

In 2014, the fatal and incapacitating injury rate per 1,000 children involved in traffic collisions in Indiana was lowest in urban areas, but substantially higher in suburban, rural, and exurban locales.

In 2014, **162** pedacyclists aged 14 years and younger were injured in Indiana crashes; **3** were killed and **21** sustained incapacitating injuries.



### Child pedacyclists injured in collisions

**219** child pedestrians were injured in collisions in Indiana in 2014; **40** were killed and suffered incapacitating injuries.



### Child pedestrians injured in collisions

### Child vehicle occupants involved in collisions

The overall rate of restraint usage among child occupants and drivers involved in Indiana crashes was **79 percent in 2014**.



This fact sheet summarizes information on traffic collisions involving children in Indiana between 2010 and 2014. It examines general trends, injury status by age group, restraint usage and seating position, alcohol-related crashes, and geographical analysis by county. Indiana collision data come from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 23, 2015.

*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:

- 3,349 children (ages 0 to 14) were killed or injured in Indiana motor vehicle collisions. Approximately 10 percent of children injured in crashes in the state were killed (20 fatalities) or experienced incapacitating injuries (305).
- The number of children who experienced incapacitating injuries (305) rose by 58 percent from 2013 (193).
- Restraint use was highest (88 percent) among the *less-than-1-year-old* and *1- to 3-year-old* age groups.
- 80 children were involved in traffic collisions that involved an alcohol-impaired driver (with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter).



# TRAFFIC SAFETY FACTS

Figure 1. Car Seat Recommendations for Children



### Birth — 12 months

Your child under age 1 should always ride in a rear-facing car seat. There are different types of rear-facing car seats: Infant-only seats can only be used rear-facing. Convertible and 3-in-1 car seats typically have higher height and weight limits for the rear-facing position, allowing you to keep your child rear-facing for a longer period of time.



### 1 — 3 years

Keep your child rear-facing as long as possible. It's the best way to keep him or her safe. Your child should remain in a rear-facing car seat at least until the age of two, and should continue to ride rear-facing until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the rear-facing car seat, your child is ready to travel in a forward-facing car seat with a harness.



### 4 — 7 years

Keep your child in a forward-facing car seat with a harness until he or she reaches the top height or weight limit allowed by your car seat's manufacturer. Once your child outgrows the forward-facing car seat with a harness, it's time to travel in a booster seat, but still in the back seat.



### 8 — 12 years

Keep your child in a booster seat until he or she is big enough to fit in a seat belt properly. For a seat belt to fit properly the lap belt must lie snugly across the upper thighs, not the stomach. The shoulder belt should lie snug across the shoulder and chest and not cross the neck or face. Remember: your child should still ride in the back seat because it's safer there.

Research has shown that the use of child restraints, including child safety seats and lap/shoulder belts, reduces the risk of fatal and serious injuries. NHTSA strongly recommends that child occupants progress through four stages of restraint usage from birth to adulthood (Figure 1). Current Indiana child passenger restraint law requires all child occupants ages 15 and under 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 further recommended safety standards and best practices. NHTSA and several safety partners sponsor Parents Central (<http://www.safercar.gov/parents/index.htm>), a website that provides parents and caregivers access to a wide variety of tools and resources for keeping children safe in and around motor vehicles.

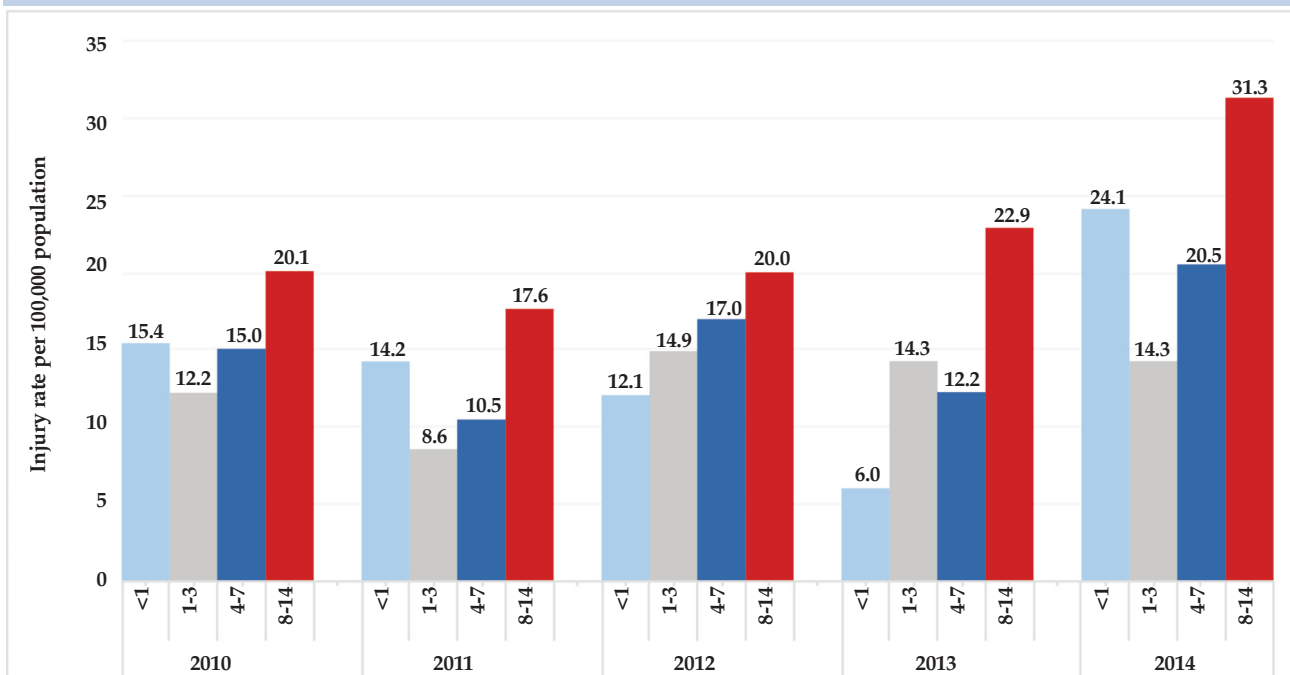
Source: NHTSA, <http://www.safercar.gov/parents/RightSeat.htm>, current as of May 3, 2015.

## GENERAL TRENDS

From 2010 to 2014, the number of children killed in Indiana traffic collisions declined 9 percent annually and the number experiencing incapacitating injuries increased 12 percent (Table 1). Between 2013 and 2014, the total number of child fatalities in Indiana traffic collisions fell by 43 percent, from 35 to 20. The number of children in the *less-than-1-year-old* age group who experienced incapacitating injuries rose between 2013 and 2014 from 3 to 17.<sup>1</sup>

Figure 2 shows rates of child fatalities and incapacitating injuries in collisions (per 100,000 population) for 2010 through 2014. Over the five-year period, the rate of fatalities and injury for the 8- to 14-year-old age group was consistently higher than other age groups over the five-year period, ending at a five-year high in 2014 (31). The rate of fatalities and incapacitating injuries among the *less-than-1-year-old* age group declined steadily from 15.4 per 100,000 population in 2010 to 6.0 in 2013 but increased substantially to a five-year high of 24.1 per 100,000 population in 2014.

Figure 2. Child fatal/incapacitating injury rates in Indiana collisions, per 100,000 population, by age group, 2010-2014



Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015; U.S. Census Bureau

Note: U.S. Census 2010-2013 data was used to calculate rates; 2014 population estimates by age were not yet available.

<sup>1</sup>Due to possible ARIES reporting errors designating very young children as drivers, this fact sheet's analysis does not include children aged 7 years old or younger who were categorized as drivers or animal-drawn vehicle operators.

**Table 1. Children involved in Indiana traffic collisions by injury status and age group, 2010-2014**

	2010		2012		2012		2013		2014		Annual rate of change	
	Count	%	Count	%	Count	%	Count	%	Count	%	2013-14	2010-14
<b>Fatal</b>	<b>29</b>	<b>100.0%</b>	<b>30</b>	<b>100.0%</b>	<b>27</b>	<b>100.0%</b>	<b>35</b>	<b>100.0%</b>	<b>20</b>	<b>100.0%</b>	<b>-42.9%</b>	<b>-8.9%</b>
Less than 1 year old	2	6.9%	3	10.0%	0	0.0%	2	5.7%	3	15.0%	50.0%	10.7%
1 to 3 years old	4	13.8%	5	16.7%	11	40.7%	8	22.9%	1	5.0%	-87.5%	-29.3%
4 to 7 years old	6	20.7%	7	23.3%	7	25.9%	8	22.9%	4	20.0%	-50.0%	-9.6%
8 to 14 years old	17	58.6%	15	50.0%	9	33.3%	17	48.6%	12	60.0%	-29.4%	-8.3%
<b>Incapacitating</b>	<b>196</b>	<b>100.0%</b>	<b>152</b>	<b>100.0%</b>	<b>207</b>	<b>100.0%</b>	<b>193</b>	<b>100.0%</b>	<b>305</b>	<b>100.0%</b>	<b>58.0%</b>	<b>11.7%</b>
Less than 1 year old	11	5.6%	9	5.9%	10	4.8%	3	1.6%	17	5.6%	466.7%	11.5%
1 to 3 years old	28	14.3%	17	11.2%	27	13.0%	28	14.5%	35	11.5%	25.0%	5.7%
4 to 7 years old	47	24.0%	30	19.7%	53	25.6%	35	18.1%	68	22.3%	94.3%	9.7%
8 to 14 years old	110	56.1%	96	63.2%	117	56.5%	127	65.8%	185	60.7%	45.7%	13.9%
<b>Non-incapacitating</b>	<b>3,096</b>	<b>100.0%</b>	<b>2,917</b>	<b>100.0%</b>	<b>2,865</b>	<b>100.0%</b>	<b>2,863</b>	<b>100.0%</b>	<b>2,750</b>	<b>100.0%</b>	<b>-3.9%</b>	<b>-2.9%</b>
Less than 1 year old	151	4.9%	150	5.1%	143	5.0%	107	3.7%	118	4.3%	10.3%	-6.0%
1 to 3 years old	416	13.4%	395	13.5%	396	13.8%	363	12.7%	372	13.5%	2.5%	-2.8%
4 to 7 years old	694	22.4%	708	24.3%	704	24.6%	753	26.3%	710	25.8%	-5.7%	0.6%
8 to 14 years old	1,835	59.3%	1,664	57.0%	1,622	56.6%	1,640	57.3%	1,550	56.4%	-5.5%	-4.1%
<b>Other injuries</b>	<b>459</b>	<b>100.0%</b>	<b>384</b>	<b>100.0%</b>	<b>429</b>	<b>100.0%</b>	<b>303</b>	<b>100.0%</b>	<b>274</b>	<b>100.0%</b>	<b>-9.6%</b>	<b>-12.1%</b>
Less than 1 year old	46	10.0%	30	7.8%	34	7.9%	18	5.9%	24	8.8%	33.3%	-15.0%
1 to 3 years old	84	18.3%	61	15.9%	67	15.6%	41	13.5%	50	18.2%	22.0%	-12.2%
4 to 7 years old	112	24.4%	81	21.1%	97	22.6%	87	28.7%	63	23.0%	-27.6%	-13.4%
8 to 14 years old	217	47.3%	212	55.2%	231	53.8%	157	51.8%	137	50.0%	-12.7%	-10.9%
<b>Not injured</b>	<b>367</b>	<b>100.0%</b>	<b>339</b>	<b>100.0%</b>	<b>351</b>	<b>100.0%</b>	<b>315</b>	<b>100.0%</b>	<b>363</b>	<b>100.0%</b>	<b>15.2%</b>	<b>-0.3%</b>
Less than 1 year old	9	2.5%	8	2.4%	7	2.0%	11	3.5%	5	1.4%	-54.5%	-13.7%
1 to 3 years old	7	1.9%	13	3.8%	10	2.8%	7	2.2%	7	1.9%	0.0%	0.0%
4 to 7 years old	17	4.6%	19	5.6%	16	4.6%	16	5.1%	18	5.0%	12.5%	1.4%
8 to 14 years old	334	91.0%	299	88.2%	318	90.6%	281	89.2%	333	91.7%	18.5%	-0.1%

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

Notes:

- 1) Includes individuals identified as drivers, injured occupants, pedestrians, and pedalcyclists.
- 2) The less than 1, 1 to 3, and 4 to 7 year old age groups exclude data records coded as driver or animal drawn vehicle operator, due to unavailable or invalid age reporting. Unknown age or birthdate often result in age assignment in the ARIES database that is not an accurate value of driver age.
- 3) "Not injured" definition included at end of report.



# INDIANA TRAFFIC SAFETY FACTS

The number of children killed or injured in traffic collisions by person type (*drivers, vehicle occupants, pedestrians, and pedalcyclists*) is depicted in Table 2. In 2014, child occupants experiencing incapacitating injuries (237) accounted for 73 percent of all fatal and incapacitating injuries

(calculated from table). Between 2013 and 2014, the number of child pedestrian fatalities declined by 33 percent, from 6 to 4; the number of child pedestrians experiencing incapacitating injuries fell by 13 percent, from 46 to 40.

**Table 2. Children involved in Indiana traffic collisions by injury status and person type, 2010-2014**

	2010		2011		2012		2013		2014		Annual rate of change	
	Count	%	Count	%	Count	%	Count	%	Count	%	2013-14	2010-14
<b>Fatal</b>	<b>29</b>	<b>100.0%</b>	<b>29</b>	<b>100.0%</b>	<b>27</b>	<b>100.0%</b>	<b>35</b>	<b>100.0%</b>	<b>20</b>	<b>100.0%</b>	<b>-42.9%</b>	<b>-8.9%</b>
Driver	1	3.4%	0	3.4%	1	3.3%	2	3.7%	2	5.7%	0.0%	18.9%
Injured occupant	18	69.0%	21	62.1%	23	70.0%	25	85.2%	11	71.4%	-56.0%	-11.6%
Pedalcyclist	1	0.0%	1	3.4%	0	3.3%	2	0.0%	3	5.7%	50.0%	31.6%
Pedestrian	9	27.6%	7	31.0%	3	23.3%	6	11.1%	4	17.1%	-33.3%	-18.4%
<b>Incapacitating</b>	<b>196</b>	<b>100.0%</b>	<b>152</b>	<b>100.0%</b>	<b>207</b>	<b>100.0%</b>	<b>193</b>	<b>100.0%</b>	<b>305</b>	<b>100.0%</b>	<b>58.0%</b>	<b>11.7%</b>
Driver	6	7.6%	10	3.1%	5	6.6%	6	2.9%	7	3.6%	16.7%	3.9%
Injured occupant	135	64.5%	98	68.7%	145	64.5%	121	69.7%	237	62.4%	95.9%	15.1%
Pedalcyclist	15	7.6%	16	7.7%	21	10.5%	20	10.1%	21	10.3%	5.0%	8.8%
Pedestrian	40	20.3%	28	20.5%	36	18.4%	46	17.3%	40	23.7%	-13.0%	0.0%
<b>Non-incapacitating injuries</b>	<b>3,092</b>	<b>100.0%</b>	<b>2,915</b>	<b>100.0%</b>	<b>2,865</b>	<b>100.0%</b>	<b>2,863</b>	<b>100.0%</b>	<b>2,747</b>	<b>100.0%</b>	<b>-4.1%</b>	<b>-2.9%</b>
Driver	52	2.2%	66	1.9%	48	2.4%	50	1.9%	44	2.0%	-12.0%	-4.1%
Injured occupant	2,644	83.9%	2,450	85.3%	2,456	84.3%	2,450	85.8%	2,390	85.3%	-2.4%	-2.5%
Pedalcyclist	182	7.0%	176	5.8%	165	5.8%	158	5.4%	138	5.4%	-12.7%	-6.7%
Pedestrian	214	6.9%	223	7.0%	196	7.5%	205	6.8%	175	7.4%	-14.6%	-4.9%

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

Notes:

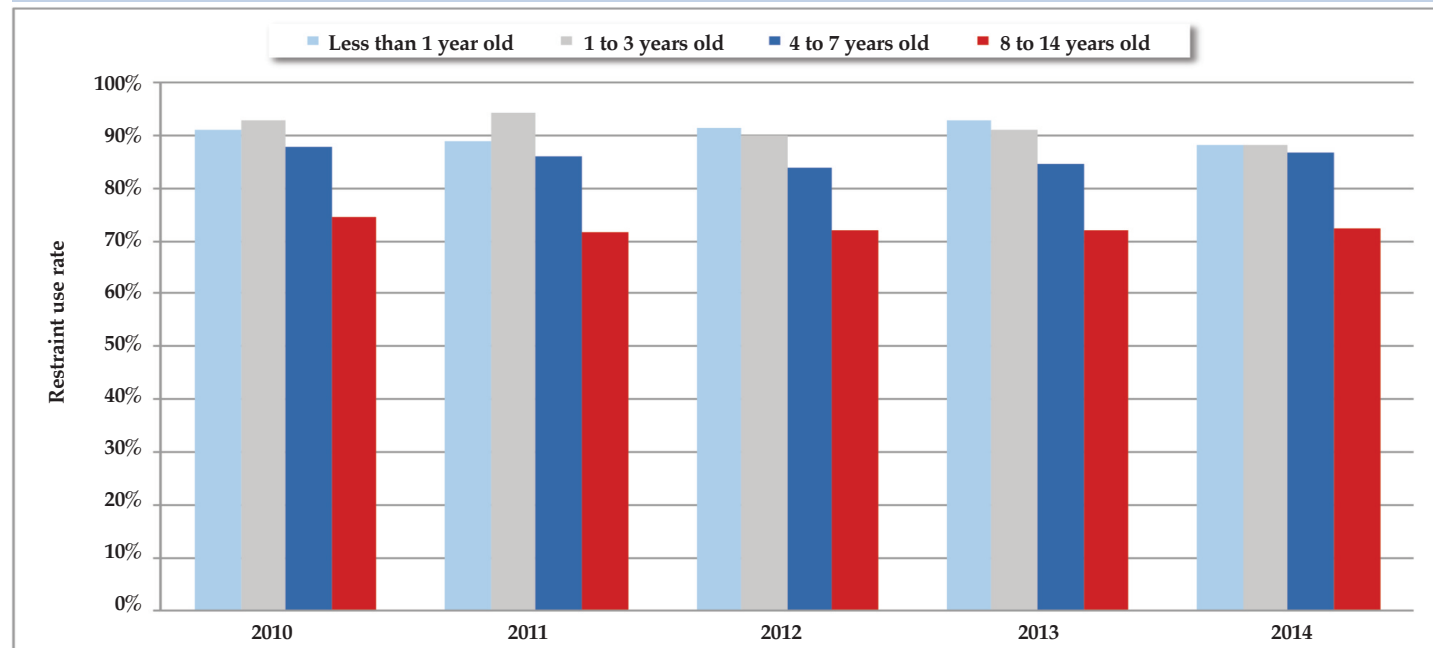
- 1) Excludes *animal-drawn vehicle operators*.
- 2) Excludes *other injuries and not injured*.

## RESTRAINT USE AND SEATING POSITION

Restraint use rates among children in traffic collisions tend to decline as children get older (Figure 3). In 2014, the 8- to 14-year-old age group had the lowest rate

of restraint use (72 percent). Between 2010 and 2014, this age group exhibited rates of restraint use consistently lower than 75 percent. The highest rate of restraint use over the five-year period was 94 percent among children 1- to 3-years old in 2011; the rate of restraint use among children in this age group fell to 88 percent in 2014.

**Figure 3. Restraint use among children involved in Indiana traffic collisions, by age group, 2010-2014**



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

Notes:

- 1) Restraint use rates are calculated based on individuals identified as *injured occupant* or *driver* where restraint use was known.
- 2) *Unrestrained* and *unknown* restraint use codes are included in totals for restraint use rate calculations.

The number and restraint usage rates for children by injury type and seating position are shown in Figure 4. In 2014, the largest number of child fatalities occurred in the *rear-right* passenger seating position. Fifty percent of these 4 fatalities were properly restrained. The greatest number of incapacitating injuries was experienced by child passengers in the *rear-left* seating position (71); of those, 77 percent were properly restrained.

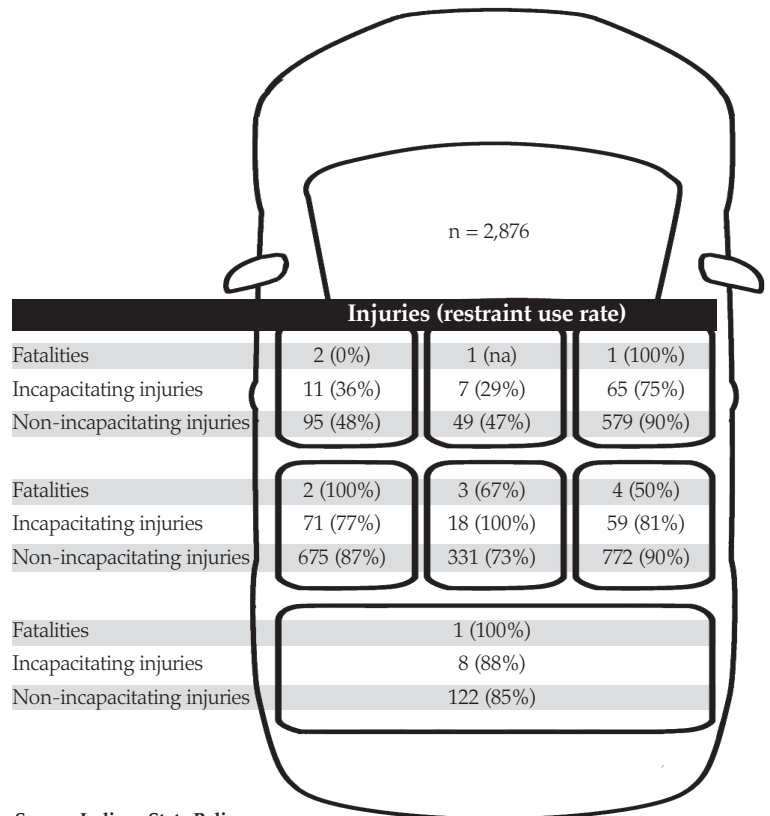
## ALCOHOL-IMPAIRED COLLISIONS

In 2014, 80 children were involved in alcohol-impaired traffic collisions (Figure 5), which involved a driver with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL). The number of children involved in alcohol-impaired collisions declined from 90 in 2010 to 78 in 2013. Over the five-year period, the rate of child involvement in alcohol-impaired collisions peaked in 2012 at 23.5 per 1,000 involved.

## GEOGRAPHY OF TRAFFIC INJURIES

The primary map on page 6 illustrates rates of Indiana child traffic injuries and fatalities for children aged less-than-one to 14 years of age by county. The mean traffic injury/fatality rate per 1,000 for children 14 and younger was 2.3. Inset maps depict rates by age group and county. Among the less-than-1-year-old age group, the mean traffic injury/fatality rate per 1,000 was 1.6, while the mean rate for the 8- to 14-year-old age group was 2.8.

Figure 4. Children in Indiana collisions by injury status, seating position, and restraint use, 2014

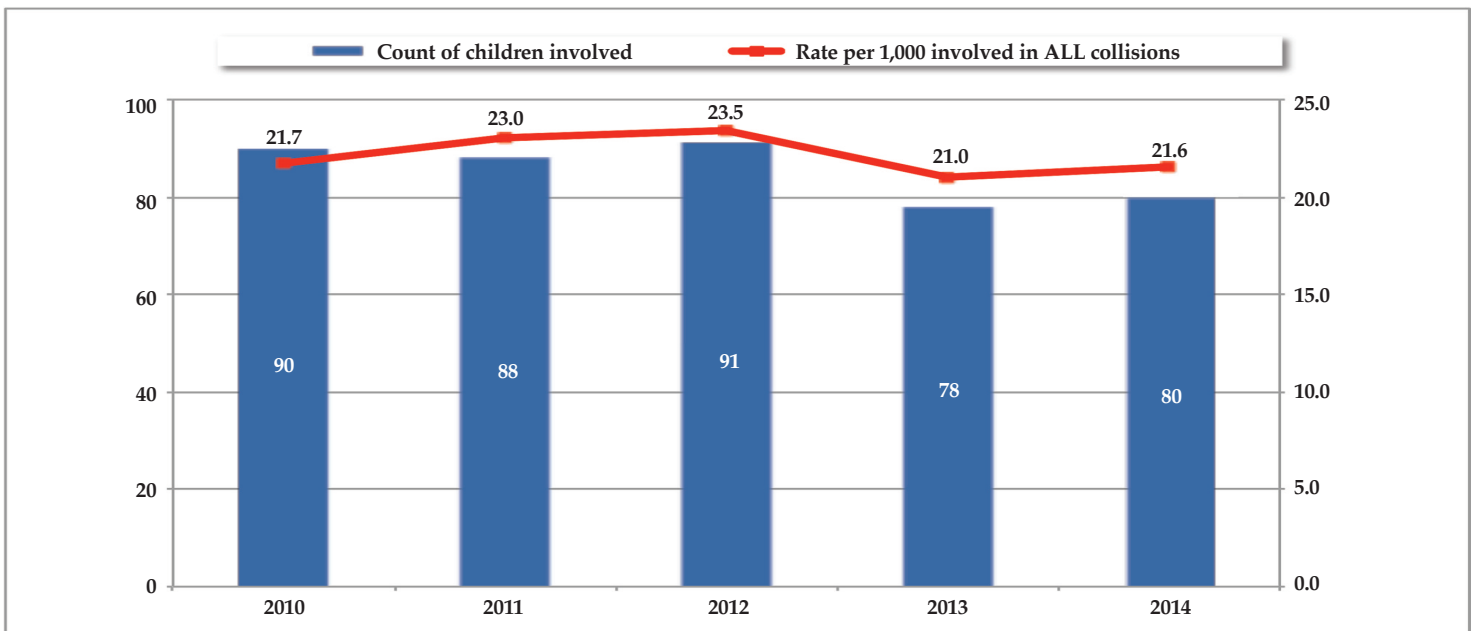


Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

Notes:

- 1) Injuries include only children (ages 0-14) sustaining *fatal*, *incapacitating*, *non-incapacitating*, and *possible* injuries where valid seating position was reported.
- 2) Percentages depicted are the percentage of individuals reported as properly restrained by injury type in each seating position.
- 3) *Unrestrained* and *unknown* restraint use codes are included in totals for restraint use rate calculations.

Figure 5. Children involved in Indiana alcohol-impaired collisions, 2010-2014

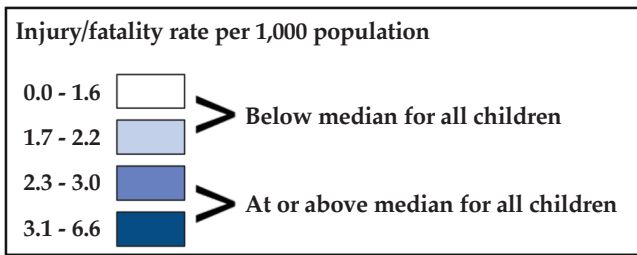
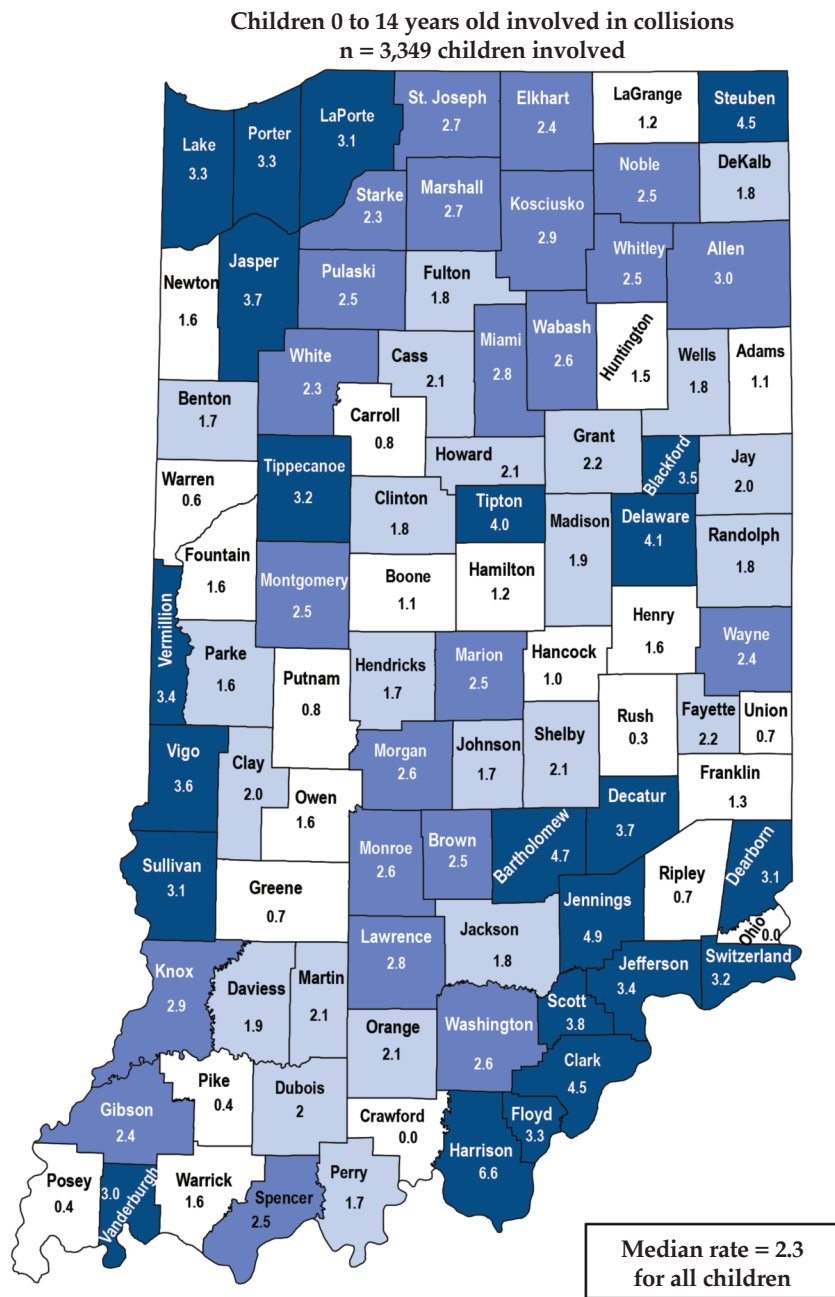


Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

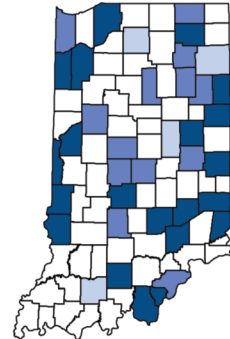


# TRAFFIC SAFETY FACTS

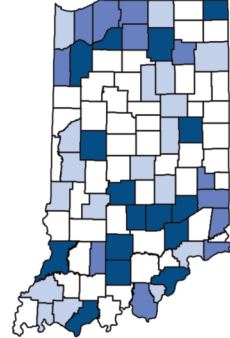
Map 1. Child injury/fatality rates in Indiana traffic collisions, by county, 2014



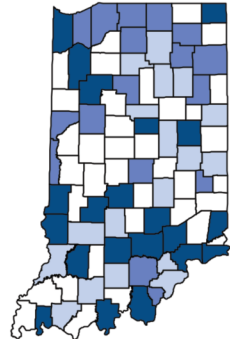
Less than 1 year old  
Median rate = 0.1



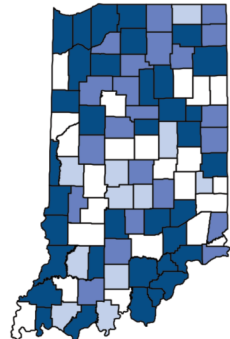
Ages 1 to 3 years old  
Median rate = 1.6



Ages 4 to 7 years old  
Median rate = 1.8



Ages 8 to 14 years old  
Median rate = 2.8



Sources: Indiana State Police; U.S. Census Bureau

## 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  $(\text{Value in 2014} / \text{Value in 2010})^{1/4} - 1$ .
- **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. 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.
- **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

National Highway Traffic Safety Administration. (2014, September). *Car Seat Recommendations for Children*.

<http://www.safercar.gov/parents/CarSeats/Right-Seat-Age-And-Size-Recommendations.htm>

## DATA SOURCES

- Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 23, 2015.
- U.S. Census Bureau, Annual Estimates of the Resident Population by Single-Year of Age and Sex for the United States and States (2013), provided by the Indiana Business Research Center, Indiana University.



# TRAFFIC SAFETY FACTS

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](http://www.policyinstitute.iu.edu)), the ICJI website ([www.in.gov/cji/](http://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.



INDIANA UNIVERSITY PUBLIC POLICY INSTITUTE



SCHOOL OF PUBLIC AND ENVIRONMENTAL AFFAIRS

INDIANA UNIVERSITY  
IUPUI

**Author:** Rachel Thelin, Senior Policy Analyst