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COMMERCIAL VEHICLES : 2015

INDIANA TRAFFIC SAFETY FACTS

IN 2015:

- Of the 216,312 collisions reported in Indiana in 2015, **8 percent** (16,160) involved commercial vehicles (CV) and there were 122 fatal collisions involving CVs.
- From 2011 to 2015, CV collisions increased annually about 3 percent. From 2014 to 2015, collisions involving large trucks or buses **decreased 4 percent**.
- In 2015, there were **136 persons killed** in CV collisions—of these, only **20 persons** were riding in the CV (15 drivers and 5 occupants).
- Considering all motor vehicle collisions from 2011 to 2015, the occupants of CVs and the occupants of non-CVs were properly restrained about 90 percent of the time; **vehicle occupants killed in CV collisions were properly restrained less than half the time**.
- Among the 17,704 CVs involved in collisions in 2015, only **59 vehicles** actually released any hazardous materials.

INTRODUCTION

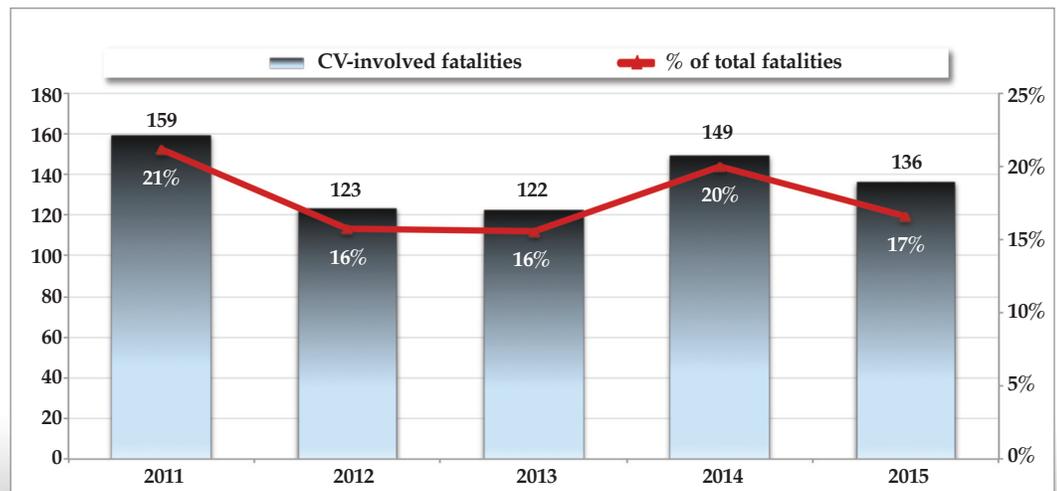
This fact sheet summarizes Indiana traffic collisions involving commercial vehicles (CV), by examining collision characteristics as well as the types of vehicles, and individuals involved. In 2015, 136 individuals were killed in CV crashes (Figure 1). Data come from the Indiana State Police Automated Reporting and Information Exchange System (ARIES) as of March 17, 2016. Collision severity, person type, personal injury status, restraint use, and other selected aspects of collisions are examined for CVs and other involved (non-CV) traffic units. The incidence of hazmat placards and releases in Indiana collisions is also noted.

DEFINITION

Commercial vehicles (CV) are defined as:

- large trucks (single 2 axle, 6 tires; single 3 or more axles; truck/trailer--not semi; tractor--cab only, no trailer; tractor/one semi-trailer; tractor/double trailer; tractor/triple trailer),
- combination vehicles,
- pickup trucks over 10,000 pounds,
- buses (15+ passengers with driver),
- school buses, or
- any vehicle with a hazardous materials (hazmat) placard.

Figure 1. Indiana traffic fatalities in collisions involving a commercial vehicle (CV), 2011-2015



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

SUMMARY OF CV COLLISIONS, FATALITIES, AND INJURIES

In 2015, there were 16,160 traffic collisions involving one or more CVs; of these, 88 percent (14,162) involved *large trucks* (Table 1). CV collisions have increased from 2011 to 2015 by about 3 percent per year. However, from 2014 to 2015, there were reductions in collisions involving *large trucks* (3 percent decrease) and *buses* (down 6 percent). Of the 122 fatal

collisions that included a CV in 2015, 95 percent (116) involved *large trucks* (not shown in Table 1). In 2015, the number of persons killed in large truck collisions declined 10 percent (from 142 to 128), while there was a slight increase in fatalities linked to *bus* collisions (from 6 to 8). These one-year changes are notable in that there was a 15 percent increase in fatalities from all other non-CV collisions in 2015. While CV collisions constituted about 8 percent of total traffic collisions, approximately 17 percent of individual fatalities resulted from CV involvement.

Table 1. Indiana collisions, fatalities, and injuries involving one or more commercial vehicles (CV), 2011-2015

	2011	2012	2013	2014	2015	Annual rate of change	
						2014-15	2011-15
Total collisions							
CV involved	14,455	13,541	13,717	16,800	16,160	-3.8%	2.8%
Fatal	130	111	101	132	122	-7.6%	-1.6%
Injury	1,986	1,837	1,855	2,193	2,110	-3.8%	1.5%
Property damage	12,339	11,593	11,761	14,475	13,928	-3.8%	3.1%
Involving a large truck	12,495	11,819	11,919	14,602	14,162	-3.0%	3.2%
Involving a bus	1,880	1,613	1,658	2,042	1,922	-5.9%	0.6%
No CV involved	174,001	175,642	179,519	188,952	200,152	5.9%	3.6%
Fatal	546	609	609	573	634	10.6%	3.8%
Injury	30,802	32,301	30,997	31,663	32,324	2.1%	1.2%
Property damage	142,653	142,732	147,913	156,716	167,194	6.7%	4.0%
Total individual fatalities							
CV involved	159	123	122	149	136	-8.7%	-3.8%
Involving a large truck	151	119	117	142	128	-9.9%	-4.0%
Involving a bus	8	4	5	6	8	33.3%	0.0%
No CV involved	592	658	662	598	685	14.5%	3.7%
Total individual injuries							
CV involved	3,042	2,856	2,915	3,377	3,435	1.7%	3.1%
Involving a large truck	2,509	2,355	2,371	2,760	2,861	3.7%	3.3%
Involving a bus	476	447	503	567	520	-8.3%	2.2%
No CV involved	44,189	46,302	44,619	45,181	47,984	6.2%	2.1%
Percent CV involved (of total)							
Collisions	7.7%	7.2%	7.1%	8.2%	7.5%		
Individual fatalities	21.2%	15.7%	15.6%	19.9%	16.6%		
Individual injuries	6.4%	5.8%	6.1%	7.0%	6.7%		

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

Note: *Large truck* and *bus* collisions, injuries, and fatalities may not sum to totals because of other CVs not listed separately.

MONTH AND DAY OF WEEK OF LARGE TRUCK COLLISIONS

Between 2011 and 2015, large truck involvement in collisions was generally higher during winter months (January, February, December) and lower during spring months (March, April, May) (Table 2). In all 5 years from 2011 to 2015, large truck involvement in all Indiana collisions was highest in a winter month; in 4 of the 5 years, large truck involvement was lowest in a spring month. Fatal collisions involving large trucks follow a different pattern, and tend to cluster more in the summer (June,

July, August) and fall (September, October, November) months. In 2015, 60 percent of fatalities in large truck collisions occurred in summer and fall (calculated from Table 2).

Large trucks follow a general pattern of high involvement in both total collisions and fatal collisions during the work week and low involvement on the weekend. Between 2011 and 2015, Sunday was consistently the day with the lowest number of both total and fatal collisions involving large trucks (Table 3). With the exception of 2012, large truck involvement in total collisions was highest on Tuesdays. In 2015, the number of fatal collisions involving large trucks was also highest on a Tuesday.

Table 2. Total and fatal traffic collisions involving large trucks in Indiana, by month, 2011-2015

Month	Collisions involving large trucks					Fatal collisions involving large trucks				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Jan	1,309	1,167	1,032	2,105	1,334	13	10	13	10	7
Feb	1,237	844	822	1,602	1,419	8	8	6	7	9
Mar	874	950	1,059	1,121	1,187	3	6	13	10	7
Apr	836	838	876	999	967	7	8	11	5	5
May	991	979	978	985	1,013	8	9	3	13	12
Jun	1,085	1,016	898	1,131	1,188	10	13	6	11	14
Jul	925	976	966	1,060	1,169	13	10	6	17	9
Aug	1,038	980	1,037	1,088	1,117	17	8	3	9	11
Sep	1,000	957	951	1,082	1,234	9	16	9	10	13
Oct	1,108	1,081	1,131	1,280	1,233	12	7	7	10	15
Nov	1,102	964	1,035	1,139	1,183	12	5	11	6	8
Dec	990	1,067	1,134	1,010	1,118	11	8	10	17	6
Total	12,495	11,819	11,919	14,602	14,162	123	108	98	125	116
High	Jan	Jan	Dec	Jan	Feb	Aug	Sep	Jan	Jul	Oct
Low	Apr	Apr	Feb	May	Apr	Mar	Nov	May	Apr	Apr

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

Notes:

- 1) Conditional formatting color-scales are illustrated to show months from low to high for each year.
- 2) Large trucks are defined as vehicles reported as single 2 axle, 6 tires; single 3 or more axles; truck/trailer — not semi; tractor — cab only, no trailer; tractor/one semi-trailer; tractor/double trailer; and, tractor/triple trailer.

Table 3. Total and fatal traffic collisions involving large trucks in Indiana, by day of week, 2011-2015

Day	Collisions involving large trucks					Fatal collisions involving large trucks				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Sun	490	540	607	803	712	3	10	3	9	3
Mon	2,053	1,946	2,064	2,364	2,485	22	12	19	23	15
Tue	2,381	2,080	2,164	2,677	2,642	14	17	22	17	29
Wed	2,278	2,122	2,046	2,636	2,558	23	19	11	21	23
Thur	2,337	2,130	2,094	2,573	2,440	32	19	18	23	21
Fri	2,060	2,196	2,054	2,406	2,295	22	24	16	23	15
Sat	896	805	890	1,143	1,030	7	7	9	9	10
Total	12,495	11,819	11,919	14,602	14,162	123	108	98	125	116
High	Tue	Fri	Tue	Tue	Tue	Thur	Fri	Tue	Mon	Tue
Low	Sun	Sun	Sun	Sun	Sun	Sun	Sat	Sun	Sun	Sun

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

Notes:

- 1) Conditional formatting color-scales are illustrated to show days from low to high for the entire 5-year period.
- 2) Large trucks are defined as vehicles reported as single 2 axle, 6 tires; single 3 or more axles; truck/trailer — not semi; tractor — cab only, no trailer; tractor/one semi-trailer; tractor/double trailer; and, tractor/triple trailer.
- 3) In 2014, the count of high fatalities (23) was the same for Monday, Thursday, and Friday.



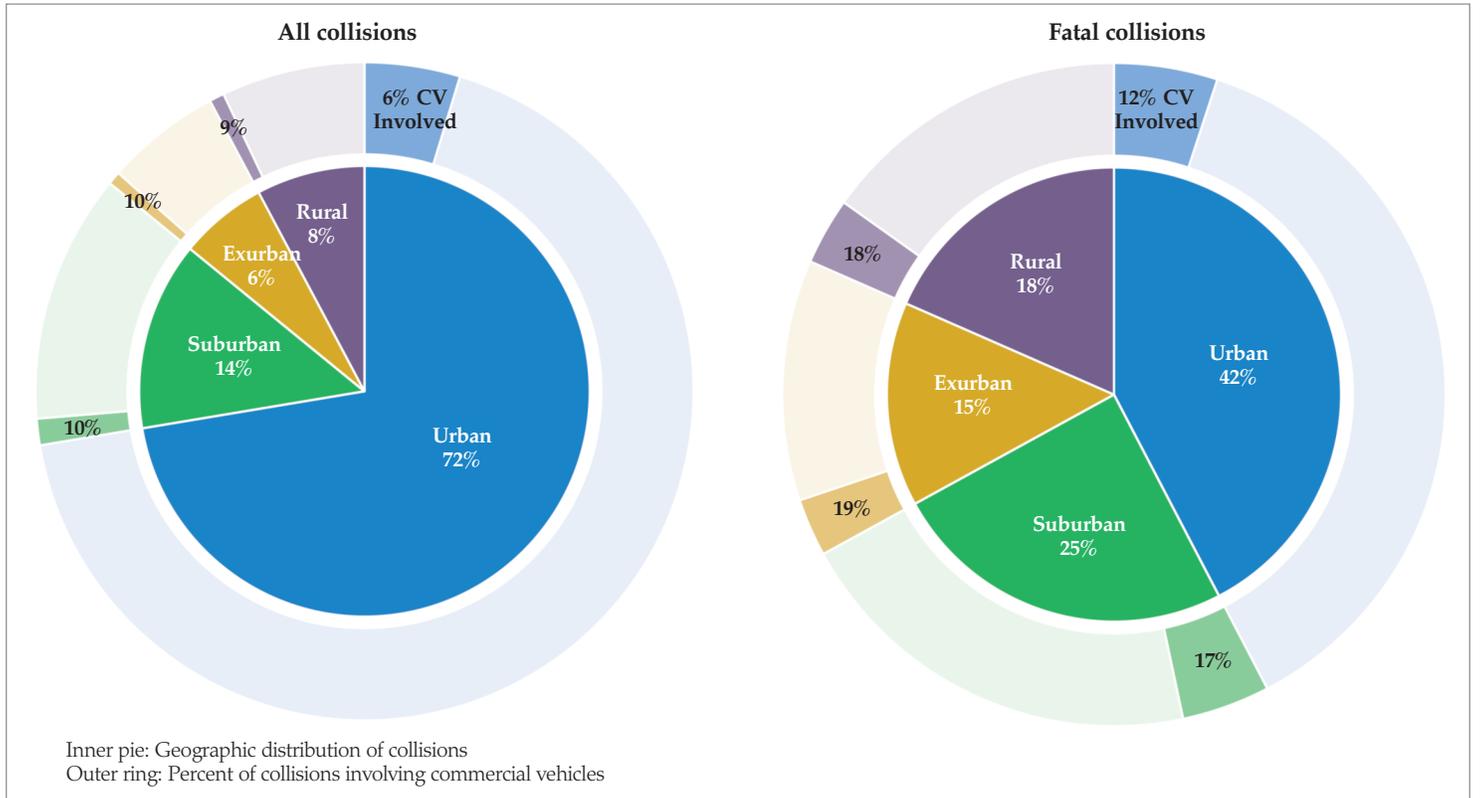


CENSUS LOCALE OF CV COLLISIONS

CV involvement in collisions varies somewhat by geographic (Census) locale. The largest numbers of collisions, both CV- and non-CV involved, occurred in urban areas. In 2015, 9,085 collisions involving one or more commercial vehicles occurred in urban areas, 34 of which were fatal collisions (calculated from Figure 2). However, proportions of commercial

vehicle collisions tend to be higher in non-urban areas and in fatal collisions. Figure 2 illustrates that 6 percent of all 2015 urban area collisions involved a commercial vehicle, while 10 percent of suburban collisions and 9 percent of rural collisions involved a commercial vehicle. Similarly, among fatal collisions, 12 percent of urban collisions were CV-involved, compared to 18 percent of rural collisions and 19 percent of exurban collisions involving a commercial vehicle.

Figure 2. Commercial vehicle (CV) involvement in Indiana collisions, by census locale, 2015



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

Notes:

- 1) Excludes collisions where *census locale* could not be determined.
- 2) *Census locale*: Urban is defined as Census 2010 Urban Areas, 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).

Individuals involved in CV collisions include CV operators and passengers, the operators and passengers of other vehicles (motorists), and non-motorists. In 2015, this included 16,228 persons in CVs, as well as 11,261 other motorists and 76 non-motorists (Table 4). Persons not in CVs are more likely to be injured or killed than CV occupants. As would be expected, in 2015 fatality and injury rates for non-motorists were high: 17 percent of involved non-motorists died and 66 percent were injured. Considering all involved persons, CV occupants had lower fatality and

injury rates (less than 1 percent and 7 percent, respectively) than other involved motorists (1 percent and 20 percent, respectively). From 2011 to 2015, non-CV drivers and their passengers comprised the largest numbers of individuals killed in CV collisions, by a wide margin (Figure 3). The CV drivers have generally comprised the next largest group killed. In terms of injuries, non-CV drivers and CV drivers were the largest number of those hurt, followed by non-CV occupants and CV occupants (Figure 4).

Table 4. Individuals in Indiana collisions involving a commercial vehicle (CV) by vehicle type and injury severity, 2011-2015

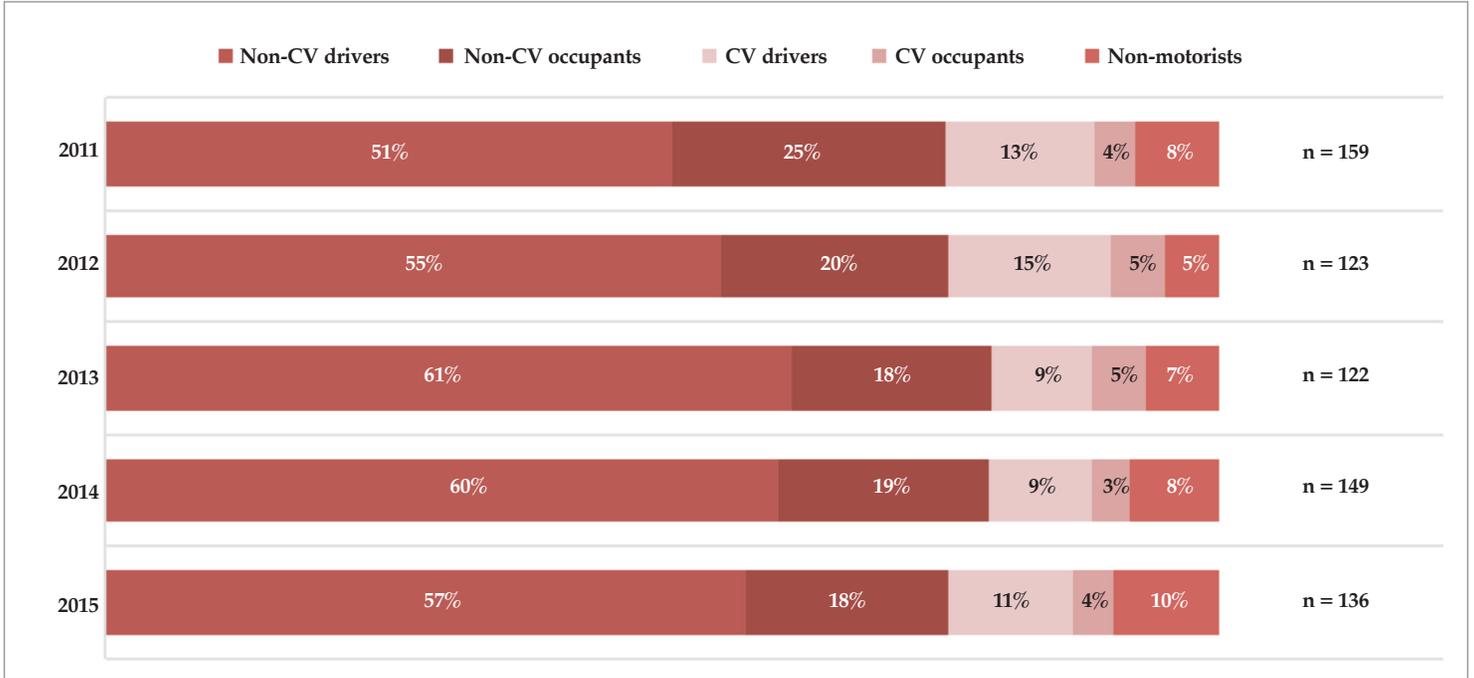
Vehicle type/injury status	Count of individuals					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
Persons in CV	14,383	13,494	13,646	16,907	16,228	-4.0%	3.1%
Fatal	27	24	17	19	20	5.3%	-7.2%
Injured	1,019	897	1,061	1,190	1,110	-6.7%	2.2%
Not injured	13,337	12,573	12,568	15,698	15,098	-3.8%	3.1%
Other motorists	10,107	9,369	9,448	11,518	11,261	-2.2%	2.7%
Fatal	120	93	97	118	103	-12.7%	-3.7%
Injured	1,969	1,905	1,797	2,124	2,275	7.1%	3.7%
Not injured	8,018	7,371	7,554	9,276	8,883	-4.2%	2.6%
Non-motorists	80	72	77	88	76	-13.6%	-1.3%
Fatal	12	6	8	12	13	8.3%	2.0%
Injured	54	54	57	63	50	-20.6%	-1.9%
Not injured	14	12	12	13	13	0.0%	-1.8%
Rates of fatal injury							
In CV	0.2%	0.2%	0.1%	0.1%	0.1%		
Other motorists	1.2%	1.0%	1.0%	1.0%	0.9%		
Non-motorists	15.0%	8.3%	10.4%	13.6%	17.1%		
Rates of non-fatal injury							
In CV	7.1%	6.6%	7.8%	7.0%	6.8%		
Other motorists	19.5%	20.3%	19.0%	18.4%	20.2%		
Non-motorists	67.5%	75.0%	74.0%	71.6%	65.8%		

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

Note: *Injured* includes *incapacitating, non-incapacitating, possible, unknown, or refused treatment*.

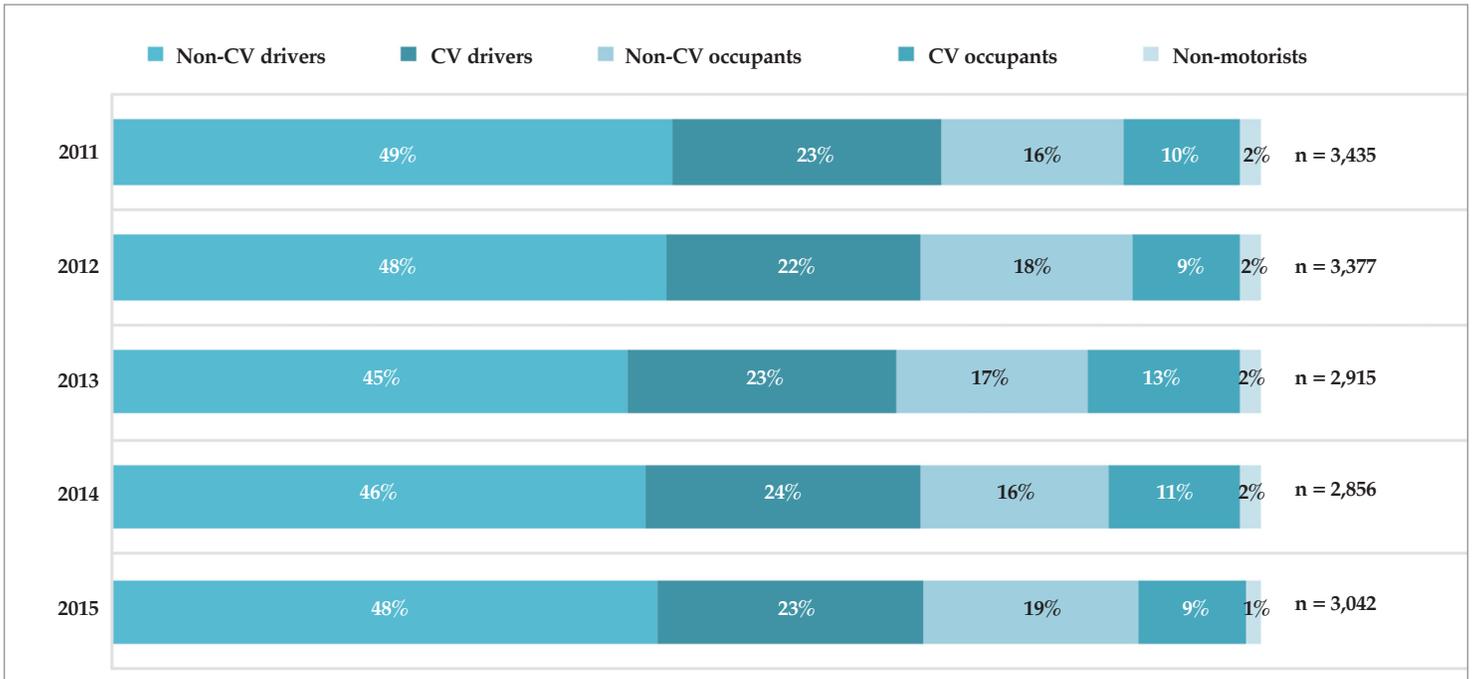


Figure 3. Individuals killed in Indiana collisions involving commercial vehicles (CV) , by person type, 2011-2015



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

Figure 4. Individuals injured in Indiana collisions involving commercial vehicles (CV) , by person type, 2011-2015



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

Note: *Injured* includes *incapacitating, non-incapacitating, possible, unknown, or refused treatment.*

RESTRAINT USE

Approximately 9 of 10 drivers involved in CV collisions were properly restrained, about the same rate as individuals involved in non-CV collisions (Table 5). There has been almost no appreciable change in this overall restraint use in collisions from 2011 to 2015. Individuals killed or injured in collisions have considerably lower restraint use rates, whether or not the collision involved a CV. For example, the individuals killed in

CVs were restrained 45 percent of the time in 2015, compared to a 48 percent restraint use rate for other motorists killed. The comparative restraint use rate between individuals in CVs and individuals in all other non-CV collisions has varied somewhat from 2011 to 2015. However in terms of those suffering non-fatal injuries, the restraint use rate of individuals in CVs has typically been lower than that of individuals in other vehicles in each of the five years.

Table 5. Restraint use among individuals involved in Indiana commercial vehicle (CV) collisions, by injury severity, 2011-2015

	2011	2012	2013	2014	2015	Annual rate of change	
						2014-15	2011-15
All involved							
CV occupants	14,383	13,494	13,646	16,907	16,228	-4.0%	3.1%
Properly restrained	12,828	12,055	12,183	15,214	14,677	-3.5%	3.4%
<i>Restraint rate</i>	89.2%	89.3%	89.3%	90.0%	90.4%		
Non-CV occupants	282,937	285,335	289,883	307,373	328,198	6.8%	3.8%
Properly restrained	255,814	257,967	262,257	280,262	298,398	6.5%	3.9%
<i>Restraint rate</i>	90.4%	90.4%	90.5%	91.2%	90.9%		
Fatal injuries							
CV occupants	27	24	17	19	20	5.3%	-7.2%
Properly restrained	8	14	9	11	9	-18.2%	3.0%
<i>Restraint rate</i>	29.6%	58.3%	52.9%	57.9%	45.0%		
Non-CV occupants	525	523	560	511	588	15.1%	2.9%
Properly restrained	256	250	282	235	281	19.6%	2.4%
<i>Restraint rate</i>	48.8%	47.8%	50.4%	46.0%	47.8%		
Non-fatal injuries							
CV occupants	1,019	897	1,061	1,190	1,110	-6.7%	2.2%
Properly restrained	681	613	684	787	795	1.0%	3.9%
<i>Restraint rate</i>	66.8%	68.3%	64.5%	66.1%	71.6%		
Non-CV occupants	41,073	42,461	41,320	42,322	45,506	7.5%	2.6%
Properly restrained	36,077	37,135	36,307	37,555	40,147	6.9%	2.7%
<i>Restraint rate</i>	87.8%	87.5%	87.9%	88.7%	88.2%		

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

Notes:

- 1) Excludes non-motorists and motorcycle riders.
- 2) Totals include individuals with 'NULL' and unknown restraint use.

VEHICLES INVOLVED IN CV COLLISIONS

The number of collision-involved *large trucks* has grown during the 2011-2015 period by approximately 3 percent per year (Table 6). The number of collision-involved *buses* grew as well during the five-years, although the count of involved *school buses* has dropped somewhat. *Large trucks* are more likely than other CVs to be involved in fatal collisions, although there was a 7 percent decrease in the number of *large trucks* in fatal collisions from 2014 to 2015.

Very few CVs with *hazmat placards* were involved in collisions from 2011 to 2015—typically around 2 percent of all involved CVs (Table 7). Each year from 2011 to 2015, approximately 1 percent of collision-involved CVs reported the release of hazardous material due to the collision, with this percentage dropping from 2014 to 2015. From 2011 to 2014, far more CVs without a *hazmat placard* released hazardous materials than did CVs with *hazmat placards*, but the number of collision-involved CVs without *hazmat placards* declined more than 80 percent from 2014 to 2015.

Table 6. Commercial vehicles (CV) involved in Indiana collisions by vehicle type and collision severity, 2011-2015

Vehicle type/collision severity	Count of vehicles					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
Large trucks	14,144	13,294	13,520	16,601	16,084	-3.1%	3.3%
Fatal	143	126	123	159	148	-6.9%	0.9%
Injury	1,951	1,755	1,780	2,161	2,072	-4.1%	1.5%
Property damage	12,050	11,413	11,617	14,281	13,864	-2.9%	3.6%
School bus	923	769	720	898	724	-19.4%	-5.9%
Fatal	5	1	0	3	3	--	-12.0%
Injury	97	83	77	91	71	-22.0%	-7.5%
Property damage	821	685	643	804	650	-19.2%	-5.7%
Buses	683	598	647	813	884	8.7%	6.7%
Fatal	2	2	2	3	1	-66.7%	-15.9%
Injury	78	96	103	115	122	6.1%	11.8%
Property damage	603	500	542	695	761	9.5%	6.0%

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

Note: *Injury* collisions include those with at least one incapacitating or non-incapacitating injury.

Table 7. Commercial vehicles (CV) in Indiana collisions by hazmat placard and hazmat release, 2011-2015

	Count of vehicles					Annual rate of change	
	2011	2012	2013	2014	2015	2014-15	2011-15
Total CV in collisions	15,757	14,669	14,895	18,324	17,704	-3.4%	3.0%
CV with hazmat placard	334	304	333	378	348	-7.9%	1.0%
CV with hazmat release	214	151	127	148	59	-60.1%	-27.5%
Release with hazmat placard	50	53	39	30	38	26.7%	-6.6%
Release without hazmat placard	164	98	88	118	20	-83.1%	-40.9%
In fatal and/or injury collisions:							
CV with hazmat placard	57	57	66	70	68	-2.9%	4.5%
CV with hazmat release	24	23	16	20	9	-55.0%	-21.7%
Percent total CV in collisions:							
with hazmat placard	2.1%	2.1%	2.2%	2.1%	2.0%		
with hazmat release	1.4%	1.0%	0.9%	0.8%	0.3%		
without hazmat placard	1.0%	0.7%	0.6%	0.6%	0.1%		

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

Another perspective on the role of CVs in Indiana traffic collisions is the *vehicle use* variable measured in ARIES. Most vehicles (92 percent) involved in collisions were classified as engaged in *personal use*; vehicles classified as engaged in *commercial use* were 4 percent of vehicles involved (Table 8). The remaining vehicles were linked to public safety, governmental, utility, and other non-personal vehicle use. However, commercial use vehicles (which include large trucks) comprised a much larger proportion of vehicles involved in fatal collisions—approximately

12 percent in 2015—and had the highest fatality rate (10 per 1,000 CVs in all collisions) among all vehicle use types, again underscoring the over-representation of CVs in fatal traffic collisions (see Table 1). (Note: the *vehicle use* designation in ARIES does not exactly match components of the *commercial vehicle* definition shown on page 1 above; accordingly, counts of commercial *vehicle use* from Table 8 will not equal counts of *commercial vehicles*.)

Table 8. Vehicles involved in Indiana collisions, by vehicle use and collision severity, 2015

Vehicle use	Vehicles involved in:								Vehicles in fatal collisions per 1000 vehicles in all collisions
	All collisions		Fatal collisions		Injury collisions		Property damage collisions		
	Count	% total	Count	% total	Count	% total	Count	% total	
Personal	350,378	91.6%	1,013	85.1%	58,720	94.5%	290,645	91.1%	2.9
Commercial	14,750	3.9%	146	12.3%	1,984	3.2%	12,620	4.0%	9.9
Police	2,599	0.7%	3	0.3%	307	0.5%	2,289	0.7%	1.2
Rental, not leased	1,589	0.4%	7	0.6%	219	0.4%	1,363	0.4%	4.4
School	1,169	0.3%	4	0.3%	115	0.2%	1,050	0.3%	3.4
Other government (postal, etc.)	998	0.3%	2	0.2%	120	0.2%	876	0.3%	2.0
Highway department	472	0.1%	0	0.0%	46	0.1%	426	0.1%	0.0
Ambulance	437	0.1%	1	0.1%	52	0.1%	384	0.1%	2.3
Public utilities	268	0.1%	0	0.0%	23	0.0%	245	0.1%	0.0
Fire	262	0.1%	0	0.0%	25	0.0%	237	0.1%	0.0
Military	50	0.0%	0	0.0%	4	0.0%	46	0.0%	0.0
Unknown/not specified	9,382	2.5%	15	1.3%	511	0.8%	8,856	2.8%	1.6
Total vehicles	382,354	100%	1,191	100%	62,126	100%	319,037	100%	3.1

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

Notes:

- 1) *Unknown/not specified* includes vehicles reported as *unknown, other, blank, or invalid codes*.
- 2) *Commercial use* includes buses, taxis, carriers, etc.
- 3) *Public utilities use* includes gas, electric, etc.
- 4) *Buses* includes charter, intercity, shuttles and transit.
- 5) *School* includes school buses, maintenance vehicles, etc.
- 6) Excludes bicycles, pedestrians and animal-drawn vehicle (non-motor vehicle) as vehicle types.



OBJECT COLLIDED WITH IN CV COLLISIONS

Note: Officers examining the full sequence of events occurring in collisions often determine that vehicles collide with more than one object in a single collision. This analysis is limited to the first object collided with as reported by the investigating officer.

Seventy-four percent of large trucks (11,814 of 15,910) involved in all crashes and 84 percent (125 of 148) of large trucks in fatal crashes collid-

ed with *another motor vehicle* (Table 9). The next most common (first) object of impact is running off the roadway. As would be expected, the next largest number of large trucks involved in fatal collisions was when non-motorists were struck (9 large trucks were involved). Other CVs (excluding large trucks) follow a similar pattern, but at a much reduced scale. Of the 1,794 other CVs in collisions, about 82 percent (1,476) collided with another motor vehicle (Table 10)

Table 9. Large trucks involved in Indiana collisions, by (first) object of impact, 2015

(First) Object collided with	Total	Type of collision		
		Fatal	Injury	Property damage
Large trucks involved	15,910	148	2,060	13,702
Another motor vehicle	11,814	125	1,667	10,022
Ran off roadway	860	3	146	711
Unknown/not reported	778	6	36	736
Deer	272	0	1	271
Parked motor vehicle	205	0	6	199
Utility pole	180	0	3	177
Bridge-related structure	168	0	12	156
Other post/pole or support	164	0	2	162
Guardrail	136	1	20	115
Wall/building/tunnel	131	1	2	128
Jackknife	106	0	13	93
Ditch	102	0	26	76
All other	994	12	126	856

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

Note: All other consists of 28 other objects collided with that involved fewer than 100 large trucks.

Table 10. Other commercial vehicles (CV) (non-large trucks) involved in Indiana collisions, by (first) object of impact, 2015

(First) Object collided with	Total	Type of collision		
		Fatal	Injury	Property damage
Other CV (non-large truck) involved	1,794	4	206	1,584
Another motor vehicle	1,476	3	171	1,302
Unknown/not reported	87	0	6	81
Parked motor vehicle	39	0	1	38
Ran off roadway	34	0	6	28
Deer	30	0	0	30
Other post/pole or support	17	0	1	16
Light/luminaire support	15	0	1	14
Non-motorist	13	1	7	5
Utility pole	12	0	2	10
Wall/building/tunnel	11	0	0	11
All other	60	0	11	49

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

Notes:

1) Excludes large trucks.

2) All other consists of 28 other objects collided with that involved fewer than 10 large trucks.

PRIMARY FACTORS IN CV COLLISIONS

Note: Police officers assign a primary factor to each collision in Indiana, and indicate whether the driver or operator ‘contributed’ to the collision occurrence (ARIES calls this ‘contributing circumstance’). When a driver’s contributing circumstance to a collision matches the primary factor of the collision, the driver is said to be attributable in the crash; roughly speaking, this means that when attributable, the driver is at least partly ‘at fault’ in the collision. In a multi-vehicle collision, both vehicles can be attributable.

For all CVs and non-CVs in multi-vehicle collisions involving at least one CV, Table 11 shows the counts and proportions of vehicles that were attributable across the various primary factors assigned to collisions. In 2015, there were 26,482 vehicles involved in multi-vehicle CV collisions, of which 14,175 were CVs and 12,307 were other motor vehicles and/or

non-motorists. Overall, slightly more than one-half of CVs were attributable (to the primary factor) and slightly less than one-half of other involved vehicles or non-motorists were attributable. However, this varies by which primary factor was assigned to the collision. The primary factors for 93 percent of multi-vehicle CV collisions (calculated from Table 11) are linked to driver-related actions, the most common of which include *unsafe lane movement, following too closely, failure to yield, improper turning, and unsafe backing* for both the CVs and non-CVs involved. In comparison to the non-CVs involved in multi-vehicle CV collisions in 2015, the CVs are much more likely to be attributable when the primary factors are *unsafe backing or improper turning*. The non-CVs are more likely to be attributable when the primary factors are *failure to yield, speed too fast for weather conditions, or improper passing*.

Table 11. Primary factor attributability by commercial vehicles (CV) and non-CV traffic units in multi-vehicle CV collisions, 2015

Primary factor in collision	CV involved:			Non-CV vehicles involved:		
	Total	Attributable to CV		Total	Attributable to non-CV	
		Count	%		Count	%
Total	14,175	7,363	51.9%	12,307	5,904	48.0%
Driver-related	13,204	6,741	51.1%	11,440	5,499	48.1%
Unsafe lane movement	1,955	1,010	51.7%	1,761	850	48.3%
Following too closely	1,898	891	46.9%	1,823	839	46.0%
Failure to yield right of way	1,710	709	41.5%	1,668	976	58.5%
Unsafe backing	1,599	1,078	67.4%	1,089	260	23.9%
Improper turning	1,358	898	66.1%	852	201	23.6%
Other - driver-related	1,225	812	66.3%	998	479	48.0%
Speed too fast for weather conditions	741	193	26.0%	701	506	72.2%
Improper lane usage	636	363	57.1%	569	254	44.6%
Left of center	405	159	39.3%	353	221	62.6%
Disregard signal/reg sign	374	150	40.1%	408	230	56.4%
Improper passing	336	102	30.4%	290	203	70.0%
Unsafe speed	266	94	35.3%	258	128	49.6%
Driver distracted	259	113	43.6%	278	130	46.8%
Overcorrecting/oversteering	219	113	51.6%	166	74	44.6%
Ran off road right	88	32	36.4%	81	44	54.3%
Driver asleep or fatigued	80	9	11.3%	79	68	86.1%
Driver illness	20	4	20.0%	25	15	60.0%
Wrong way on one way	20	8	40.0%	21	9	42.9%
Cell phone usage	14	2	14.3%	19	12	63.2%
Other telematics in use	1	1	100%	1	0	0.0%
Environment-related	420	271	64.5%	387	264	68.2%
Roadway surface condition	145	84	57.9%	126	89	70.6%
Other environment-related	96	71	74.0%	108	86	79.6%
Animal on roadway	80	49	61.3%	72	45	62.5%
View obstructed	68	49	72.1%	56	28	50.0%
Severe crosswinds	13	9	69.2%	8	6	75.0%
Pedestrian action	8	2	25.0%	9	5	55.6%
Lane marking obscured	4	2	50.0%	2	2	100%
Obstruction not marked	3	2	66.7%	3	2	66.7%
Traffic control problem	3	3	100%	3	1	33.3%
Vehicle-related	551	351	63.7%	480	141	29.4%

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

Notes:

- 1) Primary factors are counts of vehicles, involved in collisions. For example, there were 1,898 commercial vehicles involved in collisions where the primary factor for each collision was *following too closely*. Note that more than one vehicle may have *contributing circumstances* that match the *primary factor* in multi-vehicle collisions.
- 2) Attributable/Attributability: a vehicle and/or driver is considered attributable in a collision when linked by the reporting officer to the primary factor or cause of the collisions.
- 3) Excludes unknown or unspecified primary factors.



DEFINITIONS

- **Annual Rate of Change (ARC)** is the rate that a beginning value must increase/decrease each period (e.g., month, quarter, year) in a time series to arrive at the ending value in the time series. ARC is a "smoothed" rate of change because it measures change in a variable as if the change occurred at a steady rate each period with compounding. For example, to measure change in a variable from 2011 to 2015, it is calculated as $(\text{Value in 2015} / \text{Value in 2011})^{1/4} - 1$.
- **Census-based locale** — *Urban* is defined as Census 2010 Urban Areas, *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).
- **Commercial vehicle** — Units identified within ARIES as (1) large trucks (*single 2 axle, 6 tires; single 3 or more axles; truck/trailer--not semi; tractor--cab only, no trailer; tractor/one semi-trailer; tractor/double trailer; tractor/triple trailer*), (2) *combination vehicles*, (3) *pickup trucks* over 10,000 pounds, (4) *buses (15+ passengers with driver)*, (5) *school buses*, or (6) any vehicle displaying a hazardous materials (*hazmat*) placard.
- **Contributing circumstance** — Actions of the driver, apparent environmental conditions, or apparent vehicle conditions that contributed to the collision.
- **Hazmat placard** — A sign that must be affixed to any motor vehicle transporting hazardous materials in quantities above the thresholds established by the USDOT, or other authorized entity.
- **Hazmat release** — Some or all of the hazardous materials carried by the commercial vehicle were released at the crash site.
- **Motorists** — Drivers/operators of collision-involved motor vehicles and the injured occupants in those vehicles.
- **Non-motorist** — *Pedestrians, pedalcyclists, or animal-drawn vehicle operators.*
- **Primary factor** — The single factor that the investigating officer believes to be the main or primary factor that contributed to the collision's occurrence. Each collision may have only one primary factor.
- **Vehicle (unit) attributability** — The vehicle's *contributing circumstance* is the same as the collision *primary factor*. A vehicle and/or driver is considered attributable in an Indiana collision when linked by the reporting officer to the *primary factor* or cause of the collisions.
- **Restraint use** — Vehicle occupants are counted as restrained when the investigating officer selected any one of the following passenger vehicle safety equipment categories on the Indiana Crash Report: (1) *Lap belt only*; (2) *Harness*; (3) *Airbag deployed and harness*; (4) *Child restraint*; or (5) *Lap and harness*.

DATA SOURCES

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

COMMERCIAL VEHICLE DEFINITIONS

Indiana Code (IC 9-13-2-31.5 and IC 9-18-2-4). Accessed April 21, 2015 at <https://iga.in.gov/legislative/laws/2014/ic/titles/009/>.

U.S. Federal Motor Carrier Safety Administration (U.S. Codebook of Federal Regulations (CFR) 383.1). Accessed April 21, 2015 at <http://www.gpo.gov/fdsys/granule/CFR-2011-title49-vol5/CFR-2011-title49-vol5-sec383-1>.

Insurance Institute for Highway Safety (IIHS) (large trucks 10,000 pounds and greater). Accessed April 21, 2015 at <http://www.iihs.org/iihs/topics/t/large-trucks/qnda>.

National Highway Transportation Safety Administration (2014). *Traffic Safety Facts. 2012 Data*. Large trucks. DOT HS 811 868.

National Highway Transportation Safety Administration (2014). *Traffic Safety Facts. 2003-2012 Data*. School-Transportation Related Crashes. DOT HS 811 890.

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.

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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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