

INDIANA 2011 TRAFFIC SAFETY FACTS

DANGEROUS DRIVING, 2011

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In 2011, *dangerous-driving* actions were a contributing factor in 12 percent of all traffic collisions and 23 percent of fatal collisions in Indiana (see last page for *dangerous-driving* definitions). Nationally, speeding is a factor in approximately one-third of all fatal collisions, while vehicles *disregarding a signal* is a factor in six percent (NHTSA, 2010). According to data from the Fatality Analysis Reporting System (FARS) and the Bureau of Transportation Statistics (BTS), in 2010, Indiana reported 2.5 fatal speed-related collisions per one billion vehicle miles travelled (VMT), a rate below the national rate (3.2), the Great Lakes region (2.7), and all other regions of the United States.

The number of *dangerous-driving* collisions in Indiana decreased four percent from 2010 to 2011 and one percent on average from 2007 to 2011, yet *aggressive-driving* collisions increased five percent in 2011 and four percent on average.

Young drivers and male drivers involved in collisions are more likely than other demographic groups to have been *driving dangerously*. Seventy-three of every 10,000 licensed 15 to 24 year old drivers involved in collisions in 2011 were *speeding*, compared to eight of every 10,000 licensed drivers 65 years of age and older. Nine percent of male drivers involved in collisions in 2011 were *driving dangerously*, versus seven percent of females.

While *dangerous-driving* collisions were more likely to occur in *suburban* and *exurban* locales in 2011, the relative risk of a fatality was highest in *urban* and *rural* locales. Similarly, *dangerous-driving* collisions were more likely to occur on *interstates* and *county roads*, but the relative risk of fatality was generally highest on *local/city roads* and *county roads*. In 2011, *aggressive-driving* actions were most likely during early morning hours (12am to 5:59am), speeding actions were most likely during 11pm to 9:59am, and *disregarding a signal/sign* was most likely from 9am to 2:59pm and 7pm to 12:59am.

In 2011, 39 percent of fatal *dangerous-driving* collisions involved alcohol, compared to 24 percent of fatal collisions not involving *dangerous driving*. Occupants in vehicles *driven dangerously* are less likely to be properly restrained than occupants in vehicles not *driven dangerously*. Among occupants suffering fatal injuries in 2011 collisions, only 39 of every 100 in vehicles *driven dangerously* were restrained, 12 fewer than the 51 per 100 occupants in vehicles not *driven dangerously*.

Drivers involved in collisions who were *driving dangerously* were less likely to have valid licenses and more likely to be habitual traffic violators or have suspended or revoked licenses. Additionally, drivers with a history of convictions for *dangerous driving* offenses were more likely to be *driving dangerously* at the time of collision than those without a history.

In Indiana:

12 percent of all collisions and 23 percent of fatal collisions in 2011 involved *dangerous driving*.

Fatal *aggressive-driving* collisions increased 50 percent from 2010 to 2011 and 10 percent on average since 2007.

Fatalities in *aggressive-driving* collisions increased 86 percent from 2010 to 2011, and 22 percent on average since 2007.

The relative risk of a fatality is 2 to 2.5 times greater when *dangerous driving* is involved.

GENERAL TRENDS

Speeding is the most common form of *dangerous driving*. From 2001 to 2010 (latest data available), Indiana reported fewer fatal *speed-related* collisions per 1 billion vehicle miles travelled than the Great Lakes region, each of the other nine US regions, and the US as a whole, for all years except 2005 and 2008 (Table 1). During this 10-year period, the Indiana rate increased a marginal 0.5 percent on average each year, while the rate decreased on average in the Great Lakes region (1.4 percent), US (2.5 percent), and all other regions except Lower New England (0.4 percent increase). More recently, during the five-year period 2006 to 2010, Indiana's fatal *speed-related* collision rate increased 2.2 percent on average, compared to declines for all other regions except Lower New England. Despite these rate increases,

Indiana's average fatal *speed-related* collision rate (2.7 percent) during the 2001 to 2010 period was the lowest of all regions.

After increasing from 2009 to 2010, the number of *speed-related* collisions and other types of *dangerous-driving* collisions in Indiana decreased in 2011—excluding collisions involving *aggressive driving*, which increased 4.5 percent (Table 2). Additionally, fatal collisions involving *aggressive driving* increased 50 percent from 2010 to 2011 (from 20 to 30), while the number of fatal collisions involving other types of *dangerous driving* and fatal collisions overall remained the same or decreased. When *dangerous driving* is involved, a collision has historically been 2 to 2.5 times more likely to result in at least one fatality than when *dangerous driving* is not involved (Figure 1).

Table 1. Rate of fatal speed-related collisions per 1 billion vehicle miles travelled (VMT), by region, 2001-2010

Geography	Fatal speed-related collisions per 1 billion VMT											Average annual % change	
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2001-10	2006-10
INDIANA	2.8	2.2	2.7	3.1	3.2	2.5	2.5	3.0	2.2	2.5	2.5	0.5%	2.2%
UNITED STATES	4.1	4.2	4.1	3.9	4.0	4.0	3.9	3.6	3.2	3.2	3.2	-2.5%	-5.2%
Upper New England (CT, ME, MS, NH, RI, VT)	3.5	3.7	3.2	3.3	3.1	2.9	2.8	2.3	2.4	2.8	2.8	-2.0%	-0.2%
Lower New England (NJ, NY, PA)	3.4	3.7	3.4	3.3	3.7	3.3	3.6	3.5	3.2	3.4	3.4	0.4%	1.0%
Mid-Atlantic (DE, DC, KY, MD, NC, VA, WV)	4.0	4.2	4.0	4.1	4.0	3.7	4.0	3.4	3.4	3.6	3.6	-1.1%	-0.8%
Southern Atlantic (AL, FL, GA, SC, TN)	4.2	4.0	3.9	3.9	3.9	4.3	3.9	3.6	3.2	2.9	2.9	-3.6%	-9.3%
Great Lakes (IL, IN, MI, MN, OH, WI)	3.1	3.1	3.3	3.2	3.0	2.9	2.9	2.6	2.3	2.7	2.7	-1.4%	-1.4%
Southern Central (LA, MS, NM, OK, TX)	5.2	5.6	5.6	5.3	5.2	5.7	5.2	5.2	4.4	4.3	4.3	-1.7%	-6.3%
Central (AR, IA, KS, MO, NE)	4.2	5.1	4.4	3.9	4.2	3.8	3.4	3.2	3.3	3.3	3.3	-2.4%	-3.3%
West (CO, NV, ND, SD, UT, WY)	6.0	5.8	5.2	4.9	4.2	3.9	4.2	3.9	3.7	3.4	3.4	-5.8%	-3.0%
Pacific (AZ, CA, HI)	4.5	4.5	4.4	4.0	4.5	4.5	4.4	3.6	3.2	2.8	2.8	-4.7%	-11.3%
Upper Northwest (AK, ID, MT, OR, WA)	4.4	4.6	4.5	4.1	4.6	4.3	4.0	4.1	4.0	3.3	3.3	-2.8%	-6.4%

Sources: Fatality Analysis Reporting System (FARS); Bureau of Transportation Statistics

Notes: Geographic regions are defined by the National Highway Traffic Safety Administration. FARS data not yet available for 2011.

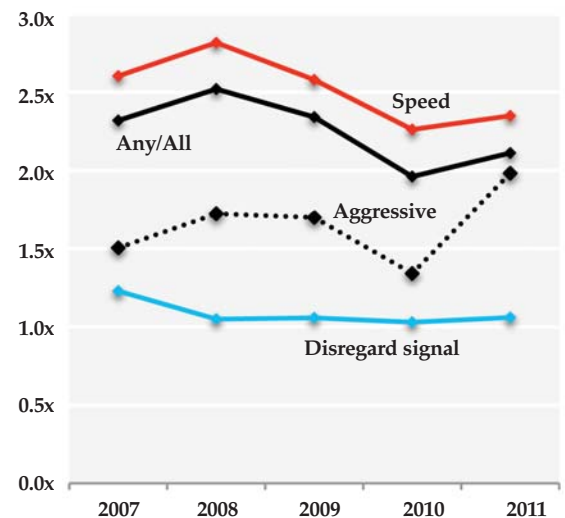
Table 2. Indiana collisions, by dangerous driving involvement and collision severity, 2007-2011

Dangerous driving type/ collision severity	Count of collisions					% Change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Aggressive	3,761	4,018	3,947	4,133	4,320	4.5%	3.6%
Fatal	22	24	22	20	30	50.0%	10.4%
Non-fatal	984	983	982	1,125	1,120	-0.4%	3.5%
Property damage	2,755	3,011	2,943	2,988	3,170	6.1%	3.7%
Disregard signal	4,797	4,343	3,983	4,011	3,955	-1.4%	-4.6%
Fatal	23	16	14	15	15	0.0%	-8.9%
Non-fatal	1,772	1,590	1,506	1,519	1,451	-4.5%	-4.8%
Property damage	3,002	2,737	2,463	2,477	2,489	0.5%	-4.4%
Speed	18,492	22,820	18,251	18,550	17,517	-5.6%	-0.1%
Fatal	165	188	136	136	131	-3.7%	-4.3%
Non-fatal	4,377	4,711	4,117	4,143	4,104	-0.9%	-1.3%
Property damage	13,950	17,921	13,998	14,271	13,282	-6.9%	0.4%
Any/all	25,011	28,915	24,027	24,391	23,307	-4.4%	-1.1%
Fatal	196	211	160	155	155	0.0%	-4.9%
Non-fatal	6,515	6,661	6,006	6,078	5,919	-2.6%	-2.3%
Property damage	18,300	22,043	17,861	18,158	17,233	-5.1%	-0.5%
All collisions	204,999	205,452	189,661	192,886	188,132	-2.5%	-2.1%
Fatal	804	722	631	701	674	-3.9%	-3.9%
Non-fatal	37,416	35,358	33,410	34,083	32,734	-4.0%	-3.2%
Property damage	166,779	169,372	155,620	158,102	154,724	-2.1%	-1.8%

Source: Indiana State Police

Note: Dangerous driving categories are not mutually exclusive; *Any/all* may not equal total of individual categories.

Figure 1. Relative risk of fatal collision, by dangerous driving type, 2007-2011



Source: Indiana State Police

Notes: Relative risk defined as ratio of % fatal (DD involved) to % Fatal (No DD involved). All relative risk estimates are significantly different from 1.0 (where a relative risk of 1.0 signifies no difference in risk), with the exceptions of those for disregarding signal, all years, and aggressive driving, 2007 and 2010.

GENERAL TRENDS *(Continued)*

Collisions are designated as involving aggressive driving when at least two of the following eight driver actions are present: *unsafe speed; speed too fast for weather conditions; failing to yield right of way; disregarding a traffic signal/sign; improper passing; improper turning; improper lane usage; or following too closely*. The observed increase in the number of *aggressive-driving* collisions has been driven in large part by more collisions reported as involving speeding and improper turning (along with at least one other *aggressive-driving* action). From 2010 to 2011, *aggressive-driving* col-

lisions involving *improper turning* increased 15.8 percent, while *aggressive-driving* collisions involving *speeding too fast for weather conditions* and *unsafe speed* increased 13.8 and 10.8 percent, respectively (Table 3).

Beginning in 2009, an updated version of ARIES gave officers investigating collisions the ability to select an unlimited number of driver contributing factors; prior to 2009, officers were restricted to selecting only two. The observed increase in the number of *aggressive-driving* collisions may in part be explained by this reporting change and/or a greater emphasis by investigating agencies on reporting *aggressive-driving* actions, though it is unclear to what extent.

Table 3. Aggressive-driving collisions, by aggressive-driving actions involved, 2007-2011

	Count of collisions					% Change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Aggressive-driving collisions	3,761	4,018	3,947	4,133	4,320	4.5%	3.6%
Aggressive-driving collisions involving ...							
Disregard signal/sign	1,007	1,019	928	1,009	1,071	6.1%	1.8%
Failure to yield right of way	1,949	1,956	1,864	1,997	2,000	0.2%	0.7%
Following too closely	902	1,086	1,166	1,231	1,269	3.1%	9.1%
Improper lane usage	874	908	956	922	938	1.7%	1.8%
Improper passing	320	319	356	386	406	5.2%	6.2%
Improper turning	908	903	849	912	1,056	15.8%	4.2%
Speed too fast for weather conditions	717	1,017	1,065	914	1,040	13.8%	11.5%
Unsafe speed	905	897	788	1,077	1,193	10.8%	8.6%

Source: Indiana State Police

Note: A collision must involve at least two of the eight actions listed to be designated as involving aggressive-driving. For example, the 1,071 aggressive-driving collisions that involved *disregard signal/sign* in 2011 also involved one or more of the remaining seven actions.

In 2011, nearly one in five collision-related injuries and deaths occurred in collisions where *dangerous driving* was involved (calculated from Table 4). Fatalities in *dangerous-driving* collisions increased 7.9 percent from 2010 to 2011, compared to a 0.7 percent decrease in all collision-related

fatalities. This increase was led by fatalities in collisions involving *aggressive driving* (85.7 percent increase), fatalities in collisions where a driver *disregarded a traffic signal/sign* (13.3 percent increase), and fatalities where a driver was *speeding* (3.4 percent increase).

Table 4. Injuries in Indiana collisions, by dangerous driving involvement and injury status, 2007-2011

Dangerous driving type/injury status	Count of injuries					% Change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Aggressive	1,818	1,742	1,626	1,951	1,886	-3.3%	1.5%
Fatal	22	30	25	21	39	85.7%	22.4%
Non-fatal	1,796	1,712	1,601	1,930	1,847	-4.3%	1.3%
Disregard signal	3,194	2,721	2,576	2,606	2,387	-8.4%	-6.8%
Fatal	27	16	16	15	17	13.3%	-8.4%
Non-fatal	3,167	2,705	2,560	2,591	2,370	-8.5%	-6.8%
Speed	7,292	7,516	6,490	6,352	6,209	-2.3%	-3.7%
Fatal	187	225	158	145	150	3.4%	-3.6%
Non-fatal	7,105	7,291	6,332	6,207	6,059	-2.4%	-3.7%
Any/all	11,134	10,834	9,674	9,660	9,194	-4.8%	-4.6%
Fatal	222	250	186	164	177	7.9%	-4.2%
Non-fatal	10,912	10,584	9,488	9,496	9,017	-5.0%	-4.6%
All injuries	61,904	55,571	51,434	50,870	47,890	-5.9%	-6.2%
Fatal	898	815	692	754	749	-0.7%	-4.0%
Non-fatal	61,006	54,756	50,742	50,116	47,141	-5.9%	-6.2%

Source: Indiana State Police

Note: Dangerous driving categories are not mutually exclusive; *Any/all* may not equal total of individual categories.

GENERAL TRENDS *(Continued)*

Unlike other types of *dangerous driving*, *aggressive driving* appears to be on the rise. While fewer vehicles were involved in all collisions in 2011 and on average from 2007 to 2011, and fewer were reported to have been *driven dangerously*, the number involved in collisions *driven aggressively* actually grew 4.5 percent from 2010 to 2011 and 3.8 percent on average from 2007 to 2011 (Table 5). This growth was led by motorcycles (59.6 percent increase from 2010 to 2011 and 22.1 percent average annual increase) and large trucks (22.9 percent increase in 2011).

The likelihood of *dangerous driving* tends to be vehicle specific. For example, *motorcycles/mopeds* involved in collisions are, on average, more likely

to have been *driven dangerously* than other vehicle types (11 percent compared to 6 to 8 percent for other types), while *large trucks* are the least likely (6 percent) to have been *driven dangerously* (calculated from Table 5). *Passenger cars* (1.3 percent) and *motorcycles/mopeds* (1.3 percent) are slightly more likely to have been driven aggressively, *light trucks* (1.4 percent) are slightly more likely to have *disregarded a traffic signal/sign*, and *motorcycles/mopeds* (10.6 percent) are the most likely to have been *speeding* at the time of collision. Historically, the *relative risk* of a serious injury has been greatest for occupants in large trucks (2.8 average) *driven dangerously* (Figure 2).

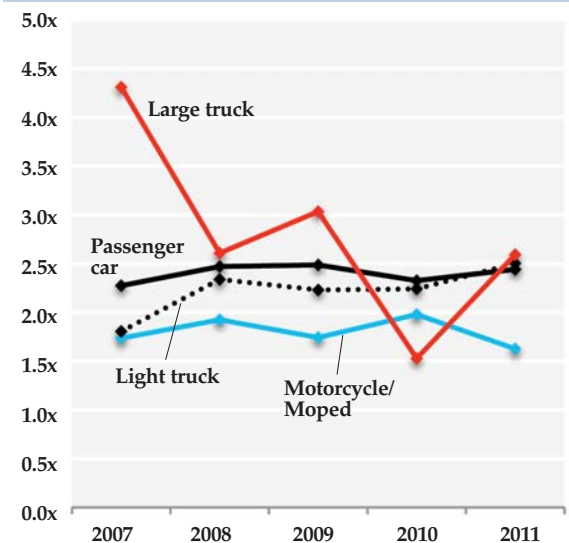
Table 5. Vehicles involved in Indiana collisions, by vehicle-specific dangerous driving involvement and vehicle type, 2007-2011

Dangerous driving type/ vehicle type	Count of vehicles					% Change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Aggressive	3,688	3,960	3,898	4,092	4,276	4.5%	3.8%
Passenger car	2,234	2,456	2,412	2,566	2,691	4.9%	4.9%
Light truck	1,242	1,291	1,309	1,348	1,349	0.1%	2.1%
Large truck	174	179	144	131	161	22.9%	-0.7%
Motorcycle/Moped	38	34	33	47	75	59.6%	22.1%
Disregard signal	4,954	4,488	4,145	4,156	4,114	-1.0%	-4.4%
Passenger car	3,081	2,869	2,555	2,597	2,605	0.3%	-4.0%
Light truck	1,717	1,513	1,490	1,469	1,404	-4.4%	-4.8%
Large truck	128	87	79	67	80	19.4%	-9.3%
Motorcycle/Moped	28	19	21	23	25	8.7%	-0.8%
Speed	18,171	22,665	18,116	18,364	17,382	-5.3%	0.2%
Passenger car	10,454	13,117	10,706	11,013	10,725	-2.6%	1.8%
Light truck	6,723	8,388	6,625	6,368	5,657	-11.2%	-2.8%
Large truck	631	797	486	652	616	-5.5%	4.0%
Motorcycle/Moped	363	363	299	331	384	16.0%	2.3%
Any/All	24,811	28,874	24,032	24,323	23,300	-4.2%	-0.8%
Passenger car	14,576	17,065	14,375	14,738	14,456	-1.9%	0.5%
Light truck	8,983	10,453	8,694	8,428	7,629	-9.5%	-3.3%
Large truck	850	966	632	784	777	-0.9%	0.6%
Motorcycle/Moped	402	390	331	373	438	17.4%	3.0%
All vehicles	343,556	342,857	319,309	327,167	319,419	-2.4%	-1.7%
Passenger car	197,106	200,024	187,964	195,788	192,354	-1.8%	-0.5%
Light truck	127,761	124,122	116,400	114,564	109,500	-4.4%	-3.8%
Large truck	15,033	14,796	11,591	13,320	13,941	4.7%	-0.9%
Motorcycle/Moped	3,656	3,915	3,354	3,495	3,624	3.7%	0.2%

Source: Indiana State Police

Note: Dangerous driving categories are not mutually exclusive; Any/All may not equal total of individual categories.

Figure 2. Relative risk of serious injury in dangerous driving collisions, by vehicle type, 2007-2011



Source: Indiana State Police

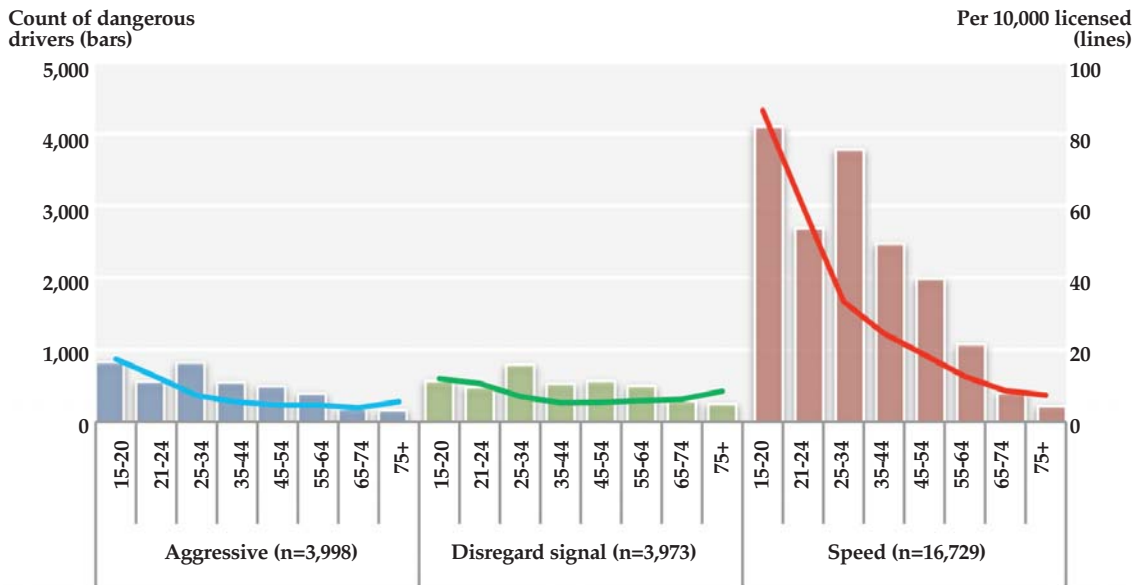
Notes: Relative risk defined as ratio of % fatal (DD involved) in vehicle type to % Fatal (No DD involved) in vehicle type. All relative risk estimates are significantly different from 1.0 (where a relative risk of 1.0 signifies no difference in risk), with the exception of those for large trucks, 2010.

DRIVERS INVOLVED

Younger drivers involved in collisions tend to exhibit higher rates of *aggressive driving*, *disregarding signals/signs*, and *speeding*. In 2011, 87 of every 10,000 licensed 15 to 20 year-olds involved in collisions were *speeding*, a rate more than 10 times higher than drivers 65 and older (Figure 3). Similarly, compared to drivers 65 and older, 15 to 20 year-old drivers involved in collisions were three to four times more likely to have been

driving aggressively and approximately 1.5 to 2 times more likely to have *disregarded a signal/sign*. In 2011, 8.5 percent of male drivers involved in collisions were *driving dangerously*, compared to 7.0 percent of female drivers (Figure 4). Males of every age group were more likely to have been *driving dangerously* than females of the same age group, with the largest difference evident in the 15 to 20 year-old age group (14 percent of males compared to 10.2 percent of females).

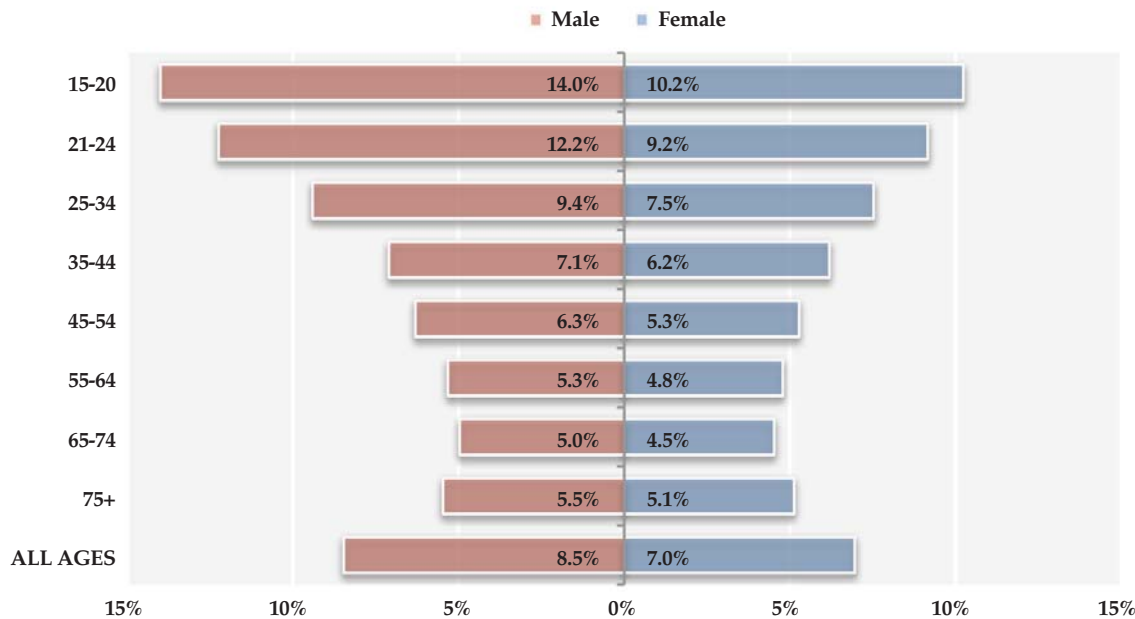
Figure 3. Drivers driving dangerously in Indiana collisions, by age cohort, 2011



Source: Indiana State Police; Indiana Bureau of Motor Vehicles

Note: Data exclude cases with invalid age.

Figure 4. Drivers driving dangerously in Indiana collisions, by gender and age cohort, 2011



Source: Indiana State Police

Note: Data exclude cases with invalid or unknown gender and age.

TIME & LOCATION

The likelihood that a collision involves *dangerous driving* and the relative risk of fatality in these collisions varies by locale, road class, and the interaction between the two. In 2011, while the largest share of all collisions involving *dangerous driving* occurred in *urban* areas (69 percent of total, calculated from Table 6), *dangerous-driving* collisions were most likely to occur in *suburban* areas (15.7 percent of total *suburban* collisions) and *exurban* areas (15.1 percent of total *exurban* collisions). Across all locale types, *dangerous-driving* collisions were most likely to occur on *interstates* and *county roads* (except in *exurban* areas where rates were higher on *local/city* roads than *county roads*).

A greater likelihood of occurrence does not necessarily translate to a higher risk of fatality. While *dangerous-driving* collisions were most likely to occur in *suburban* and *exurban* areas as reported above, the relative risk of a fatal collision was highest in *urban* (2.9 times more likely) and *rural* (1.6 times more likely) areas (Table 6). In *urban* areas in 2011, collisions on *county roads* that involved *dangerous driving* were 3.3 times more likely to result in a fatality than those that did not. In *suburban* and *rural* areas, the relative risk was greatest on *local/city* roads, while *state roads* posed the greatest risk in *exurban* areas.

Table 6. Indiana collisions, by dangerous driving (DD) involvement, locale type, and road class, 2011

Locale/road class	DD involved		No DD involved		% Involving DD	% Fatal		Relative risk of fatality
	Fatal	Non-fatal	Fatal	Non-fatal		DD involved	No DD involved	
Urban	78	13,721	178	92,184	13.0%	0.57%	0.19%	2.9
County Road	5	524	8	2,773	16.0%	0.95%	0.29%	3.3
Interstate	10	1,494	21	6,213	19.4%	0.66%	0.34%	2.0
Local/City Road	39	8,967	97	65,722	12.0%	0.43%	0.15%	2.9
State Road	16	1,335	35	9,331	12.6%	1.18%	0.37%	3.2
US Route	8	1,401	17	8,145	14.7%	0.57%	0.21%	2.7
Suburban	29	3,292	136	17,691	15.7%	0.87%	0.76%	1.1
County Road	10	1,016	35	5,370	16.0%	0.97%	0.65%	1.5
Interstate	3	739	15	2,313	24.2%	0.40%	0.64%	0.6
Local/City Road	6	477	7	2,773	14.8%	1.24%	0.25%	4.9
State Road	9	633	50	4,572	12.2%	1.40%	1.08%	1.3
US Route	1	427	29	2,663	13.7%	0.23%	1.08%	0.2
Exurban	17	1,478	79	8,307	15.1%	1.14%	0.94%	1.2
County Road	5	540	26	2,821	16.1%	0.92%	0.91%	1.0
Interstate	4	269	9	975	21.7%	1.47%	0.91%	1.6
Local/City Road	0	127	5	552	18.6%	0.00%	0.90%	0.0
State Road	6	348	21	2,752	11.3%	1.69%	0.76%	2.2
US Route	2	194	18	1,207	13.8%	1.02%	1.47%	0.7
Rural	21	1,461	92	10,113	12.7%	1.42%	0.90%	1.6
County Road	7	530	29	2,927	15.4%	1.30%	0.98%	1.3
Interstate	1	251	6	885	22.0%	0.40%	0.67%	0.6
Local/City Road	1	99	2	803	11.0%	1.00%	0.25%	4.0
State Road	8	429	41	3,959	9.8%	1.83%	1.03%	1.8
US Route	4	152	14	1,539	9.1%	2.56%	0.90%	2.8

Source: Indiana State Police

Notes: Relative risk defined as ratio of % fatal (DD involved) to % Fatal (No DD involved).

Data exclude cases with invalid or unknown locale and/or road class.

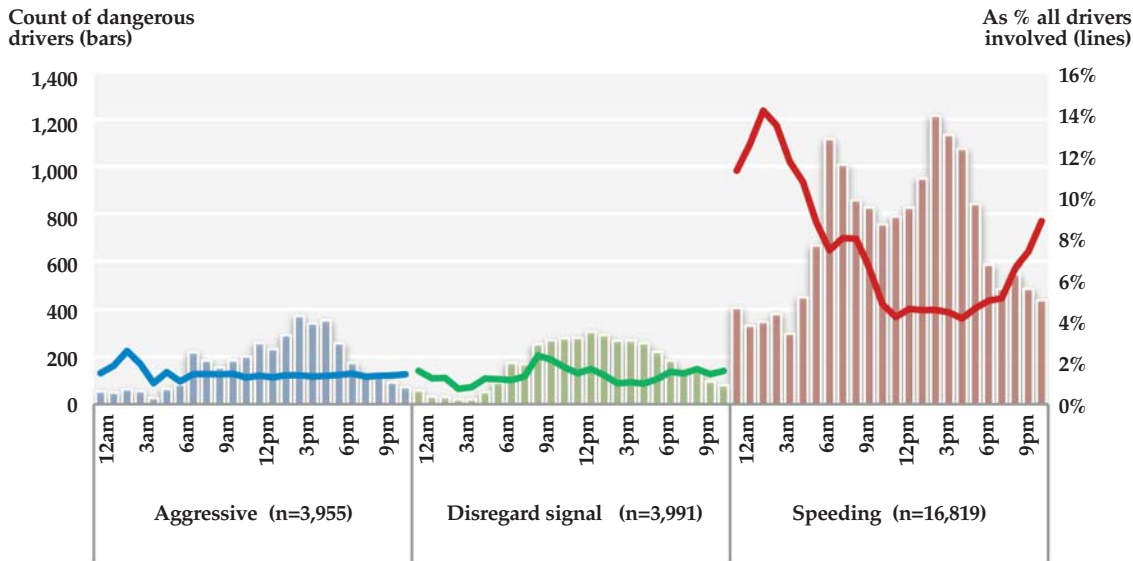
Only six relative risk estimates are significantly different from 1.0 (where a relative risk of 1.0 signifies no difference in risk): urban; urban county roads, local/city roads, state roads, US routes; suburban, local/city roads

TIME & LOCATION (Continued)

For drivers involved in collisions in 2011, the likelihood that they were engaged in different types of *dangerous driving* actions varied by time of day. For all hours, the average rate of *aggressive driving* was 1.5 percent in 2011, while *disregarding a signal/sign* and *speeding* actions averaged 1.4 and 7.5 percent, respectively (Figure 5). *Aggressive-driving* actions were

above average during early morning hours (12am to 5:59am), and peaked at 2.6 percent during the 2am hour. *Speeding* actions were most likely during 11pm to 9:59am, and peaked at 14.1 percent during the 2am hour. Finally, *disregarding a signal/sign* was most likely from 9am to 2:59pm and 7pm to 12:59am, and peaked at 2.3 percent during the 9am hour.

Figure 5. Drivers driving dangerously in Indiana collisions, by hour of day, 2011



Source: Indiana State Police

Note: Data exclude cases where collision time was not reported.

Map 1 examines which Indiana counties had the highest and lowest rates of collisions involving *dangerous driving* in 2011, and how rates changed during the past five years.

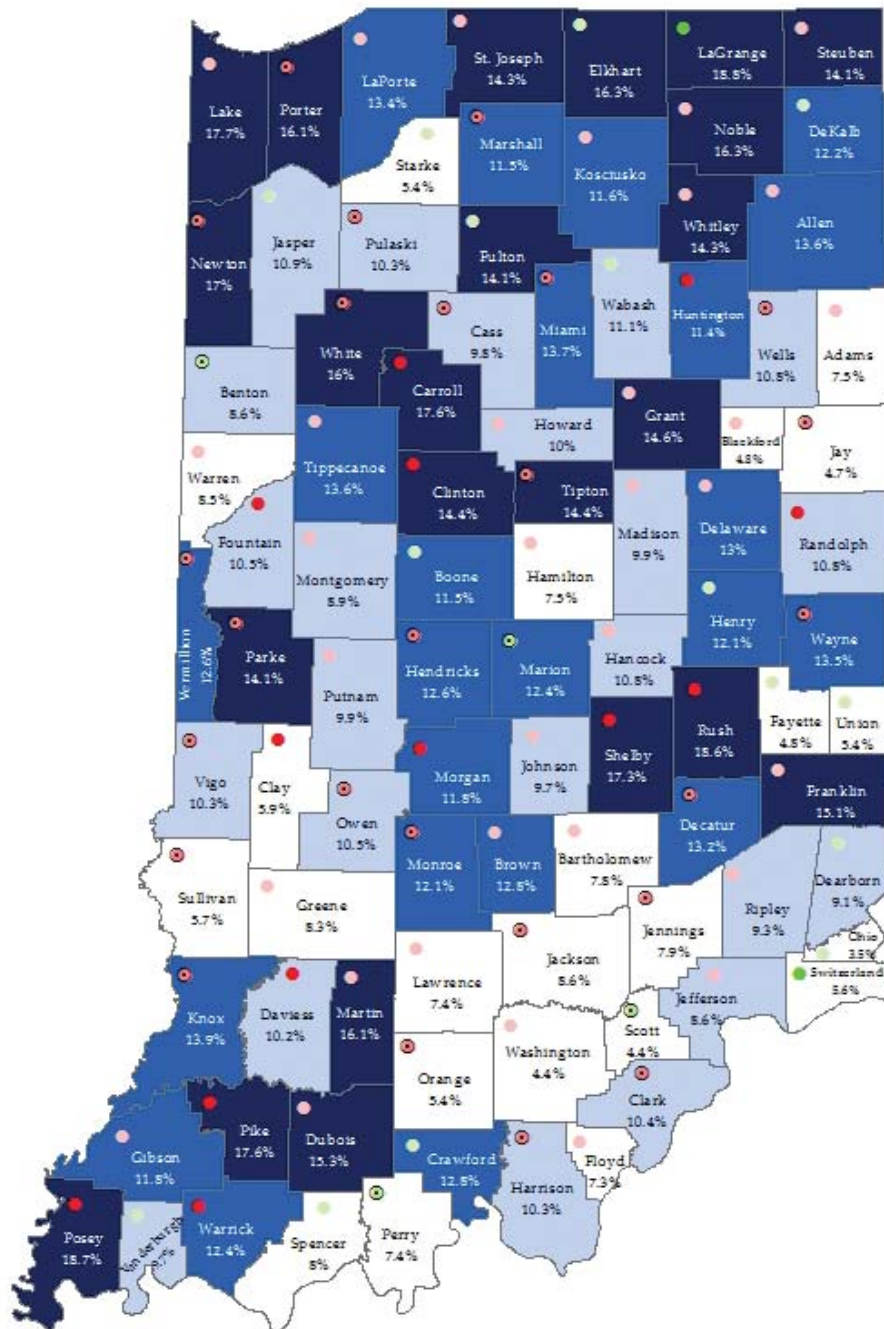
Among the 23 Indiana counties with *dangerous-driving* collision rates above the 75th percentile, the five counties where *dangerous-driving* collisions were most likely to occur in 2011 (i.e., those above the 95th percentile) were LaGrange (18.8 percent), Posey (18.7 percent), Rush (18.6 percent), Lake (17.7 percent), and Carroll (17.6 percent). Conversely, *dangerous-driving* collisions were least likely to occur in Ohio (3.5 percent), Washington (4.4 percent), Scott (4.4 percent), Jay (4.7 percent), and Fayette (4.8 percent) counties. Counties along the northern border of the state recorded rates above the mean/median, while most counties along the southern border experienced rates below the mean/median.

On average from 2007 to 2011, the proportion of collisions involving *dangerous driving* (i.e., the rate) in Indiana increased 1 percent each year, with counties averaging a 4.2 percent increase. Seventy-one counties

(77 percent) reported rates that increased on average during the five-year period (red circles in map), with just 21 reporting average annual decreases (green circles in map). With an average annual increase of 25.5 percent, Randolph County recorded the largest average increase, followed by Carroll (20.6 percent), Rush (19.7 percent), Pike (18.9 percent), and Clinton (15.5 percent) counties (labels not shown in map). Meanwhile, *dangerous-driving* collision rates in Switzerland County decreased an average of 13.7 percent each year, with LaGrange (10.3 percent), Scott (9.5 percent), Benton (6.8 percent), and Perry (6.6 percent) counties rounding out the five counties with the largest decreases.

Counties with higher rates of collisions involving *dangerous driving* in 2011 tended to also report larger average annual increases in these rates, though the correlation is not overwhelming. Some exceptions to this are LaGrange, Elkhart, and Fulton counties, which reported some of the highest 2011 rates, but average annual rate decreases. Similarly, Orange, Sullivan, and Clay counties reported some of the lowest 2011 rates, but some of the largest average annual rate increases.

Map 1. Rates of Indiana traffic collisions involving dangerous driving (DD), by county, 2011 and 2007-2011



Statewide rate = 14.1%
 Mean county rate = 11.3%
 Median county rate = 11.3%

Statewide average rate of change = 1.0%
 Mean county rate of change = 4.2%
 Median county rate of change = 3.8%

DD, as % total collisions, 2011

- 25th percentile (23)
- 50th percentile (23)
- 75th percentile (23)
- > 75th percentile (23)

Average annual change in DD rate, 2007-11

- Decrease 10%, or more (2)
- Decrease 5-10% (4)
- Decrease 0.1-5% (15)
- Increase 0.1-5% (33)
- Increase 5-10% (25)
- Increase 10% or more (13)

Source: Indiana State Police

Note: Data exclude cases with unknown county.

ALCOHOL INVOLVEMENT

In 2011, 6.9 percent of *dangerous-driving* collisions were *alcohol-related* and 4.1 percent involved a driver who was *alcohol-impaired* (BAC of 0.08 g/dL or greater) (Table 7). During the past five years, an average of 6.1 percent of *dangerous-driving* collisions have been *alcohol-related*, compared to 4.4 percent of collisions not involving *dangerous driving* (calculated from Table

7 and other data not shown). Similarly, 2.8 percent of *dangerous-driving* collisions involved a driver who was *alcohol-impaired* compared to 2.1 percent of collisions where *dangerous driving* was not involved. The rates of *alcohol involvement* and *alcohol impairment* in *dangerous-driving* collisions have increased steadily since 2008 and reached five-year highs in 2011.

Table 7. Dangerous driving (DD) collisions in Indiana, by alcohol involvement and collision severity, 2007-2011

	Count of collisions					% Change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Dangerous driving collisions	25,011	28,915	24,027	24,391	23,307	-4.4%	-1.1%
Fatal	196	211	160	155	155	0.0%	-4.9%
Non-fatal	6,515	6,661	6,006	6,078	5,919	-2.6%	-2.3%
Property damage	18,300	22,043	17,861	18,158	17,233	-5.1%	-0.5%
DD alcohol-related (BAC >= 0.01 g/dL)	1,474	1,508	1,425	1,545	1,612	4.3%	2.4%
Fatal	63	78	60	50	61	22.0%	1.5%
Non-fatal	661	599	580	637	715	12.2%	2.4%
Property damage	750	831	785	858	836	-2.6%	3.0%
DD alcohol-impaired (BAC = 0.08+ g/dL)	530	494	621	901	957	6.2%	17.6%
Fatal	48	58	45	41	49	19.5%	2.3%
Non-fatal	181	150	224	355	383	7.9%	24.6%
Property damage	301	286	352	505	525	4.0%	16.4%
% DD alcohol-related	5.9%	5.2%	5.9%	6.3%	6.9%	9.2%	4.6%
Fatal	32.1%	37.0%	37.5%	32.3%	39.4%	22.0%	6.1%
Non-fatal	10.1%	9.0%	9.7%	10.5%	12.1%	15.3%	5.0%
Property damage	4.1%	3.8%	4.4%	4.7%	4.9%	2.7%	4.7%
% DD alcohol-impaired	2.1%	1.7%	2.6%	3.7%	4.1%	11.2%	21.5%
Fatal	24.5%	27.5%	28.1%	26.5%	31.6%	19.5%	7.0%
Non-fatal	2.8%	2.3%	3.7%	5.8%	6.5%	10.8%	28.5%
Property damage	1.6%	1.3%	2.0%	2.8%	3.0%	9.5%	20.4%

Source: Indiana State Police

Note: Due to changes in the way alcohol-involved collisions are reported, caution should be used when comparing 2010 and 2011 data with data before 2010.

ALCOHOL INVOLVEMENT *(Continued)*

In 2011, 40.1 percent of fatalities in *dangerous-driving* collisions were in collisions that also involved alcohol, up from 30.5 percent in 2010. In addition, 29.9 percent of fatalities in *dangerous-driving* collisions were in collisions where at least one driver was *alcohol impaired* (BAC of 0.08 g/dL or greater), up from 25 percent in 2010. Historically, an average of 10.8 percent of injuries in *dangerous-driving* collisions were in collisions that also *involved alcohol*, compared to 8.4 percent of injuries in collisions not involving *dangerous driving* (calculated from Table 8 and other data not

shown). Similarly, an average of 4.7 percent of injuries in *dangerous-driving* collisions were in collisions where a driver was *alcohol impaired*, compared to 3.6 percent of injuries in collisions where *dangerous driving* was not involved. While the number of injuries in collisions involving *dangerous driving* decreased 4.8 percent from 2010 to 2011 and 4.6 percent on average from 2007 to 2011, the number of injuries in *dangerous-driving* collisions that also involved alcohol or a driver who was *alcohol impaired* increased substantially.

Table 8. Injuries in dangerous driving (DD) collisions in Indiana, by collision alcohol involvement and injury severity, 2007-2011

	Count of injuries					% change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Dangerous driving collisions	11,134	10,834	9,674	9,660	9,194	-4.8%	-4.6%
Fatal	222	250	186	164	177	7.9%	-4.2%
Incapacitating	749	777	675	744	766	3.0%	0.9%
Non-incapacitating	9,089	9,055	8,262	8,377	7,921	-5.4%	-3.3%
Other	1,074	752	551	375	330	-12.0%	-25.2%
DD alcohol-related (BAC >= 0.01 g/dL)	1,152	1,037	983	1,071	1,167	9.0%	0.7%
Fatal	67	91	66	50	71	42.0%	6.5%
Incapacitating	140	136	148	149	168	12.8%	4.8%
Non-incapacitating	866	768	725	833	890	6.8%	1.2%
Other	79	42	44	39	38	-2.6%	-14.0%
DD alcohol-impaired (BAC = 0.08+ g/dL)	374	320	397	603	642	6.5%	17.0%
Fatal	51	68	49	41	53	29.3%	4.6%
Incapacitating	30	25	49	82	66	-19.5%	31.8%
Non-incapacitating	267	219	287	464	496	6.9%	20.4%
Other	26	8	12	16	27	68.8%	20.7%
% DD alcohol-related	10.3%	9.6%	10.2%	11.1%	12.7%	14.5%	5.6%
Fatal	30.2%	36.4%	35.5%	30.5%	40.1%	31.6%	8.9%
Incapacitating	18.7%	17.5%	21.9%	20.0%	21.9%	9.5%	4.9%
Non-incapacitating	9.5%	8.5%	8.8%	9.9%	11.2%	13.0%	4.7%
Other	7.4%	5.6%	8.0%	10.4%	11.5%	10.7%	15.0%
% DD alcohol-impaired	3.4%	3.0%	4.1%	6.2%	7.0%	11.9%	22.7%
Fatal	23.0%	27.2%	26.3%	25.0%	29.9%	19.8%	7.5%
Incapacitating	4.0%	3.2%	7.3%	11.0%	8.6%	-21.8%	34.0%
Non-incapacitating	2.9%	2.4%	3.5%	5.5%	6.3%	13.1%	24.6%
Other	2.4%	1.1%	2.2%	4.3%	8.2%	91.8%	59.1%

Source: Indiana State Police

Note: Due to changes in the way alcohol-related collisions are reported, caution should be used when comparing 2010 and 2011 data with data before 2010.

RESTRAINT USE

Restraint use rates for occupants in vehicles *driven dangerously* have historically been lower than rates for occupants in vehicles not *driven dangerously*. This discrepancy may account for some of the increased relative risk of fatality in collisions involving *dangerous driving* discussed throughout. In 2011, 95 of every 100 occupants in vehicles driven dangerously were restrained, three fewer than the 98 per 100 occupants in vehicles not *driven dangerously* (Table 9). Among occupants suffering fatal injuries, only 39 of every 100 in vehicles *driven dangerously* were restrained, 12

fewer than the 51 per 100 occupants in vehicles not *driven dangerously*. This gap in restraint use rates between the two occupant groups increased to 14 for occupants suffering incapacitating injuries, before decreasing with less severe injuries. Restraint use rates have not changed much for either occupant group during the past five years—with the exception of restraint use rates for occupants in vehicles *driven dangerously* who suffered a fatality, which grew 16.9 percent from 2010 to 2011 and 8.6 percent on average from 2007 to 2011.

Table 9. Restraint use rates per 100 vehicle occupants involved in Indiana collisions, by injury status, 2007-2011

Occupants in...	Restraint use rates per 100 occupants					% change	
	2007	2008	2009	2010	2011	2010-11	Average annual 2007-11
Vehicles driven dangerously	92	95	95	95	95	0.1%	0.7%
Fatal	29	35	39	33	39	16.9%	8.6%
Incapacitating	51	64	59	59	59	0.0%	4.4%
Non-incapacitating	81	85	86	86	85	-0.8%	1.4%
Other	94	95	97	96	95	0.0%	0.4%
Not injured	97	98	98	98	98	0.3%	0.4%
Vehicles not driven dangerously	96	97	97	98	98	0.1%	0.4%
Fatal	51	48	51	51	51	-0.6%	0.2%
Incapacitating	65	71	71	74	73	-1.0%	3.0%
Non-incapacitating	88	90	90	91	91	0.1%	0.7%
Other	97	98	98	97	98	0.6%	0.2%
Not injured	98	99	99	99	99	0.1%	0.3%
Difference in restraint use per 100, dangerous driving v. not dangerous driving	-4	-3	-3	-3	-3	-0.4%	-5.5%
Fatal	-22	-13	-12	-18	-12	-32.9%	-7.3%
Incapacitating	-14	-7	-11	-15	-14	-4.9%	10.9%
Non-incapacitating	-8	-5	-5	-5	-6	15.9%	-5.2%
Other	-3	-3	-1	-1	-2	40.9%	0.6%
Not injured	-1	-1	-1	-1	-1	-22.7%	-5.1%

Source: Indiana State Police

Note: Data exclude individuals with unknown or invalid safety equipment type.

LICENSE STATUS & TRAFFIC OFFENSES

Compared to drivers in collisions not engaged in *dangerous-driving* actions, drivers who were engaged in *dangerous driving* were less likely to have a *valid* license (80 percent versus 85 percent) and more likely to have a *suspended, unlicensed, revoked* or *habitual traffic violator* license status at the time of collision (Table 10). Drivers with a history of conviction

for *dangerous-driving* offenses are more likely to have been *driving dangerously* at the time of collision than those without a history (Figure 6). Among the crash-involved, the chances of a driver *driving dangerously* in the crash increase by 25 percent when that driver has one or more prior convictions for *dangerous-driving* offenses. The chances of a driver speeding in the crash increase by 29 percent when that driver has one or more prior convictions for speeding.

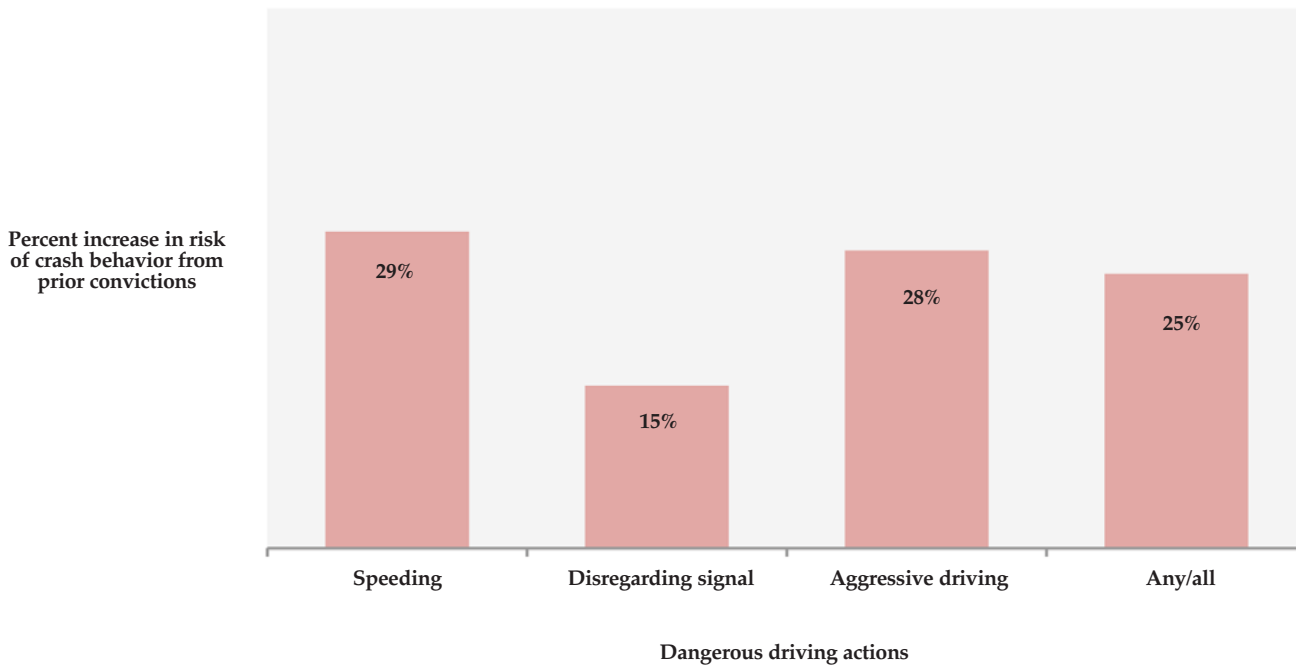
Table 10. License status of drivers involved in Indiana collisions, by driver dangerous driving (DD) involvement, 2011

License status	Driving dangerously	Not driving dangerously	All drivers	As % of total, all statuses		Relative likelihood of license status (DD/No DD)
				Driving dangerously (DD)	Not driving dangerously (Not DD)	
Valid	15,174	198,587	213,761	80.1%	85.1%	0.9
Suspended for infraction	2,797	27,141	29,938	14.8%	11.6%	1.3
Suspended for prior conviction	453	3,763	4,216	2.4%	1.6%	1.5
Unlicensed	201	1,347	1,548	1.1%	0.6%	1.8
Revoked license	165	1,341	1,506	0.9%	0.6%	1.5
Suspended for misdemeanor	64	552	616	0.3%	0.2%	1.4
Habitual traffic violator	26	143	169	0.1%	0.1%	2.2
Habitual traffic violator - Life	17	103	120	0.1%	0.0%	2.0
Other status	50	507	557	0.3%	0.2%	1.2
TOTAL (where status known)	18,947	233,484	252,431	100.0%	100.0%	--
% non-valid	19.9%	14.9%	15.3%	--	--	--
Suspended	17.5%	13.5%	13.8%	--	--	--
Unlicensed/revoked	1.9%	1.2%	1.2%	--	--	--
Other non-valid	0.3%	0.2%	0.2%	--	--	--

Sources: Indiana Bureau of Motor Vehicles; Indiana State Police

Note: Limited to drivers for whom license information was found in BMV repository.

Figure 6. Increase in risk of driver behavior in crash, based on prior convictions for those driving behaviors, 2009-2011



Sources: Indiana Bureau of Motor Vehicles; Indiana State Police

Notes: "Increase in crash risk" is derived by comparing the probability of contributing to the crash for specific driving behaviors between drivers with a history of convictions for those behaviors and drivers with no prior history. For example, 7% of drivers that had prior speeding convictions were speeding in the crash. For drivers with no prior speeding convictions, 5.4% sped in the crash. The ratio of these probabilities (7% / 5.4%) = 1.29, indicates that drivers with a history of speeding convictions are 29% ((1.29 - 1)*100) more likely to have sped in the crash than drivers with no history. All relative risk estimates are statistically significant.

DEFINITIONS

- *Aggressive driving* applies when the investigating officer determines that a driver was engaged in at least two of the following: *Unsafe speed; speed too fast for weather conditions; failing to yield right of way; disregarding a traffic signal/sign; improper passing/turning/lane usage; or following too closely.* Indiana Code IC 9-21-8-55 requires three or more of these and similar actions to be considered an aggressive-driving violation.
- *Disregarding a traffic signal* applies when a vehicle driver was involved in a collision at an intersection of two or more roads and disregarded a traffic signal/sign.
- *Speeding* applies when a vehicle driver was issued a speeding citation or driving at an unsafe speed, as indicated by *unsafe speed or speed too fast for weather conditions* as a contributing factor to the collision. Indiana Code 9-21-5-1 delineates this action from the legal perspective.
- *Dangerous driving* applies when a driver takes any of the above actions in a collision.
- *Non-fatal collision severity* applies when no fatalities and at least one *incapacitating, non-incapacitating, or possible* injury occurred.
- *Non-fatal injury* includes *incapacitating, non-incapacitating, possible, not reported, unknown, refused (treatment),* and invalid injury categories.
- *Other injury status* includes *not reported, unknown, refused (treatment),* and invalid injury categories.
- *Light truck* includes *sport utility vehicles, vans, and pickup trucks* with gross vehicle weight less than 10,000 pounds.
- *Large truck* includes *truck (single 2 axle, 6 tires), truck (single 3 or more axles), truck/trailer (not semi), tractor/one semi trailer, tractor/double trailer, tractor/triple trailer, tractor (cab only, no trailer),* and *pickup trucks* with gross vehicle weight greater than or equal to 10,000 pounds.
- *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).

DATA SOURCES

Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 20, 2012

Indiana Bureau of Motor Vehicles, current as of March 20, 2012

Bureau of Transportation Statistics, State Transportation Statistics, current as of March 15, 2012, http://www.bts.gov/publications/state_transportation_statistics/

Fatality Analysis Reporting System, National Highway Traffic Safety Administration, as of March 20, 2012
<http://www.fars.nhtsa.dot.gov/Main/index.aspx>

This publication was prepared on behalf of the Indiana Criminal Justice Institute (ICJI) by the Indiana University Center for Criminal Justice Research (CCJR). 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 the ICJI and the National Highway Traffic Safety Administration.

An electronic copy of this document can be accessed via the CCJR website (www.ccjr.iupui.edu), the ICJI website (www.in.gov/cji/), or you may contact the Center for Criminal Justice Research at 317-261-3000.



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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 Center for Criminal Justice Research is collaborating with the Indiana Criminal Justice Institute to analyze 2011 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the sixth year of this partnership. Research findings will be summarized in a series of fact sheets on various aspects of traffic collisions, including alcohol-related crashes, light and large trucks, dangerous driving, children, motorcycles, occupant protection, and drivers. An additional publication will provide information on county and municipality data and the final publication will be 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, 2011, approximately 99 percent of all collisions are entered electronically through ARIES. Trends in collisions incidence as reported in these publications could 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 Indiana University (IU) Public Policy Institute is a collaborative, multidisciplinary research institute within the Indiana University School of Public and Environmental Affairs (SPEA), Indianapolis. The Institute serves as an umbrella organization for research centers affiliated with SPEA, including the Center for Urban Policy and the Environment and the Center for Criminal Justice Research. The Institute also supports the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

The Center for Criminal Justice Research

The Center for Criminal Justice Research, one of two applied research centers currently affiliated with the Indiana University Public Policy Institute, works with public safety agencies and social services organizations to provide impartial applied research on criminal justice and public safety issues. CCJR provides analysis, evaluation, and assistance to criminal justice agencies; and community information and education on public safety questions. CCJR research topics include traffic safety, crime prevention, criminal justice systems, drugs and alcohol, policing, violence and victimization, and youth.

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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