INDIANA TRAFFIC SAFETY FACTS

INDIANA UNIVERSITY
PUBLIC POLICY INSTITUTE

NON-MOTORISTS 2016

SEPT 2017 • ISSUE 17-C08

IN 2016:

- 2,338 non-motorists were killed or injured in Indiana collisions. Among non-motorists injured in crashes, 4 percent were killed (96 fatalities).
- 926 pedalcyclists were involved in collisions—15 were killed and 680 were injured
- 1,913 pedestrians were involved in collisions—81 were killed and 1,538 were injured
- Pedestrian fatalities accounted for 10 percent of all fatalities in Indiana.
- Most non-motorists were involved in collisions that occurred during weekdays between 3:00 – 5:59 p.m.
- 33 pedestrians were involved in alcohol-impaired traffic collisions, which 5 involved a driver with a blood alcohol content (BAC) test result at or above 0.08 grams per deciliter (g/dL).
- 22 pedalcyclists and 101 pedestrians were involved in speed-related collisions.

This fact sheet summarizes information on traffic collisions involving non-motorists in Indiana between 2012 and 2016. 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 16, 2017.

As shown in Figure 1, the number of collisions involving pedalcyclists has declined from 1,119 during 2012 to 926 in 2016. Collisions involving pedestrians have risen during this five-year period from 1,754 in 2012 to 1,913 in 2016. Between 2015 and 2016, collisions involving pedalcyclists fell by 4 percent 964 to 926 (calculated from Figure 1). The rate of pedalcyclist fatalities increased from 0.9 in 2015 to 1.6 in 2016. Collisions involving pedestrians during 2016 rose 6.5 percent from 2015 (calculated from Figure 1). The rate of pedestrian fatalities decreased from 5.1 to 4.2.

Figure 1. Non-motorists involved in Indiana collisions and fatality rate, by person type, 2012-2016

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

In partnership with:

GENERAL TRENDS

From 2012 to 2016, approximately one percent of individuals involved in Indiana collisions were non-motorists (Table 1). Despite a 2.1 percent increase from 2015 to 2016, the overall number of non-motorists involved in collisions has remained fairly constant over the past 5 years with a -0.4 percent annual rate of change. Annually, the number of non-motorists killed increased by nearly 5 percent while the number of non-motorists injured decreased by 2 percent. During 2016, approximately 4 percent of all individuals killed or injured in Indiana collisions were non-motorists. Of the three categories of non-motorists involved in collisions, on average between 2012 and 2016, pedestrians typically accounted for 62 percent of the total, followed by pedalcyclists (on average about 34 percent of total non-motorists) (calculated from Table 1).

Table 1. Individuals involved in Indiana collisions, by person type and injury status, 2012-2016

	Count of individuals					Annual rate of change	
	2012	2013	2014	2015	2016	2015-16	2012-16
All individuals	**306,392**	**310,303**	**330,978**	**351,266**	**364,013**	**3.6%**	**4.4%**
Fatal	781	784	745	817	821	0.5%	1.3%
Non-fatal injury	49,158	47,534	48,563	51,465	52,591	2.2%	1.7%
Not injured	256,453	261,985	281,670	298,984	310,601	3.9%	4.9%
All non-motorists	**2,976**	**2,829**	**2,818**	**2,866**	**2,927**	**2.1%**	**-0.4%**
Fatal	79	87	90	102	96	-5.9%	5.0%
Non-fatal injury	2,424	2,279	2,231	2,222	2,242	0.9%	-1.9%
Not injured	473	463	497	542	589	8.7%	5.6%
Non-motorists as % of total	**1.0%**	**0.9%**	**0.9%**	**0.8%**	**0.8%**	**-1.4%**	**-4.6%**
Fatal	10.1%	11.1%	12.1%	12.5%	11.7%	-6.3%	3.7%
Non-fatal injury	4.9%	4.8%	4.6%	4.3%	4.3%	-1.3%	-3.6%
Not injured	0.2%	0.2%	0.2%	0.2%	0.2%	4.6%	0.7%
Pedalcyclist	**1,119**	**1,032**	**928**	**964**	**926**	**-3.9%**	**-4.6%**
Fatal	14	15	13	9	15	66.7%	1.7%
Non-fatal injury	894	822	713	732	680	-7.1%	-6.6%
Not injured	211	195	202	223	231	3.6%	2.3%
Pedestrian	**1,754**	**1,688**	**1,778**	**1,796**	**1,913**	**6.5%**	**2.2%**
Fatal	64	70	77	92	81	-12.0%	6.1%
Non-fatal injury	1,507	1,429	1,486	1,453	1,538	5.8%	0.5%
Not injured	183	189	215	251	294	17.1%	12.6%
Animal-drawn vehicle operator	**103**	**109**	**112**	**106**	**88**	**-17.0%**	**-3.9%**
Fatal	1	2	0	1	0	na	-100.0%
Non-fatal injury	23	28	32	37	24	-35.1%	1.1%
Not injured	79	79	80	68	64	-5.9%	-5.1%

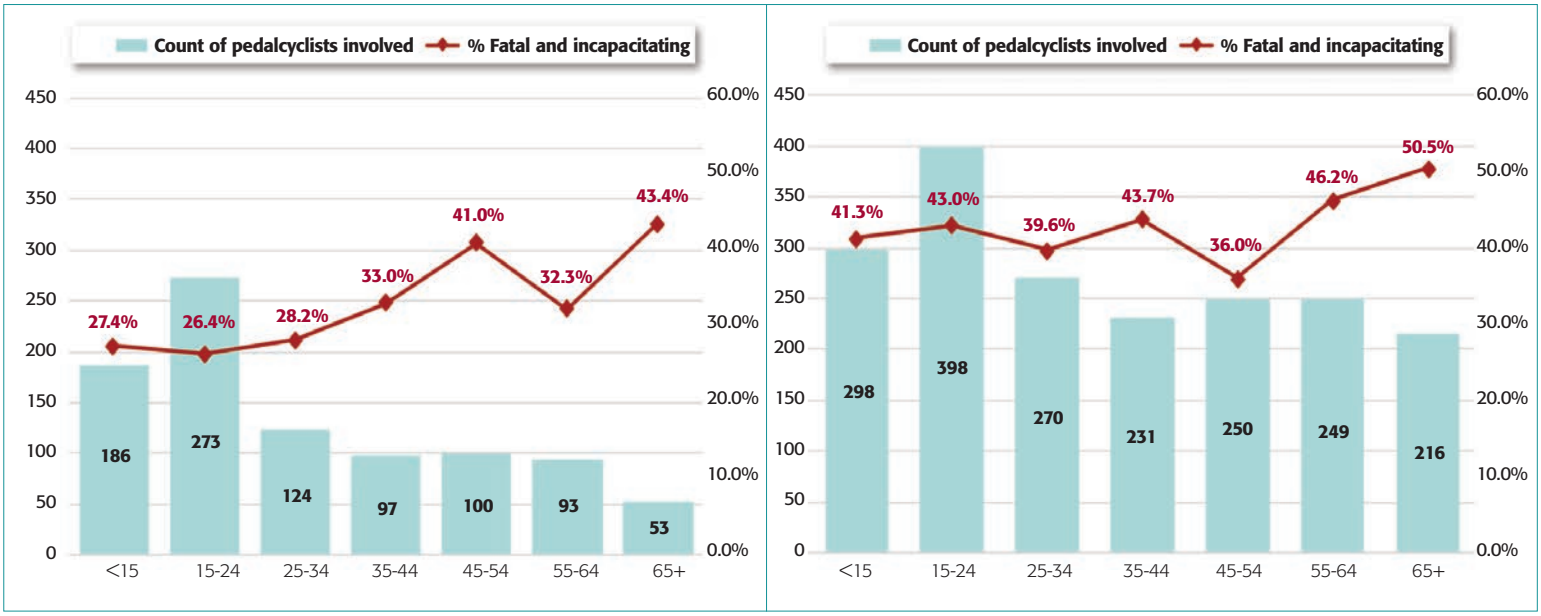
Source: Indiana State Police Automated Reporting Information Exchange System, as of March 16, 2017

Notes:
1) *Non-motorists* include *pedalcyclists, pedestrians,* and *animal-drawn vehicle operators.*
2) Non-fatal injury includes *incapacitating, non-incapacitating, possible, not reported, unknown,* and *refused* (treatment) injury categories.
3) *Not injured* status includes individuals involved in collisions reported as *null* values in the injury status code field.

NON-MOTORIST INJURIES BY AGE

Figure 2 shows the number of non-motorists involved in Indiana collisions by age and proportion that experienced fatal and incapacitating injuries. Most non-motorists involved in Indiana collisions during 2016 were under 34 years old. The largest numbers of pedalcyclists (273) and pedestrians (398) involved in collisions were in the 15-24 age group. While involvement in collisions was lower for non-motorists 34 years of age and older, the probability of being killed or injured increased with age. The rate of fatal and incapacitating injuries was highest among non-motorists age 35 and over. The mean age of pedestrians killed or injured in traffic crashes was 43.3 years (not show in table). Among pedalcyclists killed or injured in collisions, the average age was 34.8 years.

Figure 2. Non-motorists involved in Indiana collisions and fatal and incapacitating injury rate, by person type and age group, 2016



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

TIME OF DAY, DAY OF WEEK, AND MONTH

Table 2 illustrates collisions involving non-motorists 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, the count was highest on weekdays with the highest number among pedalcyclists (157) occurring on Wednesdays and on Fridays among pedestrians (318). The 3 p.m. to 5:59 p.m. time period had the highest percentage of collisions involving both pedalcyclists (30 percent) and pedestrians (22 percent). When the 3 p.m. to 5:59 p.m. and next time interval (6 p.m. to 8:59 p.m.) are combined, over one-half (51 percent) of all collisions involving pedalcyclists and 41 percent of all collisions involving pedestrians occurred during the late afternoon and evening.

Table 2. Non-motorists involved in Indiana collisions, by person type, time of day and day of week, 2016

Pedalcyclists

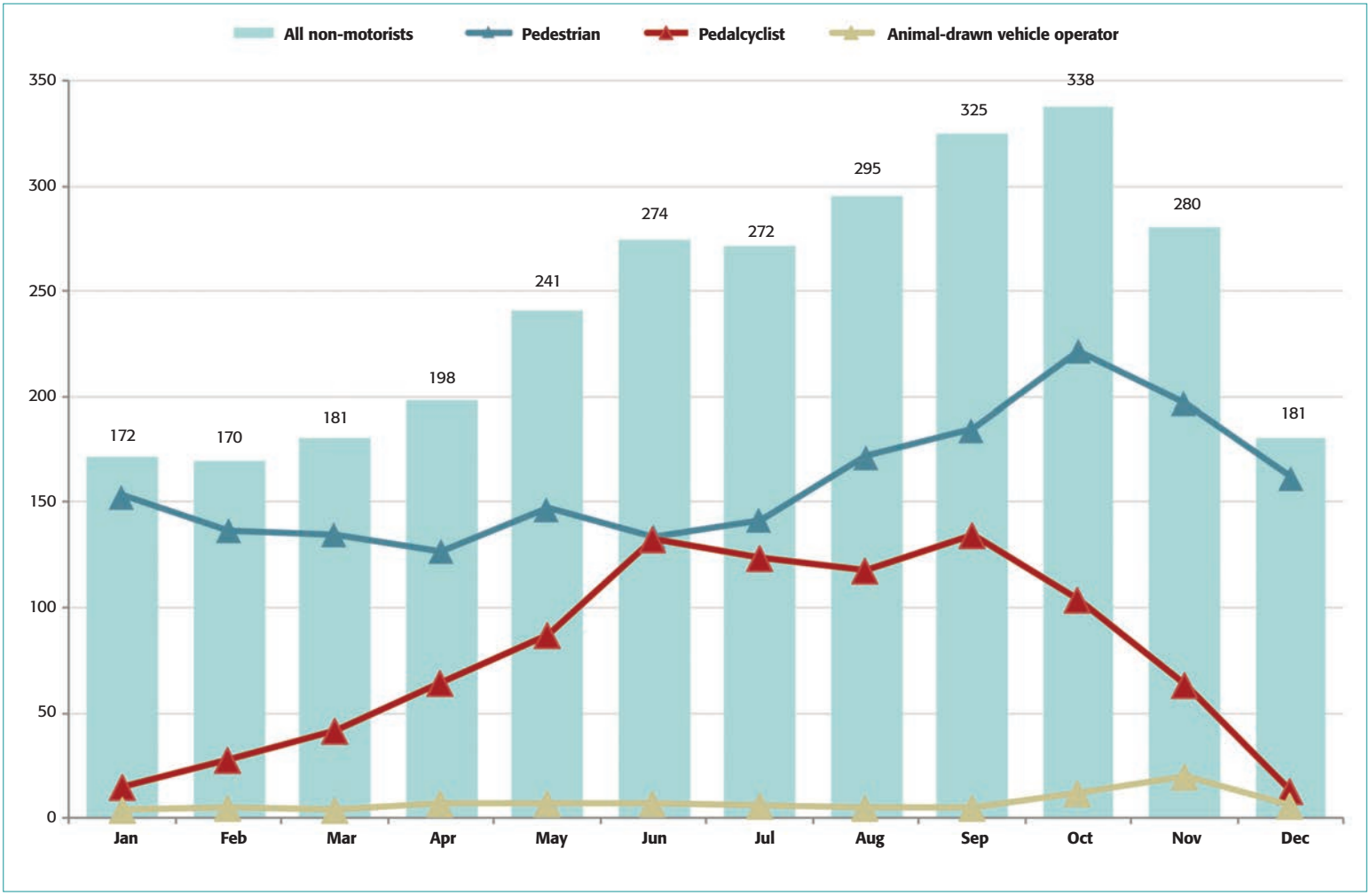
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total by time of day	% by time of day
Midnight-2:59 a.m.	2	1	3	6	2	3	2	19	2.1%
3-5:59 a.m.	0	4	5	5	7	4	0	25	2.7%
6-8:59 a.m.	4	21	16	10	21	12	6	90	9.7%
9-11:59 a.m.	12	15	11	18	18	15	15	104	11.2%
Noon-2:59 p.m.	21	17	22	23	18	28	22	151	16.3%
3-5:59 p.m.	23	45	48	49	39	44	26	274	29.6%
6-8:59 p.m.	24	29	29	34	34	27	24	201	21.7%
9-11:59 p.m.	7	6	10	12	13	5	9	62	6.7%
Total	**93**	**138**	**144**	**157**	**152**	**138**	**104**	**926**	**100.0%**
% by day	10.0%	14.9%	15.6%	17.0%	16.4%	14.9%	11.2%	100.0%	

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total by time of day	% by time of day
Midnight-2:59 a.m.	12	9	8	11	5	10	16	71	3.7%
3-5:59 a.m.	19	9	16	13	10	6	11	84	4.4%
6-8:59 a.m.	8	52	32	41	33	36	24	226	11.8%
9-11:59 a.m.	17	30	36	43	30	37	29	222	11.6%
Noon-2:59 p.m.	21	50	47	49	42	52	50	311	16.3%
3-5:59 p.m.	28	77	65	78	60	65	53	426	22.3%
6-8:59 p.m.	38	43	45	46	53	69	64	358	18.7%
9-11:59 p.m.	18	30	27	30	26	43	41	215	11.2%
Total	**161**	**300**	**276**	**311**	**259**	**318**	**288**	**1913**	**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 16, 2017

The number of non-motorists involved in Indiana collisions by month during 2016 is shown in Figure 3. More than two-thirds 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 August through November. The number of animal-drawn vehicle operators involved in collisions peaked in October and November.

Figure 3. Non-motorists involved in collisions, by month and person type, 2016



ALCOHOL-IMPAIRED COLLISIONS

In 2016, 4 pedalcyclists and 36 pedestrians were involved in alcohol-impaired crashes (Table 3), 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 number of pedalcyclists in alcohol-impaired collisions increased from 5 in 2012 to a five-year high of 10 in 2013 and declined to 4 in 2016. The number of pedestrians involved in alcohol-impaired collisions increased from 36 to a five-year high of 44 in 2015 and declined to 36 in 2016. In 2016, 5 percent of pedestrian collisions that were alcohol-impaired resulted in fatalities. None of the pedestrians or pedalcyclists were reported to be impaired.

SPEED-RELATED COLLISIONS

A collision is defined as speed-related in Indiana ARIES data if any of the following conditions is 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. In 2016, 22 pedalcyclists and 101 pedestrians were involved in speed-related traffic collisions (Table 4). The number of pedalcyclists in speed-related collisions increased from 28 in 2012 to a five-year high of 35 in 2014. Between 2012 and 2016, the number of pedestrians involved in speed-related crashes increased by 20.2 percent from a five-year low of 84 in 2012 to 101 in 2016. Five percent of pedestrian collisions during 2016 that were considered speed-related resulted in fatalities and 6 percent involved non-fatal injuries.

Table 3. Non-motorists involved in Indiana collisions, by person type, injury status, and alcohol impairment, 2012-2016

	2012			2013			2014			2015			2016		
	Total involved	Alcohol-impaired	% impaired	Total involved	Alcohol-impaired	% impaired	Total involved	Alcohol-impaired	% impaired	Total involved	Alcohol-impaired	% impaired	Total involved	Alcohol-impaired	% impaired
Pedalcyclist	**1,119**	**5**	**0.4%**	**1,032**	**10**	**1.0%**	**928**	**4**	**0.4%**	**964**	**8**	**0.8%**	**926**	**4**	**0.4%**
Fatal	14	0	0.0%	15	1	6.7%	13	1	7.7%	9	1	11.1%	15	0	0.0%
Non-fatal injury	894	5	0.6%	822	9	1.1%	713	3	0.4%	732	5	0.7%	680	3	0.4%
Not injured	211	0	0.0%	195	0	0.0%	202	0	0.0%	223	2	0.9%	231	1	0.4%
Pedestrian	**1,754**	**36**	**2.1%**	**1,688**	**38**	**2.3%**	**1,778**	**33**	**1.9%**	**1,796**	**44**	**2.4%**	**1,913**	**36**	**1.9%**
Fatal	64	6	9.4%	70	1	1.4%	77	2	2.6%	92	4	4.3%	81	4	4.9%
Non-fatal injury	1,507	27	1.8%	1,429	34	2.4%	1,486	26	1.7%	1,453	37	2.5%	1,538	29	1.9%
Not injured	183	3	1.6%	189	3	1.6%	215	5	2.3%	251	3	1.2%	294	3	1.0%

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

Note: *Alcohol-impaired* represents the count of non-motorists involved in collisions with drivers having a reported BAC of 0.08 g/dL.

Table 4. Non-motorists involved in Indiana collisions, by person type, injury status, and speed involvement, 2012-2016

	2012			2013			2014			2015			2016		
	Total involved	Count of speed-related	% speed-related	Total involved	Count of speed-related	% speed-related	Total involved	Count of speed-related	% speed-related	Total involved	Count of speed-related	% speed-related	Total involved	Count of speed-related	% speed-related
Pedalcyclist	**1,119**	**28**	**2.5%**	**1,032**	**30**	**2.9%**	**928**	**35**	**3.8%**	**964**	**23**	**2.4%**	**926**	**22**	**2.4%**
Fatal	14	0	0.0%	15	0	0.0%	13	2	15.4%	9	0	0.0%	15	0	0.0%
Non-fatal injury	894	25	2.8%	822	29	3.5%	713	23	3.2%	732	17	2.3%	680	16	2.4%
Not injured	211	3	1.4%	195	1	0.5%	202	10	5.0%	223	6	2.7%	231	6	2.6%
Pedestrian	**1,754**	**84**	**4.8%**	**1,688**	**95**	**5.6%**	**1,778**	**100**	**5.6%**	**1,796**	**96**	**5.3%**	**1,913**	**101**	**5.3%**
Fatal	64	4	6.3%	70	4	5.7%	77	6	7.8%	92	7	7.6%	81	4	4.9%
Non-fatal injury	1,507	76	5.0%	1,429	82	5.7%	1,486	84	5.7%	1,453	79	5.4%	1,538	88	5.7%
Not injured	183	4	2.2%	189	9	4.8%	215	10	4.7%	251	10	4.0%	294	9	3.1%

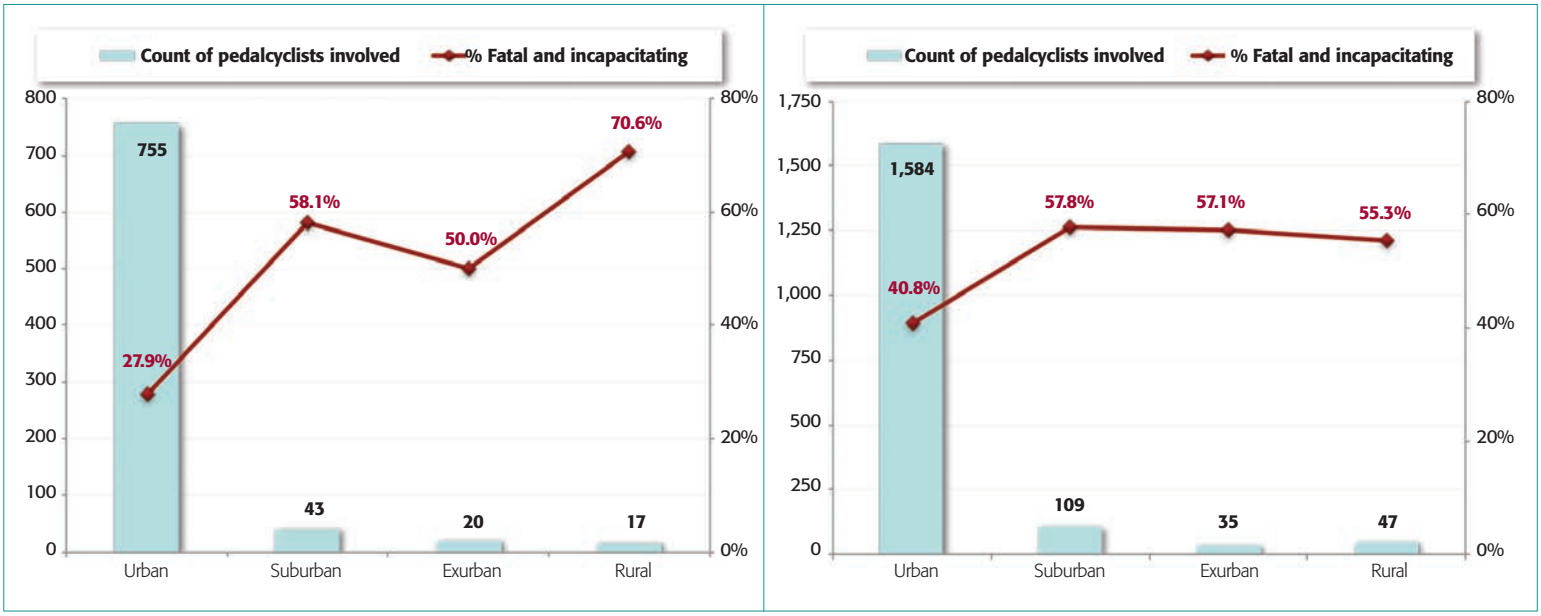
Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 16, 2017

Note: A collision is defined as speed-related in Indiana ARIES data if any of the following conditions is 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.

GEOGRAPHY OF COLLISIONS

Pedalcyclist collision counts in 2016 were substantially higher in Indiana urban (755) areas than surrounding suburban (43), exurban (20) and rural (17) locales. However, the proportion of crashes that resulted in fatalities and incapacitating injuries was much higher in in rural (71 percent), suburban (58 percent), exurban (50 percent) areas than locales identified as urban (28 percent). Similarly, counts of collisions involving pedestrians were considerably higher in urban (1,584) areas than suburban (109), rural (47), and exurban (35) locales. The fatal and incapacitating injury rate among pedestrians involved in traffic collisions was 41 percent in urban but roughly 15 to 18 percent higher in other locales.

Figure 4. Non-motorists involved in Indiana collisions, by person type and census locale, 2016



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

DEFINITIONS

- ***Alcohol-impaired collision*** - A collision is considered *alcohol-impaired* when any vehicle driver or non-motorists 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 2010 to 2014, it is calculated as (Value in 2014 / Value in 2010)$^{1/4}$ -1.
- ***Census Locale:*** *Urban* is defined as Census 2000 Urban Areas (2007-2009) or Census 2010 Urban Areas (2010-2011), *suburban* as areas within 2.5 miles of urban boundaries, *exurban* as areas within 2.5 miles of suburban boundaries, and *rural* as areas beyond exurban boundaries (i.e., everything else).
- ***Non-fatal*** injury includes *incapacitating, non-incapacitating, possible, not reported, refused (treatment)* and *unknown* injury categories.
- ***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-motorists*** include *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 is 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 16, 2017.Indiana Bureau of Motor Vehicles, current as of March 7, 2017.

This publication was prepared on behalf of the Indiana Criminal Justice Institute (ICJI) by the Indiana University Public Policy Institute (PPI). Please direct any questions concerning data in this document to ICJI at 317-232-1233.

This publication is one of a series of publications that form the analytical foundation of traffic safety program planning and design in the state of Indiana. Funding for these publications is provided by ICJI and the National Highway Traffic Safety Administration.

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

INDIANA UNIVERSITY PUBLIC POLICY INSTITUTE

SCHOOL OF PUBLIC AND ENVIRONMENTAL AFFAIRS
Indiana University

Traffic Safety Project

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic collisions. To help in the policy-making process, the Indiana University Public Policy Institute collaborates each year with the Indiana Criminal Justice Institute to analyze vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the eleventh year of this partnership. Research findings are summarized in a series of publications on various aspects of traffic collisions, including alcohol-related crashes, commercial vehicles, dangerous driving, child passenger safety, motorcycles, occupant protection, and drivers. An additional publication provides detailed information on county and municipality data. These publications serve as the analytical foundation of traffic safety program planning and design in Indiana.

Indiana collision data are obtained from Indiana Crash Reports, as completed by law enforcement officers. Crash reports for all Indiana collisions are entered electronically through ARIES. Collisions trends as reported in these publications incorporate the effects of changes to data elements on the Crash Report, agency-specific enforcement policy changes, re-engineered roadways, driver safety education programs, and other unspecified effects. A collision produces three levels of data: collision, unit (vehicles), and individual. For this reason, readers should pay particular attention to the wording of statements about the data to avoid misinterpretations. If you have questions regarding trends or unexpected results, please contact the Indiana Criminal Justice Institute, Traffic Safety Division for more information.

The Indiana Criminal Justice Institute

Guided by a Board of Trustees representing all components of Indiana's criminal and juvenile justice systems, the Indiana Criminal Justice Institute serves as the state's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. ICJI develops long-range strategies for the effective administration of Indiana's criminal and juvenile justice systems and administers federal and state funds to carry out these strategies.

The Governor's Council on Impaired & Dangerous Driving

The Governor's Council on Impaired & Dangerous Driving, a division of the Indiana Criminal Justice Institute, serves as the public opinion catalyst and the implementing body for statewide action to reduce death and injury on Indiana roadways. The Council provides grant funding, training, coordination, and ongoing support to state and local traffic safety advocates.

Indiana University Public Policy Institute

The IU Public Policy Institute delivers unbiased research and data-driven, objective, expert analysis to help public, private and nonprofit sectors make important decisions that directly impact quality of life in Indiana. Using the knowledge and expertise of our staff and faculty, we provide research and analysis that is free of political and ideological bias. A multidisciplinary institute within the Indiana University School of Public and Environmental Affairs (SPEA), our efforts also support the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

The National Highway Traffic Safety Administration (NHTSA)

NHTSA provides leadership to the motor vehicle and highway safety community through the development of innovative approaches to reducing motor vehicle crashes and injuries. The mission of NHTSA is to save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity.

Author: **Rachel Thelin**