TRAFFIC SAFETY FACTS

CHILDREN, 2013

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HIGHLIGHTS

- **In 2013, 3,399 children (ages 0 to 14) were killed or injured in Indiana motor vehicle collisions. Approximately 6 percent of all children involved in crashes in the state were killed or experienced incapacitating injuries.**
- **A child is 2.7 times more likely to be killed or experience an incapacitating injury when unrestrained.**
- **In 2013, the rate of incapacitating injury per 100,000 population was 11.4 among the *4- to 7-year-old* age group and 20.2 in the *8- to 14-year-old* age group.**
- **Between 2009 and 2013, the *8- to 14-year-old* age group exhibited rates of restraint use of 85 percent or lower. In 2013, the *8- to 14–year-old* age group had the lowest rate of restraint use (82 percent), and restraint use among the *1- to 3-year-old* age group was the highest (97 percent).**
- **The rate of fatal and incapacitating injuries per 1,000 children involved in alcohol-impaired collisions rose from 98 per 1,000 in 2009 to a five-year (2009-2013) high rate of 133 in 2010, and was 67 in 2013.**
- **In 2013, the serious injury rate per 1,000 children involved in collisions in Indiana was lowest in *urban* (43 per 1,000) and *suburban* (71) areas and highest in *exurban* (77) and *rural* (101) locales.**

In 2013, 3,399 children (ages 0 to 14) were killed or injured in Indiana motor vehicle collisions. Approximately 6 percent of children involved in crashes in the state were killed (35 fatalities) or experienced *incapacitating* injuries (194). According to the National Highway Traffic Safety Administration (NHTSA), motor vehicle crashes remain the leading cause of death among children aged 4 and among children ages 11 through 14 (National Center for Statistics and Analysis, 2014). In 2012, NHTSA found that 1,168 children ages 14 and under were killed in traffic collisions. This accounted for 3 percent of 33,561 traffic fatalities in the United States.

Research has shown that the use of child restraints, including child safety seats and lap/shoulder belts, reduces the risk of fatal and incapacitating injuries. NHTSA strongly recommends that child occupants progress through four stages of restraint usage from birth to adulthood; revised guidelines were released in 2011 for this process (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.

This fact sheet summarizes information on traffic collisions involving children in Indiana between 2009 and 2013. It examines general trends, injury status by age group, restraint usage and seating position, alcohol-related crashes, and geographical analysis by census locale and county. Indiana collision data come from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 21, 2014.

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.

Source: NHTSA, http://www.safercar.gov/parents/RightSeat.htm, current as of June 24, 2014.

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GENERAL TRENDS

From 2009 to 2013, the number of children killed in Indiana traffic collisions increased 5 percent annually and the number experiencing incapacitating injuries remained fairly stable (Table 1). Between 2012 and 2013, the total number of child fatalities in Indiana traffic collisions rose by 30 percent, from 27 to 35. The number of children who experienced incapacitating injuries fell 7 percent, from 208 in 2012 to 194 in 2013. Based on the 2012 Indiana child population estimates (Table 2), the *8- to 14-year-old* age group is over-represented among child injuries—8- to 14-year-old children represent 48 percent of the Indiana child population but comprised 57 percent of child injuries in 2013. This age group also represented the highest injury rate (308 per 100,000 population). The lowest injury rate (157 per 100,000 population) was among the *less-than-1-year-old* age group. Among the *1- to 3-year old* age group that represents 19 percent of the Indiana child population, this cohort accounted for only 13 percent of injuries among children.

Table 1. Children injured or killed in Indiana traffic collisions by injury status and age group, 2009-2013

	2009		2010		2011		2012		2013		Annual rate of change	
	Count	%	Count	%	Count	%	Count	%	Count	%	2012-13	2009-13
Fatal	**29**	**100.0%**	**29**	**100.0%**	**30**	**100.0%**	**27**	**100.0%**	**35**	**100.0%**	**29.6%**	**4.8%**
Less than 1 year old	3	10.3%	2	6.9%	3	10.0%	0	0.0%	2	5.7%	na	-9.6%
1 to 3 years old	2	6.9%	4	13.8%	5	16.7%	11	40.7%	8	22.9%	-27.3%	41.4%
4 to 7 years old	5	17.2%	6	20.7%	7	23.3%	7	25.9%	8	22.9%	14.3%	12.5%
8 to 14 years old	19	65.5%	17	58.6%	15	50.0%	9	33.3%	17	48.6%	88.9%	-2.7%
Incapacitating	**197**	**100.0%**	**195**	**100.0%**	**152**	**100.0%**	**208**	**100.0%**	**194**	**100.0%**	**-6.7%**	**0%**
Less than 1 year old	12	6.1%	11	5.6%	9	5.9%	10	4.8%	3	1.5%	-70.0%	-29.3%
1 to 3 years old	28	14.2%	28	14.4%	17	11.2%	28	13.5%	29	14.9%	3.6%	0.9%
4 to 7 years old	41	20.8%	47	24.1%	30	19.7%	53	25.5%	35	18.0%	-34.0%	-3.9%
8 to 14 years old	116	58.9%	109	55.9%	96	63.2%	117	56.3%	127	65.5%	8.5%	2.3%
Non-incapacitating	**3,377**	**100.0%**	**3,502**	**100.0%**	**3,263**	**100.0%**	**3,256**	**100.0%**	**3,114**	**100.0%**	**-4.4%**	**-2.0%**
Less than 1 year old	213	6.3%	179	5.1%	168	5.1%	167	5.1%	116	3.7%	-30.5%	-14.1%
1 to 3 years old	496	14.7%	493	14.1%	447	13.7%	452	13.9%	393	12.6%	-13.1%	-5.7%
4 to 7 years old	765	22.7%	798	22.8%	789	24.2%	797	24.5%	829	26.6%	4.0%	2.0%
8 to 14 years old	1,903	56.4%	2,032	58.0%	1,859	57.0%	1,840	56.5%	1,776	57.0%	-3.5%	-1.7%
Other injuries	**50**	**100.0%**	**51**	**100.0%**	**44**	**100.0%**	**42**	**100.0%**	**56**	**100.0%**	**33.3%**	**2.9%**
Less than 1 year old	12	24.0%	18	35.3%	12	27.3%	10	23.8%	9	16.1%	-10.0%	-6.9%
1 to 3 years old	12	24.0%	11	21.6%	15	34.1%	14	33.3%	15	26.8%	7.1%	5.7%
4 to 7 years old	10	20.0%	9	17.6%	2	4.5%	5	11.9%	15	26.8%	200.0%	10.7%
8 to 14 years old	16	32.0%	13	25.5%	15	34.1%	13	31.0%	17	30.4%	30.8%	1.5%
Not injured	**528**	**100.0%**	**397**	**100.0%**	**365**	**100.0%**	**373**	**100.0%**	**339**	**100.0%**	**-9.1%**	**-10.5%**
Less than 1 year old	14	2.7%	9	2.3%	8	2.2%	7	1.9%	11	3.2%	57.1%	-5.9%
1 to 3 years old	19	3.6%	26	6.5%	29	7.9%	24	6.4%	23	6.8%	-4.2%	4.9%
4 to 7 years old	35	6.6%	28	7.1%	31	8.5%	24	6.4%	25	7.4%	4.2%	-8.1%
8 to 14 years old	460	87.1%	334	84.1%	297	81.4%	318	85.3%	280	82.6%	-11.9%	-11.7%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

Notes:

1) Includes individuals identified as *drivers, injured occupants, pedestrians,* and *pedalcyclists*.

2) The *less than 1 year old* age group does not include data records coded as *drivers* aged *0 years*, due to unavailable or invalid age reporting. Unknown *age* or *birthdate* often result in a default value of "zero years" in the ARIES database.

Table 2. Indiana child population estimates (2012) and traffic injuries (2013)

Age group	Estimated IN population	Share of IN child population	2013 total injuries	Share of IN child injuries	2013 injury rate per 100K
Less than 1 year old	82,933	6.3%	130	3.8%	156.8
1 to 3 years old	254,836	19.3%	445	13.1%	174.6
4 to 7 years old	353,100	26.7%	887	26.1%	251.2
8 to 14 years old	629,457	47.7%	1,937	57.0%	307.7
Total	**1,320,326**	**100.0%**	**3,399**	**100.0%**	**257.4**

Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014; U.S. Census Bureau

Notes:

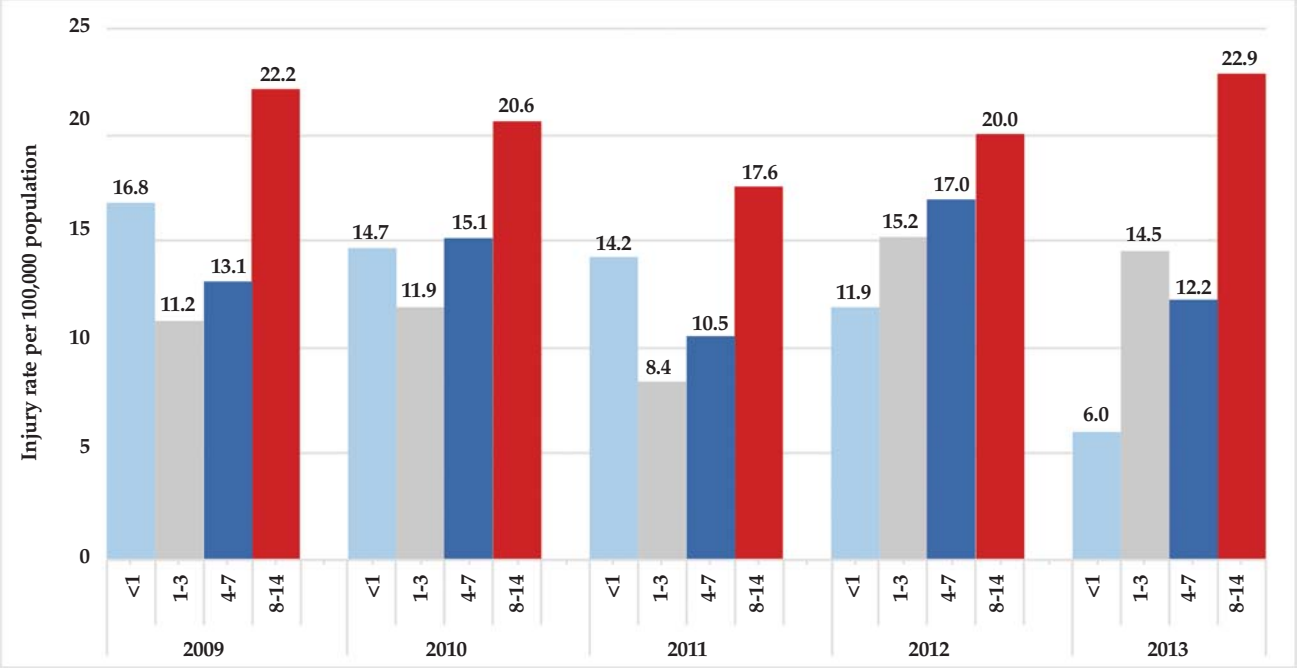
1) The most recent population estimates available by age are for 2012.

2) Total injuries are sum of children with fatal, incapacitating, or other injuries. Excludes individuals classified as *not injured*.

3) Total injuries for *less than 1 year old* excludes individuals classified as *driver*.

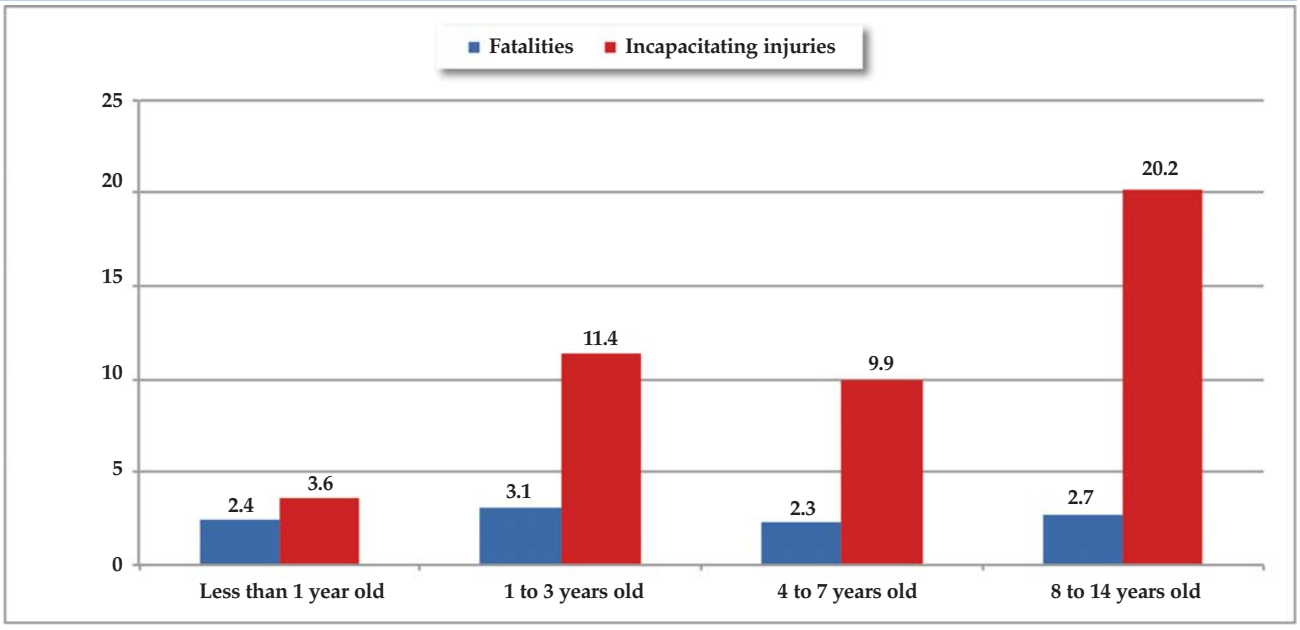
Figure 2 shows rates of child fatalities and incapacitating injuries in collisions (per 100,000 population) for 2009 through 2013. Over the five-year period, the rate of fatalities and injury for the *8- to 14-year-old* age group was consistently higher than other age groups over the five-year period. From 2009 to 2013, the rate of fatalities and incapacities injuries among the *less-than-1-year old* age group declined steadily from 16.8 per 100,000 population in 2009 to 6.0 in 2013. In 2013, the rate of fatalities in collisions (per 100,000 population) was highest in the *1- to 3-year-old* age group (3.1). In the *8- to 14-year-old* age group, the rate of incapacitating injury was 20.2 per 100,000 and 11.4 in the *1- to 3-year-old* age group (Figure 3).

Figure 2. Child fatal/incapacitating injury rates in Indiana collisions, per 100,000 population, by age group, 2009- 2013



Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014; U.S. Census Bureau
Note: U.S. Census 2008-2012 data was used to calculate rates; 2013 population estimates by age were not yet available.

Figure 3. Rates of child fatalities and incapacitating injuries in Indiana collisions, per 100,000 population, 2013



Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014; U.S. Census Bureau
Note: U.S. Census 2008-2012 data was used to calculate rates; 2013 population estimates by age were not yet available.

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 2013, child *occupants* experiencing incapacitating injuries (121) accounted for 53 percent of all fatal and incapacitating injuries (calculated from table). Between 2012 and 2013, the number of child *pedestrian* fatalities increased by 100 percent, from 3 to 6; the number of child pedestrians experiencing *incapacitating injuries* rose by 28 percent, from 36 to 46. While drivers experiencing *incapacitating injuries* increased by 17 percent between 2012 and 2013, over the five year period from 2009 to 2013, the number of *drivers* killed declined 17 percent annually.[1]

Table 3. Children killed or injured in Indiana traffic collisions by injury status and person type, 2009-2013

	2009		2010		2011		2012		2013		Annual rate of change	
	Count	%	Count	%	Count	%	Count	%	Count	%	2012-13	2009-13
Fatal	**29**	**100.0%**	**29**	**100.0%**	**30**	**100.0%**	**27**	**100.0%**	**35**	**100.0%**	**29.6%**	**4.8%**
Driver	1	3.4%	1	3.4%	1	3.3%	1	3.7%	2	5.7%	na	18.9%
Injured occupant	20	69.0%	18	62.1%	21	70.0%	23	85.2%	25	71.4%	8.7%	5.7%
Pedalcyclist	0	0.0%	1	3.4%	1	3.3%	0	0.0%	2	5.7%	na	na
Pedestrian	8	27.6%	9	31.0%	7	23.3%	3	11.1%	6	17.1%	100.0%	-6.9%
Incapacitating	**197**	**100.0%**	**195**	**100.0%**	**152**	**100.0%**	**208**	**100.0%**	**194**	**100.0%**	**-6.7%**	**-0.4%**
Driver	15	7.6%	6	3.1%	10	6.6%	6	2.9%	7	3.6%	16.7%	-17.3%
Injured occupant	127	64.5%	134	68.7%	98	64.5%	145	69.7%	121	62.4%	-16.6%	-1.2%
Pedalcyclist	15	7.6%	15	7.7%	16	10.5%	21	10.1%	20	10.3%	-4.8%	7.5%
Pedestrian	40	20.3%	40	20.5%	28	18.4%	36	17.3%	46	23.7%	27.8%	3.6%
Non-incapacitating injuries	**3,377**	**100.0%**	**3,502**	**100.0%**	**3,263**	**100.0%**	**3,256**	**100.0%**	**3,114**	**100.0%**	**-4.4%**	**-2.0%**
Driver	73	2.2%	65	1.9%	78	2.4%	63	1.9%	61	2.0%	-3.2%	-4.4%
Injured occupant	2,834	83.9%	2,988	85.3%	2,750	84.3%	2,794	85.8%	2,656	85.3%	-4.9%	-1.6%
Pedalcyclist	238	7.0%	203	5.8%	189	5.8%	177	5.4%	168	5.4%	-5.1%	-8.3%
Pedestrian	232	6.9%	246	7.0%	246	7.5%	222	6.8%	229	7.4%	3.2%	-0.3%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

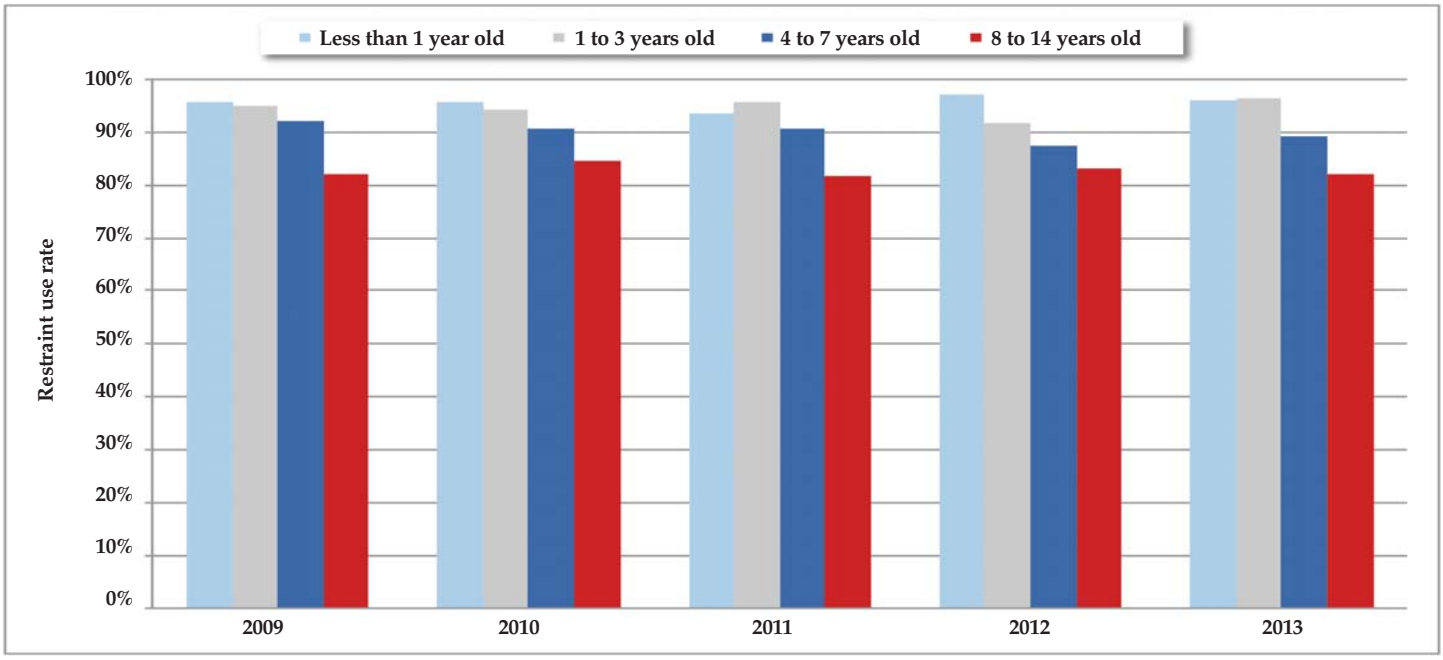
[1]Due to possible ARIES reporting errors designating very young children as *drivers*, this fact sheet's analysis does not include children aged '0' who were categorized as drivers. It is possible that other child age groups include similar miscategorizations.

RESTRAINT USE AND SEATING POSITION

Restraint use rates among children in traffic collisions tend to decline as children get older (Figure 4). In 2013, the *8- to 14-year-old* age group had the lowest rate of restraint use (82 percent). Between 2009 and 2013, this age group exhibited rates of restraint use consistently lower than 85 percent. The highest rate of restraint use over the five-year period was 97 percent among children *less-than-1-year old* in 2012; the rate for 2013 was 96 percent.

Table 4 shows the risk of *fatal* and *incapacitating* injury when child vehicle *occupants* were unrestrained. In 2013, among all restrained children involved in collisions, 4 percent were killed or experienced incapacitating injuries, while 11 percent of unrestrained child occupants were killed or sustained such injuries. This indicates that a child is 2.7 times more likely to be killed or experience an incapacitating injury when unrestrained. Unrestrained occupants in the *1- to 3-year old* age group were 6.8 times more likely to be killed or experience incapacitating injuries than children in the same age group who were properly restrained. These relative risk ratios were statistically significant ($p<0.05$).

Figure 4. Restraint use among children involved in Indiana traffic collisions, by age group, 2009-2013



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

Note: Restraint use rates are calculated based on individuals identified as *driver* or *injured occupant* where restraint use was known.

Table 4. Risk of fatal or incapacitating injury to child vehicle occupants involved in Indiana collisions, by restraint use, 2013

Age group	Restrained?	Fatal or incapacitating injuries	Non-serious injuries	Total	% Fatal/incap injury	Relative risk	Lower limit	Upper limit
Less than 1 year old	No	1	4	5	20.0%	7.6	1.0	60.7
	Yes	3	111	114	2.6%			
1 to 3 years old	No	4	9	13	30.8%	6.8*	2.6	17.3
	Yes	17	356	373	4.6%			
4 to 7 years old	No	9	68	77	11.7%	4.6*	2.1	9.9
	Yes	17	646	663	2.6%			
8 to 14 years old	No	26	238	264	9.8%	1.9*	1.3	3.0
	Yes	63	1,176	1,239	5.1%			
Total	No	40	319	359	11.1%	2.7*	1.8	3.8
	Yes	100	2,289	2,389	4.2%			

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

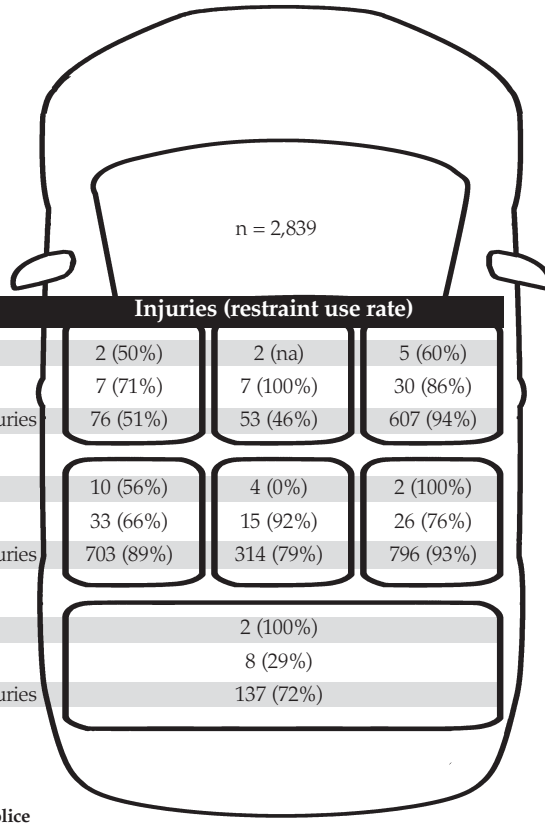
Notes:

1) **The *less than 1 year old* age group does not include data records coded as *drivers* aged *0 years,* due to unavailable or invalid age reporting. Unknown *age* or *birthdate* often result in a default value of "zero years" in the ARIES database.**
2) ***Non-serious* injuries include those reported as *non-incapacitating, possible, refused,* and *unknown* in the injury status field of the crash report.**
3) ***Relative risk* of *fatal or incapacitating injury* is the ratio of the percent of children in each age group killed or experiencing incapacitating injuries who were restrained compared to the percent killed or experiencing incapacitating injuries who were unrestrained. Ratios greater than 1 indicate a higher risk of fatality or incapacitating injury for individuals who were unrestrained.**
4) *** Indicates that *relative risk* ratios are significant at $p<0.05$ for child age groups *1 to 3 years* old, *4 to 7 years* of age, and *8 to 14 years* old. For example, in 95 out of 100 cases, the *relative risk* would fall within the *lower and upper limit* range presented.**

The number and restraint usage rates for children by injury type and seating position are shown in Figure 5. In 2013, the largest number of child fatalities occurred in the *rear-left* passenger seating position. Fifty-six percent of these 10 fatalities were restrained. The greatest number of incapacitating injuries was experienced by child passengers in the *front right* seating position (30); of those, 86 percent were restrained.

Approximately 30 percent of all child occupants killed or sustaining incapacitating injuries were identified as being in the *rear left* seating position. The relative risk of fatal or incapacitating injury was greater for unrestrained than restrained child occupants in all seating positions, with the exception of the *front center* position (Table 5). Child occupants seated in the *rear left* position who were unrestrained were 4.2 times more likely to suffer fatal and incapacitating injuries than those restrained.

Figure 5. Children in Indiana collisions by injury status, seating position, and restraint use, 2013



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

Notes:
1) Injuries include only children (ages 0-15) 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.

Table 5. Risk of fatal and incapacitating injury to children involved in Indiana collisions, by seating position, 2013

Seating position	Restrained?	Fatal or incapacitating injuries	Non-serious injuries	Total	% Fatal/incap injury	Relative risk	Lower limit	Upper limit
Front left (driver)	No	3	33	36	8.3%	0.6	0.2	2.2
	Yes	6	37	43	14.0%			
Front center	No	0	21	21	0.0%	na	na	na
	Yes	2	18	20	10.0%			
Front right	No	6	37	43	14.0%	2.9*	1.3	6.5
	Yes	28	545	573	4.9%			
Rear left	No	15	73	88	17.0%	4.2*	2.3	7.6
	Yes	26	613	639	4.1%			
Rear center	No	5	61	66	7.6%	1.7	0.6	4.8
	Yes	11	238	249	4.4%			
Rear right	No	6	52	58	10.3%	3.7*	1.6	8.8
	Yes	21	730	751	2.8%			
Far back/sleeper	No	5	36	41	12.2%	2.9	0.8	10.3
	Yes	4	92	96	4.2%			
Total	No	40	313	353	11.3%	2.7*	1.9	3.9
	Yes	98	2273	2371	4.1%			

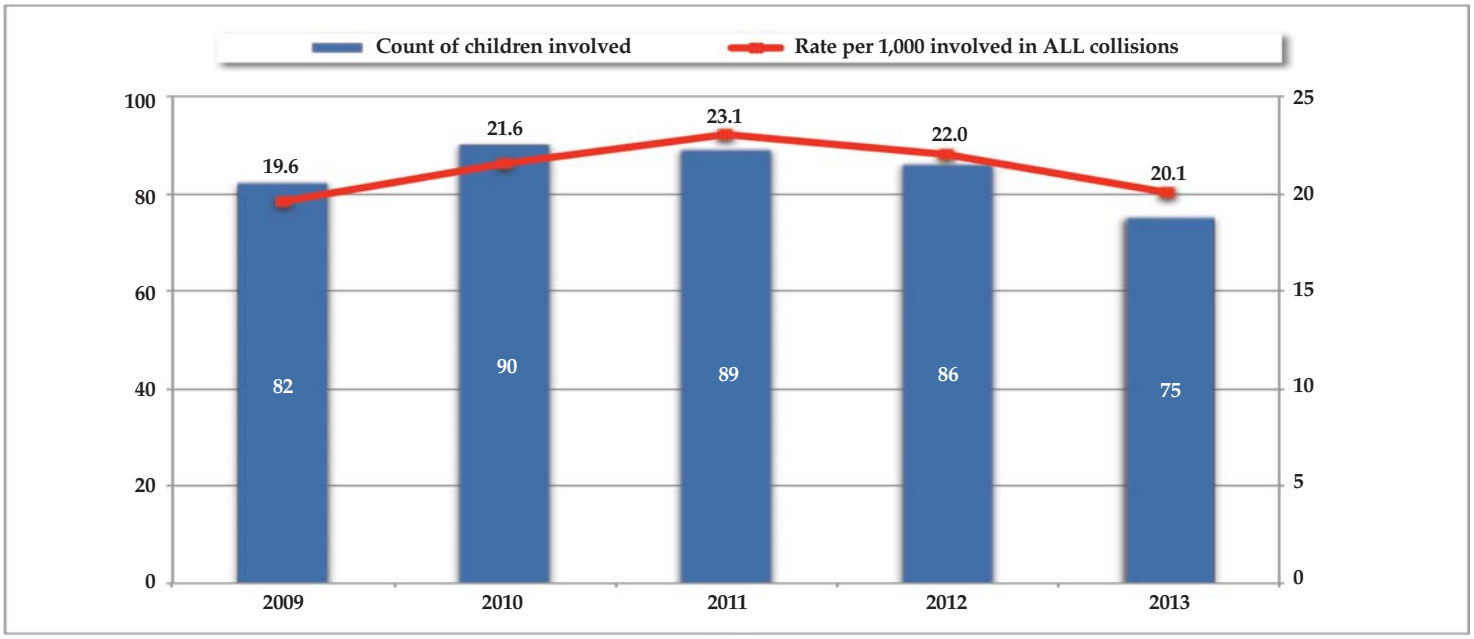
Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

Notes:
1) Limited to children identified as *drivers* or *injured occupants* where valid seating position was reported and restraint use was known.
2) *Non-serious* injuries include those reported as *non-incapacitating, possible, refused,* and *unknown* in the injury status field of the crash report.
3) *Relative risk* of *fatal or incapacitating injury* is the ratio of the percent of children in each seating position killed or experiencing incapacitating injuries who were restrained compared to the percent killed or experiencing incapacitating injuries who were unrestrained. Ratios greater than 1 indicate a higher risk of fatal or incapacitating injury for individuals who were unrestrained.
4) * Indicates relative risk ratios are significant at $p<0.05$ for *front right, rear left,* and *rear right* seating positions. For example, in 95 out of 100 cases, the relative risk would fall within the *lower and upper limit* range presented.

ALCOHOL-IMPAIRED COLLISIONS

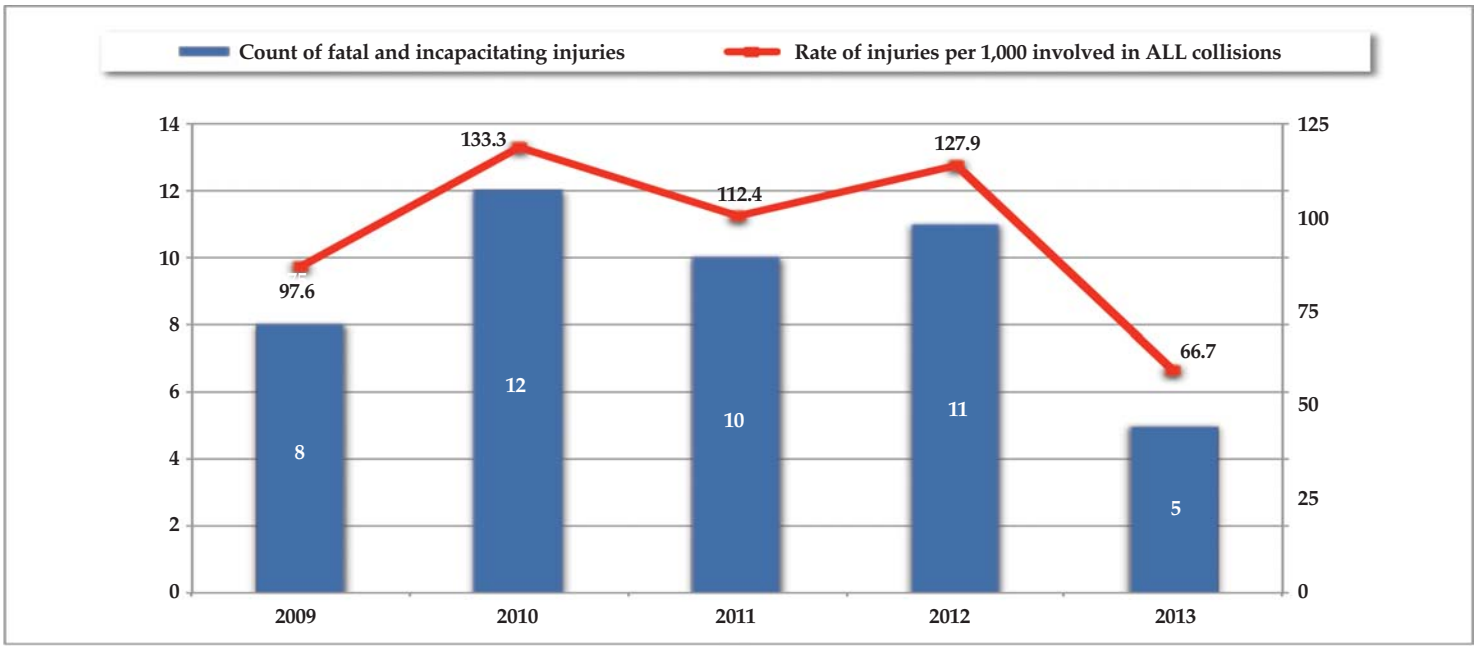
In 2013, 75 children were involved in alcohol-impaired traffic collisions (Figure 6), which involved a driver with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL). The number of children involved in alcohol-impaired collisions rose from 82 in 2009 to 90 in 2010. The number fell slightly in 2012 to 86 and to a five-year low of 75 in 2013. Over the five-year period, the rate of child involvement in alcohol-impaired collisions peaked in 2011 at 23.1 per 1,000 involved. Figure 7 shows the number and rate of *fatal* and *incapacitating* injuries per 1,000 children involved in alcohol-impaired collisions. The rate rose from 97.6 *fatal* and *incapacitating* injuries per 1,000 children involved in alcohol-impaired collisions in 2009 to a five-year high rate of 133.3 in 2010; in 2013, the rate fell to 66.7. In 2013, five children sustained *fatal* or *incapacitating* injuries in alcohol-impaired collisions.

Figure 6. Children involved in Indiana alcohol-impaired collisions, 2009-2013



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

Figure 7. Children killed or injured in Indiana alcohol-impaired collisions, 2009-2013



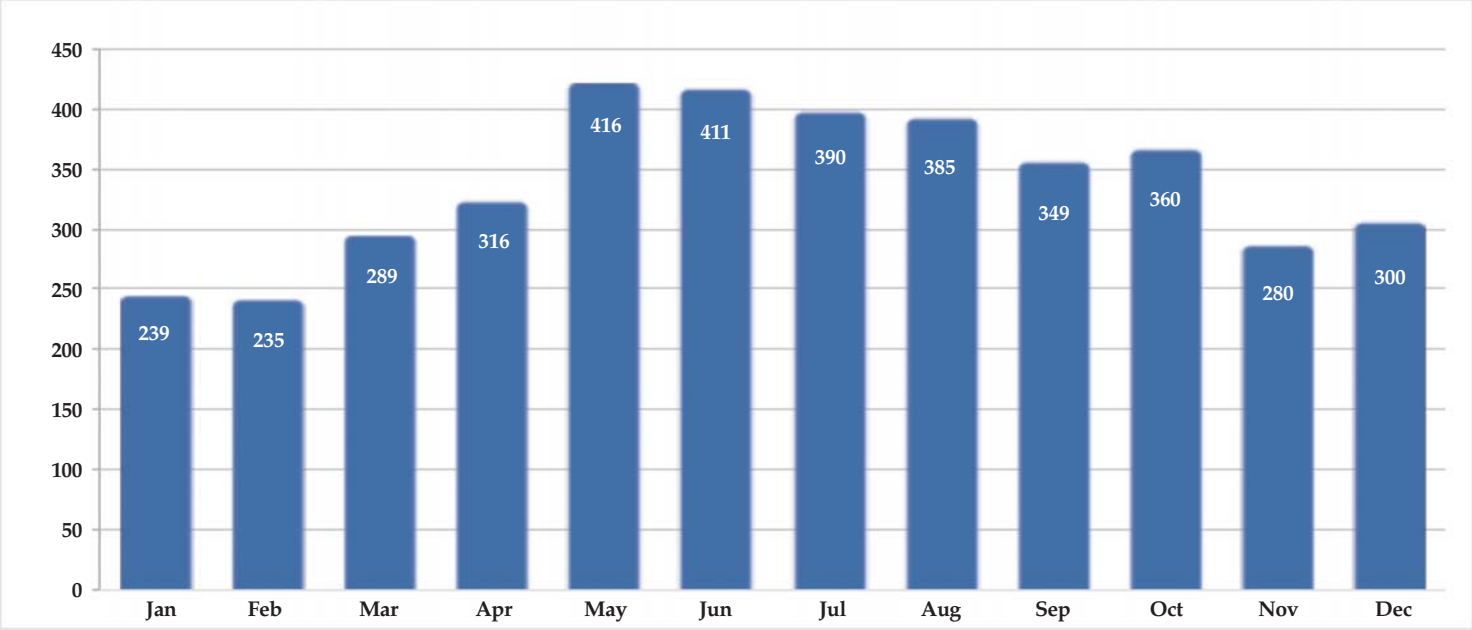
Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

MONTH, DAY OF WEEK, AND TIME OF DAY

The average number of collisions involving children that occurred each month for a five-year period (2009-2013) is depicted in Figure 8. Months with the highest average number of collisions involving children were in the late spring and summer—May (416), June (411), and July (390). Winter months, including January (239) and February (235), reflect the lowest monthly average counts for collisions involving children.

Figure 9 shows the number of collisions involving children by day of week and time of day (day/night). In 2013, the daily average count of day-time collisions involving children was 381. The daily average of night-time collisions involving children was 153. Daily counts by time of day follow a similar pattern with total day and night-time collisions involving children on Thursday, Friday, and Saturday exceeding the respective daily averages.

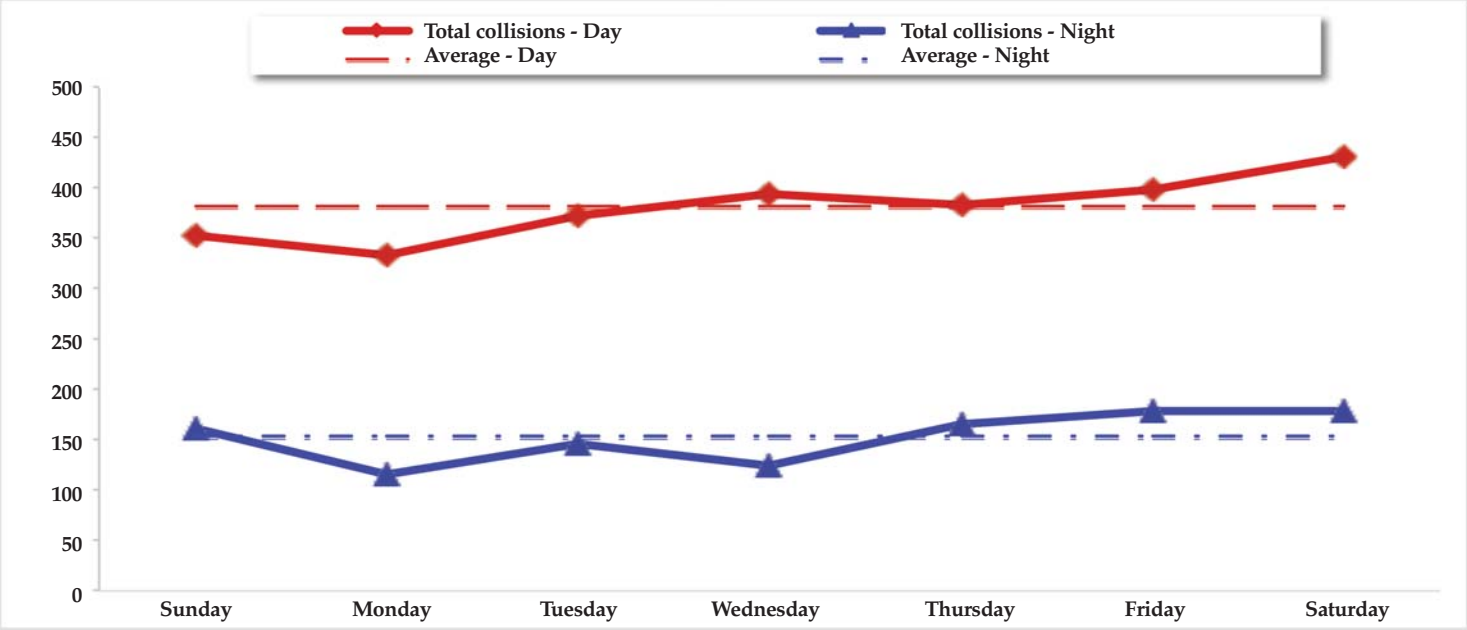
Figure 8. Indiana traffic collisions involving children, monthly average, 2009-2013



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

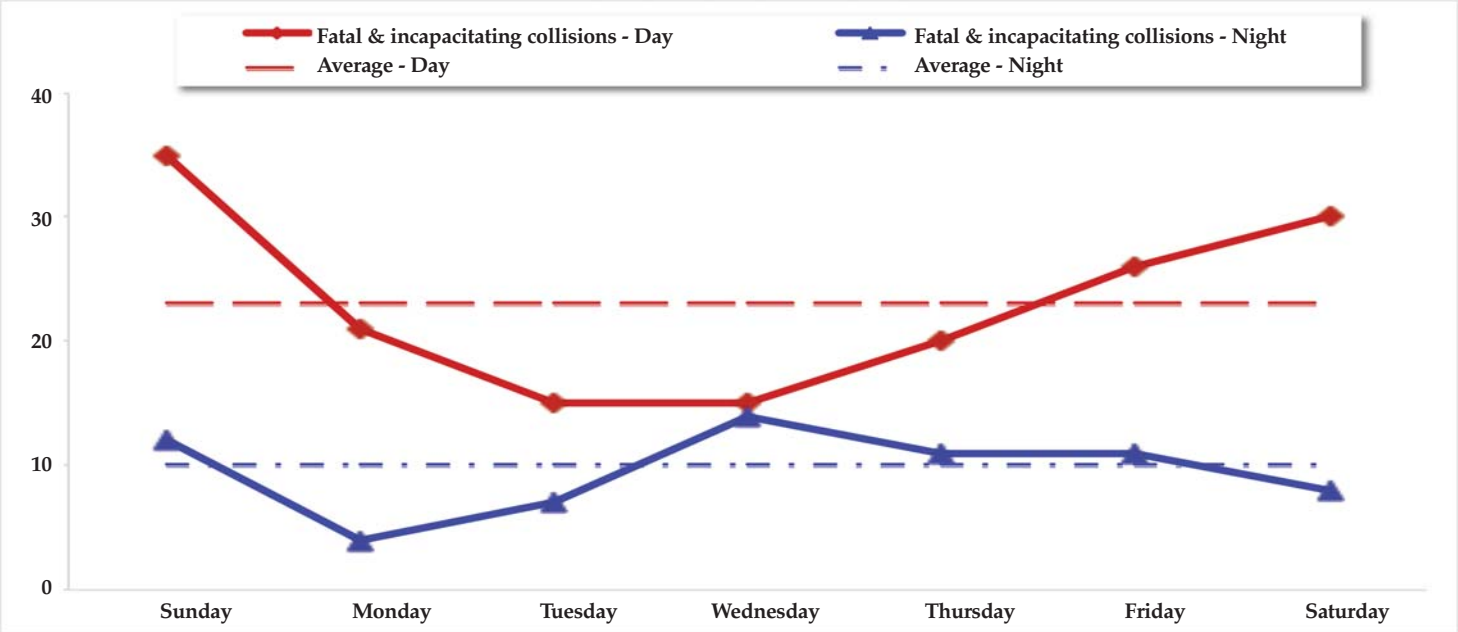
The number of fatal and incapacitating injury collisions involving children by day of week and time of day (day/night) is depicted in Figure 10. In 2013, the highest daily counts of fatal and incapacitating injury collisions involving children occurred during day time hours, peaking on Friday (26), Saturday (30), and Sunday (35). When compared to total collisions (see Figure 9), fatal and incapacitating injury collisions involving children by day of week and time of day reflect a dissimilar pattern. The highest number of night-time fatal and incapacitating injury collisions involving children occurred on Wednesday (14), while the lowest number of day-time fatal and incapacitating injury collisions involving children occurred on this day of the week.

Figure 9. Indiana traffic collisions involving children, by day of week and day/night, 2013



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014
Note: Day is defined as 6am - 5:59pm. Night is defined as 6pm - 5:59am.

Figure 10. Fatal and incapacitating injury collisions involving children, by day of week and day/night, 2013

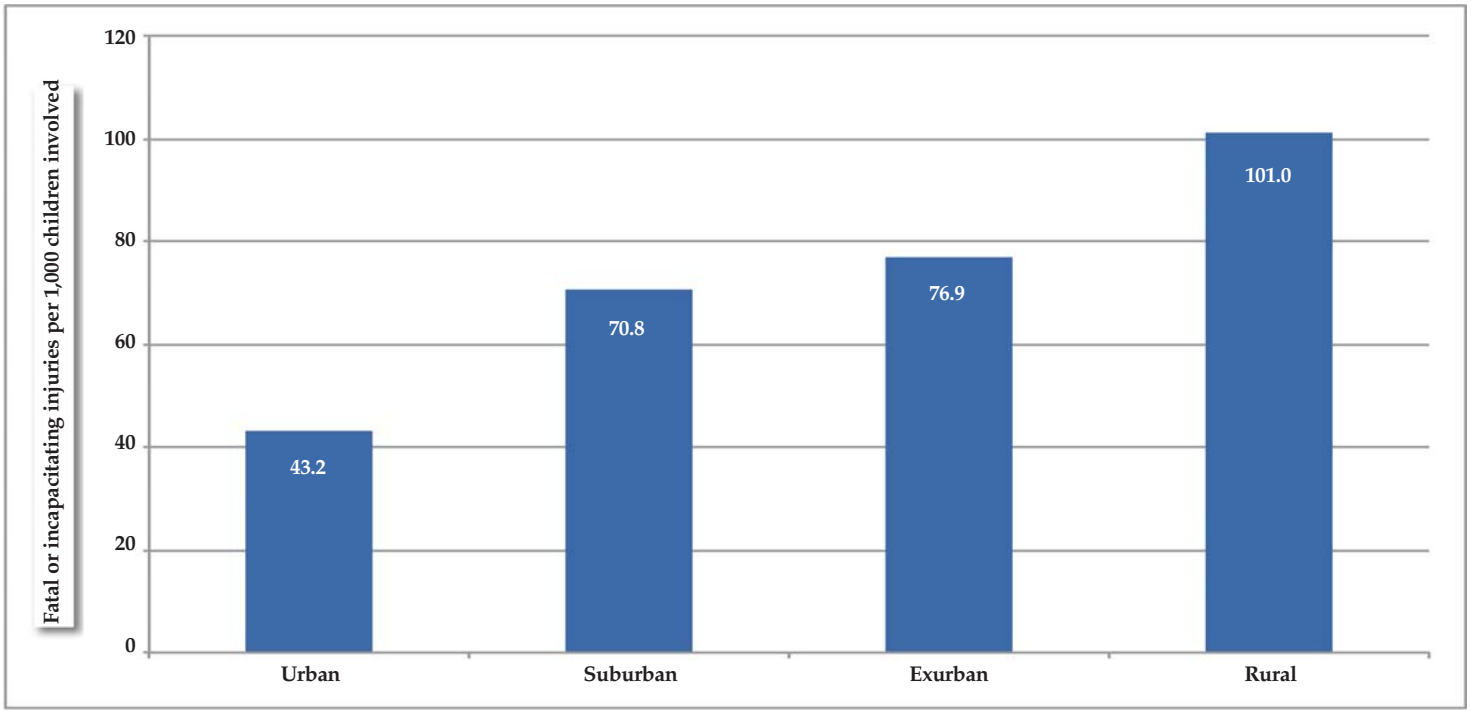


Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014
Note: Day is defined as 6am - 5:59pm. Night is defined as 6pm - 5:59am.

GEOGRAPHY OF TRAFFIC INJURIES

In 2013, the fatal and incapacitating injury rate per 1,000 children involved in traffic collisions in Indiana was lowest in *urban* (43.2 per 1,000) but substantially higher in *suburban* (70.8), *exurban* (76.9), and rural (101.0) locales (Figure 11). Maps 1 to 4 depict rates of child traffic injuries and fatalities by age group and county. The mean traffic injury/fatality rate per 1,000 for the *less-than-1-year* old age group was 1.5 (Map 1), while the mean rate for the *8- to 14-year-old* age group was 2.8 (Map 4).

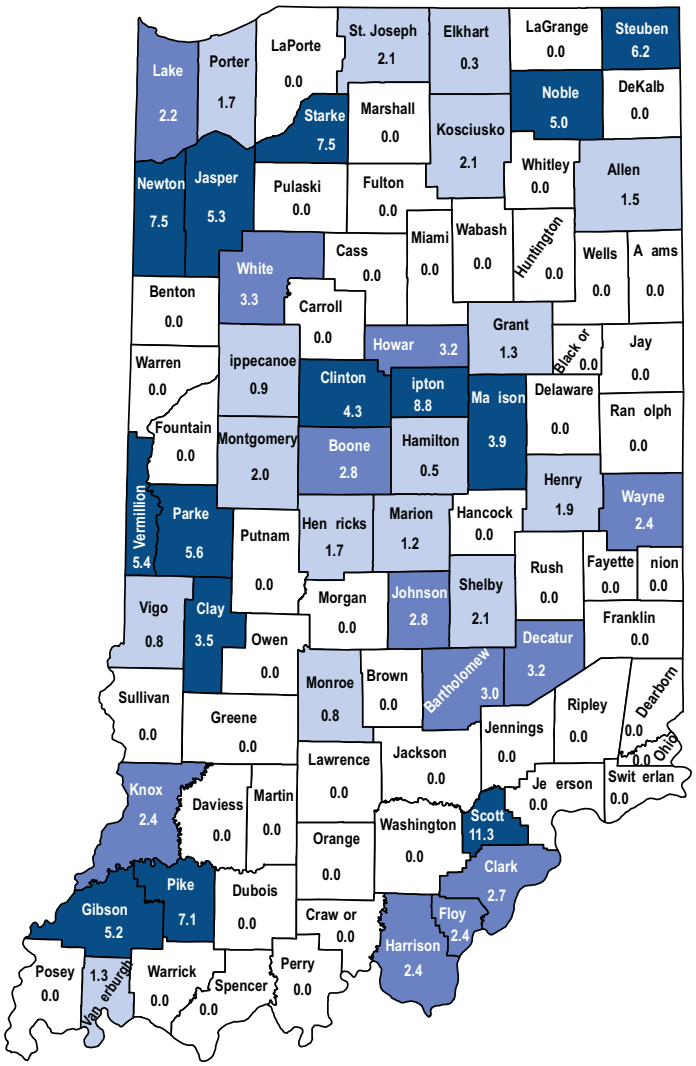
Figure 11. Children killed or injured in Indiana traffic collisions, by locale, 2013



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014

Child injury/fatality rates in Indiana traffic collisions, by county, 2013

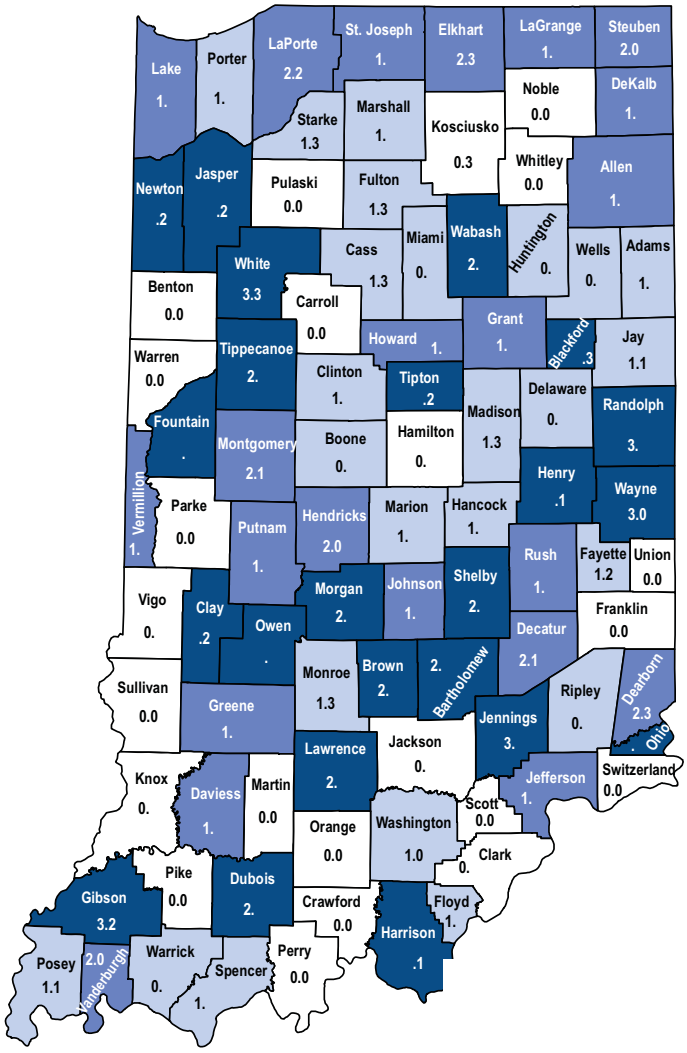
Map 1. Less than 1 year old
Median county injury/fatality rate = 0.0
Mean county injury/fatality rate = 1.5
n = 121 children involved



Injury/fatality rate per 1,000 population

- 0.0
- 0.1 to 2.1
- 2.2 to 3.3
- 3.4 to 11.3

Map 2. Ages 1 to 3 years old
Median county injury/fatality rate = 1.6
Mean county injury/fatality rate = 1.8
n = 430 children involved



Injury/fatality rate per 1,000 population

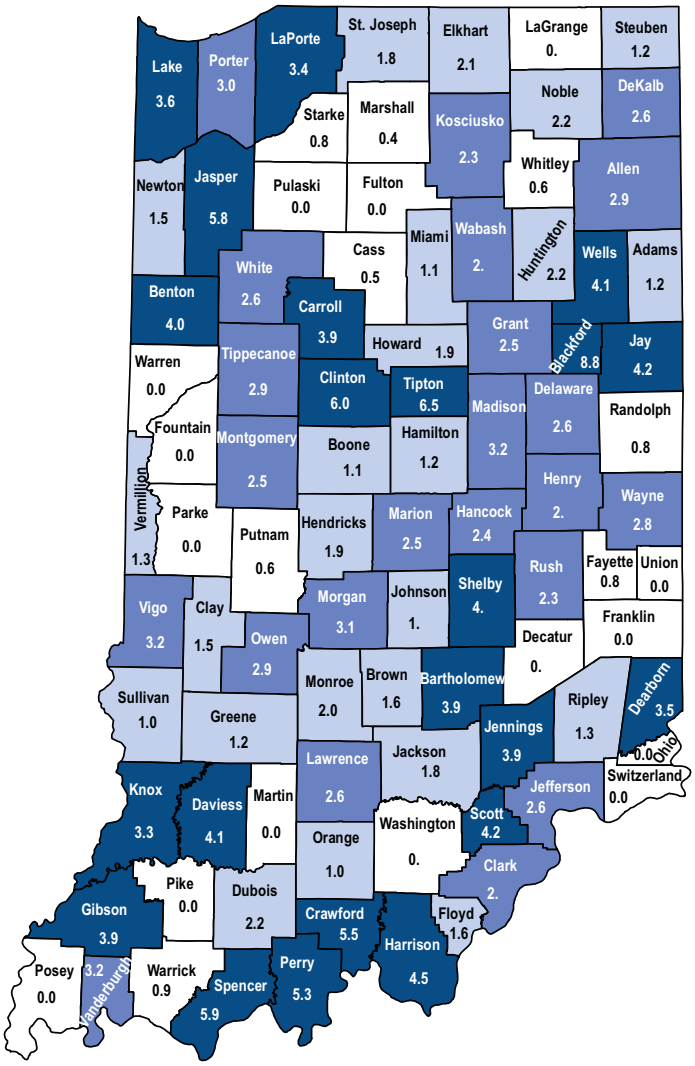
- 0.0 to 0.7
- 0.8 to 1.6
- 1.7 to 2.3
- 2.4 to 7.2

Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014; U.S. Census Bureau

Note: Includes child injuries reported as *fatal, incapacitating, non-incapacitating,* and *possible.*

Child injury/fatality rates in Indiana traffic collisions, by county, 2013

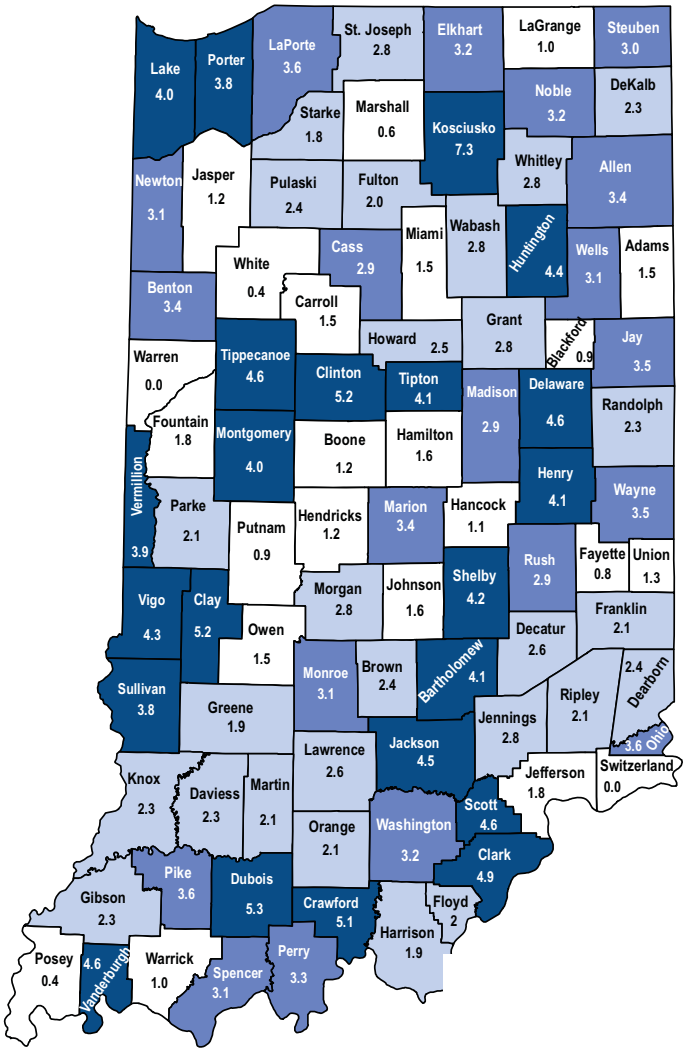
Map 3. Ages 4 to 7 years old
Median county injury/fatality rate = 2.2
Mean county injury/fatality rate = 2.3
n = 872 children involved



Injury/fatality rate per 1,000 population

- 0.0 - 0.9
- 1.0 to 2.2
- 2.3 to 3.2
- 3.3 to 8.8

Map 4. Ages 8 to 14 years old
Median county injury/fatality rate = 2.8
Mean county injury/fatality rate = 2.8
n = 1,920 children involved



Injury/fatality rate per 1,000 population

- 0.0 to 1.8
- 1.9 to 2.8
- 2.9 to 3.6
- 3.7 to 7.3

Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2014; U.S. Census Bureau

Note: Includes child injuries reported as *fatal, incapacitating, non-incapacitating,* and *possible.*

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 2009 to 2013, it is calculated as $(\text{Value in 2013}/\text{Value in 2009})^{1/4} - 1$.

- ***Census locale**: **Urban*** is defined as Census 2010 Urban Areas (expanded in 2010); ***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-incapacitating*** injuries include those injuries reported as *non-incapacitating* or *possible*.

- ***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.*

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National Center for Statistics and Analysis. (2014, April). *Children*, DOT HS 812 011, Washington DC: National Highway Traffic Safety Administration. Retrieved April 30, 2014 from http://www-nrd.nhtsa.dot.gov/Pubs/812011.pdf

National Highway Traffic Safety Administration. (2011, March). *Car Seat Recommendations for Children.*

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Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 21, 2014.

U.S. Census Bureau, Annual Estimates of the Resident Population by Single-Year of Age and Sex for the United States and States (2012), 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 fact sheets that, along with the annual Indiana Crash Fact Book, form the analytical foundation of traffic safety program planning and design in the state of Indiana. Funding for these publications is provided by ICJI and the National Highway Traffic Safety Administration.

An electronic copy of this document can be accessed via the PPI website (www.policyinstitute.iu.edu), the ICJI website (www.in.gov/cji/), or you may contact the PPI at 317-261-3000.

Traffic Safety Project

A collision produces three levels of data: collision, unit (vehicles), and individual. For this reason, readers should pay particular attention to the wording of statements about the data to avoid misinterpretations.

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic collisions. To help in the policy-making process, the Indiana University Public Policy Institute is collaborating with the Indiana Criminal Justice Institute to analyze 2013 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the eighth 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, 2013, 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 Indiana University Public Policy Institute (PPI) is a collaborative, multidisciplinary research institute within the Indiana University School of Public and Environmental Affairs (SPEA), Indianapolis. PPI serves as an umbrella organization for research centers affiliated with SPEA, including the Center for Urban Policy and the Environment and the Center for Criminal Justice Research. PPI also supports 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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