



NON-MOTORISTS 2018

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In 2018:

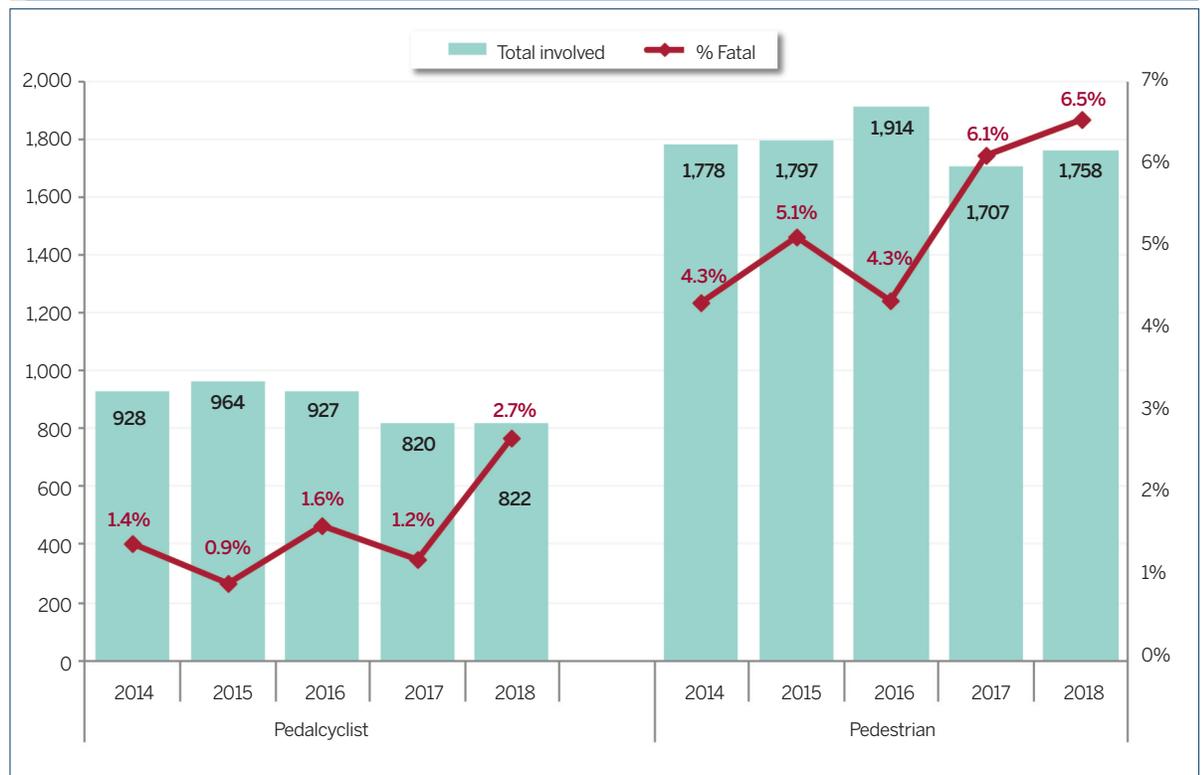
- There were 2,160 non-motorists—including pedalcyclists, pedestrians, and animal-drawn vehicle operators—killed or injured in Indiana collisions.
- Among non-motorists injured in crashes, 6 percent were killed (139 fatalities, a 21 percent increase from 2017).
- 822 pedalcyclists were involved in collisions—22 were killed and 610 were injured. 1,758 pedestrians were involved in collisions—115 were killed and 1,378 were injured.
- Pedestrians represented 13 percent of total traffic fatalities. Pedalcyclist and pedestrian fatalities together accounted for 16 percent of all traffic fatalities.
- Male pedalcyclists, particularly those between 15 and 20 years old, represented the highest proportion of pedalcyclists involved in crashes.
- Most non-motorists were involved in collisions that occurred on weekdays between 3–5:59 p.m.
- 18 pedalcyclists and 88 pedestrians were involved in speed-related collisions.

This fact sheet summarizes information on traffic collisions involving non-motorists in Indiana between 2014 and 2018. Non-motorists include pedalcyclists, pedestrians, and animal-drawn vehicle operators. It examines different dimensions of collisions involving non-motorists, in particular pedalcyclists and pedestrians. Indiana collision data come from the Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019.

As shown in Figure 1, between 2014 and 2018, the number of collisions involving pedalcyclists declined by 15 percent

from 964 during 2015 to a five-year low of 820 in 2017. Crashes involving pedestrians rose from 1,778 in 2014 to a five-year high of 1,914 in 2016 and declined to 1,707 in 2017. While the number of collisions involving pedalcyclists remained steady from 2017 to 2018, the rate of pedalcyclist fatalities increased from 1.2 percent of all pedalcyclist collisions in 2017 to 2.7 in 2018. Collisions involving pedestrians during 2018 rose 3 percent from 2017 (calculated from Figure 1) and the rate of pedestrian fatalities increased from 6.1 percent of all collisions involving pedestrians to 6.5.

Figure 1. Non-motorists involved in Indiana collisions and fatality rate, by person type, 2014–2018



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

In partnership with:



GENERAL TRENDS

From 2014 to 2018, approximately 1 percent of individuals involved in Indiana collisions were non-motorists (calculated from Table 1). The overall number of non-motorists involved in collisions has remained fairly constant during the past five years dropping by 1.3 percent annually. However, during this period, the number of non-motorists killed increased by 12 percent annually and the number non-motorists experiencing incapacitating injuries rose 24 percent. Of the three categories of non-motorists involved in collisions, on average between 2014 and 2018, pedestrians typically accounted for 64 percent of the total, followed by pedalcyclists (on average about 33 percent of total non-motorists) (calculated from Table 1). While the number of pedestrian fatalities has fluctuated within a relatively narrow range over the past five years (77 in 2014 to 115 in 2018), they accounted for a steadily increasing percentage of total traffic deaths—rising from 10 percent of fatalities in 2014 to 13 percent in 2018.

Table 1. Individuals involved in Indiana collisions, by person type and injury status, 2014–2018

Person type and injury status	Number of individuals					Annual rate of change	
	2014	2015	2016	2017	2018	2017–18	2014–18
All individuals	331,015	351,314	364,355	358,086	352,122	-1.7%	1.6%
Fatal	745	817	829	913	873	-4.4%	4.0%
Incapacitating	5,501	18,852	21,001	20,257	19,976	-1.4%	38.0%
Non-incapacitating	43,074	32,623	31,622	30,669	28,295	-7.7%	-10.0%
Not injured	281,695	299,022	310,903	306,247	302,978	-1.1%	1.8%
All non-motorists	2,818	2,867	2,934	2,654	2,679	0.9%	-1.3%
Fatal	90	102	98	115	139	20.9%	11.5%
Incapacitating	399	890	1,018	905	932	3.0%	23.6%
Non-incapacitating	1,832	1,332	1,228	1,087	1,089	0.2%	-12.2%
Not injured	497	543	590	547	519	-5.1%	1.1%
Non-motorists as % of total	0.9%	0.8%	0.8%	0.7%	0.8%	2.7%	-2.8%
Fatal	12.1%	12.5%	11.8%	12.6%	15.9%	26.4%	7.1%
Incapacitating	7.3%	4.7%	4.8%	4.5%	4.7%	4.4%	-10.4%
Non-incapacitating	4.3%	4.1%	3.9%	3.5%	3.8%	8.6%	-2.5%
Not injured	0.2%	0.2%	0.2%	0.2%	0.2%	-4.1%	-0.7%
Pedalcyclist	928	964	927	820	822	0.2%	-3.0%
Fatal	13	9	15	10	22	120.0%	14.1%
Incapacitating	89	254	269	255	237	-7.1%	27.7%
Non-incapacitating	624	478	412	357	373	4.5%	-12.1%
Not injured	202	223	231	198	190	-4.0%	-1.5%
Pedestrian	1,778	1,797	1,914	1,707	1,758	3.0%	-0.3%
Fatal	77	92	83	104	115	10.6%	10.5%
Incapacitating	303	624	734	631	682	8.1%	22.5%
Non-incapacitating	1,183	829	803	711	696	-2.1%	-12.4%
Not injured	215	252	294	261	265	1.5%	5.4%
Animal-drawn vehicle operator	112	106	93	127	99	-22.0%	-3.0%
Fatal	0	1	0	1	2	100.0%	N/A
Incapacitating	7	12	15	19	13	-31.6%	16.7%
Non-incapacitating	25	25	13	19	20	5.3%	-5.4%
Not injured	80	68	65	88	64	-27.3%	-5.4%

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

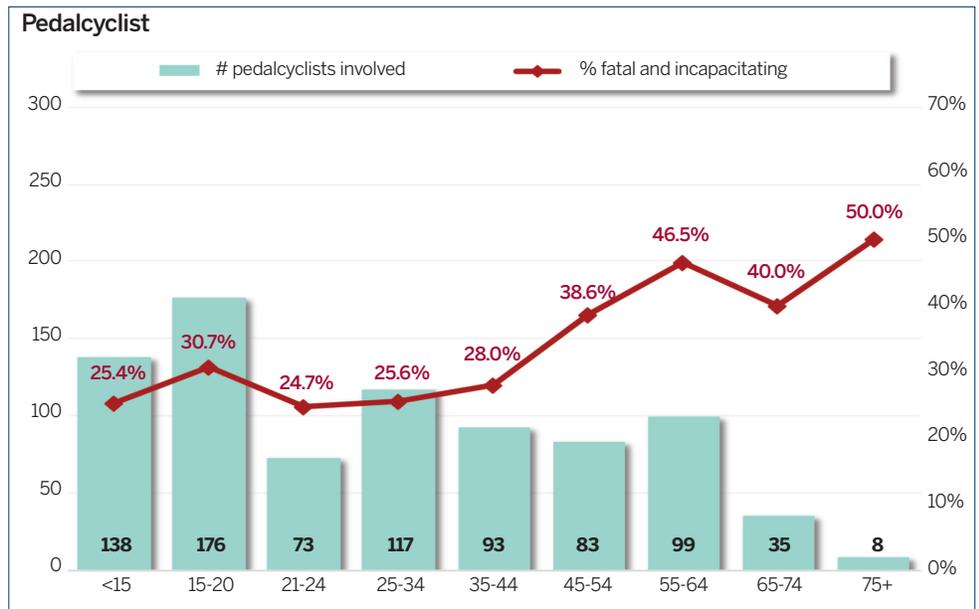
Notes:

- 1) Non-motorists include pedalcyclists, pedestrians, and animal-drawn vehicle operators.
- 2) Not injured status includes individuals involved in collisions reported as null values in the injury status code field.
- 3) 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.

NON-MOTORIST INJURIES BY AGE AND GENDER

Figure 2 shows the number of non-motorists involved in Indiana collisions by age and proportion that experienced fatal and incapacitating injuries. The majority (61 percent) of pedalcyclists and 49 percent of pedestrians involved in Indiana collisions during 2018 were 34 years of age or younger. Across age group categories displayed in Figure 2, the largest group of pedalcyclists (176) involved in crashes was 15- to 20-years-old. Among pedestrians involved in collisions, the largest number (290) were in the 25- to 34-year old age category. The probability of being killed or injured increased with age among pedalcyclists. In 2018, the mean age of pedalcyclists killed or injured in traffic crashes was 36.6 years and 42.3 years among pedestrians (not shown in table).

Figure 2. Non-motorists involved in Indiana collisions and fatal and incapacitating injury rate, by person type and age group, 2018



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

Table 2 includes the percentage of pedestrians and pedalcyclists involved in crashes by gender and age group. On average between 2014 and 2018, 80 percent of pedalcyclists and 58 percent of pedestrians involved in Indiana traffic collisions were male (calculated from Table 2). In 2018, male

pedalcyclists 34 years of age and younger accounted for 48 percent of collisions involving pedalcyclists, compared with 14 percent of collisions that involved female pedalcyclists in this age group.

Table 2. Proportion of non-motorists involved in Indiana collisions, by person type, age group, and gender, 2014–2018

Pedalcyclist

Age group	2014		2015		2016		2017		2018	
	Female	Male								
<15	4.4%	18.3%	6.7%	17.6%	4.5%	15.6%	4.0%	17.1%	4.4%	12.4%
15–20	3.9%	14.5%	4.5%	12.9%	4.1%	15.6%	3.5%	15.5%	4.6%	16.8%
21–24	4.2%	7.8%	1.8%	7.5%	1.3%	8.4%	2.0%	9.5%	1.7%	7.2%
25–34	3.1%	11.1%	2.1%	10.7%	1.7%	11.7%	3.8%	10.4%	2.9%	11.3%
35–44	1.3%	7.2%	1.8%	7.4%	2.4%	8.1%	2.8%	5.4%	1.9%	9.4%
45–54	1.3%	9.8%	2.6%	10.0%	1.8%	9.0%	1.8%	8.9%	0.7%	9.4%
55–64	1.5%	7.0%	1.5%	8.2%	1.8%	8.2%	1.5%	8.1%	1.8%	10.2%
65–74	0.4%	3.0%	0.7%	3.1%	0.5%	3.9%	0.4%	3.9%	0.5%	3.8%
75+	0.2%	0.9%	0.3%	0.8%	0.1%	1.2%	0.1%	1.1%	0.5%	0.5%
All ages	20.4%	79.6%	21.9%	78.1%	18.3%	81.7%	20.0%	80.0%	19.1%	80.9%

Pedestrian

Age group	2014		2015		2016		2017		2018	
	Female	Male								
<15	6.4%	8.9%	5.2%	9.9%	5.4%	10.2%	4.8%	9.2%	5.2%	6.7%
15–20	4.3%	7.6%	5.5%	8.5%	5.5%	6.9%	5.7%	7.5%	5.7%	6.5%
21–24	3.0%	5.1%	3.6%	4.7%	3.2%	5.2%	3.8%	3.9%	3.9%	4.1%
25–34	6.5%	8.6%	5.7%	10.0%	5.5%	8.6%	7.2%	8.5%	7.3%	9.2%
35–44	5.3%	7.9%	4.9%	6.0%	4.9%	7.2%	5.0%	6.6%	5.1%	7.3%
45–54	5.4%	7.9%	5.6%	7.8%	5.4%	7.7%	5.4%	8.9%	4.7%	8.0%
55–64	4.4%	6.6%	4.6%	7.5%	5.7%	7.4%	5.3%	6.7%	5.5%	7.6%
65–74	3.8%	3.3%	2.8%	3.1%	3.5%	3.8%	4.0%	3.5%	3.2%	4.4%
75+	2.7%	2.3%	2.2%	2.3%	2.0%	2.0%	1.5%	2.3%	3.1%	2.6%
All ages	41.8%	58.2%	40.1%	59.9%	41.1%	58.9%	42.8%	57.2%	43.6%	56.4%



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

Note: Excludes unknown gender and invalid age.

TIME OF DAY, DAY OF WEEK, AND MONTH

Table 3 illustrates collisions involving pedalcyclists and pedestrians by day of week and time of day, divided into eight 3-hour intervals starting at midnight. Among both pedalcyclists and pedestrians involved in collisions during 2018, the count was highest on weekdays with the highest number

among both pedalcyclists (142) and pedestrians (287) on Tuesdays. The 3–5:59 p.m. time period had the highest percentage of collisions involving both pedalcyclists (26 percent) and pedestrians (22 percent). In 2018, two-thirds (66 percent) of all collisions involving pedalcyclists and 57 percent involving pedestrians occurred during the afternoon and evening hours (noon–8:59 p.m.)

Table 3. Non-motorists involved in Indiana collisions, by person type, time of day, and day of week, 2018

Pedalcyclist

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total by time of day	% by time of day
Midnight-2:59 a.m.	4	1	1	1	3	1	3	14	1.7%
3-5:59 a.m.	2	3	1	0	4	6	1	17	2.1%
6-8:59 a.m.	1	22	14	15	18	14	3	87	10.6%
9-11:59 a.m.	8	12	17	13	16	12	17	95	11.6%
Noon-2:59 p.m.	19	19	31	18	30	31	18	166	20.2%
3-5:59 p.m.	20	33	40	35	33	31	24	216	26.3%
6-8:59 p.m.	22	15	30	29	19	30	14	159	19.3%
9-11:59 p.m.	7	14	8	5	13	12	9	68	8.3%
Total	83	119	142	116	136	137	89	822	100.0%
% by day	10.1%	14.5%	17.3%	14.1%	16.5%	16.7%	10.8%	100.0%	

Pedestrian

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total by time of day	% by time of day
Midnight-2:59 a.m.	16	8	7	7	5	13	7	63	3.6%
3-5:59 a.m.	9	12	9	19	6	3	18	76	4.3%
6-8:59 a.m.	7	54	41	43	31	23	19	218	12.4%
9-11:59 a.m.	17	29	38	16	23	28	34	185	10.5%
Noon-2:59 p.m.	19	38	49	40	42	40	31	259	14.7%
3-5:59 p.m.	28	46	68	50	82	63	50	387	22.0%
6-8:59 p.m.	40	37	45	53	51	61	61	348	19.8%
9-11:59 p.m.	17	27	30	32	31	32	53	222	12.6%
Total	153	251	287	260	271	263	273	1,758	100.0%
% by day	8.4%	15.7%	14.4%	16.3%	13.5%	16.6%	15.1%	100.0%	



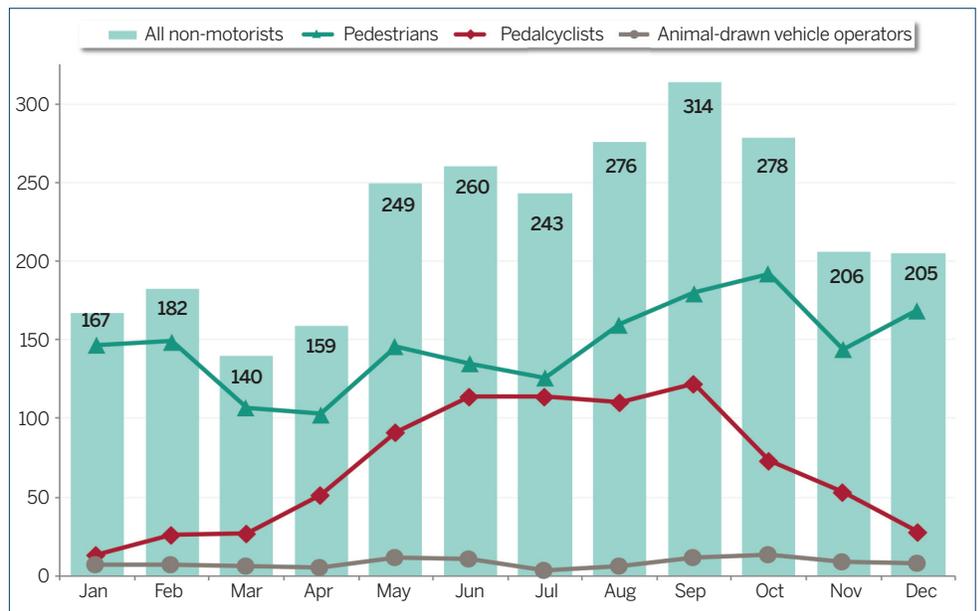
Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019

The number of non-motorists involved in Indiana collisions by month during 2018 is shown in Figure 3. Over two-thirds (68 percent) of non-motorists were involved in traffic collisions between May and November. This increase coincides with a larger number of pedalcyclists involved in crashes between June and September and an increase in pedestrians involved in crashes during the months of September and October. The number of animal-drawn vehicle operators involved in collisions peaked in May, September, and October.

ALCOHOL-IMPAIRED COLLISIONS

In 2018, 18 pedestrians were involved in alcohol-impaired crashes (Table 4), which involved either a driver or non-motorist with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL). The average number of pedalcyclists in alcohol-impaired collisions between 2014 and 2018 was 4. The number of pedestrians involved in alcohol-impaired collisions increased from 33 in 2014 to a five-year high of 41 in 2015 and declined to 18 in 2018. None of the pedestrians were reported to be impaired. In 2018, 3 pedestrian collisions that were alcohol-impaired resulted in fatalities.

Figure 3. Non-motorists involved in collisions, by person type, and month, 2018



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

Table 4. Non-motorists involved in Indiana collisions, by person type, injury status, and alcohol impairment, 2014–2018

	2014			2015			2016			2017			2018		
	Total involved	Alcohol-impaired	% impaired												
Pedalcyclist	928	4	0.4%	964	8	0.8%	927	5	0.5%	820	0	0.0%	822	2	0.2%
Fatal	13	1	7.7%	9	1	11.1%	15	1	6.7%	10	0	0.0%	22	0	0.0%
Incapacitating	89	0	0.0%	254	3	1.2%	269	0	0.0%	255	0	0.0%	237	1	0.4%
Non-incapacitating	624	3	0.5%	478	2	0.4%	412	3	0.7%	357	0	0.0%	373	1	0.3%
Not injured	202	0	0.0%	223	2	0.9%	231	1	0.4%	198	0	0.0%	190	0	0.0%
Pedestrian	1,778	33	1.9%	1,797	41	2.3%	1,914	37	1.9%	1,707	30	1.8%	1,758	18	1.0%
Fatal	77	2	2.6%	92	4	4.3%	83	5	6.0%	104	4	3.8%	115	3	2.6%
Incapacitating	303	9	3.0%	624	22	3.5%	734	17	2.3%	631	8	1.3%	682	6	0.9%
Non-incapacitating	1,183	17	1.4%	829	13	1.6%	803	12	1.5%	711	11	1.5%	696	6	0.9%
Not injured	215	5	2.3%	252	2	0.8%	294	3	1.0%	261	7	2.7%	265	3	1.1%

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

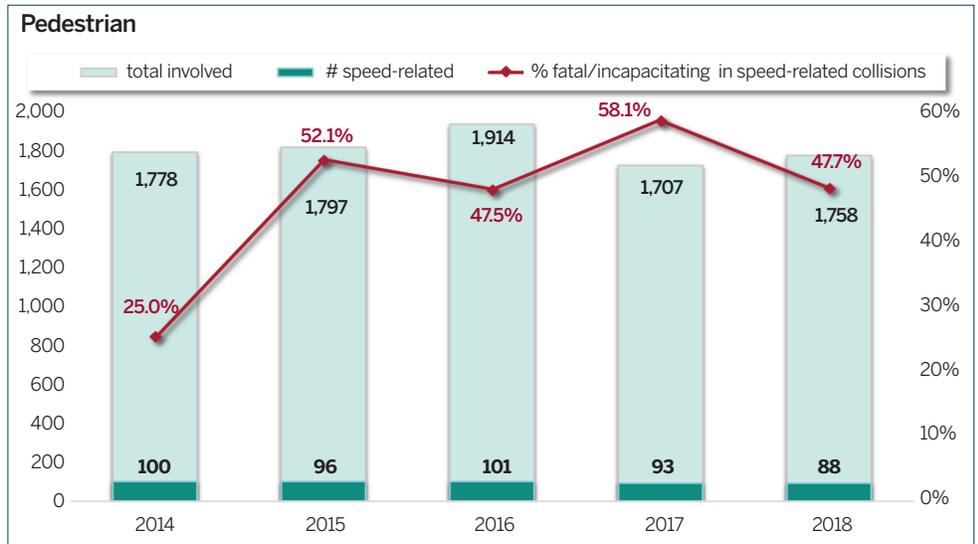
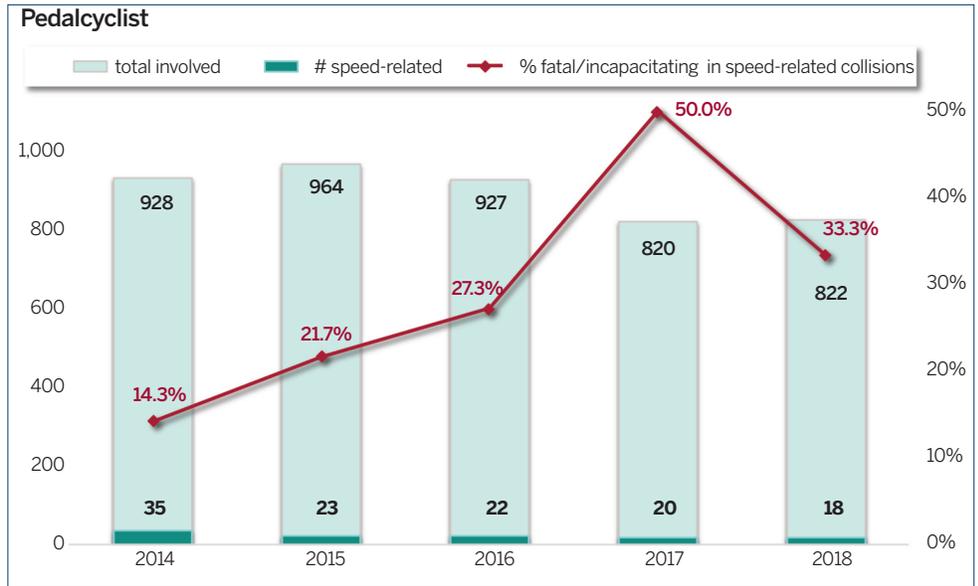
Notes:

- 1) Alcohol-impaired represents the count of non-motorists involved in collisions with drivers having a reported BAC of 0.08 g/dL.
- 2) Trends related to Indiana alcohol-impaired crashes should be interpreted with caution. Counts were current as of the March 18, 2019 ARIES data extract and are likely to change as pending BAC test results are finalized and reported into the ARIES crash database.
- 3) 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.

SPEED-RELATED COLLISIONS

The number of pedalcyclists in speed-related collisions has steadily declined from 35 in 2014 to a five-year low of 18 in 2018 (Figure 4). On average between 2014 and 2018, 5 percent of collisions involving pedestrians were speed-related crashes (not shown in Figure 4). In 2018, 88 pedestrians were involved in speed-related traffic collisions. The proportion of both pedalcyclists and pedestrians who experienced fatal and incapacitating injuries in speed-related crashes rose steadily between 2014 and 2017 before declining in 2018.

Figure 4. Non-motorists involved in Indiana collisions, by person type, speed involvement, and fatal and incapacitating injury rate, 2014–2018



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

Notes:

- 1) A collision is defined as speed-related in Indiana ARIES data if any of the following conditions are met: unsafe speed or speed too fast for weather conditions is listed as the primary or a contributing factor of the collision; or a vehicle driver is issued a speeding citation.
- 2) 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.

NON-MOTORIST ACTION AND ATTRIBUTABILITY

The most common actions of pedestrians and pedalcyclists involved in 2018 collisions were related to crossing at intersection, crossing not at intersection, and being on roadway (Table 5). Among pedestrians specifically, crossing not at intersection (29 percent) was the most frequent action resulting in traffic collisions (calculated from Table 5). Pedalcyclist actions related to crossing at intersection represented 37 percent (153 of 415) of crashes involving pedalcyclists in 2018. Both pedalcyclists (88 percent) and pedestrians (73 percent) were more likely to be attributable in crashes with a non-motorist action of crossing not at intersection.

Table 5. Non-motorists involved in Indiana collisions, by person type, action, and attributability, 2018

Pedalcyclist			
Action	Total involved	# attributable to pedalcyclist	% attributable to pedalcyclist
Crossing at intersection	274	153	55.8%
On roadway	115	53	46.1%
Crossing not at intersection	56	49	87.5%
Moving	78	35	44.9%
Against traffic	35	28	80.0%
Not in roadway	26	15	57.7%
With traffic	45	9	20.0%
On designated non-motorist lane	29	9	31.0%
On shoulder	18	3	16.7%
Other	44	23	52.3%
Unknown	102	38	37.3%
Total	822	415	50.5%

Pedestrian			
Action	Total involved	# attributable to pedestrian	% attributable to pedestrian
Crossing not at intersection	266	194	72.9%
On roadway	272	140	51.5%
Crossing at intersection	396	119	30.1%
Moving	111	24	21.6%
Not in roadway	119	16	13.4%
Against traffic	28	16	57.1%
With traffic	36	12	33.3%
Standing	64	7	10.9%
Getting in or out of vehicle	37	6	16.2%
On shoulder	45	4	8.9%
On designated non-motorist lane	25	4	16.0%
Working	15	3	20.0%
Getting off or on school bus	5	0	0.0%
Other	171	49	28.7%
Unknown	168	65	38.7%
Total	1,758	659	37.5%



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 18, 2019
 Note: A vehicle or non-motorist is attributable to the occurrence of a collision when the officer marks a contributing circumstance for that vehicle that also matches the collision primary factor.

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 $(\text{Value in 2018} / \text{Value in 2014})^{1/4} - 1$.
- **Not injured:** 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-motorists:** Includes animal-drawn vehicle operators, pedalcyclists, and pedestrians.
- **Speed-related collision:** A collision is defined as speed-related in Indiana ARIES data if any of the following conditions are met: Unsafe speed or speed too fast for weather conditions is listed as the primary or a contributing factor of the collision; or a vehicle driver is issued a speeding citation.

DATA SOURCES

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

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.



INDIANA UNIVERSITY
PUBLIC POLICY INSTITUTE



Author: Rachel Thelin, Senior Policy Analyst