CHILDREN 2020



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In 2020:

- 2,082 children ages 0 to 14 were killed (27) or injured (2,055) in motor vehicle accidents.
- 1% of children injured in crashes were killed.
- Of the 896 fatalities in crashes statewide, 3% were children.
- 110 child pedestrians were injured in collisions; 6 were killed and 58 suffered incapacitating injuries.
- 97 child pedalcyclists were injured in collisions; 1 was killed and 45 suffered incapacitating injuries.
- The overall rate of restraint use among children in crashes—as both drivers and occupants—was 88%.
- Only 83% of 13-to 14-year olds were restrained, the lowest rate among all child age groups.
- 71 children were involved in alcohol-impaired crashes. 4 children were killed and 20 sustained incapacitating injuries.

The number of children killed in crashes decreased by 7% from 29 in 2019 to 27 in 2020 (Figure 1). However, the rate of fatal injuries per 1,000 children involved in crashes increased from 9.4 to 11.9, the highest rate during the five-year period. The number of children involved in crashes in 2020 was less than half the annual average for the four previous years likely as the result of the travel changes as a result of the pandemic (calculated from source data for Figure 1).

This fact sheet summarizes information on Indiana traffic safety collisions involving children ages 0–14 for the five-year period 2016–20. It is one in a series of topical fact sheets and examines general trends, injury status by age group, restraint use, alcohol-related crashes, and the geography of crashes by county. Indiana collision data is collected by Indiana State Police officers and submitted to the Automated Reporting Information Exchange System (ARIES). The ARIES data used in this report were extracted March 29, 2021.

¹ Due to the possible ARIES reporting errors designating very young children as drivers, the analysis does not include children ages 7 or younger who were identified as drivers or animal-drawn vehicle operators.

The pandemic and traffic safety in 2020

The COVID-19 pandemic affected a traffic safety in 2020. Preliminary analyses of traffic safety fatalities by the National Highway Traffic Safety Administration (NHTSA)— using data from the Fatality Analysis Reporting System (FARS)—estimates that while vehicle miles travelled were down nationally in 2020 from 2019, the number of fatalities and the fatality rate per 100 million VMT were higher (NCSA, 2021a). Fatalities among passenger vehicle occupants, motorists, and pedalcyclists are estimated to be up 5%, 9%, and 5%, respectively (NCSA, 2021b). NHTSA's analysis also suggests risky traffic behaviors increased in 2020 (OBSR, 2021). For example, national fatality counts for unrestrained occupants of passenger vehicles are estimated to be up 15% and deaths from occupant ejections up 20%.

The 2020 Indiana traffic safety data and analysis should be considered carefully in light of the potentially anomalous effects of the pandemic. Further analysis may be needed to evaluate whether the challenges in Indiana were similar to those identified nationally, whether those challenges continue, and whether the addition or adjustment of countermeasures is warranted.

Sources:

- National Center for Statistics and Analysis. (2021a, (revised)). Early estimates of motor vehicle traffic fatalities and fatality rate by sub-categories in 2020 (Crash Stats Brief Statistical Summary. Report No. DOT HS 813 118). National Highway Traffic Safety Administration.
- National Center for Statistics and Analysis. (2021b). Early estimate of motor vehicle traffic fatalities in 2020 (Crash Stats Brief Statistical Summary. Report No. DOT HS 813 115). National Highway Traffic Safety Administration.
- Office of Behavioral Safety Research. (2021, June). Update to special reports on traffic safety during the COVID-19 public health emergency: Fourth quarter data (Report No. DOT HS 813 135). National Highway Traffic Safety Administration.

Children involved # Child fatal and incapacitating injuries ■◆■ Rate of fatal/incapacitating injuries per 1,000 involved in all collisions 100 15.0 14.3 90 12.0 86 80 80 10.6 77 $\mathbf{\hat{X}}$ 11.4 10.0 60 40 5.0 48 43 20 37 31 24 0 0.0 2016 2017 2018 2019 2020

Figure 1. Child fatalities and fatal injury rates in Indiana collisions, per 1,000 children involved, 2016–20

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

General trends

Fewer children were injured in all categories—fatal, incapacitating, and non-incapacitating—in 2020 than in 2019 (Table 1). Among individual age cohorts, the only increases in 2020 were fatalities for children less than one year old with two additional deaths and children ages 4–7 with four additional deaths.

Among children killed in crashes in 2020, more than one-third were ages 4–7. Among children who sustained non-fatal injuries, the ages 8–12 group accounted for more than one-third of incapacitating and non-incapacitating injuries in 2020. As shown in Table 2, children ages 8–12 and ages 13–14 were overrepresented for crash-related injuries. Children ages 8–12 sustained 36% of injuries but make up only 34% of the population ages 0–14.² Children ages 13–14 sustained 20% of child injuries but make up only 14% of the relevant population.

² Based on 2019 U.S. Census child population estimates for Indiana—the most recent year available.

Table 1. Children involved in Indiana traffic collisions, by injury status and age group, 2016–20

	2016		2017		2018		2019		2020		Annual rate of change	
		% Total	2019–20	2016–20								
All children involved	3,757	100%	3.640	100%	3,356	100%	3.088	100%		100%	-26.5%	-11.8%
<1	177	5%	207	6%	147	4%	138	4%	113	5%	-18.1%	-10.6%
1–3	529	14%	482	13%	495	15%	441	14%	299	13%	-32.2%	-13.3%
4–7	877	23%	881	24%	779	23%	760	25%	570	25%	-25.0%	-10.2%
8–12	1,446	38%	1,355	37%	1,287	38%	1,150	37%	801	35%	-30.3%	-13.7%
13–14	728	19%	715	20%	648	19%	599	19%	487	21%	-18.7%	-9.6%
Fatal	16	100%	40	100%	21	100%	29	100%	27	100%	-6.9%	14.0%
<1	1	15.0%	6	5.7%	0	6.7%	1	3.4%	3	11.1%	200.0%	31.6%
1–3	8	5.0%	6	17.1%	2	46.7%	10	34.5%	6	22.2%	-40.0%	-6.9%
4–7	1	20.0%	13	20.0%	7	6.7%	6	20.7%	10	37.0%	66.7%	77.8%
8–12	4	35.0%	7	42.9%	6	26.7%	9	31.0%	2	7.4%	-77.8%	-15.9%
13–14	2	25.0%	8	14.3%	6	13.3%	3	10.3%	6	22.2%	100.0%	31.6%
Incapacitating	1,349	100%	1,234	100%	1,292	100%	1,268	100%	858	100%	-32.3%	-10.7%
<1	59	4.8%	71	5.0%	55	4.3%	61	4.8%	39	4.5%	-36.1%	-9.8%
1–3	200	13.7%	208	14.7%	203	14.4%	191	15.1%	122	14.2%	-36.1%	-11.6%
4–7	307	25.2%	292	24.7%	275	24.3%	316	24.9%	219	25.5%	-30.7%	-8.1%
8–12	514	35.1%	437	37.0%	519	39.0%	471	37.1%	307	35.8%	-34.8%	-12.1%
13–14	269	21.1%	226	18.6%	240	18.0%	229	18.1%	171	19.9%	-25.3%	-10.7%
Non-incapacitating	2,160	100%	2,134	100%	1,823	100%	1,575	100%	1,197	100%	-24.0%	-13.7%
<1	104	4.8%	116	5.4%	86	4.7%	71	4.5%	66	5.5%	-7.0%	-10.7%
1–3	301	13.9%	254	11.9%	276	15.1%	226	14.3%	161	13.5%	-28.8%	-14.5%
4–7	543	25.1%	551	25.8%	465	25.5%	415	26.3%	309	25.8%	-25.5%	-13.1%
8–12	850	39.4%	832	39.0%	686	37.6%	597	37.9%	432	36.1%	-27.6%	-15.6%
13–14	362	16.8%	381	17.9%	310	17.0%	266	16.9%	229	19.1%	-13.9%	-10.8%
Not injured	232	100%	232	100%	220	100%	216	100%	188	100%	-13.0%	-5.1%
<1	13	1.4%	14	1.6%	6	5.6%	5	2.3%	5	2.7%	0.0%	-21.2%
1–3	20	1.9%	14	2.9%	14	8.7%	14	6.5%	10	5.3%	-28.6%	-15.9%
4–7	26	5.0%	25	10.1%	32	11.3%	23	10.6%	32	17.0%		5.3%
8–12	78	16.0%	79	30.5%	76	33.8%	73	33.8%	60	31.9%	-17.8%	-6.3%
13–14	95	75.8%	100	54.9%	92	40.7%	101	46.8%	81	43.1%	-19.8%	-3.9%

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Notes:

- 1) Includes all individuals ages 0–14 identified as injured occupants, pedestrians, and pedalcyclists as well as drivers and animal-drawn vehicle operators ages 8–14.
- 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.</p>
- Non-incapacitating injuries include those injuries reported as non-incapacitating, possible, not reported, unknown, and refused (treatment) injury status codes.
- 4) Not injured includes individuals involved in collisions with null values in the injury status code field. See definition at end of report for additional information.

The child fatality rate per 100,000 child population was reduced from 2.2 in 2019 to 2.1 in 2020. As shown in Figure 2, this rate has varied substantially over the last 10 years. The injury rate per 100,000 child population generally increases with age (Table 2). The 13-to-14 year-old age group experienced the highest injury rate (226 per 100,000 population) among the five child age groups. The 1–to-3-year-old age group experienced the lowest injury rate (115 per 100,000 population)

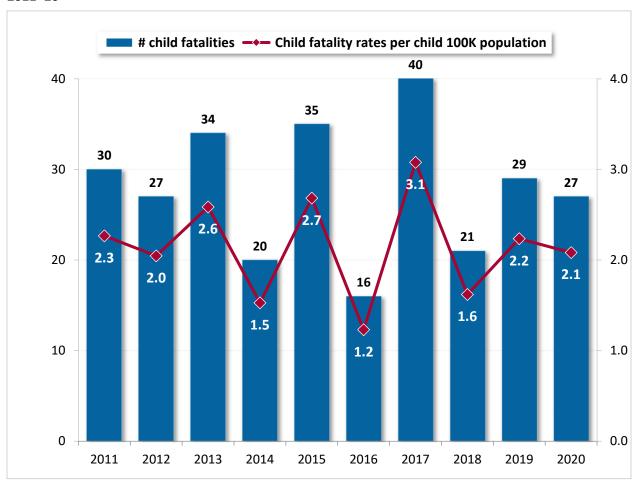


Figure 2. Child fatalities and fatal injury rates per 100,00 child population in Indiana collisions, 2011–20

Sources: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021, and the U.S. Census Bureau. Note: The most recent population estimates available by age are for 2019.

Table 2. Indiana child population estimates (2019) and traffic injuries (2020)



Age group	Estimated IN population	Share of IN child population (2019)	2020 total injuries	Share of IN child injuries	2019 injury rate per 100K population
<1	80,356	6.2%	108	5.2%	134.4
1–3	251,152	19.4%	289	13.9%	115.1
4–7	345,526	26.6%	538	25.8%	155.7
8–12	440,586	34.0%	741	35.6%	168.2
13–14	179,701	13.9%	406	19.5%	225.9
Total	1,297,321	100.0%	2,082	100.0%	160.5

Sources: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021, and the U.S. Census Bureau.

Notes:

- 1) The most recent population estimates available by age are for 2019.
- 2) Total injuries are the sum of children with fatal, incapacitating, non-incapacitating, possible and other injuries. Excludes individuals classified as not injured.
- 3) Total injuries for < 1, 1–3, and 4–7-year-old age group exclude individuals classified as driver or animal-drawn vehicle operator.

Person type and injury status

Most of the children (83%) involved in traffic collisions—as drivers, vehicle occupants (passengers), pedestrians, and pedalcyclists—were vehicle occupants (Figure 3). Only a small percentage of children in collisions were pedestrians (6%), pedalcyclists (5%), and drivers (5%).

Table 3 shows the number of children killed or injured in collisions by person type. Among child pedestrians that were injured in collisions in 2020, 5% were killed, showing a higher likelihood of death than among child occupants, pedalcyclists, or drivers.

In 2020, the fatalities among child occupants increased by 5% (19 to 20) from the previous year. Incapacitating and non-incapacitating injuries among child occupants, however, decreased substantially by 35% (1,122 to 740) and 24% (1,463 to 1,079), respectively. No child driver fatalities were reported in 2020, however, the number of incapacitating (13 to 15; 15%) and non-incapacitating injuries (18 to 21; 16%) increased from the previous year.

Child pedestrian fatalities declined slightly from 2019 to 2020, while injuries declined substantially. Six child pedestrian fatalities were reported in 2020, down from eight in 2019 (-25%). Incapacitating injuries declined by 35% (89 to 58), and non-incapacitating injuries declined 40% (77 to 46). The change in fatalities and injuries among child pedalcyclists was a mixed bag. One child pedalcyclist fatality was reported in both 2019 and 2020. Incapacitating injuries among young pedalcyclists increased by 5% (43 to 45), while non-incapacitating injuries decreased (57 to 51; -11%).

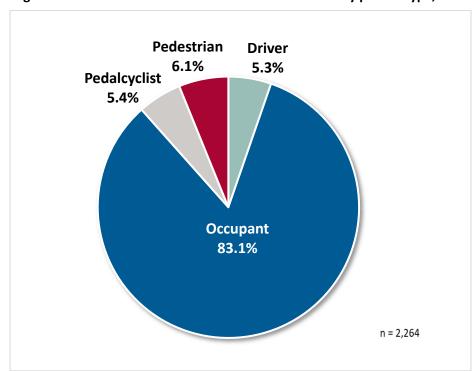


Figure 3. Children involved in Indiana traffic collisions by person type, 2020

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Note: Excludes animal-drawn vehicle operators.

Table 3. Children killed or injured in Indiana traffic collisions by injury status and person type, 2016–20

Injury status by	20	016	20)17	20	18	20	19	20	20	Annual rate	e of change
person type	Count	% Total	2019–20	2016–20								
Fatal	16	100%	40	100%	21	100%	29	100%	27	100%	-6.9%	14.0%
Driver	0	0.0%	1	2.5%	0	0.0%	1	3.4%	0	0.0%	-100%	N/A
Occupant	12	75.0%	30	75.0%	13	61.9%	19	65.5%	20	74.1%	5.3%	13.6%
Pedalcyclist	1	6.3%	2	5.0%	0	0.0%	1	3.4%	1	3.7%	0.0%	0.0%
Pedestrian	3	18.8%	7	17.5%	8	38.1%	8	27.6%	6	22.2%	-25.0%	18.9%
Incapacitating	1,347	100%	1,233	100%	1,291	100%	1,267	100%	858	100%	-32.3%	-10.7%
Driver	20	1.5%	26	2.1%	12	0.9%	13	1.0%	15	1.7%	15.4%	-6.9%
Occupant	1,157	85.9%	1,057	85.7%	1,153	89.3%	1,122	88.6%	740	86.2%	-34.0%	-10.6%
Pedalcyclist	50	3.7%	54	4.4%	35	2.7%	43	3.4%	45	5.2%	4.7%	-2.6%
Pedestrian	120	8.9%	96	7.8%	91	7.0%	89	7.0%	58	6.8%	-34.8%	-16.6%
Non-incapacitating	2,159	100%	2,133	100%	1,822	100%	1,575	100%	1,197	100%	-24.0%	-13.7%
Driver	20	0.9%	22	1.0%	13	0.7%	18	1.1%	21	1.8%	16.7%	1.2%
Occupant	1,928	89.3%	1,938	90.9%	1,660	91.1%	1,423	90.3%	1,079	90.1%	-24.2%	-13.5%
Pedalcyclist	85	3.9%	72	3.4%	68	3.7%	57	3.6%	51	4.3%	-10.5%	-12.0%
Pedestrian	126	5.8%	101	4.7%	81	4.4%	77	4.9%	46	3.8%	-40.3%	-22.3%

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

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.

Restraint use

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 (see NHTSA Car seat recommendations). 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.

Figure - Car seat recommendations for children

https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/carseat-recommendations-for-children-by-age-size.pdf Source: NHTSA

Restraint use among children in traffic collisions in Indiana generally declines as children get older (Figure 4). In 2020, the 13-and 14-year-old age group had the lowest rate of restraint use (83%). Between 2016 and 2020, this age group exhibited consistently lower rates of restraint use than other age groups. The highest rate of proper restraint use in 2020 was 98% among children less than one-year-old, a five-year high. Proper restraint use also was at a five-year high for children 1-to 3-years old (93%).

The number and restraint use rates for children by injury type and seating position are shown in Figure 5. The largest number of child fatalities occurred in the rear-left passenger position. Two-thirds of these 9 fatalities were properly restrained. The greatest number of incapacitating injuries was experienced by child passengers in the right-rear seating position (358). Of those, 91% were properly restrained.

Analysis of crash data from 2016 to 2020 demonstrates a consistent relationship between driver restraint status and that of child passengers (Figures 6 and 7). Based on collisions for which restraint use was known over the five-year period, 98% to 99% of children were restrained when the driver of the vehicle was restrained. However, when drivers were unrestrained, 9% to 15% of child occupants were restrained.

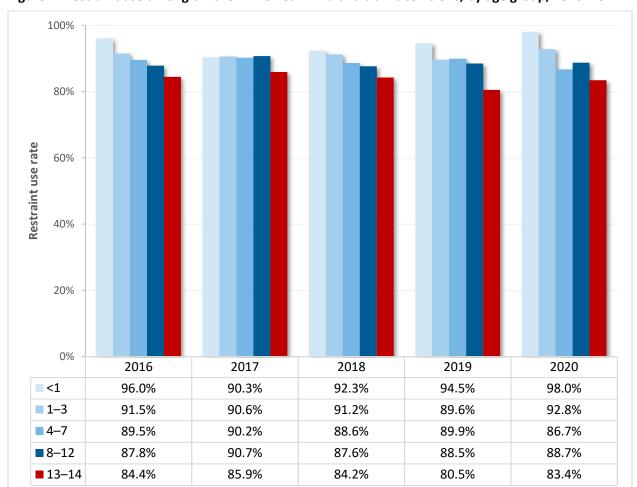


Figure 4. Restraint use among children involved in Indiana traffic collisions, by age group, 2016–20

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Notes:

- 1) Restraint use rates are calculated based on individuals identified as an occupant (ages 0–14) or driver (ages 8–14) 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. Children in Indiana collisions by injury status, seating position, and restraint use, 2020

To match format in 2019, this graphic should be combined with the outline of a passenger vehicle.

Seating position legend:

injuries (restraint use)

Injuries (restraint use rate)									
FRONT									
Fatalities	N/A	2 (50%)	3 (67%)						
	21		140						
Incapacitating injuries	(52%)	17 (29%)	(88%)						
	25		225						
Non-incapacitating injuries	(48%)	11 (18%)	(89%)						
REAR									
Fatalities	9 (67%)	3 (33%)	2 (50%)						
	195		265						
Incapacitating injuries	(92%)	72 (71%)	(90%)						
	295		358						
Non-incapacitating injuries	(86%)	109 (82%)	(91%)						
THIRD ROW									
Fatalities		1 (0%)							
Incapacitating injuries	30 (90%)								
Non-incapacitating injuries	67 (82%)								

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Notes:

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

Figure 6. Restraint use among child occupants involved in Indiana collisions, by driver restraint use, 2016–20

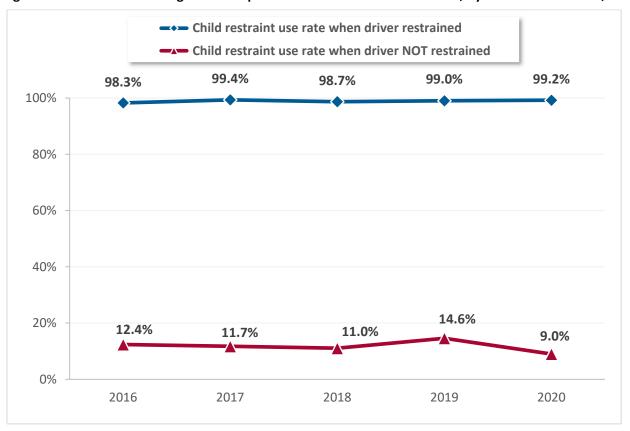


Figure 7. Restraint use among child occupants involved in Indiana collisions, by driver restraint use, 2020

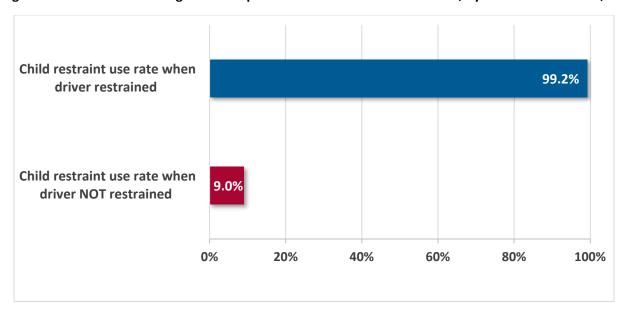


Figure 6 and 7: Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Notes:

- 1) Restraint use 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 child occupants (ages 0–14).

Alcohol-impaired collisions

In 2020, 71 children were involved in traffic collisions which involved a driver with blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL) (Figure 8). This number represents a five-year low. The number of fatal and incapacitating injuries in alcohol-impaired collisions declined from 37 in 2019 to 74 in 2020. The rate of child involvement in collisions with a legally impaired driver decreased from 12.0 per 1,000 involved in 2019 to 10.6 per 1,000 involved in 2020. The 2020 rate was lower than all rates between 2016 and 2020 except for 2017 (8.5).

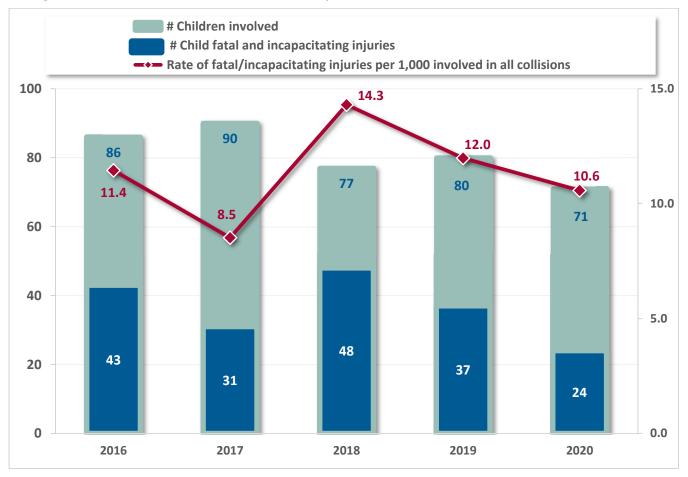


Figure 8. Children involved in Indiana alcohol-impaired collisions, 2016–20

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Geography of traffic injuries

While the most children were involved in collisions in urban areas in Indiana in 2020, these areas had the lowest fatality rates (7.1) (Figure 9). Exurban (16 per 1,000 involved) and rural areas (24 per 1,000 involved) had substantially higher fatality rates, while urban and suburban areas had similar rates (7 per 1,000 involved).

The map on Page 15 shows county-level injury rates per 1,000 children involved in traffic collisions. The median traffic injury rate per 1,000 children ages 0–14 was 1.5. A lower rate than in 2019. The five counties with the highest rates were Tipton (5.5), Spencer (2.8), Kosciusko (2.7), Scott (2.7), and Wayne (2.7) counties. There were two counties with that had rates of zero: Parke County in ICJI Traffic Safety Region 3 and Crawford County in ICJI Traffic Safety Region 5.

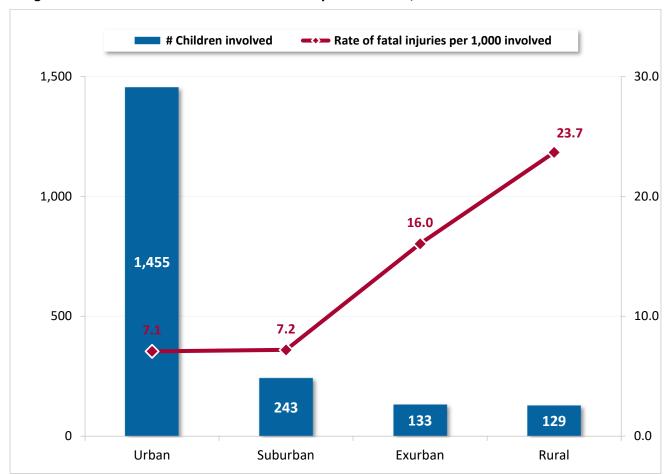
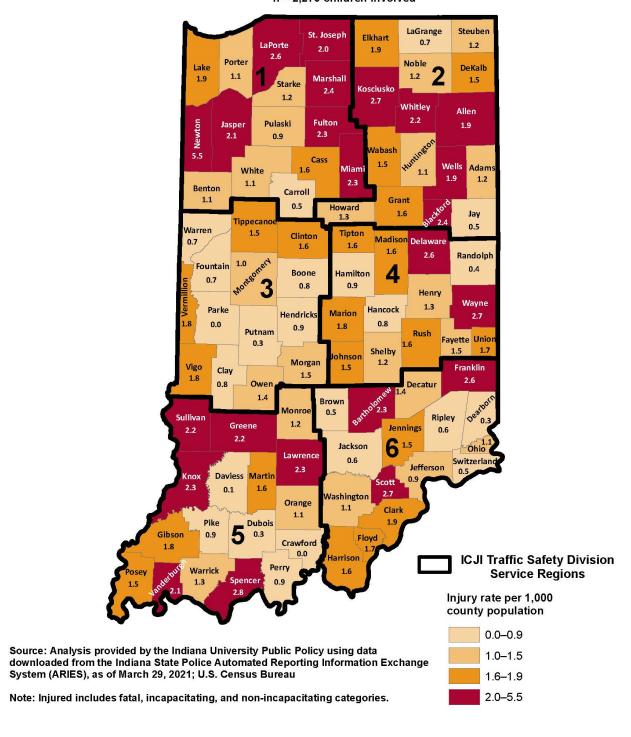


Figure 9. Children involved in Indiana collisions by census locale, 2020

Source: Analysis provided by the Indiana University Public Policy using data downloaded from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 29, 2021

Map 1. Children 0 to 14 years injured in collisions, by county and ICJI Traffic Safety Service Region, 2020

Median county injury rate = 1.5 Mean county injury rate = 1.5 n = 2,270 children involved



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, 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 2016 to 2020, it is calculated as (Value in 2020 / Value in 2016) 1/4–1.
- Census locale: urban is defined as Census 2000 Urban Areas (2007–2009) or Census 2010 Urban Areas (2010–2011). Suburban is defined 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).
- **Non-fatal**: includes incapacitating, non-incapacitating, possible, not reported, refused (treatment), and unknown injury categories.
- **Not injured**: includes individuals involved in collisions reported as null values in the injury status code field. While reporting officers are instructed to enter all drivers in ARIES, passengers are only to be entered in the crash report if an injury occurs; therefore, counts of those listed as not injured should be interpreted with caution.
- 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; (5) lap and harness; or (6) shoulder belts.

References

National Highway Traffic Safety Administration. (2019, July). Car Seat Recommendations for Children. https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/carseat-recommendations-for-children-by-age-size.pdf

Data sources

Indiana State Police. Automated Reporting Information Exchange System (ARIES), downloaded March 29, 2021

U.S. Census Bureau. (2018). Annual estimates of the resident population by single-year of age and sex for the United States and States, provided by the Indiana Business Research Center, Indiana University.