

## IN 2016:

- 3,513 children (ages 0 to 14) were killed or injured in Indiana motor vehicle collisions. Less than 1 percent of children injured in crashes in the state were killed (15 fatalities).
- The overall rate of restraint usage among child occupants and drivers involved in Indiana crashes was 86 percent.
- Restraint use was highest (96 percent) among the less-than-1-year-old age group and lowest (84 percent) among the 13- to 14-year-old group.
- 246 child pedestrians were injured in collisions in Indiana in 2016; 2 were killed and 121 suffered incapacitating injuries.
- In 2016, 129 bicyclists aged 14 years and younger were injured in Indiana crashes; 1 was killed and 50 sustained incapacitating injuries.
- 86 children were involved in alcohol-impaired traffic collisions, which involved a driver with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL).

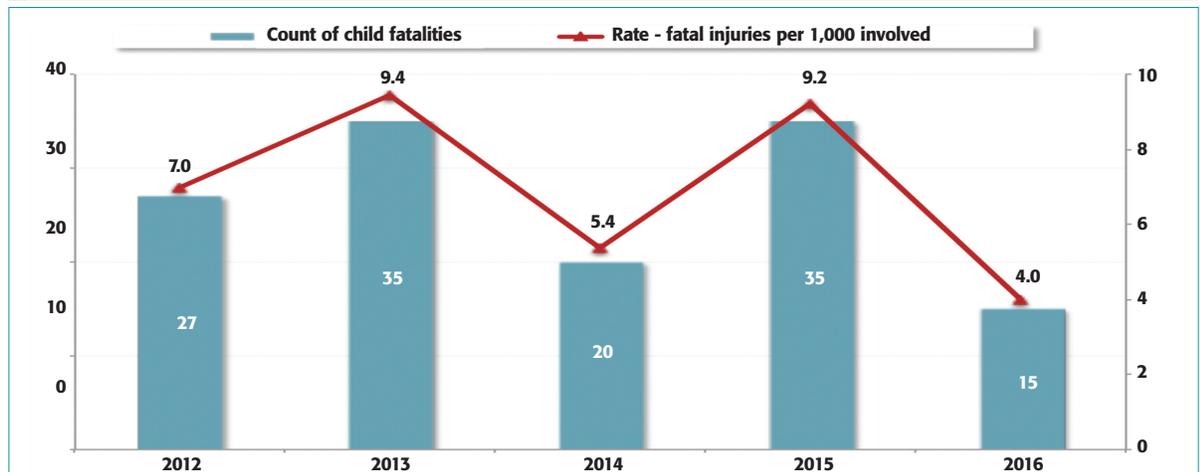
In partnership with:

# CHILDREN 2016

From 2012 to 2016, the number of children killed in Indiana traffic collisions declined 14 percent annually. Recent crash data shows the total number of child fatalities in Indiana traffic collisions fell from 35 in 2015 to 15 in 2016 (Figure 1).<sup>1</sup> This fact sheet summarizes information on traffic collisions involving children in Indiana between 2012 and 2016. 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 16, 2017.

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 2). 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.

Figure 1. Child fatalities and fatal injury rates in Indiana collisions, per 1,000 involved, 2012-2016



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

Figure 2. 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.

Source: NHTSA, <http://www.safercar.gov/parents/RightSeat.htm>, current as of September 20, 2016

<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*.

## GENERAL TRENDS

The number of children experiencing non-fatal injuries increased slightly between 2015 and 2016, from 3,448 to 3,498 (Table 1). Fatalities among the less than 1-year-old and 1- to 3-year-old age groups represent 53 percent of all children killed in Indiana collisions in 2016. As shown in Figure 1, the rate of fatal injuries per 1,000 children involved in crashes fell from 9.2 in 2015 to 4.0 in 2016.

Based on 2015 Indiana child population estimates (Table 2), both the 8- to 12-year-old and 13- to 14-year old age groups are over-represented among child injuries—8- to 12-year-old children represent 34 percent of the Indiana child population but comprised 39 percent of child injuries in 2016; and 13- to 14-year old children represent 14 percent of the state's child population but accounted for 18 percent of child injuries. This 13- to 14-year-old age group represented the highest injury rate (351 per 100,000 population). The lowest injury rate (183 per 100,000 population) was among the less than 1-year-old age group.

**Table 1. Children injured or killed in Indiana traffic collisions by injury status and age group, 2012-2016**

	2012		2013		2014		2015		2016		Annual rate of change	
	Count	%	2015-16	2012-16								
<b>Fatal</b>	<b>27</b>	<b>100.0%</b>	<b>35</b>	<b>100.0%</b>	<b>20</b>	<b>100.0%</b>	<b>35</b>	<b>100.0%</b>	<b>15</b>	<b>100.0%</b>	<b>-57.1%</b>	<b>-13.7%</b>
Less than 1 year old	0	0.0%	2	5.7%	3	15.0%	2	5.7%	1	6.7%	-50.0%	na
1 to 3 years old	11	40.7%	8	22.9%	1	5.0%	6	17.1%	7	46.7%	16.7%	-10.7%
4 to 7 years old	7	25.9%	8	22.9%	4	20.0%	7	20.0%	1	6.7%	-85.7%	-38.5%
8 to 12 years old	3	11.1%	11	31.4%	7	35.0%	15	42.9%	4	26.7%	-73.3%	7.5%
13 to 14 years old	6	22.2%	6	17.1%	5	25.0%	5	14.3%	2	13.3%	-60.0%	-24.0%
<b>Non-fatal</b>	<b>3,501</b>	<b>100.0%</b>	<b>3,359</b>	<b>100.0%</b>	<b>3,332</b>	<b>100.0%</b>	<b>3,448</b>	<b>100.0%</b>	<b>3,498</b>	<b>100.0%</b>	<b>1.5%</b>	<b>0.0%</b>
Less than 1 year old	187	5.3%	128	3.8%	159	4.8%	171	5.0%	152	4.3%	-11.1%	-5.0%
1 to 3 years old	490	14.0%	432	12.9%	457	13.7%	506	14.7%	503	14.4%	-0.6%	0.7%
4 to 7 years old	854	24.4%	875	26.0%	841	25.2%	852	24.7%	850	24.3%	-0.2%	-0.1%
8 to 12 years old	1,250	35.7%	1,216	36.2%	1,171	35.1%	1,277	37.0%	1,364	39.0%	6.8%	2.2%
13 to 14 years old	720	20.6%	708	21.1%	704	21.1%	642	18.6%	629	18.0%	-2.0%	-3.3%
<b>Not injured</b>	<b>351</b>	<b>100.0%</b>	<b>315</b>	<b>100.0%</b>	<b>363</b>	<b>100.0%</b>	<b>308</b>	<b>100.0%</b>	<b>231</b>	<b>100.0%</b>	<b>-25.0%</b>	<b>-9.9%</b>
Less than 1 year old	7	2.0%	11	3.5%	5	1.4%	5	1.6%	13	5.6%	160.0%	16.7%
1 to 3 years old	10	2.8%	7	2.2%	7	1.9%	9	2.9%	20	8.7%	122.2%	18.9%
4 to 7 years old	16	4.6%	16	5.1%	18	5.0%	31	10.1%	26	11.3%	-16.1%	12.9%
8 to 12 years old	187	53.3%	110	34.9%	58	16.0%	94	30.5%	78	33.8%	-17.0%	-19.6%
13 to 14 years old	131	37.3%	171	54.3%	275	75.8%	169	54.9%	94	40.7%	-44.4%	-8.0%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

Notes:

- 1) 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, 2015 and 2016 increases in incapacitating injuries reflect a definitional change and should be interpreted with caution.
- 2) Includes individuals identified as *drivers, injured occupants, pedestrians, and pedalcyclists* and in the 8 to 14 year old age group, *animal-drawn vehicle operators*.
- 3) 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.
- 4) "Not injured" definition included at end of report.

**Table 2. Indiana child population estimates (2015) and traffic injuries (2016)**

Age group	Estimated IN population	Share of IN child population	2016 total injuries	Share of IN child injuries	2016 injury rate per 100K
Less than 1 year old	83,603	6.4%	153	4.4%	183.0
1 to 3 years old	251,554	19.3%	510	14.5%	202.7
4 to 7 years old	344,261	26.4%	851	24.2%	247.2
8 to 12 years old	445,225	34.1%	1,368	38.9%	307.3
13 to 14 years old	179,787	13.8%	631	18.0%	351.0
<b>Total</b>	<b>1,304,430</b>	<b>100.0%</b>	<b>3,513</b>	<b>100.0%</b>	<b>269.3</b>

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017; U.S. Census Bureau

Notes:

- 1) The most recent population estimates available by age are for 2015.
- 2) Total injuries are sum of children with *fatal, incapacitating, non-incapacitating, possible* and *other* injuries. Excludes individuals classified as *not injured*.
- 3) Total injuries for less than 1, 1 to 3, and 4 to 7 year old age group exclude individuals classified as *driver* or *animal-drawn vehical operator*.

The number of children killed or injured in traffic collisions by person type (drivers, vehicle occupants, pedestrians, and pedalcyclists) is depicted in Table 3. In 2016, child occupants experiencing incapacitating injuries (1,347) accounted for 99 percent of all fatal and incapacitating injuries (calculated from table). Between 2015 and 2016, the number of fatalities among child occupants

declined by 57 percent, from 35 to 15. The number of child pedestrian fatalities fell by 78 percent, from 9 to 2. Figure 3 depicts the proportion of children involved in crashes by person type. Injured occupants account for 84 percent of children involved in Indiana collisions.

**Table 3. Children killed or injured in Indiana traffic collisions by injury status and person type, 2012-2016**

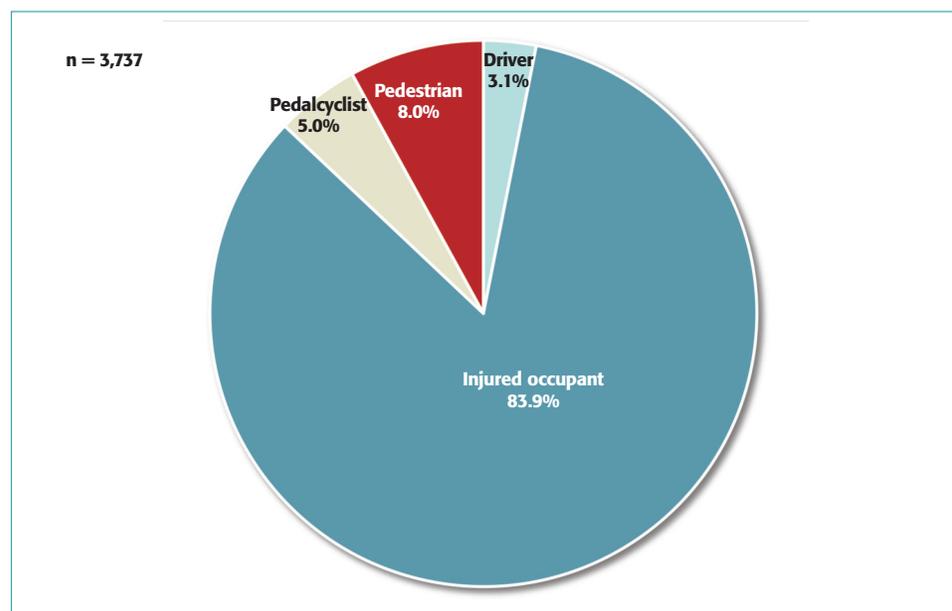
	2012		2013		2014		2015		2016		Annual rate of change	
	Count	%	2015-16	2012-16								
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Driver	1	3.7%	2	5.7%	2	10.0%	0	0.0%	0	0.0%	na	-100.0%
Injured occupant	23	85.2%	25	71.4%	11	55.0%	25	71.4%	12	80.0%	-52.0%	-15.0%
Pedalcyclist	0	0.0%	2	5.7%	3	15.0%	1	2.9%	1	6.7%	0.0%	na
Pedestrian	3	11.1%	6	17.1%	4	20.0%	9	25.7%	2	13.3%	-77.8%	-9.6%
<b>Incapacitating</b>	<b>207</b>	<b>100.0%</b>	<b>193</b>	<b>100.0%</b>	<b>305</b>	<b>100.0%</b>	<b>1,203</b>	<b>100.0%</b>	<b>1,347</b>	<b>100.0%</b>	<b>12.0%</b>	<b>59.7%</b>
Driver	5	2.4%	6	3.1%	7	2.3%	19	1.6%	20	1.5%	5.3%	41.4%
Injured occupant	145	70.0%	121	62.7%	237	77.7%	1,022	85.0%	1,156	85.8%	33.12%	68.0%
Pedalcyclist	21	10.1%	20	10.4%	21	6.9%	68	5.7%	50	3.7%	223.8%	24.2%
Pedestrian	36	17.4%	46	23.8%	40	13.1%	94	7.8%	121	9.0%	28.7%	35.4%
<b>Non-incapacitating injuries</b>	<b>3,253</b>	<b>100.0%</b>	<b>3,110</b>	<b>100.0%</b>	<b>2,983</b>	<b>100.0%</b>	<b>2,146</b>	<b>100.0%</b>	<b>2,057</b>	<b>100.0%</b>	<b>-4.1%</b>	<b>-10.8%</b>
Driver	52	1.6%	52	1.7%	45	1.5%	19	0.9%	19	0.9%	0.0%	-22.3%
Injured occupant	2,802	86.1%	2,661	85.6%	2,597	87.1%	1,900	88.5%	1,837	89.3%	-3.3%	-10.0%
Pedalcyclist	177	5.4%	168	5.4%	147	4.9%	102	4.8%	78	3.8%	-23.5%	-18.5%
Pedestrian	222	6.8%	229	7.4%	194	6.5%	125	5.8%	123	6.0%	-1.6%	-13.7%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

**Notes:**

- 1) 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 through 2016 increases in incapacitating injuries reflect a definitional change and should be interpreted with caution.
- 2) Excludes animal-drawn vehicle operators.
- 3) *Non-incapacitating* injuries include those injuries reported as *non-incapacitating* or *possible*.

**Figure 3. Children involved in Indiana traffic collisions by person type, 2016**



Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

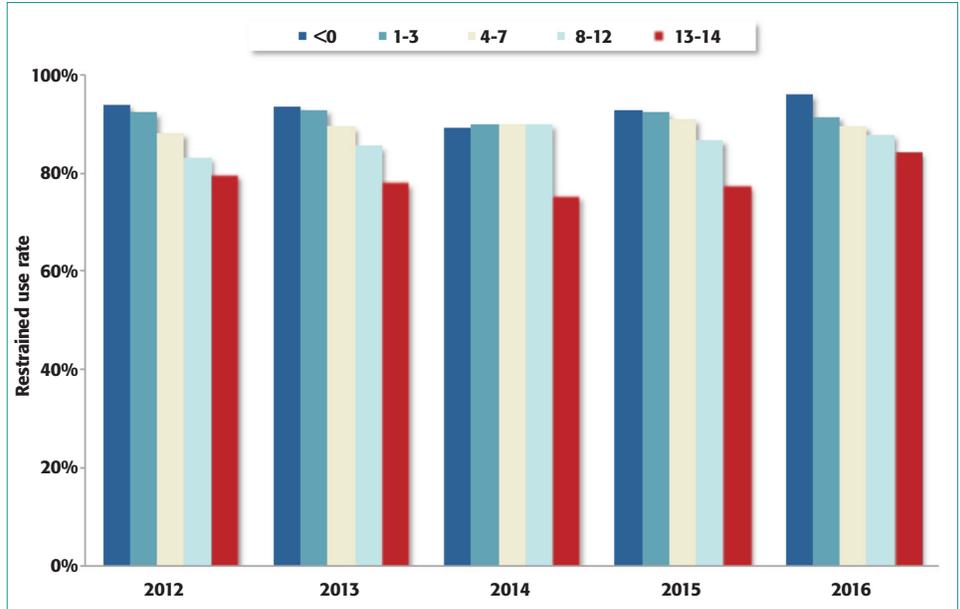
Note: Excludes animal-drawn vehicle operators

# RESTRAINT USE

Restraint use rates among children in traffic collisions tend to decline as children get older (Figure 4). In 2016, the 13- to 14-year-old age group had the lowest rate of restraint use (84 percent). Between 2012 and 2015, this age group exhibited rates of restraint use consistently at or lower than 80 percent. The highest rate of restraint use over the five-year period was 94 percent among children less than 1-year-old in 2016.

Figure 5 illustrates restraint use rates among child occupants in traffic collisions based on whether their respective drivers were restrained or not. Based on known restraint use, between 2012 and 2016, over 98 percent of children were restrained when their drivers were restrained. When drivers were unrestrained, less than 15 percent of child occupants were restrained over the five-year period.

**Figure 4. Restraint use among children involved in Indiana traffic collisions, by age group, 2012-2016**

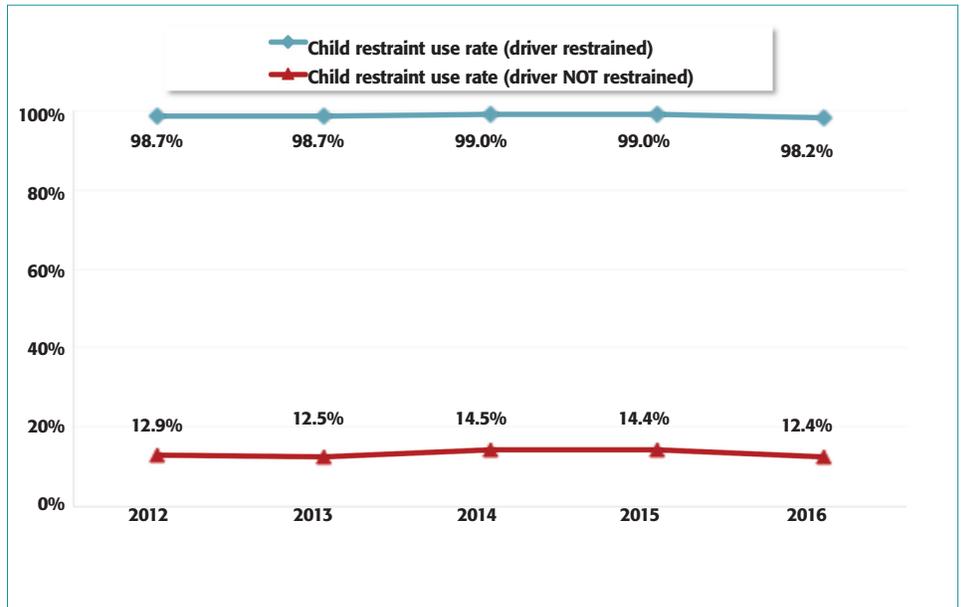


Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

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.
- 3) Restraint use rates are limited to those occurring in passenger vehicles (defined as passenger cars, pickup trucks, sport utility vehicles, and vans).

**Figure 5. Restraint use among child occupants involved in Indiana collisions, by driver restraint use, 2012-2016**



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

Note: Restraint use rates are limited to those occurring in passenger vehicles (defined as *passenger cars*, *pickup trucks*, *sport utility vehicles*, and *vans*).

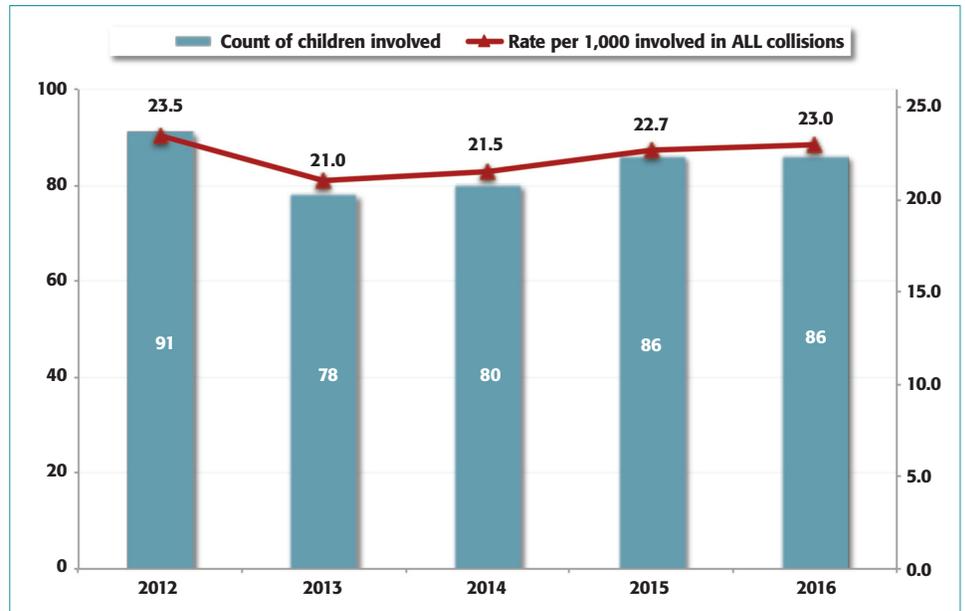
## ALCOHOL-IMPAIRED COLLISIONS

In 2016, 86 children were involved in alcohol-impaired traffic collisions (Figure 6), 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 91 in 2012 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

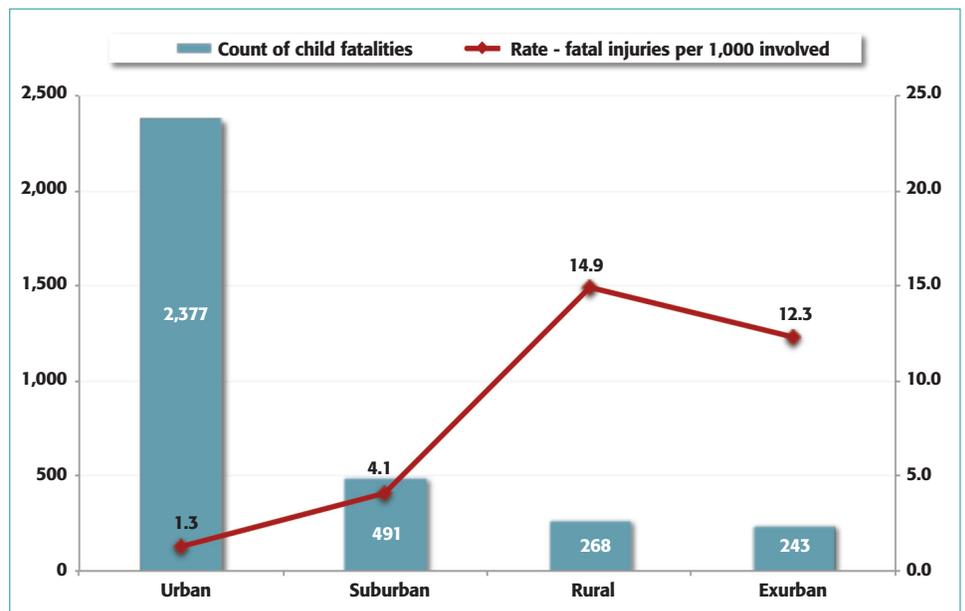
In 2016, the fatal injury rate per 1,000 children involved in traffic collisions in Indiana was lowest in urban (1.3 per 1,000) but substantially higher in rural (14.9), exurban (12.3), and suburban (4.1) locales (Figure 7). The map on page 6 illustrates rates of Indiana child traffic injuries and fatalities for children aged less-than-one to 14 years of age by county. The median traffic injury/fatality rate per 1,000 for children 14 and younger was 1.2.

Figure 6. Children involved in Indiana alcohol-impaired collisions, 2012-2016



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

Figure 7. Children involved in Indiana collisions by census locale, 2016



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017



## DEFINITIONS

**Alcohol-impaired collision:** A collision is considered *alcohol-impaired* when any vehicle driver involved has a BAC test result at or above 0.08 g/dL.

**Annual rate of change (ARC)** – is the rate that a beginning value must increase/decrease each period (e.g. month, quarter, or 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 2012 to 2016, it is calculated as  $(\text{Value in 2016} / \text{Value in 2012})^{1/4} - 1$ .

**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. NOTE: The *not injured* category in ARIES should include only uninjured *drivers*; nonetheless, *vehicle occupants* are sometimes reported as *not injured* on the crash report completed by the investigating officer.

**Non-fatal** injury includes *incapacitating*, *non-incapacitating*, *possible*, *not reported*, *refused (treatment)* and *unknown* injury categories.

**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*.

## REFERENCE

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?view=full>)

## DATA SOURCES

Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 16, 2017.

U.S. Census Bureau, Annual Estimates of the Resident Population by Single-Year of Age and Sex for the United States and States (2015), provided by the Indiana Business Research Center, Indiana University.

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 publications that 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**

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 collaborates each year with the Indiana Criminal Justice Institute to analyze vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the eleventh year of this partnership. Research findings are summarized in a series of publications on various aspects of traffic collisions, including alcohol-related crashes, commercial vehicles, dangerous driving, child passenger safety, motorcycles, occupant protection, and drivers. An additional publication provides detailed information on county and municipality data. 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. Crash reports for all Indiana collisions are entered electronically through ARIES. Collisions trends 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. 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. 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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