

INDIANA TRAFFIC SAFETY FACTS

July 2007



ALCOHOL 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.



Introduction

From 2003 to 2006, more than 1,000 people were killed in alcohol-related collisions in Indiana. During the same period, about 25,000 individuals sustained incapacitating or other injuries from alcohol-related crashes. Each year, approximately 30 percent of Indiana traffic fatalities occurred in alcohol-related collisions. This fact sheet presents several aspects of the sometimes deadly linkage between alcohol and traffic collisions. It briefly examines Indiana's comparative status among other Great Lakes states, different dimensions of alcohol-related collisions (e.g., injury status, who was killed or injured, time of occurrence, etc.), the general incidence of alcohol and drug testing, and the blood alcohol content (BAC) test results reported in the Indiana Vehicle Crash Records System database.¹ Finally, county-by-county data on alcohol related collisions are presented, in addition to the distribution of Operating While Intoxicated (OWI) cases reported by the Indiana Bureau of Motor Vehicles.

Indiana's regional and national status

Based on statewide and national collision data from 1994 to 2005 shown in Table 1, Indiana typically had the lowest proportions of traffic fatalities from alcohol-related collisions among the six Great Lakes states.² In all but two of the 12 years, Illinois and Wisconsin had the highest proportions of alcohol-related traffic deaths. Since 2000, Indiana has had the smallest share of alcohol-related fatalities in the Great Lakes region. In addition, Indiana has consistently reflected a lower percentage than the United States.

Alcohol-related collisions in Indiana

Information about the involvement of alcohol in traffic collisions is included in various sections of the standard crash report used by Indiana law enforcement. Based on a selection of alcohol variables included in Indiana crash reports, this fact sheet uses an expanded definition of alcohol involvement.³ A collision is identified as alcohol-related if any one

¹The Indiana State Police Vehicle Crash Records System (VCRS) is now the Automated Reporting Information Exchange System (ARIES), incorporating other types of reports related to traffic collisions. Data for this fact sheet are current as of June 5, 2007.

²Fatality Analysis Reporting System (FARS), National Highway Traffic Safety Administration. Information contained in Table 1 is based on NHTSA's definition of alcohol-related crashes. All other tables and exhibits in this fact sheet use the expanded definition of alcohol involvement defined here.

³For various reasons, state crash data frequently underreport BAC results. As a result, the FARS database describing alcohol involvement uses imputation models to estimate missing BAC values. For purposes of this fact sheet, imputation models are not used for Indiana VCRS/ARIES data. The expanded definition of alcohol-related crashes is used to classify collisions, and BAC levels are based on the test results reported in the 2003-2006 VCRS/ARIES data base.



Table 1: Percent of total fatalities in alcohol-related crashes, 1994-2005

Year	United States	Indiana	Illinois	Michigan	Minnesota	Ohio	Wisconsin	Indiana rank (highest = 1)
1994	43	36	44	43	39	33	44	5
1995	42	36	44	41	45	36	43	5
1996	42	36	46	42	38	37	43	6
1997	40	35	43	40	33	37	46	5
1998	40	41	44	40	44	37	43	4
1999	40	38	44	41	33	37	42	4
2000	41	34	44	38	41	41	44	6
2001	41	35	44	39	40	44	48	6
2002	41	33	46	39	39	39	45	6
2003	40	31	44	38	41	37	46	6
2004	39	32	45	37	34	38	45	6
2005	39	34	43	37	36	38	45	6

NOTE: NHTSA definition of alcohol-related crash: "A motor vehicle crash is considered to be alcohol-related if at least one driver or nonoccupant (such as a pedestrian or pedalcyclist) involved in the crash is determined to have had a blood alcohol concentration (BAC) of .01 gram per deciliter (g/dL) or higher. Thus, any fatality that occurs in an alcohol-related crash is considered an alcohol-related fatality. The term "alcohol-related" does not indicate that a crash or fatality was caused by the presence of alcohol." See p. 1, National Center for Statistics and Analysis, "Alcohol," *Traffic Safety Facts, 2005 Data*, National Highway Traffic Safety Administration, DOT HS 810 616.

Source: data adapted from <http://www-fars.nhtsa.dot.gov/FinalReport.cfm?stateid=18&title=trends&title2=alcohol&year=2005>

Accessed June 18, 2007

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, pedalcyclist) involved in the collision had a BAC test result greater than zero;

declines in trends in the proportion of individuals injured or killed in alcohol-related collisions occurred from 2003 to 2006. Further, the proportion of alcohol-involvement increases when comparing non-fatal to fatal injury status, suggesting alcohol is associated with more serious injuries.

(4) the collision report lists the apparent physical condition of any vehicle driver or non-motorist involved as 'had been drinking'; or (5) a vehicle driver is issued an Operating While Intoxicated (OWI) citation.

The incidence of alcohol-related collisions producing injuries and fatalities varies among different types of vehicles. As shown in Table 2, the proportion of occupants injured in alcohol-related collisions, as a share of total collisions, was highest in pickup trucks, motorcycles, and SUVs. Large trucks had the lowest percentage of alcohol-related deaths and injuries.

For most vehicle categories, no

Table 2: Individual injury status by unit type and percent alcohol-related collisions, 2003-2006

Individuals in collisions*	2003		2004		2005		2006		2003-06 Average percent alcohol-related
	Count	Percent alcohol-related	Count	Percent alcohol-related	Count	Percent alcohol-related	Count	Percent alcohol-related	
Fatalities									
Passenger car	454	27.3%	498	29.9%	436	30.0%	420	29.8%	29.3%
Pickup	129	33.3%	138	34.1%	180	32.8%	130	31.5%	32.9%
Motorcycle**	77	41.6%	109	34.9%	112	40.2%	108	43.5%	40.0%
Sport utility vehicle	69	33.3%	83	31.3%	94	40.4%	91	31.9%	34.2%
Van	56	19.6%	57	26.3%	61	27.9%	45	20.0%	23.5%
Large trucks	29	13.8%	40	10.0%	42	2.4%	31	3.2%	7.3%
Buses & large vehicles	7	14.3%	13	23.1%	7	14.3%	5	40.0%	22.9%
Non-fatal injuries***									
Passenger car	35,700	10.6%	36,868	10.2%	34,677	10.9%	32,035	10.2%	10.5%
Pickup	7,587	15.5%	7,856	14.5%	7,471	14.6%	6,510	15.2%	14.9%
Sport utility vehicle	5,988	11.3%	6,871	11.4%	7,251	11.4%	6,527	11.0%	11.2%
Van	5,053	9.0%	5,457	8.0%	5,033	8.9%	4,703	7.2%	8.3%
Motorcycle**	1,777	14.5%	2,276	13.8%	2,196	12.2%	2,410	13.3%	13.5%
Large trucks	1,039	4.6%	1,107	3.9%	1,059	5.6%	754	3.1%	4.3%
Buses & large vehicles	363	9.6%	336	5.1%	480	7.3%	480	6.0%	7.0%

Notes:

*Includes only individuals where vehicle type is known. Excludes pedalcyclists and pedestrians. Counts show individuals who sustained injuries riding in the vehicle; person who makes collision 'alcohol-related' might not be in the same vehicle.

**Motorcycle category includes motorcycles, mopeds, all terrain vehicles (ATV), and electric scooters.

***Non-fatal injuries include individuals classified with incapacitating, non-incapacitating, and possible injuries.

Source: Unless noted otherwise, data for all tables and figures extracted June 5, 2007, from Indiana Vehicle Crash Records System.

Table 3: Individuals in non-alcohol and alcohol-related collisions in Indiana by injury status, 2003-2006

	2003		2004		2005		2006	
	Count	Pct.	Count	Pct.	Count	Pct.	Count	Pct.
Non-alcohol related								
Fatal	592	0.2%	663	0.2%	645	0.2%	626	0.2%
Incapacitating	3,402	1.0%	3,244	1.0%	3,119	1.0%	3,088	1.0%
Non-incapacitating*	48,509	14.6%	51,828	15.8%	49,522	15.4%	46,237	15.5%
Other status**	278,886	84.2%	272,732	83.0%	269,011	83.5%	247,401	83.2%
Subtotal	331,389	100%	328,467	100%	322,297	100%	297,352	100%
Alcohol-related								
Fatal	241	1.0%	284	1.3%	293	1.3%	273	1.5%
Incapacitating	790	3.4%	717	3.3%	704	3.2%	716	3.9%
Non-incapacitating*	5,734	24.9%	5,863	26.6%	5,905	26.5%	5,140	27.8%
Other status**	16,264	70.6%	15,197	68.9%	15,414	69.1%	12,363	66.9%
Subtotal	23,029	100%	22,061	100%	22,316	100%	18,492	100%
Grand Total	354,418		350,528		344,613		315,844	
Alcohol risk factor***								
Fatal	5.9		6.4		6.6		7.0	
Incapacitating	3.3		3.3		3.3		3.7	
Non-incapacitating*	1.7		1.7		1.7		1.8	
Other status**	0.8		0.8		0.8		0.8	
Pct. alcohol-related by injury status								
Fatal	28.9%		30.0%		31.2%		30.4%	
Incapacitating	18.8%		18.1%		18.4%		18.8%	
Non-incapacitating*	10.6%		10.2%		10.7%		10.0%	
Other status**	5.5%		5.3%		5.4%		4.8%	

Note:

*Includes "possible injuries."

**Other status includes individuals classified as not reported, multiple codes entered, refused, unknown, or blank.

***Alcohol risk factor = ratio of the percent of alcohol-related injury status to the percent of non-alcohol related injury status. Due to rounding of injury status percentages, ratios will be different if calculated from this table.

Table 4: Individual traffic fatalities by alcohol-related status and person type, 2003-2006

	2003		2004		2005		2006		Total Count
	Count	Pct.	Count	Pct.	Count	Pct.	Count	Pct.	
Alcohol-related crashes									
Drivers	152	18.2%	195	20.6%	200	21.3%	192	21.4%	739
Passengers	71	8.5%	61	6.4%	77	8.2%	57	6.3%	266
Non-occupants	18	2.2%	28	3.0%	16	1.7%	24	2.7%	86
Subtotal	241		284		293		273		1,091
Non-alcohol-related crashes									
Drivers	402	48.3%	449	47.4%	461	49.1%	417	46.4%	1,729
Passengers	141	16.9%	157	16.6%	123	13.1%	139	15.5%	560
Non-occupants	49	5.9%	57	6.0%	61	6.5%	70	7.8%	237
Subtotal	592		663		645		626		2,526
Total	833	100%	947	100%	938	100%	899	100%	3,617

Consistent with studies of alcohol use and injury severity, Indiana data suggest that alcohol-related collisions affect the incidence of serious injuries (see Table 2).⁴ In 2006, there were 18,492 individuals injured in alcohol-related collisions in Indiana, about 6 percent of all injuries in the state (see Table 3). However, individuals associated with alcohol-related crashes appear more likely to face serious injury—about 18 percent of individuals with incapacitating injuries and 30 percent of individuals with fatal injuries occurred in alcohol-related collisions. In 2006, an individual in an Indiana collision was seven times more likely to have died when alcohol was involved than otherwise. Incapacitating injuries were nearly four times more likely.

Who was killed and injured in alcohol-related crashes?

Slightly less than one-half of Indiana collision fatalities from 2003 to 2006 were the drivers of vehicles involved in non-alcohol related collisions. The next largest proportions of annual traffic fatalities in Indiana were drivers involved in alcohol-related crashes, increasing from 18.2 percent in 2003 to 21.4 percent of traffic deaths in 2006 (Table 4). Considering all passengers killed in collisions during the same period, each year approximately one-third of them died in alcohol-related incidents (calculated from Table 4).

⁴Macdonald, S. et al. 2006. "Variations of alcohol impairment in different types, cause and contexts of injuries: results of emergency room studies from 16 countries," *Accident Analysis & Prevention* 38(6): 1107-1112.



Table 5: Occupant injuries in two-vehicle alcohol-related collisions, 2006

Injuries to the occupants in...	Collision with...			
	Vehicle where driver had been drinking		Vehicle where driver had not been drinking	
	Count	%	Count	%
<i>Vehicles where driver had been drinking</i>		<i>Probability of injury status</i>		<i>Probability of injury status</i>
Injuries				
Fatal	9	3.1	36	3.5
Non-fatal	283	96.9	981	96.5
TOTAL	292	100.0	1,017	100.0
<i>Vehicles where driver had not been drinking</i>		<i>Probability of injury status</i>		<i>Probability of injury status</i>
Injuries				
Fatal	18	1.6	266	0.9
Non-fatal	1,141	98.4	29,802	99.1
TOTAL	1,159	100.0	30,068	100.0

Injuries sustained by drivers considered to have been drinking, compared to those who were not, varied depending on whether they collided with vehicles occupied by another drinking or non-drinking driver (Table 5). In general, alcohol involvement in Indiana collisions led to a greater risk of injury severity among drivers. In two-vehicle crashes involving injuries, the highest probability of fatality for drinking drivers occurred in collisions with non-drinking drivers (3.5).

Figure 1: Percentage of individuals involved in crashes that are alcohol-related, by age group 2003-2006

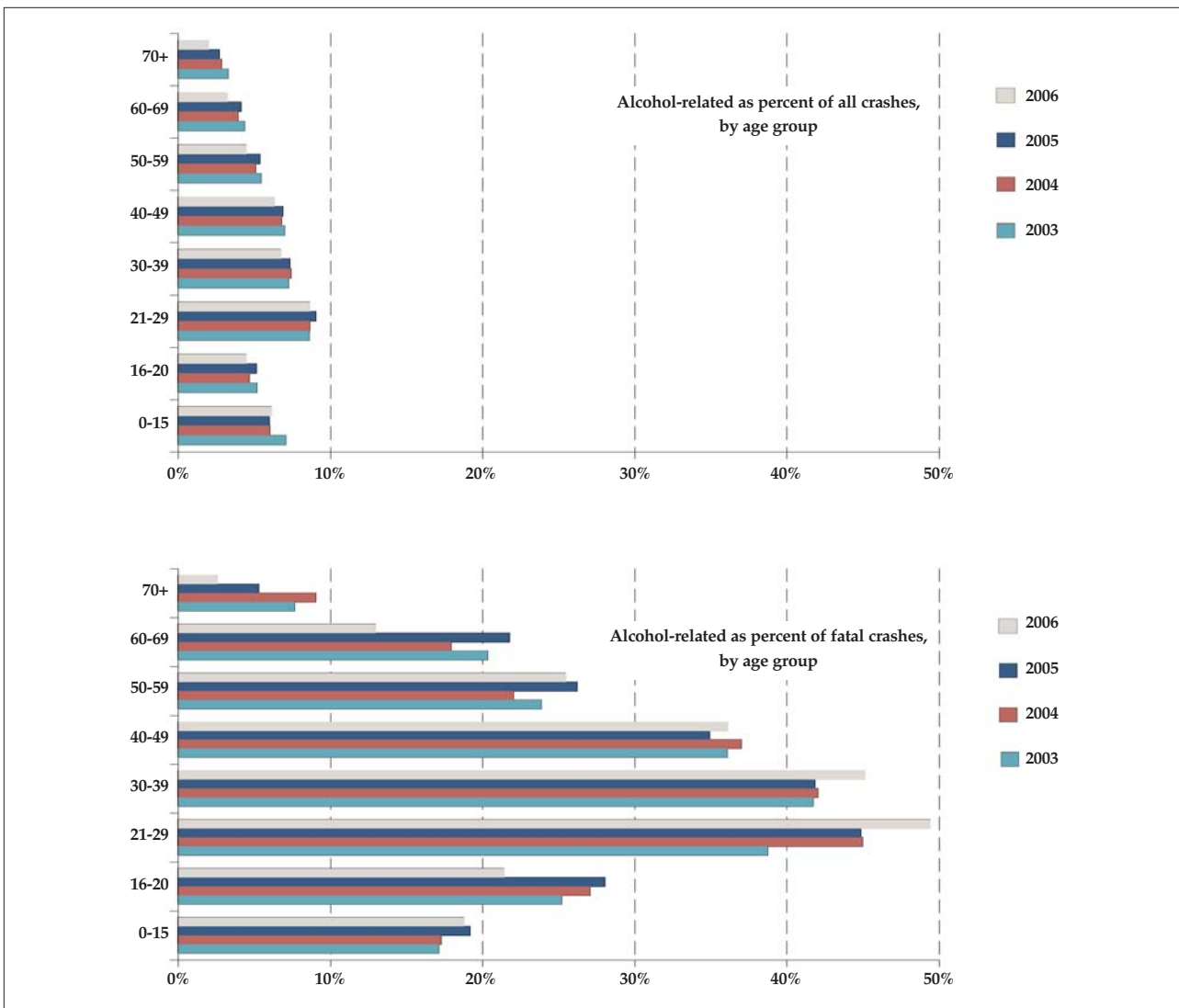


Table 6: Driver fatalities by gender, age, and BAC test results, 2006

Drivers, by gender/age	Total fatalities 2006	Percent alcohol-related	BAC test results (g/dL) as reported						
			Zero	> 0 to <.08	.08 < .15	> .15	Blank or unknown	Percent positive (>.00 BAC)	Percent .08 BAC or greater
Female									
16-20	35	2.9%	16	0	0	1	18	2.9%	2.9%
21-29	25	32.0%	10	0	2	6	7	32.0%	32.0%
30-39	19	47.4%	7	1	2	5	4	42.1%	36.8%
40-49	22	31.8%	7	1	3	2	9	27.3%	22.7%
50-59	21	23.8%	6	0	1	1	13	9.5%	9.5%
60-69	20	10.0%	6	1	0	0	13	5.0%	0.0%
70+	18	5.6%	6	0	0	0	12	0.0%	0.0%
Subtotal	160	20.6%	58	3	8	15	76	16.3%	14.4%
Male									
0-15	1	0.0%	0	0	0	0	1	0.0%	0.0%
16-20	54	22.2%	20	1	2	6	25	16.7%	14.8%
21-29	89	53.9%	14	5	7	29	34	46.1%	40.4%
30-39	87	49.4%	25	4	10	27	21	47.1%	42.5%
40-49	79	39.2%	22	4	9	14	30	34.2%	29.1%
50-59	61	27.9%	20	4	2	7	28	21.3%	14.8%
60-69	46	15.2%	17	0	1	4	24	10.9%	10.9%
70+	32	3.1%	9	0	0	0	23	0.0%	0.0%
Subtotal	449	35.4%	127	18	31	87	186	30.3%	26.3%
Total	609	31.5%	185	21	39	102	262	26.6%	23.2%

Conversely, the lowest probability of fatality (when injuries were present) was when neither driver was drinking (0.9). Among two-vehicle collisions examined, the fatality rate was higher when at least one driver was drinking.

For Indiana, several age groups exhibited comparatively high rates of involvement in alcohol-related collisions (Figure 1). Individuals in the 21-to-29 year old age group had the highest proportions of alcohol-related collisions, whether considering all or only fatal crashes. Regarding all alcohol-related collisions, most age groups have shown a positive trend (i.e., declining proportions) during 2003 to 2006. Focusing on fatal collisions, the opposite trend holds for several age groups. For example, individuals in the 21 to 29 and 30 to 39 year old groups reflected increasing shares of fatal injuries incurred in crashes classified as alcohol-related. Generally, persons 60 years or older experienced declines in alcohol-related fatality shares, and the share for young drivers (16-20) dropped from 28 percent to 21 percent

from 2005 to 2006. Overall, however, the trend in alcohol-related collisions with fatal outcomes is not encouraging, and it appears that targeting several age groups with programs designed to reduce alcohol-related crashes might be beneficial.

“From 2003 to 2006, more than 1,000 people were killed in alcohol-related collisions in Indiana.”

Blood alcohol content (BAC) results

In 2006, traffic collisions killed 609 drivers in Indiana. Regardless of age group, male drivers were more likely than females to be involved in alcohol-related crashes, and were more likely to be legally intoxicated (defined as a blood alcohol content greater than 0.08 grams per deciliter, g/dL) (Table 6). As suggested by Figure 1, the highest risk of driver alcohol involvement was among males and females between 21 and 39 years of age. The male drivers killed in this age group were especially likely to have extraordinarily high BAC results (greater than .15 g/dL). Nearly one-fourth of Indiana driver fatalities had BAC results .08 g/dL or greater. In 2005, the U.S. proportion of fatalities in crashes reporting a BAC of .08 g/dL or more was one-third. The 2005 FARS estimate for Indiana was 29 percent.⁵

⁵National Highway Traffic Safety Administration. 2006. Fatality Analysis Reporting System (FARS) Web-Based Encyclopedia, “Persons Killed, by Highest Blood Alcohol Concentration (BAC) in the Crashes, 1994 – 2005,” tables for U.S. and Indiana, accessed June 22, 2007, at <http://www-fars.nhtsa.dot.gov/>. Because FARS substitutes imputed values for missing BAC results to estimate state alcohol involvement, direct comparisons cannot be made between FARS counts of Indiana driver BAC results with the counts in the VCRS/ARIES data.



Indiana counties: alcohol-related crashes, alcohol testing, and BAC results

Indiana counties exhibit considerable variation in total and alcohol-related fatalities, rates of alcohol testing, and reported BAC results (Table 7). Annually from 2003 to 2006, alcohol-related fatalities averaged one-third or more of total fatalities in 26 counties. For some counties, alcohol was related to a substantial proportion of fatalities during this period—alcohol-related fatalities averaged 47 percent in St. Joseph County, 41 percent in Tippecanoe County, 40 percent in Lake County, 36 percent in Allen County, and 35 percent in Marion County. In any given year, however, alcohol-related fatalities can be considerably larger than the 2003-2006 averages. In Steuben, Pike, and Perry counties, for example, nearly 80 percent of fatalities were linked to alcohol in 2006.

On average at the county level from 2003 to 2006, 54 percent of fatally injured individuals were tested for alcohol use, with considerable variation from county to county (standard deviation of

14.4 percent). Predictably, counties tested fatalities at different rates, ranging from 2003 to 2006 annual averages of 12 (Jay) to 83 percent (Kosciusko). In terms of major urban counties, Allen tested on average 81 percent of traffic fatalities, whereas Marion County tested about 41 percent.

When BAC test results are reported in VCRS/ARIES, they are generally consistent with the categorization of fatalities as alcohol-related. For instance, 100 percent of alcohol-related fatalities in 28 counties were linked to positive BAC results and most of the time the driver tested at .08 g/dL or more BAC (calculated from Table 7).

Indiana counties: Operating while Intoxicated (OWI) convictions

In 2006, there were 22,393 OWI convictions among Indiana counties reported to the Indiana Bureau of Motor Vehicles.⁶ Fourteen counties—primarily urban—accounted for more than 50 percent of all OWI convictions in the state: Marion, Allen,

Table 7: Alcohol-related fatalities, alcohol testing, and BAC results (g/dL), by county

	2006						2003 to 2006 average	
	Total fatalities	Alcohol-related fatalities		Percent fatalities tested	Number of fatalities		Percent fatalities alcohol-related	Percent fatalities tested
		Count	Percent		> .00 BAC	.08+ BAC		
INDIANA	899	273	30.4%	49.2%	182	157	30.1%	55.0%
Adams	8	2	25.0%	25.0%	0	0	14.6%	43.4%
Allen	27	11	40.7%	88.9%	11	9	36.4%	80.6%
Bartholomew	16	7	43.8%	37.5%	4	4	21.6%	57.5%
Benton	4	2	50.0%	25.0%	1	1	31.3%	50.0%
Blackford	0	0	-	-	-	-	27.8%	70.0%
Boone	8	1	12.5%	37.5%	1	1	15.2%	31.1%
Brown	4	1	25.0%	25.0%	1	1	41.7%	54.2%
Carroll	2	1	50.0%	100.0%	1	1	31.3%	66.7%
Cass	8	3	37.5%	37.5%	1	0	19.2%	41.2%
Clark	15	7	46.7%	66.7%	5	4	28.4%	62.8%
Clay	4	1	25.0%	25.0%	1	1	15.6%	34.4%
Clinton	12	6	50.0%	41.7%	4	2	28.8%	43.0%
Crawford	2	1	50.0%	100.0%	1	1	20.8%	54.2%
Daviess	6	4	66.7%	33.3%	2	1	25.0%	36.9%
De Kalb	6	2	33.3%	66.7%	2	2	20.8%	82.0%
Dearborn	10	1	10.0%	40.0%	1	1	23.2%	50.3%
Decatur	9	1	11.1%	33.3%	0	0	32.8%	52.5%
Delaware	9	4	44.4%	55.6%	3	2	34.8%	51.4%
Dubois	6	1	16.7%	33.3%	1	1	26.2%	53.7%
Elkhart	35	5	14.3%	40.0%	3	3	18.2%	45.8%

(continued on next page)

⁶This includes all OWI convictions, not just those linked to traffic collisions.

Table 7: Alcohol-related fatalities, alcohol testing, and BAC results (g/dL), by county

	2006						2003 to 2006 average	
	Total fatalities	Alcohol-related fatalities		Percent fatalities tested	Number of fatalities		Percent fatalities alcohol-related	Percent fatalities tested
		Count	Percent		> .00 BAC	.08+ BAC		
Fayette	3	1	33.3%	33.3%	1	1	30.8%	43.3%
Floyd	8	1	12.5%	75.0%	1	1	24.7%	61.6%
Fountain	2	0	0.0%	50.0%	0	0	15.5%	67.3%
Franklin	3	0	0.0%	66.7%	0	0	25.9%	78.3%
Fulton	5	3	60.0%	60.0%	3	3	22.1%	67.7%
Gibson	10	1	10.0%	70.0%	1	1	10.3%	58.3%
Grant	15	5	33.3%	40.0%	4	3	29.5%	48.9%
Greene	9	2	22.2%	55.6%	1	1	32.6%	72.2%
Hamilton	12	4	33.3%	50.0%	2	1	23.6%	53.8%
Hancock	6	0	0.0%	0.0%	0	0	16.3%	36.7%
Harrison	7	3	42.9%	57.1%	2	2	39.2%	59.5%
Hendricks	13	1	7.7%	53.8%	1	1	25.4%	70.8%
Henry	14	4	28.6%	64.3%	3	2	13.9%	71.5%
Howard	13	3	23.1%	53.8%	2	1	25.1%	50.2%
Huntington	11	1	9.1%	18.2%	1	1	17.3%	31.5%
Jackson	11	2	18.2%	54.5%	2	1	22.3%	68.8%
Jasper	9	5	55.6%	66.7%	4	3	42.9%	72.0%
Jay	4	0	0.0%	0.0%	0	0	6.3%	12.5%
Jefferson	4	2	50.0%	50.0%	2	2	27.5%	42.5%
Jennings	6	1	16.7%	50.0%	0	0	28.2%	59.5%
Johnson	14	5	35.7%	78.6%	4	4	38.7%	66.2%
Knox	10	4	40.0%	40.0%	3	3	33.3%	38.3%
Kosciusko	15	6	40.0%	86.7%	4	3	29.7%	83.3%
La Porte	23	8	34.8%	69.6%	7	5	35.9%	61.7%
Lagrange	8	2	25.0%	75.0%	2	2	26.3%	72.6%
Lake	52	25	48.1%	50.0%	16	16	39.1%	60.2%
Lawrence	6	2	33.3%	50.0%	2	1	25.7%	56.7%
Madison	10	3	30.0%	80.0%	2	2	31.7%	79.0%
Marion	85	19	22.4%	40.0%	15	14	34.8%	40.8%
Marshall	12	3	25.0%	41.7%	3	2	25.1%	54.5%
Martin	2	0	0.0%	0.0%	0	0	27.1%	14.6%
Miami	5	0	0.0%	20.0%	0	0	21.2%	39.5%
Monroe	15	4	26.7%	33.3%	2	2	34.2%	45.7%
Montgomery	13	4	30.8%	23.1%	1	0	21.3%	50.7%
Morgan	12	4	33.3%	41.7%	2	2	30.7%	46.2%
Newton	8	3	37.5%	25.0%	1	1	53.1%	46.9%
Noble	9	3	33.3%	44.4%	3	3	23.6%	38.3%
Ohio	0	0	-	-	-	-	33.3%	50.0%
Orange	2	1	50.0%	0.0%	0	0	33.3%	36.7%
Owen	5	5	100.0%	40.0%	2	2	34.9%	42.6%
Parke	3	1	33.3%	66.7%	0	0	22.9%	59.4%
Perry	5	4	80.0%	80.0%	2	2	40.1%	71.7%
Pike	5	4	80.0%	80.0%	4	4	20.0%	82.5%
Porter	15	3	20.0%	33.3%	2	2	36.6%	44.0%
Posey	4	1	25.0%	25.0%	0	0	63.2%	66.7%
Pulaski	6	1	16.7%	50.0%	1	1	26.7%	56.3%
Putnam	5	3	60.0%	20.0%	1	1	19.2%	25.8%
Randolph	3	0	0.0%	0.0%	0	0	13.3%	26.7%
Ripley	5	1	20.0%	60.0%	0	0	16.2%	45.4%
Rush	2	0	0.0%	50.0%	0	0	25.0%	62.5%

(continued on next page)



Table 7: (continued from previous page)

	2006						2003 to 2006 average	
	Total fatalities	Alcohol-related fatalities		Percent fatalities tested	Number of fatalities		Percent fatalities alcohol-related	Percent fatalities tested
		Count	Percent		> .00 BAC	.08+ BAC		
Scott	2	0	0.0%	50.0%	0	0	20.0%	48.8%
Shelby	16	6	37.5%	56.3%	4	4	34.0%	62.0%
Spencer	9	3	33.3%	44.4%	2	2	34.4%	39.8%
St Joseph	20	5	25.0%	50.0%	3	3	46.4%	64.1%
Starke	10	1	10.0%	50.0%	0	0	13.3%	39.5%
Steuben	13	10	76.9%	46.2%	3	2	35.6%	62.6%
Sullivan	1	0	0.0%	100.0%	0	0	12.5%	62.5%
Switzerland	4	1	25.0%	50.0%	1	1	33.3%	50.0%
Tippecanoe	21	10	47.6%	38.1%	5	4	41.4%	58.5%
Tipton	6	2	33.3%	66.7%	2	2	19.6%	50.4%
Union	2	1	50.0%	50.0%	0	0	16.7%	61.1%
Vanderburgh	24	5	20.8%	54.2%	3	2	34.0%	42.3%
Vermillion	5	1	20.0%	60.0%	1	1	31.1%	51.7%
Vigo	12	3	25.0%	41.7%	2	2	33.3%	56.5%
Wabash	5	0	0.0%	60.0%	0	0	17.4%	63.2%
Warren	3	1	33.3%	33.3%	0	0	13.3%	56.7%
Warrick	3	1	33.3%	33.3%	1	0	28.8%	66.2%
Washington	2	1	50.0%	100.0%	1	1	22.5%	49.3%
Wayne	10	3	30.0%	60.0%	2	2	18.5%	58.1%
Wells	3	0	0.0%	66.7%	0	0	18.8%	60.4%
White	6	0	0.0%	50.0%	0	0	19.6%	47.4%
Whitley	7	0	0.0%	42.9%	0	0	16.7%	60.7%
Mean	10	3	29.3%	48.8%	2	2	26.9%	54.0%
Minimum	0	0	0.0%	0.0%	0	0	6.3%	12.5%
Maximum	85	25	100.0%	100.0%	16	16	63.2%	83.3%
Standard deviation	11	4	20.8%	22.4%	3	3	9.6%	14.4%

Hamilton, Elkhart, Lake, Tippecanoe, St. Joseph, Vanderburgh, Madison, Porter, Hendricks, Johnson, Laporte, and Hancock. Map 1 depicts, for 2006, the number of OWI convictions per 1,000 licensed drivers in each county. The rate at which OWI convictions occurred per 1,000 licensed drivers in 2006 varied among counties, ranging from 1.5 (Clark County) to 10.1 (Ohio County). The county mean was 4.7 convictions per 1000 licensed drivers (standard deviation of 1.2). Eighteen Indiana counties had OWI rates 6.0 or greater.

Time of alcohol-related crashes

Traffic crashes and the injuries they generate follow a regular pattern across time. They peak at predictable periods and have the same general distribution, although the volume of crash injuries increases through the week. Figure 2 depicts for 2006 the number of individuals with fatal or non-fatal personal injuries linked to all injury crashes and alcohol-related crashes, based on the time of the crash, beginning at midnight Monday

and ending at midnight Sunday. It shows the distribution, with peak injuries during early morning rush hour, lunch time, and evening rush hours. The incidence of traffic injuries diminishes slowly until rush hour the next morning, around 6 am. Then the pattern begins again, and builds in amplitude during the week, with the weekends showing the worst injury outcomes.

However, injuries from alcohol-related crashes do not mirror the pattern of all injury crashes. For example, during periods of darkness, the volume of total crash injuries declined, whereas alcohol-related injuries and fatalities generally increased. This is illustrated most notably on weekends (from Friday 6 pm to 6 am Monday morning), when the hourly incidence of alcohol-related fatalities and injuries increased at the same time that total injuries and fatalities decreased. Furthermore, although all crash injuries peak on Friday and decline on Saturday, the volume of alcohol-related injuries and fatalities continued at peak levels Friday and Saturday, and did not decline until Sunday.

Alcohol-related crash injuries and fatalities exhibit different distributions on weekends versus weekdays, as shown in Table 8. Alcohol-related injuries and fatalities occurred disproportionately during the hours of darkness, especially on the weekend. If standardized across 12-hour cycles, however, a slightly different picture emerges. Although total injuries per 12-hour cycle generally reach their peak during daylight hours, the after-dark periods of the weekend produce peaks for alcohol-related fatalities and injuries substantially larger than the other 12-hour cycles.

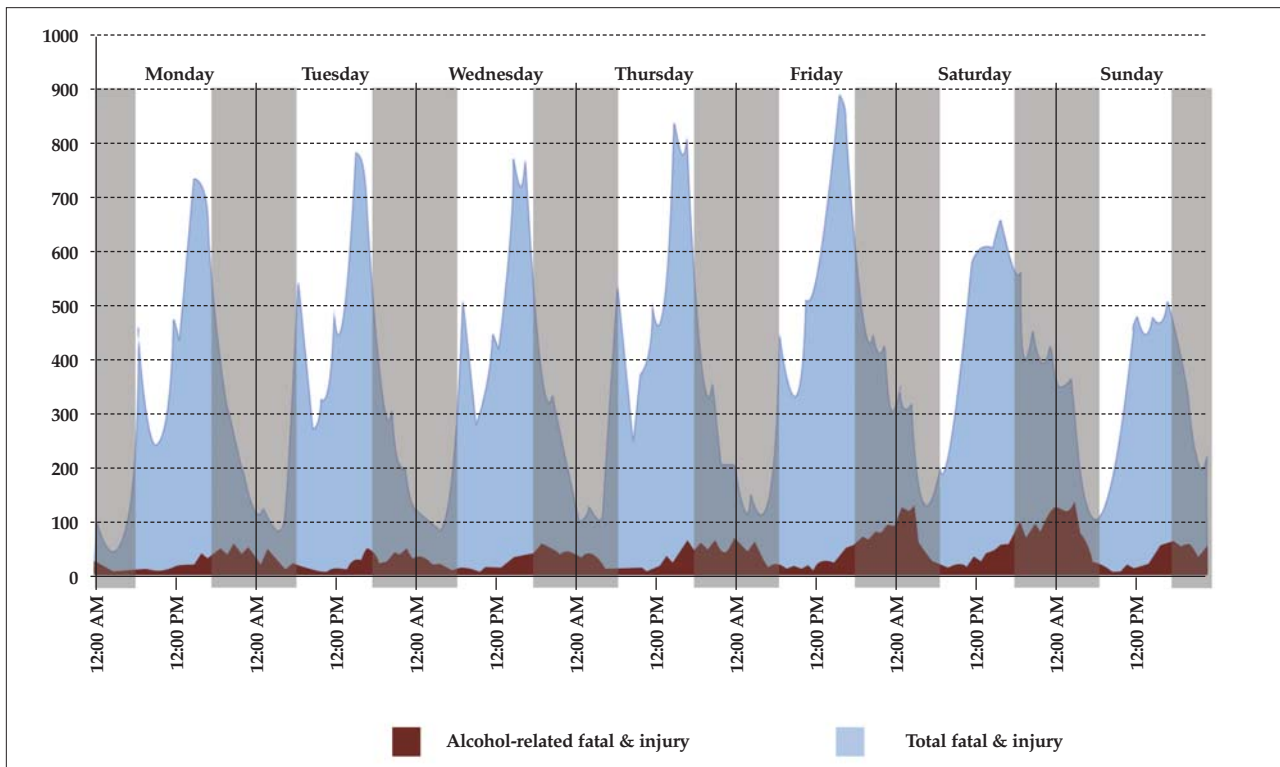
Table 8: Total and alcohol-related fatal and injury collisions by category of day, 2006

Category	Alcohol-related fatal & injury	Total fatal & injury	Percent alcohol-related	No. of 12-hour cycles	Total fatal & injury per cycle	Alcohol-related injury & fatal rate per cycle
Weekday light	1,051	28,947	3.6%	5	5,789	210
Weekday dark	1,841	9,180	20.1%	4	2,295	460
Weekend light	658	8,745	7.5%	2	4,373	329
Weekend dark	2,557	9,098	28.1%	3	3,033	852

Weekend begins Friday, 6 pm, and ends the next Monday 6 am.
 Weekday begins Monday 6 am and ends the next Friday 6 pm.

Weekday light: 6 am to 6 pm, Monday through Friday
 Weekday dark: Monday through Thursday, 6 pm to 6 am
 Weekend light: Saturday and Sunday, 6 am to 6 pm
 Weekend dark: Friday, Saturday, and Sunday: 6 pm to 6 am; and Monday midnight to 6 am.

Figure 2: Total fatal and personal injuries resulting from alcohol-related crashes by day and time, 2006



Gray shaded boxes indicate approximate hours of darkness.
 Includes only collisions for which time and day were known.
 Reports individuals with fatal or other personal injuries, linked to the time of the crash.

Conclusions

During the 2003 to 2006 period in Indiana, alcohol appeared to be an important factor in 19 percent of collisions with incapacitating injuries and 30 percent of fatal injury collisions.

Compared to its neighboring Great Lakes states, Indiana has a low proportion of alcohol-related fatalities. Pickups, SUVs, and motorcycles appear to be over-represented in alcohol-related collisions, and thus more likely to produce fatal and non-fatal injuries. Two demographic groups were at highest risk in the gender/age comparison—males between the ages of 21 and 29 and those between 30 and 39. In 2006, of the total 176 fatalities among 21 to 39 year old male drivers, 73 (41 percent) had reported BAC levels of .08 g/dL or greater. Programs designed to reduce alcohol-related collisions might specifically target this 21 to 39 year old cohort.

Indiana collision data suggest Indiana counties test, on average, about one-half of their fatalities for evidence of alcohol. County test rates ranged up to 83 percent (Kosciusko), but varied substantially. Some large counties did very well—for example, Allen County tested nearly 90 percent of its fatalities in 2006. Marion County, with the most 2006 fatalities in the state, tested about 41 percent, so there is clearly variation in testing rates. Some of this variation could be reporting differences among counties. Nevertheless, they also suggest that we could learn about the strategies more successful counties have used in order to help other counties improve their alcohol testing.

When BAC results were reported to the Indiana State Police data repository, they tended to corroborate legal intoxication (.08 g/dL or greater) in crashes nominally classified as alcohol-related, but reported results were always less than the estimated number of alcohol-related collisions. The final BAC result probably reflects underreporting because crash reports might not be updated for every test performed. Considering all 609 fatal injuries among Indiana drivers in 2006, 192 drivers were linked to alcohol-related collisions, 84 percent of them were reported as having positive BAC results (i.e., greater than .00 g/dL), and 73 percent were legally intoxicated (.08 g/dL or higher).

Where it is not already doing so, alcohol enforcement should be focused in time and space. During weekends from 6 pm Friday to late Sunday night and early Monday morning, alcohol-related fatalities and injuries increase. Other fatal and serious crashes are going down during these same periods. While obvious, it still deserves emphasis that peaks in alcohol related fatalities and injuries occur in cycles that appear to track darkness. Perhaps the key challenge is to identify the places where these crashes occur in order to mount effective preventive strategies.

INDIANA TRAFFIC SAFETY FACTS



This publication was prepared on behalf of the Indiana Criminal Justice Institute by the Indiana University Center for Urban Policy and the Environment. Please direct any questions concerning data in this document to ICJI at 317-232-1233.

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An electronic copy of this document can be accessed via the 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.

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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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