



Collisions involving motorcycles and persons involved

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MOTORCYCLES 2015

INDIANA TRAFFIC SAFETY FACTS

IN 2015:

- 3,263 collisions involving motorcycles occurred in Indiana, a **4 percent decrease** from 2014.
- The number of fatal motorcycle collisions **decreased 15 percent**, from 128 to 107.
- A total of 107 motorcycle and motor driven cycle (B) riders died in collisions (a **16 percent decrease** from 2014), while 2,607 were injured (**down 9 percent**).
- **Unhelmeted** collision-involved motorcyclists had **higher fatality and injury rates** than helmeted riders.
- The highest helmet use among collision-involved motorcyclists was among riders 21 to 24 years old (**52 percent**). The lowest rate of helmet use was among riders 35 to 44 years old (**28 percent**).

Based on data from the Indiana State Police Automated Reporting and Information Exchange System (ARIES) as of March 17, 2016, this fact sheet summarizes select attributes of 2015 Indiana motorcycle collisions including demographic characteristics, rates of helmet use, and rates of alcohol impairment among persons involved in these collisions.

Beginning in 2015, changes to Indiana law were implemented regarding motorcycle and motor driven cycle classifications. For the purpose of this fact sheet, the term *motorcycles* is broadly defined as all categories of *motorcycles* and *motor driven cycles* reported in ARIES by the investigating officer, except as defined in notes accompanying select exhibits that examine motorcycles and motor driven cycles separately. Data discrepancies may exist between this fact sheet and previous traffic safety publications due to these vehicle classification changes as well as updates to the ARIES and BMV data sets that have occurred since the original publication dates.

COLLISIONS INVOLVING MOTORCYCLES AND PERSONS INVOLVED

From 2011 to 2015, fatalities per 100,000 motorcycle registrations decreased substantially from 55 to 42, while injuries per 100,000 registrations dropped from 1,354 to 1,027. It should be noted that the BMV reclassification of motorcycle and motor driven cycle types in 2015 resulted in a 15 percent increase in the

Table 1. Indiana motorcycle collisions, motorcyclist fatalities, injuries, and fatality and injury rates, 2011-2015

Collision metrics	2011	2012	2013	2014	2015	Annual rate of change	
						2014-15	2011-15
Collisions	3,556	4,112	3,525	3,412	3,263	-4.4%	-2.1%
Fatal collisions	117	146	114	122	104	-14.8%	-2.9%
Fatalities	118	151	119	128	107	-16.4%	-2.4%
Injuries	2,910	3,487	2,965	2,859	2,607	-8.8%	-2.7%
Motorcycle (MC) registrations	214,903	223,989	221,715	221,606	253,921	14.6%	4.3%
Per 100,000 registrations:							
Collisions	1,654.7	1,835.8	1,589.9	1,539.7	1,285.0	-16.5%	-6.1%
Fatal collisions	54.4	65.2	51.4	55.1	41.0	-25.6%	-6.9%
Fatalities	54.9	67.4	53.7	57.8	42.1	-27.0%	-6.4%
Injuries	1,354.1	1,556.8	1,337.3	1,290.1	1,026.7	-20.4%	-6.7%

Sources:

Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016; Indiana Bureau of Motor Vehicles, as of April 20, 2016.

Notes:

- 1) *Motorcycles* are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle.*
- 2) *Injuries* include *incapacitating, non-incapacitating, and other injury* categories.





number of registered motorcycles; coupled with the decrease in motorcycle collisions, fatalities, and injuries overall, this explains much of the 2014 to 2015 reduction in the 'per registration' rates. From 2014 to 2015, the number of fatal motorcycle collisions decreased 15 percent, from 122 in 2014 to 104 in 2015 (Table 1). Of the 107 persons killed in *motorcycle* collisions in 2015, motorcycles accounted for 96 fatalities, while *motor driven cycles* (B) accounted for 11 fatalities (Table 2). The highest fatality rate in 2015 was for individuals riding *motorcycles*.

Each year from 2011 to 2015, there were more *multi-vehicle* (MV) than *single-vehicle* (SV) motorcycle collisions. While fatal collisions not involving motorcycles increased 12 percent from 2014 to 2015, fatal SV motorcycle collisions decreased 10 percent and fatal MV motorcycle collisions decreased 18 percent. Traffic collisions not involving motorcycles increased 5 percent in 2015, and SV motorcycle collisions decreased 8 percent. SV collision *injury* rates are higher than MV rates (Table 3).

Table 2. Motorcycle and motor driven cycle riders, by type of unit and injury status, 2015

Unit type	Count of persons				Percent	
	Fatal	Injured	Not injured	Total	Fatal	Injured
All	107	2,412	970	3,489	3.1%	69.1%
Motorcycles	96	1,920	781	2,797	3.4%	68.6%
Motor Driven Cycles Class B	11	492	189	692	1.6%	71.1%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) *Not injured* includes ALL individuals involved in collisions reported as NULL values in the injury status code field. Reporting officers are instructed to include all *drivers* in ARIES, but to include passengers in the crash report only if an injury occurs; therefore, *not injured* counts should be interpreted with caution.
- 2) *Injured* include individuals with at least one *incapacitating, non-incapacitating, or other injury*.
- 3) *Motorcycle* is defined as a vehicle reported in ARIES as a *motorcycle* or *motor driven cycle (class A)*.
- 4) *Motor driven cycle (B)* is defined as a vehicle reported in ARIES as a *motor driven cycle (class B)*, *moped*, or *motorized bicycle*.

Table 3. Collisions involving motorcycles (MC), by collision severity and vehicles involved, 2011-2015

Collision type and severity	Count of collisions					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
All collisions	188,456	189,183	193,236	205,752	216,312	5.1%	3.5%
No MC involved	184,900	185,071	189,711	202,340	213,049	5.3%	3.6%
Fatal	559	574	596	583	652	11.8%	3.9%
Injury	30,362	31,239	30,408	31,497	32,306	2.6%	1.6%
Property damage	153,979	153,258	158,707	170,260	180,091	5.8%	4.0%
Single vehicle MC	1,571	1,771	1,494	1,465	1,344	-8.3%	-3.8%
Fatal	54	63	52	48	43	-10.4%	-5.5%
Injury	1,236	1,430	1,179	1,166	1,025	-12.1%	-4.6%
Property damage	281	278	263	251	276	10.0%	-0.4%
Multi-vehicle MC	1,985	2,341	2,031	1,947	1,919	-1.4%	-0.8%
Fatal	63	83	62	74	61	-17.6%	-0.8%
Injury	1,190	1,469	1,265	1,193	1,103	-7.5%	-1.9%
Property damage	732	789	704	680	755	11.0%	0.8%
Fatal collision as % total							
No MC involved	0.3%	0.3%	0.3%	0.3%	0.3%		
Single vehicle MC	3.4%	3.6%	3.5%	3.3%	3.2%		
Multi-vehicle MC	3.2%	3.5%	3.1%	3.8%	3.2%		
Injury collision as % total							
No MC involved	16.4%	16.9%	16.0%	15.6%	15.2%		
Single vehicle MC	78.7%	80.7%	78.9%	79.6%	76.3%		
Multi-vehicle MC	59.9%	62.8%	62.3%	61.3%	57.5%		

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) *Motorcycles* are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle*.
- 2) *Multi-vehicle* collisions include collisions involving *other motor vehicles and non-motorists*.
- 3) *Injury* collisions include collisions with at least one *incapacitating or non-incapacitating injury*.

Injury rates in motorcycle collisions are associated with different collision characteristics (Table 4). Motorcycle collisions in 2015 occurred predominantly during *clear weather conditions*, on *straight/level* roads not involving *road junctions*, and on *local/city roads*. The probability of fatal motorcycle

collisions was highest on *interstates* (7 percent) and *curves* (5 percent). The highest probability of a fatal collision involving one or more motorcycles by type of road junction was on *interchange/ramp* road junctions (5 percent).

Table 4. Characteristics of Indiana motorcycle collisions, by severity of collision, 2015

Characteristics	Count of collisions				Probability of collision severity	
	Fatal	Injury	Property damage	Total	Fatal	Injury
Weather conditions						
Clear	77	1,737	814	2,628	2.9%	66.1%
Cloudy or poor visibility	23	303	172	498	4.6%	60.8%
Extreme weather	4	88	45	137	2.9%	64.2%
Road junctions						
No junction involved	64	1,337	652	2,053	3.1%	65.1%
Intersections	36	730	362	1,128	3.2%	64.7%
Interchange/ramp	4	61	17	82	4.9%	74.4%
Road character						
Straight (level)	60	1,374	751	2,185	2.7%	62.9%
Curves	28	452	133	613	4.6%	73.7%
Straight (non-level)	15	286	128	429	3.5%	66.7%
Non-roadway	1	16	18	35	2.9%	45.7%
Road class						
Local/city	33	1,056	546	1,635	2.0%	64.6%
Highway	39	562	223	824	4.7%	68.2%
County	19	348	112	479	4.0%	72.7%
Interstate	10	96	39	145	6.9%	66.2%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

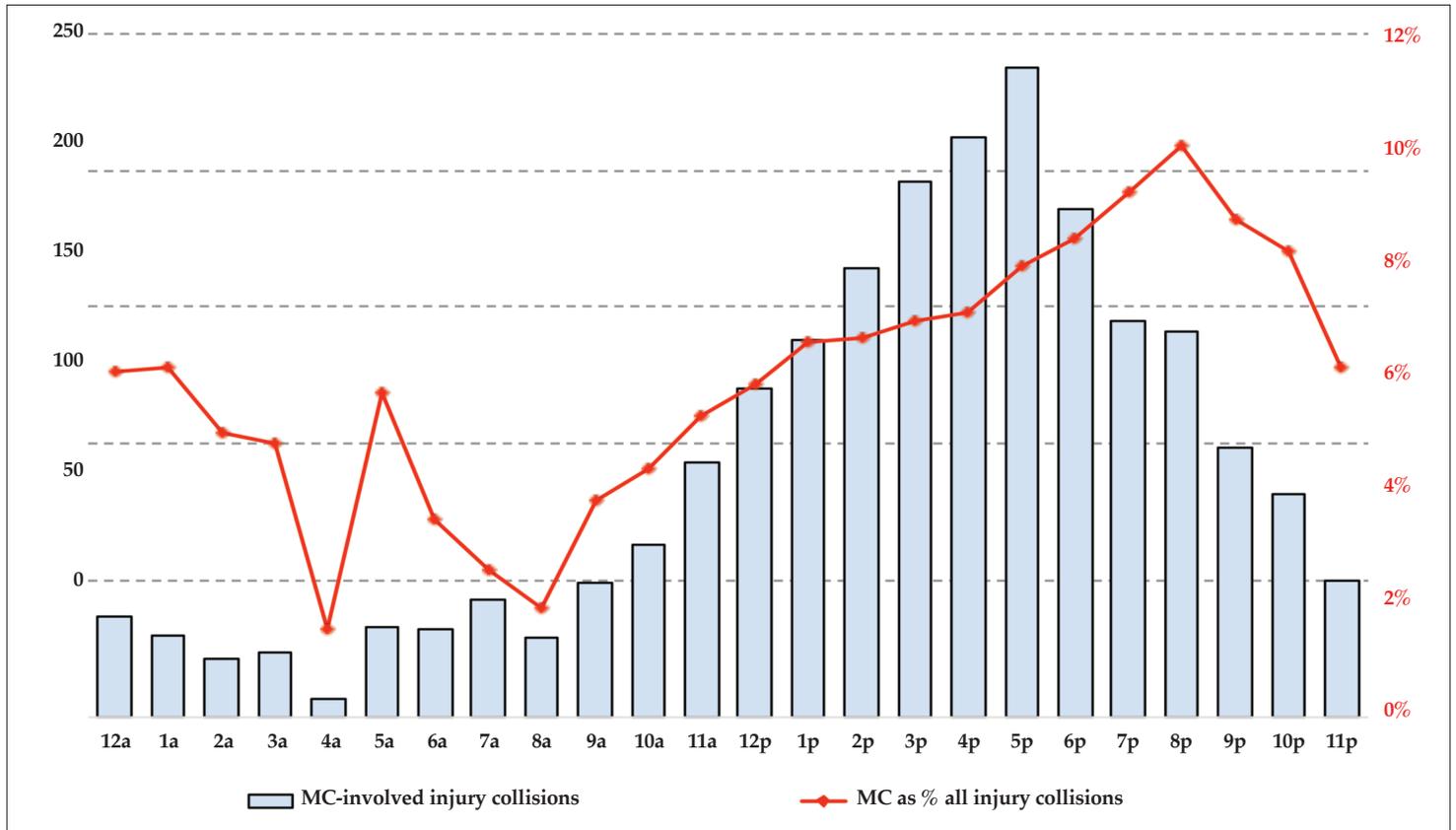
Notes:

- 1) Excludes collisions where characteristic was *unknown* or *not reported*.
- 2) Selected characteristics are re-grouped from collision characteristics reported in ARIES, as shown below.
 - a) *Weather conditions:*
Cloudy or poor visibility includes *cloudy, fog/smoke/smog, and blowing sand/soil/snow.*
Extreme weather includes *rain, severe cross wind, sleet/hail/freezing rain, and snow.*
 - b) *Road junctions:*
Intersections includes *five point or more, four-way intersection, T-intersection, traffic circle/roundabout, trail crossing, RR crossing, and Y-intersection.*
Interchange/ramp includes *interchange and ramp.*
 - c) *Road character:*
Curves includes *curve/grade, curve/hillcrest, and curve/level.*
Straight/grade/hillcrest includes *straight/grade and straight/hillcrest.*
 - d) *Road class:*
Highway includes *state road and US route.*
- 3) Includes collisions involving vehicles reported in ARIES as *motorcycles, motor driven cycle class A, motor driven cycle class B, moped, and motorized bicycle.*



Motorcycle collisions occur at roughly predictable times across the day. In 2015, the count of injury collisions involving motorcycles generally peaked from 3pm to 6pm, while the proportion of all injury collisions that involved motorcycles peaked around 8pm (Figure 1).

Figure 1. Motorcycle (MC) involved injury collisions in Indiana by hour of the day, 2015



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) Excludes collisions where *hour* or *injury status* was *unknown* or *not reported*.
- 2) *Injury* collisions include collisions with at least one *incapacitating* or *non-incapacitating* injury.
- 3) Motorcycles are defined as vehicles reported in ARIES as *motorcycle*, *class A and B motor driven cycles*, *moped*, and *motorized bicycle*.

FATALITIES AND INJURIES IN MOTORCYCLE AND MOTOR DRIVEN CYCLE (B) COLLISIONS

The Indiana reclassification of motorcycles and motor driven cycles (B) into three categories had an effect on changes between 2014 to 2015 (as reported in ARIES by investigating officers) in the numbers of motorcycle and motor driven cycle (B) riders involved in collisions; **therefore, 2015 changes as illustrated in Table 5 reflect a definitional change and should be interpreted with caution.** Of the 107 persons killed on

all types of motorcycles or motor driven cycles (B) in 2015 collisions, 89 were motorcycle operators, 9 were motor driven cycle (B) operators, 7 were motorcycle passengers, and 2 were motor driven cycle (B) passengers. In 2015 crashes, there were 1,668 motorcycle operators with non-fatal injuries, and another 252 motorcycle passenger non-fatal injuries, while there were 447 motor driven cycle (B) operator non-fatal injuries and 45 motor driven cycle (B) passenger non-fatal injuries. Overall, from 2011 to 2015, motorcycle operator involvement in Indiana collisions dropped, and deaths and injuries to motorcycle operators and passengers declined.

Table 5. Motorcyclists involved in Indiana motorcycle or motor driven cycle (B) collisions, by person type and injury status, 2011-2015

Injury status and person type	Count of individuals					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
Motorcycle	2,855	3,191	2,649	2,496	2,797	12.1%	-0.5%
Operator	2,578	2,881	2,383	2,251	2,516	11.8%	-0.6%
Fatal	92	112	82	87	89	2.3%	-0.8%
Injured	1,722	1,987	1,605	1,503	1,668	11.0%	-0.8%
Not injured	764	782	696	661	759	14.8%	-0.2%
Passenger	277	310	266	245	281	14.7%	0.4%
Fatal	4	15	12	13	7	-46.2%	15.0%
Injured	269	286	248	225	252	12.0%	-1.6%
Not injured	4	9	6	7	22	--	--
Motor driven cycle (B)	960	1,275	1,147	1,195	692	-42.1%	-7.9%
Operator	883	1,148	1,055	1,059	641	-39.5%	-7.7%
Fatal	21	23	23	23	9	-60.9%	-19.1%
Injured	662	891	818	818	447	-45.4%	-9.4%
Not injured	200	234	214	218	185	-15.1%	-1.9%
Passenger	77	127	92	136	51	-62.5%	-9.8%
Fatal	1	1	2	1	2	100%	--
Injured	72	122	86	131	45	-65.6%	-11.1%
Not injured	4	4	4	4	4	--	--
Total killed	118	151	119	124	107	-13.7%	-2.4%
Total injured	2,725	3,286	2,757	2,677	2,412	-9.9%	-3.0%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) *Not injured* includes ALL individuals involved in collisions reported as NULL values in the injury status code field. Reporting officers are instructed to include all *drivers* in ARIES, but to include passengers in the crash report only if an injury occurs; therefore, *not injured* counts should be interpreted with caution.
- 2) *Injured* include individuals with at least one *incapacitating, non-incapacitating, or other injury*.
- 3) *Motorcycle* is defined as a vehicle reported in ARIES as a *motorcycle or motor driven cycle (class A)*
- 4) *Motor driven cycle (B)* is defined as a vehicle reported in ARIES as a *motor driven cycle (class B), moped, or motorized bicycle*.



HELMET USE

Based on recent roadside observational surveys of motorcycle helmet use in Indiana in 2015, the helmet usage rate was 37 percent (Center for Road Safety, 2015). Collision-involved motorcyclists reflect generally lower helmet use rates. Considering known helmet use from 2011 to 2015, the rate of helmet use among collision-involved motorcycle riders ranged from about 27 percent to 38 percent in 2015 (a five-year high) (Table 6). Fatality rates for unhelmeted riders exceed those of helmeted

riders every year from 2011 to 2015. Similarly, helmeted riders had lower non-fatal injury rates than unhelmeted riders. However, helmet use by motorcyclists involved in Indiana collisions varies somewhat by age (Figure 2). The highest rate of helmet use among collision-involved motorcyclists in 2015 (52 percent) was among riders between 21 to 24 years of age, followed by 49 percent for riders under 21 years old, and 48 percent for riders over 64 years of age. The lowest rate was for riders between 35 and 44 years of age (28 percent). It should be noted that helmet usage rates in 2015 generally exceeded those from 2014.

Table 6. Helmet use by motorcyclists in Indiana collisions and individual injury severity, 2011-2015

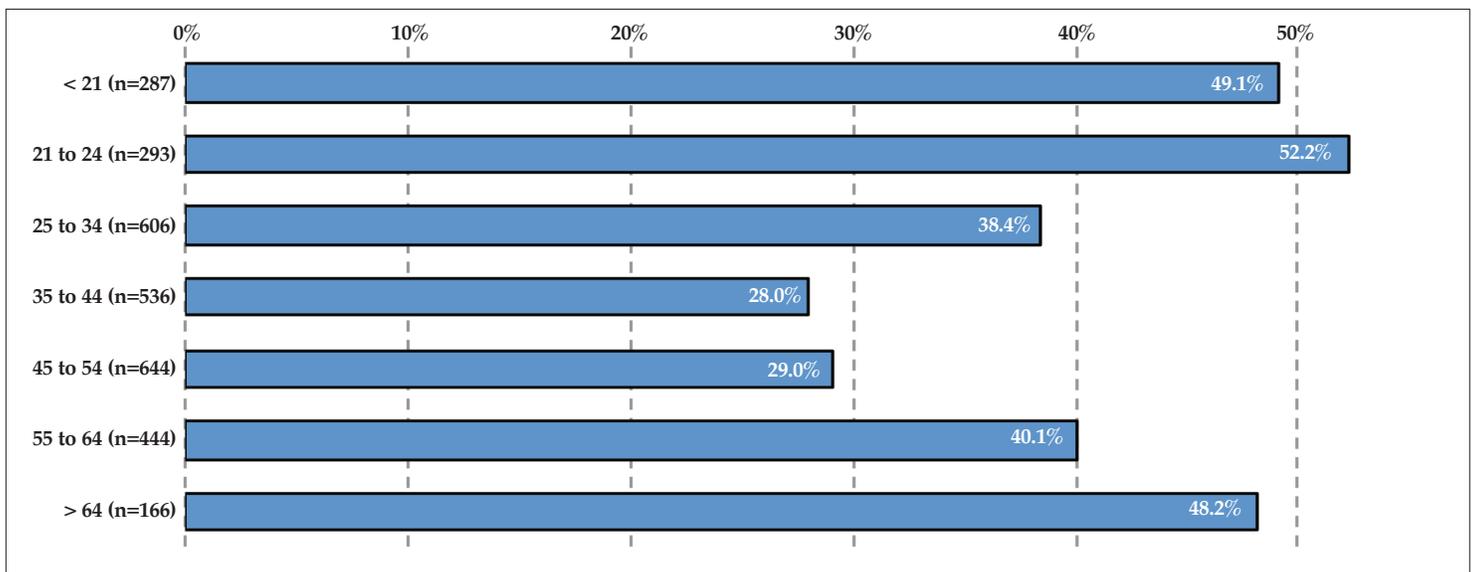
Helmet use/injury status	Counts and percent totals					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
All motorcyclists	3,450	4,068	3,482	3,339	2,976	-10.9%	-3.6%
No helmet reported	71.6%	72.9%	71.9%	70.7%	62.3%	-11.9%	-3.4%
Helmet reported	28.4%	27.1%	28.1%	29.3%	37.7%	28.7%	7.3%
No helmet reported	2,469	2,965	2,505	2,361	1,854	-21.5%	-6.9%
Fatal	3.8%	3.9%	3.4%	3.7%	4.2%	12.9%	2.3%
Injured	74.2%	75.2%	74.9%	75.7%	72.2%	-4.7%	-0.7%
Not injured	22.0%	20.8%	21.8%	20.5%	23.6%	15.0%	1.9%
Helmet reported	981	1,103	977	978	1,122	14.7%	3.4%
Fatal	1.8%	2.6%	1.9%	2.8%	1.5%	-45.1%	-4.7%
Injured	69.4%	72.8%	72.0%	68.6%	68.0%	-0.9%	-0.5%
Not injured	28.7%	24.6%	26.1%	28.6%	30.5%	6.5%	1.5%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) Motorcycles are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle*.
- 2) Excludes *individuals* for whom helmet use was *unknown or unreported*.
- 3) *Not injured* includes **ALL** individuals involved in collisions reported as NULL values in the injury status code field. Reporting officers are instructed to include all *drivers* in ARIES, but to include passengers in the crash report only if an injury occurs; therefore, *not injured* counts should be interpreted with caution.

Figure 2. Percent helmet use reported for motorcyclists involved in Indiana collisions, by age of rider, 2015



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) Motorcycles are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle*.
- 2) Excludes *individuals* for whom helmet use was *unknown or unreported*.

Among motorcyclists involved in Indiana collisions, helmet use is associated typically with lower fatality and injury rates. However, most collision-involved riders are not wearing helmets (Table 7). Of the 95 motorcycle fatalities in 2015 for whom helmet use was known, only 17 (18 percent) were reported to be wearing helmets. Again considering only

motorcyclists for whom helmet use and age known, those without helmets experienced higher fatal (4.2 percent) and injury rates (72 percent) than those reported as wearing helmets (2 percent and 68 percent, respectively). Fatal and incapacitating injury rates were lower for helmeted riders than for unhelmeted riders.

Table 7. Motorcyclists involved in collisions, by rider characteristics, helmet use, and injury status, 2015

Characteristics	Count of individuals, by injury status				Probability of injury status	
	Fatal	Injury	No injury	Total	Fatal	Injury
Type of individual	107	2,412	970	3,489	3.1%	69.1%
Operator	98	2,115	944	3,157	3.1%	67.0%
Injured passenger	9	297	26	332	2.7%	89.5%
Helmet use/age group						
Helmet	17	763	342	1,122	1.5%	68.0%
Under 21	2	100	39	141	1.4%	70.9%
21-24	2	107	44	153	1.3%	69.9%
25-34	6	147	80	233	2.6%	63.1%
35-44	1	111	38	150	0.7%	74.0%
45-54	1	125	61	187	0.5%	66.8%
55-64	4	113	61	178	2.2%	63.5%
65 and older	1	60	19	80	1.3%	75.0%
No helmet	78	1,338	438	1,854	4.2%	72.2%
Under 21	5	109	32	146	3.4%	74.7%
21-24	7	103	30	140	5.0%	73.6%
25-34	12	276	85	373	3.2%	74.0%
35-44	18	273	95	386	4.7%	70.7%
45-54	18	342	97	457	3.9%	74.8%
55-64	16	176	74	266	6.0%	66.2%
65 and older	2	59	25	86	2.3%	68.6%
Gender						
Male	97	1,996	897	2,990	3.2%	66.8%
Operator	97	1,926	881	2,904	3.3%	66.3%
Injured passenger	0	70	16	86	0.0%	81.4%
Female	10	414	72	496	2.0%	83.5%
Operator	1	187	62	250	0.4%	74.8%
Injured passenger	9	227	10	246	3.7%	92.3%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) Excludes cases in which *gender, helmet use, or age group* was unknown.
- 2) *Not injured* includes **ALL** individuals involved in collisions reported as NULL values in the injury status code field. Reporting officers are instructed to include all *drivers* in ARIES, but to include passengers in the crash report only if an injury occurs; therefore, *not injured* counts should be interpreted with caution.
- 3) Totals within *gender, helmet use, and type of individual* categories may not match due to missing values in selected categories.
- 4) *Injury* includes individuals with at least one *incapacitating, non-incapacitating or other injury*.
- 5) Motorcycles are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle*.

ALCOHOL INVOLVEMENT

In terms of *blood alcohol content (BAC)* results, the number of collision-involved motorcycle operators with a BAC of 0.08 g/dL or more increased from 50 in 2014 to 62 in 2015 (Table 8). Over the five-year period, the number of operators with 0.15 BAC and greater declined annually by about 7 percent. Among the reported BAC results each year from 2011 to 2015, anywhere from 38 percent to 59 percent of motorcycle operators were in excess of 0.08 BAC. The count of motorcycle operators in fatal and incapacitating injury collisions with *no reported* BAC results in ARIES increased sharply from 2014 to 2015—more than 90 percent of operators (in fatal and incapacitating collisions) had no reported BAC results in 2015. Over the five year period, from 76 percent to 92 percent of such operators have no BAC results reported in ARIES.

With respect to the numbers of impaired motorcycle and motor driven cycle (B) operators who were killed in collisions from 2011 to 2015, the number of motorcycle or motor driven cycle (B) operators classified with a BAC of 0.08 g/dL or greater dropped sharply from 2014 to 2015 (from 15 to 7) (Table 9). It should be noted that the percentage of fatalities with reported results in ARIES dropped to another five-year low of 20 percent in 2015 (from a high of 73 percent in 2012). Considering only those with reported results, the percentage of (killed) operators with 0.08 g/dL or greater has varied from 2011 to 2015—nearly 50 percent in 2011, which dropped to 35 percent in 2015. These declines should be considered cautiously in the light of very incomplete reporting of BAC results in the ARIES data base.

Table 8. Motorcycle operators in Indiana collisions involving fatal or incapacitating injuries, by blood alcohol content (BAC) (g/dL), 2011-2015

BAC range, g/dL	Count of motorcycle operators					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
Total motorcycle operators	642	754	663	658	1,350	105.2%	20.4%
No BAC reported	490	571	535	545	1,245	128.4%	26.3%
% total operators	76.3%	75.7%	80.7%	82.8%	92.2%		
< 0.01	66	84	61	50	31	-38.0%	-17.2%
% total operators	10.3%	11.1%	9.2%	7.6%	2.3%		
0.01 < 0.08	8	19	19	13	12	-7.7%	10.7%
% total operators	1.2%	2.5%	2.9%	2.0%	0.9%		
0.08 < 0.15	24	27	9	11	22	100.0%	-2.2%
% total operators	3.7%	3.6%	1.4%	1.7%	1.6%		
0.15 and greater	54	53	39	39	40	2.6%	-7.2%
% total operators	8.4%	7.0%	5.9%	5.9%	3.0%		
As % of reported results							
< 0.01	43.4%	45.9%	47.7%	44.2%	29.5%		
0.01 < 0.08	5.3%	10.4%	14.8%	11.5%	11.4%		
0.08 < 0.15	15.8%	14.8%	7.0%	9.7%	21.0%		
0.15 and greater	35.5%	29.0%	30.5%	34.5%	38.1%		

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) g/dL = grams per deciliter.
- 2) Excludes BAC > 0.59 g/dL.
- 3) Includes operators involved in collisions with at least one *fatal* or *incapacitating injury*.
- 4) The most recent ARIES upgrade added a clarification to reporting officers on the definition of incapacitating injuries criteria to include "transported from scene for treatment"; therefore, recent increases in incapacitating injuries should be interpreted with caution.
- 5) Motorcycles are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle*.

Table 9. Motorcycle operators killed in collisions, by blood alcohol content, 2011-2015

BAC (g/dL) range	2011	2012	2013	2014	2015	Annual rate of change	
						2014-15	2011-15
Operators killed	113	135	105	110	98	-10.9%	-3.5%
Not reported or no test	36	36	56	73	78	6.8%	21.3%
0	34	54	29	21	11	-47.6%	-24.6%
0.01 < 0.08	5	7	7	1	2	--	--
0.08 < 0.15	13	14	2	4	1	-75.0%	-47.3%
0.15+	25	24	11	11	6	-45.5%	-30.0%
Operators with 0.08 +	38	38	13	15	7	-53.3%	-34.5%
% with reported results	68.1%	73.3%	46.7%	33.6%	20.4%		
% 0.08 or higher (of all reported results)	49.4%	38.4%	26.5%	40.5%	35.0%		

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) g/dL = grams per deciliter.
- 2) Excludes BAC > 0.59 g/dL.
- 3) Motorcycles are defined as vehicles reported in ARIES as *motorcycle, class A and B motor driven cycles, moped, and motorized bicycle*.

MOTORCYCLE COLLISIONS AND ‘AT FAULT’ DRIVERS OR OPERATORS

In MV motorcycle collisions, there is a difference between the likelihood the motorcycle operator or the other vehicle operator was “at fault” (i.e., a vehicle’s *contributing circumstance* matched the *primary factor* in the collision—referred to in Table 10 as being *attributable*). In 2015, MV collisions involving motorcycles most frequently involved some type of *unsafe*

action by either or both the motorcyclist and/or the other vehicle driver. Overall in 2015, other vehicles were somewhat more likely to be *attributable* (63 percent were *attributable*) than the *motorcycles* (35 percent were *attributable*). However, certain collisions involving selected primary factors were more likely to be the fault of motorcyclists in MV motorcycle collisions in 2015, including *unsafe speed*, *improper passing*, *driving left of center*, and *speed too fast for weather conditions*.

Table 10. Vehicles involved in Indiana multi-vehicle motorcycle collisions, by vehicle type, primary factor, and vehicle attributability to collision occurrence, 2015

Primary factor	Vehicles involved		Count of vehicles attributable		% Attributable	
	Motorcycle	Other vehicles	Motorcycle	Other vehicles	Motorcycle	Other vehicles
Unsafe actions	1,589	1,542	561	971	35.3%	63.0%
Failure to yield right of way	666	662	95	563	14.3%	85.0%
Following too closely	371	346	215	132	58.0%	38.2%
Unsafe backing	110	105	7	94	6.4%	89.5%
Disregard signal/reg sign	92	96	38	53	41.3%	55.2%
Unsafe speed	88	81	70	12	79.5%	14.8%
Improper turning	79	73	16	55	20.3%	75.3%
Improper passing	78	72	57	19	73.1%	26.4%
Improper lane usage	59	60	29	31	49.2%	51.7%
Left of center	37	38	27	10	73.0%	26.3%
Speed too fast for weather conditions	7	8	5	2	71.4%	25.0%
Wrong way on one way	2	1	2	0	100.0%	0.0%
Distraction	53	49	24	23	45.3%	46.9%
Vehicle-related	43	38	29	10	67.4%	26.3%
Loss of control	43	34	36	2	83.7%	5.9%
Environmental	35	27	23	17	65.7%	63.0%
Cognitive impairment	6	6	3	2	50.0%	33.3%
All other	139	145	74	72	53.2%	49.7%
Total	1,908	1,841	750	1,097	39.3%	59.6%



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 17, 2016

Notes:

- 1) A vehicle 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*. In multi-vehicle collisions, more than one vehicle can be classified as *attributable*.
- 2) Data exclude single-vehicle collisions involving motorcycles and collisions with unknown or unreported primary factor.
- 3) *Other vehicles* excludes *unknown* unit type, *pedestrians*, *bicycles*, and *animal-drawn vehicles*.
- 4) Due to reorganizations of primary factors and vehicle classifications, some numbers may not be comparable to previous publications.
- 5) Motorcycles are defined as vehicles reported in ARIES as *motorcycle*, *class A and B motor driven cycles*, *moped*, and *motorized bicycle*.



DEFINITIONS

- **Alcohol-impaired** - A driver or operator is classified as *alcohol-impaired* when the driver has a blood alcohol content (BAC) test result at or above 0.08 g/dL.
- **Motorcycle** - vehicle reported in ARIES as a *motorcycle* or a *motor-driven cycle (class A)*.
- **Motor driven cycle (B)** - vehicle reported in ARIES as a *motor driven cycle (class B)*, *moped*, or *motorized bicycle*.

DATA SOURCES

Indiana State Police Automated Reporting Information Exchange System (ARIES), current as of March 17, 2016.

Indiana Bureau of Motor Vehicles, current as of April 20, 2016.

REFERENCES

Center for Road Safety. 2015. Indiana Roadside Observational Survey of Safety Belt and Motorcycle Helmet Use. Purdue 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.

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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

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 tenth 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.



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