INDIANA TRAFFIC SAFETY FACTS

OCCUPANT PROTECTION, 2014

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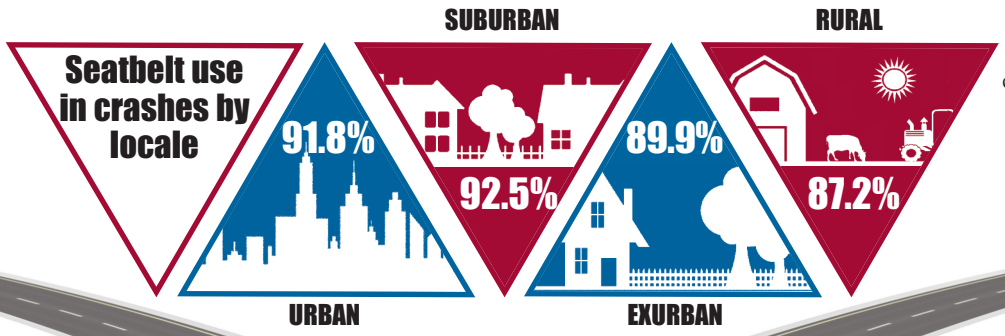
Seatbelt use in crashes by locale

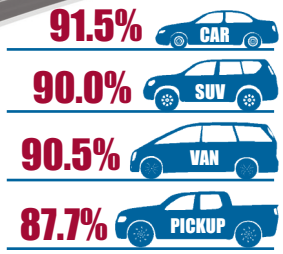


People in rural areas in crashes have the lowest rates of seatbelt usage, while people in suburban areas have the highest.

Seatbelt use among people killed in crashes

Only **47%** of people killed in crashes were wearing seatbelts.

Seatbelt use in crashes by vehicle type



Seatbelt use among pickup truck occupants in collisions is lower than in other passenger vehicles.

Seatbelt use among drivers in crashes

14 Drivers in collisions are **times more likely** to be killed when they are not wearing a seatbelt.

This fact sheet summarizes occupant protection data trends at 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 March 23, 2015. Nearly 89 percent of passenger vehicle occupants injured (excludes individuals in collisions with no injury reported) in 2014 Indiana traffic collisions were wearing the proper safety restraint.

Note: Data discrepancies may exist between the 2014 Indiana traffic safety reports and previous traffic safety publications due to updates to the Indiana State Police ARIES data that have occurred since the original publication dates.

The most recent ARIES upgrade added a clarification to reporting officers on the definition of incapacitating injuries criteria to include "transported from scene for treatment"; therefore, 2014 increases in incapacitating injuries should be interpreted with caution.

In 2014:

- 304,345 passenger vehicle occupants were reported to be involved in Indiana traffic collisions; 91 percent were wearing proper safety restraints.
- 233 of the 498 Indiana passenger vehicle occupants who were killed in crashes were wearing seatbelts.
- Males between the ages of 8 and 14 represented the highest percentages of unrestrained passenger vehicle occupants involved in crashes.
- Hourly rates of fatal and incapacitating injuries in crashes increased during late overnight hours (between 12am and 4am), while hourly rates of seatbelt use decreased during this same time period.

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The National Highway Traffic Safety Administration (NHTSA) reports that, nationally in 2014, the overall observed seatbelt use rate was 87 percent, unchanged from 2013 (DOT HS 812 113) (Figure 1). 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). 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 issued after the officer stops the vehicle or cites the offender for another infraction. As of May 2014, Indiana was one of 33 states that have primary enforcement laws in effect.

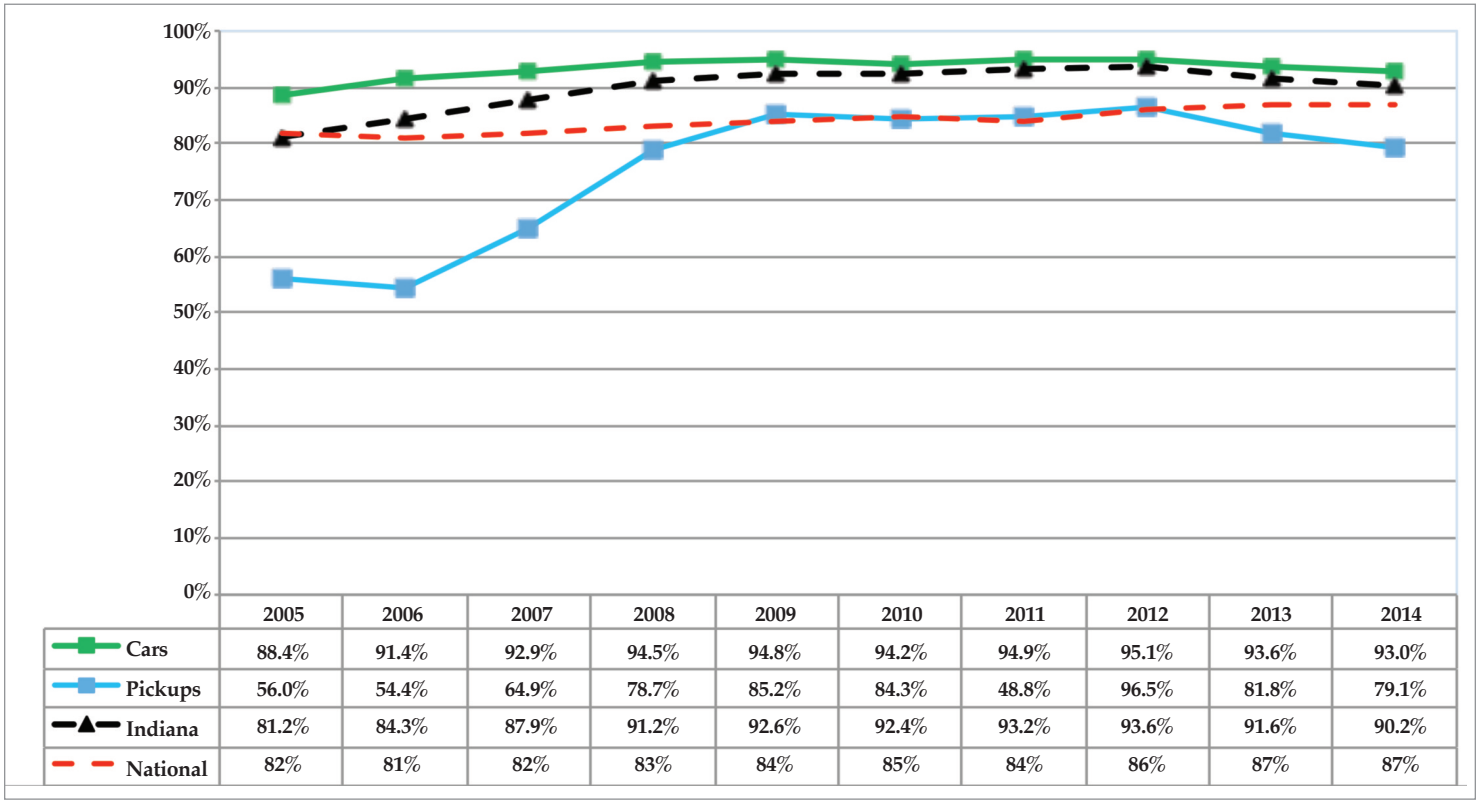
Indiana Occupant Protection Laws

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.[i] 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.[ii] 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.

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

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

Figure 1. Indiana observed seatbelt use rates in passenger vehicles, 2005-2014



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Cars	88.4%	91.4%	92.9%	94.5%	94.8%	94.2%	94.9%	95.1%	93.6%	93.0%
Pickups	56.0%	54.4%	64.9%	78.7%	85.2%	84.3%	48.8%	96.5%	81.8%	79.1%
Indiana	81.2%	84.3%	87.9%	91.2%	92.6%	92.4%	93.2%	93.6%	91.6%	90.2%
National	82%	81%	82%	83%	84%	85%	84%	86%	87%	87%

Sources: Indiana - *Indiana Safety Belt Observational Survey,* Center for Road Safety, Purdue University, 2014
National - DOT HS 812 113, February 2015

Note: Car and pickup truck restraint usage rates are specific to Indiana only.

GENERAL TRENDS

Indiana observational studies of seatbelt usage, conducted annually by the Indiana Criminal Justice Institute (ICJI) and the Purdue University Center for Road Safety, show that Indiana's overall seatbelt usage rates have exceeded national rates since 2006. The overall Indiana observed seatbelt use rate in passenger vehicles in 2014 was 90.2 percent, down 1 percentage point from 2013 (Figure 1). Despite this decrease, Figure 1 shows that Indiana restraint usage rates for all occupants increased 9 percentage points since 2005. Observed seatbelt use among Indiana pickup truck occupants in 2014 was the lowest observed rate since 2008.

Table 1 shows the overall rate of restraint usage among passenger vehicle occupants involved in Indiana crashes was 91.4 percent in 2014, a slight increase from 2013. Rates of restraint usage among passenger vehicle occupants injured in Indiana traffic collisions decreased as the severity of injuries increased. In 2014, among the 498 passenger vehicle occupants killed, 47 percent were wearing seatbelts. Approximately 80 percent of the 4,338 individuals suffering incapacitating injuries were properly restrained. While passenger vehicle fatalities decreased about 10 percent in 2014, incapacitating injuries occurring in passenger vehicles in collisions increased more than 75 percent.

When looking at restraint use by age and gender between 2010 and 2014, males in collisions were consistently more likely to be unrestrained than females in the same age groups (Table 2). Males in the 8 to 14 age group represented the highest proportion of passenger vehicle occupants who were unrestrained in collisions from 2010 through 2014. Among female occupants, those between the ages of 8 and 14 years old also represented the highest proportion of unrestrained across all age groups.

Table 1. Restraint use and injury status among individuals involved in Indiana passenger vehicles collisions, 2010-2014

Passenger vehicle occupant injuries	2010	2011	2012	2013	2014	Annual rate of change	
						2013-14	2010-14
All occupants	**289,536**	**280,923**	**283,450**	**287,745**	**304,345**	**5.8%**	**1.3%**
Properly restrained	262,791	254,550	256,870	260,786	278,123	6.6%	1.4%
Restraint use rate	*90.8%*	*90.6%*	*90.6%*	*90.6%*	*91.4%*	*0.8%*	0.2%
Fatalities	**549**	**515**	**518**	**550**	**498**	**-9.5%**	**-2.4%**
Properly restrained	262	255	250	282	233	-17.4%	-2.9%
Restraint use rate	*47.7%*	*49.5%*	*48.3%*	*51.3%*	*46.8%*	*-8.7%*	-0.5%
Incapacitating injuries	**2,510**	**2,433**	**2,762**	**2,471**	**4,338**	**75.6%**	**14.7%**
Properly restrained	1,868	1,803	2,009	1,824	3,455	89.4%	16.6%
Restraint use rate	*74.4%*	*74.1%*	*72.7%*	*73.8%*	*79.6%*	*7.9%*	1.7%
Non-incapacitating injuries	**38,954**	**36,630**	**37,639**	**36,607**	**35,706**	**-2.5%**	**-2.2%**
Properly restrained	34,770	32,677	33,479	32,593	32,183	-1.3%	-1.9%
Restraint use rate	*89.3%*	*89.2%*	*88.9%*	*89.0%*	*90.1%*	*1.2%*	0.2%
Other injuries	**2,277**	**1,721**	**1,735**	**2,001**	**1,944**	**-2.8%**	**-3.9%**
Properly restrained	2,022	1,519	1,550	1,797	1,751	-2.6%	-3.5%
Restraint use rate	*88.8%*	*88.3%*	*89.3%*	*89.8%*	*90.1%*	*0.3%*	0.4%
Not injured	**245,246**	**239,624**	**240,796**	**246,116**	**261,859**	**6.4%**	**1.7%**
Properly restrained	223,869	218,296	219,582	224,290	240,501	7.2%	1.8%
Restraint use rate	*91.3%*	*91.1%*	*91.2%*	*91.1%*	*91.8%*	*0.8%*	0.2%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

Notes:
1) Totals include individuals with 'NULL' and unknown restraint use.
2) Definition for *not injured* included at the end of this publicaton.

Table 2. Proportion of individuals in Indiana collisions who were unrestrained, by age group and gender, 2010-2014

Low < < > > High

	2010		2011		2012		2013		2014	
Age group	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
< 1	7.8%	7.6%	13.3%	5.8%	9.8%	8.5%	2.6%	8.8%	4.9%	6.2%
1-3	6.9%	6.8%	7.7%	5.2%	7.5%	3.2%	10.8%	4.0%	8.5%	7.1%
4-7	10.3%	8.4%	9.5%	9.9%	10.2%	9.3%	15.7%	12.2%	12.3%	11.6%
8-14	17.4%	12.5%	23.7%	15.3%	17.7%	13.1%	18.5%	16.6%	16.8%	15.9%
15-20	11.1%	8.7%	13.6%	10.3%	11.1%	8.9%	12.6%	10.2%	10.9%	8.6%
21-24	12.0%	8.2%	13.3%	9.2%	11.8%	8.5%	13.5%	8.9%	11.9%	8.2%
25-34	10.8%	8.1%	12.0%	8.8%	10.9%	8.4%	12.6%	9.2%	11.4%	8.4%
35-44	10.0%	7.9%	11.3%	8.8%	10.2%	7.9%	11.5%	8.6%	10.1%	8.1%
45-54	9.2%	7.2%	10.3%	7.8%	9.3%	7.5%	10.4%	8.3%	9.2%	7.9%
55-64	8.7%	7.1%	9.5%	7.5%	8.8%	7.7%	9.5%	7.8%	9.2%	7.1%
65-74	9.0%	6.8%	9.6%	7.2%	8.7%	7.5%	8.9%	7.6%	7.8%	7.2%
75 +	9.0%	6.7%	9.7%	7.3%	8.6%	7.5%	9.5%	8.2%	9.8%	7.2%
All ages	**10.2%**	**7.8%**	**11.5%**	**8.7%**	**10.2%**	**8.1%**	**11.4%**	**8.8%**	**10.3%**	**8.1%**

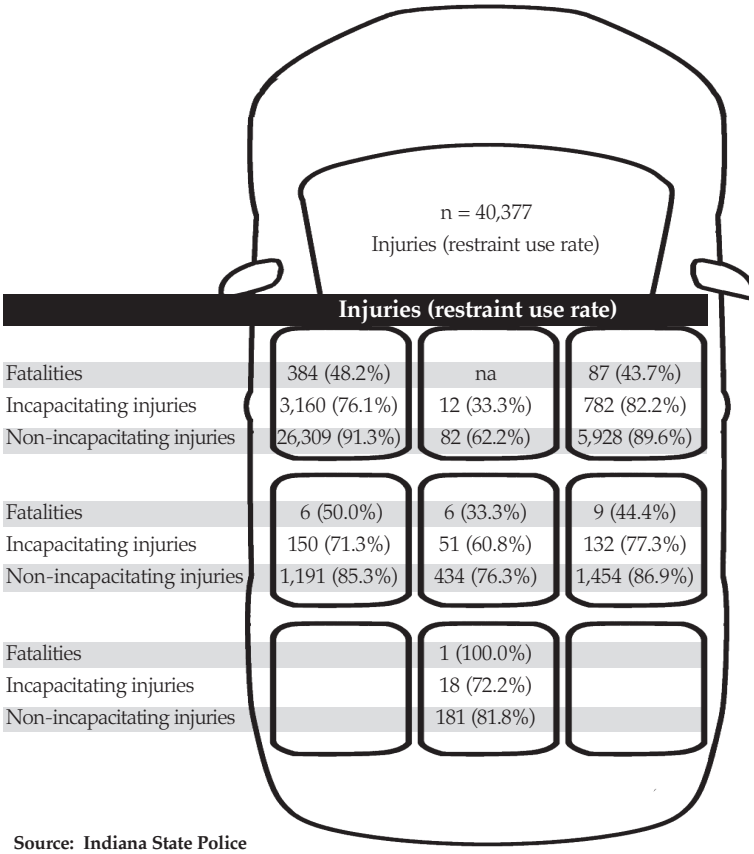
Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

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.
3) The *< 1 , 1-3, and 4-7 year old* age groups exclude data records coded as *drivers*, due to unavailable or invalid birthdate/age reported. *Unknown/invalid* birthdates often result in an auto-calculated age code in years in the ARIES database that is not an accurate value of driver age.
4) Conditional formatting color-scales are illustrated to show single-year high highs across all age group and gender categories.

RESTRAINT USE AND SEATING POSITION

Figure 2 shows injury counts and restraint usage rates for 2014 by injury type and vehicle seating position. The greatest number of fatalities occurred in the driver seating position (384), among which 48 percent were properly restrained. About 44 percent of the 87 individuals killed in the front right passenger seat were properly restrained, and 43 percent of the 21 individuals killed in the rear seating positions were restrained (calculated from Figure 2).

Figure 2. Individuals in Indiana passenger vehicle collisions by injury status, seating position, and restraint use, 2014



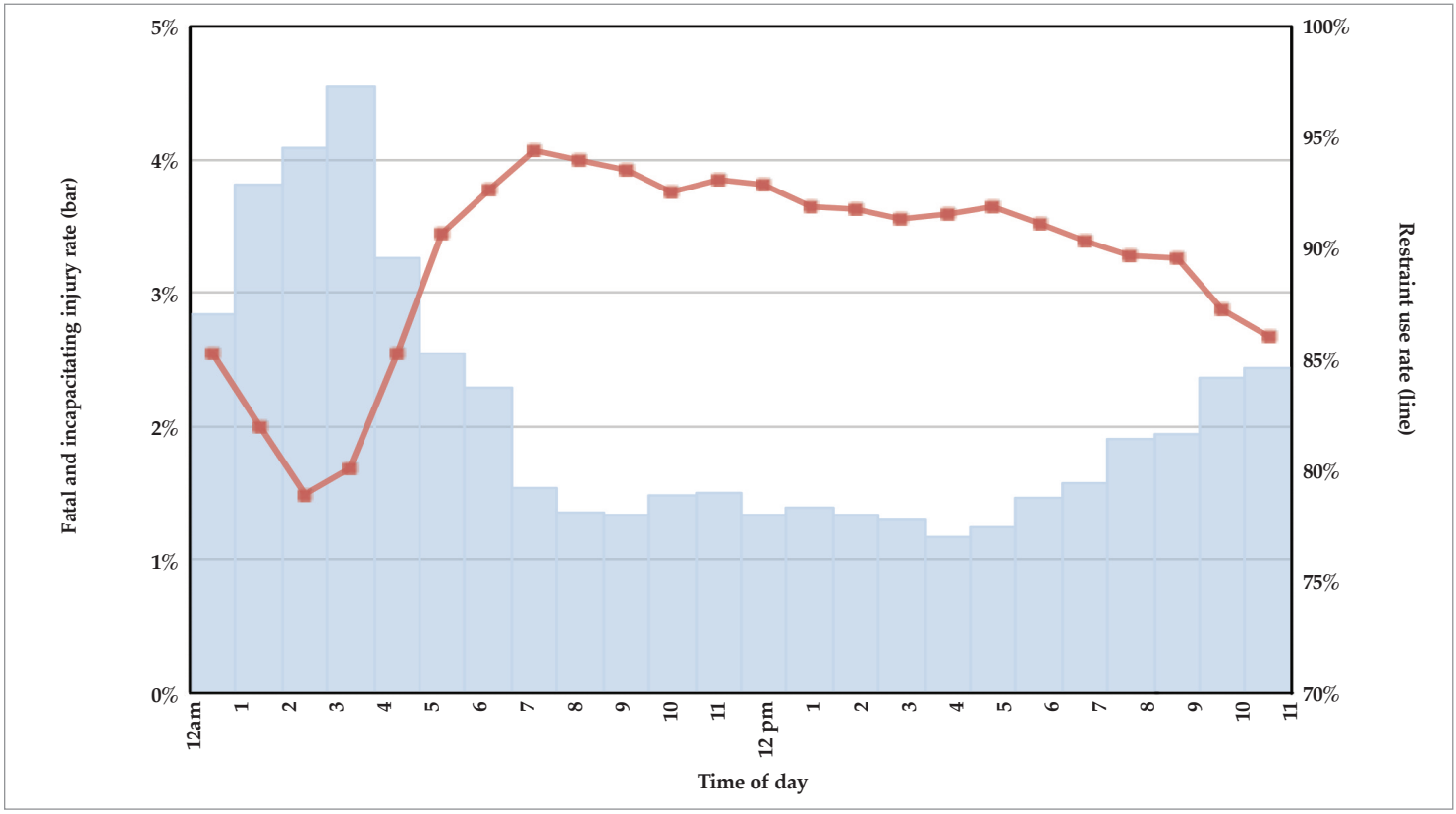
Source: Indiana State Police
Automated Reporting Information Exchange System, as of March 23, 2015

Notes:
1) Injuries include only individuals with *fatal, incapacitating,* and *non-incapacitating* (defined as *non-incapacitating* and *possible*) injuries where valid seating position was identified.
2) 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.

TIME OF DAY AND RESTRAINT USE

In 2014, the highest percentage of hourly fatal and incapacitating injuries occurred during overnight hours (between 12am and 4am) (Figure 3). The lowest hourly rates of restraint usage occurred this same time period. The highest percentage of hourly fatal and incapacitating injuries in 2014 occurred during the hours between 2am (4.1 percent) and 3am (4.5 percent), while the lowest hourly rate of restraint use occurred during these same hours, 79 percent and 80 percent, respectively.

Figure 3. Indiana fatal and incapacitating injuries and restraint use in passenger vehicles, by time of day, 2014



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

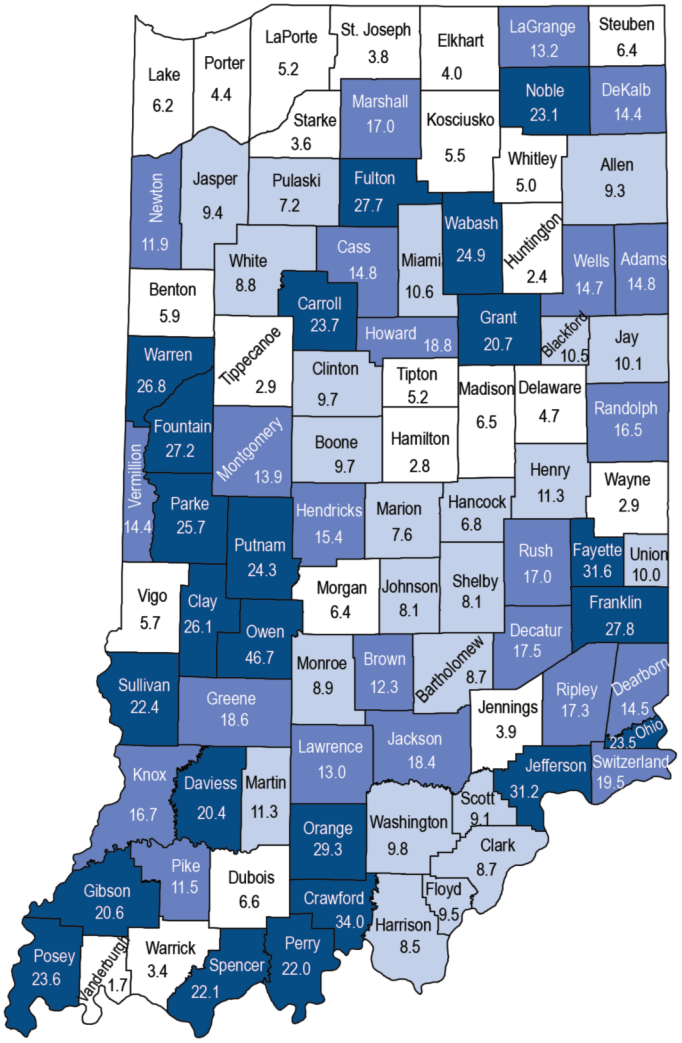
Notes:
1) *Fatal and incapacitating injury rate* represents *fatal* or *incapacitating* injuries as a proportion of all individuals involved in collisions.
2) Restraint use rate includes individuals reported with unknown and invalid safety equipment type.

GEOGRAPHY OF INDIANA RESTRAINT USE

Maps 1 and 2 illustrate 2014 Indiana county percent of unrestrained passenger vehicle occupants in crashes and fatal/incapacitating crash injury rates per 10,000 population. The median county rate of unrestrained occupants in Indiana passenger vehicle collisions was 11.4 percent, while the mean rate was 13.9 percent. The median county fatal and incapacitating injury rate was 8.6 per 10,000 of the population, and the mean fatal and incapacitating injury rate was 8.8 per 10,000. Many counties with higher rates (above the median) of unrestrained vehicle occupants in crashes also have higher fatal and incapacitating injury rates. The central western, southwestern, and southeastern regions of the state show both high rates of vehicle occupants not wearing their seatbelts and high rates of fatal and incapacitating injuries. Relatively low rates of unrestrained occupants (below the median) as well as low rates of fatal and incapacitating injuries can be found in metropolitan Indianapolis counties.

Map 1. Percent of unrestrained passenger vehicle occupants in collisions by county, 2014

Median county percent unrestrained = 11.4
Mean county percent unrestrained = 13.9
n = 304,345 individuals injured or involved in collisions

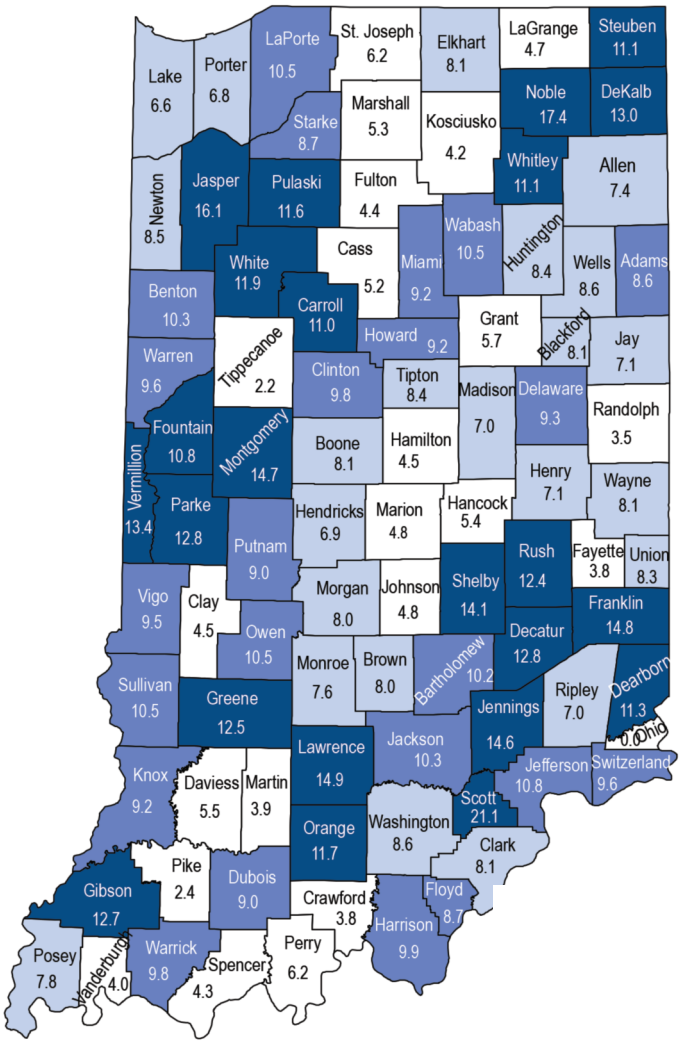


Percent unrestrained passenger vehicle occupants

- 1.7 to 6.6
- 6.7 to 11.3
- 11.4 to 19.5
- 19.6 to 46.7

Map 2. Passenger vehicle fatal and incapacitating injury rates by county, 2014

Median county fatal/incap injury rate = 8.6
Mean county fatal/incap injury rate = 8.8
n = 4,836 fatal and incapacitating injuries in collisions



Fatal and incapacitating injuries per 10k population

- 0.0 to 6.2
- 6.3 to 8.6
- 8.7 to 10.8
- 10.9 to 21.1

Sources:
Injuries — Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2015
Population — U.S. Census Bureau (2014)

DEFINITIONS

- ***Annual Rate of Change*** (ARC) is 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 2010 to 2014, it is calculated as $(\text{Value in 2014} / \text{Value in 2010})^{1/4} - 1$.
- ***Locale —*** *Urban* is defined as Census 2010 Urban Areas, *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. Reporting officers are instructed to enter only *drivers* in ARIES, if no injury occurs; however, passengers and non-motorists are sometimes mistakenly reported when no injury occurs. For this reason, *not injured* counts should be interpreted with caution.
- ***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.*

REFERENCES

Indiana Roadside Observational Survey of Safety Belt and Motorcycle Helmet Use, Center for Road Safety, Purdue University, June 2014.

National Center for Statistics and Analysis, National Highway Traffic Safety Administration, *Seat Belt Use in 2014–Overall Results,* DOT HS 812 113, February 2015.

National Center for Statistics and Analysis (2011, April). *Summary of Vehicle Occupant Protection Laws,* DOT HS 811 458, Washington, DC: National Highway Traffic Safety Administration.

DATA SOURCES

- Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 23, 2015.
- National Center for Statistics and Analysis, National Highway Traffic Safety Administration, *Seat Belt Use in 2014–Overall Results,* DOT HS 812 113, May 2015.
- U.S. Census Bureau, Indiana Population Estimates by County (2014), accessed from Stats Indiana, Indiana Business Research Center, http://www.stats.indiana.edu/population/popTotals/2014_cntyest.asp on April 21, 2015.

This publication was prepared on behalf of the Indiana Criminal Justice Institute (ICJI) by the Indiana University Public Policy Institute (PPI). 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 PPI website (www.policyinstitute.iu.edu), the ICJI website (www.in.gov/cji/), or you may contact the PPI at 317-261-3000.

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 Public Policy Institute is collaborating with the Indiana Criminal Justice Institute to analyze 2014 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the ninth 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, 2014, 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 IU Public Policy Institute delivers unbiased research and data-driven, objective, expert analysis to help public, private and nonprofit sectors make important decisions that directly impact quality of life in Indiana. Using the knowledge and expertise of our staff and faculty, we provide research and analysis that is free of political and ideological bias. A multidisciplinary institute within the Indiana University School of Public and Environmental Affairs (SPEA), our efforts also support the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

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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