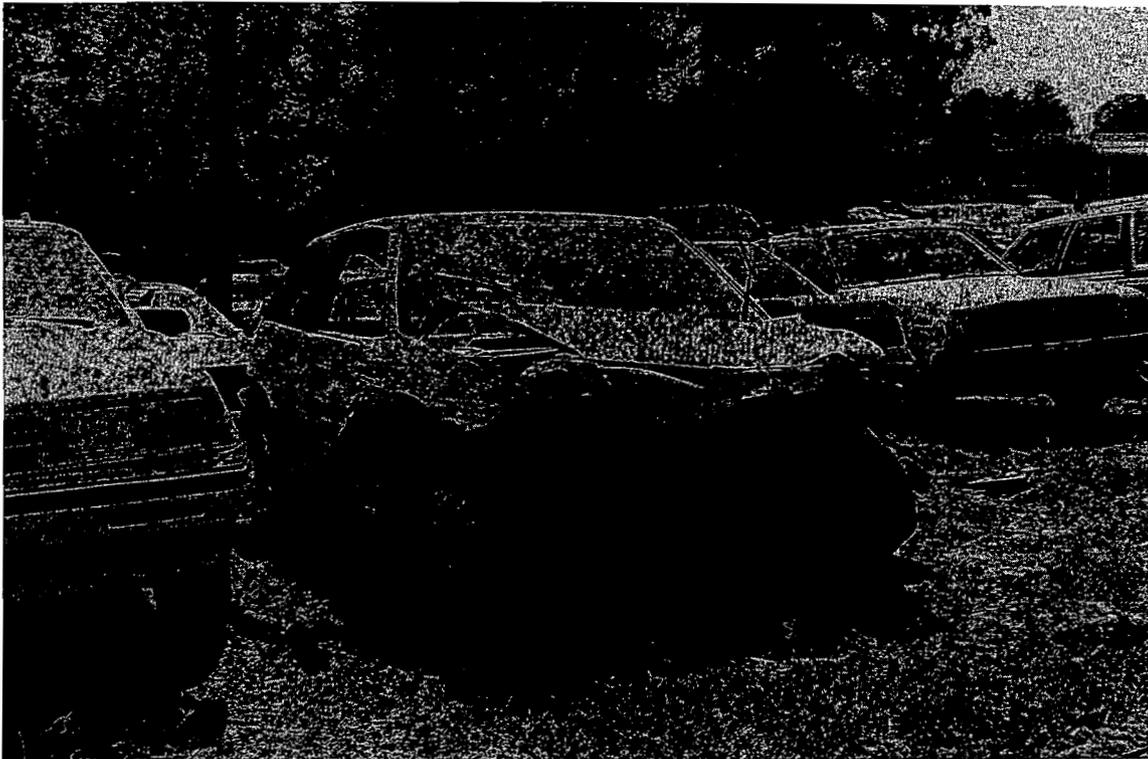
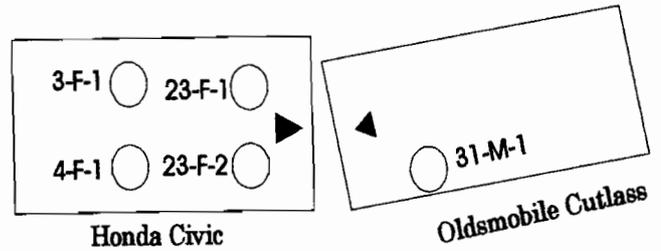
A Toyota was southbound on a four lane roadway, waiting to make a left turn. A Buick was northbound approaching the intersection. The light turned yellow and the driver of the Toyota thought the Buick was going to stop, but it did not. The Buick struck the Toyota on the right side. The driver of the Toyota was wearing her lap/shoulder belt. A 3-year-old male was seated in a child booster seat secured in the left rear seating position by the vehicle's lap/shoulder belt. The child seat's locking clip was not used per instructions, however, this did not appear to affect the performance of the child restraint system. Upon impact the driver's side air bag inflated, striking the driver in the face. The 3-year-old male remained in the child booster seat. Both received minor injuries. The driver of the Buick was wearing his lap/shoulder seat belt and was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear seat	Laceration to head	1	Hit head on left side interior panel
	Laceration to left ear	1	Same
	Laceration to upper lip	1	Struck padded child seat shield
	Laceration to right hand	1	Struck the child seat or back of front seat

Case No. 55

Accident Number: SRH-94-FH-C29
Date: September 17, 1994
Location: Marietta, Georgia
Vehicle 1: 1985 Honda Civic
Delta V: 22.9 mph
Vehicle 2: 1978 Oldsmobile Cutlass
Delta V: 15.5 mph

Collision Diagram

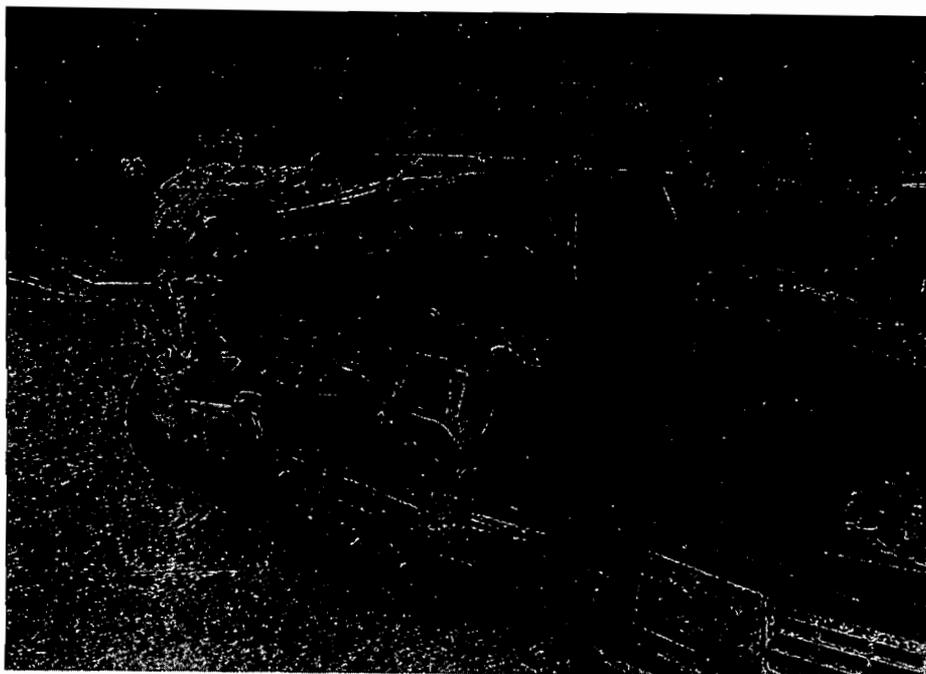
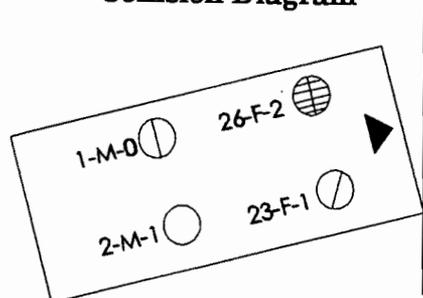


A Honda Civic collided head on with an Oldsmobile Cutlass that crossed the center line of the roadway. Both vehicles were substantially damaged. Occupants of the Honda were the driver, an adult female in the right front, a 3-year-old female in the left rear, and a 4-year-old female in the right rear. None of the occupants of the Honda were restrained; no child restraint system was in the vehicle. The right front passenger received moderate injuries; the other three occupants received minor injuries. The driver of the Oldsmobile was not restrained and he received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left rear	Contusion, lateral left orbit	1	Seatback of driver's seat
Right rear	Laceration, left cheek	1	Rear of seatback of right front seat
	Contusion, left side of face	1	Rear of seatback of right front seat
	Fractured tooth	1	Unknown

Case No. 58

Accident Number: SRH-95-FH-CO2
Date: October 11, 1994
Location: Austell, Georgia
Vehicle 1: 1994 Dodge Spirit
Delta V: 12.9 mph

Collision Diagram

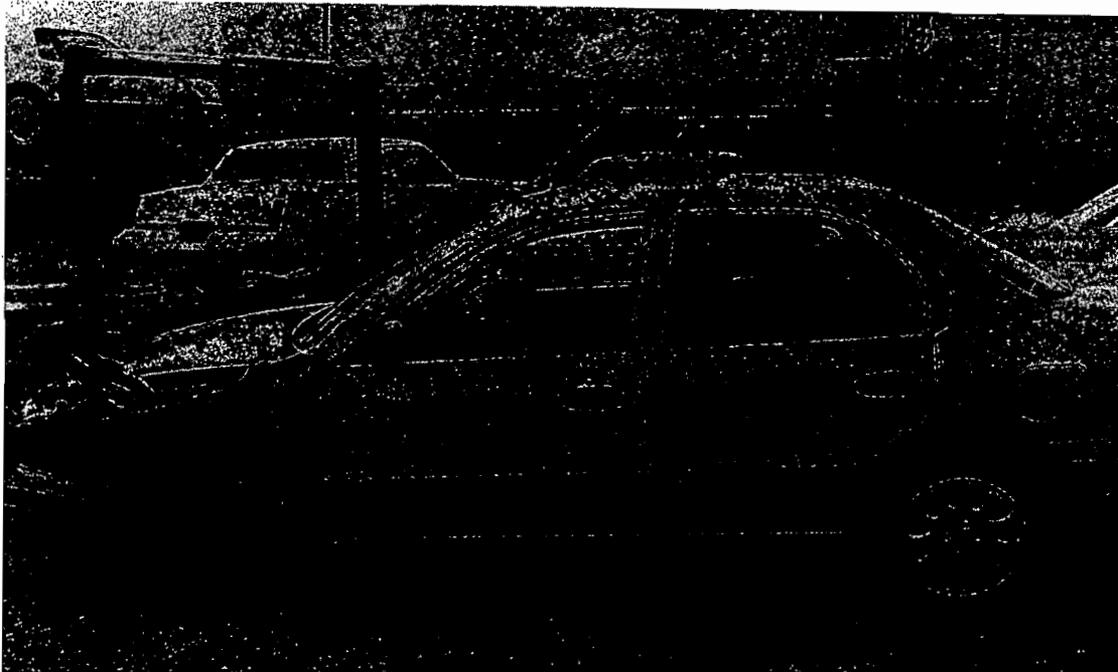
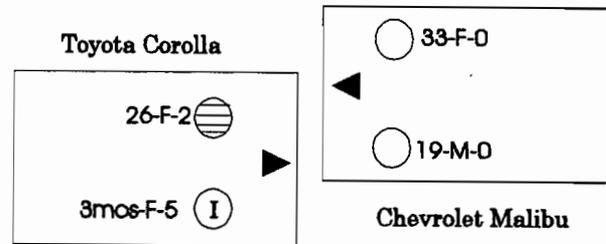
A Dodge Spirit was eastbound on a multi-lane Interstate highway. The Dodge was traveling in the right lane when it veered to the right across the paved shoulder. As the Dodge traveled off the edge of the pavement, the driver steered to the left, re-entered and crossed the eastbound lanes out of control, and struck the concrete median divider head-on. The lapbelt and airbag restrained driver and the shoulder belt only restrained right front passenger of the Dodge sustained moderate and minor injuries respectively. A 2-year-old child and 1-year-old child were seated in the rear of the Dodge. The unrestrained 2-year-old child in the right rear received minor injuries and the lapbelt only restrained 1-year-old child in the left rear was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1: Right Rear	Laceration (1 cm) of Scapula Abrasions back and shoulder	1 1	Unknown Unknown

Case No. 59

Accident Number: WRH-95-FH-CO2
Date: November 14, 1994
Location: Banning, California
Vehicle 1: 1994 Toyota Corolla
Delta V: N.A.
Vehicle 2: 1981 Chevrolet Malibu
Delta V: N.A.

Collision Diagram

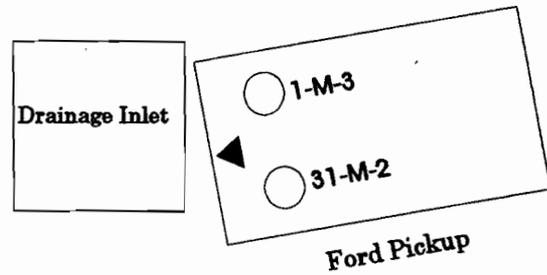


A Toyota Corolla driven by a 26-year-old female was struck left front wheel to left front wheel by a 1981 Chevrolet Malibu driven by a 19-year-old male. The Toyota was equipped with a driver and passenger side air bag. Both air bags inflated on impact. The driver of the Toyota was not wearing her lap/shoulder belt. She complained of pain and sustained a broken left wrist. The passenger side air bag door struck the back of the rear-facing infant seat, breaking it in several places. A 3-month-old female child was not properly secured in the vehicle or in this child seat, per vehicle and seat manufacturer instructions. The child sustained a contusion, skull fractures to the back of her head, a contusion behind the right ear and a subdural hematoma. The adult male and female occupants of the Chevrolet were not wearing their lap/shoulder belts. They were not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right front	Fractures on right and left occipital bones	2	Air bag lid struck back of child seat
	Contusion behind right ear	1	Air bag lid struck back of child seat right ear
	Bilateral temporal subdural hematoma	5	Same
	Contusion on right parietal lobe	3	Same
	Fracture of right lambdoid area	2	Same

Case No. 60

Accident Number: CRH-95-FH-C03
Date: November 26, 1994
Location: Gilmer, Texas
Vehicle 1: 1989 Ford pickup truck
Delta V: 14.2 mph

Collision Diagram

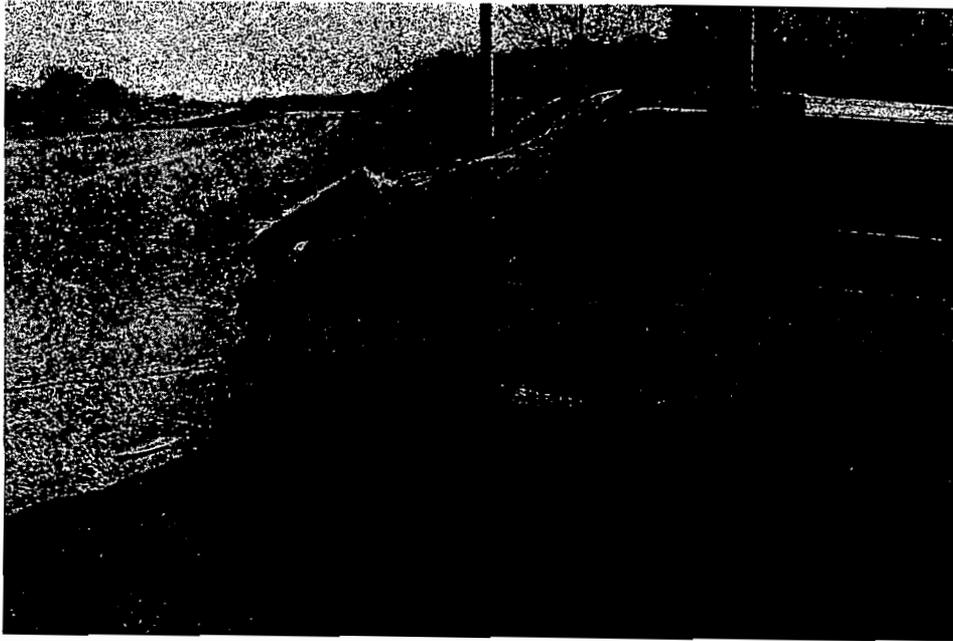
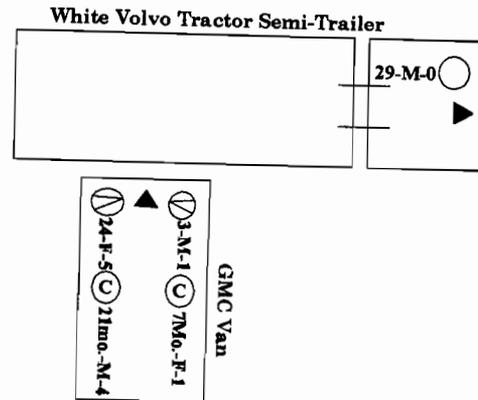
A Ford pickup collided front first into a concrete drainage inlet after it skidded off of the road in moderate fog. The pickup was equipped with lap/shoulder belts at the outboard seating positions. Neither the driver nor the 22-month old male passenger were restrained. The driver received moderate injuries and the child passenger received serious injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Displaced Fracture of Right Humerus	3	Instrument Panel
	Abrasion on Right Side of head and Face	1	Instrument Panel

Case No. 61

Accident Number: CRH-95-FH-C05
Date: December 1, 1994
Location: Southlake, Texas
Vehicle 1: 1990 GMC Safari van
Delta V: 34.7 mph
Vehicle 2: 1985 White/Volvo tractor/semi-trailer
Delta V: 1.6 mph

Collision Diagram



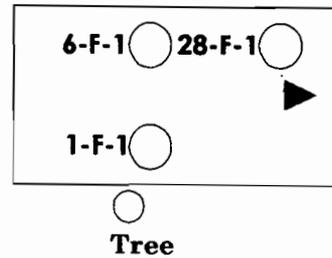
The loaded tractor semi-trailer combination was traveling eastbound when it entered the intersection at about 55 mph and collided with the left front of the GMC van. The back of the van driver's seat collapsed rearward. The 24-year-old female van driver, restrained by lap/shoulder belt, was ejected through a left side window. The 7-month-old female, restrained in the right rear in an infant carrier, received minor injury. The 21-month-old male, in a child restraint system in the left rear, was found in the cargo area of the van behind the third row of seats, and was severely injured. The 3-year-old male passenger in the right front seat was wearing the lap/shoulder belt and received minor injuries. The driver of the truck tractor combination was not injured and his restraint use is unknown.

Occupant Location	Injuries	AIS	Probable Source
Right front	Multiple contusions	1	Driver's seat
Left rear	Multiple skull fractures	2	C-pillar and vehicle interior
	Depressed left parietal skull fracture	3	
	Intracranial hematoma	3	
	Cerebral contusion	4	
	Subarachnoid hemorrhage	3	
Right rear	Contusion to forehead	1	Unknown

Case No. 62

Accident Number: SRH-95-FH-CO3
Date: October 11, 1994
Location: Marietta, Georgia
Vehicle 1: 1986 Honda Civic
Delta V: 6.7 mph

Collision Diagram

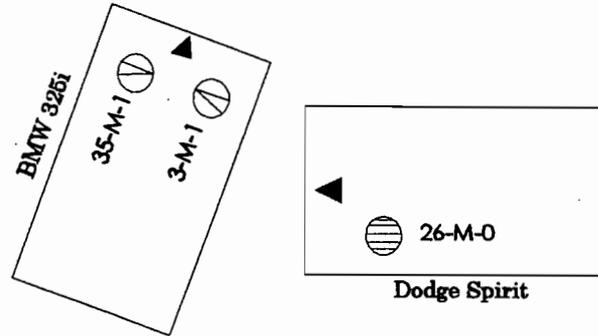


A Honda Civic skidded on a wet surface roadway, rotated clockwise 90 degrees off the left side of the roadway, and its right rear door crashed into a 12-inch-diameter tree. The driver, and two female child passengers, a 1-year-old and a 6-year-old, in the rear seat, were not restrained. All occupants of the Honda sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Left rear	Abrasion, left hand	1	Unknown
Right rear	Laceration, forehead	1	Interior side panel/window glass
	Abrasions, face	1	Interior side panel/window glass

Case No. 63

Accident Number: SRH-95-FH-CO4
Date: November 4, 1994
Location: Acworth, Georgia
Vehicle 1: 1978 BMW 325i
Delta V: Delta V: 19.4 mph
Vehicle 2: 1994 Dodge Spirit
Delta V: 18 mph

Collision Diagram

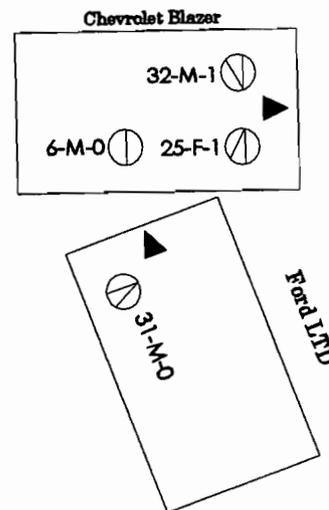
A BMW was traveling eastbound on a four lane undivided roadway. The driver of the BMW entered the left turn lane to make a left turn at a signalized intersection. As the BMW crossed the right most westbound lane it was struck in the right side by a westbound Dodge Spirit. After this impact the BMW rolled into a third vehicle which was sitting at the intersection waiting for the signal to change.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Laceration of the upper lip	1	Right door window sill

Case No. 64

Accident Number: SRH-95-FH-CO5
Date: November 3, 1994
Location: Smyrna, Georgia
Vehicle 1: 1985 Chevrolet Blazer
Delta V: 12.6 mph
Vehicle 2: 1985 Ford LTD
Delta V: 14 mph

Collision Diagram

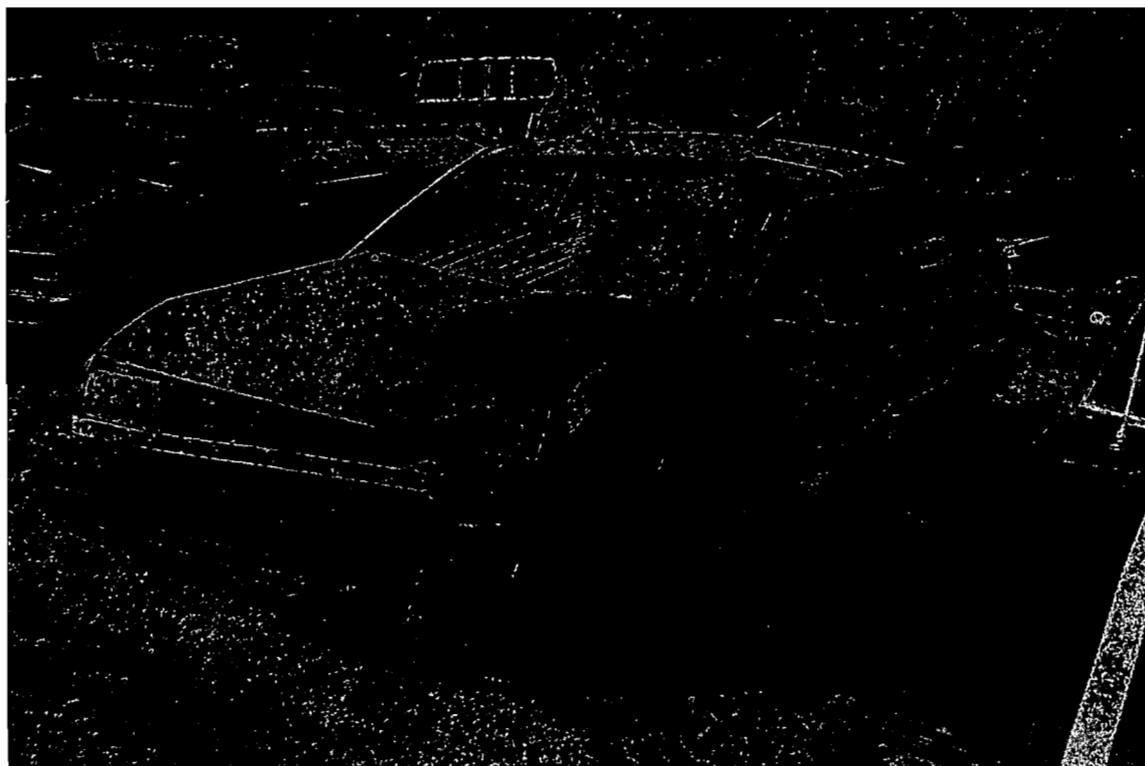
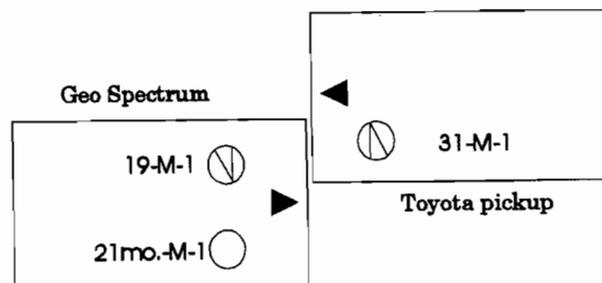


A 1985 Chevrolet Blazer traveled southbound on a 2-lane roadway in a residential area. As the Blazer approached a sign controlled intersection the driver failed to stop. The Blazer entered the intersection and was struck in the right side by a Ford. All of the occupants of both vehicles were restrained. The driver and adult right front seat passenger of the Blazer were injured. A 6-year-old child, seated in the right rear seat of the Blazer, was restrained with a lapbelt only and was not injured. The driver of the Ford was not injured.

Case No. 65

Accident Number: SRH-95-FH-CO6
Date: November 19, 1994
Location: Marietta, Georgia
Vehicle 1: 1989 Chevrolet Geo
Delta V: 19.9 mph
Vehicle 2: 1989 Toyota pickup truck
Delta V: 15.2 mph

Collision Diagram



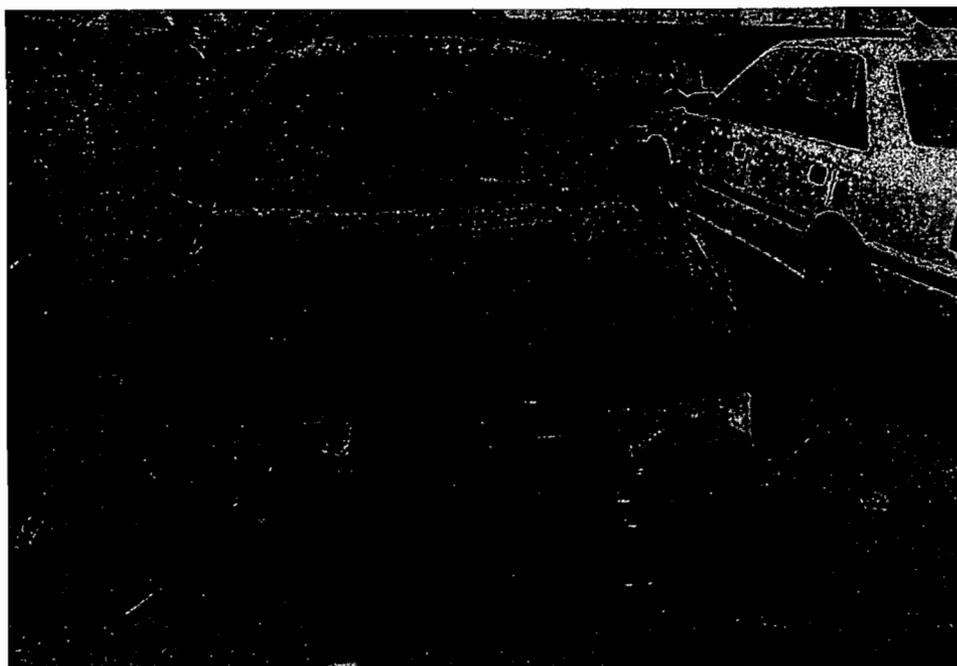
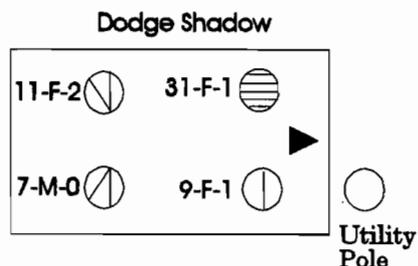
The Geo crossed the center line and its front left impacted the front left of the Toyota pickup. The 19-year-old Geo driver was lap/shoulder belted and sustained minor injuries. The 21-month-old male unrestrained in the front seat of the Geo sustained minor injuries. The driver of the pickup was lap/shoulder belted and received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Laceration to right cheek(Jagged, 2 cm)	1	Rearview mirror

Case No. 66

Accident Number: SRH-95-FH-CO8
Date: December 10, 1994
Location: Austell, Georgia
Vehicle 1: 1992 Dodge Shadow
Delta V: 10.6 mph

Collision Diagram



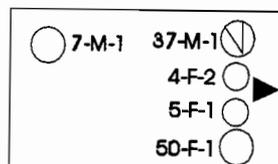
A Dodge Shadow was traveling southbound and approaching a right curve on a two lane, two direction, asphalt surfaced roadway. The driver observed an oncoming car start across the center line into her lane. The driver of the Dodge braked, steered right, but lost control. The Dodge struck a utility pole on the right edge of the roadway. The unrestrained driver sustained minor injuries from the airbag when it deployed at impact. The right front seat passenger, who was improperly restrained by the lap/shoulder belt and the left rear seat passenger who was properly restrained by the lap/shoulder belt sustained minor and moderate injuries respectively. The lap/shoulder belt restrained 7-year-old male in the right rear seat was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1: Right front	Right knee contusion	1	Right door inner panel
	Forehead contusion	1	Lower right windshield
Left rear	Maxillary Alveolar Fracture	2	Top center of left front seat back.
	Avulsion of tooth # 8.	1	Top center of left front seat back.
	Facial Laceration involving the lip and maxillary gingiva	1	Top center of left front seat back.

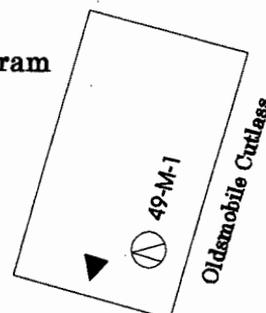
Case No. 68

Accident Number: SRH-95-FH-C10
Date: January 18, 1995
Location: Smyrna, Georgia
Vehicle 1: 1992 Dodge pickup
Delta V: 12.0 mph
Vehicle 2: 1985 Oldsmobile Cutlass
Delta V: 12.6 mph

Collision Diagram



Dodge Dakota



The front of the Dodge pickup struck the right side of an Oldsmobile Cutlass when it turned left into its path at an intersection. The pickup driver was restrained by the lap/shoulder belt. The adult in the right front seat, the 4-year-old and 5-year-old females in the front center, and the 7-year-old male in the rear of the pickup were not restrained. The 4-year-old female received moderate injuries, and the other pickup occupants received minor injuries. The driver of the Oldsmobile was restrained and received minor injuries.

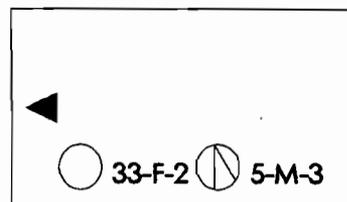
Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center left	Small laceration to posterior occiput	1	Unknown
	Nondisplaced fracture, distal right tibia	2	Unknown
Center right	Contusion, center forehead	1	Upper dash
	Abrasion, left wrist	1	Upper dash
	Abrasion, right knee	1	Lower dash
Rear (pickup)	Lacerations, middle finger right hand	1	Unknown

Case No. 69

Accident Number: SRH-95-FH-C11
Date: January 29, 1995
Location: Atlanta, Georgia
Vehicle 1: 1993 Ford Escort
Delta V: 21.4 mph

Collision Diagram

Utility Pole



Ford Escort



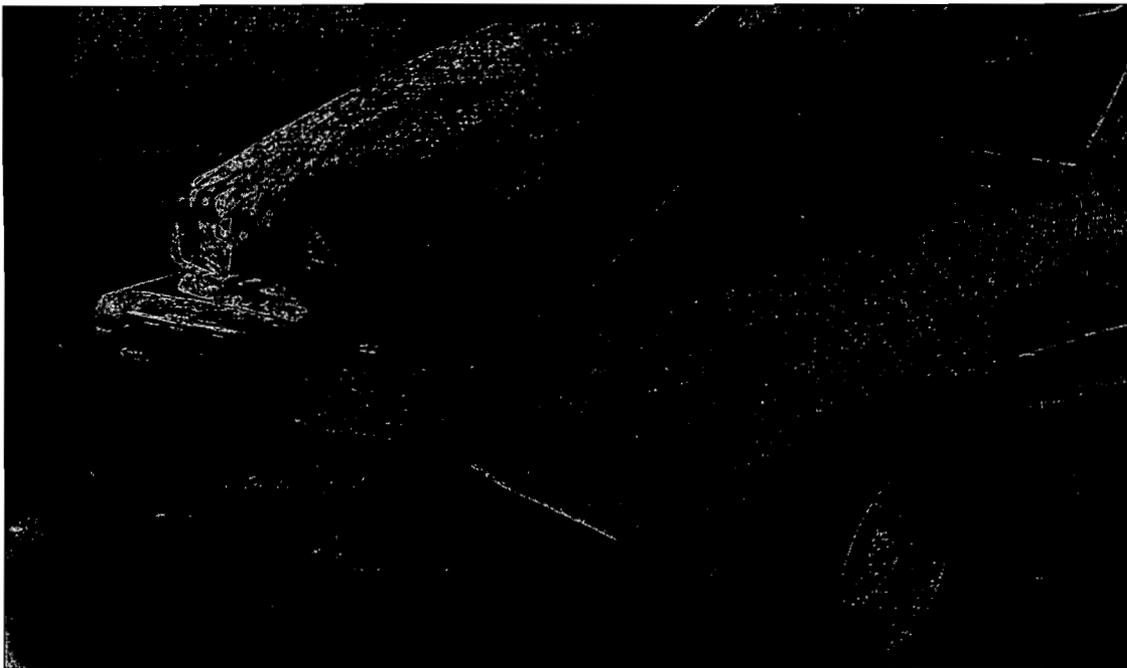
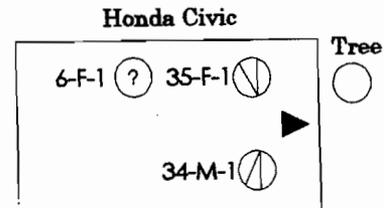
The Ford Escort was negotiating a curve to the left, when it departed the right edge of the roadway. The Escort moved onto the sidewalk area, where it struck a wooden utility pole. The driver was not restrained. The 5-year-old male in the left rear seat position was restrained by the lap/shoulder belt, which was fitted with a SAFEFIT device to change the geometry of the belt so that they are more compatible with smaller passengers. The unrestrained driver received moderate injury and the lap/shoulder belted rear child passenger was seriously injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Ligamentous instability C1 - C2	1	Whiplash
	Traumatic head injury NFS	9	Contact with interior door surface
	Pulmonary contusion	3	Seatbelt
	Hepatic Contusion	2	Seatbelt latch/latchplate

Case No. 70

Accident Number: WRH-95-FH-CO1
Date: December 10, 1994
Location: Paramount, California
Vehicle 1: 1982 Honda Civic
Delta V: 20.6 mph

Collision Diagram



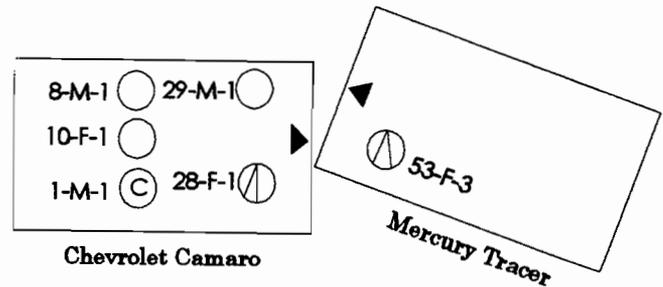
A Honda Civic driven by a 35-year-old female, was eastbound at about 40 miles per hour. Both the driver and a 34-year-old male right front passenger were wearing their lap/shoulder belts. The restraint use could not be determined for a 6-year-old female in the rear cargo area. As the vehicle approached an intersection where they were going to turn right, the driver changed lanes, lost control of the vehicle, drove over the curb and struck a 12-inch-diameter tree. Injury evidence to the driver indicated that she was wearing her shoulder belt too loose. The right front passenger said that he leaned over, as the vehicle was drifting too far to the right and grabbed the steering wheel. The shoulder belt was also loose on him, because he was leaning to the right at impact. All the occupants received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Rear cargo area	Laceration to forehead	1	Struck the back of the driver's seat

Case No. 71

Accident Number: WRH-95-FH-CO3
Date: December 11, 1994
Location: Long Beach, California
Vehicle 1: 1987 Chevrolet Camaro
Delta V: 19.9 mph
Vehicle 2: 1991 Mercury Tracer
Delta V: 21.5 mph

Collision Diagram



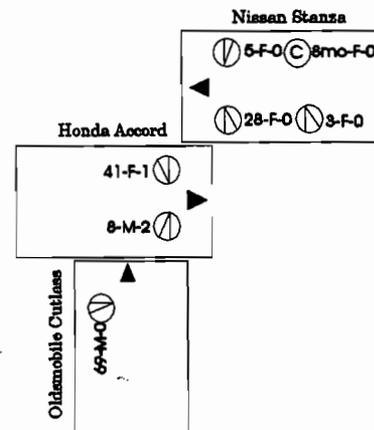
A Chevrolet Camaro, while in the process of making a left turn, was struck in the front center by the left front of a Mercury Tracer. There were 5 occupants in the Camaro. Two were restrained and three unrestrained. The 29-year-old male driver was unrestrained and the 28-year-old female right front passenger was wearing a lap/shoulder belt. An 8-year-old male, seated in the left rear position, did not use the provided lap belt. A 10-year-old female, seated in the rear center position on the carpeted "driveshaft hump", was in a position where no seatbelt was provided. A one-year-old male, in the right rear position, was restrained in a Fisher-Price child restraint system. All of the passengers in this vehicle sustained minor injuries. The driver of the Mercury was restrained by a lap/shoulder belt. This 53-year-old female driver sustained a left clavicle fracture, as well as 3 different fractures in the lower right leg. She was admitted to a local hospital and was an inpatient for about one month. Both vehicles were heavily damaged.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left rear	Abrasion on right knee	1	Back of driver seat
Center rear	Nose contusion and nose bleed	1	Back of driver seat
Right rear	Abrasion on left cheek	1	Back of right front passenger seat
	Abrasion on left shoulder	1	Shoulder harness from child car seat

Case No. 72

Accident Number: WRH-95-FH-CO4
Date: January 2, 1995
Location: Long Beach, California
Vehicle 1: 1988 Honda Accord
Delta V: 16.6 mph
Vehicle 2: 1991 Oldsmobile Cutlass
Delta V: 21.0 mph
Vehicle 3: 1990 Nissan Stanza
Delta V: N.A.

Collision Diagram



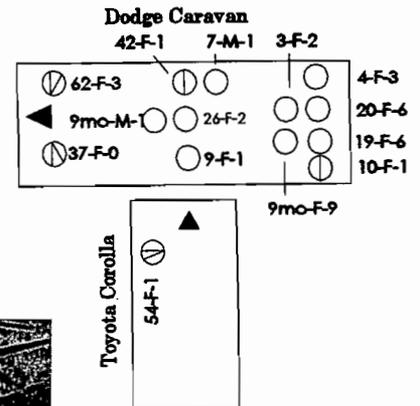
The Honda was eastbound traversing an intersection and the Nissan was westbound entering the intersection. The Oldsmobile was northbound and failed to stop for the red light. The Oldsmobile struck the Honda on the right "B" pillar and doors. The impact pushed the Honda into the path of the Nissan and they "side swiped" each other, damaging both vehicles' left front fenders. The driver of the Honda was correctly wearing her lap/shoulder belt. The 8-year-old male in the right front seat was improperly wearing his shoulder belt under his right arm. Both sustained minor and moderate injuries respectively. The driver of the Oldsmobile was correctly wearing his lap/shoulder belt. He was not injured. The driver and 5-year-old female right front passenger in the Nissan were correctly wearing their lap/shoulder seat belts. The 3-year-old female in the left rear seat was wearing a lap/shoulder belt when legally required to be in a child restraint device. An 8-month-old female was riding in an infant seat in the center rear seating position. The infant seat was designed to be used with a base and to be installed in the rear facing position. The seat was installed in the vehicle without the base and in the forward facing position. In addition the harness straps on the infant seat were not properly adjusted on the 8-month-old female.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front seat	Fractured Clavicle	2	Struck by intruding right "B" pillar
	Contusion on Head	1	Struck by "B" pillar
	Puncture of lower lip	1	Bit his lip

Case No. 73

Accident Number: WRH-95-FH-CO5
Date: January 21, 1995
Location: Los Angeles, California
Vehicle 1: 1988 Dodge Caravan
Delta V: 11.9 mph
Vehicle 2: 1987 Toyota Corolla
Delta V: 20.9 mph

Collision Diagram



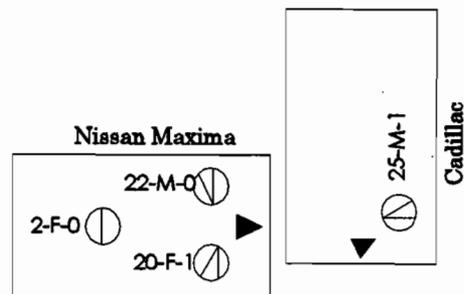
The Dodge Caravan was westbound, traversing an intersection. In the vehicle with the 37-year-old female driver were 12 other people ranging in age from 8 months to 62 years. The vehicle has two front seats and two bench seats. The driver, right front passenger and the two persons in seating positions first bench seat, seated on the right side, and second bench seat, seated on the left side, were the only persons wearing seat belts. The Toyota Corolla, driven by a 54-year-old female, was northbound. The driver was wearing her lap/shoulder belt. The vehicles collided in the intersection, with the Toyota striking the Dodge on the left side. The Dodge spun around in a counter clockwise direction and the rear door came open. Five occupants of the Dodge were ejected out the back door, four of whom received fatal injuries.

Occupant Location	Injuries	AIS	Probable Source
<u>Vehicle 1</u>			
Left side, first bench	Abrasions to left eyelid	1	Struck "C" pillar and window frame
	Abrasions to both knees	1	Unknown
Center, first bench	Abrasions to head	1	Unknown
Left side, last bench	Abrasion to left knee	1	Struck by intruding side of vehicle
	Abrasion to left hip	1	Struck by intruding side of vehicle
	Abrasion to right side	1	Unknown
Last bench, on lap	Abrasion to left forehead	1	Roadway and/or curb
	Fractures of calvaria and base of skull	3	Roadway and/or curb
	Bilateral cerebral subdural hematoma	5	Roadway and/or curb
	Laceration of left parietal lobe, cerebral cortex	4	Roadway and/or curb
	Abrasions of face and chest area	1	Roadway and/or curb
	Blunt trauma to the chest area; internal bleeding	9	Roadway and/or curb
Rear floor	Lacerations and abrasions to forehead	1	Roadway and/or curb
	Fracture at base of calvarium	3	Roadway and/or curb
	Fracture of bilateral orbital plate	3	Roadway and/or curb
	Fracture of skull, calvarium over brain	3	Roadway and/or curb
	Hemorrhage of cerebral hemisphere	3	Roadway and/or curb
	Abrasions and lacerations to body	2	Roadway and/or curb
Last bench, on lap	Abrasion to left hip	1	Roadway and/or rear vehicle part
	Contusion over left eye, unconscious	2	Roadway and/or rear vehicle part
	Abrasions to left elbow, thigh and foot	1	Roadway
Rear floor	Contusion to chest wall	1	Edge of bench seat

Case No. 74

Accident Number: CRH-95-FH-CO8
Date: March 15, 1995
Location: Ft. Worth, Texas
Vehicle 1: 1987 Nissan Maxima
Delta V: 17 mph
Vehicle 2: 1978 Cadillac
Delta V: 12.9 mph

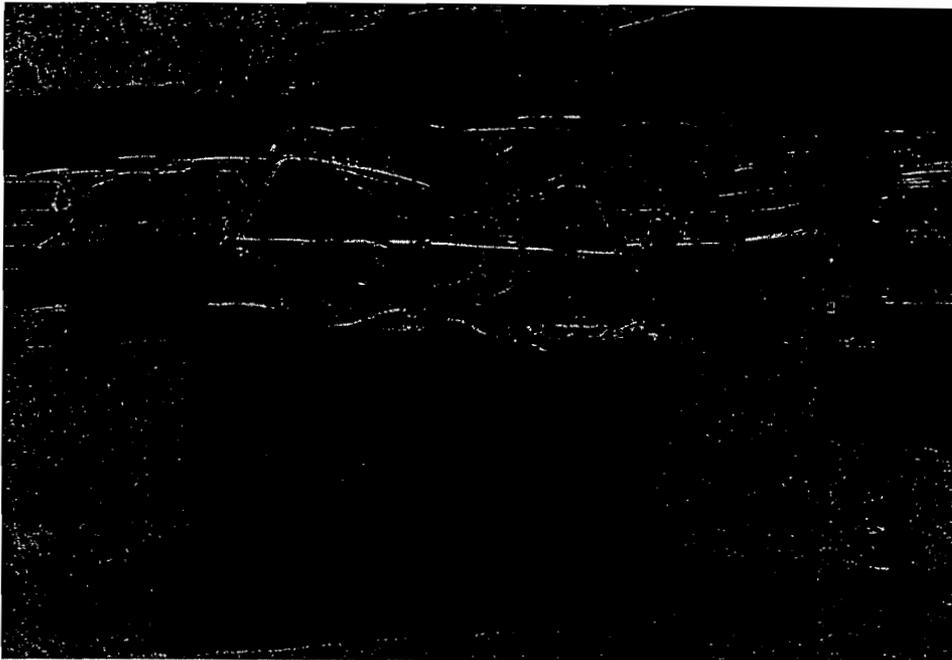
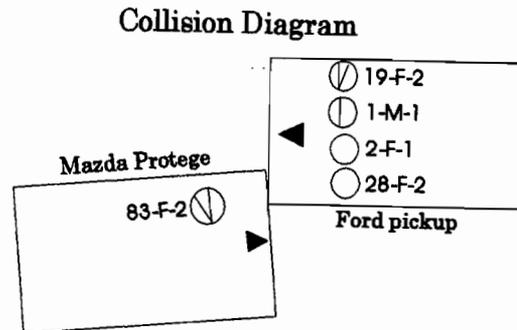
Collision Diagram



A Nissan Maxima collided with a Cadillac at an intersection. The 22-year-old male Nissan driver, restrained with a lap/shoulder belt, was not injured. The 20-year-old female passenger, also restrained with a lap/shoulder belt, received minor injuries. The 2-year-old rear seat passenger, restrained by a lapbelt, was not injured. The 25-year-old driver of the Cadillac, restrained with a lap/shoulder belt, received minor injuries.

Case No. 75

Accident Number: CRH-95-FH-CO9
Date: March 18, 1995
Location: Ft. Worth, Texas
Vehicle 1: 1991 Ford pickup truck
Delta V: 5.4 mph
Vehicle 2: 1991 Mazda Protege
Delta V: 9.1 mph



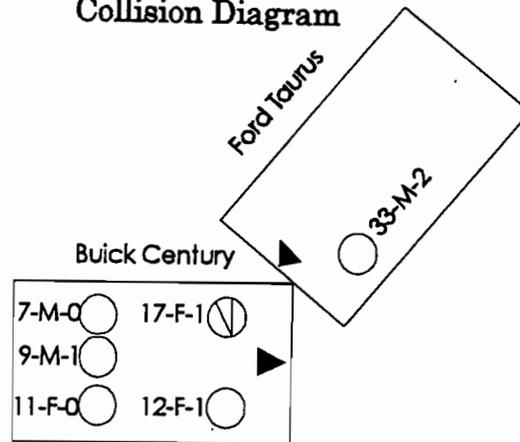
A Ford pickup truck collided with a Mazda Protege at an intersection and then the Ford truck overturned onto its roof. The 28-year-old female Ford driver was unrestrained and received moderate injuries. The unrestrained 2-year-old female left center passenger received minor injuries. The 1-year-old male right center passenger, restrained by a lap belt, received minor injuries. The 19-year-old female passenger, restrained with a lap/shoulder belt, received moderate injuries. The 83-year-old female driver of the Mazda, restrained with a lap/shoulder belt, received moderate injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left Center	Abrasion on face	1	Shattered glass
	Laceration on forehead	1	Dashboard
Right Center	Abrasion on back of head	1	Shattered glass and back of front seat

Case No. 76

Accident Number: NRH-95-FH-CO3
Date: January 30, 1995
Location: Ephrata Township, PA
Vehicle 1: 1987 Buick Century
Delta V: 15 mph
Vehicle 2: 1987 Ford Taurus
Delta V: 15 mph

Collision Diagram



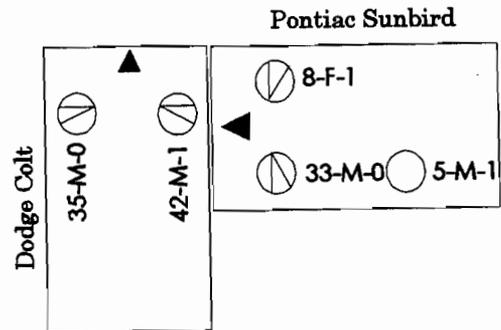
The Buick Century, occupied by 5 children, aged 7 to 17 years, turned left (west) out of a school driveway and was struck in the left front side by an eastbound Ford Taurus. The 17-year-old female driver of the Buick was restrained by a lap/shoulder belt and sustained minor injuries. The 12-year-old female seated in the right front seat was unrestrained and sustained minor injuries. The 7-year-old male seated in the left rear and an 11-year-old female seated in the right rear were unrestrained and were not injured. A 9-year-old male seated in the rear seat, middle position, was also unrestrained and sustained minor injuries. The driver of the Ford was unrestrained and according to the police, sustained moderate injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Middle Rear	Forehead abrasion	1	Back of front seat

Case No. 77

Accident Number: NRH-95-FH-CO5
Date: March 18, 1995
Location: Allentown, PA
Vehicle 1: 1979 Pontiac Sunbird
Delta V: 14 mph
Vehicle 2: 1985 Dodge Colt
Delta V: 19 mph

Collision Diagram

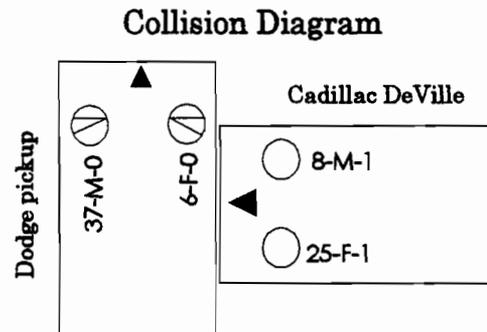


The Pontiac Sunbird was westbound when it collided with a Dodge Colt that was northbound. The Pontiac was occupied by a 33-year-old male driver and two passengers, 8-years-old and 5-years-old. The Pontiac driver was restrained by a lap/shoulder belt and was not injured. The 8-year-old female seated in the right front seat was restrained by a lap/shoulder belt and sustained minor injuries. The 5-year-old male seated in the left rear was unrestrained and sustained minor injuries. The driver of the Dodge was not injured and a right front seat passenger sustained minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Abrasion, lower left neck to lower right jaw line	1	Lap/shoulder belt
	Abrasion, or, contusion, right hip area	1	Lap/sboulder belt
Left Rear	Contusion on forehead	1	Back of drivers seat

Case No. 78

Accident Number: SRH-95-FH-C12
Date: January 30, 1995
Location: Marietta, Georgia
Vehicle 1: 1985 Cadillac
Delta V: 12.5 mph
Vehicle 2: 1993 Dodge pickup truck
Delta V: 10.2 mph



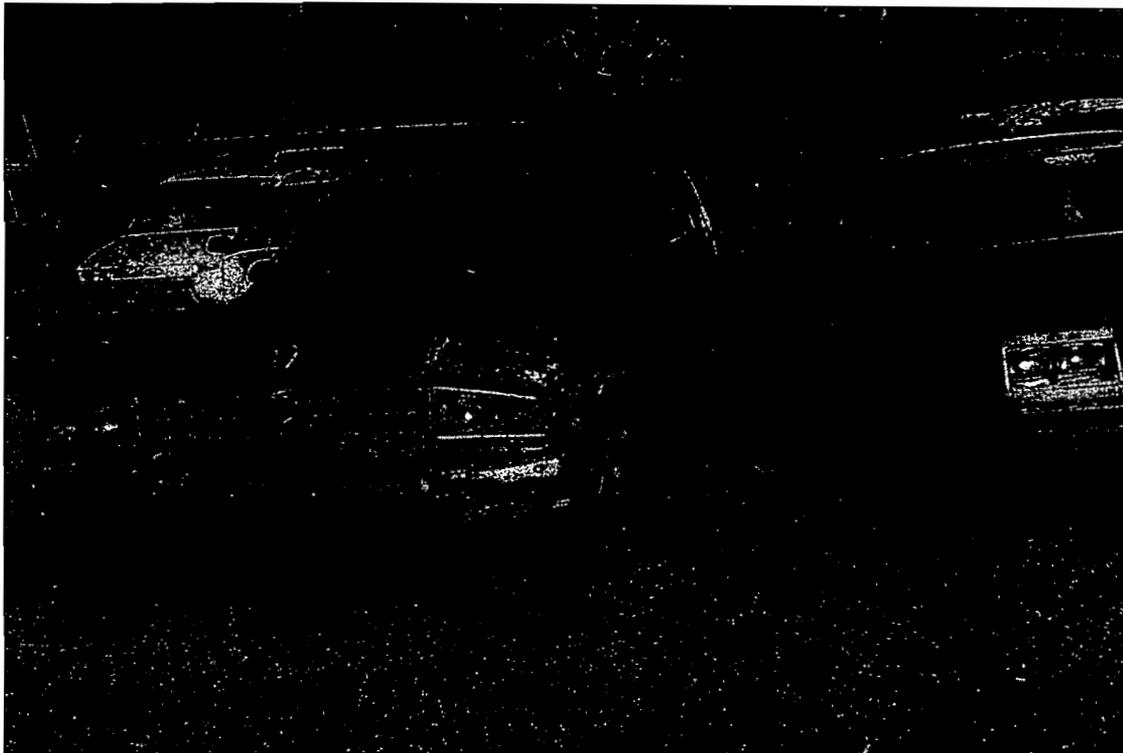
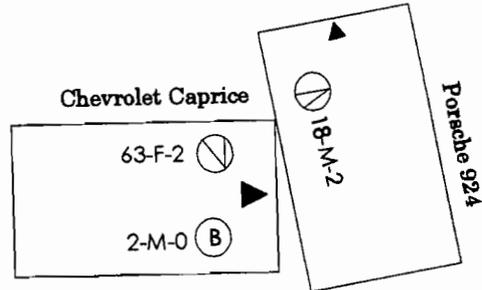
A Cadillac was traveling northbound on a 2-lane roadway in a residential area.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Contused/Lacerated lip Chipped tooth	1 1	Instrument panel Dashboard

Case No. 79

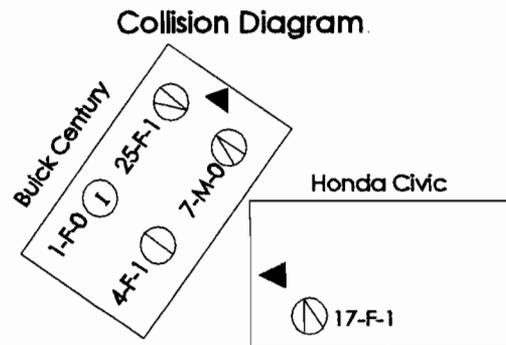
Accident Number: SRH-95-FH-C13
Date: February 15, 1995
Location: Kennesaw, Georgia
Vehicle 1: 1988 Chevrolet Caprice
Delta V: 8.2 mph
Vehicle 2: 1978 Porsche 924
Delta V: 12.0 mph

Collision Diagram



Case No. 80

Accident Number: SRH-95-FH-C14
Date: February 17, 1995
Location: Marietta, Georgia
Vehicle 1: 1986 Buick Century
Delta V: 13.8 mph
Vehicle 2: 1984 Honda Civic
Delta V: 22.3 mph



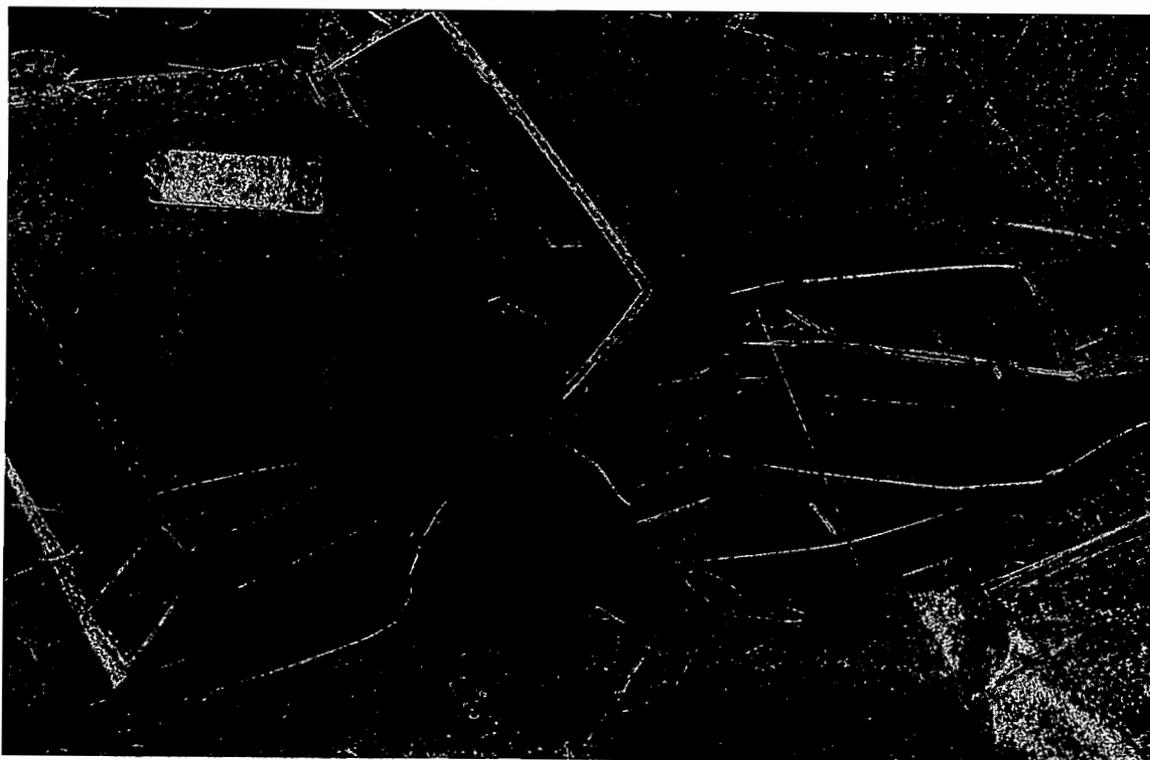
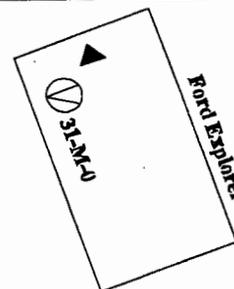
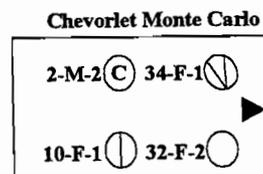
A Buick was traveling northbound and negotiating a left turn at a signalized intersection. Midway through the turn the signal changed from a green arrow to green light. A southbound Honda, which was approaching in the left southbound lane, observed the light change and moved into the right lane. The Honda then struck the turning Buick in the right rear door. All four occupants of the Buick were restrained by the front lap/shoulder belts or rear lapbelts. The one-year-old female passenger in the left rear seat was secured in a child restraint system. The 23-year-old driver and 4-year-old female right rear seat passenger sustained minor injuries. The 7-year-old male right front seat passenger and the 1-year-old female left rear seat passenger were not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right rear	Contusions right forehead	1	Right rear door inner panel

Case No. 81

Accident Number: SRH-95-FH-C15
Date: March 11, 1995
Location: Marietta, Georgia
Vehicle 1: 1984 Chevrolet Monte Carlo
Delta V: 17.5 mph
Vehicle 2: 1991 Ford Explorer
Delta V: 15.8

Collision Diagram

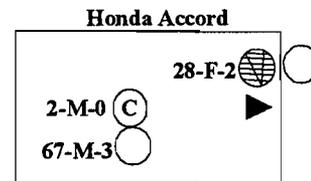


The Chevrolet was eastbound, turned left at an intersection, and its right side was struck by the front of the westbound Ford Explorer. The restrained Chevrolet driver and 10-year-old female in the right rear received minor injuries. The unrestrained passenger in the right front and the 2-year-old male in a child restraint system in the left rear received moderate injuries. The driver of the Ford Explorer was restrained and not injured.

Occupant Location	Injuries	AIS	Probable Source
<u>Vehicle 1</u>			
Left rear	Fracture thru medial 3rd of right clavicle	2	CRD harness
Right rear	Abrasion/Laceration, forehead	1	Right door/window frame
	Contusion, right forehead	1	Right door/window frame
	Abrasion/laceration, left wrist	1	Unknown
	Contusions, abdominal wall	1	Lap belt

Case No. 82

Accident Number: SRH-95-FH-C17
Date: March 20, 1995
Location: Austell, Georgia
Vehicle 1: 1992 Honda Accord
Delta V: 15.0 mph

Collision Diagram

82

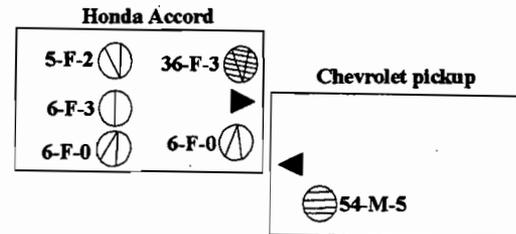


A Honda was traveling southbound on a 2-lane roadway in a combination commercial/residential area. As the Honda slowed to attempt a right turn, a southbound Mitsubishi struck the rear of the Honda. The Honda then veered off the right side of the roadway and struck a tree head-on. The restrained adult driver of the Honda sustained a fractured right foot and an unrestrained adult passenger sustained a fractured spine. Both occupants were transported to a local hospital. A 2-year-old male restrained in a child restraint system at the center rear position was not injured. The restrained driver of the Mitsubishi was not injured.

Case No. 83

Accident Number: SRH-95-FH-C18
Date: March 25, 1995
Location: Suwannee, Georgia
Vehicle 1: 1991 Honda Accord
Delta V: 48.2
Vehicle 2: 1995 Chevrolet pickup
Delta V: 57.3 mph

Collision Diagram



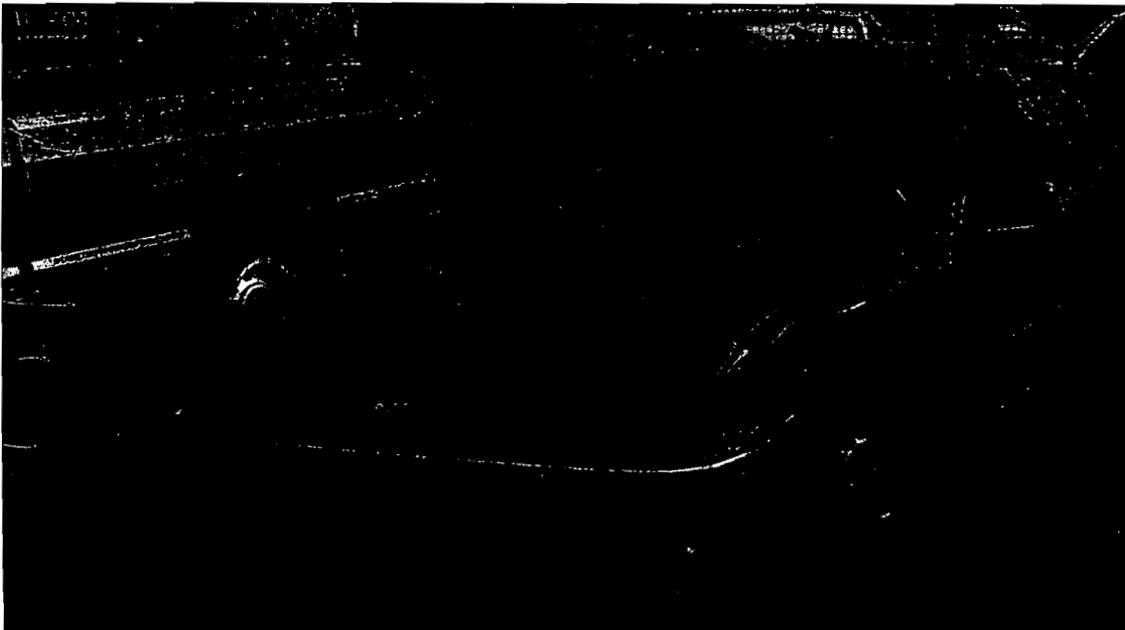
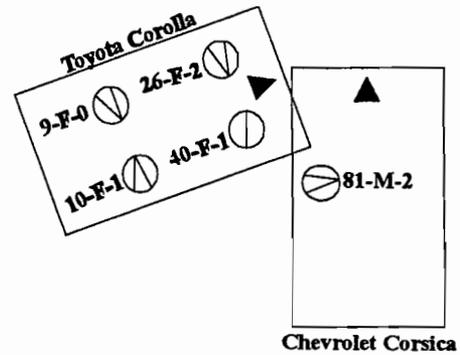
The Honda Accord was traveling northbound when a southbound Chevrolet pickup truck crossed the double yellow center line of the two lane roadway and struck the Honda head on. The Chevrolet overrode the left front of the Honda, rolled 360 degrees about its longitudinal axis and came to rest on its wheel on the southbound lane shoulder. The Honda rotated about 85 degrees about its vertical axis in a counter clockwise direction and came to rest on its wheels on the right edge of the northbound lane. The driver of the Chevrolet was fatally injured, while the driver of the Honda and the lap belted 3-year-old female passenger at the rear center seat position sustained serious injuries. The left rear passenger of the Honda sustained a moderate injury while the other two passengers were not injured; they all were lap/shoulder belted.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Fracture of the third left metacarpal	2	Unknown
Center rear	Naso-Orbit Ethmoid fracture	3	Rear of left front seat back
	LeFort I, fracture	2	Rear of left front seat back
	LeFort II, fracture	2	Rear of left front seat back
	Left orbital blow-out fracture	3	Rear of left front seat back

Case No. 84

Accident Number: WRH-95-FH-CO6
Date: January 26, 1995
Location: Long Beach, California
Vehicle 1: 1991 Toyota Corolla
Delta V: Delta V: 10.5 mph
Vehicle 2: 1990 Chevrolet Corsica
Delta V: 10.7 mph

Collision Diagram



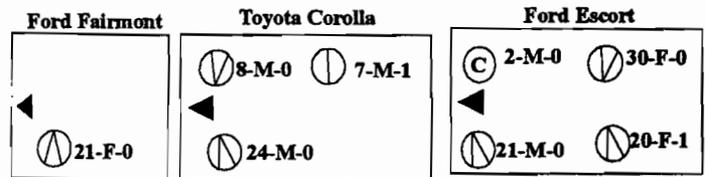
A Toyota Corolla was making a left turn at an intersection when it was struck on the front left side by the front of a Chevrolet Corsica. The driver of the Toyota, a 26-year-old female, was restrained by a motorized shoulder belt and a separate lap belt. The right front passenger, a 40-year-old female, was wearing the motorized shoulder belt, but did not have the separate lap belt buckled. The left rear passenger, a 9-year-old female, was restrained by a lap/shoulder belt. The right rear passenger, a 10-year-old female, was also restrained by a lap/shoulder belt. The driver and right front passenger were transported in a private vehicle to a medical clinic where they were treated and released. The driver

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right rear	Contusion on left shin	1	Impact with rear edge of console
	Contusion on forehead	1	Unknown

Case No. 85

Accident Number: WRH-95-FH-CO7
Date: January 23, 1995
Location: La Mirada, California
Vehicle 1: 1988 Ford Escort
Delta V: 14.9 mph
Vehicle 2: 1993 Toyota Corolla
Delta V: 13.0 mph
Vehicle 3: 1979 Ford Fairmont
Delta V: N.A

Collision Diagram

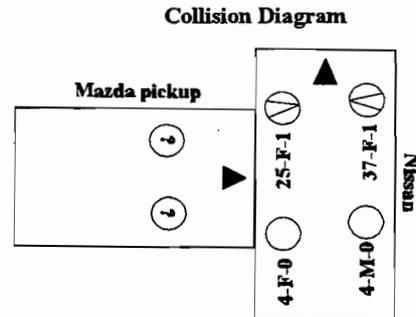


The Ford Fairmont was stopped ahead of the Toyota at a red light. The Ford Escort failed to stop and struck the Toyota in the rear. The 24-year-old driver of the Toyota and the 8-year-old male in the right front seat were wearing lap/shoulder belts and were not injured. The 7-year-old male in the right rear seat was wearing a lap belt, and struck his head on the back of the right front seat. The 21-year-old driver of the Escort and the two adults (20-year-old female in the left rear seat and 30-year-old female in the right rear seat) were wearing their lap/shoulder seat belts. The 30-year-old female was wearing the shoulder belt under her right arm. A 33-month-old male riding in a forward facing child restraint system was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 2 Right Rear	Laceration over right eye	1	Struck the back of the right front seat

Case No. 86

Accident Number: WRH-95-FH-CO8
Date: February 1, 1995
Location: Long Beach, California
Vehicle 1: 1984 Nissan 200SX
Delta V: 16 mph
Vehicle 2: Mazda pickup
Delta V: 15.5 mph

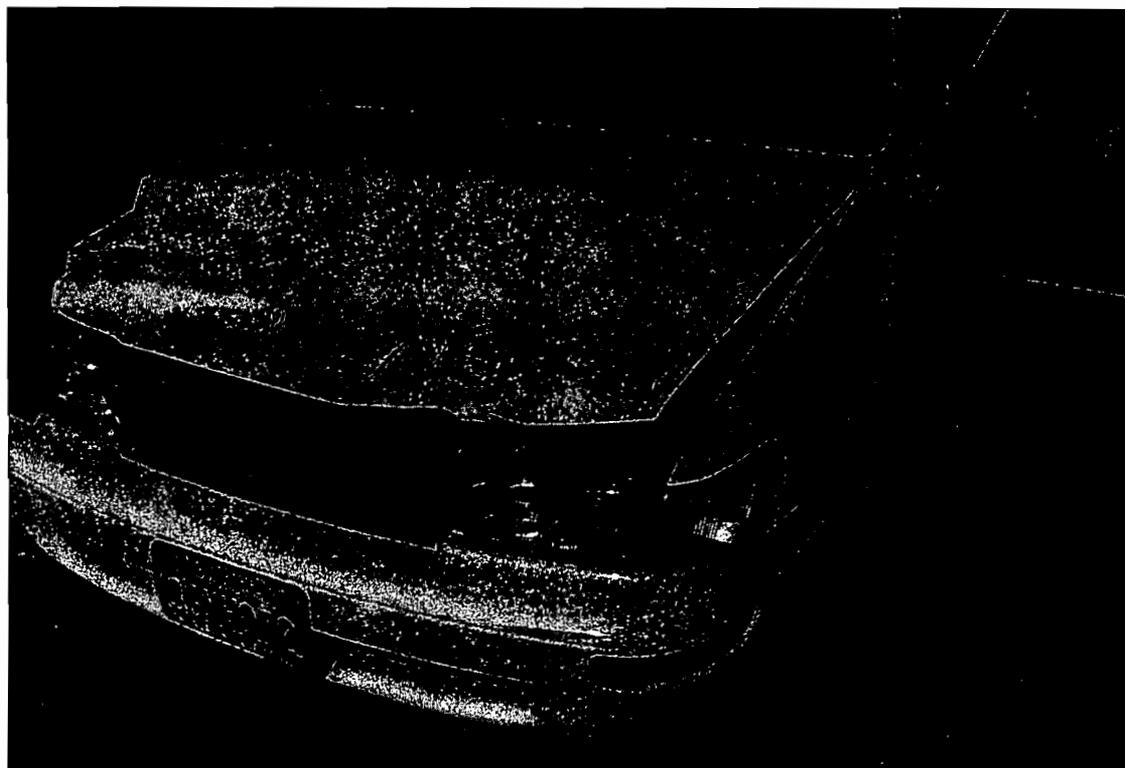
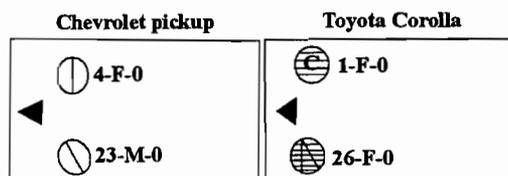


The Nissan 200SX was struck broadside, on the left side at the driver door location, by the front of a Mazda pickup truck. Both vehicles received heavy damage. There were four occupants in the Nissan. The 25-year-old female driver and 37-year-old female right front passenger were restrained with lap/shoulder belts and were treated for minor injury. Two 4-year-old children riding in the back seat were unrestrained and uninjured. There is no restraint or injury information available for the two adult males in the Mazda, as they fled the scene after the accident.

Case No. 87

Accident Number: WRH-95-FH-CO9
Date: February 6, 1995
Location: Carson, California
Vehicle 1: 1994 Toyota Corolla
Delta V: 16.8 mph
Vehicle 2: 1975 Chevrolet pickup truck
Delta V: 11.4 mph

Collision Diagram

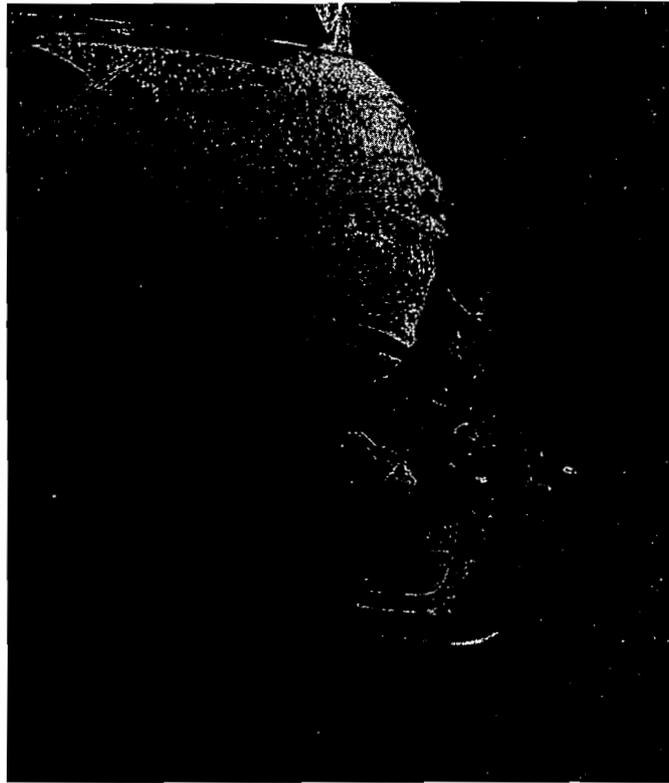
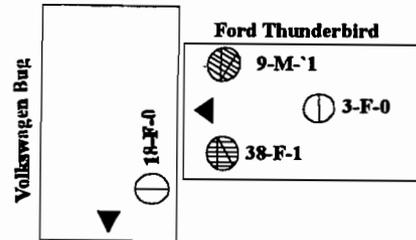


A Toyota Corolla, driven by a 26-year-old female wearing the lap/shoulder belt, struck the rear of a Chevrolet pickup truck stopped at a stop sign. A 1-year-old female was properly restrained in a Century infant seat, located in the vehicle's right front seat. The driver received minor lacerations to her face when the air bag deployed. The child was not injured. The driver of the pickup truck was wearing a shoulder belt only and a 4-year-old female right front passenger was wearing a lap belt only. Neither occupant of the Chevrolet was injured.

Case No. 88

Accident Number: WRH-95-FH-C10
Date: February 11, 1995
Location: Covina, California
Vehicle 1: 1994 Ford Thunderbird
Delta V: 8.7 mph
Vehicle 2: 1967 Volkswagen "Bug"
Delta V: 16.5 mph

Collision Diagram



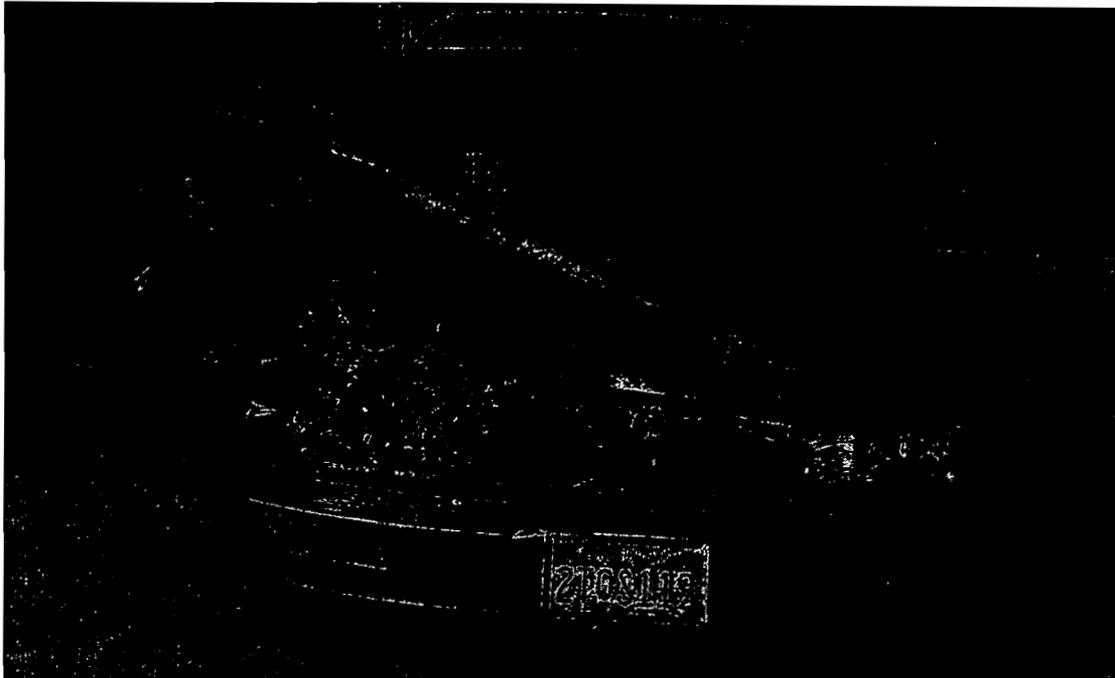
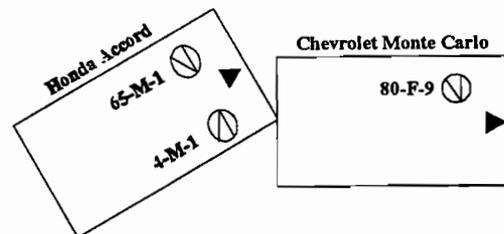
The Ford Thunderbird was traveling westbound on a residential street at about 20 to 25 miles per hour. The driver and 9-year-old male right front passenger were reportedly wearing their lap/shoulder belts. A 3-year-old female, in the center rear position was wearing her lap belt. The Ford struck a southbound 1967 Volkswagen on the left side. The 18-year-old female driver of the Volkswagen was wearing her lap belt. The impact caused the Volkswagen to spin around. The Volkswagen frame had been reinforced by a roll bar, which was located at the point of impact. Both air bags in the Ford deployed on impact. The driver of the Ford received minor bruising. The right front child passenger sustained lacerations to his face and right cornea from being struck by the air bag. The 3-year-old in the center rear seating position was not injured. The driver of the Volkswagen was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Facial lacerations Laceration on cornea	1 1	Struck by air bag Struck by air bag

Case No. 89

Accident Number: WRH-95-FH-C11
Date: February 17, 1995
Location: Long Beach, California
Vehicle 1: 1990 Honda Accord
Delta V: 9.7 mph
Vehicle 2: 1982 Chevrolet Monte Carlo
Delta V: 9.1 mph

Collision Diagram



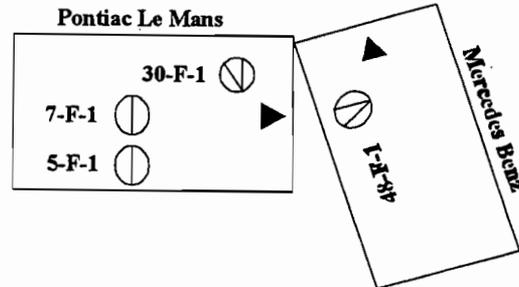
A Chevrolet Monte Carlo was backing out of a diagonal parking spot when it was struck in the rear by the right front of a Honda Accord. In the Honda both the driver, and right front passenger, a 4-year-old male, were wearing the motorized automatic shoulder belt and the independent lapbelt. The driver, who sustained a seatbelt abrasion across his chest and bruised ribs, was taken to a local hospital via private vehicle. He was treated and released. The 4-year-old male, who sustained a shoulder belt abrasion on the right side of his neck, was not medically treated. It was substantiated through geometrical measurements, as well as his neck abrasion, that the shoulder/belt fit him high and brushes against his neck. The driver of vehicle the Chevrolet, an 80-year-old female, was not medically treated on the day of the accident, but went to a doctor about a week later complaining of neck pain.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Abrasion on right side of neck	1	Shoulder belt

Case No. 90

Accident Number: WRH-95-FH-C12
Date: March 2, 1995
Location: Sherman Oaks, California
Vehicle 1: 1992 Pontiac Le Mans
Delta V: 18.1 mph.
Vehicle 2: 1978 Mercedes Benz 280
 SLC
Delta V: 10.9 mph

Collision Diagram



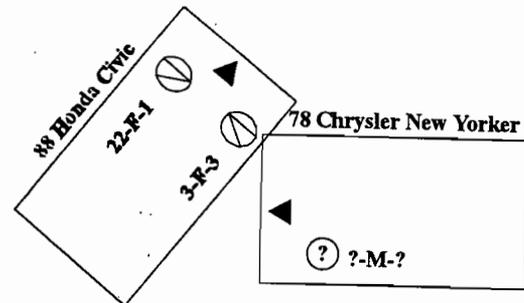
A Mercedes Benz was entering a main roadway intending to make a left turn when it was struck on the left front by the front of a Pontiac Le Mans. The driver of the Pontiac, a 30-year-old female, was restrained by a motorized shoulder belt and a lapbelt. The rear center passenger, a 7-year-old female, was restrained by a lap belt. The right rear passenger, a 5-year-old female, was restrained with a lap/shoulder belt. However, this occupant wore the shoulder belt portion behind her back because, according to the occupant, the shoulder belt went across her face. All three of these occupants sustained minor injuries and were transported to a local hospital via ambulance. The driver of the Mercedes Benz, a 48-year-old female, was also wearing a lap/shoulder belt. She was also transported to a local hospital via ambulance. She sustained minor injuries and was treated and released.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center rear	Abrasions on both sides of pelvis	1	Lap belt
	Left front tooth knocked loose	1	Struck her own knee
	Nose hemorrhage	1	Struck her own knee
Right rear	Abrasion near center of back	1	Impacted door handle

Case No. 91

Accident Number: WRH-95-FH-C13
Date: March 9, 1995
Location: Sepulveda, CA
Vehicle 1: 1988 Honda Civic
Delta V: 19.4 mph
Vehicle 2: 1978 Chrysler New Yorker
Delta V: 8.9 mph

Collision Diagram



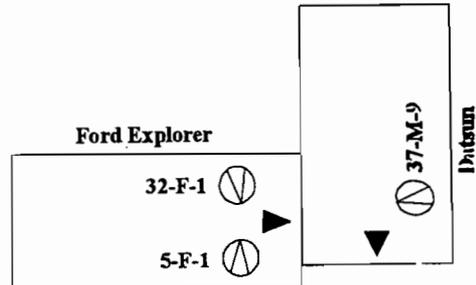
A Honda Civic was eastbound on an urban roadway and attempted to make a left turn into a restaurant parking lot when it was struck on the right side by a westbound Chrysler New Yorker. The Honda was driven by a 22-year-old female and the right front passenger was a 3-year-old female. Both of them were restrained by lap/shoulder belts. They were air-lifted to hospitals. The driver was treated and released six hours later. The 3-year-old passenger was admitted with serious injuries and had a 14 day hospital stay. The Honda had 22 inches of intrusion into the middle of the right passenger door in the vicinity where the 3-year-old female was seated. The driver of the Chrysler fled the scene and his identity is unknown.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front seat	Lacerations of the liver with blood loss (NFS)	2	Impact with intruded door
	Closed Intracranial injury (NFS)	9	Impact with intruded door
	Closed right tibia "shaft" fracture	2	Impact with intruded door
	Closed right fibula, distal and "shaft" fracture	2	Impact with intruded door
	Closed right femur "shaft" fracture(100%) displaced	3	Impact with intruded door
	Closed mandible fracture (multiple sites)	1	Impact with intruded door
	Closed orbital floor fracture	2	Impact with intruded door
	Closed maxilla fracture	2	Impact with intruded door
	Close zygomatic	2	Impact with intruded door
	Close fracture of right astragalus fracture(right ankle)	2	Impact with intruded door
	Contusion with swelling over right temporal area	1	Impact with intruded door
	Multiple contusions with echymoses(multiple locations)	1	Impact with intruded door and/or other components
	Multiple lacerations (multiple locations)	1	Impact with intruded door and/or other components
	Abrasions over sternum)	1	Impact with intruded door and/or shoulder belt

Case No. 92

Accident Number: WRH-95-FH-C14
Date: March 11, 1995
Location: Granada Hills, California
Vehicle 1: 1994 Ford Explorer
Delta V: 16.8 mph
Vehicle 2: 1978 Datsun 280 ZX
Delta V: 23.4 mph

Collision Diagram



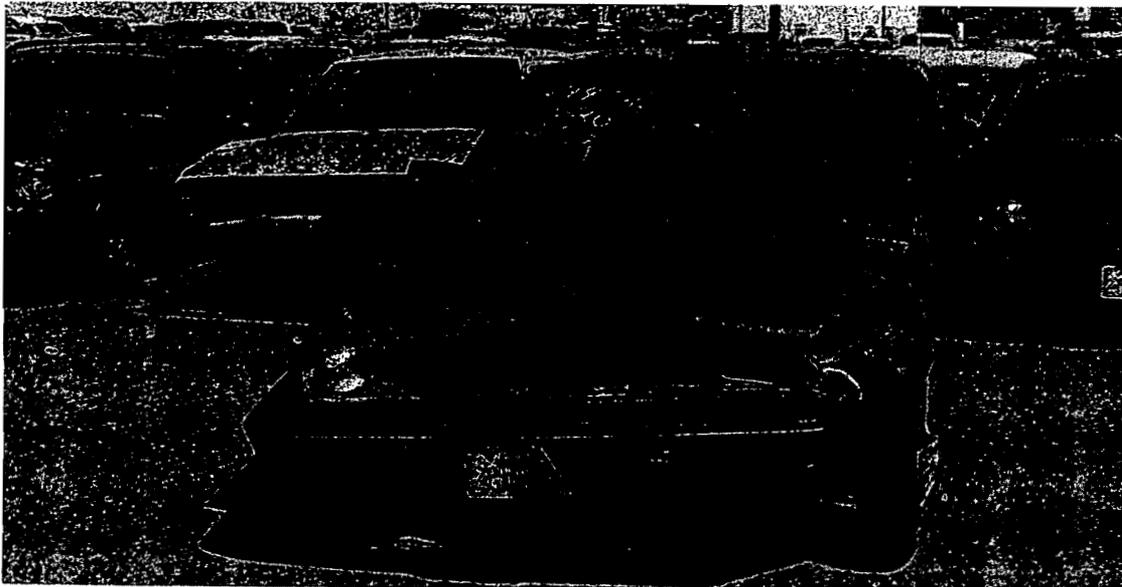
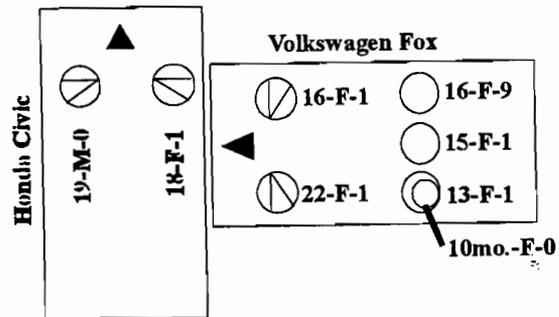
A Ford Explorer was entering an intersection when it struck the right front side of a Datsun 280 ZX. In the Explorer a 32-year-old female driver was restrained with a lap/shoulder belt and the right front passenger, a 5-year-old female, was also restrained with a lap/shoulder belt. However, the child was laying down on the front seat in the fetal position with her head resting on the cushioned armrest located between the two front seats. The shoulder belt was under her right arm and the lap portion of the belt was low on her right hip, but went across her abdominal area at a slight angle. Both of these occupants were taken to a local hospital via ambulance where they were treated for minor injuries and released several hours later. Both of them required follow up treatment. The driver of the Nissan, a 37-year-old male, was also wearing a lap/shoulder belt. He complained of neck pain while at the scene, but did not seek immediate medical attention. It is unknown if he sustained any injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Left periorbital contusion(dark with swelling)	1	Struck vinyl/plastic food storage holder(console area)
	Right periorbital contusion	1	"same as above"
	Fractured right index finger	1	"same as above"

Case No. 94

Accident Number: WRH-95-FH-C16
Date: March 20, 1995
Location: Long Beach, California
Vehicle 1: 1988 Volkswagen Fox
Delta V: 10.1 mph
Vehicle 2: 1995 Honda Civic
Delta V: 10.8 mph

Collision Diagram

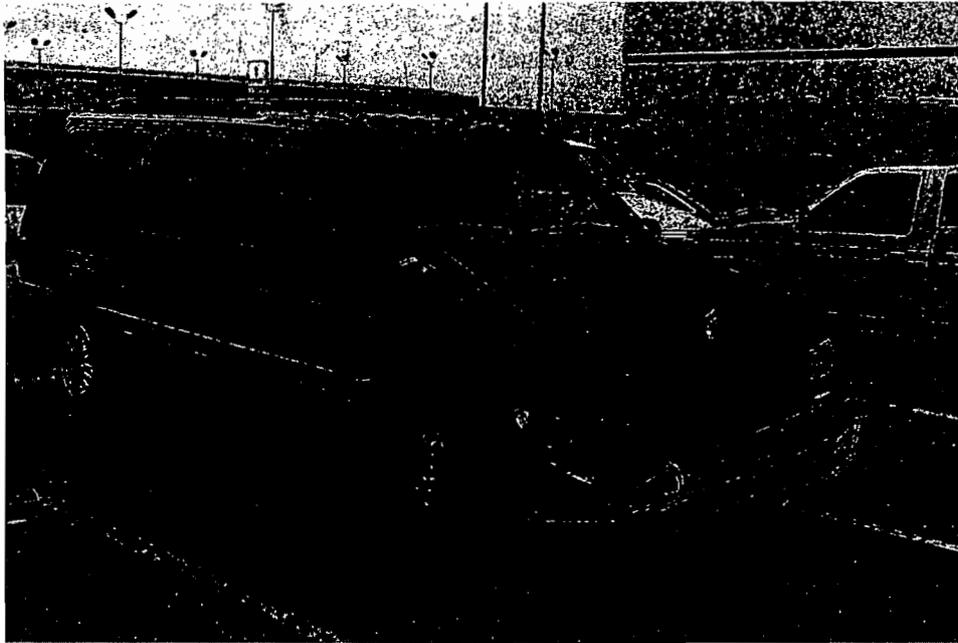
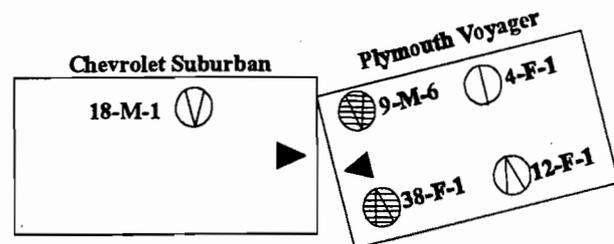


A Volkswagen Fox was traveling southbound and entered a controlled intersection. A Honda Civic, traveling westbound, was struck on the right side, in the vicinity of the passenger door, by the front of the Volkswagen Fox. There were six occupants in the Volkswagen. The 22-year-old female driver and a 16-year-old female right front passenger were both restrained by lap/shoulder belts. A 13-year-old female, seated in the left rear, was holding a 10-month-old female infant on her lap. Both of these occupants were unrestrained. A 15-year-old female in the middle rear position and a 16-year-old female in the right rear position were also unrestrained. Four of these six occupants, including the 10-month-old infant, were transported via ambulance to a local hospital where they were treated and released. The 10-month-old infant was uninjured. The 16-year-old female passenger seated in the right rear was not injured. The other four occupants received minor injury. There were two occupants in the Honda. The 19-year-old male driver and 18-year-old female in the right front seat were both restrained by lap/shoulder belts. The right front passenger was transported to a local hospital where she was treated for minor injuries and released.

Case No. 95

Accident Number: CRH-95-FH-C01
Date: March 3, 1995
Location: Houston, Texas
Vehicle 1: 1995 Plymouth Grand Voyager
Delta V: 17.5 mph
Vehicle 2: 1985 Chevrolet Suburban
Delta V: 14.4 mph

Collision Diagram



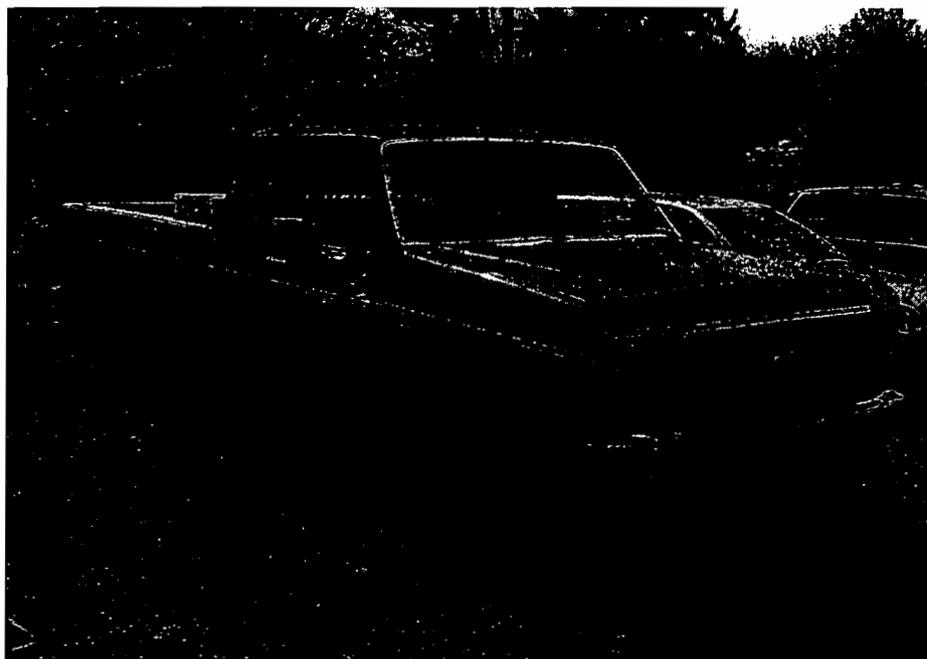
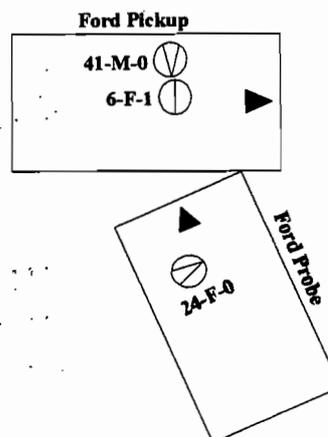
The Suburban slid into the intersection on wet pavement and collided front first into the front of the Plymouth minivan, turning left from a stopped position at a stop sign. The minivan driver braked to avoid the impact. The minivan spun 180 degrees counterclockwise after the collision and came to rest facing in the opposite direction. The Plymouth driver was restrained by a lap/shoulder belt. The 9-year-old male right front passenger was restrained by the lap belt, and probably with the shoulder belt although actual use is uncertain. Both driver and passenger air bags deployed in response to the collision. The 12-year-old female in the left rear was wearing the lap/shoulder belt. The 4-year-old female in the right rear was wearing the lapbelt with proper use of the shoulder belt being uncertain. The 9-year-old male right front occupant was fatally injured by the air bag. The other occupants of the Plymouth minivan received minor injuries. The lap/shoulder belted Suburban driver received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Fracture of Cervical Spine Between C-1 and Forearm with loss of conciousness for over 24 hours with quadraplegia	6	Air Bag
	Bilateral Subdural Hemorrhage	5	Air Bag
	Bilateral Subarachnoid Hemorrhage	3	Air Bag
	Cerebral Edema	3	Air Bag
	Brush Burn Abrasion on Nasal Opening	1	Air Bag
	Contusion and Brush Burn	1	Air Bag
	Abrasion on Both Lips	1	Air Bag
	Laceration to Frenulum		
	Diffuse Brush Burn Abrasion on Forehead Extending to the Left and Right Orbits	1	Air Bag
	Abrasions on Left and Right Sides of the Face	1	Air Bag
	Purple Contusion of Right	1	Air Bag
Right Rear	Contusion on Hip	1	Lapbelt

Case No. 96

Collision Diagram

Accident Number: NRH-95-FH-CO6
Date: March 24, 1995
Location: Worcester, PA
Vehicle 1: 1986 Ford pickup truck
Delta V: 4.7 mph
Vehicle 2: 1993 Ford Probe
Delta V: 7.8 mph



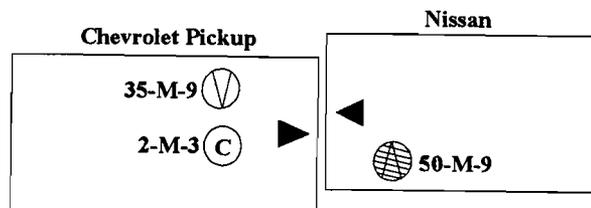
The Ford pickup truck was westbound. The truck was occupied by a 41-year-old male driver and a 6-year-old female who was seated next to him. As the truck reached an intersection it collided with a Ford Probe that was turning east. The drivers of both vehicles were restrained by lap/shoulder belts and were not injured. The 6-year-old female passenger in the pickup truck was restrained by a lapbelt and sustained minor injuries. She was treated at a local hospital and released.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center front	Contusion left temple area	1	Unknown

Case No. 97

Accident Number: SRH-95-FH-C19
Date: March 24, 1995
Location: Columbiana, Alabama
Vehicle 1: 1991 Chevrolet pickup truck
Delta V: 46.2 mph
Vehicle 2: 1991 Nissan 300 ZX
Delta V: 55.2 mph

Collision Diagram

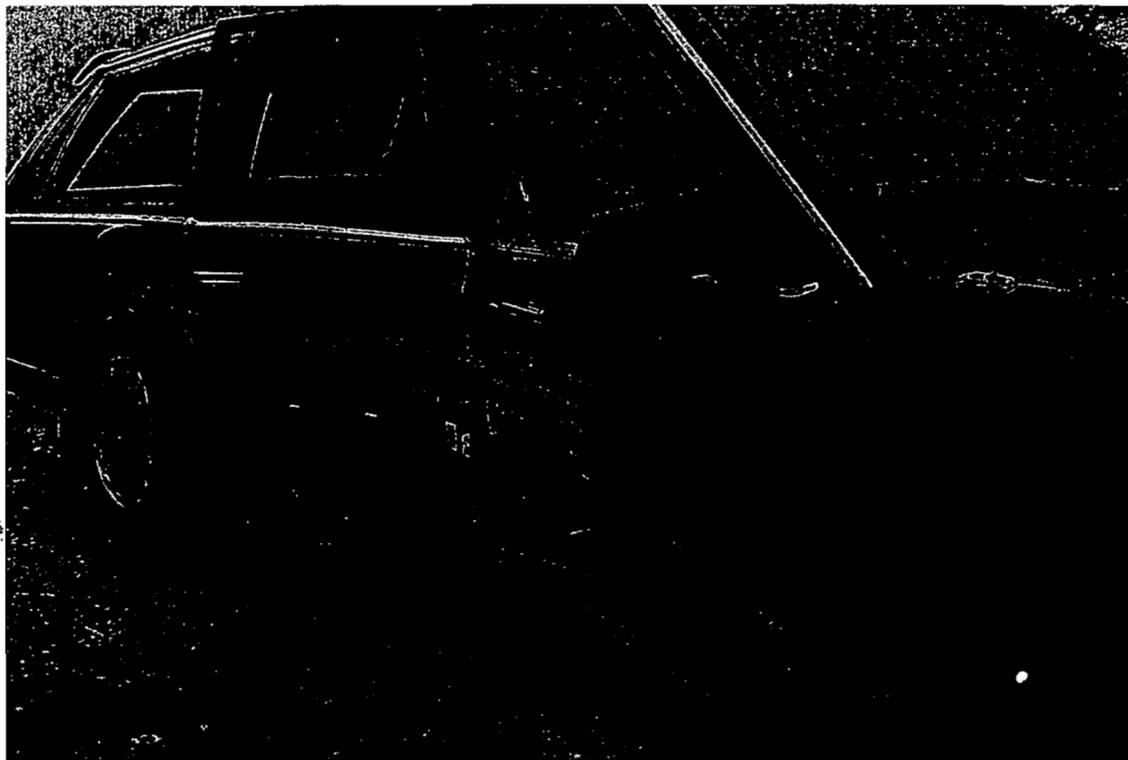
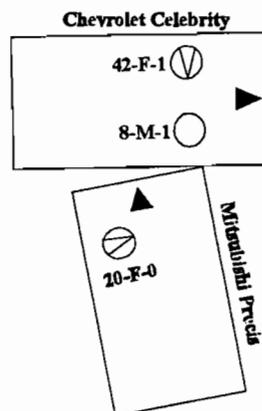


A Chevrolet pickup collided head-on with a Nissan 300 ZX that crossed the roadway center line. Both vehicles were extensively damaged. The lap/shoulder belted driver of the pickup was fatally injured. A 2-year-old male passenger in a child restraint system, secured by the center position lap belt, received serious injuries. In the Nissan, the driver was lap/shoulder belted and the airbag deployed, yet he was fatally injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center front	Multiple fractures to left orbital skull	3	Shift lever or dash
	Fractures to left temporal skull	3	Shift lever or dash
	Traumatic brain injury	9	Shift lever or dash
	Contusion, left frontal temporal region	1	Shift lever or dash
	Fracture, right tibia	1	Lower dash

Case No. 98

Accident Number: SRH-95-FH-C21
Date: April 11, 1995
Location: Kennesaw, Georgia
Vehicle 1: 1987 Chevrolet Celebrity
Delta V: 10.9 mph
Vehicle 2: 1989 Mitsubishi Precis
Delta V: 14.6 mph

Collision Diagram

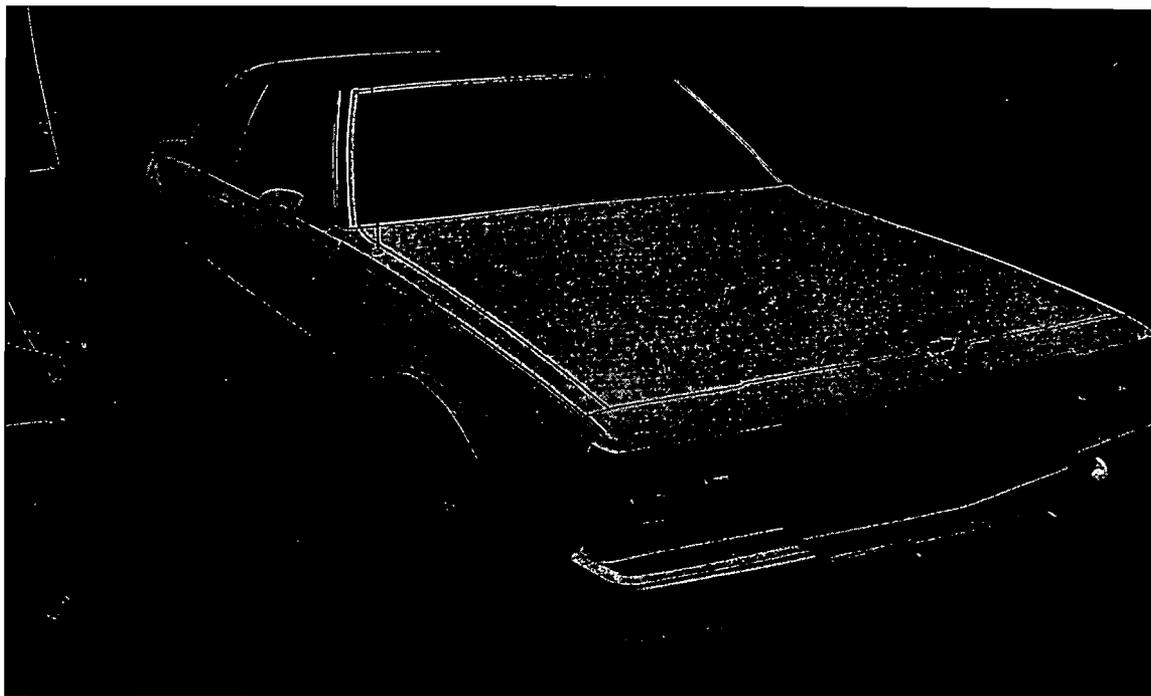
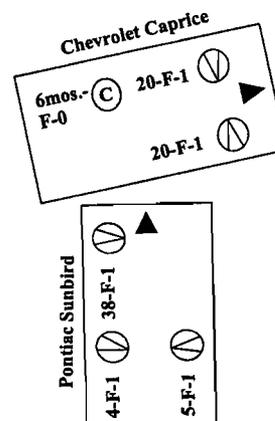
The Chevrolet was westbound, turned left at an intersection, and its right side was struck by the eastbound Mitsubishi. The Chevrolet driver was lap/shoulder belted and sustained minor injuries. An unrestrained 8-year-old male in the right front received minor injuries. The driver of the Mitsubishi was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Cervical strain	1	Unknown
	Laceration, jagged on chin	1	Windshield
	Laceration, tongue	1	Windshield
	Laceration, right index finger	1	Unknown

Case No. 100

Accident Number: SRH-95-FH-C22
Date: April 10, 1995
Location: Marietta, Georgia
Vehicle 1: 1986 Chevrolet Caprice
Delta V: 8.7 mph
Vehicle 2: 1990 Pontiac Sunbird
Delta V: 12.1 mph

Collision Diagram

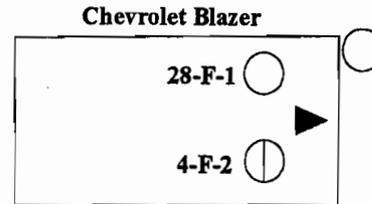


The Chevrolet Caprice was traveling southbound. As the Chevrolet crossed the controlled intersection it was struck in the right rear by an eastbound Pontiac Sunbird. The Chevrolet rotated about 190 degrees in a clockwise direction. The lap/shoulder belt restrained driver and right front seat passenger sustained minor injuries, while the 6-month-old child restrained in a child restraint system in the left rear was not injured. The lap/shoulder belt restrained driver of the Pontiac and both of the lap/shoulder belt restrained rear seat passengers were taken for treatment. However, they refused to cooperate with the Safety Board.

Case No. 101

Accident Number: NRH-95-FH-CO7
Date: April 10, 1995
Location: Boyertown, PA
Vehicle 1: 1994 Chevrolet Blazer
Delta V: 22.1 mph

Collision Diagram



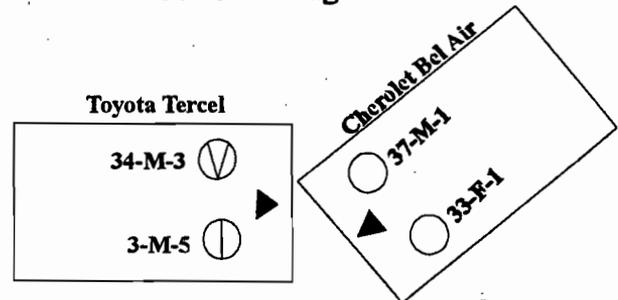
A Chevrolet Blazer was eastbound. The vehicle was occupied by a 28-year-old female driver and a 4-year-old female seated in the right front seat. The Chevrolet failed to negotiate a right turn and crashed into a wooden utility pole. The driver was unrestrained and sustained minor injuries. The 4-year-old female in the right front passenger seat was restrained by the lapbelt portion of a lap/shoulder belt and sustained moderate injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Front, right	Kidney Contusion	2	Lapbelt
	Contusions, abrasions upper pelvic area	1	Lapbelt
	Forehead abrasion	1	Dashboard
	Contusions and abrasions to nose	1	Dashboard

Case No. 103

Accident Number: SRH-95-FH-C23
Date: April 12, 1995
Location: Smyrna, Georgia
Vehicle 1: 1983 Toyota Tercel
Delta V: 23.9 mph
Vehicle 2: 1967 Chevrolet Bel Air
Delta V: 12.5 mph

Collision Diagram



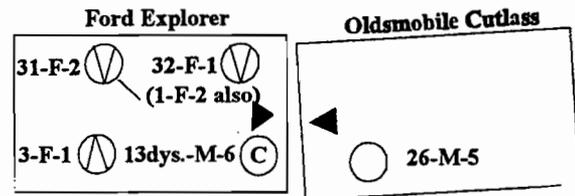
A Toyota traveled northbound on a 4-lane roadway in a commercial area. As the Toyota entered an intersection a southbound Chevrolet attempted a left turn and was struck in the right front corner by the Toyota. The lap/shoulder belt restrained adult driver of the Toyota sustained a fractured right arm and a lapbelt only restrained 3-year-old child right front seat passenger sustained a lumbar spinal fracture and a contused spinal cord. Both occupants were transported to a local hospital. The child's injuries resulted in paralysis and respiratory failure. He is quadriplegic and dependent upon a respirator. Both occupants of the Chevrolet received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Fractured L2 vertebra Contused spinal cord(C2 vertebra)	2 5	Lapbelt Stretch injury

Case No. 105

Accident Number: SRH-95-FH-C24
Date: April 21, 1995
Location: Lilburn, Georgia
Vehicle 1: 1992 Ford Explorer
Delta V: 30.8 mph
Vehicle 2: 1984 Oldsmobile Cutlass
Delta V: 38.3 mph

Collision Diagram



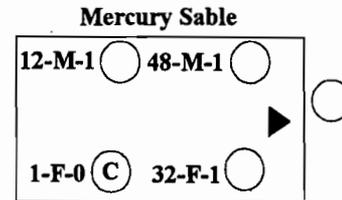
A stopped Ford Explorer in a left turn lane was struck head-on by an Oldsmobile. The Ford was moved rearward and overturned onto its right side. A 13-day-old male in a child restraint system secured in the right front was ejected and fatally injured. No other occupant was ejected. The lap/shoulder belted driver and 3-year-old female in the right rear sustained minor injuries. The left rear passenger and 23-month-old female on her lap were restrained with the same lap/shoulder belt. Both received moderate injuries. The driver of the Oldsmobile received critical injuries

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Large open lateral fracture of skull	6	Vehicle/roadway
	Abrasions right back and shoulder	1	Unknown
	Abrasion right forearm	1	Unknown
	Abrasion left biceps and hand	1	Unknown
	Abrasion right knee and lower leg	1	Unknown
Left rear on lap	Contusion to pancreas	2	Lap belt
	Laceration to forehead	1	Unknown
	Contusion to left lower back	1	Unknown
	Contusion to lower abdomen	1	Lap belt
Right rear	Abrasions to upper chest	1	Shoulder belt
	Abrasion to abdomen	1	Lap belt
	Laceration to mouth	1	Unknown
	Laceration to left finger	1	Unknown

Case No. 106

Accident Number: NRH-94-FH-CO9
Date: July 17, 1994
Location: Ocean City, NJ
Vehicle 1: 1989 Mercury Sable
Delta V: 18 mph

Collision Diagram

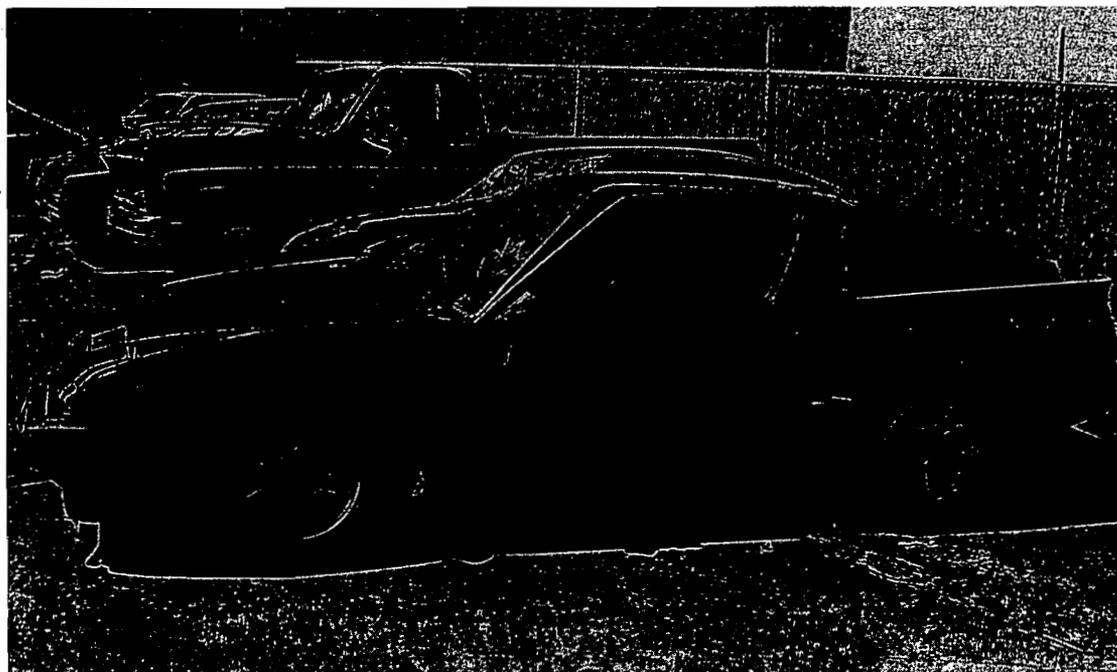
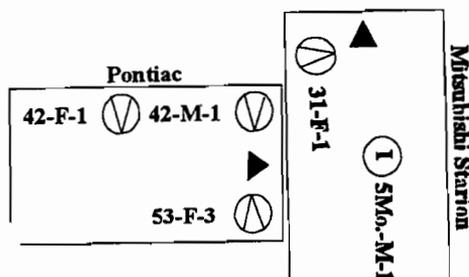


The Mercury was westbound when it drifted over the center line, crossed both eastbound lanes, crashed into and knocked down a wooden utility pole. A 1-year-old female seated in the right rear was restrained by an Evenflo Ultara, convertible, forward facing, child restraint system and was uninjured. A 12-year-old male seated in the left rear was not restrained by the available lapbelt and sustained minor injuries. The driver and front seat passengers were not restrained and sustained minor injuries.

Case No. 107

Accident Number: WRH-95-FH-C17
Date: March 23, 1995
Location: Studio City, California
Vehicle 1: 1988 Mitsubishi Starion
Delta V: 12.1 mph
Vehicle 2: 1990 Pontiac 6000
Delta V: 19.9 mph

Collision Diagram



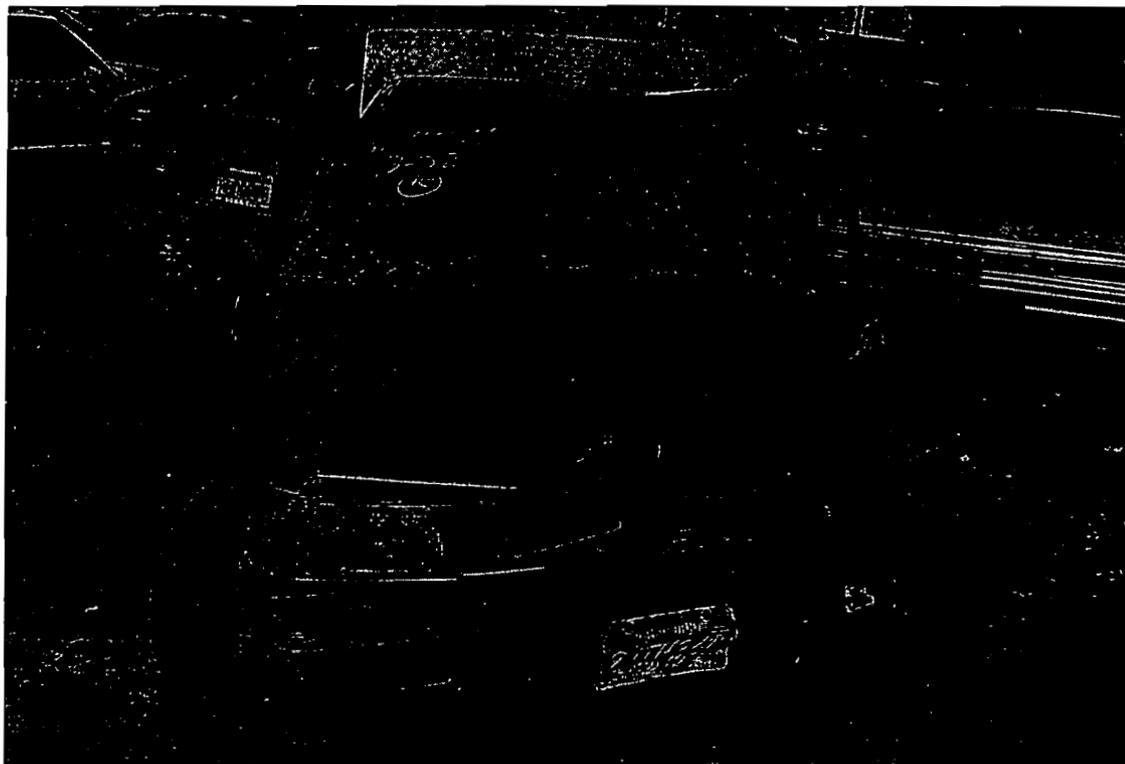
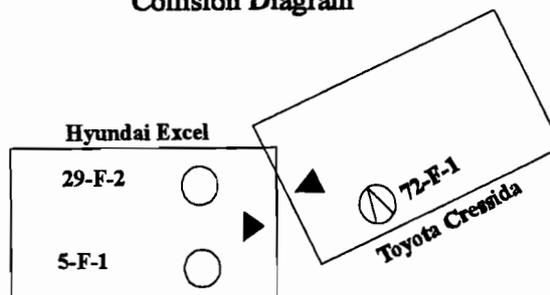
The Mitsubishi was northbound exiting a driveway onto a surface street. A Pontiac was eastbound on the surface street. The Pontiac struck the Mitsubishi on the driver's door. The 31-year-old female driver of the Mitsubishi was wearing her lap/shoulder belt and received a minor injury to the left side of her head and ribs. A 5-month-old male was riding in a child restraint system in the center rear position. The child restraint system was installed improperly on a "hump" in the back seat and was not tightly secured on the vehicle seat. The 6-month-old passenger was not properly secured in the child restraint system with the harness straps too loose and harness clip too high. The child struck his head on part of the child restraint system. The driver of the Pontiac complained of pain in his head, neck and back. The 53-year-old female right front seat passenger sustained a bruised heart. The 42-year-old female in the left rear passenger's seat received a contusion to her eye and laceration to her chin.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center Rear	Contusion to head	1	Exposed hard plastic of child seat shield arms or top surface of shield

Case No. 108

Accident Number: WRH-95-FH-C18
Date: March 28, 1995
Location: Long Beach, California
Vehicle 1: 1988 Hyundai Excel
Delta V: 25.6 mph
Vehicle 2: 1984 Toyota Cressida
Delta V: 20 mph

Collision Diagram



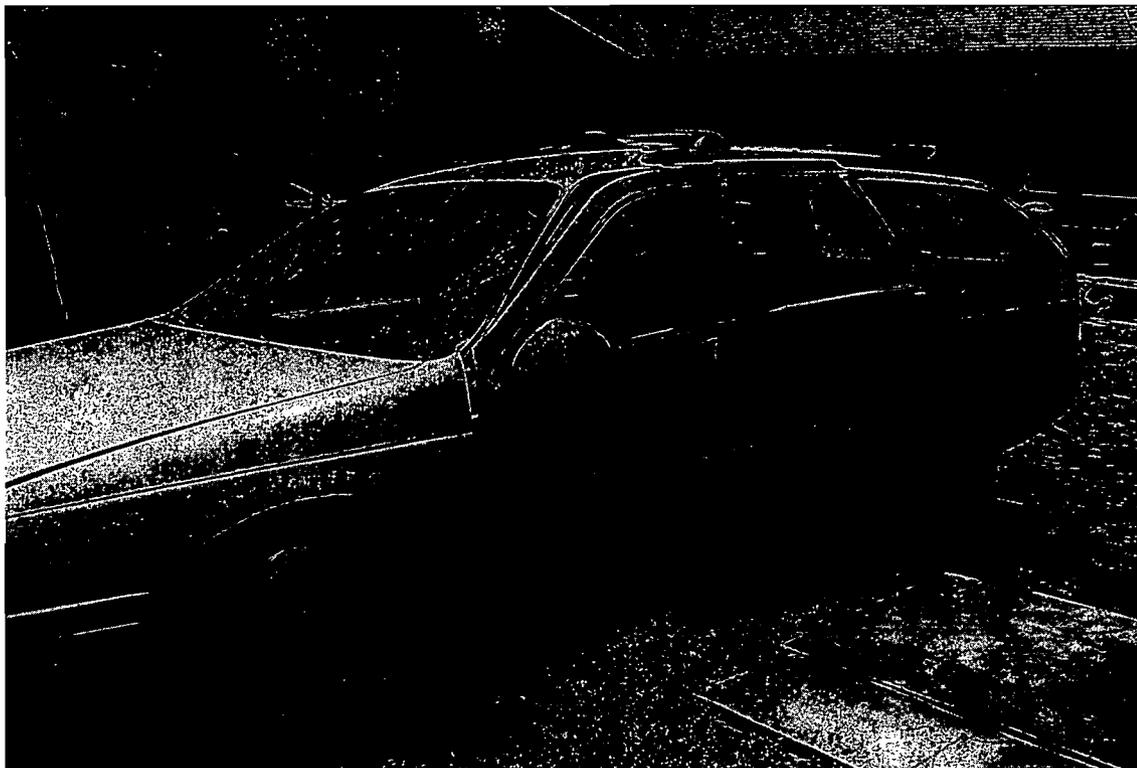
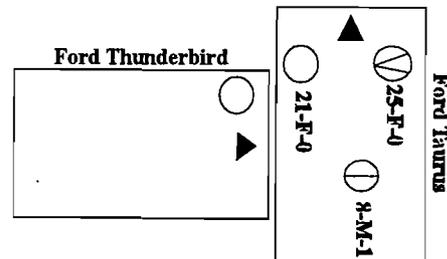
A Toyota Cressida was making a left turn at an intersection when it was struck in the front by the left front of a Hyundai Excel. The Hyundai was driven by a 29-year-old female and the right front passenger was a 5-year-old female. Both of these occupants were unrestrained. They were taken by ambulance to a local hospital where the driver was admitted with moderate injuries and had a 3 day hospital stay. The 5-year-old female was treated and released, but required follow-up dental work. The driver of the Toyota, a 72-year-old female, was also taken to a local hospital via ambulance. Although she received only minor injuries, she was admitted to the hospital for precautionary reasons due to a suspected myocardial injury.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Avulsed front baby tooth	1	Impact with dash
	Lip and mouth laceration with swelling	1	Impact with dash
	4 inch laceration on inside of left leg, above the knee	1	Unknown
	Superficial abrasions on both thighs and lower legs	1	Impact with dash and/or console

Case No. 109

Accident Number: SRH-95-FH-C25
Date: April 15, 1995
Location: Lawrenceville, Georgia
Vehicle 1: 1987 Ford Taurus
Delta V: 20.2 mph
Vehicle 2: 1983 Ford Thunderbird
Delta V: 20.5 mph

Collision Diagram



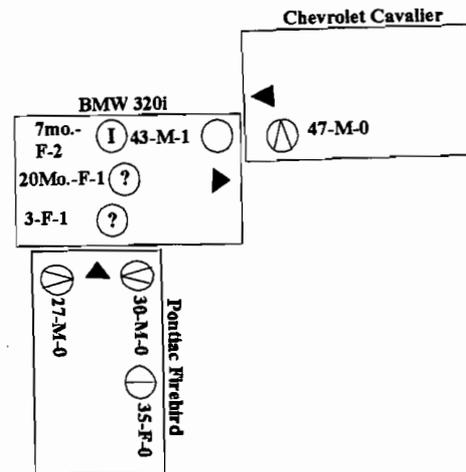
The Ford Thunderbird was traveling southbound when a Ford Taurus entered from a private drive into the path of the Thunderbird. The collision occurred in the left lane of the southbound roadway. After impact, the Thunderbird was located upright in the left southbound lane and the Taurus rotated 90 degrees and it was located upright in the center turn lane at final rest. The Taurus occupants, an unrestrained driver and a restrained right front passenger were not injured. An 8-year-old male, lapbelt restrained in the center rear seat, received minor injuries. He was transported to a local hospital where he was treated and released.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center Rear	Facial Laceration	1	Window glass

Case No. 110

Accident Number: NRH-95-FH-C19
Date: April 23, 1995
Location: Lancaster, California
Vehicle 1: 1980 BMW 320i
Delta V: 13.5 mph
Vehicle 2: 1986 Pontiac Firebird
Delta V: 11.6 mph
Vehicle 3: 1986 Chevrolet Cavalier
Delta V: N.A

Collision Diagram



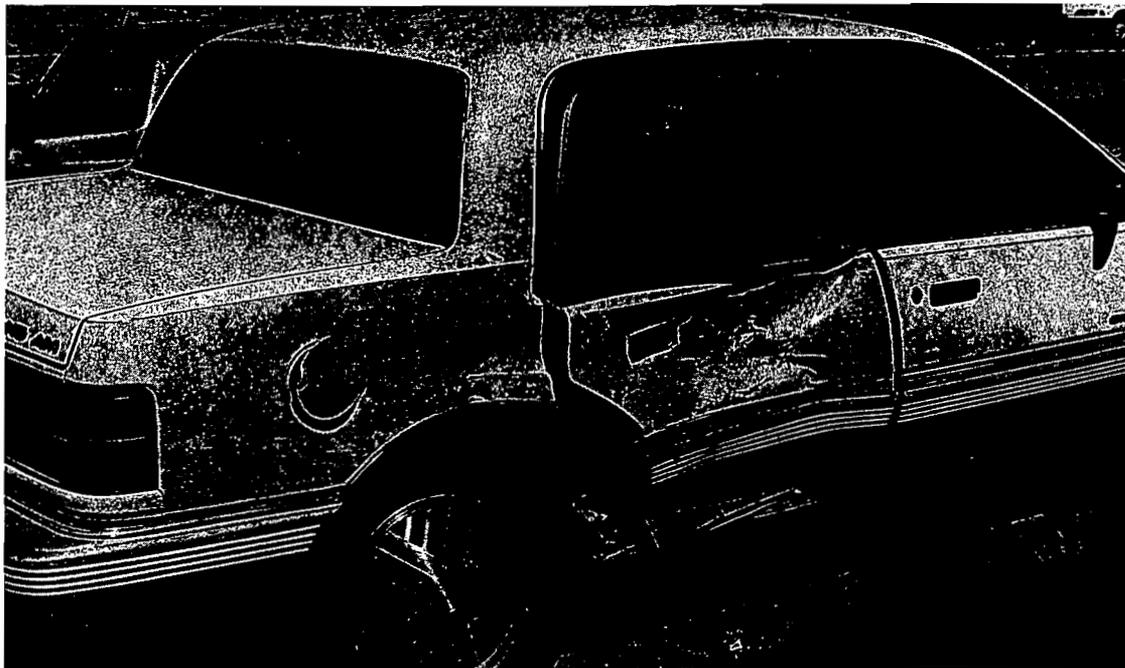
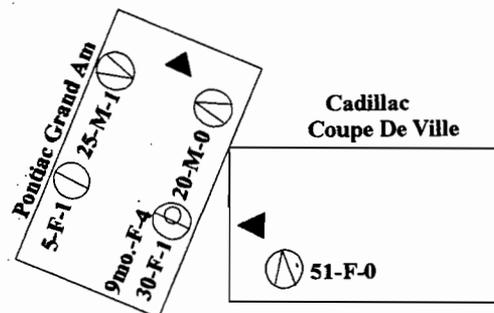
The BMW, driven by a 43-year-old male, was struck on the right side by a Pontiac Firebird. The BMW was also occupied by a 7-month-old female in an infant seat in the left rear, an 20-month-old female in the center rear, and a 3-year-old female in the right rear. The driver and the 7-month-old female in the infant seat were not belted. It could not be determined whether or not the other two children were wearing their seat belts. The BMW rolled over on impact with the Pontiac. As it rolled over it was struck on the left fender by the Chevrolet. The driver of the BMW was partially ejected through the right front of the windshield. All three occupants of the BMW received moderate to minor injuries. The occupants of the other vehicles complained of pain.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left rear	Closed head injury	9	Roof crush
	Fracture right humerus	2	Unknown
	Contusion left eye	1	Unknown
Center rear	Abrasions left clavicle	1	Unknown
	Contusions left shoulder	1	Unknown
	Contusion left finger	1	Unknown
	Abrasion left eye	1	Unknown
Right rear	Contusion forehead	1	Unknown
	Contusion right hand	1	Unknown

Case No. 111

Accident Number: WRH-95-FH-C20
Date: April 13, 1995
Location: Culver City, California
Vehicle 1: 1986 Pontiac Grand Am
Delta V: 11.9 mph.
Vehicle 2: 1985 Cadillac
Delta V: 10.5 mph

Collision Diagram

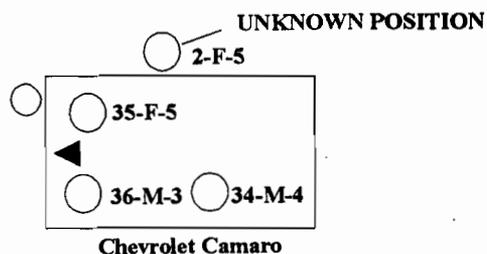


A Pontiac was making a left turn at an intersection when it was struck on the right side by a 1985 Cadillac. During the collision, the Pontiac right rear door came open and the Pontiac rotated clockwise. This resulted in the ejection of a 30-year-old female and a 9-month-old female who was being held against her breast. Both of them were transported to a local hospital where the adult was treated and released, but the infant was admitted with serious injuries. A 5-year-old female was unrestrained in the left rear seat. She was not ejected, but was transported to a local hospital where she was treated for minor injury and then released. The driver, a 25-year-old male, and the right front passenger, a 20-year-old male, were both restrained with lap/shoulder belts. The driver sustained minor injury and the right front occupant complained of pain. Neither of them were transported to the hospital. The driver of the Cadillac was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Left rear	Contusion on inside of lip	1	Unknown
Right rear (on lap)	Left occipital basilar skull fracture	3	Impact with pavement
	Left distal femur fracture	2	Impact with pavement
	Left clavicular fracture	2	Impact with pavement
	Right wrist dislocation	2	Impact with pavement
	Subdural hematoma	4	Impact with pavement
	Left sacroiliac joint separation	2	Impact with pavement
	Multiple abrasions and contusions	1	Impact with pavement

Case No. 112

Accident Number: NRH-95-FH-CO9
Date: May 7, 1995
Location: Allentown, Pennsylvania
Vehicle 1: 1983 Chevrolet Camaro
Delta V: 39 mph

Collision Diagram

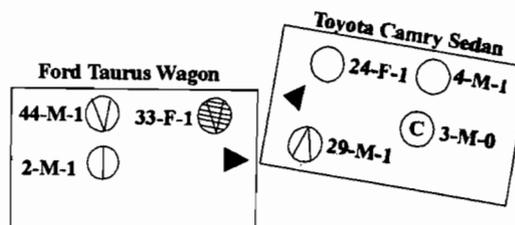
A Chevrolet Camaro was southbound when it failed to negotiate a left hand curve, ran off the right side of the roadway and struck a tree. The Chevrolet was occupied by a 36-year-old male driver who sustained serious injuries. A 35-year-old female, seated in the right front seat and 2-year-old female whose seating position was not determined, sustained fatal injuries. A 34-year-old male who was seated in the left rear behind the driver sustained serious injuries and died several days later in the hospital. All of the occupants were unrestrained.

Occupant Location	Injuries	AIS	Probable Source
2-year-old child (position unknown)	Brain contusion, hemorrhages	5	Unknown
	Extensive skull fractures	4	Unknown
	Retroperitoneal hemorrhage	4	Unknown
	Multiple contusions and abrasions to face, left side of head, arms and the legs	1	Unknown

Case No. 113

Accident Number: SRH-95-FH-C30
Date: May 28, 1995
Location: Duluth, Georgia
Vehicle 1: 1995 Ford Taurus
Delta V: 9.8 mph
Vehicle 2: 1984 Toyota Camry
Delta V: 12.8 mph

Collision Diagram



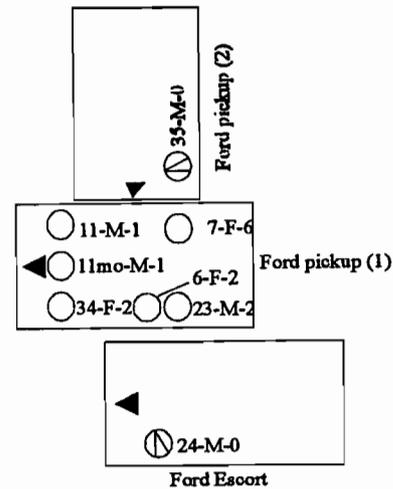
The Ford Taurus was northbound, turned left at an intersection, and its front left struck the front left of the southbound Toyota Camry. In the Ford, the driver and left rear passenger were lap/shoulder belted and sustained minor injuries, and a 2-year-old male lapbelted in the rear center sustained minor injuries. In the Toyota, the lap/shoulder belted driver sustained minor injuries. The unrestrained right front and right rear passengers sustained minor injuries. A 3-year-old male in a child restraint system secured at the rear center was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center Rear	Laceration/contusion on abdomen	1	Lapbelt
Vehicle 2 Right rear	Laceration, left side of scalp Concussion	1 1	Right side of CRD at center rear seat position Unknown

Case No. 114

Accident Number: WRH-95-FH-C21
Date: May 17, 1995
Location: Pacoima, California
Vehicle 1: 1986 Ford pickup truck
Delta V: 9.7 mph
Vehicle 2: 1987 Ford pickup truck
Delta V: 11.3 mph
Vehicle 3: 1988 Ford Escort
Delta V: N.A.

Collision Diagram



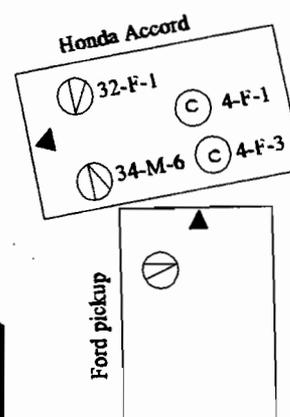
The 1986 Ford pickup truck was driven by a 34-year-old female. An 11-month-old male was seated next to her and an 11-year-old male was in the right front seat. In the covered bed of the pickup truck were a 7-year-old and 6-year-old female, and a 2-year-old male. None were secured by a restraint system. The 1987 Ford pickup struck the 1986 Ford pickup on the right side, causing it to rotate clockwise. The left rear of the 1986 Ford pickup struck the right side of the Ford Escort. The three occupants in the rear of the 1986 Ford were ejected and the 7-year-old female received fatal injuries. The driver of the 1987 Ford drifted into the opposing lanes of traffic prior to striking the 1986 Ford. The 1987 Ford driver said he was wearing his lap/shoulder belts. The driver of the Ford Escort never responded to requests for an interview.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Center Front	Nose bleed	1	Struck dashboard
Bed of Vehicle	Spleen laceration	5	Interior of bed of vehicle
	Brain swelling	5	Same
	Cerebral subarachoid	3	Same
	Closed head injury (non-survivable)	6	Interior of vehicle or asphalt on street
Bed of Vehicle	Multiple contusions and lacerations	1	Asphalt/Street
	Complex laceration on left knee	2	Asphalt/Street
	Contusion on right shoulder	1	Asphalt/Street

Case No. 115

Accident Number: CRH-94-FH-C15
Date: April 30, 1994
Location: Marshall, Texas
Vehicle 1: 1988 Honda Accord
Delta V: 25.8 mph
Vehicle 2: 1991 Ford pickup truck
Delta V: 16.6 mph

Collision Diagram



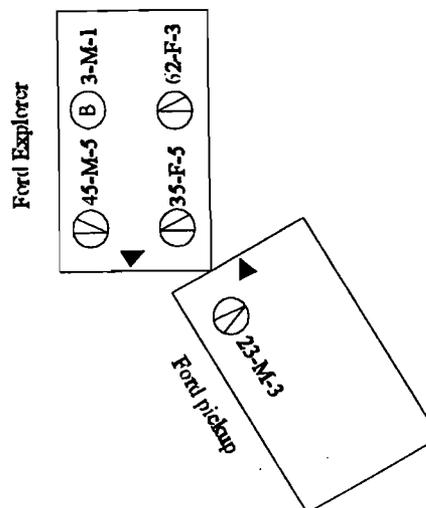
A Honda Accord was westbound from a stop sign when it encroached upon the path of a northbound Ford pickup truck. The pickup truck struck the Honda nearly centered on the left side of the passenger compartment of the vehicle. The Honda and pickup truck both rotated counterclockwise and came to rest in the roadway. None of the occupants of either vehicle were ejected. The Honda was occupied by a 34-year-old male driver and a 32-year-old female right front passenger, and 4-year-old twin females in the rear seat. All were restrained, with the children occupying child restraint systems. The driver of the Honda was killed as a result of blunt trauma to the left side of his body, and a suspected spinal transection. No autopsy was performed. The adult female in the right front passenger seat suffered two broken ribs and was knocked unconscious. The 4-year-old female seated in the left rear seat suffered a fractured kidney, some thickening of the pleural lining of the left lung, and a closed head injury that was not specified. The other 4-year-old female seated in the center rear seat sustained minor lacerations and bruising to the head area. The male driver of the Ford pickup truck sustained minor bruises to the torso.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Contusion to head	3	Side of vehicle
	Fractured kidney	2	Side of vehicle
Center rear	Contusion left parietal area	1	Occupant/CRS
	Laceration to right maxillary	1	Occupant/CRS
	Laceration to right of forehead	1	Occupant/CRS

Case No. 116

Accident Number: SRH-95-FH-C28
Date: May 10, 1995
Location: Woodstock, Georgia
Vehicle 1: 1994 Ford Explorer
Delta V: 49.2 mph
Vehicle 2: 1986 Ford pickup truck
Delta V: 50.4 mph

Collision Diagram



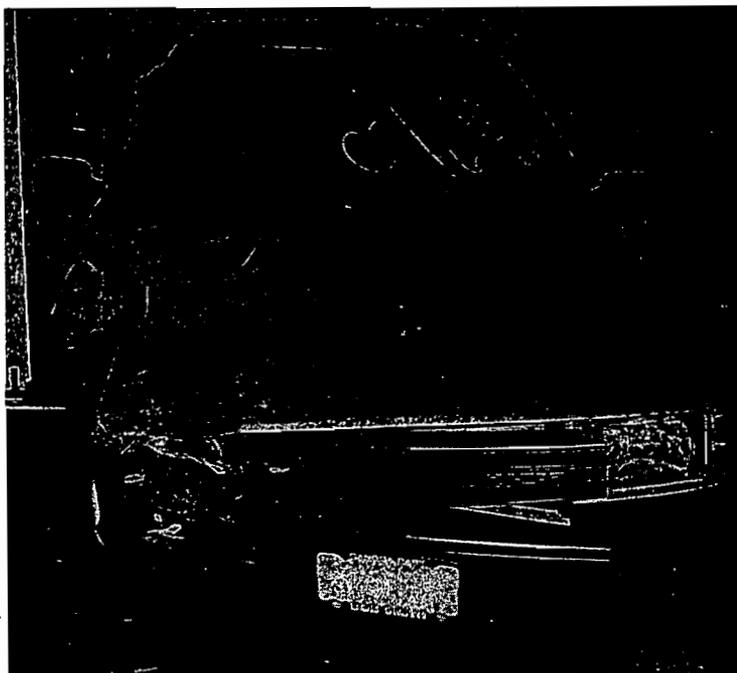
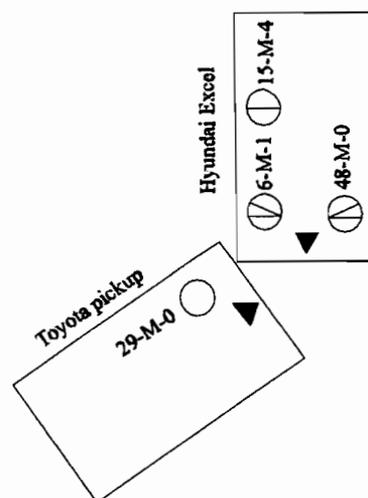
The Ford Explorer was traveling southbound on a two lane, two direction roadway. A Ford pickup traveling northbound toward the Explorer crossed the center line and struck the Ford Explorer head-on. The Explorer overturned onto its right side, while the Ford pickup rotated counterclockwise and came to rest on its wheels. The lap/shoulder belt restrained driver and right front seat passenger of the Ford Explorer sustained fatal injuries. The lap/shoulder belted left rear seat passenger sustained serious injuries. The right rear seat passenger in a child restraint system sustained only minor injuries. The lap/shoulder belt restrained driver of the Ford pickup sustained serious injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right rear	Scalp lacerations	1	Flying glass

Case No. 118

Accident Number: WRH-95-FH-C23
Date: May 20, 1995
Location: Van Nuys, California
Vehicle 1: 1988 Hyundai Excel
Delta V: 16.0 mph
Vehicle 2: 1982 Toyota pickup truck
Delta V: 14.0 mph

Collision Diagram



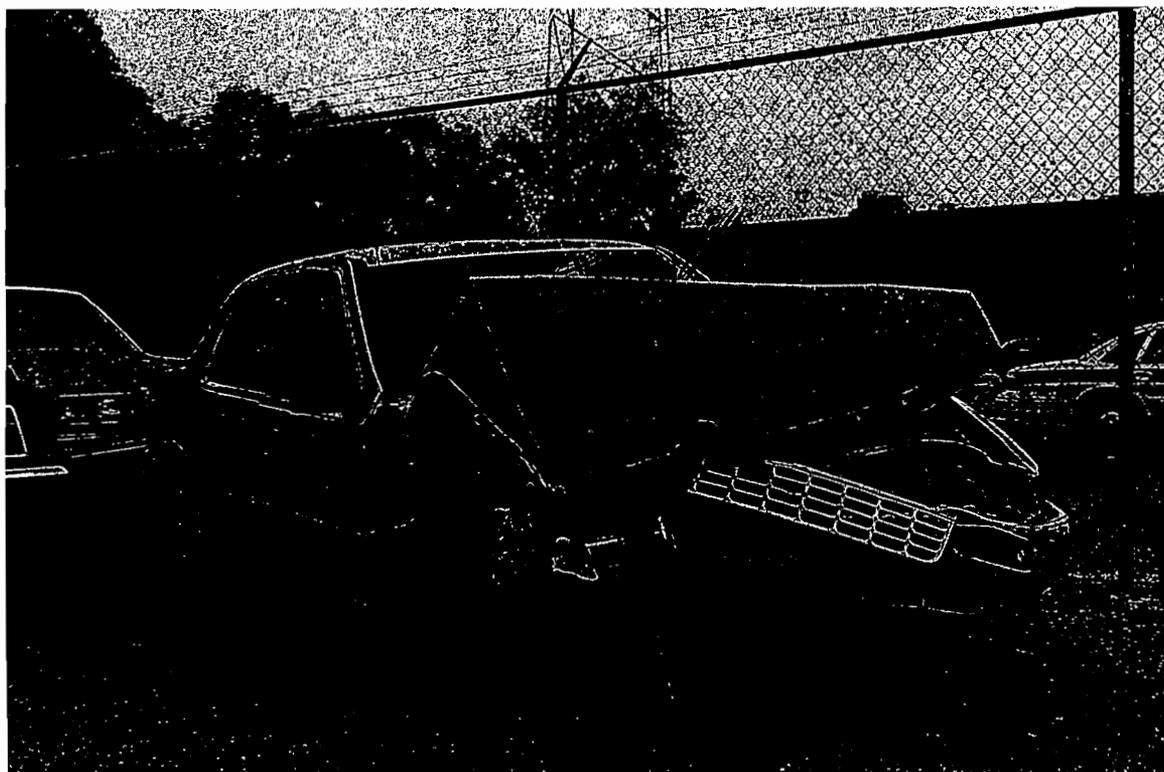
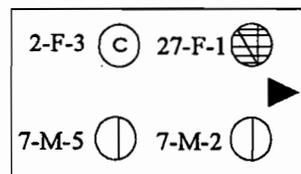
A Hyundai was southbound. The 48-year-old driver of the Hyundai was wearing his lap/shoulder belt. A 6-year-old male right front passenger was wearing his lap/shoulder belt, however it was undetermined if he was wearing it properly. The 15-year-old male, right rear passenger, was wearing his lap belt. A Toyota pickup truck was making a left turn to the north from a parking lot on the west side of the street. The 29-year-old driver was not wearing his lap/shoulder belt. The vehicles collided left front corner of the Hyundai to the left front of the Toyota. The driver of the Hyundai complained of pain on his right side. The 6-year-old male passenger received a contusion and closed head injury. The 15-year-old male passenger received an injury to his abdomen which required surgery to repair. The driver of the pickup truck was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Contusion over right eye	1	Driver's door or glove box
	Closed head trauma	9	Same

Case No. 119

Accident Number: SRH-95-FH-C33
Date: June 24, 1995
Location: Lilburn, Georgia
Vehicle 1: 1994 Plymouth Acclaim
Delta V: 29.5 mph

Collision Diagram



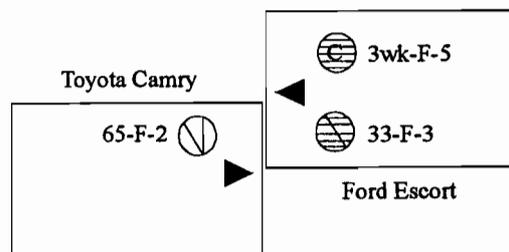
A Plymouth Acclaim ran off the road to the right, in a left curve, and struck a 12 foot deep ditch and embankment. The driver was wearing the lap/shoulder belt and sustained minor injuries. The lap/belted 7-year-old male in the right front sustained moderate injuries, and the 2-year-old female in a child restraint system at the left rear received serious injuries. The lap/belted 7-year-old male in the right rear was critically injured.

Occupant Location	Injuries	AIS	Probable Source
Right front	Multiple facial lacerations	2	Instrument panel
	Nasal fracture	1	Instrument panel
	Contusion to left eye area	1	Instrument panel
	Gingival lacerations	1	Instrument panel
	Abrasion across pelvis	1	Lapbelt
	Fractured right humerus	2	Rt. instrument panel
	Bilateral fracture lumbar spine (L3)	2	Lapbelt
	Edema and displacement of right kidney	9	Lapbelt
	Parietal hematoma (left)	9	Lapbelt
	Left rear	Abrasion, right shoulder	1
Abrasion left eye		1	CRS
Contusion left orbit		1	CRS
Fracture left thumb		2	Unknown
Left femoral fracture		3	CRS
Closed head injury		9	Unknown
Right rear		Contusion right parietal lobe	1
	Ecchymosis to right cheek	1	Unknown
	Left temporal bone fracture	3	Unknown
	Abrasions, lower abdomen	1	Lapbelt
	Severe closed head injury	9	Unknown
	Occipital cervical dislocation	5	Unknown
	L4-L5 fracture dislocation	5	Unknown

Case No. 121

Accident Number: NRH-95-FH-C11
Date: July 18, 1995
Location: Gilbertsville, Pennsylvania
Vehicle 1: 1995 Ford Escort
Delta V: 23 mph
Vehicle 2: 1991 Toyota Camry
Delta V: 20 mph

Collision Diagram



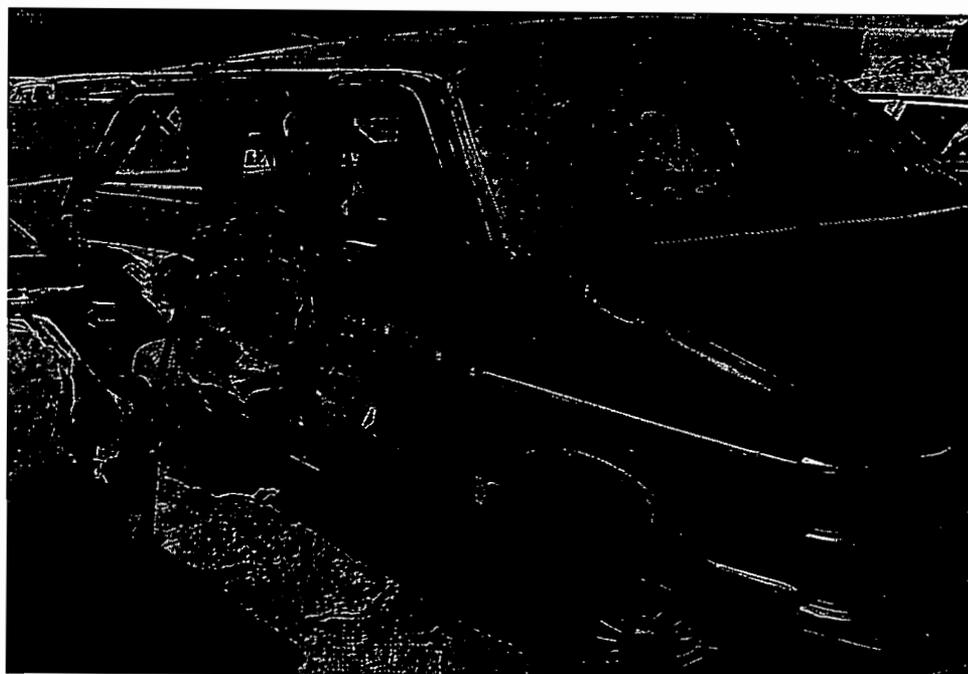
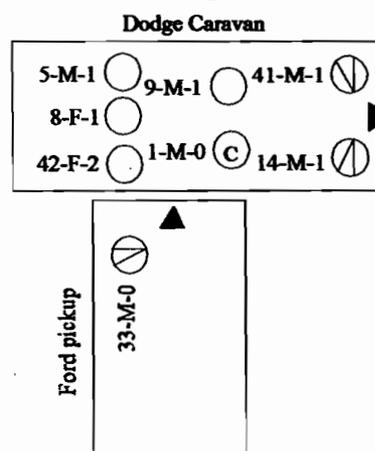
An eastbound Ford Escort was occupied by a 33-year-old female driver and a 3-week-old female. A westbound Toyota crossed into the eastbound lane and collided head-on with the Ford Escort. The Ford driver was restrained by the motorized shoulder belt and a driver air bag that deployed during the collision. This driver was hospitalized with serious injuries. The 3-week-old infant was restrained in a Cosco Touriva convertible, child restraint system that was installed facing rearward in the right front seat, behind the passenger air bag. The air bag deployed and contacted the rear of the child restraint system. The child sustained extensive skull fractures and died several hours later of multiple crush injuries to the head. The 65-year-old female driver of the Toyota received moderate injury.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Brain stem contusion	5	Passenger air bag
	Circumferential fracture of the right and left parietal and occipital bones with brain matter extruding at the fractures	4	Passenger air bag
	Extensive destruction of the brain with multi-focal areas of hemorrhage and laceration	4	Passenger air bag
	Fractures at base of skull	3	Passenger air bag
	Fractured left third rib	1	Child Restraint System harness clip

Case No. 123

Accident Number: WRH-95-FH-C25
Date: July 9, 1995
Location: Mission Hills, California
Vehicle 1: 1985 Dodge Caravan
Delta V: 8.9 mph
Vehicle 2: 1994 Ford pickup truck
Delta V: 9.9 mph

Collision Diagram



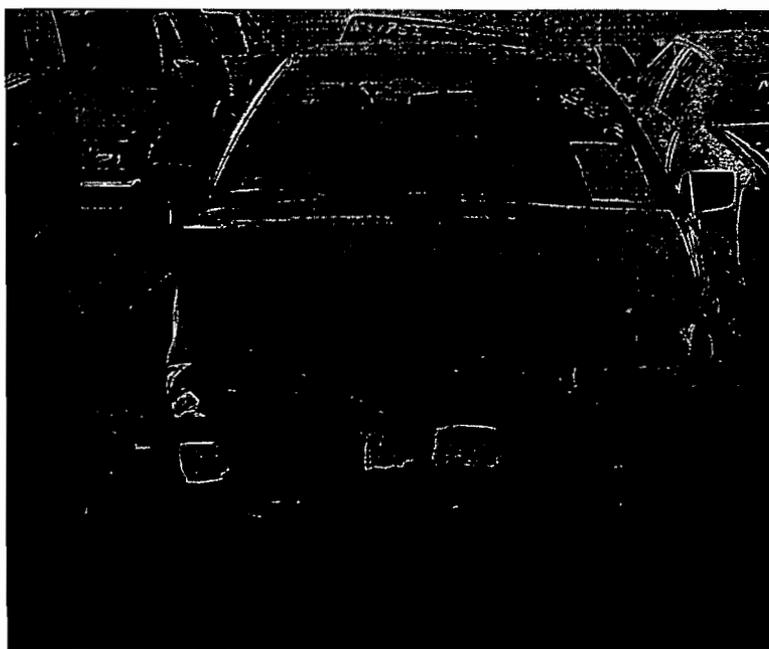
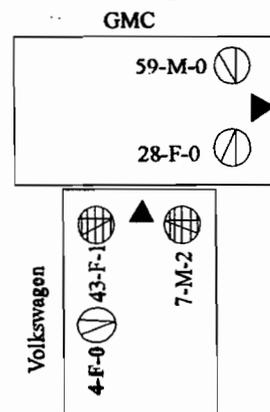
An eastbound Dodge Caravan was driven by a 41-year-old male. Both the driver and a 14-year-old male in the right front were wearing the lap/shoulder belts. A 9-year-old male on the left side of the first bench was not wearing the lapbelt. A 1-year-old male was in a forward facing child restraint secured by the lapbelt, on the right side of the first bench seat. A 5-year-old male, 8-year-old female, and 42-year-old female were riding on the rear bench seat. None of these occupants were wearing their lap/belts. The Dodge van was struck on the right side in an intersection by a Ford pickup truck. The Ford driver was wearing the lap/shoulder belt. The Dodge van rotated and rolled over twice. All three occupants of the rear bench seat were unrestrained and were ejected. The adult sustained moderate injuries and the children sustained minor injuries. All the other occupants sustained minor injuries, except the child in the child seat, who was not injured. The driver of the Ford was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left side, 1 st bench	Abrasions to face head and abdomen	1	Asphalt, street
Left side, 2 nd bench	Laceration to right side of face	1	Broken glass or asphalt
	Laceration to knees	1	Broken glass or asphalt
Center, 2 nd bench	Closed head injury	9	Asphalt
	Contusions and lacerations to left arm	1	Asphalt or broken glass
	Abrasions to left arm	1	Asphalt or broken glass

Case No. 124

Accident Number: WRH-95-FH-C26
Date: July 21, 1995
Location: Van Nuys, California
Vehicle 1: 1995 Volkswagen
Delta V: 14.9 mph
Vehicle 2: 1992 GMC Suburban
Delta V: 6.8 mph

Collision Diagram



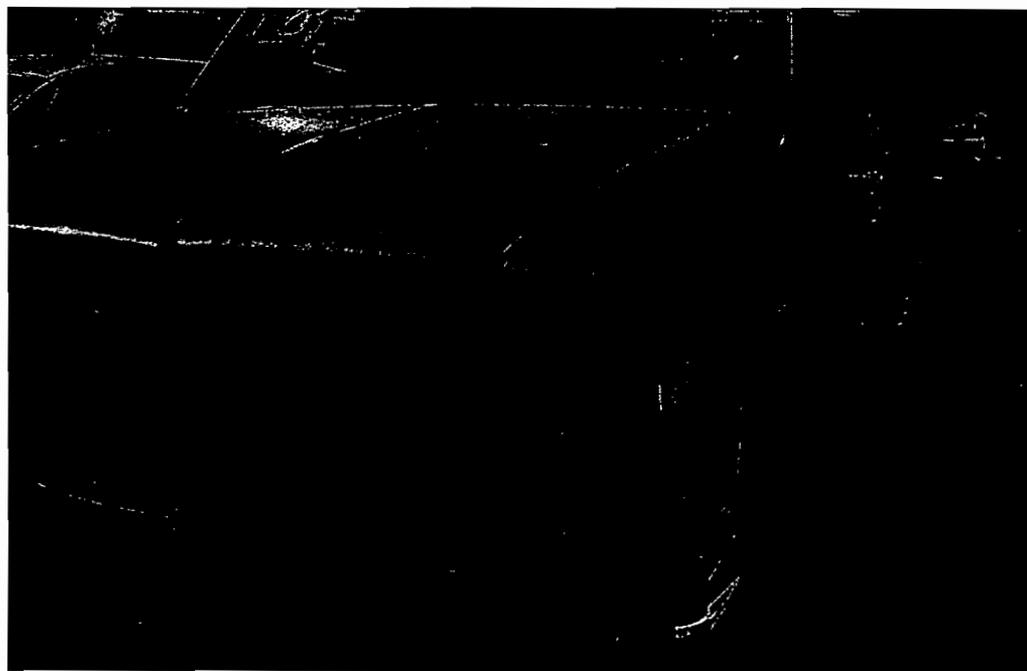
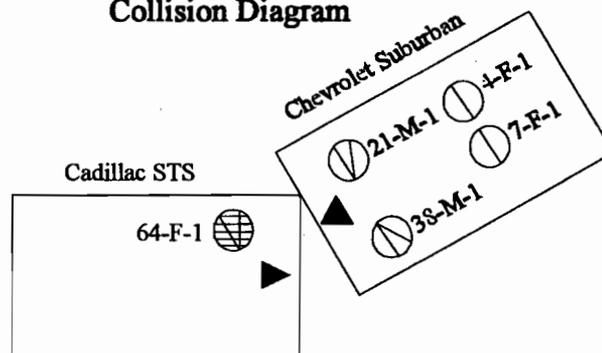
A Volkswagen Jetta was stopped for a red light. The vehicle was driven by a 43-year-old female. In the vehicle was a 7-year-old male in the right front seat and a 4-year-old female in the left rear seat. All the occupants were wearing their lap/shoulder belts. A GMC Suburban was proceeding through the intersection, driven by a 59-year-old male with a 28-year-old female in the right front seat. They were both wearing their lap/shoulder belts. With the traffic signal still red the Volkswagen moved into the intersection and struck the GMC on the right side. The collision caused the GMC to spin around. Upon impact the two front air bags deployed in the Volkswagen. Both front seat occupants received injuries as a result of the air bag deployment. The left rear seat passenger was not injured. None of the occupants of the GMC were injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Abrasions to face and neck	1	Air Bag
	Laceration under right eye	1	Air Bag
	Cerebral concussion	2	Air Bag
	Choroid rupture	1	Air Bag
	Fractured index finger right hand	1	Unknown

Case No. 125

Accident Number: WRH-95-FH-C27
Date: July 22, 1995
Location: Granada Hills, CA.
Vehicle 1: 1986 Chevrolet Suburban
Delta V: 6.5 mph.
Vehicle 2: 1992 Cadillac
Delta V: 10.8 mph

Collision Diagram



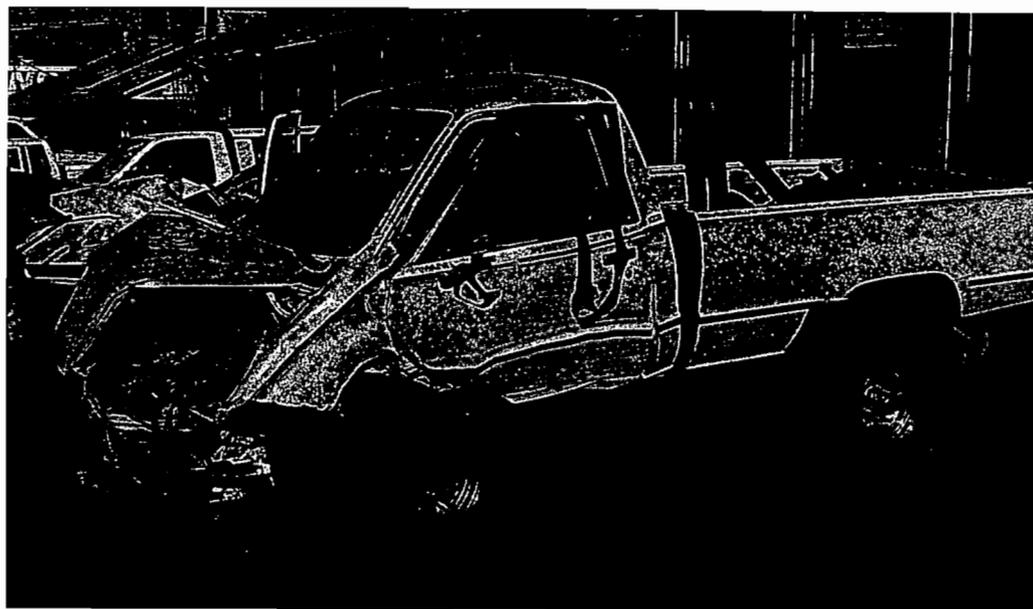
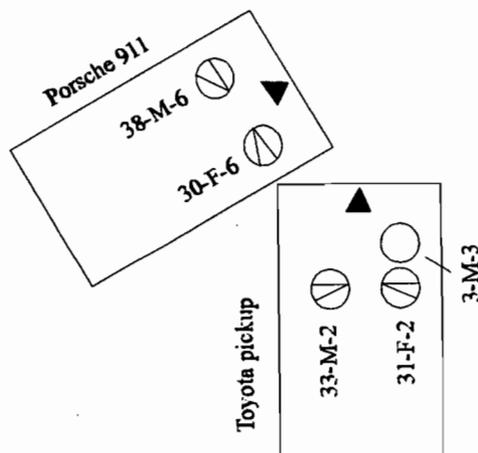
A Chevrolet Suburban was traveling westbound and made a left turn at an intersection in front of a Cadillac traveling eastbound. There were 4 occupants in the Chevrolet. The 38-year-old male driver and 21-year-old male right front passenger were both wearing lap/shoulder belts. They both received minor injuries, but were not medically treated. A 7-year-old female seated in the center rear seat and a 4-year-old female seated to her right were both wearing lapbelts. They were transported to a local hospital via ambulance. Although they both sustained minor injuries, the 4-year-old was treated and released. The 7-year-old female did not require treatment. The Cadillac was driven by a 64-year-old female. She was restrained by a lap/shoulder belt. The vehicle was also equipped with an airbag which deployed upon impact. She was transported via ambulance to a local hospital where she was treated and released.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Center rear	Contusions and abrasions across the abdomen	1	Lap belt
Right rear	Contusions and abrasions across the abdomen	1	Lap belt
	Contusion on right side of forehead	1	Impact with right door window or window frame

Case No. 127

Accident Number: WRH-95-FH-C28
Date: August 26, 1995
Location: Canoga Park, California
Vehicle 1: 1986 Toyota pickup truck
Delta V: 42.5 mph
Vehicle 2: 1995 Porsche 911
Delta V: 39.6 mph

Collision Diagram



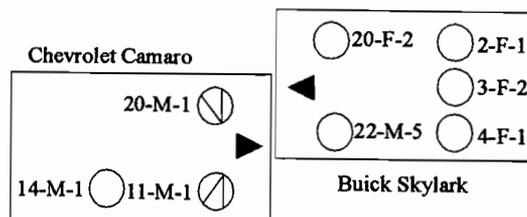
The Toyota was traveling northbound at about 40 miles per hour. The 33-year-old male driver was accompanied by a 31-year-old female and a 3-year-old male. The driver and adult passenger were wearing their lap/shoulder belts. The child was on the lap of the right front passenger and was not belted. The Porsche was racing two other vehicles southbound at about 70 miles per hour. The driver of the Porsche lost control of the car as it was negotiating a curve. The Porsche slid sideways to the right side across two lanes of traffic and struck the front of the Toyota. The two occupants of the Porsche, 38-year-old male driver and 30-year-old female passenger, were killed on impact. The adult passengers of the Toyota received moderate injuries. The child received serious injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right Front	Fractured right femur Laceration on top of head Puncture wound to right thigh Abrasions to left forehead	3 1 1 1	Dashboard Mother's face Unknown Mother's face

Case No. 129

Accident Number: WRH-94-FH-C16
Date: July 26, 1994
Location: Lynwood, California
Vehicle 1: 1981 Buick Skylark
Delta V: 54.5 mph
Vehicle 2: 1978 Chevrolet Camaro
Delta V: 42.8 mph

Collision Diagram



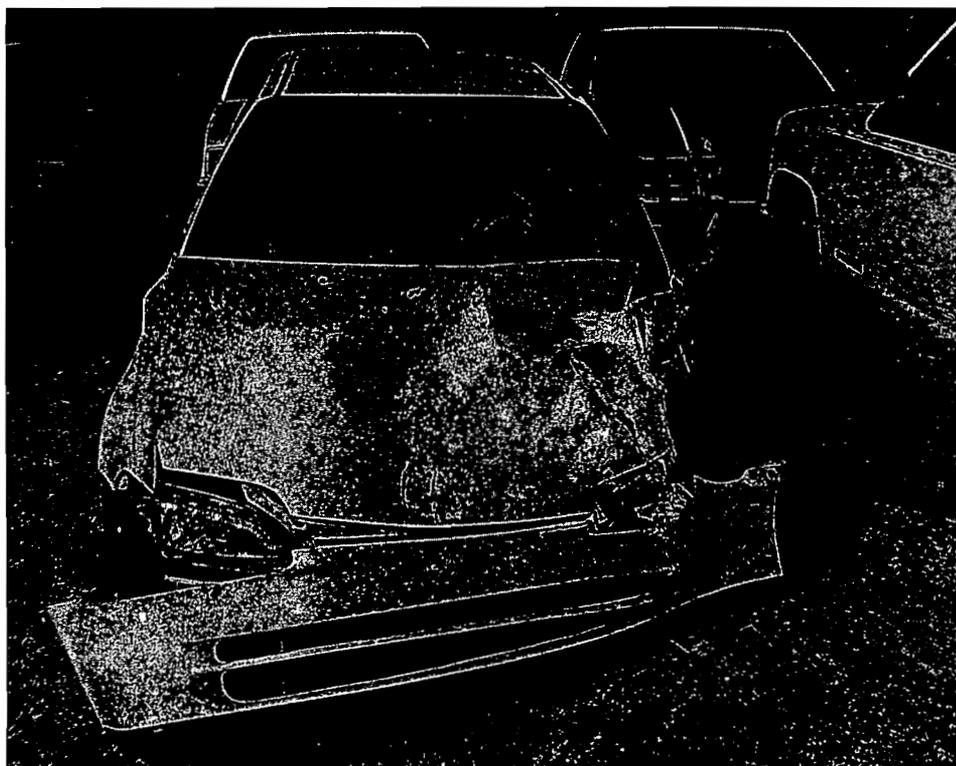
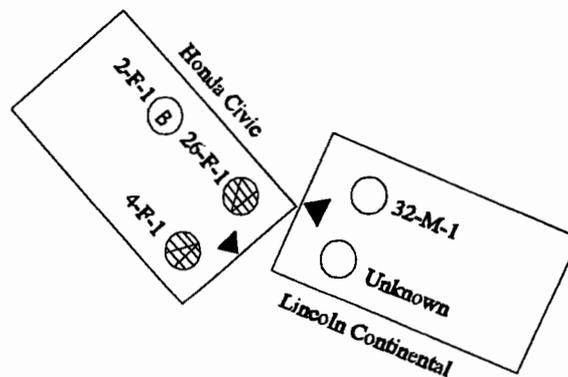
A Buick was westbound on a four lane roadway. A Chevrolet was eastbound on the same roadway. The driver of the Chevrolet decided to pass a vehicle in front of it by driving on the wrong side of the street. The Chevrolet crossed the double yellow lines and collided head-on with the Buick. No one in the Buick was wearing a seat belt. The vehicle had been modified by converting it into a convertible and the seat belts were inaccessible to the occupants. The crash caused the vehicle to bend in the middle. The 22-year-old driver received critical injuries. The 20-year-old female in the right front seat received moderate injuries. The 4-year-old female in the left rear seat and the 2-year-old female in the right rear seat sustained minor injuries. The 3-year-old female in the center rear seat sustained moderate injuries. The driver and right front passenger in the Chevrolet were wearing their lap/shoulder belts and received minor injuries. The 11-year-old right rear passenger was not wearing his lapbelt and received minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Left rear	Contusions and laceration to forehead	1	Struck metal support in convertible top (roof)
Center rear	Broken left collar bone	2	Same as above
	Contusion to forehead	1	Same as Above
	Blunt abdominal trauma	9	Struck the back of front seat
Right rear	Blunt head trauma	9	Struck metal support in convertible top
	Lacerations to forehead	1	Same as above
	Abrasions and contusions to head	1	Same as above

Case No. 130

Accident Number: SRH-95-FH-C38
Date: August 6, 1995
Location: Norcross, Georgia
Vehicle 1: 1994 Honda Civic
Delta V: 25.4 mph
Vehicle 2: 1982 Lincoln Continental
Delta V: 15.8 mph

Collision Diagram



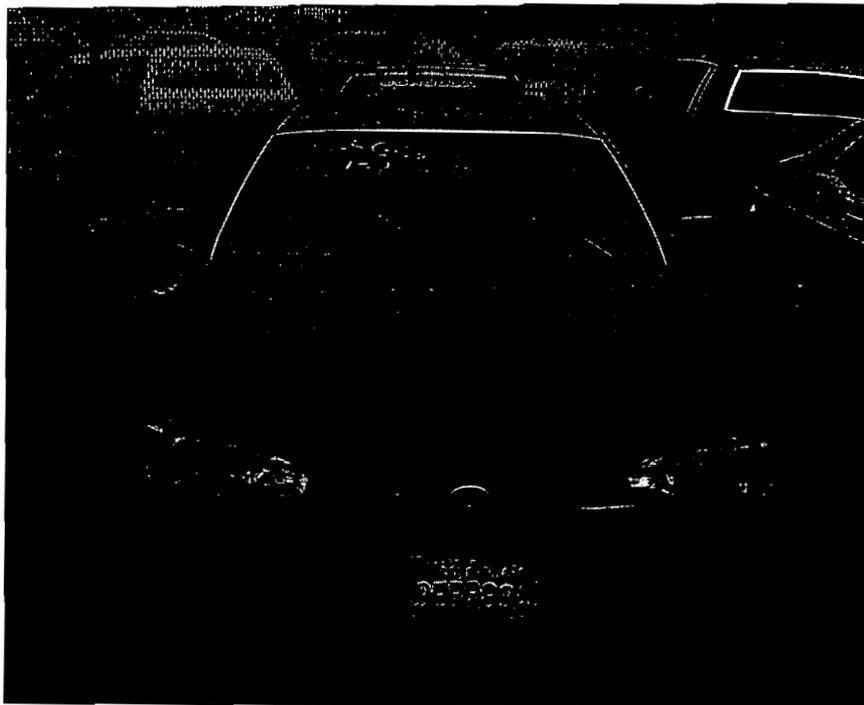
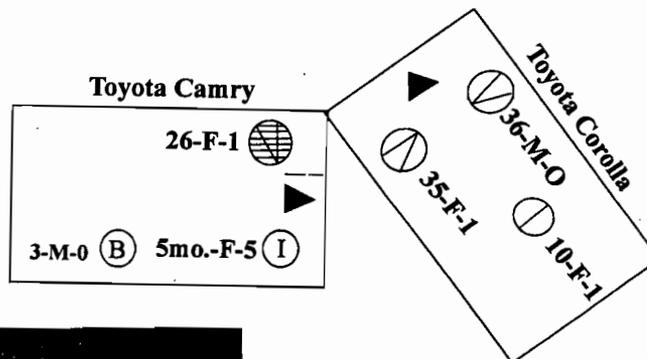
The westbound Honda, occupied by the driver, a 4-year-old female right front seat passenger, and a 2-year-old female in the left rear seat, was struck in the left front by the eastbound Lincoln. The driver and right front passenger of the Honda were restrained by lap/shoulder belts and were both protected by air bags which activated during the crash. The left rear passenger was riding in a child restraint system which was secured by a lap/shoulder belt. The driver of the Honda and both passengers sustained only minor injuries.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Abdominal contusions	1	Safety belt
Left rear	Tongue contusion and abrasion	1	Teeth

Case No. 136

Accident Number: WRH-95-FH-29
Date: September 20, 1995
Location: Long Beach, California
Vehicle 1: 1994 Toyota Camry
Delta V: 7.4 mph
Vehicle 2: 1985 Toyota Corolla
Delta V: 8.9 mph

Collision Diagram



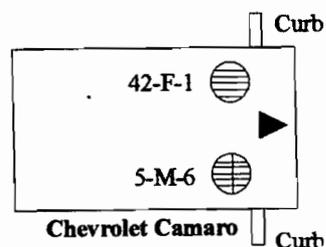
An eastbound Toyota Camry approached the intersection of a northbound freeway off-ramp. The 26-year-old driver was wearing her lap/shoulder belt. A 5-month-old female right front passenger was in a rear facing infant seat. A 3-year-old male right rear passenger was restrained in a booster seat. A Toyota Corolla, driven by a lap/shoulder belted 35-year-old female, was northbound on the freeway off-ramp. A 36-year-old male right front passenger and a 10-year-old female right rear passenger of the Corolla were also wearing their available belts. The Camry struck the Corolla on the left front wheel. The Camry air bags inflated. The rear facing infant seat in the Camry was severely damaged and the 5-month-old infant received fatal injuries. The Camry driver received minor bruising on her arms and abdomen and the 3-year-old male in the booster seat in the right rear was not injured. The driver of the Corolla and the 10-year-old female passenger received minor injuries. The right front passenger of the Corolla was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right front	Fracture right occipital bone	2	Air bag
	Fracture left temporal occipital bone	4	Air bag
	Subarachnoid hemorrhage	3	Air bag
	Subdural hemorrhage	4	Air bag
	Subgaleal hematoma	5	Air bag
Vehicle 2			
Right rear	Contusions to legs and mouth	1	Unknown

Case No. 137

Accident Number: WRH-96-FH-01
Date: October 10, 1995
Location: N. Salt Lake, Utah
Vehicle 1: 1994 Chevrolet Camaro
Delta V: 9 to 15 mph (estimated)

Collision Diagram



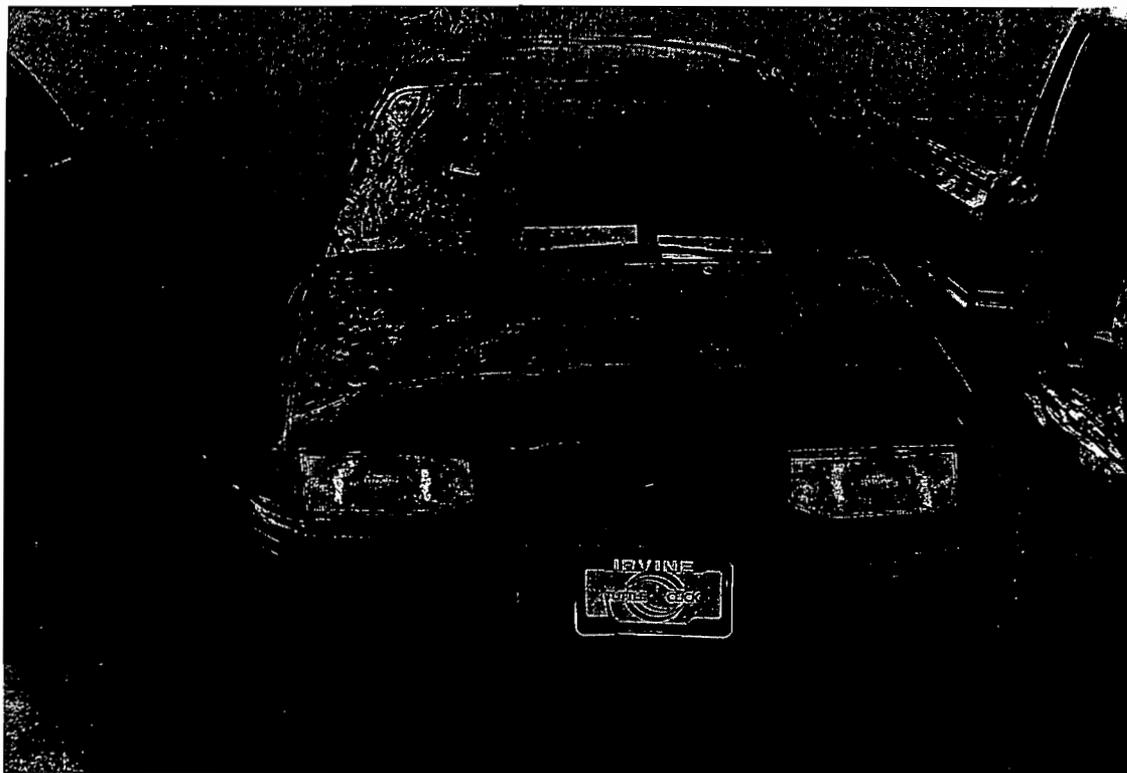
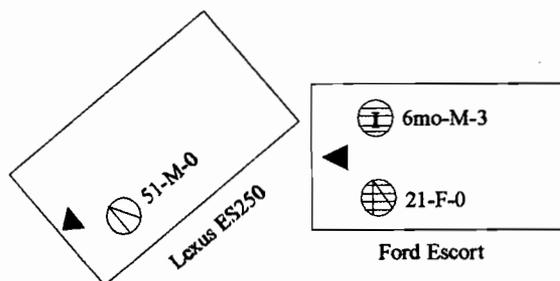
A Chevrolet Camaro convertible had entered a parking lot when the vehicle overrode a curb, striking the front crossmember. Both driver and passenger air bags deployed. The 42 year-old female driver sustained abrasions on the face and neck from the air bag. The 5-year-old male in the right front seat sustained fatal injuries from the air bag, including a broken neck and crushed spinal cord. Based on the vehicle's diagnostic electronic monitoring of the driver belt system it was determined the driver was not wearing the lap/shoulder belt. The 5-year-old male is believed to have been wearing only the lap portion of the lap/shoulder belt.

Occupant Location	Injuries	AIS	Probable Source
Right front passenger	Crushed spinal cord with C-1 to C-3 fractures and dislocation	6	Impact with air bag door and air bag
	Brain contusions	3	Impact with air bag door, air bag, and seatback
	Stretching laceration of inferior vena cava	3	Being partially held down by the lap belt while being forced upward and rearward by the air bag
	Fracture of coronal suture	2	Impact with air bag door and air bag
	Subgaleal hemorrhage on left side of scalp	2	Impact with air bag door and air bag
	Subgaleal hemorrhage on right occiput	2	Impact with air bag door and air bag
	Intrathymic hemorrhage	2	Impact with air bag
	Severe facial abrasions	2	Impact with air bag
	Linear contusion from left ear and extending to right forehead	1	Impact with air bag door

Case No. 138

Accident Number: WRH-96-FH-C02
Date: October 3, 1995
Location: Irvine, California
Vehicle 1: 1995 Ford Escort
Delta V: 4.6 mph
Vehicle 2: 1991 Lexus 250
Delta V: 3.8 mph

Collision Diagram



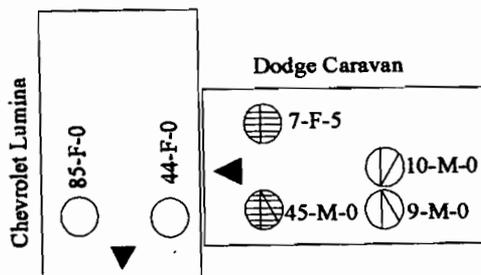
A Ford Escort was traveling westbound. The 21-year-old female driver was wearing her lap/shoulder belt. A 6-month-old male was in a rear-facing child restraint system in the right front seat, secured by the vehicle's lap/shoulder belt. A Lexus, driven by a 51-year-old male, was making a U-turn when struck by the Escort. Both air bags in the Lexus inflated. The carrying handle on the child seat broke. The 6-month-old male child received a skull fracture. The driver of the Ford Escort sustained bruising on her inner arms and abdomen. The lap/shoulder belted driver of the Lexus was not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Fractured parietal bone, left side, with small subdural epidural hematoma	3	Air bag

Case No. 139

Accident Number: NRH-96-FH-C01
Date: October 15, 1995
Location: Baltimore, Maryland
Vehicle 1: 1995 Dodge Caravan
Delta V: 9.3 mph
Vehicle 2: 1992 Chevrolet Lumina van
Delta V: 8.9 mph

Collision Diagram



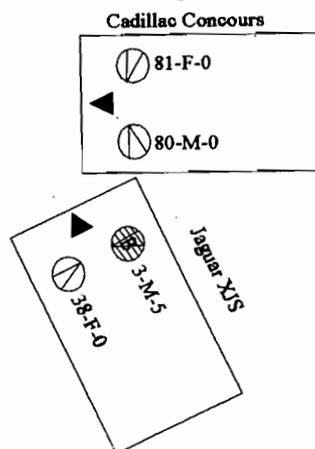
A Dodge Caravan was southbound when it struck a Chevrolet Lumina van in the side in an intersection. The Dodge driver, a 45-year-old male, was restrained by the lap/shoulder belt and a driver air bag that deployed during the collision. A 7-year-old female was seated in the right front seat wearing the lapbelt portion of the lap/shoulder belt. The air bag deployed and she received fatal neck and closed head injuries from the air bag. Two male children, aged nine and ten, were in the rear seat wearing their lap/shoulder belts and were not injured. The Dodge driver was not injured. The unrestrained occupants of the Chevrolet were not injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Closed head injury, no brainstem function, no response to voice or painful stimuli	5	Air bag
	Intraventricular blood in the fourth ventricle	4	Air bag
	Cerebral edema	4	Air bag
	Subarachnoid hemorrhage	3	Air bag
	Frontal neck abrasions	1	Air bag

Case No. 140

Accident Number: NRH-96-FH-C02
Date: October 25, 1995
Location: Lower Merion Township,
 Pennsylvania
Vehicle 1: 1995 Jaguar XJS
Delta V: 9.9 mph
Vehicle 2: 1994 Cadillac
Delta V: 9.2 mph

Collision Diagram



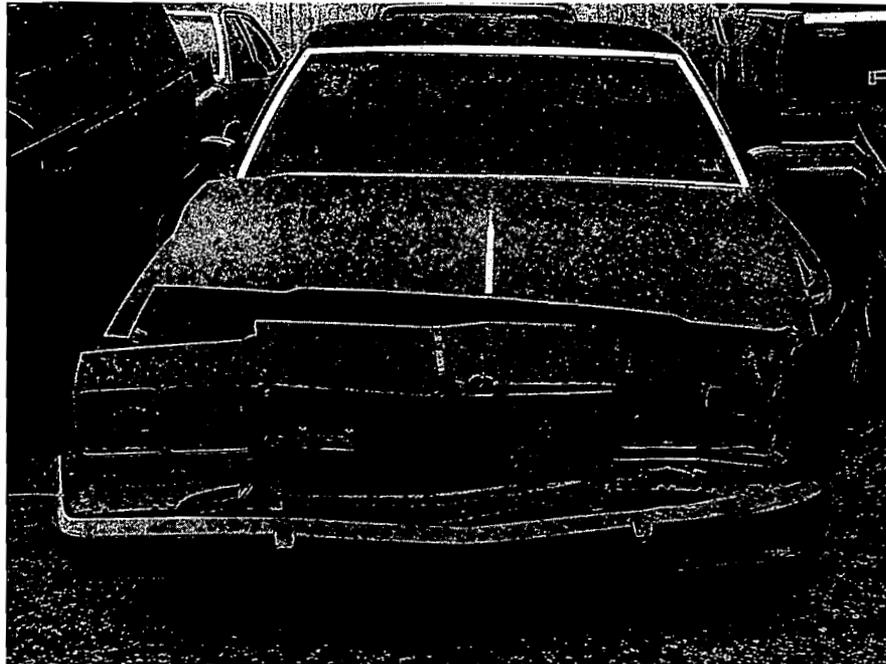
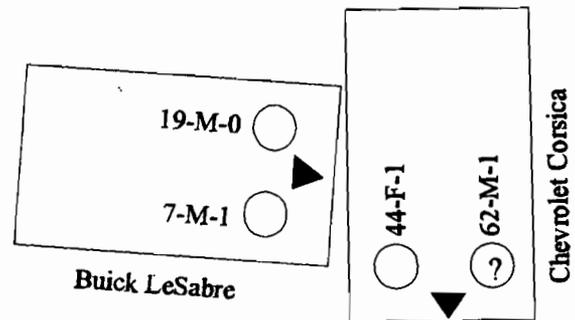
A Jaguar collided with the front left side of the Cadillac in an intersection. The 38-year-old female Jaguar driver was wearing the lap/shoulder belt and both Cadillac occupants were also belted. A 3-year-old male was in the right front of the Jaguar in a booster seat, restrained by the lap/shoulder belt. The Jaguar driver and passenger air bag systems are independently actuated and only the passenger air bag deployed. The passenger air bag severely injured the child. None of the other occupants of either car was injured.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1 Right front	Facial abrasions nose to chin	1	Air bag
	Multiple contusions to head and face	1	Air bag
	Bruise to upper left arm (inner aspect)	1	Air bag
	Bruise to left and right shoulders	1	Air bag
	Bruise to left anterior thigh	1	Air bag
	Subdural hematoma	4	Air bag
	Shear injuries to brain stem	5	Air bag
	Shear injuries to basal ganglia area	5	Air bag
	Shear injuries to right temporal area	9	Air bag
	Coma > 24 hours	5	Air bag

Case No. 142

Accident Number: NRH-96-FH-C04
Date: February 17, 1996
Location: Reading, Pennsylvania
Vehicle 1: 1981 Buick LeSabre
Delta V: 8.9 mph
Vehicle 2: 1994 Chevrolet Corsica
Delta V: 11.6 mph

Collision Diagram



A westbound Buick was driven by a 19-year-old male driver and occupied by a 7-year-old male in the right front seat. The Buick struck a northbound Chevrolet in an intersection. The Buick driver and passenger were not restrained. The Buick driver was not injured and the passenger received minor injuries. Both Chevrolet occupants received minor injury. The passenger was unrestrained and restraint use is unknown for the driver.

Occupant Location	Injuries	AIS	Probable Source
Vehicle 1			
Right front	Nose fracture	1	Instrument panel
	Facial lacerations and abrasions	1	Instrument panel