

Based on data from the Indiana State Police Automated Reporting and Information Exchange System (ARIES) as of March 23, 2015, this fact sheet summarizes aspects of motorcycle collisions, demographic characteristics of persons involved, helmet use, and alcohol impairment in Indiana during calendar year 2014.

## PERSONS INVOLVED, FATALITIES, AND INJURIES IN MOTORCYCLE AND MOPED COLLISIONS

There was a 6 percent decrease in the number of motorcyclists involved in collisions in 2014 (Table 1) There were 125 motorcyclist fatalities (and 4 non-motorcyclists killed in motorcycle collisions, not shown in Table 1). There were 2,671 motorcyclists with non-fatal injuries, a 3 percent decline from 2013. There was a 52 percent increase in the number of moped passengers injured from 2013 (86) to 2014 (131). From 2010 to 2014, motorcycle operator involvement dropped, and deaths and injuries to motorcycle operators have generally declined. During the same five-year period, moped operator involvement increased and there was also substantial growth in moped passenger injuries.

In 2014:

- 3,407 collisions involving motorcycles or mopeds occurred in Indiana, a 3 percent decrease from 2013.
- The number of fatal motorcycle collisions increased 8 percent, to 123. The largest increase was in the fatal multi-vehicle category, from 62 to 74 (19 percent increase).
- A total of 125 motorcycle and moped riders died in collisions (5 percent increase from 2013), while 2,671 were injured (down 3 percent). Four non-motorcyclists were killed in motorcycle collisions.
- Unhelmeted collision-involved motorcyclists had higher fatality and injury rates than helmeted riders.
- The highest helmet use among collision-involved motorcyclists was among riders aged 55 to 64 years (38 percent). The lowest rate of helmet use was for riders 35 to 44 years old (20 percent).

*Note: Data discrepancies may exist between the 2014 Indiana traffic safety reports and previous traffic safety publications due to updates to the Indiana State Police ARIES data that have occurred since the original publication dates.*

**Table 1. Motorcyclists involved in Indiana motorcycle or moped collisions by person type and injury, 2010-2014**

Injury status and person type	2010	2011	2012	2013	2014	Annual rate of change	
						2013-14	2010-14
<b>Motorcycle</b>	<b>2,864</b>	<b>2,855</b>	<b>3,192</b>	<b>2,648</b>	<b>2,492</b>	<b>-5.9%</b>	<b>-3.4%</b>
<b>Operator</b>	<b>2,559</b>	<b>2,578</b>	<b>2,882</b>	<b>2,382</b>	<b>2,247</b>	<b>-5.7%</b>	<b>-3.2%</b>
Fatal	93	92	112	82	88	7.3%	-1.4%
Injured	1,740	1,722	1,988	1,604	1,499	-6.5%	-3.7%
Not injured	726	764	782	696	660	-5.2%	-2.4%
<b>Passenger</b>	<b>305</b>	<b>277</b>	<b>310</b>	<b>266</b>	<b>245</b>	<b>-7.9%</b>	<b>-5.3%</b>
Fatal	10	4	15	12	13	8.3%	6.8%
Injured	292	269	286	248	224	-9.7%	-6.4%
Not injured	3	4	9	6	8	--	--
<b>Moped</b>	<b>865</b>	<b>960</b>	<b>1,273</b>	<b>1,147</b>	<b>1,194</b>	<b>4.1%</b>	<b>8.4%</b>
<b>Operator</b>	<b>786</b>	<b>883</b>	<b>1,146</b>	<b>1,055</b>	<b>1,058</b>	<b>0.3%</b>	<b>7.7%</b>
Fatal	7	21	23	23	23	0.0%	34.6%
Injured	612	662	890	817	817	0.0%	7.5%
Not injured	167	200	233	215	218	1.4%	6.9%
<b>Passenger</b>	<b>79</b>	<b>77</b>	<b>127</b>	<b>92</b>	<b>136</b>	<b>47.8%</b>	<b>14.5%</b>
Fatal	0	1	1	2	1	-50%	--
Injured	73	72	122	86	131	52.3%	15.7%
Not injured	6	4	4	4	4	--	--
<b>Total killed</b>	<b>110</b>	<b>118</b>	<b>151</b>	<b>119</b>	<b>125</b>	<b>5.0%</b>	<b>3.2%</b>
<b>Total injured</b>	<b>2,717</b>	<b>2,725</b>	<b>3,286</b>	<b>2,755</b>	<b>2,671</b>	<b>-3.0%</b>	<b>-0.4%</b>

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015



## COLLISIONS INVOLVING MOTORCYCLES AND/OR MOPEDS

From 2010 to 2014, fatalities per 100,000 motorcycle registrations increased slightly from 55 to 58, while injuries per 100,000 registrations dropped from 1,399 to 1,287 (Table 2). From 2013 to 2014, the number of

fatal motorcycle collisions increased 8 percent (Table 3). Fatal single-vehicle collisions decreased from 2013 to 2014 (down 6 percent), while fatal multi-vehicle collisions increased 19 percent. Single-vehicle motorcycle crashes have higher non-fatal injury rates than multi-vehicle collisions.

**Table 2. Fatalities and injuries in Indiana collisions involving motorcycles, 2010-2014**

Year	Counts				Per 100,000 MC registrations		
	Collisions	Fatalities	Injuries	Motorcycle registrations	Collisions	Fatalities	Injuries
2010	3,436	114	2,922	208,918	1,644.7	54.6	1,398.6
2011	3,556	118	2,910	214,903	1,654.7	54.9	1,354.1
2012	4,111	151	3,487	223,989	1,835.4	67.4	1,556.8
2013	3,524	119	2,963	221,715	1,589.4	53.7	1,336.4
2014	3,407	129	2,852	221,606	1,537.4	58.2	1,287.0

Sources: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015; Indiana Bureau of Motor Vehicles, as of March 24, 2015.

**Notes:**

- 1) *Fatalities and injuries* include motorcycle and moped riders, vehicle occupants, pedestrians, and pedalcyclists killed or injured in collisions involving motorcycles.
- 2) *Injuries* include *incapacitating, non-incapacitating, and other injury* categories.

**Table 3. Collisions involving motorcycles by collision severity and vehicles involved, 2010-2014**

Collision type and severity	Count of collisions					Annual rate of change	
	2010	2011	2012	2013	2014	2010-14	2010-14
<b>All collisions</b>	<b>3,436</b>	<b>3,556</b>	<b>4,111</b>	<b>3,524</b>	<b>3,407</b>	<b>-3.3%</b>	<b>-0.2%</b>
Fatal	110	117	146	114	123	7.9%	2.8%
Injury	2,415	2,426	2,899	2,442	2,353	-3.6%	-0.6%
Property damage	911	1,013	1,066	968	931	-3.8%	0.5%
<b>Single vehicle</b>	<b>1,560</b>	<b>1,571</b>	<b>1,771</b>	<b>1,493</b>	<b>1,462</b>	<b>-2.1%</b>	<b>-1.6%</b>
Fatal	49	54	63	52	49	-5.8%	0.0%
Injury	1,238	1,236	1,430	1,177	1,162	-1.3%	-1.6%
Property damage	273	281	278	264	251	-4.9%	-2.1%
<b>Multi-vehicle</b>	<b>1,876</b>	<b>1,985</b>	<b>2,340</b>	<b>2,031</b>	<b>1,945</b>	<b>-4.2%</b>	<b>0.9%</b>
Fatal	61	63	83	62	74	19.4%	4.9%
Injury	1,177	1,190	1,469	1,265	1,191	-5.8%	0.3%
Property damage	638	732	788	704	680	-3.4%	1.6%
<b>Fatal collision as % total</b>							
Single vehicle	3.1%	3.4%	3.6%	3.5%	3.4%		
Multi-vehicle	3.3%	3.2%	3.5%	3.1%	3.8%		
<b>Injury collision as % total</b>							
Single vehicle	79.4%	78.7%	80.7%	78.8%	79.5%		
Multi-vehicle	62.7%	59.9%	62.8%	62.3%	61.2%		

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

**Notes:**

- 1) *Motorcycles* includes *mopeds*.
- 2) *Multi-vehicle* collision includes *other vehicles* and *non-motorists*.

## GENDER AND AGE

Far more males than females are involved as riders in Indiana motorcycle collisions (Table 4). Overall, the number of male motorcycle *riders* killed in crashes increased 8 percent in 2014, driven largely by the number of male *operators* killed. The number of collision-involved female operators increased 5 percent from 2013 to 2014. From 2010 to 2014, the largest

numbers of motorcyclists killed were typically within three age groupings: 25-34, 35-44, and 45-54 years (Figure 1). From 2013 to 2014, however, two age groups experienced sizeable increases in the counts of motorcyclists killed—a 73 percent increase (from 15 to 26 killed) among the 25-to-34 year old group, and a 90 percent increase (from 21 to 40 killed) in the 45-to-54 year old group (calculated from Figure 1).

**Table 4. Injury status of motorcyclists by gender and person type, 2010-2014**

Person type, gender, and injury status	2010	2011	2012	2013	2014	Annual rate of change	
						2013-14	2010-14
<b>All riders</b>	<b>3,728</b>	<b>3,814</b>	<b>4,458</b>	<b>3,794</b>	<b>3,682</b>	<b>-3.0%</b>	<b>-0.3%</b>
<b>Male</b>	<b>3,129</b>	<b>3,226</b>	<b>3,809</b>	<b>3,227</b>	<b>3,086</b>	<b>-4.4%</b>	<b>-0.3%</b>
Fatal	99	109	135	102	110	7.8%	2.7%
Injured	2,182	2,201	2,721	2,252	2,142	-4.9%	-0.5%
Not injured	848	916	953	873	834	-4.5%	-0.4%
<b>Female</b>	<b>599</b>	<b>588</b>	<b>649</b>	<b>567</b>	<b>596</b>	<b>5.1%</b>	<b>-0.1%</b>
Fatal	11	9	16	17	15	-11.8%	8.1%
Injured	535	523	562	503	528	5.0%	-0.3%
Not injured	53	56	71	47	53	12.8%	0.0%
<b>Operators only</b>	<b>3,344</b>	<b>3,461</b>	<b>4,023</b>	<b>3,436</b>	<b>3,301</b>	<b>-3.9%</b>	<b>-0.3%</b>
<b>Male</b>	<b>3,051</b>	<b>3,151</b>	<b>3,709</b>	<b>3,154</b>	<b>3,005</b>	<b>-4.7%</b>	<b>-0.4%</b>
Fatal	96	109	135	101	109	7.9%	3.2%
Injured	2,115	2,129	2,627	2,188	2,068	-5.5%	-0.6%
Not injured	840	913	947	865	828	-4.3%	-0.4%
<b>Female</b>	<b>293</b>	<b>310</b>	<b>314</b>	<b>282</b>	<b>296</b>	<b>5.0%</b>	<b>0.3%</b>
Fatal	4	4	0	4	2	-50.0%	-15.9%
Injured	237	255	250	233	247	6.0%	1.0%
Not injured	52	51	64	45	47	4.4%	-2.5%
<b>Passengers only</b>	<b>384</b>	<b>353</b>	<b>435</b>	<b>358</b>	<b>381</b>	<b>6.4%</b>	<b>-0.2%</b>
<b>Male</b>	<b>78</b>	<b>75</b>	<b>100</b>	<b>73</b>	<b>81</b>	<b>11.0%</b>	<b>0.9%</b>
Fatal	3	0	0	1	1	--	--
Injured	67	72	94	64	74	15.6%	2.5%
Not injured	8	3	6	8	6	--	--
<b>Female</b>	<b>306</b>	<b>278</b>	<b>335</b>	<b>285</b>	<b>300</b>	<b>5.3%</b>	<b>-0.5%</b>
Fatal	7	5	16	13	13	0.0%	16.7%
Injured	298	268	312	270	281	4.1%	-1.5%
Not injured	1	5	7	2	6	--	--

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

**Notes:**

- 1) Excludes cases where *gender* or *injury status* were unknown.
- 2) Passengers classified as *not injured* should not be in ARIES; they are included here as reported in ARIES.

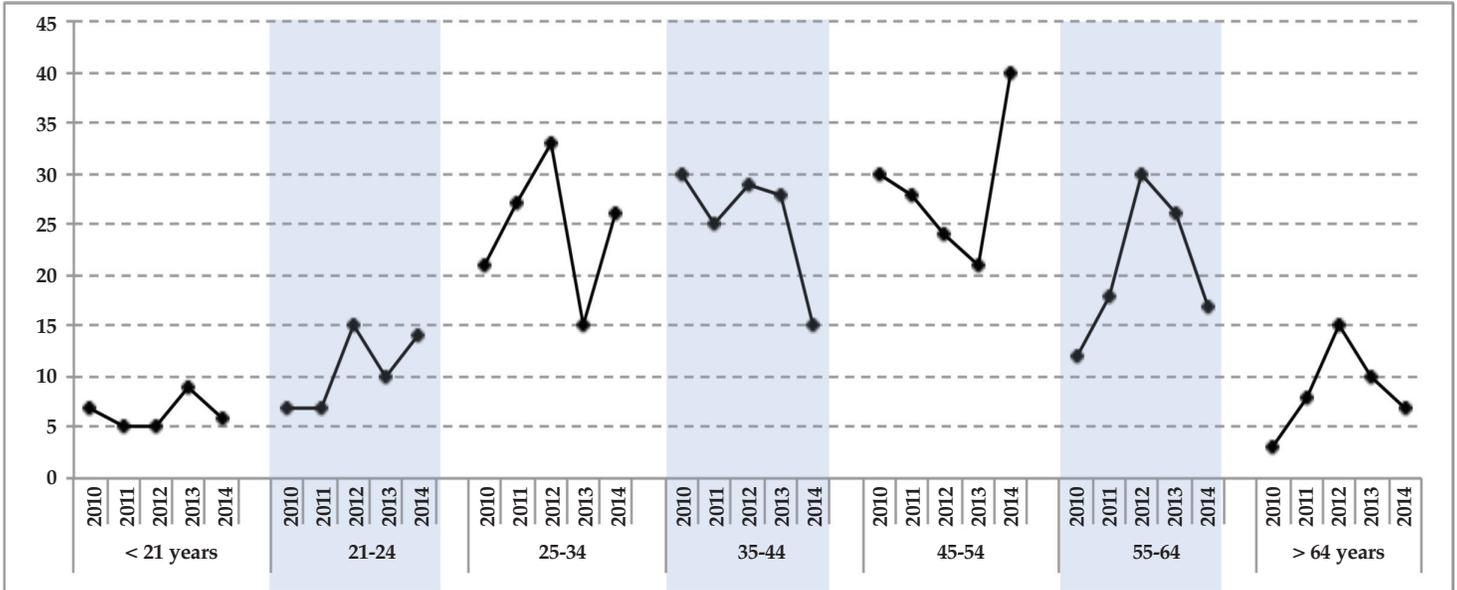


# TRAFFIC SAFETY FACTS

The pattern of fatality rates per 100 motorcyclists involved in collisions differs among age groups. Given a collision, the likelihood of being killed goes up slightly as age increases (Figure 2). During the 2010 to

2014 period, motorcyclists under the age of 21 years had the lowest fatality rates, while collision-involved motorcyclists 65 years and older generally had higher rates than other age groups.

Figure 1. Count of motorcyclists killed by age group, 2010-2014

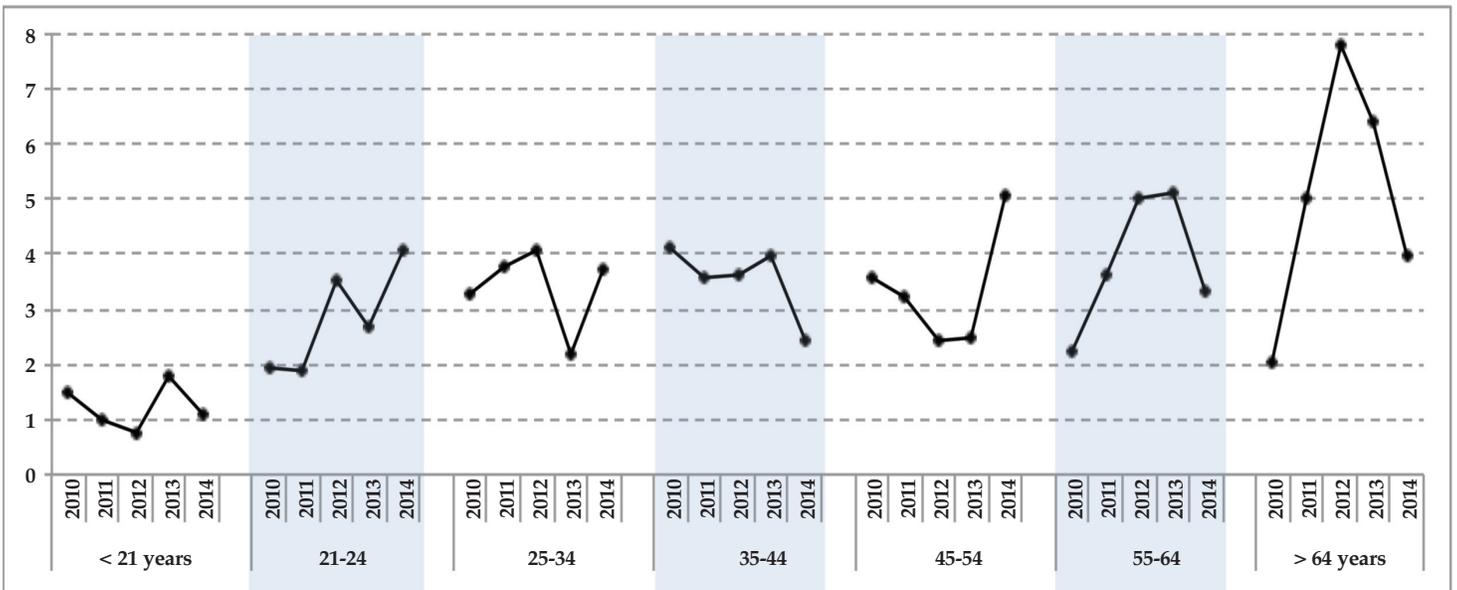


Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

Notes:

- 1) Motorcyclists includes moped riders.
- 2) Excludes *unknown* age group.

Figure 2. Fatality rate per 100 motorcyclists involved, by age, 2010-2014



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

Notes:

- 1) Motorcyclists includes moped riders.
- 2) Excludes *unknown* age group.

# HELMET USE

Based on recent roadside observational surveys of motorcycle helmet use in Indiana from 2005 to 2013, helmet usage has ranged between 35 and 47 percent, with a mean of about 41 percent (Center for Road Safety, 2014). Collision-involved motorcyclists reflect substantially lower helmet use rates. Considering known helmet use from 2010 to 2014, the rate of helmet use among collision-involved motorcycle riders ranged from

about 27 percent to 30 percent (Table 5). Fatality rates for unhelmeted riders exceed those of helmeted riders every year from 2010 to 2014. Similarly, helmeted riders had lower non-fatal injury rates than unhelmeted riders. However, helmet use in Indiana motorcycle collisions varies somewhat by age (Figure 3). The highest rate of helmet use among collision-involved motorcyclists in 2014 (38 percent) was among riders between 55 and 64 years of age. The lowest rate was for riders between 35 and 44 years of age (20 percent).

**Table 5. Helmet use by motorcyclists in Indiana collisions by individual injury severity, 2010-2014**

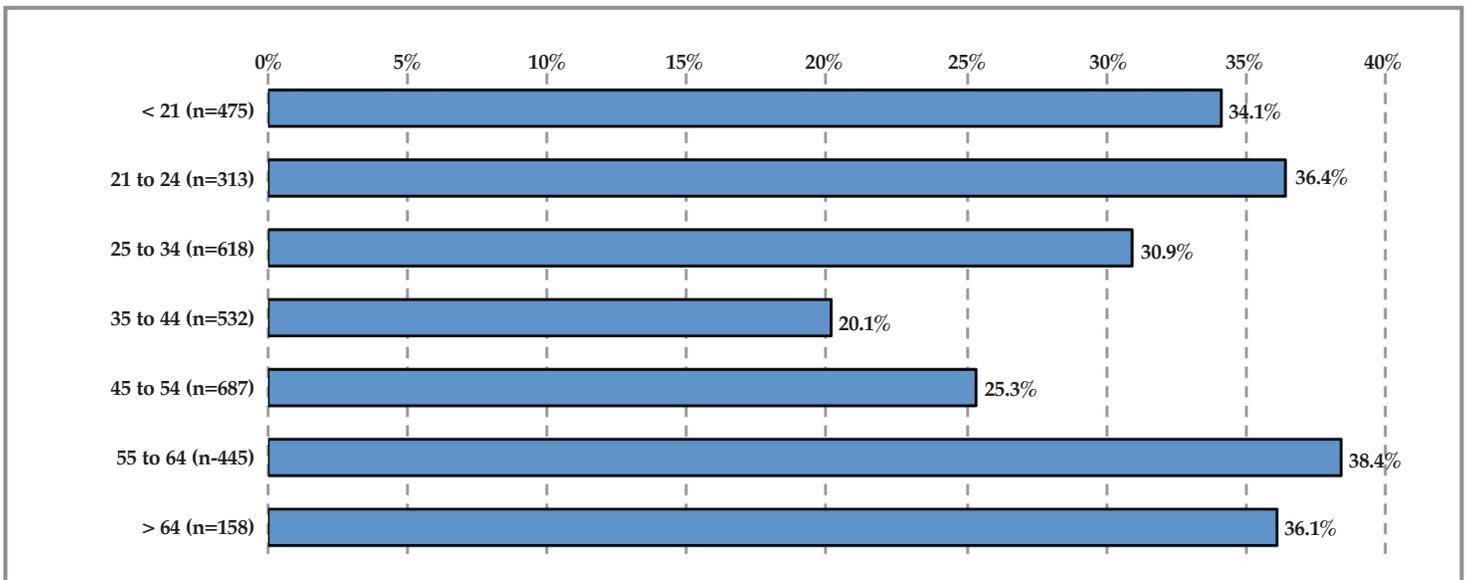
Helmet use/injury status	Counts and percent totals					Annual rate of change	
	2010	2011	2012	2013	2014	2013-14	2010-14
<b>All motorcyclists</b>	<b>3,395</b>	<b>3,450</b>	<b>4,070</b>	<b>3,482</b>	<b>3,228</b>	<b>-7.3%</b>	<b>-1.3%</b>
No helmet reported	71.0%	71.6%	72.9%	72.0%	69.8%	-3.1%	-0.4%
Helmet reported	29.0%	28.4%	27.1%	28.0%	30.2%	7.9%	1.0%
<b>No helmet reported</b>	<b>2,409</b>	<b>2,469</b>	<b>2,967</b>	<b>2,506</b>	<b>2,252</b>	<b>-10.1%</b>	<b>-1.7%</b>
Fatal	3.6%	3.8%	3.9%	3.3%	3.2%	-0.9%	-2.7%
Injured	74.1%	74.2%	75.3%	74.9%	75.8%	1.2%	0.6%
Not injured	22.3%	22.0%	20.8%	21.8%	21.0%	-4.0%	-1.5%
<b>Helmet reported</b>	<b>986</b>	<b>981</b>	<b>1,103</b>	<b>976</b>	<b>976</b>	<b>0.0%</b>	<b>-0.3%</b>
Fatal	1.8%	1.8%	2.6%	1.9%	2.8%	42.1%	11.0%
Injured	72.5%	69.4%	72.8%	71.9%	68.5%	-4.7%	-1.4%
Not injured	25.7%	28.7%	24.6%	26.1%	28.7%	9.8%	2.8%

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

**Notes:**

- 1) Includes motorcycle and moped riders.
- 2) Injured includes incapacitating, non-incapacitating, and other injury categories.
- 3) Excludes motorcyclists with unknown helmet use.

**Figure 3. Percent helmet use reported for motorcyclists involved in collisions by age of rider, 2014**



Source: Indiana State Police Automated Reporting Information Exchange System, as of March 23, 2015

**Notes:**

- 1) Includes motorcycle and moped riders.
- 2) Excludes unknown helmet use or unknown age.



## ALCOHOL INVOLVEMENT

With respect to levels and numbers of impaired motorcycle and moped operators who were killed in collisions from 2010 to 2014, the numbers of impaired operators involved in collisions generally declined, although early incomplete reporting of BAC results in 2014 creates a false picture of declines (Table 6). The number of motorcycle or moped operators classified with a BAC of 0.08 g/dL or greater dropped sharply from 2012

to 2013 (from 38 to 13), then increased slightly to 15 operators in 2014. It should be noted that the percentage of fatalities with reported results in ARIES dropped to a five-year low of 30 percent in 2014. Considering only those tested, the percentage of (killed) operators with 0.08 g/dL or greater drifted upward from 2010 to nearly 50 percent in 2011, then dropped to under 40 percent in 2012 and 27 percent in 2013. The impairment rate was back up to 46 percent in 2014.

Table 6. Motorcycle and moped operators killed in collisions, by blood alcohol content, 2010-2014

BAC (g/dL) range	2010	2011	2012	2013	2014	Annual rate of change	
						2013-14	2010-14
<b>Operators killed</b>	<b>100</b>	<b>113</b>	<b>135</b>	<b>105</b>	<b>111</b>	<b>5.7%</b>	<b>2.6%</b>
Not reported or no test	39	36	36	56	78	39.3%	18.9%
0	34	34	54	29	18	-37.9%	-14.7%
0.01 < 0.08	3	5	7	7	0	--	--
0.08 < 0.15	10	13	14	2	4	100.0%	-20.5%
0.15+	14	25	24	11	11	0.0%	-5.9%
Operators with 0.08 +	24	38	38	13	15	15.4%	-11.1%
<b>% with reported results</b>	<b>61.0%</b>	<b>68.1%</b>	<b>73.3%</b>	<b>46.7%</b>	<b>29.7%</b>		
<b>% 0.08 or higher (of all reported results)</b>	<b>39.3%</b>	<b>49.4%</b>	<b>38.4%</b>	<b>26.5%</b>	<b>45.5%</b>		

Source: Indiana State Police Automated Reporting Information Exchange System, as of March 21, 2015

## 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
- **Motorcyclist** - includes the operators and passengers of motorcycles or mopeds involved in Indiana motor vehicle collisions, unless otherwise specified.
- **Not injured** status includes individuals involved in collisions reported as *null* values in the injury status code field. Reporting officers are instructed to enter only *drivers* in ARIES, if no injury occurs; however, passengers and non-motorists are sometimes mistakenly reported when no injury occurs. For this reason, not injured counts should be interpreted with caution.

## REFERENCES

Center for Road Safety. (2014). *Indiana roadside observational survey of safety belt and motorcycle helmet use*. West Lafayette, IN: Purdue University.

## DATA SOURCES

Indiana State Police Automated Reporting Information Exchange System (ARIES), current as of March 23, 2015.

Indiana Bureau of Motor Vehicles, current as of March 25, 2015.



# TRAFFIC SAFETY FACTS

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](http://www.policyinstitute.iu.edu)), the ICJI website ([www.in.gov/cji/](http://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 2014 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the ninth 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, 2014, 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 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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