



TRAFFIC SAFETY FACTS

OCCUPANT PROTECTION, 2012

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In 2012, 42,598 passenger vehicle occupants were injured or killed in Indiana traffic collisions; 87 percent were wearing proper safety restraints. Among those killed in Indiana, 48 percent were properly restrained. The National Highway Traffic Safety Administration (NHTSA) reports that, nationally in 2012, the overall observed seatbelt use rate was 86 percent, up 2 percentage points from 2011 (DOT HS 811 691). The national restraint usage rate among pickup truck occupants in 2011 was 74 percent, and two-thirds of rural pickup truck fatalities were unrestrained (DOT HS 811 683). Not using proper safety restraints is associated with higher injury rates and more serious injuries.

Indiana Occupant Protection Laws

Effective July 1, 2007, Indiana law requires all passenger vehicle occupants 16 and older to ride properly restrained in a vehicle. This law applies to all seating positions in all vehicles, including pick-up trucks and SUVs.¹ The current Indiana child passenger restraint law requires all child occupants (ages 15 and younger) to be properly restrained in a child restraint device or seat belt in all seating positions in all vehicles. In addition to legislative efforts, child passenger safety experts have developed recommended safety standards and best practices that include the use of rear facing child safety seats as long as possible, or, at a minimum, until a child is two years old and weighs at least 20 pounds. These guidelines also include the use of booster safety seats for children who have outgrown child safety seats with harnesses. Children then may transition to the use of adult seat belts. It is recommended that all children under the age of 13 ride in the back seat of the vehicle.

¹Passenger Restraint Systems, IC 9-19-10-2; available at <http://www.ai.org/legislative/ic/code/title9/ar19/ch10.html>

NHTSA identifies safety belt use as the most effective strategy a person can employ to prevent death and minimize injury resulting from traffic collisions (see text box for summary of Indiana Occupant Protection Laws). Research shows that primary enforcement laws increase rates of restraint use and decrease traffic fatality rates (DOT HS 811 458). A 2008 NHTSA report found that states with primary enforcement laws had significantly lower fatality rates than states without primary enforcement (DOT HS 810 921). *Primary enforcement* laws allow a law enforcement officer to stop a vehicle and issue a citation when the officer observes an unrestrained driver or passenger. *Secondary enforcement* means that a citation for being unrestrained can only be written after the officer stops the vehicle or cites the offender for another infraction. As of May 2012, 33 states (including Indiana) and the District of Columbia have primary enforcement laws in effect (Table 1). With the exception of New Hampshire, the only state with no adult seat belt law, the remaining states have secondary enforcement laws in place.

Vehicle occupants injured in Indiana collisions are counted as having been restrained when the investigating officer selects any one of the following passenger vehicle safety equipment categories on the Indiana Crash Report: (1) *lap belt only*; (2) *harness*; (3) *airbag deployed and harness*; (4) *child restraint*; or (5) *lap and harness*. By this standard, 90.6 percent of passenger vehicle occupants involved in 2012 Indiana traffic collisions were wearing the proper safety restraint.

This fact sheet summarizes occupant protection data trends and legislation at national, regional, state, and county levels. Restraint use and injury analyses are limited to those occurring in passenger vehicles (defined as *passenger cars, pickup trucks, sport utility vehicles, and vans*). Analyses include data from several sources (see last page for a full list of references, data sources, and definitions). Indiana data come primarily from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 9, 2013.

Table 1. States with primary enforcement seatbelt laws

Alabama	Hawaii	Maryland	Oklahoma
Alaska	Illinois	Michigan	Oregon
Arkansas	Indiana	Minnesota	Rhode Island
California	Iowa	Mississippi	South Carolina
Connecticut	Kansas	New Jersey	Tennessee
Delaware	Kentucky	New Mexico	Texas
District of Columbia	Louisiana	New York	Washington
Florida	Maine	North Carolina	Wisconsin
Georgia			

 Indicates Great Lakes Region state

Source: *Seat Belt Use in 2012—Overall Results*, DOT HS 811 691, November 2012 (table extracted)

Note: This list is current as of May 31, 2012.





GENERAL TRENDS

Indiana observational studies of seatbelt usage conducted by the Indiana Criminal Justice Institute (ICJI) show that restraint usage rates continue to climb for passenger vehicle occupants. Figure 1 shows that Indiana restraint usage rates for all occupants increased more than 12 percentage points, from 81.3 percent in 2003 to 93.6 percent in 2012. Restraint usage among pickup truck occupants increased dramatically, increasing from 56.6 percent in 2003 to 86.5 percent in 2012. This increase is likely due in part to the 2007 change to the Indiana seatbelt law that required all passenger vehicle occupants, 16 and older (including pickup truck and SUV

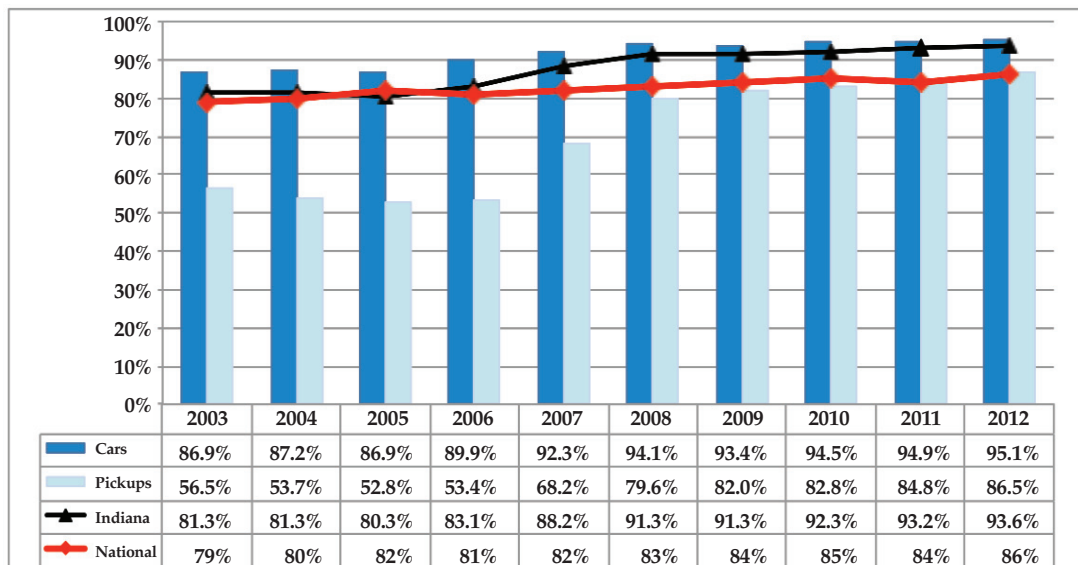
occupants), to ride properly restrained in a vehicle. Since 2006, Indiana's overall seatbelt usage rates exceeded U.S. rates.

Table 2 shows the overall rate of restraint usage among passenger vehicle occupants involved in Indiana crashes increased slightly between 2008 and 2012, a rate that has remained essentially unchanged since 2008.

Consistent with national trends, rates of restraint usage among passenger vehicle occupants injured in Indiana traffic collisions were lower for individuals suffering more severe injuries. In 2012, among the 516 passenger vehicle occupants killed, 47.9 percent were properly restrained.

Approximately 73 percent of the 2,759 individuals suffering incapacitating injuries were properly restrained.

Figure 1. Indiana observed seat belt use rates in passenger vehicles, 2003 to 2012



Sources: Indiana - Indiana Roadside Observational Survey of Safety Belt and Motorcycle Helmet Use, Center for Road Safety, Purdue University, 2012
National - DOT HS 811 691, November 2012

Notes:

- 1) Indiana data (2003-2010) represent the average annual rates of observed restraint use among all Indiana passenger vehicle occupants in a study previously conducted by ICJI twice per year. Beginning in 2011, this study is now conducted only once each year; therefore, averages no longer apply from this point forward.
- 2) Car and pickup truck restraint usage rates are specific to Indiana only.

Table 2. Restraint use and injury status among individuals involved in Indiana passenger vehicle collisions, 2008-2012

Passenger vehicle occupant injuries	2008	2009	2010	2011	2012	% change ('11 - '12)	Annual rate of change ('08 - '12)
All occupants	300,918	283,544	288,843	280,469	283,010	0.9%	-1.5%
Properly restrained	272,300	256,103	262,212	254,140	256,505	0.9%	-1.5%
Restraint use rate	90.5%	90.3%	90.8%	90.6%	90.6%	0.0%	0.0%
Fatalities	588	497	548	514	516	0.4%	-3.2%
Properly restrained	258	239	261	254	247	-2.8%	-1.1%
Restraint use rate	43.9%	48.1%	47.6%	49.4%	47.9%	-3.1%	2.2%
Incapacitating injuries	2,508	2,358	2,505	2,426	2,759	13.7%	2.4%
Properly restrained	1,820	1,713	1,863	1,799	2,008	11.6%	2.5%
Restraint use rate	72.6%	72.6%	74.4%	74.2%	72.8%	-1.9%	0.1%
Non-incapacitating injuries	39,936	38,437	38,903	36,575	37,590	2.8%	-1.5%
Properly restrained	35,182	33,926	34,727	32,628	33,440	2.5%	-1.3%
Restraint use rate	88.1%	88.3%	89.3%	89.2%	89.0%	-0.3%	0.2%
Other injuries	5,505	3,875	2,272	1,708	1,733	1.5%	-25.1%
Properly restrained	4,897	3,630	2,018	1,508	1,547	2.6%	-25.0%
Restraint use rate	89.0%	93.7%	88.8%	88.3%	89.3%	1.1%	0.1%
Not injured	252,381	238,377	244,615	239,246	240,412	0.5%	-1.2%
Properly restrained	230,143	216,595	223,343	217,951	219,263	0.6%	-1.2%
Restraint use rate	91.2%	90.9%	91.3%	91.1%	91.2%	0.1%	0.0%

Source: Indiana State Police

RESTRAINT USE IN THE GREAT LAKES REGION

Among the six states in the Great Lakes Region, Michigan and Indiana had the highest observed seatbelt use rate in passenger vehicles in 2011, 94.5 percent and 93.2 percent, respectively (DOT HS 811 729). Ohio (84.1 percent) had the lowest observed seatbelt use rate of all states in the region. Traffic fatality rates per 100,000 of the population decreased slightly in each of the states in the Great Lakes Region except Wisconsin (no change) between 2010 and 2011 (Table 3). With the exception of Wisconsin, the average annual decrease in fatality rates between 2002 and 2011 has been much lower in Indiana (-1.6 percent) than in other Great

Lakes states. Since 2004, Indiana has represented the highest fatality rate of any state in the region. The proportion of occupants killed in collisions who were unrestrained decreased in Illinois, Michigan, and Ohio in 2011, while the largest increases occurred in Minnesota (4.9 percentage points) and Wisconsin (2 percentage points); the Indiana proportion increased by less than one percentage point in 2011 (Table 4). Each of the states in the Great Lakes Region, with the exception of Ohio, experienced an average annual decrease in the percent of fatally injured occupants who were unrestrained between 2002 and 2011. During that period, the Indiana unrestrained fatal rate declined about 1 percent annually. Ohio is the only Great Lakes state with no primary enforcement law in effect.

Table 3. Traffic fatality rates (per 100,000 population) by states in the Great Lakes Region, 2002-2011

	<div> <div>Low</div> <div><</div> <div><</div> <div>></div> <div>></div> <div>High</div> </div>											
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Change '10-'11	Annual rate of change ('02-'11)
Illinois	9.6	9.9	9.3	9.2	8.5	8.2	6.8	6.0	6.1	5.8	-0.3	-5.4%
Indiana	11.8	12.3	13.8	13.7	12.7	12.9	11.6	9.9	10.4	10.2	-0.2	-1.6%
Michigan	10.7	10.7	9.8	9.5	9.1	9.3	8.3	7.3	7.9	7.3	-0.6	-4.2%
Minnesota	11.9	11.7	10.2	9.9	8.6	9.1	7.8	7.0	6.9	6.0	-0.9	-7.3%
Ohio	11.5	10.1	10.1	10.5	9.7	9.8	9.3	7.9	8.4	7.7	-0.7	-4.3%
Wisconsin	13.6	14.2	13.0	13.5	11.8	12.2	9.6	9.0	8.9	8.9	0.0	-4.6%

Sources: Fatality Analysis Reporting System, U.S. Census Bureau

Notes:

1) FARS data not yet available for 2012.

2) Traffic fatality rates are calculated for vehicle occupants (drivers and passengers) only. Pedestrians and pedalcyclists are excluded.

Table 4. Proportion of occupants killed in collisions who were unrestrained, by states in the Great Lakes Region, 2002-2011

	<div> <div>Low</div> <div><</div> <div><</div> <div>></div> <div>></div> <div>High</div> </div>											
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Change '10-'11 (percentage points)	Annual rate of change ('02-'11)
Illinois	70.2%	68.2%	60.4%	60.0%	60.6%	62.1%	58.8%	58.3%	59.2%	58.3%	-0.9	-2.0%
Indiana	63.2%	58.6%	61.9%	62.2%	63.5%	60.3%	59.2%	57.3%	57.8%	58.2%	0.4	-0.9%
Michigan	45.9%	48.4%	46.1%	42.7%	41.8%	42.5%	44.6%	44.3%	40.5%	40.1%	-0.4	-1.5%
Minnesota	62.4%	60.5%	60.4%	58.9%	62.9%	60.7%	58.8%	61.4%	50.8%	55.7%	4.9	-1.2%
Ohio	63.9%	64.1%	62.4%	60.4%	61.0%	61.6%	62.2%	66.4%	64.0%	63.7%	-0.3	0.0%
Wisconsin	67.9%	65.2%	64.7%	66.9%	62.9%	65.8%	64.1%	64.0%	60.6%	62.6%	2.0	-0.9%

Source: Fatality Analysis Reporting System

Notes:

1) FARS data not yet available for 2012.

2) Color-scale formatting is applied to individual years to illustrate the states with the highest proportion of unrestrained occupants killed for each year in the series.



TRAFFIC SAFETY FACTS

RESTRAINT USE AND VEHICLE TYPE

Table 5 shows the relative risk of serious injury increases substantially when vehicle occupants are unrestrained. In each of the four passenger vehicle types in 2012, only one-tenth of a percent of properly restrained individuals involved in collisions were killed. Among unrestrained individuals injured in passenger cars, 5.2 percent were killed; thus, in comparison to the 0.1 percent fatality rate for restrained occupants, an indi-

vidual is 51 times more likely to be killed in a passenger car when unrestrained. Likewise, unrestrained occupants of pickup trucks were 57 times more likely to be killed and 15 times more likely to suffer incapacitating injuries in traffic collisions than occupants using proper safety restraints. Unrestrained occupants of SUVs had the highest relative risk (90.2) of being killed in collisions compared to properly restrained occupants in the same vehicle type. These relative risk ratios are all statistically significant ($p < 0.05$).

Table 5. Passenger vehicle occupants involved in Indiana collisions, by vehicle type, restraint use, and injury status, 2012

	Passenger cars		Pickup trucks		SUVs		Vans	
Restrained (R)	167,680	100.0%	33,168	100.0%	38,692	100.0%	16,965	100.0%
Fatal	172	0.1%	29	0.1%	24	0.1%	22	0.1%
Incapacitating	1,354	0.8%	239	0.7%	272	0.7%	143	0.8%
Non-incapacitating	22,749	13.6%	3,305	10.0%	5,019	13.0%	2,367	14.0%
Other	958	0.6%	250	0.8%	239	0.6%	100	0.6%
No injury	142,447	85.0%	29,345	88.5%	33,138	85.6%	14,333	84.5%
Not restrained (NR)	2,477	100.0%	777	100.0%	536	100.0%	278	100%
Fatal	130	5.2%	39	5.0%	30	5.6%	12	4%
Incapacitating	302	12.2%	86	11.1%	70	13.1%	36	13%
Non-incapacitating	1,270	51.3%	377	48.5%	277	51.7%	155	56%
Other	16	0.6%	6	0.8%	7	1.3%	2	1%
No injury	759	30.6%	269	34.6%	152	28.4%	73	26%
Relative risk of serious injury (% NR / % R)								
Fatal	51.2		57.4		90.2		33.3	
Incapacitating	15.1		15.4		18.6		15.4	

Source: Indiana State Police

Notes:

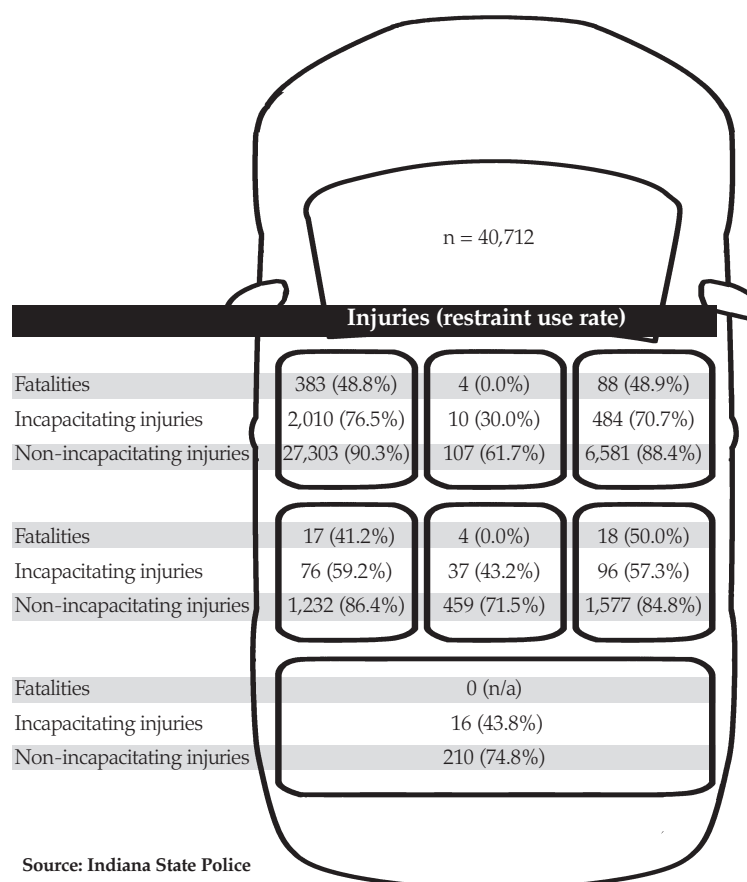
- 1) Excludes individuals involved in collisions where restraint use was unknown.
- 2) Percent totals may not add up to 100 due to rounding.
- 3) All relative risk ratios are significant ($p < 0.05$).

RESTRAINT USE AND SEATING POSITION

Research shows that vehicle seating position is linked both to the rate of restraint usage and the risk of injury for all passenger vehicle occupants. NHTSA reports that proper restraint use reduces the risk of fatal injury to passenger car occupants riding in the front seat of the vehicle by 45 percent and pickup truck occupants by 60 percent (DOT HS 811 729). Figure 2 shows injury counts and restraint usage rates for 2012 by injury type and vehicle seating position. The greatest number of fatalities occurred in the driver seating position (383), among which 49 percent were properly restrained. About 49 percent of the 88 individuals killed in the front right passenger seat were properly restrained.

In 2012, this risk of serious injury (*fatal and incapacitating*) was greater for unrestrained occupants of passenger vehicles across all seating positions (Table 6). Occupants seated in the driver's position who were unrestrained were 4.4 times more likely to suffer serious injuries than those that were wearing the proper restraints. Unrestrained passenger vehicle occupants seated in the *far back/sleeper* position (typically found in SUVs and vans) were 3.2 times more likely to suffer serious injuries than occupants who were properly restrained. All relative risk ratios are significant ($p < 0.05$).

Figure 2. Individuals in Indiana passenger vehicle collisions by injury status, seating position, and restraint use, 2012



Notes:
 Injuries include only individuals obtaining *fatal, incapacitating, non-incapacitating, and possible* injuries where valid seating position was identified. Percentages depicted are the percentage of individuals reported to be properly restrained by injury type in each seating position. Both *not restrained* and *unknown* restraint use codes are included in the totals for restraint use rate calculations.

Table 6. Risk of serious injury to passenger vehicle occupants involved in Indiana collisions, by seating position, 2012

Seating position	Restrained?	Serious injuries	Non-serious injuries	Total	% Serious injury	Relative risk	Lower limit	Upper limit
Front left (driver)	No	471	1,252	1,723	27.3%	4.4	4.0	4.8
	Yes	1,724	26,093	27,817	6.2%			
Front center	No	6	26	32	18.8%	4.4	1.2	16.6
	Yes	3	68	71	4.2%			
Front right	No	116	400	516	22.5%	3.6	3.0	4.4
	Yes	385	5,844	6,229	6.2%			
Rear left	No	29	93	122	23.8%	5.2	3.4	7.8
	Yes	52	1,076	1,128	4.6%			
Rear center	No	20	98	118	16.9%	3.7	2.0	7.0
	Yes	16	336	352	4.5%			
Rear right	No	34	149	183	18.6%	4.1	2.8	6.1
	Yes	64	1,353	1,417	4.5%			
Far back/sleeper	No	7	45	52	13.5%	3.2	1.2	8.6
	Yes	7	158	165	4.2%			
Total	No	683	2,063	2,746	24.9%	4.1	3.8	4.5
	Yes	1,866	29,084	30,950	6.0%			

Source: Indiana State Police

- Notes:**
- 1) Limited to individuals with valid seating position and restraint use identified. Individuals coded as *unknown* restraint use are excluded.
 - 2) Serious injuries include those reported as *fatal* and *incapacitating*.
 - 3) Non-serious injuries excludes NULL values in the injury status code field.
 - 4) Relative risk of serious injury = the percent of unrestrained serious injuries in a given seating position divided by the percent of restrained serious injuries in the same seating position.
 - 5) All relative risk ratios are significant at $p < 0.05$.



RESTRAINT USE AND AGE

Rates of restraint use among passenger vehicle occupants involved in Indiana traffic collisions were typically lower for individuals suffering serious injuries (*fatal and incapacitating*) across all age groups than the overall passenger vehicle occupant restraint usage rate (Table 7). The lowest rates of restraint use occurred among passenger vehicle occupants killed in 2012 collisions in the 16 to 20 (34.7 percent), 21 to 24 (34.5 percent), and

35 to 44 (29.8 percent) age groups. When looking at restraint use by age and gender across the 2008 to 2012 period, males in collisions were much more likely to be unrestrained than their female counterparts in the same age groups (Table 8). Males between the ages of 8 and 15 years of age consistently represented the highest proportion of passenger vehicle occupants in collisions who were unrestrained for each year between 2008 and 2012.

Table 7. Individuals involved in Indiana passenger vehicle collisions by age group, injury status, and restraint use, 2012

Age group	All involved			Fatal injuries			Incapacitating injuries		
	Total	Properly restrained	Restraint use rate	Total	Properly restrained	Restraint use rate	Total	Properly restrained	Restraint use rate
< 1	181	170	93.9%	0	0	na	5	3	60.0%
1 - 3	469	423	90.2%	9	7	77.8%	22	17	77.3%
4 - 7	736	646	87.8%	4	3	75.0%	34	20	58.8%
8 - 15	2,212	1,815	82.1%	7	4	57.1%	88	56	63.6%
16 - 20	41,568	37,541	90.3%	72	25	34.7%	414	270	65.2%
21 - 24	31,715	28,494	89.8%	58	20	34.5%	293	183	62.5%
25 - 34	55,589	50,046	90.0%	86	31	36.0%	495	332	67.1%
35 - 44	45,169	41,044	90.9%	57	17	29.8%	423	297	70.2%
45 - 54	42,896	39,199	91.4%	60	24	40.0%	379	307	81.0%
55 - 64	33,099	30,386	91.8%	51	33	64.7%	290	250	86.2%
65 - 74	17,466	16,153	92.5%	48	37	77.1%	182	162	89.0%
75 and over	11,402	10,418	91.4%	64	46	71.9%	130	108	83.1%
Unknown	508	170	33.5%	0	0	na	4	3	75.0%
<i>Total</i>	<i>283,010</i>	<i>256,505</i>	<i>90.6%</i>	<i>516</i>	<i>247</i>	<i>47.9%</i>	<i>2,759</i>	<i>2,008</i>	<i>72.8%</i>

Source: Indiana State Police

Note: Total columns include individuals reported with unknown and invalid safety equipment type.

Table 8. Proportion of vehicle occupants in Indiana collisions who were unrestrained, by age group and gender, 2008-2012

Age group	2007		2008		2009		2010		2011	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
< 1	10.4%	12.4%	7.6%	7.8%	7.8%	7.6%	9.8%	8.5%	4.9%	6.2%
1-3	10.8%	7.1%	5.9%	7.3%	8.6%	6.9%	8.5%	4.9%	10.5%	8.6%
4-7	17.4%	10.3%	11.0%	9.2%	10.8%	8.4%	11.5%	9.4%	13.0%	11.5%
8-15	21.4%	14.9%	22.8%	14.0%	18.1%	13.6%	17.3%	13.4%	17.9%	15.7%
16-20	11.9%	8.3%	11.7%	8.2%	11.0%	8.6%	11.0%	8.9%	10.8%	8.4%
21-24	12.9%	8.1%	12.5%	8.4%	12.0%	8.2%	11.8%	8.5%	11.9%	8.2%
25-34	12.0%	8.1%	11.9%	8.5%	10.7%	8.1%	10.9%	8.4%	11.4%	8.4%
35-44	10.6%	7.5%	10.3%	7.8%	10.0%	7.8%	10.2%	7.9%	10.1%	8.1%
45-54	9.4%	7.1%	10.0%	7.7%	9.1%	7.2%	9.3%	7.5%	9.2%	7.9%
55-64	8.4%	6.6%	8.8%	7.2%	8.7%	7.1%	8.8%	7.7%	9.1%	7.1%
65-74	8.2%	7.1%	9.2%	7.2%	9.0%	6.8%	8.7%	7.6%	7.8%	7.2%
75 +	9.1%	6.8%	9.3%	7.7%	9.0%	6.7%	8.6%	7.5%	9.8%	7.1%
All ages	10.9%	7.7%	10.9%	8.1%	10.3%	7.8%	10.3%	8.2%	10.3%	8.1%

Source: Indiana State Police

Notes:

1) Data limited to individuals with valid gender and age reported.

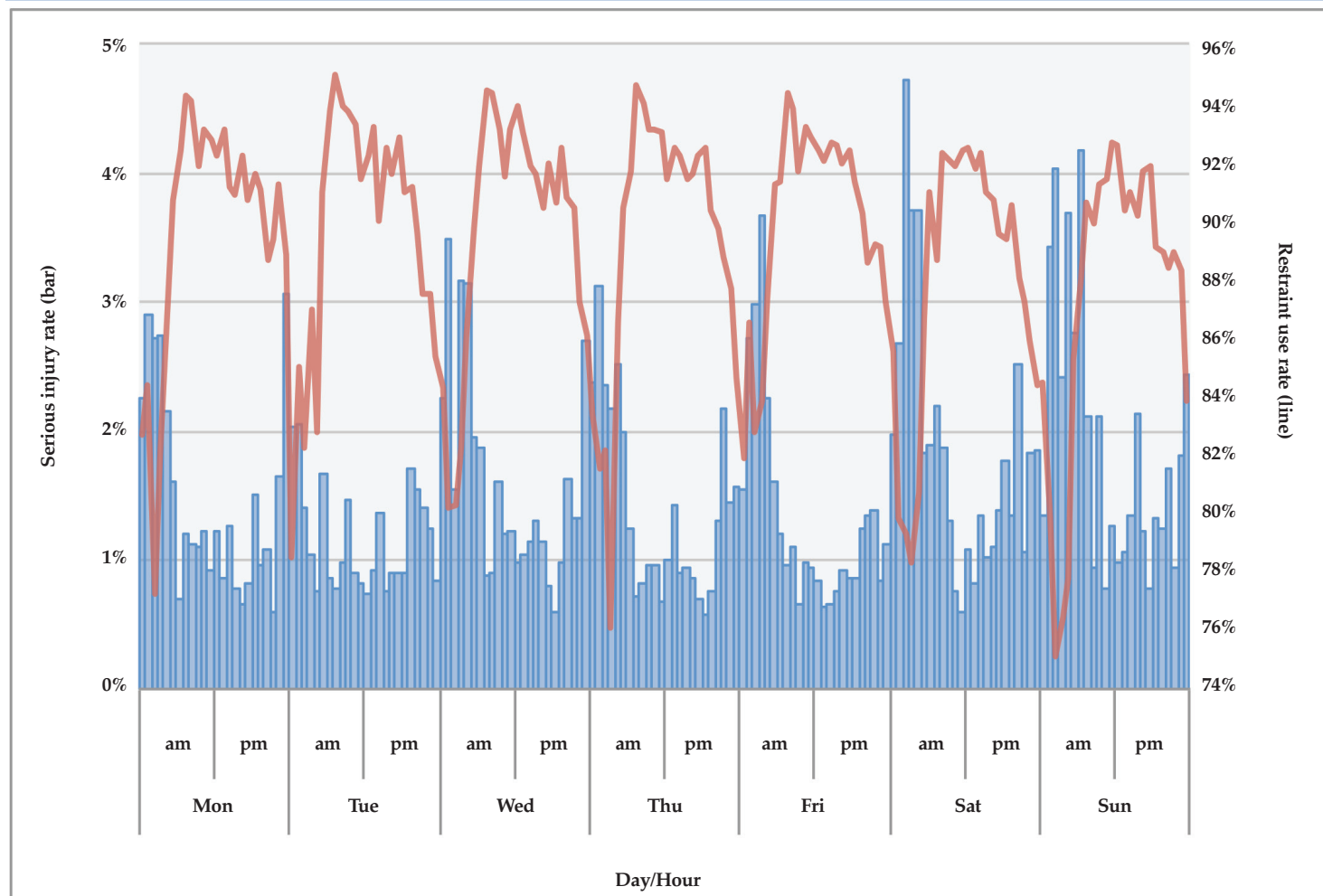
2) Percent unrestrained includes individuals reported with "No restraint" and NULL values in the restraint use code field.

TIME OF DAY AND RESTRAINT USE

In 2012, most serious injuries occurred during morning rush hour periods and late overnight hours (Figure 3). Data also suggest that rates of

restraint usage are noticeably lower and serious injury rates are higher during overnight hours than during other periods of the day, especially in the first few hours after midnight. For example, the lowest hourly rate of restraint use in 2012 occurred at 2am on Sundays (73 percent).

Figure 3. Indiana serious injuries and restraint use in passenger vehicles, by hour and day of week, 2012



Source: Indiana State Police

Notes:

- 1) *Serious injury* rate represents *fatal* or *incapacitating* injuries as a proportion of all individuals involved in collisions.
- 2) Data exclude individuals involved in collisions with invalid time reported.
- 3) Restraint use rate includes individuals reported with *unknown* and invalid safety equipment type.

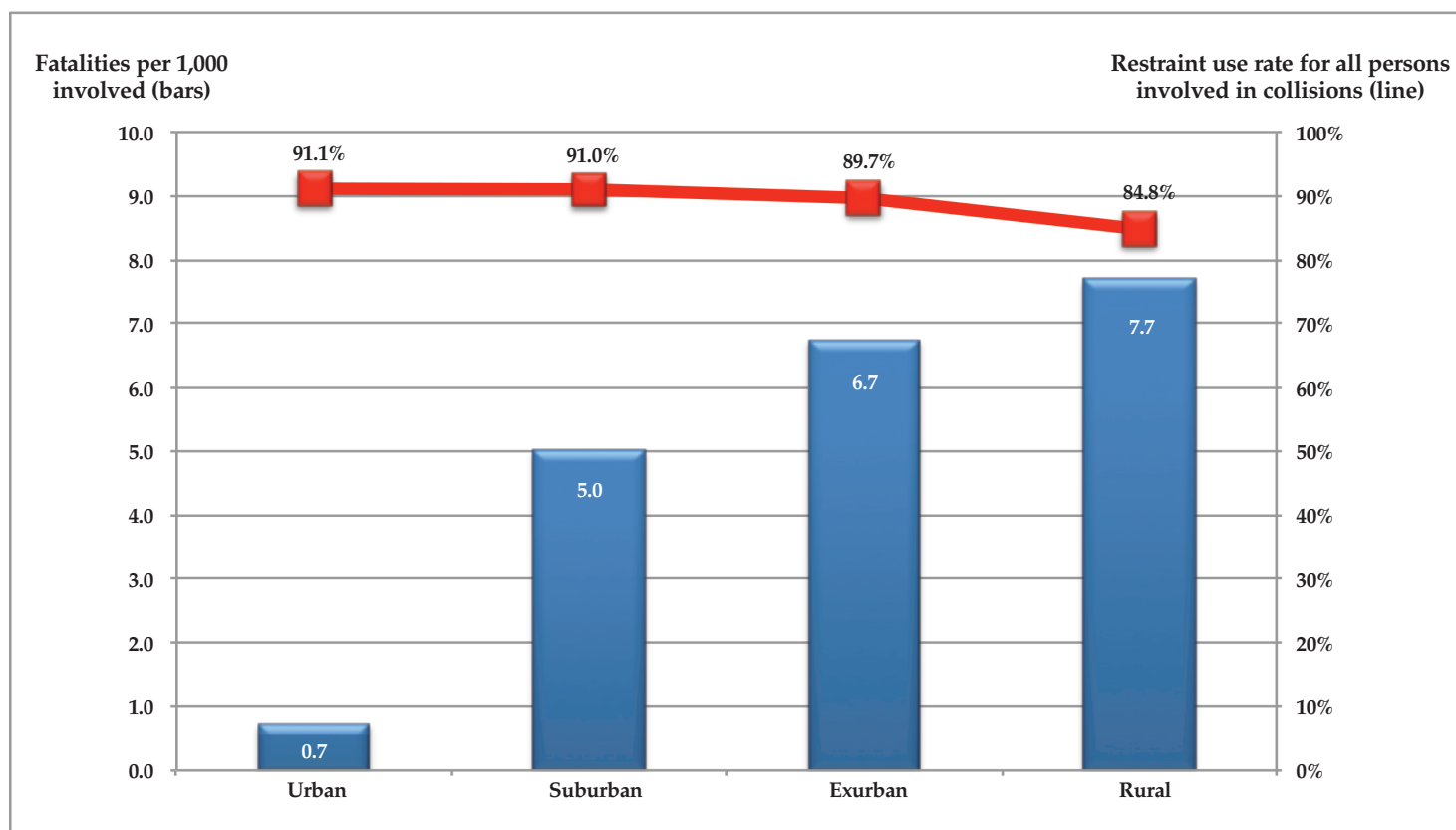


GEOGRAPHY OF INDIANA RESTRAINT USE

The 2012 fatality rate per 1,000 individuals involved in collisions was lower in Indiana *urban* (0.7 per 1,000) and *suburban* (5.0) locales than in surrounding *exurban* (6.7) and *rural* (7.7) areas (Figure 4). Conversely, rates of restraint use were higher in *urban* (91.1 percent) and *suburban* (91.0 percent) locales than in areas designated as *exurban* (89.7 percent)

and *rural* (84.8 percent). In 2012, this risk of serious injury (*fatal* and *incapacitating*) was greater for unrestrained occupants of passenger vehicles across all locales (Table 9). Occupants of vehicles involved in collisions in *urban* areas who were unrestrained were 4.1 times more likely to suffer serious injuries than those that were wearing the proper restraints. Unrestrained passenger vehicle occupants in *rural* areas were 3.2 times more likely to suffer serious injuries than occupants who were properly restrained. All relative risk ratios are significant ($p < 0.05$).

Figure 4. Indiana traffic fatalities by restraint use and locale, 2012



Source: Indiana State Police

Note: Limited to individuals with valid locale identified.

Table 9. Risk of serious injury to passenger vehicle occupants involved in Indiana collisions, by locale, 2012

Locale	Restrained?	Serious injuries	Non-serious injuries	Total	% Serious injury	Relative risk	Lower limit	Upper limit
Urban	No	256	1,127	1,383	18.5%	4.1	3.6	4.7
	Yes	1,137	24,226	25,363	4.5%			
Suburban	No	165	394	559	29.5%	3.3	2.8	3.8
	Yes	516	5,209	5,725	9.0%			
Exurban	No	105	223	328	32.0%	3.2	2.6	3.9
	Yes	258	2,299	2,557	10.1%			
Rural	No	161	320	481	33.5%	3.2	2.7	3.8
	Yes	285	2,426	2,711	10.5%			
Total	No	687	2,064	2,751	25.0%	4.1	3.8	4.5
	Yes	2,196	34,160	36,356	6.0%			

Source: Indiana State Police

- Notes:
- 1) Limited to individuals with valid locale and restraint use identified.
 - 2) Serious injuries include those reported as *fatal* and *incapacitating*.
 - 3) Non-serious injuries excludes NULL values in the injury status code field.
 - 4) Relative risk of serious injury = the percent of *unrestrained* serious injuries in a given locale divided by the percent of *restrained* serious injuries in the same locale.
 - 5) All relative risk ratios are significant at $p < 0.001$.

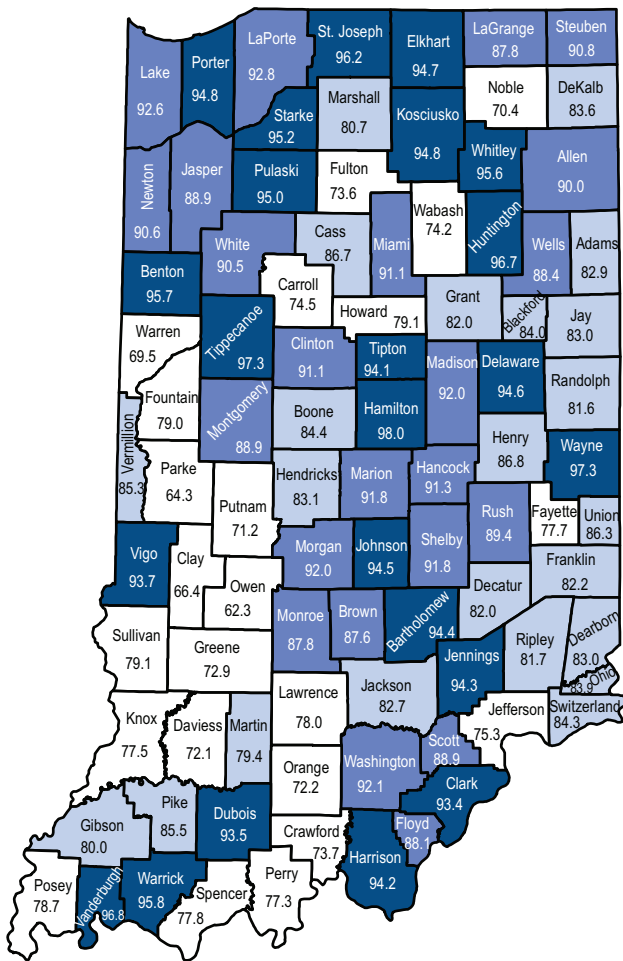
GEOGRAPHY OF INDIANA RESTRAINT USE *continued*

Maps 1 and 2 illustrate 2012 Indiana county restraint use and serious injury rates for all occupants of passenger vehicles. Although there are some exceptions, the maps illustrate a general pattern of higher serious injury rates in counties with lower rates of restraint use. For example, a number of primarily urban counties located in the central and northern

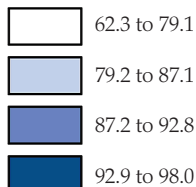
portions of the state show high restraint use rates and low serious injury rates. Many counties with low restraint use and high serious injury rates appear to be clustered in the southwestern portions of the state. The median rate of overall county restraint use reported in Indiana collisions was 87.2 percent, while the mean rate was 85.6 percent. The median county serious injury rate was 17.0 per 1,000 involved in collisions, and the mean serious injury rate was 18.9 per 1,000 involved.

Map 1. Passenger vehicle restraint use rates by county, 2012

Indiana overall restraint use rate = 90.6
Median county restraint use = 87.2
Mean county restraint use = 85.6
n = 283,010 individuals injured or involved in collisions

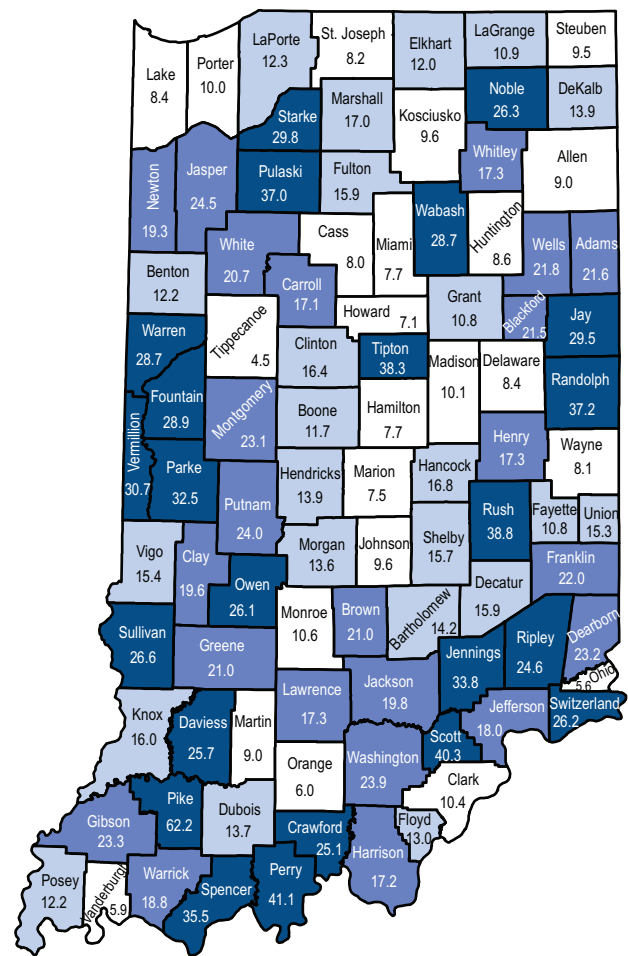


Percent restraint usage

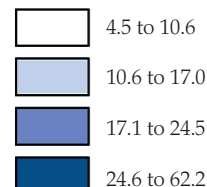


Map 2. Passenger vehicle serious injury rates by county, 2012

Median county serious injury rate = 17.0
Mean county serious injury rate = 18.9
n = 283,010 individuals injured or involved in collisions



Serious injuries per 1,000 involved in collisions





TRAFFIC SAFETY FACTS

DEFINITIONS

Annual Rate of Change (ARC) — The rate that a beginning value must increase/decrease each period (e.g., month, quarter, year) in a time series to arrive at the ending value in the time series. ARC is a "smoothed" rate of change because it measures change in a variable as if the change occurred at a steady rate each period with compounding. For example, to measure change in a variable from 2008 to 2012, it is calculated as $(\text{Value in 2012} / \text{Value in 2008})^{1/4} - 1$.

Census locale — **Urban** is defined as Census 2000 Urban Areas (2007-2009) or Census 2010 Urban Areas (2010-2011), **suburban** as areas within 2.5 miles of urban boundaries, **exurban** as areas within 2.5 miles of suburban boundaries, and **rural** as areas beyond **exurban** boundaries (i.e., everything else).

Not injured status includes individuals involved in collisions reported as *null* values in the injury status code field.

Non-incapacitating injuries include those injuries reported as *non-incapacitating* or *possible*.

Other injury status includes *not reported*, *unknown*, and *refused* (treatment) status codes.

Passenger vehicles are defined as *passenger cars*, *pickup trucks*, *sport utility vehicles*, and *vans*.

Restraint use — Vehicle occupants injured in Indiana collisions are counted as having been restrained when the investigating officer selects any one of the following passenger vehicle safety equipment categories on the Indiana Crash Report: (1) *lap belt only*; (2) *harness*; (3) *airbag deployed and harness*; (4) *child restraint*; or (5) *lap and harness*.

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DATA SOURCES

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National Center for Statistics and Analysis, National Highway Traffic Safety Administration, *Seat Belt Use in 2012—Overall Results*, DOT HS 811 Fatality Analysis Reporting System, National Highway Traffic Safety Administration, current as of April 10, 2013 (see <http://www-fars.nhtsa.dot.gov/Main/index.aspx>).



TRAFFIC SAFETY FACTS

This publication was prepared on behalf of the Indiana Criminal Justice Institute (ICJI) by the Indiana University Center for Criminal Justice Research (CCJR). Please direct any questions concerning data in this document to ICJI at 317-232-1233.

This publication is one of a series of fact sheets that, along with the annual Indiana Crash Fact Book, form the analytical foundation of traffic safety program planning and design in the state of Indiana. Funding for these publications is provided by ICJI and the National Highway Traffic Safety Administration.

An electronic copy of this document can be accessed via the CCJR website (www.ccjr.iupui.edu), the ICJI website (www.in.gov/cji/), or you may contact the Center for Criminal Justice Research at 317-261-3000.



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Traffic Safety Project

A collision produces three levels of data: collision, unit (vehicles), and individual. For this reason, readers should pay particular attention to the wording of statements about the data to avoid misinterpretations.

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic collisions. To help in the policy-making process, the Indiana University Center for Criminal Justice Research is collaborating with the Indiana Criminal Justice Institute to analyze 2012 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the seventh year of this partnership. Research findings are summarized in a series of fact sheets on various aspects of traffic collisions, including alcohol-related crashes, trucks, dangerous driving, children, motorcycles, occupant protection, and drivers. An additional publication provides information on county and municipality data, and the final publication produced is the annual Indiana Crash Fact Book. These publications serve as the analytical foundation of traffic safety program planning and design in Indiana.

Indiana collision data are obtained from Indiana Crash Reports, as completed by law enforcement officers. As of December 31, 2012, approximately 99 percent of all collisions are entered electronically through ARIES. Trends in collisions incidence as reported in these publications incorporate the effects of changes to data elements on the Crash Report, agency-specific enforcement policy changes, re-engineered roadways, driver safety education programs, and other unspecified effects. If you have questions regarding trends or unexpected results, please contact the Indiana Criminal Justice Institute, Traffic Safety Division for more information.

The Indiana Criminal Justice Institute

Guided by a Board of Trustees representing all components of Indiana's criminal and juvenile justice systems, the Indiana Criminal Justice Institute serves as the state's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. ICJI develops long-range strategies for the effective administration of Indiana's criminal and juvenile justice systems and administers federal and state funds to carry out these strategies.

The Governor's Council on Impaired & Dangerous Driving

The Governor's Council on Impaired & Dangerous Driving, a division of the Indiana Criminal Justice Institute, serves as the public opinion catalyst and the implementing body for statewide action to reduce death and injury on Indiana roadways. The Council provides grant funding, training, coordination, and ongoing support to state and local traffic safety advocates.

Indiana University Public Policy Institute

The Indiana University Public Policy Institute (PPI) is a collaborative, multidisciplinary research institute within the Indiana University School of Public and Environmental Affairs (SPEA), Indianapolis. PPI serves as an umbrella organization for research centers affiliated with SPEA, including the Center for Urban Policy and the Environment and the Center for Criminal Justice Research. PPI also supports the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

The Center for Criminal Justice Research

The Center for Criminal Justice Research (CCJR), one of two applied research centers currently affiliated with the Indiana University Public Policy Institute, works with public safety agencies and social services organizations to provide impartial applied research on criminal justice and public safety issues. CCJR provides analysis, evaluation, and assistance to criminal justice agencies; and community information and education on public safety questions. CCJR research topics include traffic safety, crime prevention, criminal justice systems, drugs and alcohol, policing, violence and victimization, and youth.

The National Highway Traffic Safety Administration (NHTSA)

NHTSA provides leadership to the motor vehicle and highway safety community through the development of innovative approaches to reducing motor vehicle crashes and injuries. The mission of NHTSA is to save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity.

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