

INDIANA TRAFFIC SAFETY FACTS

May 2007



SPEEDING 2006

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic accidents. To help in the policy-making process, the Indiana University Center for Urban Policy and the Environment is collaborating with the Indiana Criminal Justice Institute to analyze data from the Vehicle Crash Records System database, maintained by the Indiana State Police. Research findings will be summarized in a series of Fact Sheets on various aspects of traffic accidents, including alcohol-related crashes, light trucks, large trucks, speeding, children, motorcycles, occupant protection, and young drivers. Additional briefs will provide information on county and municipality data. Portions of the content in these reports are based on guidelines provided by the U.S. National Highway Traffic Safety Administration (NHTSA). These Fact Sheets, combined with an annual Indiana Crash Fact Book, serve as the analytical foundation of traffic safety program planning and design in Indiana.



Speeding is one of the most prevalent factors contributing to traffic crashes. A study in 2000 conducted by the National Highway Traffic Safety Administration (NHTSA) estimated that speed-related crashes produce costs of \$40.4 billion per year, or \$1,281 per second. Nationally in 2005, speeding was a contributing factor in 30 percent of all fatal crashes resulting in a loss of over 13,000 lives.¹ In 2006, there were 156 speed-related fatal collisions in Indiana that resulted in 171 fatalities.

A collision is defined as speeding-related if the driver was charged with a speeding-related offense or if an officer indicates on the collision report that the driver was driving at an unsafe speed or too fast for conditions. This fact sheet will examine the collisions involving speed, characteristics of the drivers who speed (age, gender, type of vehicle), the road conditions at the time of collisions, and the environmental factors relating to the crashes. Collision data are taken from the Indiana State Police Vehicle Crash Records System (VCRS)² from 2003 to 2006 unless otherwise noted.

Indiana Speeding Law

Indiana Code (9-21-5-1) states:

"A person may not drive a vehicle on a highway at a speed greater than is reasonable and prudent under the conditions, having regard to the actual and potential hazards then existing. Speed shall be restricted as necessary to avoid colliding with a person, vehicle, or other conveyance on, near, or entering a highway in compliance with legal requirements and with the duty of all persons to use due care."

Speed limits for varying types of roadways (e.g., local and city roads, US routes, interstates), localities (e.g., urban, rural), and types of vehicles (e.g., those with a gross weight of 26,000 pounds or more) are set forth in Indiana law. In addition, local jurisdictions may alter the speed limits as necessary with certain restrictions.

Indiana law also provides instructions on when a driver should lower their speed. An appropriate reduced speed should take place when "(1) approaching and crossing an intersection or railway crossing, (2) approaching and going around a curve, (3) approaching a hill crest, (4) traveling upon a narrow or winding roadway, or (5) when a special

¹National Center for Statistics and Analysis, National Highway Traffic Safety Administration, *Traffic Safety Facts, Speeding*, 2005 data. DOT HS 810 629.

²As of April 12, 2007 a new version of VCRS was launched and titled the Automated Reporting Information Exchange System (ARIES), incorporating other types of reports relating to traffic collisions. Data for this fact sheet were extracted April 9, 2007 and is sourced as VCRS.



hazard exists with respect to pedestrians or other traffic or by reason of weather or highway conditions" (IC 9-21-5-4).

There are also restrictions on driving too slowly. Generally, a person may not drive a vehicle at a slow speed that impedes the normal and reasonable movement of traffic (IC 9-21-5-7). The state or local jurisdiction may declare a minimum speed limit for safe operation as necessary (IC 9-21-5-8).

Trends in Speed-Related Collisions

Speed reduces the amount of available time needed to avoid a crash, increases the likelihood of crashing, and increases the severity of a crash once it occurs.³

While the total number of collisions in Indiana decreased each year from 2003 to 2006, the number and percentage of speed-related crashes increased from 2003 to 2005 (Table 1). In 2006, the proportion of collisions where speed was a factor decreased 2.1 percentage points from 2005 to 2006. However, the proportion of speed-related fatal collisions increased slightly from 2003 to 2006, suggesting that speed might contribute to the severity of a crash.

In 2005 and 2006, among speed-related collisions, a higher number involved only a single vehicle compared to multiple-vehicle collisions. Of the 14,299 speed-related collisions in Indiana in 2006, 50.4 percent (7,206) were single-vehicle crashes. However, in 2003 and 2004, there were more multiple vehicle collisions. Speed-related collisions occurred more often in urban areas, typically on local/city roads (Table 2).

The data on speed-related fatal collisions in Indiana exhibit different results. In all years from 2003 to 2006, nearly two-thirds of the speed-related fatal crashes involved single vehicles and occurred about one-third of the time on county roads in rural areas. Of the 156 speed-related fatal collisions in Indiana in 2006, 66.7 percent (104) were single-vehicle crashes and 63 percent (99) occurred in rural area, with 51 of those on county roads (Table 3).

There were 13,649 drivers involved in speed-related traffic collisions in Indiana in 2006. In addition, speed-related crashes affected 1,252 passengers, four pedalcyclists and 16 pedestrians (not shown).

Table 1: Indiana total collisions and speed related collisions, 2003 - 2006

Year	All collisions	Speed-related collisions		Fatal collisions	
	Count	Count	% all	Count	% speed-related
2003	211,731	18,458	8.7%	174	0.9%
2004	208,683	18,548	8.9%	175	0.9%
2005	208,362	19,739	9.5%	202	1.0%
2006	192,645	14,299	7.4%	156	1.1%

Source: Indiana State Police, Vehicle Crash Records System (VCRS), April 9, 2007.

Speeding in adverse road conditions can be hazardous. In 2006, although most (122 of 156) speed-related fatal collisions occurred when the roads were dry, 14.7 percent (23) occurred during wet road conditions. Another 6.4 percent (10) of speed-related fatal crashes occurred on ice- and snow-covered roads. Among nonfatal collisions, only 43.1 percent occurred on dry roads. Wet

Table 2: Speed-related collisions in Indiana, 2003 - 2006

	2003		2004		2005		2006	
	Count	% total	Count	% total	Count	% total	Count	% total
Total collisions	18,458		18,548		19,739		14,299	
By vehicles involved								
Single vehicle	9,210	49.9%	8,968	48.4%	10,027	50.8%	7,206	50.4%
Multiple vehicles	9,248	50.1%	9,580	51.6%	9,712	49.2%	7,093	49.6%
By locality								
Urban	9,598	52.0%	9,795	52.8%	9,992	50.6%	7,758	54.3%
Rural	8,670	47.0%	8,713	47.0%	9,693	49.1%	6,502	45.5%
Unknown	190	1.0%	40	0.2%	54	0.3%	39	0.3%
By road type								
Local/City Road	6,441	34.9%	6,863	37.0%	6,969	35.3%	5,158	36.1%
County Road	4,795	26.0%	4,672	25.2%	5,141	26.0%	3,173	22.2%
State Road	2,278	12.3%	2,173	11.7%	2,346	11.9%	1,964	13.7%
US Route	1,435	7.8%	1,654	8.9%	1,683	8.5%	1,274	8.9%
Interstate	2,555	13.8%	2,338	12.6%	2,596	13.2%	2,067	14.5%

Source: Indiana State Police, Vehicle Crash Records System (VCRS), April 9, 2007.

³DOT HS 810 629.

Table 3: Speed-related fatal collisions in Indiana, 2003 - 2006

	2003		2004		2005		2006	
	Count	% total	Count	% total	Count	% total	Count	% total
Total Fatal collisions	174		175		202		156	
By vehicles involved								
Multiple Vehicle	65	37.4%	65	37.1%	76	37.6%	52	33.3%
Single Vehicle	109	62.6%	110	62.9%	126	62.4%	104	66.7%
By locality								
Rural	123	70.7%	113	64.6%	140	69.3%	99	63.5%
Urban	51	29.3%	62	35.4%	62	30.7%	57	36.5%
By road type								
County Road	61	35.1%	59	33.7%	72	35.6%	51	32.7%
Local/City Road	36	20.7%	48	27.4%	41	20.3%	35	22.4%
State Road	28	16.1%	26	14.9%	43	21.3%	33	21.2%
US Route	20	11.5%	21	12.0%	19	9.4%	17	10.9%
Interstate	28	16.1%	21	12.0%	27	13.4%	20	12.8%
Unknown	1	0.6%	0	0.0%	0	0.0%	0	0.0%

Source: Indiana State Police, Vehicle Crash Records System (VCRS), April 9, 2007.

road conditions contributed to 38.5 percent of the speed-related collisions, and 17 percent occurred on ice- and snow-covered roads.

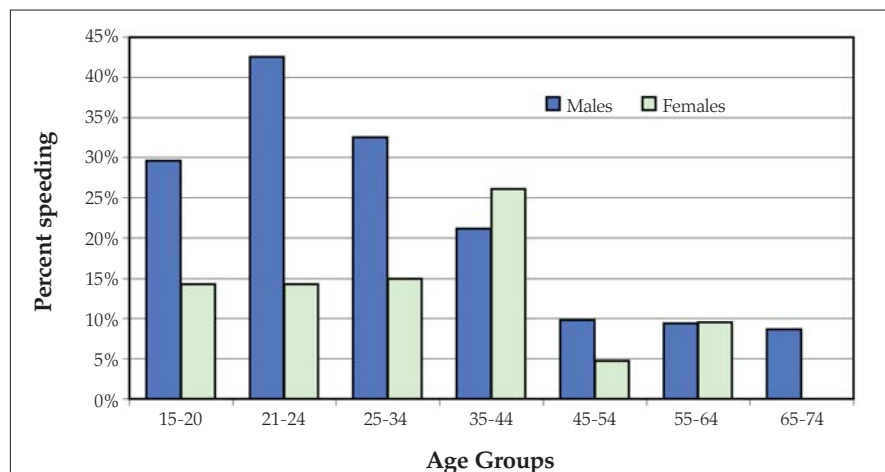
Drivers Involved in Speed-Related Fatal Collisions

There were 114 drivers of vehicles killed in which the vehicle they were driving was speeding. Eighty-three percent (95) of those drivers killed were male. Figure 1 shows the proportion of male and female speeding drivers in relation to all drivers in fatal collisions by age group. In general, and especially among drivers younger than age 35, males were more likely to have been speeding. In 2006, the highest percentage (42.6 percent) of male drivers speeding involved in fatal collisions was those aged 21-24. For females, the highest percentage (26.1 percent) speeding in fatal collisions were those aged 35-44. There were no female speeding drivers aged 65-74 involved in fatal collisions.

Of 603 drivers killed in Indiana collisions in 2006, 114 were speeding. Of those 114 who were speeding, only 20.2 percent (23) were known to be wearing their safety belts. In contrast, 36.9 percent (116 of 314) of the speeding drivers who incurred incapacitating injuries wore their safety belts (not shown).

Regardless of the vehicle type, Indiana data suggests that drivers who speed and are involved in collisions have a

Figure 1: Proportion of Indiana drivers who were speeding in fatal collisions, by age and gender, 2006



Source: Indiana State Police, Vehicle Crash Records System (VCRS), April 9, 2007.

higher percentage rate of being killed. Table 4 shows that 86.7 percent (13 of 15) of the speeding drivers of a Sport Utility Vehicle (SUV) involved in a collision were killed and 66.7 percent of passenger cars who were speeding were killed. These rates compare to 49.3 percent of all SUV and 53.6 percent of all passenger car drivers killed. Speed-related collisions are especially deadly for motorcycle drivers. In addition, there were 33 passengers killed in collisions in which the vehicle they were riding was speeding.

Alcohol-related speeding collisions

Speed and alcohol continue to provide a deadly mixture. Although figure 2 shows that from 2003 to 2005 the involvement



Table 4: Drivers involved in Indiana fatal collisions, 2006

Vehicle type	Drivers in all fatal collisions			Drivers in speed-related fatal collisions			Drivers who were speeding		
	Involved	Killed	% killed	Involved	Killed	% killed	Involved	Killed	% killed
Passenger Car	541	290	53.6	110	60	54.5	81	54	66.7
Pickup	213	92	43.2	24	15	62.5	20	14	70.0
Sport Utility Vehicle	144	71	49.3	20	14	70.0	15	13	86.7
Van	69	25	36.2	9	5	55.6	5	4	80.0
Motorcycle	101	85	84.2	33	25	75.8	26	23	88.5
Large trucks	137	25	18.2	25	5	20.0	8	5	62.5
Total	1,205	588	48.8	221	124	56.1	155	113	72.9

Does not include mopeds or RVs or unknown vehicle type.
 Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

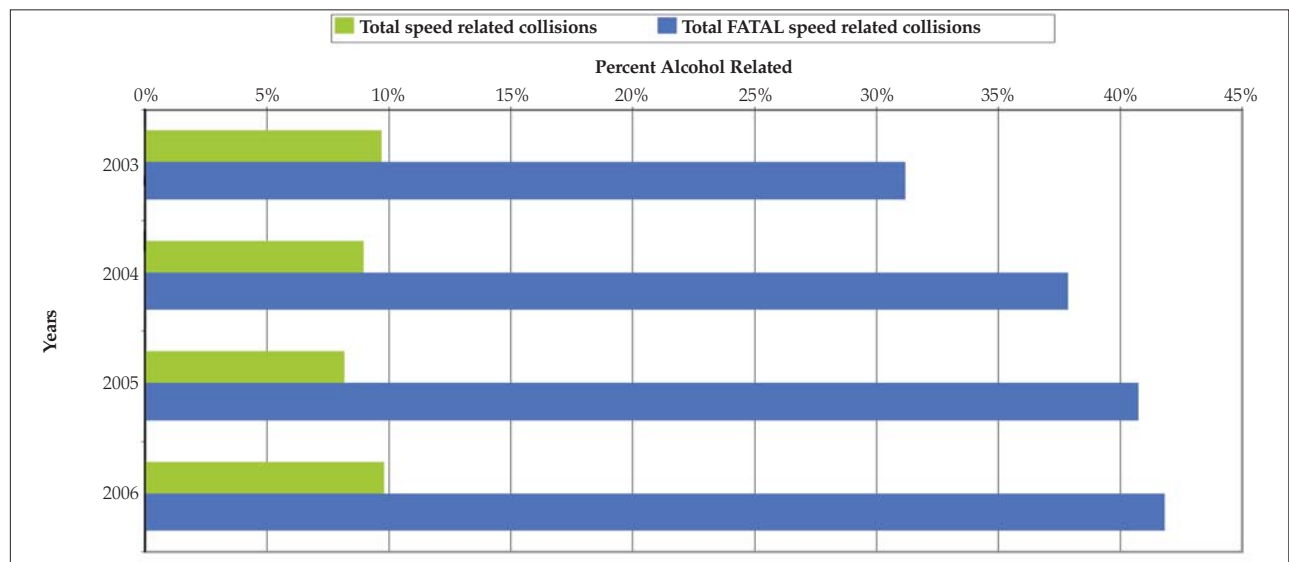
of alcohol¹ in speed-related collisions decreased steadily (9.5, 8.8, 8.0 percent, respectively), there was a substantial increase of alcohol involvement in 2006 (to 9.6 percent). In speed-related fatal collisions there was a steady increase in alcohol involvement from 31 percent in 2003 to 41.7 percent in 2006. The largest percentage increase occurred from 2003 to 2004 (6.7 percent). The percent of increase between years has steadily declined, but there continues to be an overall increase in alcohol involvement.

In three age groups of fatal speed-related collisions, female drivers were more apt to have alcohol involvement than males (Table

5). In every instance these females were intoxicated (having a blood alcohol content of 0.08 grams per deciliter or greater). There were no female drivers aged 15-20 or aged 55 and over in speed- and alcohol-related fatal crashes. All male drivers aged 15-20 and aged 55-64 involved in speed- and alcohol-related fatal collisions were intoxicated. In contrast, none of the male drivers aged 45-54 who were involved in speed and alcohol-related fatal collisions were considered to be intoxicated.

Figure 3 indicates that in alcohol-related collisions, speed is most prominent in the nighttime and early morning hours,

Figure 2: Alcohol Involvement in Speed-Related Collisions in Indiana, 2003 - 2006



A collision is identified as alcohol related if any one of the following conditions are met: (1) 'Alcoholic Beverages' is listed as the primary factor of the collision; (2) 'Alcoholic beverages' is listed as a contributing circumstance in the collision; (3) any vehicle driver or non-motorist (pedestrian, bicyclist) involved in the collision has a blood alcohol content (BAC) test result greater than zero; (4) the collision report lists the apparent physical condition of any vehicle driver or non-motorist involved as 'had been drinking'; (5) a vehicle driver is issued an Operating While Intoxicated (OWI) citation.

Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

¹A collision is identified as alcohol related if any one of the following conditions are met: (1) 'Alcoholic Beverages' is listed as the primary factor of the collision; (2) 'Alcoholic beverages' is listed as a contributing circumstance in the collision; (3) any vehicle driver or non-motorist (pedestrian, bicyclist) involved in the collision has a blood alcohol content (BAC) test result greater than zero; (4) the collision report lists the apparent physical condition of any vehicle driver or non-motorist involved as 'had been drinking'; (5) a vehicle driver is issued an Operating While Intoxicated (OWI) citation. Condition (3) is a replication of the NHTSA definition of an alcohol-related collision. The other conditions are included to compensate for un-interpretable and under-reported BAC results.

Table 5: Indiana speeding drivers killed and alcohol involvement by age group, 2006

Age Groups	Male Drivers Killed		Female Drivers Killed	
	Percent Alcohol Involved	Percent Intoxicated	Percent Alcohol Involved	Percent Intoxicated
15-20	25.0%	25.0%	0.0%	0.0%
21-24	40.0%	25.0%	50.0%	50.0%
25-34	53.8%	42.3%	33.3%	33.3%
35-44	63.2%	57.9%	83.3%	83.3%
45-54	28.6%	0.0%	100.0%	100.0%
55-64	40.0%	40.0%	0.0%	0.0%

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Intoxicated is defined as a BAC test result greater than 0.08 grams per deciliter.

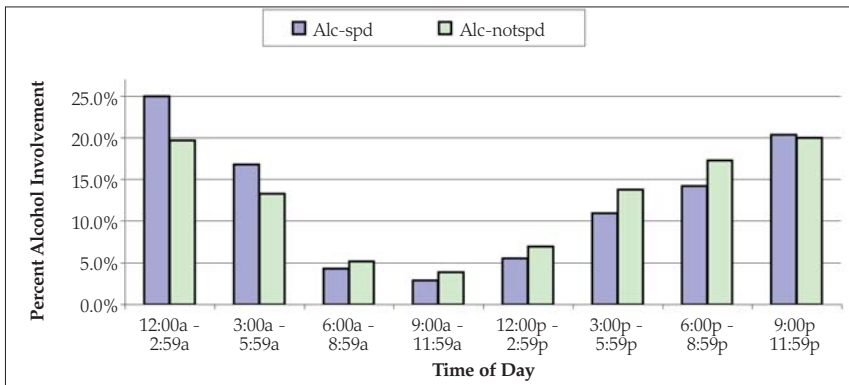
Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

from 9pm to 6am. At other times of the day, speed is not as much of a factor in alcohol-related crashes.

Location of Speed-Related Collisions

As seen in Figure 4, in 2006, most fatal collisions occurred on state roads while most fatal speed-related crashes occurred on county roads. Over 50 percent of non-fatal collisions and the majority of non-fatal speed-related collisions happened on local and city roads. Non-fatal speed-related collisions occurred disproportionately more often on county roads as well as on interstates in relation to the total percentage of non-fatal collisions on those types of roads. Of the speed-related fatal collisions in 2006, 87.2 percent occurred on non-interstate roads.

Figure 3: Indiana 2006 Alcohol Related Collisions with/without speed and Time of Day



A collision is identified as alcohol related if any one of the following conditions are met: (1) 'Alcoholic Beverages' is listed as the primary factor of the collision; (2) 'Alcoholic beverages' is listed as a contributing circumstance in the collision; (3) any vehicle driver or non-motorist (pedestrian, bicyclist) involved in the collision has a blood alcohol content (BAC) test result greater than zero; (4) the collision report lists the apparent physical condition of any vehicle driver or non-motorist involved as 'had been drinking'; (5) a vehicle driver is issued an Operating While Intoxicated (OWI) citation.

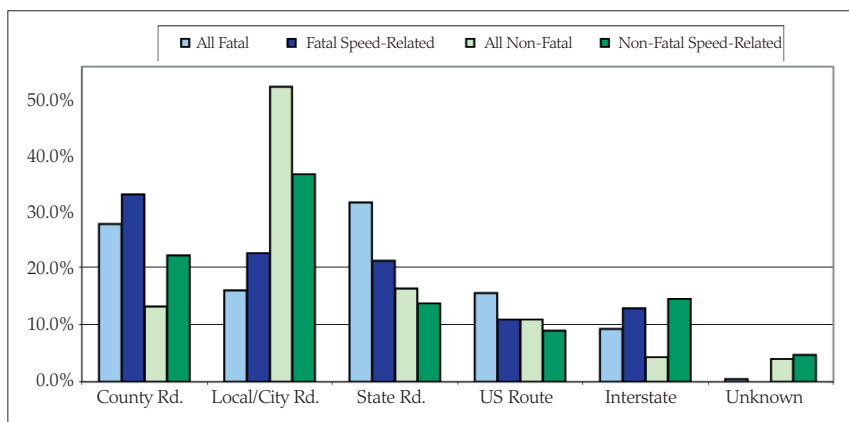
Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

Table 6 shows that 80.7 percent of all vehicles involved in speed-related collisions were on non-interstate highways where speed limits are generally lower. In addition, 87.2 percent of the vehicles in speed-related fatal collisions were on non-interstate highways, most on roads with speed limits of 45 mph or lower.

Map 1 depicts all speed-related collisions (black dots) throughout Indiana. Also shown are the speed-related fatal collisions (color density). Most counties have had some speed-related collisions. The three areas that show the greatest density of speed-related fatal collisions are Lake, Marion and St. Joseph/Elkhart counties.

These areas do not indicate that one particular intersection or roadway has the largest concentrations of speed-related fatal collisions for that area. In reviewing those areas, certain trends are noticeable. The Marion County area inside Interstate 465 and east of Illinois Street had more speed-related fatal collisions than west of Illinois Street. In both the Lake and St. Joseph/Elkhart county areas, the east/west corridors appear to be the main areas with speed-related fatal collisions, concentrating along and perpendicular to Interstate 80/90 and US 20.

Figure 4: Indiana Total Fatal and Non-fatal and Speed-Related Collisions by Road Type, 2006



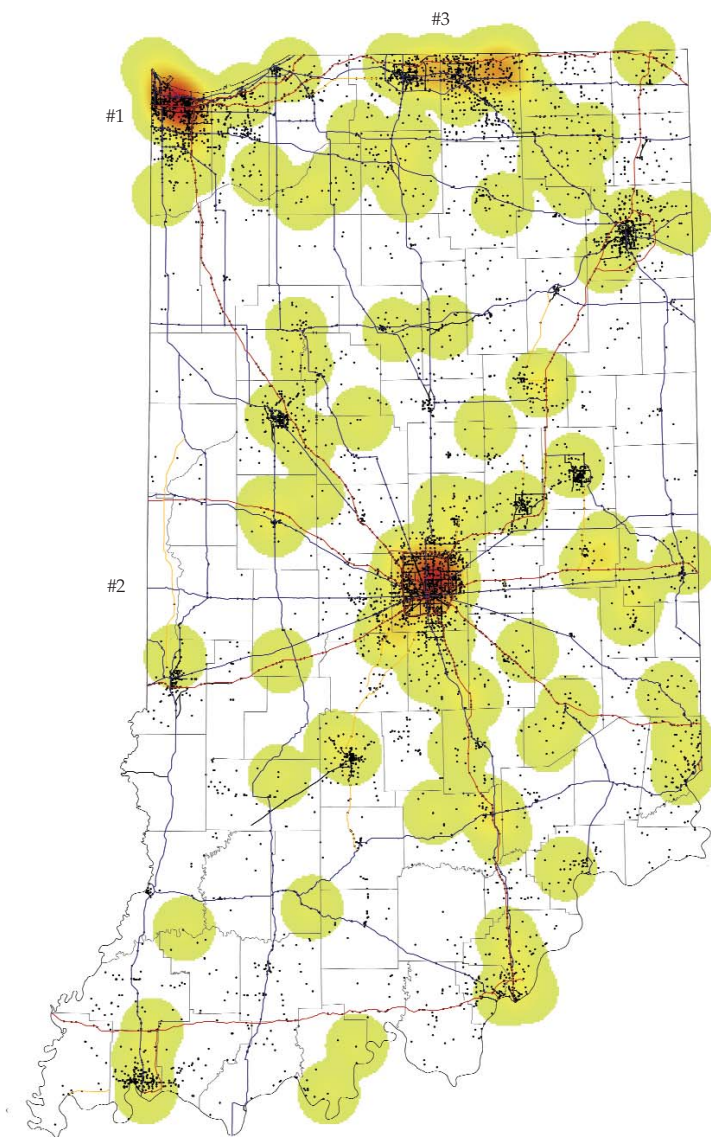
Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

Speed Enforcement

Many different factors can influence the speed at which a motorist chooses to drive. As all cars have speedometers, in

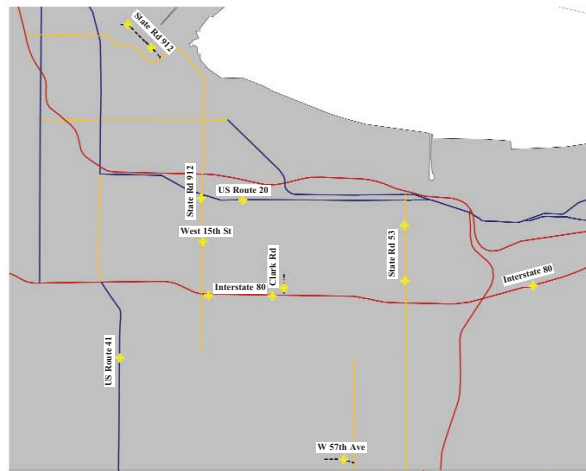


Map 1: Indiana speeding-related collisions and fatality concentrations, 2006

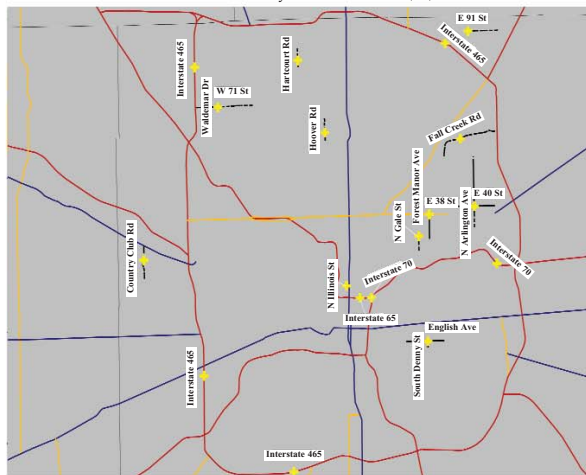


- Speeding collisions (9,933/14,299)
- Fatality streets
- + Speeding fatalities (46/128)
- low (few fatalities in 10 mile radius)
- high (more fatalities in 10 mile radius)
- Interstate
- US Highway
- Primary State Highways

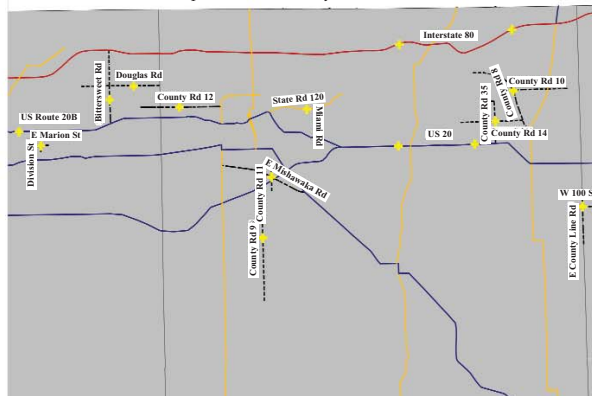
Lake County Concentration (#1)



Marion County Concentration (#2)



St. Joseph/Elkhart County Concentration (#3)



Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

Table 6: Vehicles involved in Indiana Speed-related Collisions by speed limit, 2006

Posted speed limit	Vehicles in all speed-related collisions			Vehicles in speed-related fatal collisions			TOTAL
	Interstate	Non-interstate	Unknown	Interstate	Non-interstate	Unknown	
< 35 mph	59	3,441	363	1	31	0	3,895
35 mph	27	1,900	29	0	14	0	1,970
40 mph	51	1,474	13	0	17	0	1,555
45 mph	81	1,500	23	1	21	0	1,626
50 mph	99	519	3	2	5	0	628
55 mph	949	2,210	19	8	43	0	3,229
> 55 mph	846	133	3	8	3	0	993
Unknown	9	372	192	0	2	0	575
TOTAL	2,121	11,549	645	20	136	0	14,471

Source: Indiana State Police Vehicle Crash Records System (VCRS), April 9, 2007

principle then driving speed is a deliberate choice. Speed choice can be influenced by driver age, gender, attitude and the perceived risk of law enforcement sanctions or a potential crash. Speed choice can also be influenced by situational factors such as road characteristics, weather, impairment, or “running late.”^{5 6}

Automated enforcement has demonstrated its effectiveness in other countries, but is used only rarely in America. Most automated enforcement programs and laws are for red light violations; however, their use for speed is increasing. In the few states that have automated enforcement laws, the laws vary. Some states authorize enforcement statewide, whereas others permit use only in specified communities.

Automated speed enforcement systems are triggered when a vehicle exceeding the speed limit by a specified amount is observed. Radar or infrared laser instruments detect a speeding vehicle and trigger a pre-positioned camera to photograph the vehicle’s license plate and the driver. The time of the violation and recorded speed of the vehicle are superimposed on the photograph. If the license plate number and driver can be clearly identified in the photograph, a citation is issued and mailed to the registered owner.

A recent Insurance Institute for Highway Safety study showed that average speeds declined 14 percent within 6 months of implementing speed cameras in the District of Columbia. In addition, the proportion of vehicles exceeding the speed limit by more than 10 mph declined 82 percent.⁷

Another recent meta-analysis reviewed 26 studies of the use of speed enforcement detection devices. All studies documenting collision outcomes reported an absolute pre-to-post reduction in all crashes and injury related crashes. In the vicinity of camera sites these reductions ranged from 14 percent to 72 percent for all collisions, 8 to 46 percent for injury crashes, and 40 to 45 percent for crashes resulting in fatalities or serious injuries. The

consistency of reported positive reductions in speed and crash outcomes across all studies suggests that speed enforcement devices are a promising intervention for reducing the number of traffic injuries and deaths.⁸

Conclusion

Changing cultural values is difficult, but not impossible. Americans have changed their values, norms, beliefs and behaviors on several health and safety issues in recent years – for example, smoking, eating high-fat foods, recycling, terrorist threats (screening baggage at airports); and traffic safety issues such as use of safety belts and child restraint seats.

What has been helpful and successful in changing the above health and safety issues has been effective campaigns and vigorous leadership acting together. Effective campaigns can help eliminate speeding in specific locations and situations where public support already exists and can be increased. Vigorous leadership at all levels – local, state, and national – can make reducing speeding a high traffic safety priority. Leadership will bring resources. Effective information campaigns can raise public awareness of speeding and increase public support for expanding speeding control more broadly.

Speeding can be controlled and reduced. Without strong leadership and effective campaigns, we can only expect speeding collisions, injuries and fatalities to increase as the speeding culture continues on America’s roads and highways.

⁵Institute for Road Safety Research, SWOV Fact Sheet, *Speed choice: the influence of human, vehicle, and road*. SWOV, Leidschendam, the Netherlands. December, 2006.

⁶Insurance Institute for Highway Safety, *Status Report, Special Issue: Speeding*. Vol. 38, No. 10, November 22, 2003.

⁷Insurance Institute for Highway Safety, *Automated Enforcement Laws, Laws as of April 2007*. web access www.iihs.org/laws/state_laws/auto_enforce.html. , Accessed April 27, 2007.

⁸Wilson C, Willis C, Hendrikz JK, Bellamy N. Speed enforcement detection devices for preventing road traffic injuries. *Cochrane Database of Systematic Reviews* 2006, Issue 2. Art. No.: CD004607. DOI: 10.1002/14651858.CD004607.pub2.

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This publication was prepared on behalf of the Indiana Criminal Justice Institute by the Center for Urban Policy and the Environment. 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 Indiana Criminal Justice Institute and the National Highway Traffic Safety Administration.

An electronic copy of this document can be accessed via the Center website (www.urbancenter.iupui.edu/trafficsafety/), the ICJI traffic safety website (www.in.gov/cji/traffic/), or you may contact the Center for Urban Policy and the Environment at 317-261-3000.

The Indiana Criminal Justice Institute (ICJI)

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.

The Center for Urban Policy and the Environment

The Indiana University Center for Urban Policy and the Environment is devoted to supporting economic success for Indiana and a high quality of life for all Hoosiers. An applied research organization, the Center was created by the Indiana University School of Public and Environmental Affairs in 1992. The Center works in partnership with community leaders, business and civic organizations, nonprofits, and government. The Center's work is focused on urban and community development, health policy, and criminal justice research essential to developing strategies to strengthen Indiana's economy and quality of life.

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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