

Traffic Safety Facts

Research Note



DOT HS 811 030

September 2008

Fatality and Injury Trends Among Child Front-Seat Passenger Vehicle Occupants 12 and Younger

Summary

Starting in 1995, many child safety campaigns have encouraged parents, caregivers, and drivers to move children 12 and younger from the front seat to the back seat of vehicles. The focus of this document is on children 12 and younger seated in the front row in passenger vehicles (cars, vans, pickups, and SUVs) and the effect of these child safety campaigns. The analysis is from the National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS) as well as the National Automotive Sampling System (NASS) General Estimates System (GES).

- Trend data from fatalities and injuries indicate the child safety campaigns (laws, enforcement, and publicity campaigns) have worked in moving the children to the back seat.
- The data indicate a continuous declining trend in fatalities among children 12 and younger in the front seat of passenger vehicles between 1996 and 2006 – from 554 to 209 fatalities, a decline of 62 percent.
- Nationwide, the fatality ratio for children 12 and younger in the front seat in passenger vehicles in crashes has shrunk over the past 11 years – from 41 percent to 21 percent.
- The number and ratio of children age 12 and younger injured in the front seat in passenger vehicles in crashes have also declined between 1996 and 2006.

Definitions

Passenger vehicles: According to the 2008 FARS & NASS GES Analytical Data Classification Manual, the passenger vehicle only included passenger car (vehicle body type code 1-11), light truck (vehicle body type code 14-22, 24, or 25), and van (vehicle body type code 28-41, 45-49, or [79 and towing = 0 or 9]) between 1996 and 2006. The light truck category also includes pickups and SUVs.

Ratio of front-seat fatalities: The number of passenger vehicle occupants 12 and younger killed in front seat divided by the total number of passenger vehicle occupants 12 and younger killed in crashes.

Injured occupant: According to 1988-2006 NASS GES Analytical User's Manual, the injured vehicle occupant only included a person having possible injury (injury severity code 1), non-incapacitating injury (injury severity code 2), incapacitating injury (injury severity code 3), or injured but severity unknown (injury severity code 5) between 1996 and 2006.

Ratio of front-seat injuries: The number of passenger vehicle occupants 12 and younger injured in the front seat divided by the total number of passenger vehicle occupants 12 and younger injured in crashes.

Average rates of change in fatalities: The geometric mean has been used to measure the average rates of change in fatalities for passenger vehicle occupants 12 and younger in the front seat. It is the 10th root of the product of a set of annual changing values from 1996 to 2006.

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Findings

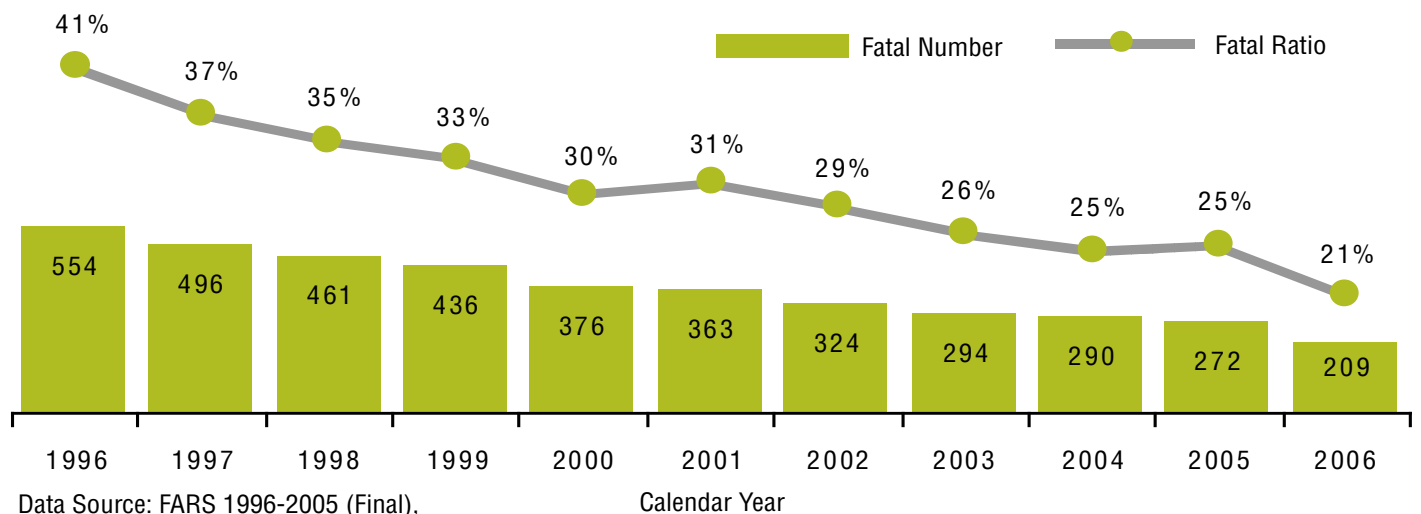
FATALITY TREND

As the title of this Research Note states, the purpose is to analyze and show the trend for front seats only. In this Research Note, the data in Table 1 have been used to calculate the ratios displayed in Figure 1.

Figure 1 illustrates 11-year trend data in the number of fatalities of children 12 and younger seated in the front in passenger vehicles in crashes, and the ratio they represent of passenger vehicle occupant total fatalities for children of this age range. The number of front-seat fatalities declined from 554 in 1996 to 209 in 2006, a significant decline of 62 percent. Over the 11-year period, the number of front-seat fatalities decreased by 10 percent every year on average.

In addition, the ratio of front-seat fatalities as a trend has also dropped during the past 11 years. In 1996, 41 percent of children 12 and younger were killed in the front seat. The ratio decreased to 21 percent in 2006. From 1996 to 2006, the ratio of front-seat fatalities had a 20-percentage-point reduction. On average, the ratio of front-seat fatalities declined by 1.8 percentage points per year in the 11-year period.

Figure 1: Number and ratio of front-seat passenger vehicle occupants 12 and younger killed in crashes



Data Source: FARS 1996-2005 (Final),
2006 Annual Report File (ARF)

Table 1: Passenger Vehicle Occupants 12 and Younger Killed, by Year and Seating Position

Year	Fatalities in Front Seat		Fatalities Not in Front Seat (mid, rear, or unknown)		Total Fatalities
	Number	%	Number	%	Number
1996	554	41	786	59	1,340
1997	496	37	838	63	1,334
1998	461	35	867	65	1,328
1999	436	33	877	67	1,313
2000	376	30	882	70	1,258
2001	363	31	814	69	1,177
2002	324	29	802	71	1,126
2003	294	26	817	74	1,111
2004	290	25	881	75	1,171
2005	272	25	802	75	1,074
2006	209	21	799	79	1,008

Data Source: FARS 1996-2005 (Final), 2006 Annual Report File (ARF)

INJURY TREND

Figure 2 presents the number and ratio of children 12 and younger injured in the front seat of passenger vehicles in crashes from 1996 to 2006. The data in Table 2 have been used to estimate the ratios shown in Figure 2. As the data in Figure 2 shows, both the number and ratio of children injured decreased for 8 years and increased for 3 years between 1996 and 2006. Overall, the trend of injury number and injury ratio both went down in the 11-year period.

Figure 2: Number and ratio of front-seat passenger vehicle occupants 12 and younger injured in crashes

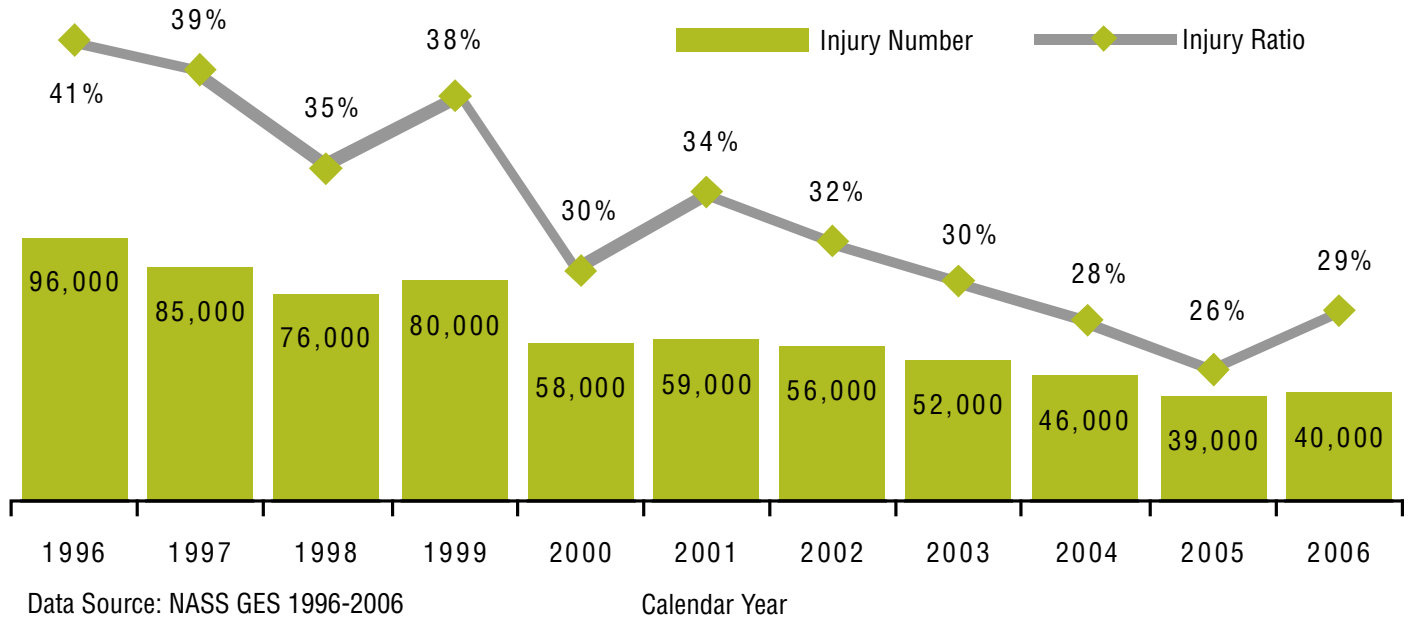


Table 2: Passenger Vehicle Occupants 12 and Younger Injured, by Year and Seating Position

Year	Injured Occupants in Front Seat		Injured Occupants Not in Front Seat (mid or rear)		Total Occupant Injured
	Number*	%	Number*	%	Number*
1996	96,000	41	141,000	59	237,000
1997	85,000	39	132,000	61	217,000
1998	76,000	35	142,000	65	218,000
1999	80,000	38	130,000	62	210,000
2000	58,000	30	134,000	70	192,000
2001	59,000	34	116,000	66	175,000
2002	56,000	32	121,000	68	177,000
2003	52,000	30	122,000	70	174,000
2004	46,000	28	118,000	72	164,000
2005	39,000	26	112,000	74	151,000
2006	40,000	29	100,000	71	140,000

Data Source: NASS GES 1996-2006

*Injury numbers rounded to nearest 1,000.

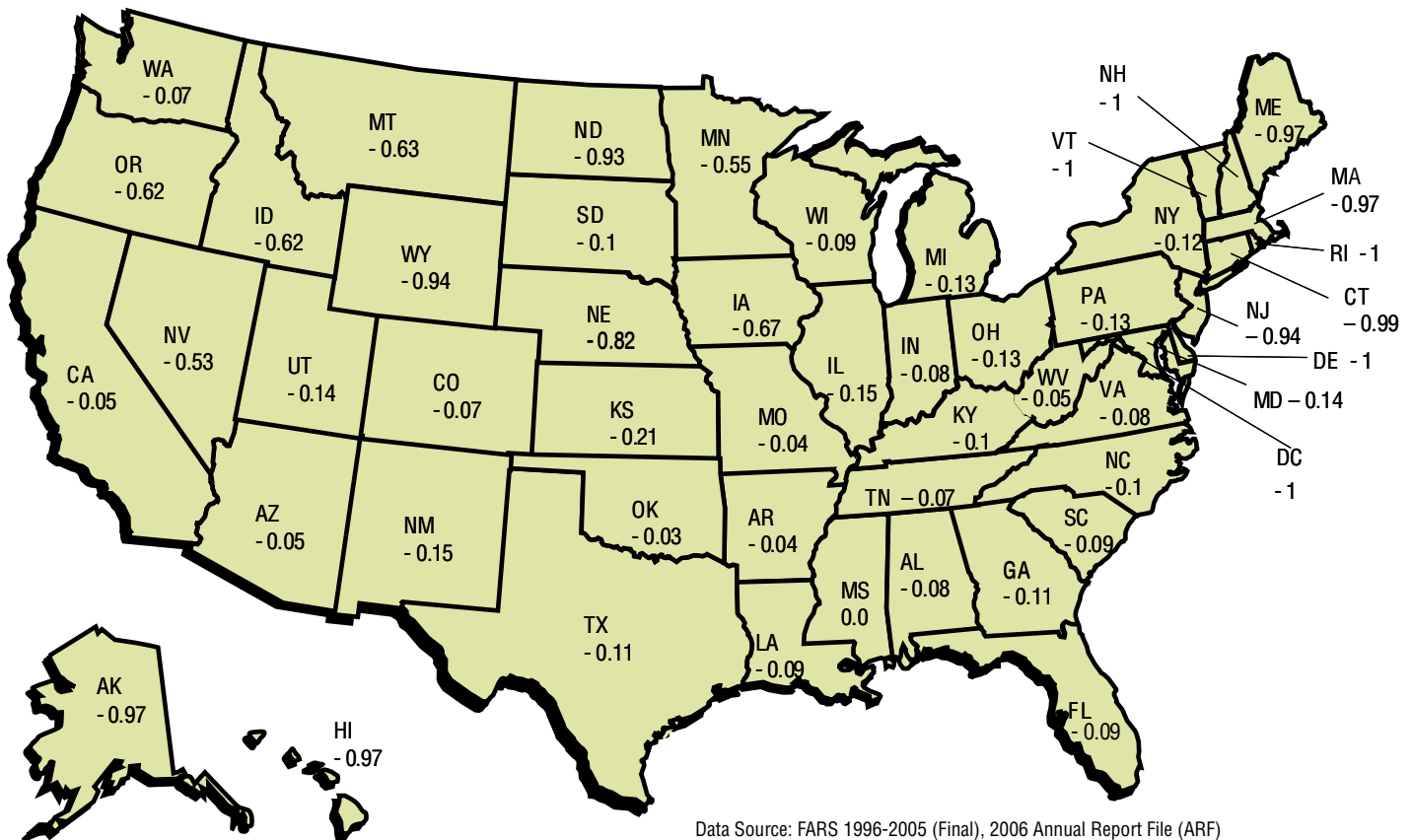
There were 237,000 children 12 and younger in passenger vehicles injured in crashes in 1996, of which 96,000 (41%) were in the front seat. In 2006, the number of children in the front seat injured decreased to 40,000 and the ratio of front-seat injuries decreased to 29 percent for the same age group.

From 1996 to 2006, the injury number declined by 58 percent and injury ratio declined by 12 percentage points for children 12 and younger in the front seat in passenger vehicles in crashes. On average, the number of front-seat injuries declined by 9 percent every year and the ratio of front-seat injuries declined by 1 percentage point every year over the past 11 years.

TRENDS IN EACH STATE

Figure 3 shows the U.S. map and average rates of change in fatalities for passenger vehicle occupants 12 and younger in the front seat over the 11-year period. Table 3 shows a breakdown by State and year of passenger vehicle occupants 12 and younger killed in front seats from 1996 to 2006.

Figure 3: Average rates of change in fatalities for passenger vehicle occupants 12 and younger in the front seat



The data in Table 3 have been used to estimate the average rates of change in fatalities for each State shown in Figure 3. As Figure 3 shows, the fatalities among 49 States and Washington, DC, except Mississippi, decreased over the 11-year period for passenger vehicle occupants 12 and younger in the front seat.

Table 3: Passenger Vehicle Occupants 12 and Younger Killed in the Front Seat by State and Year, 1996-2000

State Name	State	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Alabama	AL	14	22	16	17	20	15	15	7	14	12	6
Alaska	AK	0	2	1	0	0	3	0	1	0	1	2
Arizona	AZ	7	14	6	13	9	11	5	8	11	8	4
Arkansas	AR	10	15	8	8	8	9	3	10	12	5	7
California	CA	29	23	30	30	28	22	22	30	14	23	17
Colorado	CO	10	12	11	5	7	4	5	5	3	7	5
Connecticut	CT	4	0	2	1	1	0	0	1	2	0	0
Delaware	DE	2	2	0	0	1	0	1	0	1	0	0
Dist of Columbia	DC	0	0	0	0	0	0	0	0	1	0	0
Florida	FL	29	22	20	23	21	19	20	19	18	25	11
Georgia	GA	26	15	29	24	13	14	14	9	13	15	8
Hawaii	HI	3	0	1	0	0	0	1	1	1	1	1
Idaho	ID	5	5	3	6	3	3	5	3	2	3	0
Illinois	IL	20	12	12	11	5	11	9	8	4	5	4
Indiana	IN	12	12	16	6	11	8	8	6	3	3	5
Iowa	IA	6	6	6	4	4	10	1	2	3	1	0
Kansas	KS	11	5	7	6	5	5	6	3	5	3	1
Kentucky	KY	18	13	10	10	10	9	5	9	10	5	6
Louisiana	LA	21	11	2	5	9	8	6	4	8	6	8
Maine	ME	3	3	0	2	1	0	2	1	0	1	0
Maryland	MD	9	8	6	2	3	3	5	3	3	4	2
Massachusetts	MA	1	0	1	0	0	1	1	1	0	3	1
Michigan	MI	23	13	12	11	10	10	8	11	10	9	6
Minnesota	MN	2	6	4	4	3	5	7	0	4	2	2
Mississippi	MS	13	20	21	20	21	8	14	15	15	19	13
Missouri	MO	19	17	15	11	13	10	10	11	7	4	12
Montana	MT	4	4	1	2	3	5	3	3	2	2	0
Nebraska	NE	4	7	4	2	1	1	3	0	2	0	2
Nevada	NV	5	5	4	1	4	2	5	6	0	1	2
New Hampshire	NH	1	1	0	2	2	0	1	0	0	0	0
New Jersey	NJ	6	3	4	6	1	2	0	3	0	1	0
New Mexico	NM	10	11	3	6	3	7	5	5	8	5	2
New York	NY	14	14	6	8	6	7	5	4	4	2	4
North Carolina	NC	23	26	29	18	19	13	9	11	10	8	8
North Dakota	ND	2	1	3	1	2	0	0	1	1	0	1
Ohio	OH	17	17	25	13	9	10	9	9	8	5	4
Oklahoma	OK	12	16	17	16	8	8	10	8	13	5	9
Oregon	OR	6	7	7	6	2	5	5	2	2	0	2
Pennsylvania	PA	16	12	10	7	7	3	6	4	5	6	4
Rhode Island	RI	0	1	0	1	0	0	0	0	0	0	1
South Carolina	SC	16	10	8	12	10	5	12	5	8	8	6
South Dakota	SD	3	1	2	3	4	4	2	2	4	1	1
Tennessee	TN	15	15	14	14	14	12	16	9	9	8	7
Texas	TX	58	48	55	58	56	57	40	36	31	33	18
Utah	UT	9	5	6	4	2	4	1	1	1	3	2
Vermont	VT	1	1	1	0	0	0	1	0	0	1	0
Virginia	VA	9	10	7	7	4	5	5	4	8	3	4
Washington	WA	6	6	6	11	3	9	5	5	3	9	3
West Virginia	WV	7	7	3	7	5	7	2	3	2	4	4
Wisconsin	WI	10	6	3	7	4	6	3	3	5	2	4
Wyoming	WY	3	4	4	5	1	3	3	2	0	0	0

Data Source: FARS 1996-2005 (Final), 2006 (ARF)