



CHILDREN 2018

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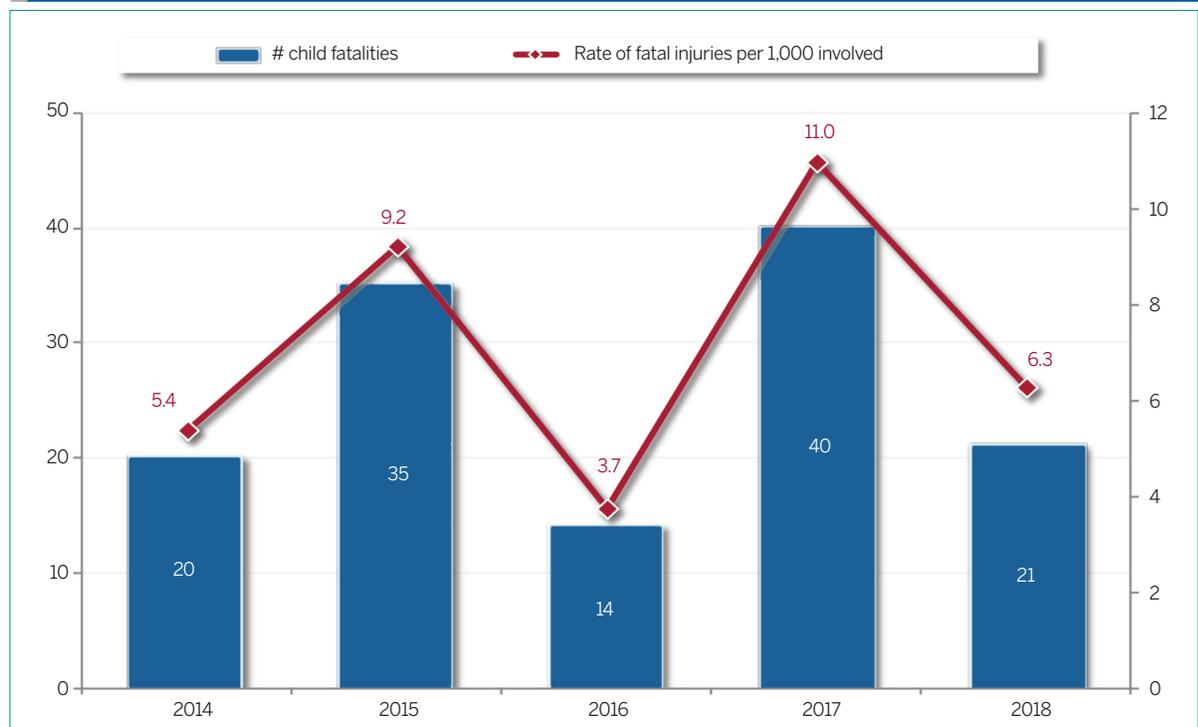
In 2018:

- 3,133 children ages 0 through 14 were killed or injured in motor vehicle collisions.
- Less than 1 percent of children injured in crashes were killed (21 fatalities).
- The overall rate of restraint use among children in crashes—as both drivers and occupants—was 88 percent.
- Only 84 percent of 13- to 14-year-olds in crashes were restrained, the lowest rate among all children.
- 179 child pedestrians were injured in collisions in Indiana in 2017; 8 were killed and 91 suffered incapacitating injuries.
- 103 pedalcyclists ages 14 and younger were injured in crashes; 35 sustained incapacitating injuries.
- 73 children were involved in alcohol-impaired traffic collisions.

The number of children killed in Indiana traffic collisions varies from year to year. Recent crash data show that the total number of children killed in crashes fell by nearly one-half from 40 in 2017 to 21 in 2018 (Figure 1).¹ The rate of fatal injuries per 1,000 children involved in crashes decreased from 11.0 in 2016 to 6.3 in 2018. This fact sheet summarizes information on Indiana traffic collisions

involving children ages 0 through 14 from 2014 through 2018. It examines general trends, injury status by age group, restraint usage, alcohol-related crashes, and geographical analysis by county. Indiana collision data comes from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019.

Figure 1. Child fatalities and fatal injury rates in Indiana collisions, per 1,000 children involved, 2014–2018



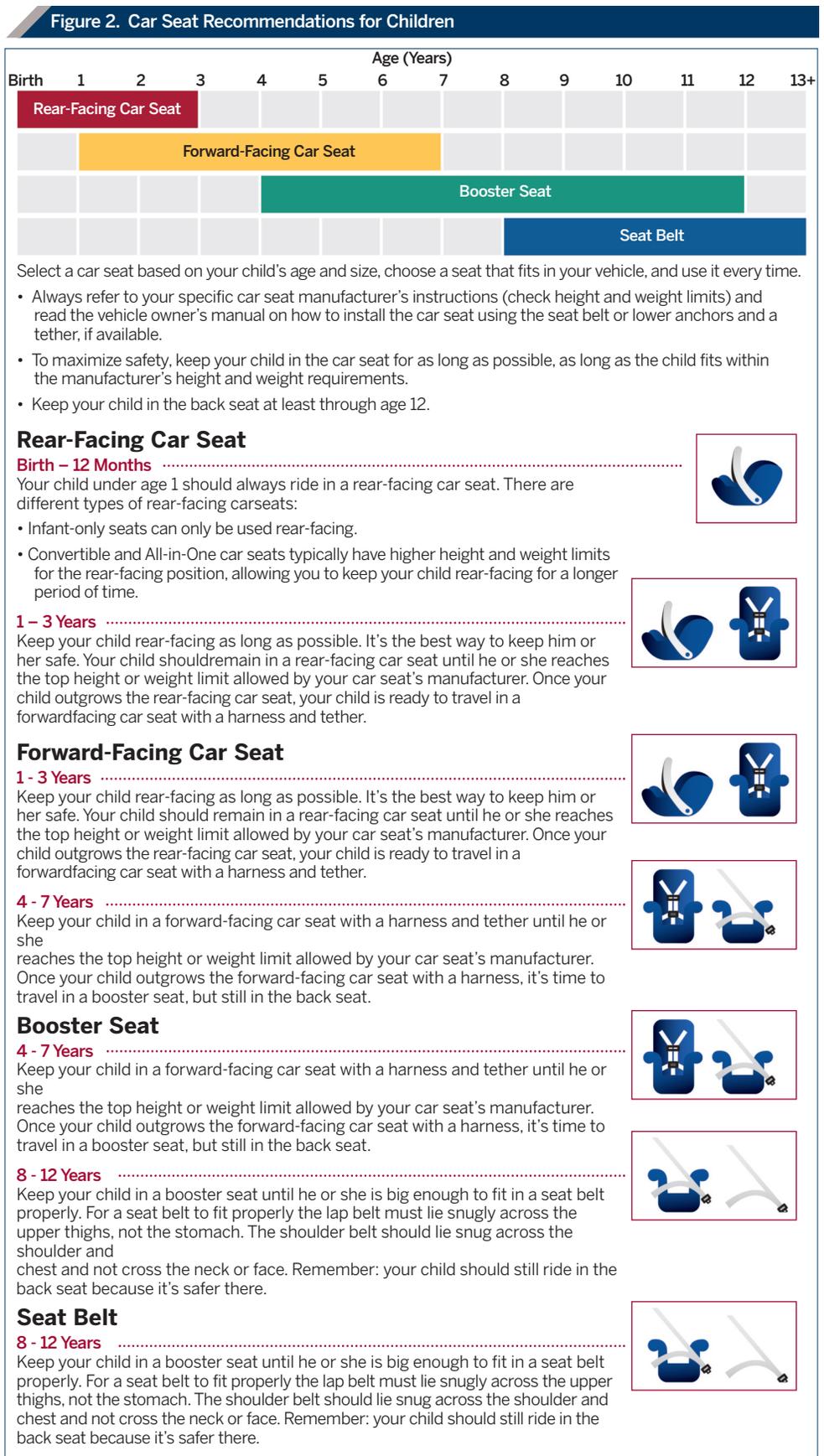
Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019

In partnership with:



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

Research shows that proper use of child restraints, including child safety seats and lap/shoulder belts, reduces the risk of fatal and serious injuries to children. The National Highway Traffic Safety Administration (NHTSA) strongly recommends that children progress through four stages of restraints from birth to adulthood (Figure 2). Indiana child restraint laws require all occupants ages 15 and younger to be properly restrained in a child restraint device or seat belt in all seating positions in all vehicles.



Source: NHTSA, <https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/carseat-recommendations-for-children-by-age-size.pdf>, current as of May 19, 2019

GENERAL TRENDS

The number of children killed in crashes rose from a five-year low of 14 in 2016 to 40 in 2017, then fell in 2018 to 21. However, it should be noted that 2016's numbers were exceptionally low based on annual counts. Among

children killed in collisions in 2018, the 4- to 7-year-old age group represented nearly one-third of all child fatalities (Table 1). From 2017 to 2018, the number of children experiencing incapacitating injuries increased slightly from 1,236 to 1,290, while non-incapacitating injuries declined.

Table 1. Children involved in Indiana traffic collisions, by injury status and age group, 2014–2018

Injury status by age group	2014		2015		2016		2017		2018		Annual rate of change	
	Count	% Total	2017–18	2014–18								
Fatal	20	100.0%	35	100.0%	14	100.0%	40	100.0%	21	100.0%	-47.5%	1.2%
<1	3	5.7%	2	15.0%	0	5.7%	6	6.7%	0	0.0%	-100.0%	-100.0%
1–3	1	22.9%	6	5.0%	7	17.1%	5	46.7%	2	9.5%	-60.0%	18.9%
4–7	4	22.9%	7	20.0%	1	20.0%	13	6.7%	7	33.3%	-46.2%	15.0%
8–12	7	31.4%	15	35.0%	4	42.9%	8	26.7%	6	28.6%	-25.0%	-3.8%
13–14	5	17.1%	5	25.0%	2	14.3%	8	13.3%	6	28.6%	-25.0%	4.7%
Incapacitating	305	100.0%	1,204	100.0%	1,350	100.0%	1,236	100.0%	1,290	100.0%	4.4%	43.4%
<1	17	3.8%	49	4.8%	59	5.0%	71	4.3%	54	4.2%	-23.9%	33.5%
1–3	35	12.9%	202	13.7%	201	14.7%	210	14.4%	203	15.7%	-3.3%	55.2%
4–7	68	26.0%	284	25.2%	307	24.7%	291	24.3%	275	21.3%	-5.5%	41.8%
8–12	105	36.2%	439	35.1%	514	37.0%	437	39.0%	520	40.3%	19.0%	49.2%
13–14	80	21.1%	230	21.1%	269	18.6%	227	18.0%	238	18.4%	4.8%	31.3%
Non-incapacitating	3,029	100.0%	2,245	100.0%	2,153	100.0%	2,132	100.0%	1,822	100.0%	-14.5%	-11.9%
<1	142	4.7%	122	5.4%	94	4.4%	114	5.3%	87	4.8%	-23.7%	-11.5%
1–3	423	14.0%	304	13.5%	302	14.0%	254	11.9%	276	15.1%	8.7%	-10.1%
4–7	774	25.6%	568	25.3%	543	25.2%	551	25.8%	465	25.5%	-15.6%	-12.0%
8–12	1,066	35.2%	838	37.3%	851	39.5%	832	39.0%	685	37.6%	-17.7%	-10.5%
13–14	624	20.6%	413	18.4%	363	16.9%	381	17.9%	309	17.0%	-18.9%	-16.1%
Not injured	363	100.0%	308	100.0%	232	100.0%	232	100.0%	218	100.0%	-6.0%	-12.0%
<1	5	3.5%	5	1.4%	13	1.6%	15	5.6%	6	2.8%	-60.0%	4.7%
1–3	7	2.2%	9	1.9%	20	2.9%	14	8.7%	14	6.4%	0.0%	18.9%
4–7	18	5.1%	31	5.0%	26	10.1%	25	11.3%	32	14.7%	28.0%	15.5%
8–12	58	34.9%	94	16.0%	78	30.5%	78	33.8%	74	33.9%	-5.1%	6.3%
13–14	275	54.3%	169	75.8%	95	54.9%	100	40.7%	92	42.2%	-8.0%	-23.9%

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019

Notes:

- 1) Includes individuals identified as drivers, injured occupants, pedestrians, and pedalcyclists and in the 8 to 14 year old age group, animal-drawn vehicle operators.
- 2) The <1, 1–3, and 4–7-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) Non-incapacitating injuries include those injuries reported as non-incapacitating, possible, not reported, unknown, and refused (treatment) injury status codes.
- 4) Not injured definition included at end of report.
- 5) A previous ARIES upgrade added a clarification to reporting officers on the definition of incapacitating injuries criteria to include "transported from scene for treatment"; therefore, 2014 to 2015 increases in incapacitating injuries reflect a definitional change.

Based on 2017 Indiana child population estimates—the most recent year available—both the 8- to 12-year-old and 13- to 14-year-old age groups were over-represented among crash-related child injuries (Table 2). The 8- to 12-year-old group represented 34 percent of the Indiana child population in 2017, but accounted for 39 percent of child injuries in 2018. The 13- to 14-year-old age group represented 14 percent of the state’s child population, but 18 percent of child injuries. This age group also represented the highest injury rate (309 per 100,000 population) among all five child age groups. The lowest injury rate (171 per 100,000 population) was among the less than 1-year-old age group.

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 2018, the number of fatalities among child occupants decreased by 57 percent from the previous year, from 30 to 13. However, the number of child pedestrians killed in crashes rose, from 6 to 8 and accounted for 38 percent of 2018 crash-related child fatalities. The number of child passengers experiencing incapacitating injuries (1,153) accounted for 88 percent of all fatal and incapacitating injuries in 2018 (calculated from table).

Table 2. Indiana child population estimates (2017) and traffic injuries (2018)

Age group	Estimated IN population	Share of IN child population	2018 total injuries	Share of IN child injuries	2018 injury rate per 100K
<1	82,498	6.3%	141	4.5%	170.9
1–3	253,447	19.5%	481	15.4%	189.8
4–7	341,740	26.3%	747	23.8%	218.6
8–12	443,141	34.1%	1,211	38.7%	273.3
13–14	178,763	13.8%	553	17.7%	309.3
Total	1,299,589	100.0%	3,133	100.0%	241.1

Sources: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019; U.S. Census Bureau

Notes:

- 1) The most recent population estimates available by age are for 2017.
- 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 vehicle operator.

Table 3. Children killed or injured in Indiana traffic collisions by injury status and person type, 2014–2018

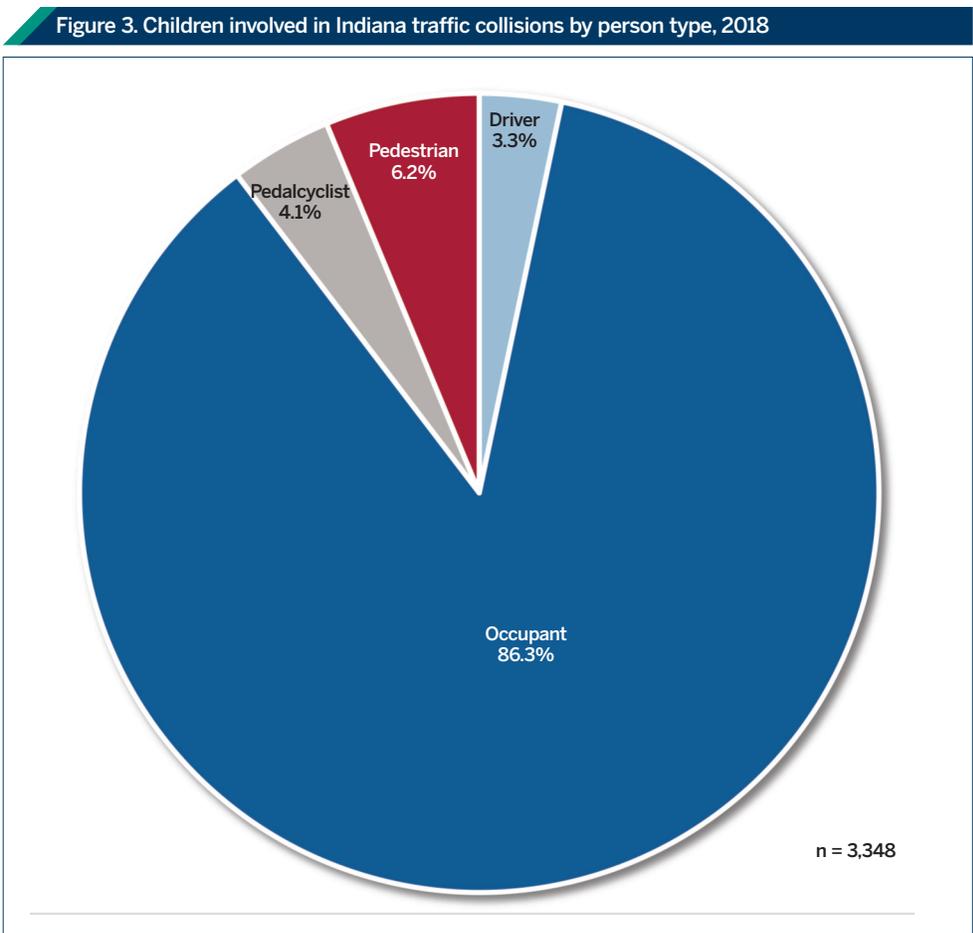
	2014		2015		2016		2017		2018		Annual rate of change	
	Count	% Total	2017–2018	2014–18								
Fatal	20	100.0%	35	100.0%	14	100.0%	40	100.0%	21	100.0%	-47.5%	1.2%
Driver	2	10.0%	0	0.0%	0	0.0%	1	2.5%	0	0.0%	-100%	-100.0%
Occupant	11	55.0%	25	71.4%	11	78.6%	30	75.0%	13	61.9%	-56.7%	4.3%
Pedalcyclist	3	15.0%	1	2.9%	1	7.1%	3	7.5%	0	0.0%	-100.0%	-100%
Pedestrian	4	20.0%	9	25.7%	2	14.3%	6	15.0%	8	38.1%	33.3%	18.9%
Incapacitating	305	100.0%	1,203	100.0%	1,348	100.0%	1,235	100.0%	1,290	100.0%	4.5%	43.4%
Driver	7	2.3%	19	1.6%	20	1.5%	26	2.1%	11	0.9%	-57.7%	12.0%
Occupant	237	77.7%	1,022	85.0%	1,157	85.8%	1,059	85.7%	1,153	89.4%	-8.9%	48.5%
Pedalcyclist	21	6.9%	68	5.7%	50	3.7%	54	4.4%	35	2.7%	-35.2%	13.6%
Pedestrian	40	13.1%	94	7.8%	121	9.0%	96	7.8%	91	7.1%	-5.2%	22.8%
Non-incapacitating	3,027	100.0%	2,243	100.0%	2,152	100.0%	2,131	100.0%	1,821	100.0%	-14.5%	-11.9%
Driver	48	1.6%	21	0.9%	20	0.9%	22	1.0%	13	0.7%	-40.9%	-27.9%
Occupant	2,634	87.0%	1,981	88.3%	1,921	89.3%	1,936	90.8%	1,660	91.2%	-14.3%	-10.9%
Pedalcyclist	149	4.9%	111	4.9%	85	3.9%	72	3.4%	68	3.7%	-5.6%	-17.8%
Pedestrian	196	6.5%	130	5.8%	126	5.9%	101	4.7%	80	4.4%	-20.8%	-20.1%

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

Notes:

- 1) Excludes animal-drawn vehicle operators.
- 2) Injuries for < 1, 1–3, and 4–7-year-old age group exclude individuals classified as drivers.
- 3) Non-incapacitating injuries include those injuries reported as non-incapacitating, possible, not reported, unknown, and refused (treatment) injury status codes.
- 4) A previous ARIES upgrade added a clarification to reporting officers on the definition of incapacitating injuries criteria to include “transported from scene for treatment”; therefore, 2014 to 2015 increases in incapacitating injuries reflect a definitional change.

Figure 3 illustrates the proportion of children involved in crashes by person type. Among children involved in traffic collisions, 86 percent were passengers. Six percent were pedestrians and 4 percent were pedalcyclists. Only 3 percent of children involved in crashes were drivers.



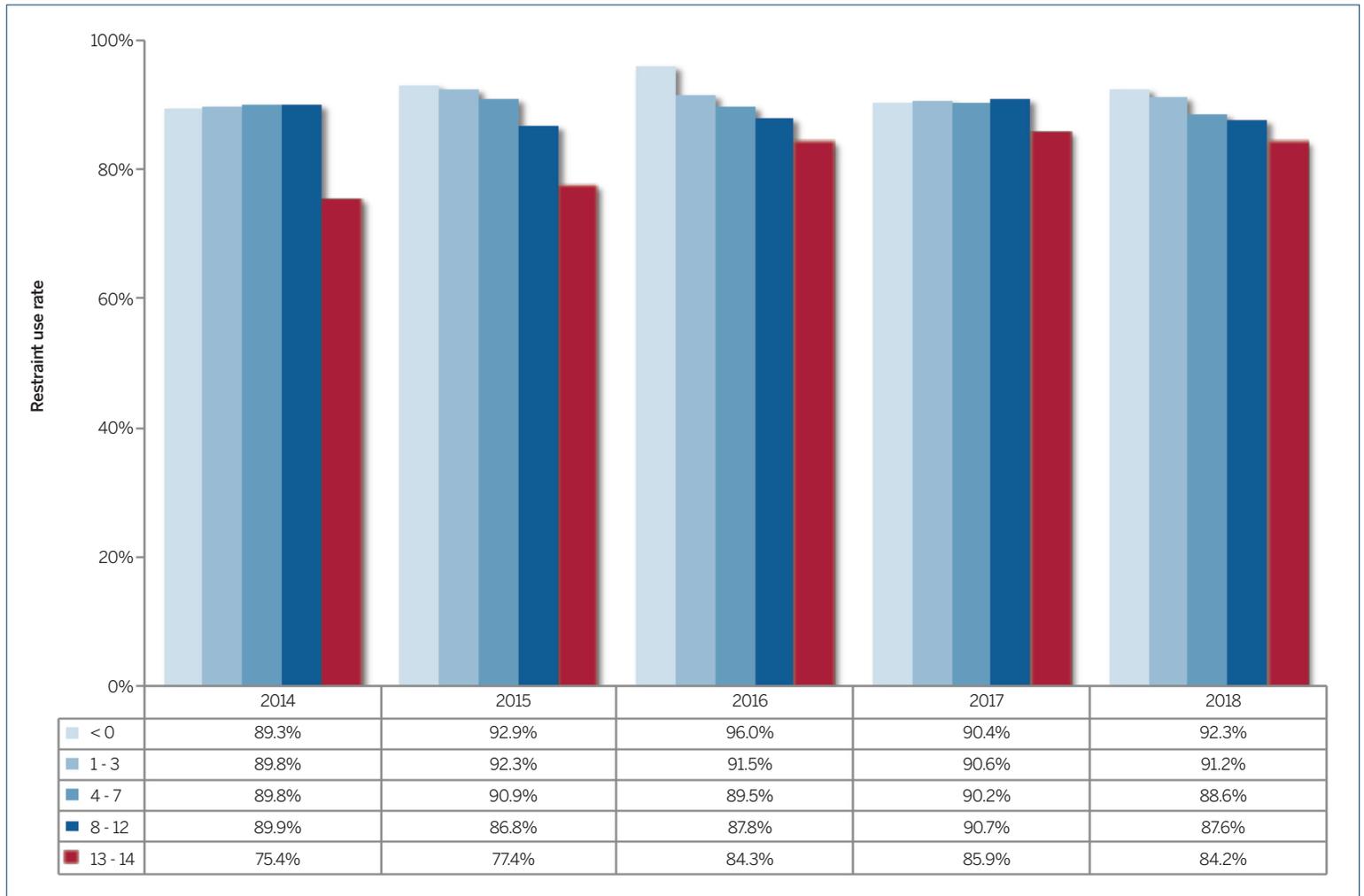
Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019
Note: Excludes animal-drawn vehicle operators.

RESTRAINT USE

Restraint usage rates among children in traffic collisions tend to decline as children get older (Figure 4). In 2018, the 13- and 14-year-old age group had

the lowest rate of restraint use (84 percent). Between 2014 and 2018, this age group exhibited rates of restraint use consistently lower than all other age groups. The highest rate of proper restraint use during the five-year period was 96 percent among children less than 1-year-old in 2016.

Figure 4. Restraint use among children involved in Indiana traffic collisions, by age group, 2014–2018



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019

Notes:

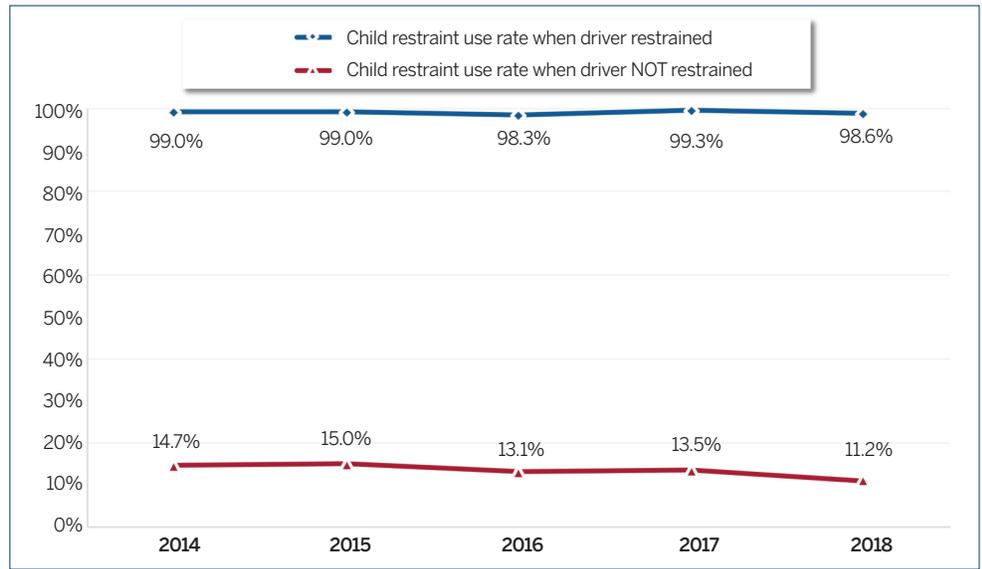
- 1) Restraint usage rates are calculated based on individuals identified as occupant or driver where restraint use was known.
- 2) Unrestrained and unknown restraint use codes are included in totals for restraint use rate calculations.
- 3) Restraint usage rates are limited to those occurring in passenger vehicles (defined as passenger cars, pickup trucks, sport utility vehicles, and vans).

Analysis of crash data from 2014 through 2018 demonstrates a consistent relationship between driver restraint status and that of child passengers (Figure 5). Based on known restraint use, during the five-year period, over 98 percent of children were restrained when their drivers were restrained. However, when drivers were unrestrained, only 11 to 15 percent of child occupants were restrained.

ALCOHOL-IMPAIRED COLLISIONS

In 2018, 73 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) (Figure 6). The number of children involved in alcohol-impaired collisions increased from 79 in 2014 to 90 in 2016. Over the five-year period, the rate of child involvement in collisions with a legally impaired driver has risen to 13.4 per 1,000 involved in 2018.

Figure 5. Restraint use among child occupants involved in Indiana collisions, by driver restraint use, 2014–2018

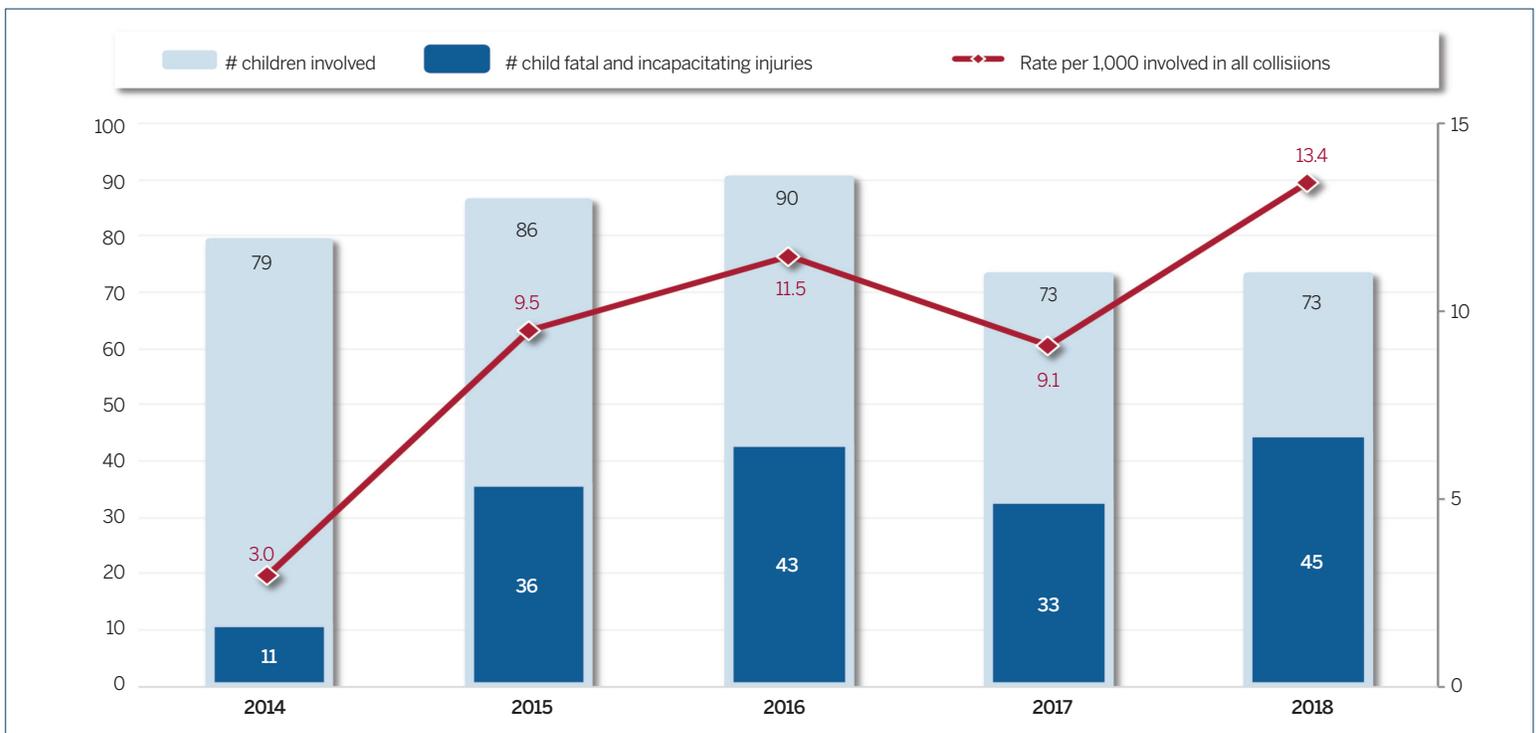


Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019

Notes:

- 1) Restraint usage rates are limited to those occurring in passenger vehicles (defined as passenger cars, pickup trucks, sport utility vehicles, and vans).
- 2) Includes individuals identified as drivers and injured occupants.

Figure 6. Children involved in Indiana alcohol-impaired collisions, 2014–2018

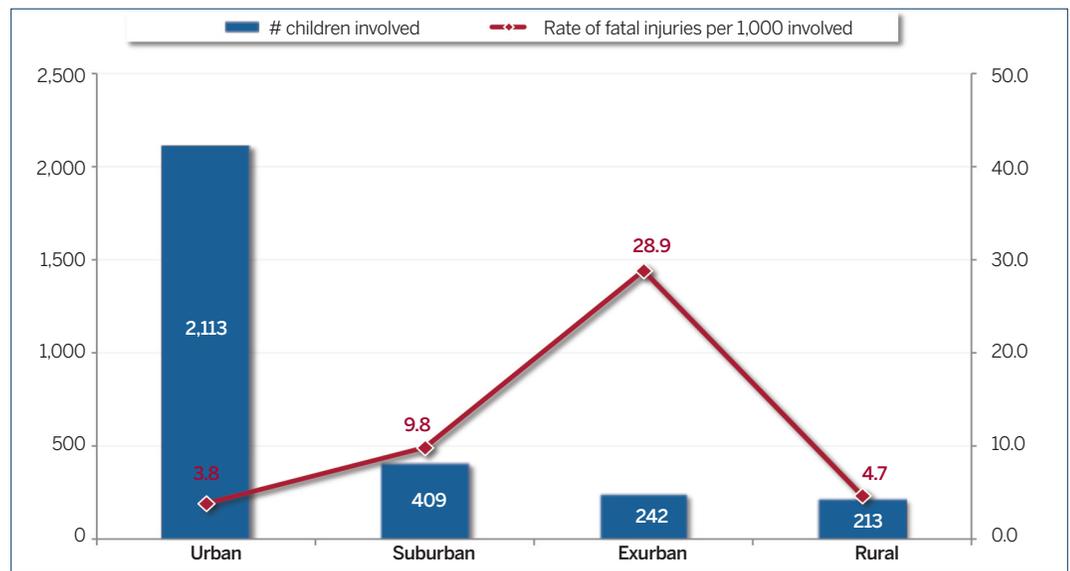


Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019

GEOGRAPHY OF TRAFFIC INJURIES

While more children were involved in crashes in urban areas in Indiana, those same locales had the lowest rates of child fatal injuries (Figure 7). In 2018, the fatal injury rate per 1,000 children involved was lowest in urban (3.8 per 1,000) but higher in suburban (9.8), exurban (28.9), and rural (4.7) areas. The map on page 9 illustrates county-level injury rates per 1,000 children involved in traffic collisions. The median traffic injury rate per 1,000 for children 14 and younger was 2.0. The five counties with the highest injury rates in 2018 were Harrison (5.5), Delaware (5.3), LaPorte (5.1), Marshall (5.1), and Vanderburgh (4.4). The five counties with the lowest rates were Pulaski (0.4), Fountain, (0.3), Parke (0.3), Union (0.0), and Warren (0.0).

Figure 7. Children involved in Indiana collisions by Census locale, 2018



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of April 6, 2018

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):** 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 2014 to 2018, it is calculated as $(\text{Value in 2018} / \text{Value in 2014})^{1/4} - 1$.
- **Non-fatal:** This injury group includes incapacitating, non-incapacitating, possible, not reported, refused (treatment), and unknown injury categories.
- **Not injured:** This category includes individuals involved in collisions who are 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.
- **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. (2016, September). Car Seat Recommendations for Children. <https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/carseatrecommendationsforchildren.pdf>

DATA SOURCES

Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019.

U.S. Census Bureau, Annual Estimates of the Resident Population by Single-Year of Age and Sex for the United States and States (2017), 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 traffic safety research project site (<http://trafficsafety.iupui.edu>), the ICJI website (www.in.gov/cji/), or you may contact the PPI at 317-278-1305.

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 thirteenth 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.

Indiana University Public Policy Institute

The Indiana University Public Policy Institute produces unbiased, high-quality research, analyses and policy guidance to promote positive change and improve the quality of life in communities across Indiana and the nation. Our clients use our research to enhance their programs and services, to develop strategies and policies, to evaluate the impact of their decisions—and ultimately to help the people they serve. Established in 1992, PPI is part of the IU O'Neill School of Public and Environmental Affairs at IUPUI.

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 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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