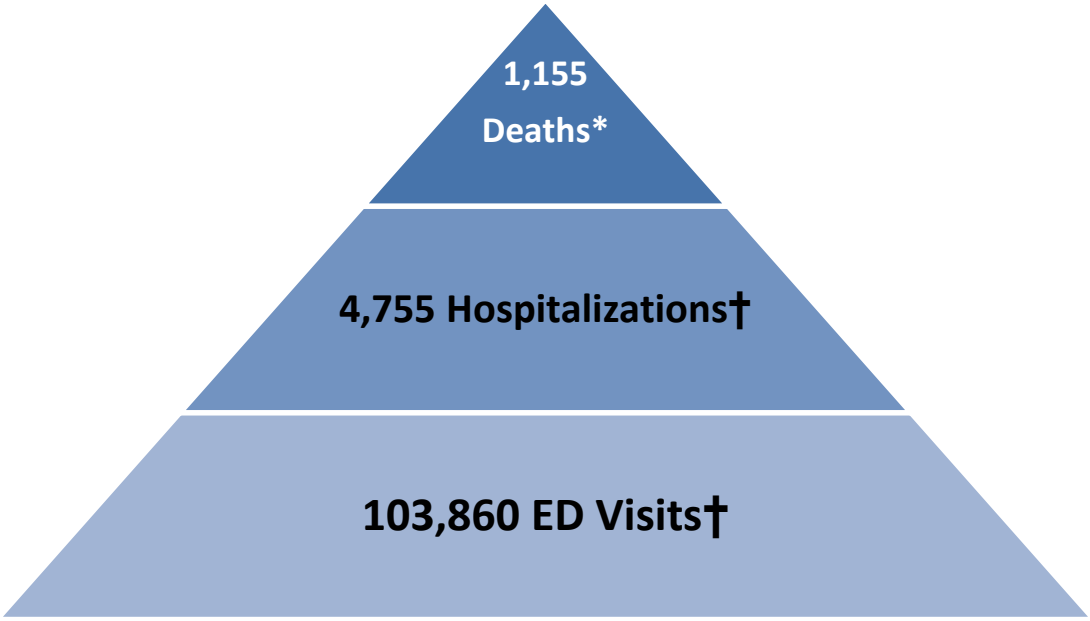
SECTION 3.2: MOTOR VEHICLE TRAFFIC CRASHES



*SOURCE: OHIO DEPARTMENT OF HEALTH, VITAL STATISTICS
†SOURCE: OHIO HOSPITAL ASSOCIATION

CHAPTER HIGHLIGHTS:

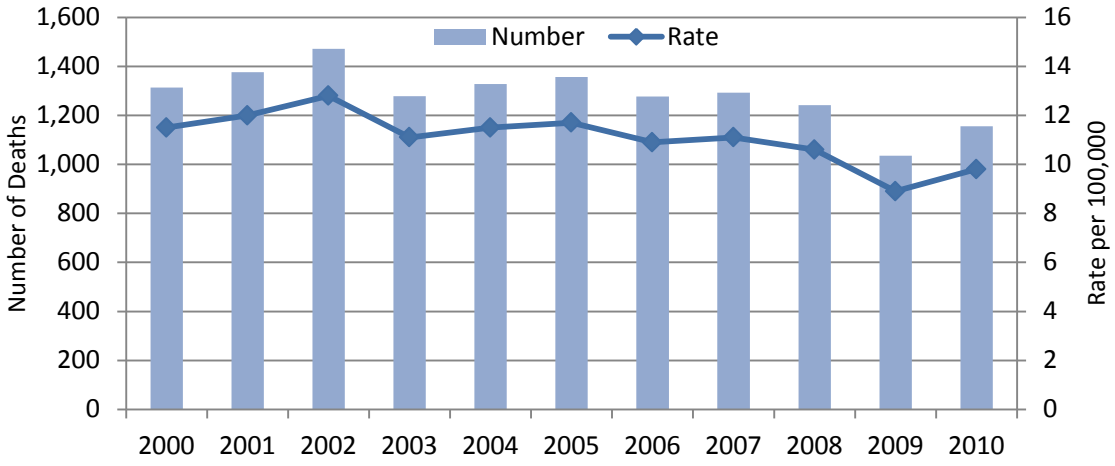
Patterns:

- Motor vehicle crashes were one of the leading causes of fatal and non-fatal unintentional injuries.
- Males were more likely to experience fatal injury and hospitalization than females.
- Young drivers and older adults were most likely to experience an injury.
- Most adults reported regular seat belt use while less than half of high school students reported regular seat belt use.

Trends:

- Death and hospitalization rates are on the decline while ED visit rates increased slightly.
- Fatal and non-fatal injury rates have decreased the most among ages 15-34.
- Percentage of adults who reported always using their seat belt increased from 76 percent in 2002 to 83 percent in 2010. These self-reported data are consistent with observational seat belt use data as well.

Figure 4.1. Number and age adjusted rate of unintentional motor vehicle traffic deaths by year, Ohio, 2000-2010



Source: Ohio Department of Health, Vital Statistics

DEATHS:

In 2010, 1,155 deaths resulted from unintentional motor vehicle traffic crashes. The fatality rate was 9.8 per 100,000 (Figure 4.1). Fatality rates among males were nearly three times higher than females (14.7 compared to 5.7 per 100,000). The largest number of deaths occurred among ages 15-24 years while the highest rates of fatalities were found among adults age 85 or older (Figure 4.2). Motor vehicle traffic fatalities varied by race and ethnic groups. The highest rates were found among white, non-Hispanics (10.1 per 100,000) followed by Hispanics (8.3 per 100,000) and black, non-Hispanics (8.2 per 100,000). See Table 4.1 for an unintentional motor vehicle traffic death risk profile.

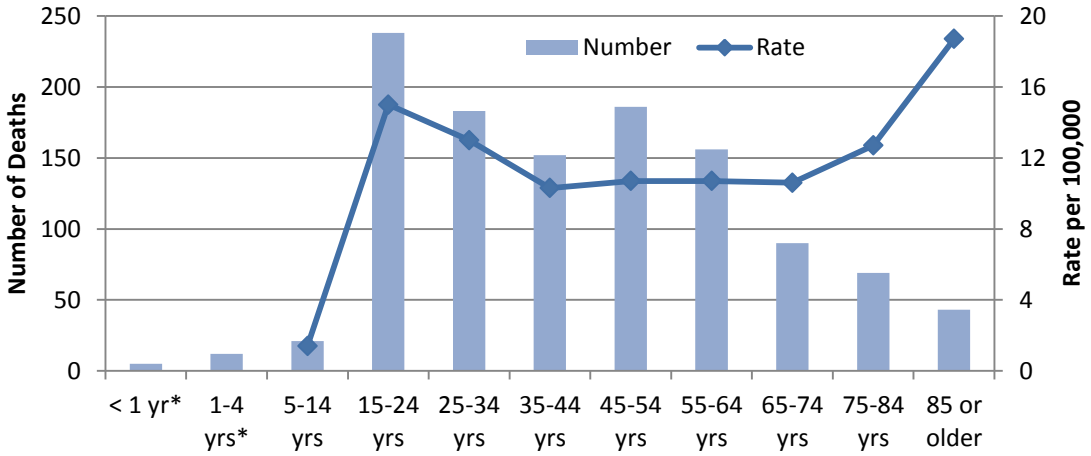
Table 4.1 Unintentional Motor Vehicle Traffic Crash Death Risk Profile

	2010 At Risk Groups	Annual trend since 2000
Overall		-15%
Sex	Males	Similar for males and females
Age	85 or older	15-24 (largest decrease)
Race and ethnicity	Whites	Whites (largest decrease)

TRENDS:

Fatalities resulting from unintentional motor vehicle traffic crashes decreased 15 percent from 11.5 per 100,000 in 2000 to 9.8 per 100,000 in 2010. The average decrease was -0.3 deaths per 100,000 per year. The decrease in death rates was similar among males and females. Decreases were found in several age groups with the largest decrease among ages 15-24 (-0.8 per 100,000 per year). Rates among ages 25-34, 45-74, and 85 or older did not follow a linear trend. Decreases in rates were found among whites (-0.3 per 100,000 per year) while rates among blacks did not follow a consistent pattern. See Tables 11a-b located at the end of this section for more detailed information about the number and rates of unintentional motor vehicle crashes in Ohio.

Figure 4.2. Number and rates of unintentional motor vehicle traffic related death rates by age group, Ohio, 2010

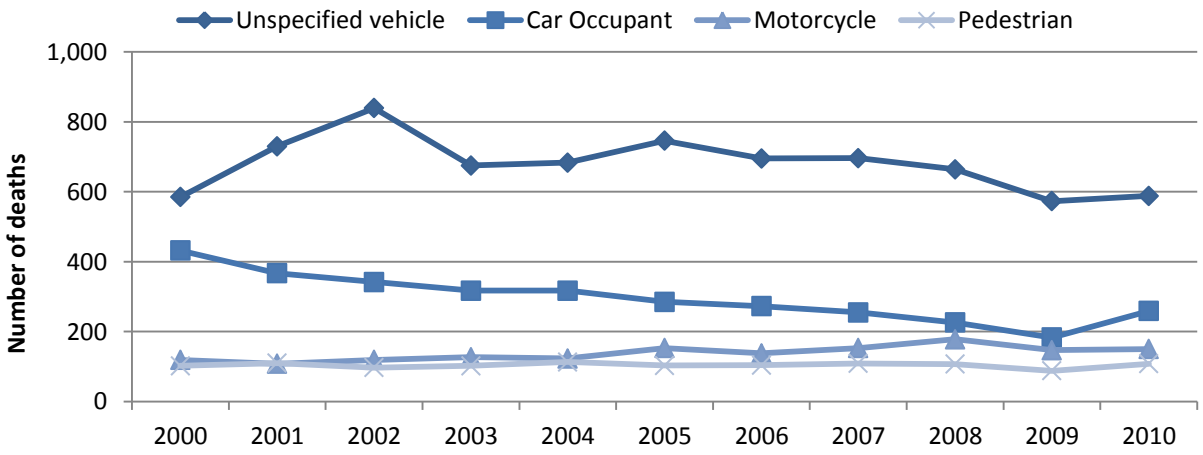


Source: Ohio Department of Health, Vital Statistics
*Rate suppressed due to fewer than 20 deaths

PERSON INJURED:

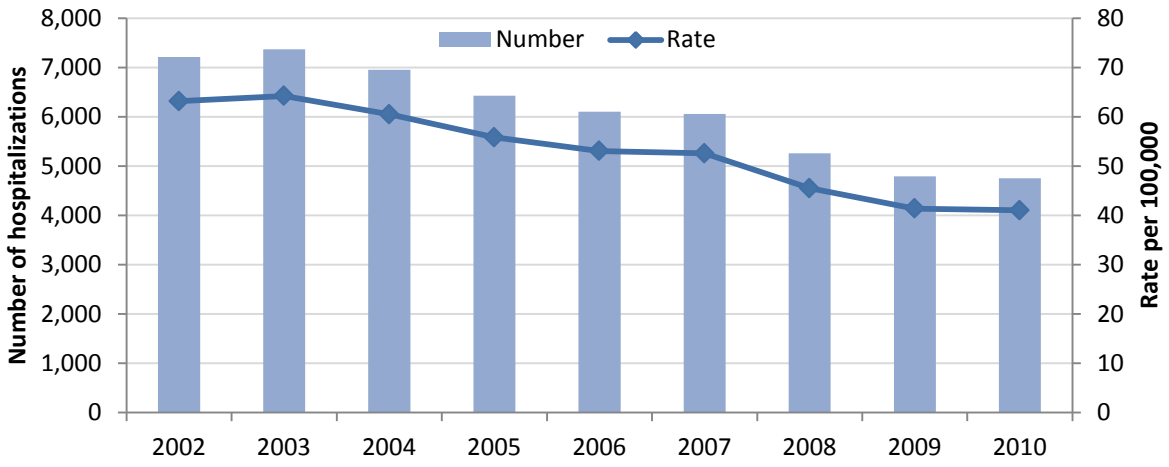
In 2010, the person injured in approximately one-half (588 deaths) was unspecified. The most common specified fatally injured persons were car occupants (259 deaths), motorcyclists (150 deaths), and pedestrians (108 deaths) (see Table 11c). The number of car occupant deaths decreased by 20 deaths per year while deaths of motorcyclists increased by 5 per year. The number of deaths with an unspecified person and pedestrian deaths did not follow a consistent trend. See Table 11c located at the end of this section for more detailed information on the number of persons fatally injured in motor vehicle traffic crashes in Ohio.

Figure 4.3. Number of deaths resulting from unintentional motor vehicle traffic related injury by the person injured, year, Ohio, 2000-2010



Source: Ohio Department of Health, Vital Statistics

Figure 4.4. Number and age adjusted rate of hospitalizations for unintentional motor vehicle traffic related injury by year, Ohio, 2002-2010



Source: Ohio Hospital Association

HOSPITALIZATIONS:

Nearly 4,800 inpatient hospitalizations resulted from unintentional motor vehicle traffic-related injury in Ohio in 2010. The motor vehicle traffic related hospitalization rate was 41 per 100,000 (Figure 4.4). The hospitalization rate was higher for males (52 per 100,000) compared to females (30 per 100,000). The highest rates were found among individuals 15-24 years (64 per 100,000) and 25-34 years (55 per 100,000). The lowest rates were found among children 14 years of age or less (Figure 4.5). See Table 4.2 for an unintentional motor vehicle traffic crash hospitalization risk profile.

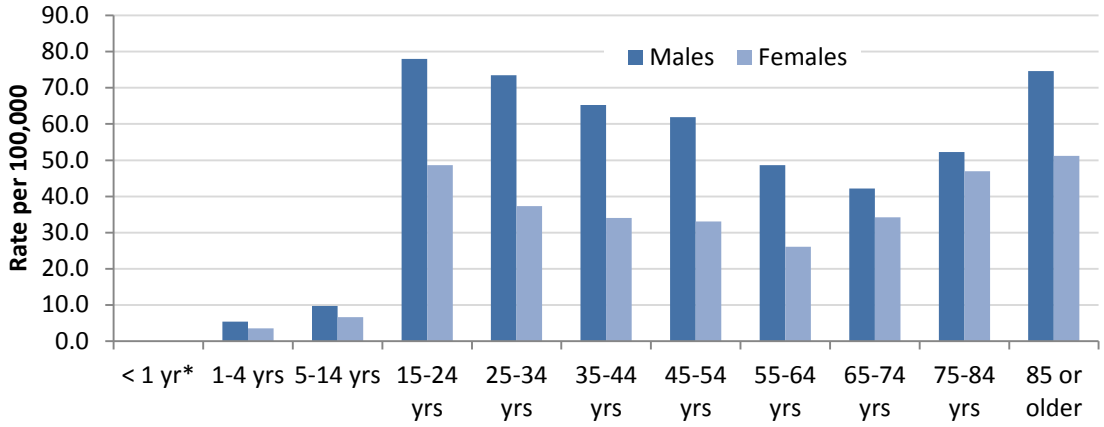
Table 4.2 Unintentional Motor Vehicle Traffic Crash Hospitalization Risk Profile

	2010 At Risk Groups	Annual trend since 2002
Overall		-34%
Sex	Males	Males (largest decrease)
Age	15-24	15-24 (largest decrease)

TRENDS:

As with deaths, hospitalizations resulting from unintentional motor vehicle traffic-related injury decreased 34 percent from 63 per 100,000 in 2002 to 41 per 100,000 in 2010. The average decrease was 3 hospitalizations per 100,000 per year. The decrease in hospitalizations was slightly higher among males (4 per 100,000) than females (3 per 100,000). Hospitalization rates decreased among ages 15 and older with the largest decrease occurring among ages 15-24 (7 per 100,000). See Tables 12a-b located at the end of this section for more detailed information on the number and rate of unintentional motor vehicle traffic crash hospitalizations.

Figure 4.5. Hospitalization rates from unintentional motor vehicle traffic crashes by age group and sex, Ohio, 2010

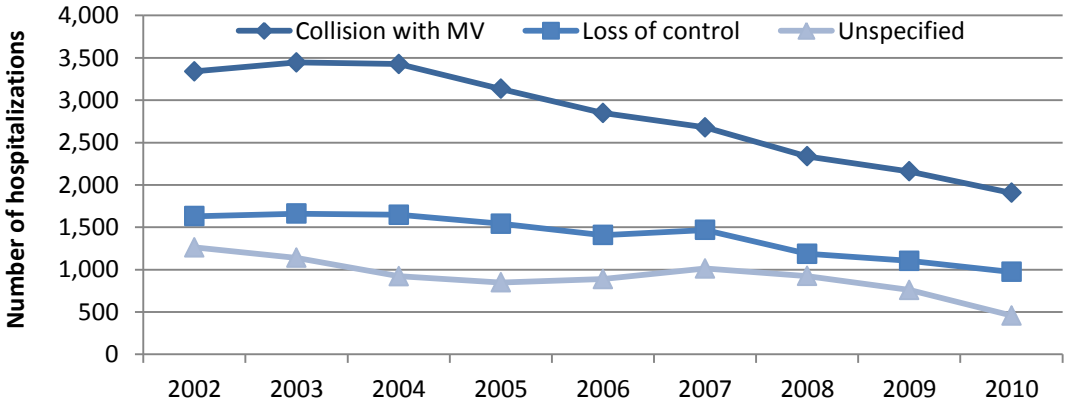


Source: Ohio Hospital Association
*Rate suppressed due to fewer than 20 Hospitalizations

NATURE OF CRASH:

The most common causes of motor vehicle traffic hospitalizations were a collision with another motor vehicle, loss of control (not on a highway), and a traffic crash of an unspecified nature. These categories combined account for nearly 75 percent of hospitalizations associated with motor vehicle traffic crashes each year. The number of hospitalizations for each of these categories has decreased from 2002 - 2010 with the largest decreases associated with collisions with other motor vehicles (204 per year). Hospitalizations resulting from motor vehicle traffic crashes associated with loss of control, not on highway (88 per year), and unspecified nature (70 per year) also experienced more modest decreases during this time period (Figure 4.6). See table 12c located at the end of this section for more detailed information on the number of hospitalizations by nature of traffic crash.

Figure 4.6. Number of hospitalizations resulting from unintentional motor vehicle traffic crahes by nature of crash, Ohio, 2002-2010



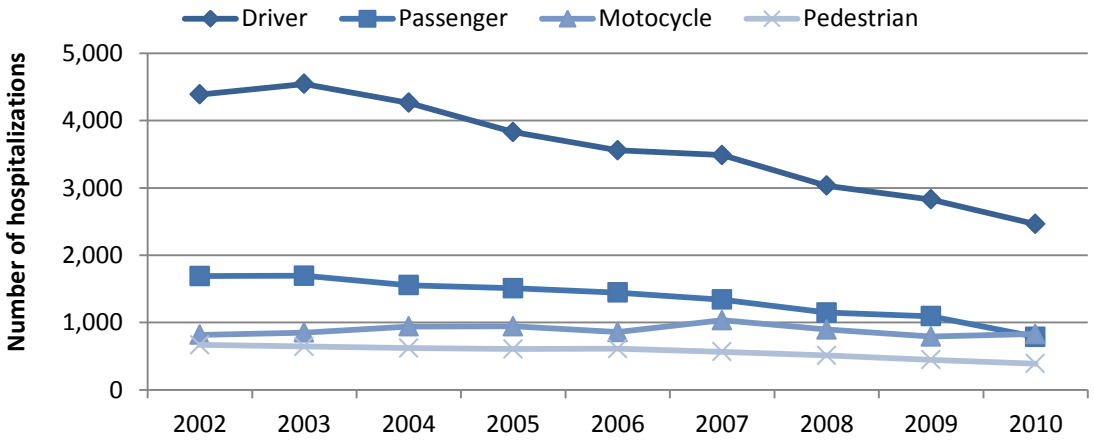
Source: Ohio Hospital Association

PERSON INJURED:

In 2010, most hospitalizations after a motor vehicle traffic crash were occupants of the vehicle. Approximately one-half of hospitalizations were the driver of the vehicle and nearly one in five were passengers in the vehicle or a motorcycle driver or passenger. Eight percent of the hospitalizations involved pedestrians injured in motor vehicle traffic crashes (Figure 4.7).

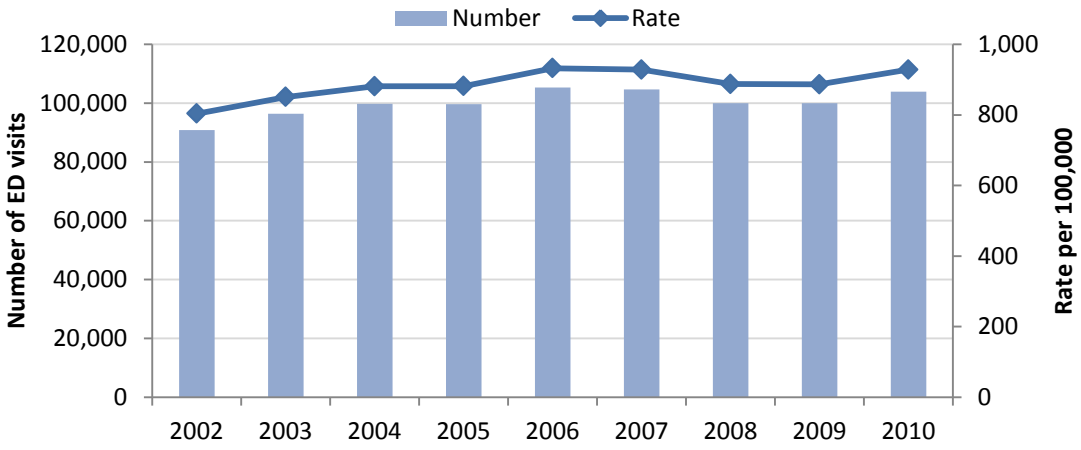
The decrease in motor vehicle traffic hospitalizations has been driven by decreases in hospitalizations among drivers (261 per year), passengers (107 per year), and pedestrians (33 per year). See tables 12d located at the end of this section for more detailed information on the number of persons injured in motor vehicle traffic related hospitalizations.

Figure 4.7. Number of hospitalizations resulting from unintentional motor vehicle traffic crahes by the person injured, Ohio, 2002-2010



Source: Ohio Hospital Association

Figure 4.8. Number and age adjusted rate of ED visits for unintentional motor vehicle-related injury by year, Ohio, 2002-2010



Source: Ohio Hospital Association

EMERGENCY DEPARTMENT VISITS:

Approximately 104,000 emergency department (ED) visits resulted from unintentional motor vehicle traffic crash-related injury in 2010. The ED visit rate was 928 per 100,000 (Figure 4.8). The rate of unintentional motor vehicle traffic ED visits was higher among females (1,019 per 100,000) compared to males (839 per 100,000). ED visit rates were similar among children and teens ages 14 or younger but increased dramatically among driving-aged youth ages 15-24. Rates decreased with age among adults 25 or older (Figure 4.9). See Table 4.3 for an unintentional motor vehicle traffic crash ED visit risk profile.

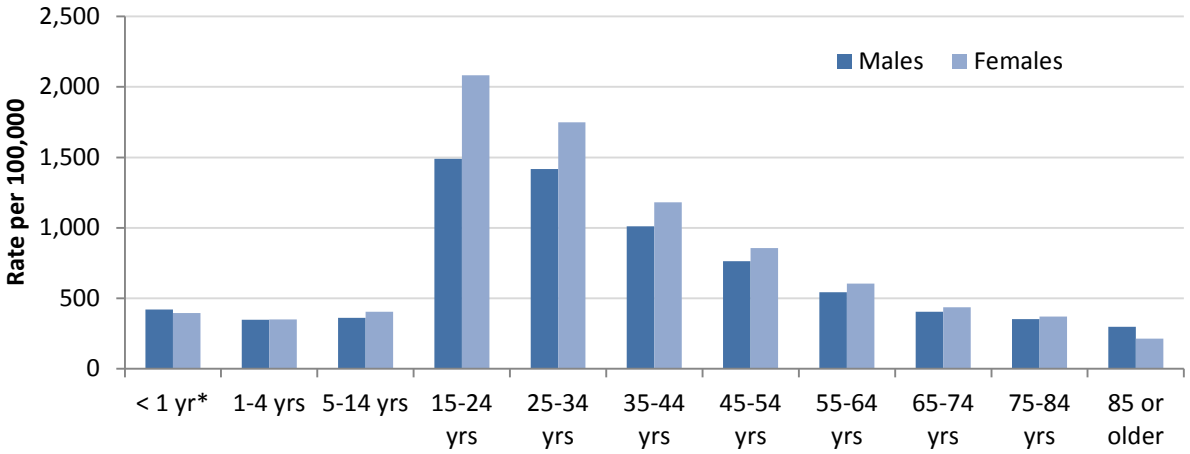
Table 4.3 Unintentional Motor Vehicle Traffic Crash ED Visit Risk Profile

	2010 At Risk Groups	Annual trend since 2002
Overall		+16%
Sex	Females	Females (largest increase)
Age	15-44	25-34 (largest increase)

TRENDS:

Since 2002, the rate of ED visits resulting from motor vehicle traffic crash-related injury increased from 803 per 100,000 in 2002 to 928 per 100,000 in 2010. The average annual increase was 11 per 100,000 per year. Rates increased 14 per 100,000 annually among females while rates did not follow a linear trend for males. The largest increase in annual rates was found among adults ages 25-34. See Tables 13a and 13b located at the end of this section for more detailed information on the number and rate of unintentional motor vehicle traffic crash ED visits.

Figure 4.9. ED visit rates per 100,000 resulting from unintentional motor vehicle traffic crash-related injury by age group and sex, Ohio, 2010

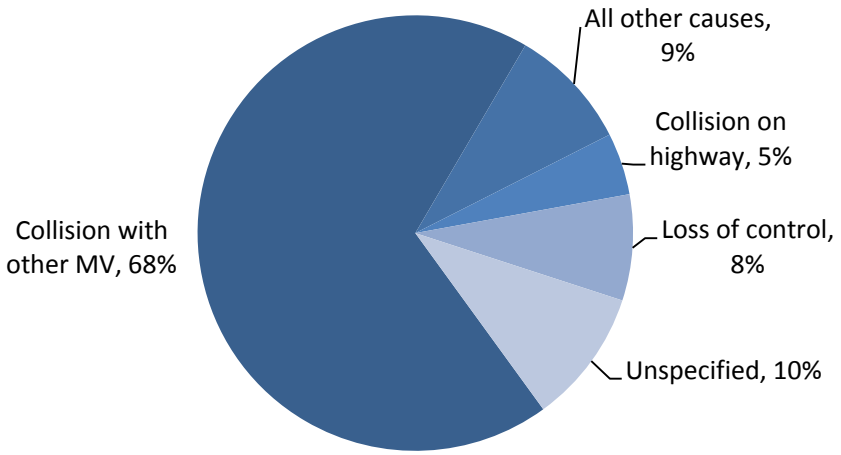


Source: Ohio Hospital Association

NATURE OF CRASH:

The most common causes of motor vehicle traffic crash-related ED visits were collision with another motor vehicle (68 percent), loss of control (8 percent), and collision on a highway (5 percent). These coding categories combined account for 81 percent of ED visits associated with motor vehicle traffic crashes each year. The number of ED visits associated with collisions on highways and collisions with pedestrians increased, but the other types of crashes did not follow a linear trend. See Table 13c located at the end of this section for more detailed information on the number and percentage of ED visits by nature of motor vehicle traffic crashes.

Figure 4.10. Distribution of ED visits resulting from motor vehicle traffic crashes by nature of crash, Ohio, 2010

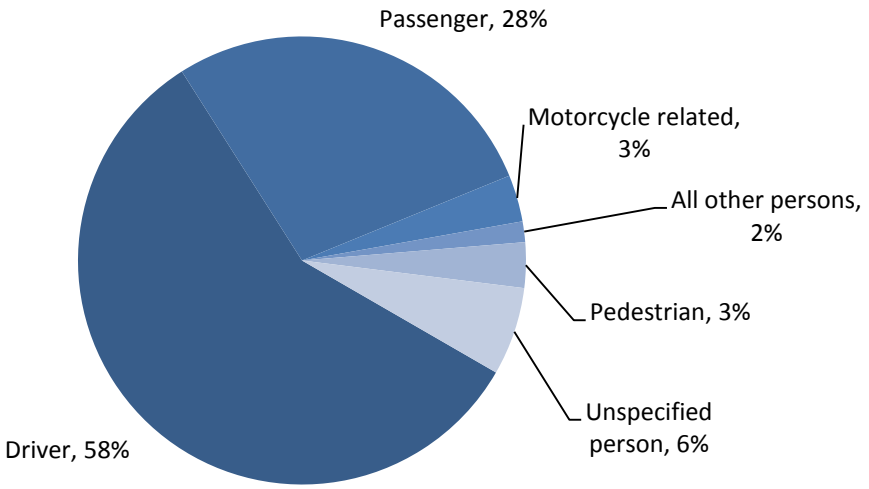


Source: Ohio Hospital Association

PERSON INJURED IN CRASH:

Most motor vehicle traffic-related ED visits involved an injury to either the driver (58 percent) or the passenger (28 percent) of the motor vehicle. In addition, 6 percent of ED visits were associated with an injury to an unspecified person and 3 percent were associated with injuries to pedestrians and persons riding a motorcycle. The largest increases in the number of ED visits were among passengers (378 per year), motorcyclists (119 per year), and pedestrians (97 per year). See Table 13d located at the end of this section for more detailed information on the number and percentage of persons injured in motor vehicle ED visits.

Figure 4.11. Distribution of ED visits resulting from motor vehicle traffic crashes by person injured, Ohio, 2010



Source: Ohio Hospital Association

Table 11a. Number of deaths resulting from unintentional motor vehicle traffic crash-related injury by year, Ohio, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Overall	1,314	1,376	1,471	1,279	1,328	1,357	1,277	1,293	1,242	1,036	1,155
Sex											
Males	868	938	982	845	931	902	880	899	882	695	803
Females	446	438	489	434	397	455	397	394	360	341	352
Age											
< 1 yr	<5	7	<5	<5	<5	<5	<5	<5	5	5	5
1-4 yrs	16	12	9	18	12	9	7	11	12	9	12
5-14 yrs	63	44	52	42	42	41	37	16	34	19	21
15-24 yrs	316	334	366	317	370	301	285	304	248	205	238
25-34 yrs	205	214	229	190	181	230	200	226	187	154	183
35-44 yrs	225	232	234	200	184	217	171	197	177	157	152
45-54 yrs	153	191	194	160	214	187	207	164	212	181	186
55-64 yrs	103	110	119	126	98	137	142	156	162	113	156
65-74 yrs	97	95	108	81	82	99	98	74	87	83	90
75-84 yrs	97	110	112	98	101	98	80	104	80	85	69
85 or older	37	27	46	45	40	38	47	37	38	25	43
Race/Ethnicity†											
White‡	1,133	1,231	1,286	1,109	1,159	1,183	1,120	1,116	1,079	890	988
Black‡	139	112	139	126	128	120	128	130	129	114	118
Hispanic	28	24	34	30	23	32	13	29	30	19	26
Other‡	13	8	7	8	12	13	14	16	<5	12	22

‡Non-Hispanic

Source: ODH Office of Vital Statistics

Table 11b. Death rates per 100,000 resulting from unintentional motor vehicle traffic crash-related injury, by year, Ohio, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Trend (per yr)
Overall†	11.5	12.0	12.8	11.1	11.5	11.7	10.9	11.1	10.6	8.9	9.8	-0.3
Sex†												
Males	16.1	17.1	17.9	15.4	16.7	16.3	15.7	16.1	15.6	12.3	14.1	-0.3
Females	7.5	7.2	8.1	7.2	6.5	7.5	6.5	6.5	5.9	5.5	5.7	-0.2
Age												
< 1 yr	*	*	*	*	*	*	*	*	*	*	*	*
1-4 yrs	*	*	*	*	*	*	*	*	*	*	*	*
5-14 yrs	3.8	2.7	3.2	2.6	2.7	2.6	2.4	*	2.3	*	1.4	*
15-24 yrs	20.3	21.3	23.1	19.9	23.3	19.0	18.1	19.3	15.8	13.1	15.0	-0.8
25-34 yrs	13.5	14.4	15.5	12.9	12.3	15.6	13.7	15.4	12.7	10.4	13.0	-0.2 (NL)
35-44 yrs	12.5	13.0	13.4	11.7	11.0	13.1	10.5	12.3	11.3	10.3	10.3	-0.2
45-54 yrs	9.7	11.7	11.8	9.6	12.6	10.9	11.9	9.4	12.1	10.3	10.7	0.0 (NL)
55-64 yrs	10.2	10.7	11.0	11.2	8.4	11.3	11.3	12.0	12.1	8.2	10.7	0.0 (NL)
65-74 yrs	12.3	12.2	14.0	10.5	10.7	12.9	12.7	9.4	10.7	9.9	10.6	-0.3 (NL)
75-84 yrs	17.9	20.0	20.1	17.5	18.0	17.5	14.3	18.7	14.6	15.7	12.7	-0.6
85 or older	20.8	14.9	24.9	23.6	20.6	19.0	22.7	17.2	17.2	11.0	18.7	-0.5 (NL)
Race/Ethnicity†												
White‡	11.7	12.6	13.2	11.4	11.9	12.1	11.4	11.4	10.9	9.1	10.1	-0.3
Black‡	10.9	8.6	10.5	9.6	9.5	9.0	9.4	9.4	9.7	8.5	8.2	-0.2 (NL)
Hispanic	13.7	12.9	14.5	14.4	7.6	13.1	*	10.6	10.7	*	8.3	*
Other‡	*	*	*	*	*	*	*	*	*	*	9.6	*

*Rates suppressed due to less than 20.

†Age adjusted to 2000 U.S. standard population

‡Non-Hispanic

NL: Interpret with caution because trend does not follow linear pattern

Source: ODH Office of Vital Statistics

Table 11c: Number of unintentional motor vehicle deaths, by occupant injured and year, Ohio, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Pedestrian	102	110	97	102	113	103	104	109	107	88	108	9%	<-1 (NL)
Pedal cycle	13	11	15	7	14	11	18	19	14	16	11	1%	*
Motorcycle	119	108	119	127	123	153	138	153	178	147	150	13%	5
3 wheeled vehicle	0	0	0	0	0	0	0	0	0	0	0	0%	*
Car	432	367	342	317	317	285	273	255	226	183	259	22%	-19
Pickup truck or van	51	46	47	43	42	47	39	45	42	27	27	2%	-2
Heavy transport vehicle	12	4	12	7	21	12	9	15	10	2	7	1%	*
Bus	0	0	0	1	1	0	1	1	1	0	5	0%	*
Other or unspecified vehicle	585	730	839	675	683	746	695	696	664	573	588	51%	-10 (NL)

NL: Interpret with caution because trend does not follow linear pattern
Source: ODH Office of Vital Statistics

Table 12a. Number of hospitalization resulting from unintentional motor vehicle traffic crash-related injury, by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Overall	7,215	7,369	6,953	6,428	6,102	6,055	5,257	4,792	4,755
Sex									
Males	4,364	4,371	4,187	3,900	3,702	3,755	3,211	2,894	2,921
Females	2,851	2,998	2,766	2,528	2,400	2,300	2,046	1,898	1,834
Age									
< 1 yr	<5	<5	<5	<5	<5	<5	<5	<5	<5
1-4 yrs	77	53	68	74	82	59	56	59	26
5-14 yrs	323	312	267	293	350	324	300	212	125
15-24 yrs	1,858	1,880	1,679	1,550	1,439	1,361	1,144	1,044	1,008
25-34 yrs	1,196	1,186	1,124	1,022	975	1,025	823	770	780
35-44 yrs	1,265	1,252	1,185	1,016	944	921	785	743	733
45-54 yrs	978	1,036	1,064	971	915	940	842	754	822
55-64 yrs	566	655	621	619	587	596	561	531	537
65-74 yrs	399	436	382	385	353	376	309	297	322
75-84 yrs	401	409	424	373	334	314	308	269	266
85 or older	146	143	132	114	115	129	121	107	135

Source: Ohio Hospital Association

Table 12b. Hospitalization rates per 100,000 resulting from unintentional motor vehicle traffic crash-related injury, by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Trend (per year)
Overall†	63.2	64.2	60.5	55.8	53.1	52.6	45.5	41.4	41.0	-3.2
Sex†										
Males	78.8	78.6	75.1	69.7	66.1	67.1	57.3	51.4	52.0	-3.8
Females	47.9	50.2	46.3	42.3	40.3	38.5	34.1	31.7	30.4	-2.6
Age										
< 1 yr	*	*	*	*	*	*	*	*	*	*
1-4 yrs	12.8	8.9	11.4	12.5	14.0	10.0	9.5	10.0	4.5	-0.6 (NL)
5-14 yrs	20.0	19.5	16.9	18.9	22.8	21.4	20.0	14.2	8.2	-0.9 (NL)
15-24 yrs	117.4	117.9	105.2	97.3	91.0	86.4	72.8	66.7	63.5	-7.4
25-34 yrs	81.1	80.9	76.9	70.1	66.9	70.1	56.2	52.1	55.3	-3.8
35-44 yrs	72.5	73.4	70.7	61.7	58.2	57.8	50.5	48.9	49.5	-3.5
45-54 yrs	59.4	62.0	62.7	56.5	52.7	53.8	48.1	43.0	47.2	-2.3
55-64 yrs	52.2	58.2	53.1	51.0	46.7	45.9	42.1	38.3	37.0	-2.5
65-74 yrs	51.7	56.7	49.8	50.3	45.9	48.1	38.3	35.5	37.9	-2.4
75-84 yrs	72.5	73.6	76.3	67.3	60.8	57.8	57.6	49.6	49.1	-3.5
85 or older	77.3	73.0	65.9	55.1	53.5	58.0	52.9	47.0	58.6	-2.9

*Rates suppressed due to less than 20 hospitalizations. †Rates are age adjusted to 2000 U.S. standard population

NL: Interpret with caution because trend does not follow linear pattern

Source: Ohio Hospital Association

Table 12c. Number of unintentional motor vehicle traffic hospitalizations by nature of collision and year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per year)
Nature of Collision											
Collision with train	55	65	43	12	32	17	18	11	6	*	*
Re-entrant collision with other MV	15	30	16	11	8	7	<5	7	<5	*	*
Collision with other MV	3,339	3,445	3,427	3,133	2,849	2,678	2,337	2,160	1,907	40.1%	-204
Collision with other non-motor vehicle	240	233	205	201	237	227	263	235	276	5.8%	5 (NL)
Collision with pedestrian	576	587	565	562	556	511	462	405	361	7.6%	-28
Collision on highway	700	793	726	668	596	602	577	550	542	11.4%	-29
Loss of control, not on highway	1,630	1,660	1,648	1,541	1,408	1,468	1,187	1,103	973	20.5%	-88
Noncollision while boarding or alighting	64	76	84	59	62	58	39	66	36	0.8%	-4 (NL)
Other noncollision	287	327	288	308	295	284	246	229	194	4.1%	-13
Unspecified	1,263	1,140	922	848	889	1,013	924	759	457	9.6%	-70

*Suppressed due to less than 20 hospitalizations

NL: Interpret with caution because trend does not follow linear pattern

Source: Ohio Hospital Association

Table 12d. Number of unintentional motor vehicle traffic hospitalizations by person injured and year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Person Injured											
Driver	4,387	4,545	4,265	3,828	3,558	3,486	3,033	2,828	2,463	51.8%	-261
Passenger	1,690	1,695	1,555	1,510	1,444	1,341	1,149	1,093	787	16.6%	-107
Motorcyclists	817	852	941	944	859	1035	896	792	830	17.5%	-2 (NL)
Street care occupant	<5	0	<5	<5	<5	<5	<5	5	<5	*	*
Occupant of animal drawn vehicle	6	<5	<5	5	7	8	8	0	8	*	*
Pedal cyclist	112	122	112	112	141	126	165	110	107	2.3%	1 NL
Pedestrian	667	644	621	607	611	566	511	447	391	8.2%	-33
Other specified person	62	55	42	35	41	27	36	32	29	0.6%	-4
Unspecified person	371	361	310	301	267	274	257	218	139	2.9%	-25

*Rates suppressed due to less than 20 hospitalizations

NL: Interpret with caution because trend does not follow linear pattern

Source: Ohio Hospital Association

Table 13a. Number of ED visits resulting from unintentional motor vehicle traffic crash-related injury by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Overall	90,873	96,350	99,747	99,644	105,304	104,675	99,927	99,984	103,862
Sex									
Males	41,513	43,766	45,184	45,278	47,731	47,686	45,399	45,089	46,463
Females	49,360	52,584	54,563	54,366	57,573	56,989	54,528	54,895	57,397
Age									
< 1 yr	405	450	550	452	555	565	579	563	568
1-4 yrs	1,872	1,858	1,806	1,852	2,008	2,055	2,046	2,169	2,029
5-14 yrs	6,006	6,207	6,194	6,177	6,692	6,300	6,185	5,955	5,832
15-24 yrs	28,482	30,405	30,733	30,112	30,914	29,734	27,665	27,893	28,278
25-34 yrs	18,110	19,032	20,065	20,292	21,230	21,571	20,779	20,867	22,332
35-44 yrs	15,181	15,726	16,070	16,271	16,763	17,016	15,849	15,524	16,230
45-54 yrs	10,507	11,501	12,238	12,495	13,878	14,021	13,725	13,452	14,131
55-64 yrs	5,246	5,798	6,321	6,397	7,186	7,352	7,421	7,696	8,350
65-74 yrs	2,832	3,018	3,282	3,169	3,438	3,424	3,363	3,416	3,593
75-84 yrs	1,830	1,911	2,026	2,021	2,119	2,086	1,811	1,943	1,963
85 or older	402	444	462	406	521	551	504	506	556

Source: Ohio Hospital Association

Table 13b. ED visit rates per 100,000 resulting from unintentional motor vehicle traffic crash-related injury by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Trend (per yr)
Overall	803	851	881	882	932	928	887	886	928	11.1
Sex										
Males	744	782	808	810	854	854	813	807	839	8.4 (NL)
Females	863	920	954	954	1,011	1,004	963	968	1,019	13.9
Age										
< 1 yr	275	305	369	309	375	373	379	381	409	14.1
1-4 yrs	311	311	303	312	342	350	346	367	349	7.4
5-14 yrs	372	388	392	398	436	416	413	398	383	2.3 (NL)
15-24 yrs	1,800	1,906	1,926	1,890	1,954	1,889	1,760	1,782	1,782	13.0 (NL)
25-34 yrs	1,227	1,298	1,373	1,392	1,458	1,476	1,420	1,412	1,584	32.4
35-44 yrs	870	921	959	987	1,033	1,068	1,019	1,021	1,097	23.5
45-54 yrs	638	688	722	728	799	802	784	767	811	18.8
55-64 yrs	484	515	541	527	572	566	557	555	575	9.2
65-74 yrs	367	393	428	414	447	438	417	409	423	4.5 (NL)
75-84 yrs	331	344	365	365	386	384	339	358	363	2.3 (NL)
85 or older	213	227	230	196	243	248	220	222	241	2.2 (NL)

NL: Interpret with caution because trend does not follow linear pattern

Source: Ohio Hospital Association

Table 13c. Number of ED visits from motor vehicle traffic crash-related injury by nature of crash and year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Nature of crash											
Collision with train	149	392	38	48	334	111	71	61	57	0%	-21 (NL)
Re-entrant collision with other MV	106	196	40	94	139	58	85	50	51	0%	-10 (NL)
Collision with other MV	60,018	65,249	68,369	68,119	71,058	69,413	65,801	67,364	70,334	68%	729 (NL)
Collision with other non-motor vehicle	2,748	1,766	1,887	1,823	2,206	2,665	2,652	2,948	3,159	3%	126 (NL)
Collision with pedestrian	2,355	2,437	2,503	2,659	3,168	3,057	3,088	2,972	2,880	3%	87.9
Collision on highway	3,110	4,112	4,040	4,249	4,149	4,765	5,109	4,720	4,730	5%	182.6
Loss of control	7,915	8,456	8,634	9,324	8,894	9,095	8,928	8,000	8,089	8%	-5 (NL)
Noncollision while boarding or alighting	953	856	843	877	1,121	1,216	1,203	1,128	1,061	1%	38 (NL)
Other noncollision	2,211	2,082	2,205	2,319	2,722	2,873	2,792	3,025	3,231	3%	144 (NL)
Unspecified	11,324	10,813	11,191	10,135	11,528	11,427	10,204	9,726	10,270	10%	-136 (NL)

NL: Interpret with caution because trend does not follow linear pattern

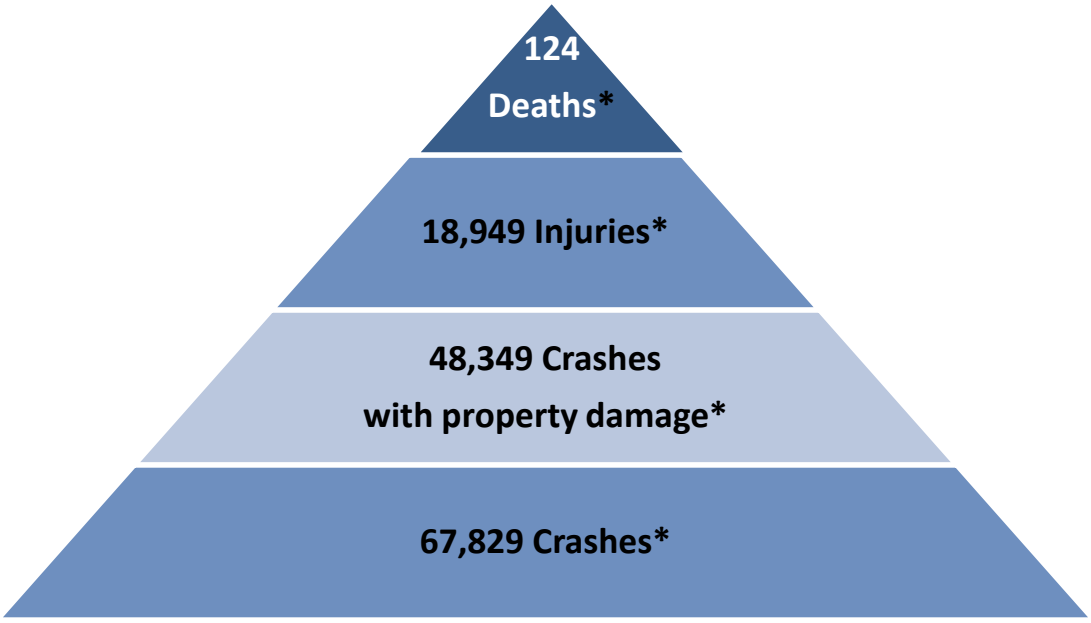
Source: Ohio Hospital Association

Table 13d. Number of ED visits from motor vehicle traffic crash-related injury by person injured and year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Person injured											
Driver	53,187	56,713	58,693	58,653	60,369	60,330	57,037	56,815	59,948	58%	428 (NL)
Passenger	25,429	26,427	27,357	27,193	29,063	28,725	27,522	28,627	28,983	28%	378
Motorcyclist	2,248	2,618	3,022	3,184	3,325	3,603	3,581	3,072	3,244	3%	115
Passenger of motorcyclist	216	237	245	321	281	327	637	323	334	0%	25 (NL)
Occupant of streetcar	51	21	24	29	35	24	23	31	34	0%	-1 (NL)
Animal related	21	17	24	29	43	41	22	25	32	0%	1 (NL)
Pedal cyclist	860	854	830	907	1,039	1,094	1,097	1,069	1,079	1%	37.4
Pedestrian	2,593	2,692	2,727	2,951	3,408	3,388	3,335	3,277	3,198	3%	97
Other specified person	294	348	416	319	303	317	292	361	354	0%	0.5 (NL)
Unspecified person	5,870	5,903	6,400	6,060	7,244	6,831	6,664	6,394	6,656	6%	99 (NL)

Source: Ohio Hospital Association

SECTION 3.2A: TEEN DRIVERS



*SOURCE: OHIO TRAFFIC CRASH STATISTICS, 2011

While the number of injuries treated in health care facilities has decreased over the past decade, motor vehicle traffic crashes among teen drivers remains a public health and safety issue. In 2011, nearly 290,000 motor vehicle traffic crashes were reported to the Ohio Department of Public Safety. Of these crashes, 67,829 or 14 percent involved drivers ages 16-20. The crashes ranged in severity with 124 resulting in death, nearly 19,000 resulting in injury, and approximately 48,000 resulting in property damage. Teen drivers were disproportionately involved in crashes compared to all other age groups. Teenage males were more likely to be involved in a crash than females.

RISK FACTORS

There are many well-known factors that raise a driver's risk of being killed or injured in a crash:

- **Speed** – Among Ohio drivers of all age groups in 2010:
  - 156 fatal crashes were caused by speeding or driving at unsafe speeds.
  - 5,306 crashes resulting in injuries were caused by speeding or driving at unsafe speeds.
  - 9,376 crashes resulting in property damage were caused by speeding or driving at unsafe speeds.

- **Alcohol -** Among Ohio drivers ages 16-20 in 2010:
  - 36 fatal crashes were caused by alcohol impaired drivers.
    - 91 percent of fatal crashes involved a driver ages 16-20 with a blood alcohol concentration of 0.08 or higher.

- 7 percent of high school students in Ohio reported driving a car or other vehicle when they had been drinking alcohol in 2011. No differences in the percentage of students reporting episodes of drinking and driving were found by sex while students in grade 12 were more likely to drive after drinking alcohol (13 percent) than students in grade 10 (4 percent).

- **Lack of seat belt use** -
  - Only 29 percent of occupants aged 16-20 who were killed in traffic crashes were restrained.
  - 10 percent of high school students in Ohio reported "never" or "rarely" wearing a seat belt when driving a car. Males were more likely to "never" or "rarely" wear a seat belt (13 percent) than females (6 percent). No differences were found by grade level.

- **Driving at night** – The fatal crash rate of 16-year-olds is nearly twice as high at night.[1]

- **Driver distractions** such as talking on a cell phone and carrying multiple peer passengers are risky. Teen passengers and cell phones are two distractions proven to kill teens. [2] Two or more peer passengers more than triples the risk of a fatal crash with a teen at the wheel.[3] The risk is not just for the driver. Most teen passengers who die in crashes are riding with a teen driver.

REFERENCES:

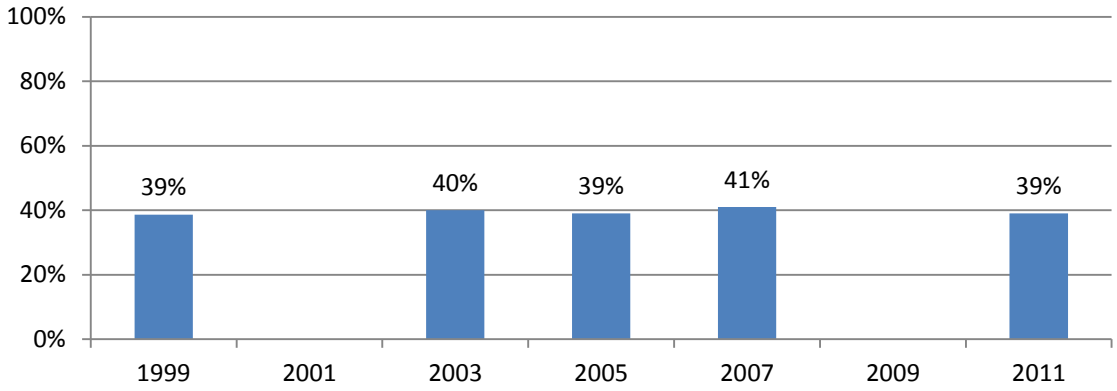
[1] Insurance Institute for Highway Safety (IIHS). Beginning Teenage Drivers. 2007. Available at: http://www.iihs.org/brochures/pdf/beginning_drivers.pdf. Accessed April 7, 2010.

[2] Winston FK, et al. Eds. Driving Through the Eyes of Teens, A Closer Look. Published by The Children's Hospital of Philadelphia and State Farm Insurance Companies®. 2009

[3]Teen Driver Source, Children's Hospital of Philadelphia website http://www.teendriversource.org/support_gov

SECTION 3.2B: YOUTH SEAT BELT USE

Figure 4.12. Percentage of high school students who reported always wearing a seatbelt when riding in a motor vehicle, Ohio, 1999, 2003, 2005, 2007, and 2011



Source: Ohio Youth Risk Behavior Survey

SELF REPORTED SEAT BELT USE:

Approximately 4 in 10 high school students reported "always" using a seat belt when they ride in a motor vehicle in 2011 (Figure 4.12). Reported seat belt use was similar for males (37 percent) and females (41 percent). Reported seat belt use increased by grade level with students in grade 12 (44 percent) being more likely to "always" use seat belts than students in grade 9 (35 percent). White students (42 percent) were more likely report "always" using a seat belt than African American (27 percent) or Hispanic (30 percent) students.

TRENDS IN SEAT BELT USE:

The percentage of high school students who "always" reported wearing a seat belt has not changed since 1999. Seat belt use patterns by sex, grade, race or ethnicity did not change during the period. See Tables 4a-b located on the following page for more detailed information on the reported seat belt use among high school students in Ohio.

Table 14a. Percentage of high school students who reported seat belt when they ride in a vehicle by frequency, Ohio, 1999, 2003, 2005, 2007, and 2011

	1999	2001	2003	2005	2007	2009	2011
Frequency of Seat Belt Use							
Always	38.6%	NA	40.1%	38.9%	40.8%	NA	38.5%
Most of the time	30.1%		28.5%	29.4%	28.9%		30.7%
Sometimes	15.5%		16.0%	15.1%	16.0%		14.1%
Rarely	10.4%		9.9%	10.5%	10.1%		11.0%
Never	5.4%		5.6%	6.0%	4.2%		5.8%

NA: Did not receive sufficient response rate for weighted data
Source: Ohio Youth Risk Behavior Survey

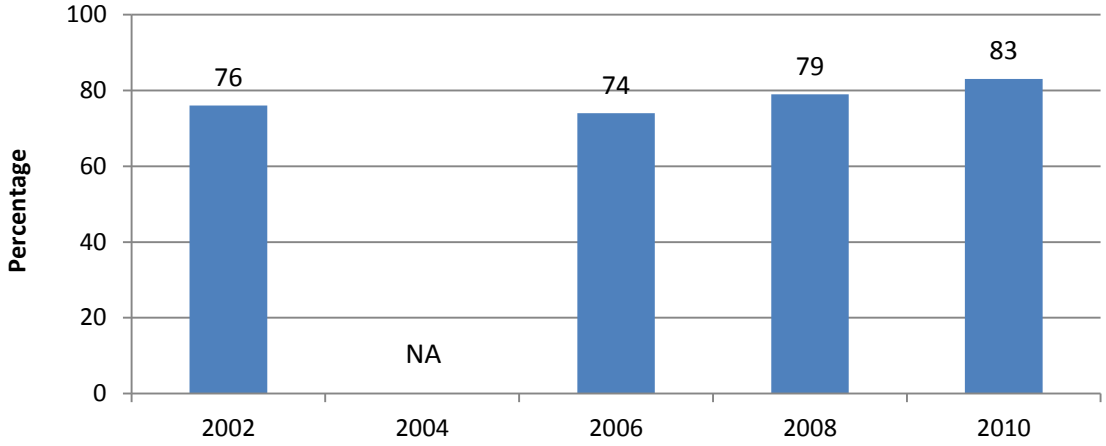
Table 14b. Percentage of high school students who reported always wearing a seat belt when they ride in a vehicle, Ohio, 1999, 2003, 2005, 2007, 2011

	1999	2001	2003	2005	2007	2009	2011
Overall	38.6%	NA	40.1%	38.9%	40.8%	NA	38.5%
Sex							
Males	32.6%		38.4%	35.8%	37.5%		36.6%
Females	44.9%		42.2%	42.1%	44.3%		40.5%
Grade							
9th	35.9%		32.5%	35.5%	32.1%		34.7%
10th	38.1%		39.2%	36.9%	42.2%		39.7%
11th	38.9%		41.3%	41.7%	43.8%		37.7%
12th	42.6%		48.2%	42.4%	47.6%		43.9%
Race/Ethnicity							
White, non-Hispanic	40.5%		44.0%	42.6%	42.9%		42.2%
Black, non-Hispanic	30.8%		*	20.0%	28.5%		26.5%
Hispanic	*		*	*	38.1%		30.0%

*Percentage suppressed due to few than 100 respondents in subgroup.
NA: Did not receive sufficient response rate for weighted data
Source: Ohio Youth Risk Behavior Survey

SECTION 3.2C: ADULT SEAT BELT USE

Figure 4.13. Percentage of adults who reported always using a seat belt when riding in a motor vehicle, Ohio, 2002, 2006, 2008 and 2010



Source: Ohio Behavioral Risk Factor Surveillance System

SELF REPORTED SEAT BELT USE:

Approximately 8 in 10 adults reported "always" using a seat belt when they ride in a motor vehicle in 2010 (Figure 4.13). Several important patterns were found in frequent seat belt use. Females were more likely to report "always" wearing a seat belt (86 percent) compared to males (79 percent). Adults ages 55 or older were more likely to report "always" wearing a seat belt than adults ages 44 or younger. No differences were found by education, household poverty, employment, or marital status.

TRENDS:

The percentage of adults who reported "always" using a seat belt increased from 76 percent in 2002 to 83 percent in 2010 (Figure 4.13). Significant increases were observed in both males and females as well as adults aged 35 or older, completing post secondary education, household incomes well above poverty, married couples, and currently employed. See Tables 15a-b located on the following page for more details about self-reported seat belt use among adult Ohioans.

Table 15a. Prevalence of seat belt use among adults ages 18 or older by frequency of use, Ohio, 2002-2010

	2002		2006		2008		2010	
	Percent	**95% CI***	**Percent**	**95% CI***	**Percent**	**95% CI***	**Percent**	**95% CI***
Always	76.3	(74.7-77.9)	74.0	(71.5-76.4)	78.8	(77.7-80.0)	82.6	(81.2-84.0)
Nearly Always	10.3	(9.2-11.5)	14.2	(12.3-16.1)	11.8	(10.9-12.7)	8.8	(7.8-9.9)
Sometimes	6.0	(5.1-6.9)	6.1	(4.8-7.4)	4.6	(4.0-5.2)	4.0	(3.3-4.7)
Seldom	3.0	(2.4-3.7)	2.7	(1.8-3.7)	2.2	(1.8-2.6)	2.0	(1.5-2.5)
Never	4.1	(3.4-4.8)	2.8	(1.7-4.0)	2.3	(1.9-2.8)	2.5	(1.8-3.1)
Never ride in a car	0.2	(0.1-0.4)	0.1	(0.0-0.2)	0.2	(0.0-0.3)	0.1	(0.1-0.2)

Source: Ohio Behavioral Risk Factor Surveillance System

Table 15b. Prevalence of adults ages 18 or older who reported always using a seat belt, Ohio, 2002-2010

	2002		2006		2008		2010	
	Percent	**95% CI***	**Percent**	**95% CI***	**Percent**	**95% CI***	**Percent**	**95% CI***
Sex								
Males	72.2	(69.6-74.7)	69.0	(64.9-73.0)	73.6	(71.7-75.5)	79.0	(76.6-81.4)
Females	80.0	(78.1-81.9)	78.5	(75.7-81.4)	83.6	(82.4-84.9)	85.9	(84.4-87.4)
Age Group								
18-24	69.3	(63.2-75.5)	70.3	(59.8-80.8)	70.9	(65.3-76.5)	72.7	(63.0-82.4)
25-34	75.4	(71.6-79.2)	68.7	(61.9-75.6)	75.0	(71.5-78.4)	75.2	(70.4-80.0)
35-44	75.1	(71.7-78.4)	70.5	(64.8-76.2)	77.8	(75.3-80.3)	84.3	(81.2-87.3)
45-54	78.6	(75.5-81.7)	73.8	(69.1-78.5)	80.3	(78.3-82.4)	84.2	(81.8-86.7)
55-64	76.7	(72.8-80.6)	80.5	(76.2-84.8)	82.4	(80.6-84.2)	83.3	(81.0-85.7)
65 or older	80.8	(77.4-84.2)	80.2	(76.3-84.0)	84.1	(82.7-85.5)	86.7	(84.9-88.6)
Education Level								
Did not complete HS	71.7	(65.5-77.9)	66.3	(56.5-76.1)	70.2	(65.1-75.3)	74.3	(67.9-80.7)
Completed HS/GED	73.1	(70.5-75.8)	71.9	(67.7-76.0)	74.6	(72.5-76.7)	77.9	(75.2-80.6)
Some college	74.5	(71.3-77.6)	73.8	(69.1-78.4)	79.2	(77.0-81.4)	82.8	(80.2-85.5)
College graduate	84.3	(81.8-86.8)	79.0	(74.8-83.2)	85.3	(83.6-86.9)	88.4	(86.5-90.4)
Poverty Status								
Below poverty	72.2	(66.5-78.0)	68.0	(58.8-77.3)	68.2	(63.3-73.1)	75.4	(70.0-80.8)
Above poverty < 200%	74.6	(71.2-78.1)	75.3	(70.4-80.1)	75.6	(72.7-78.5)	76.5	(72.8-80.2)
Above poverty > 200%	77.5	(75.5-79.4)	74.6	(71.6-77.7)	81.1	(79.8-82.4)	85.4	(83.8-87.0)
Missing household or income information	77.8	(73.2-82.4)	75.8	(68.0-83.5)	80.3	(77.2-83.5)	85.4	(81.8-89.0)
Marital Status								
Married or unmarried couple	78.8	(76.9-80.8)	74.4	(71.4-77.4)	81.1	(79.8-82.4)	84.9	(83.2-86.5)
Separated, widowed or divorced	74.9	(71.7-78.0)	75.5	(71.3-79.7)	77.2	(75.1-79.4)	80.6	(77.8-83.3)
Never married	69.8	(65.5-74.0)	70.7	(63.3-78.1)	72.2	(68.5-76.0)	74.4	(69.6-79.1)
Employment Status								
Employed	75.4	(73.3-77.4)	72.8	(69.6-76.0)	78.4	(76.9-79.9)	82.2	(80.3-84.1)
Not employed	66.7	(58.6-74.8)	56.7	(41.4-72.1)	70.7	(64.6-76.7)	73.1	(66.8-79.5)
Other	79.4	(76.8-82.1)	77.9	(74.1-81.8)	81.0	(79.3-82.7)	85.7	(83.8-87.6)

*95% CI: 95% confidence interval.

Source: Ohio Behavioral Risk Factor Surveillance System

APPENDICES

APPENDIX 1: DATA SOURCES

This report uses data from behavioral risk factor surveys, hospital discharge records and death certificates to study patterns and trends in injuries among Ohio residents. The following is brief summary of each data source referenced in this report.

Cost of Injuries

The medical and work loss cost of injuries was estimated by the Centers for Disease Control and Prevention (CDC). Cost estimates for fatal and non-fatal injuries can be queried on the CDC's Web-based Injury Statistics Query and Reporting System Web (WISQARS).
http://www.cdc.gov/injury/wisqars/pdf/WISQARS_Cost_Methods-a.pdf

Death Records

Death records are maintained by ODH's Office of Vital Statistics. Death certificates provide limited information about circumstances of injury circumstances or contributing factors. Both injuries and their external causes were classified according to the 10th Revision of the International Classification of Diseases (ICD-10). See Appendix 3 for a complete list of external cause of injury codes by mechanism and intent.
http://dwhouse.odh.ohio.gov/datawarehousev2.htm

Hospital Discharge Records

Hospital discharge records are collected and maintained by the Ohio Hospital Association (OHA) from information provided by member hospitals. Both injuries and their external causes were classified according to the 9th Revision of the International Classification of Diseases, Clinical Modification (ICD-9-CM). For hospitalizations, a case was defined as an Ohio resident with an injury listed in the primary diagnosis field. For ED visits, a case was defined as an Ohio resident with an injury listed in the primary diagnosis field or a valid external cause of injury code any of the 15 diagnosis fields. Injury mechanisms for both hospitalizations and ED visits were based on the first listed external cause of injury. See Appendix 2 for a complete list external cause of injury codes by mechanism and intent.
http://www.ohanet.org/

Leading Causes of Death

The data source for WISQARS Fatal Injury Data is the National Vital Statistics System (NVSS) operated by the National Center for Health Statistics. WISQARS provides death counts and death rates for the United States and by state, county, age, race, Hispanic ethnicity, sex, and leading cause of death, injury intent, and injury mechanism categories. WISQARS can be used to query death data for the years 1999 - 2009, of which the underlying cause of death is specified using ICD-10 codes.
http://www.cdc.gov/injury/wisqars/leading_causes_death.html

Ohio Behavioral Risk Factor Surveillance System (BRFSS)

The Ohio Behavioral Risk Factor Surveillance System (BRFSS) is a random digit dial telephone survey of non-institutionalized adults aged 18 years of older. The BRFSS has been conducted annually by the Ohio Department of Health since 1984. The survey collects information on the prevalence of health behaviors, health care usage, and disease diagnosis associated with the leading cause of disease, injury and death in the United States. Results from the survey are weighted to represent the age, sex, race, and ethnic composition of Ohio.
http://www.odh.ohio.gov/healthstats/brfss/behrisk1.aspx

Ohio Population Estimates

The National Center for Health Statistics releases bridged-race population estimates of the resident population of the United States for use in calculating vital rates. These estimates result from bridging the 31 race categories used in Census 2000 and Census 2010. The bridged-race population estimates are produced under a collaborative arrangement with the U. S. Census Bureau.
http://www.cdc.gov/nchs/nvss/bridged_race.htm

Ohio Pregnancy Risk Assessment Monitoring System (PRAMS)

The Pregnancy Risk Assessment Monitoring System (PRAMS) is a population-based survey designed to examine maternal behaviors and experiences before, during and after a woman's pregnancy, and during the early infancy of her child. The Centers for Disease Control and Prevention initiated PRAMS in 1987 in an effort to reduce infant mortality and the incidence of low birth weight. PRAMS were implemented in Ohio in 1999.
http://www.odh.ohio.gov/healthstats/pramshs/prams1.aspx

Ohio Traffic Crash Reports

The Ohio Department of Public Safety compiles statistical data on crashes that occur on Ohio's roads and highways. Crash data is available in the form of annual reports. Users can also develop customized queries of the data online.
http://ohiohighwaysafetyoffice.ohio.gov/otso_annual_crash_facts.stm

Ohio Youth Risk Behavior Survey (YRBS)

The Ohio Youth Risk Factor Survey (YRBS) is an anonymous paper and pencil survey of high school students enrolled in public and non-public schools. The YRBS has been conducted in Ohio since 1993 and is collaborative project between the Ohio Departments of Education and Health. The survey collects information on the prevalence of health behaviors, health care usage, and disease diagnosis associated with the leading cause of disease, injury and death in the United States. Results from the survey are weighted to represent the age, sex, race, and ethnic composition of Ohio.
http://www.odh.ohio.gov/odhprograms/chss/ad_hlth/youthrsk/youthrsk1.aspx

APPENDIX 2: ANALYTIC METHODS

This analysis was limited to descriptive statistics, which were generated through the use of Statistical Analysis System (SAS) Version 9.1, Cary, N.C. The data were analyzed using injury surveillance guidelines from the Centers for Disease Control and Prevention (CDC).

Deaths:

- Injury deaths were defined as a death with the underlying cause of death listed as an injury. Traumatic brain injury deaths were defined as deaths with an injury as underlying cause of death and a traumatic brain injury listed in one of the multiple cause of death fields. See Appendix 4 for a list of ICD-10 codes for injury mechanisms and Appendix 6 for a list of mechanism subcategories.
- Deaths included in this report were restricted to Ohio residents.
- Rates were calculated by dividing the number of injuries by the number of Ohio residents. Population estimates were based on estimates from the National Center for Health Statistics. Rates were age adjusted to the 2000 U.S. standard population.

Hospitalizations:

- Discharge dataset includes nonfederal, acute care, or inpatient facilities. The dataset does not include Veterans' Affairs and other federal hospitals, rehabilitation centers, or psychiatric hospitals.
- Injury hospitalizations were defined as an inpatient visit with an injury listed in the primary discharge diagnosis field. See Appendix 5 for a list of ICD-9-CM codes for injury mechanisms and Appendix 7 for a list of mechanism subcategories.
- Datasets include readmissions, transfers, and deaths occurring in the hospital.
- Hospitalizations included in this report were restricted to Ohio residents.
- The external cause of injury code used in the analysis was the first listed cause of the discharge diagnosis fields. If the codes E000-E030, E849, E967, E869.4, E870-E879, or E930-E949 were the first listed codes then the next valid external cause code was used.
- Rates were calculated by dividing the number of injuries by the number of Ohio residents. Population estimates were based on estimates from the National Center for Health Statistics. Rates were age adjusted to the 2000 U.S. standard population.

Emergency Department Visits:

- Discharge dataset includes nonfederal, acute care, or inpatient facilities. The dataset does not include Veterans' Affairs and other federal hospitals, rehabilitation centers, or psychiatric hospitals.

- Injury ED visits were defined as an ED visit with an injury listed in the primary discharge diagnosis field or a valid external cause of injury code in any of the discharge diagnosis fields. See Appendix 5 for a complete list of ICD-9-CM codes.
- ED visits included in this report were restricted to Ohio residents.
- Persons who are treated at an ED and later admitted to a hospital are removed from the ED dataset, and therefore are not included in any analysis of ED data.
- The external cause of injury code used in the analysis was the first listed cause of the discharge diagnosis fields. If the codes E000-E030, E849, E967, E869.4, E870-E879, or E930-E949 were the first listed codes then the next valid external cause code was used.
- Rates were calculated by dividing the number of injuries by the number of Ohio residents. Population estimates were based on estimates from the National Center for Health Statistics. Rates were age adjusted to the 2000 U.S. standard population.

Trend Analysis for Deaths, Hospitalizations and Emergency Department Visits:

- Trend analysis for annual injury death, hospitalization, and ED visit rates was conducted in Microsoft Excel. Annual injury rates were plotted and a linear trend line was drawn to minimize the distance between the trend line and data point. The goodness of fit for the linear trend line was determined by the R-squared value. Linear trends were defined as a trend line with an R-squared value of 0.5 or higher. Non-linear trends were defined as a trend line with an R-squared value of less than 0.5. The slope and goodness of fit of the trend line were reported in the data tables. Non-linear trends were labeled with (NL) next to the slope.

Poverty Status and County Urbanality Classifications:

- County urbanality was derived from county of residence reported by Ohio Behavioral Risk Factor Surveillance System respondents. County urbanality classifications were based on a combination of proximity and connectedness to urban core economic development area and definitions of Appalachian counties established by the Appalachian Development Commission. See Appendix 11 for a map with county classifications.
- Poverty status was derived from household income and household composition reported by Ohio Behavioral Risk Factor Surveillance System respondents. Respondents were grouped into categories based on the 2010 Federal Poverty Guidelines. See Appendix 12 for household income and composition thresholds.

Cost of Injuries:

- Fatal Injury costs were calculated by multiplying the number of injury deaths in Ohio by the average cost associated the death for Ohio published on the CDC's

WISQARS website. See Appendix 8 for average cost estimates by mechanism and intent.

- Non-fatal injury costs for hospitalizations were calculated by multiplying the number of hospitalizations by the average cost associated with hospitalizations for the United States published on the CDC's WISQARS website. See Appendix 9 for average cost estimates by mechanism and intent.
- Non-fatal injury costs for ED visits were calculated by multiplying the number of ED visits by the average cost associated with ED visits for the United States published on the CDC's WISQARS website. See Appendix 10 for average cost estimates by mechanism and intent.
- Total injury costs were calculated by adding the estimated costs for injury deaths, hospitalizations and ED visits.

APPENDIX 3: LIMITATIONS OF INJURY SURVEILLANCE DATA

Death Certificate Data:

- The cause of death reported on the death certificate is based on the underlying cause of death determined by a physician or coroner. While physicians and coroners are well trained to investigate and determine causes of death, a standardized process for investigating and determining causes of death does not exist in Ohio. This lack of uniformity may lead to differences in how underlying causes of death are classified and pose limitations for comparing rates across local jurisdictions.

Hospital Discharge Data:

- In each year of the study period, approximately 30 percent of injuries treated in the as inpatients and emergency departments were not assigned an external cause code (E-code). This most likely resulted in an underestimate of total costs and incidence rates, because not all mechanism and intents for injuries could be identified and included in the analysis by mechanism.
- Of the non-fatally injured, only those who sought medical care were captured for this analysis.
- Discharges, not individuals, were the unit of measurement, thereby resulting in duplication when readmissions for the same initial event occurred. The inclusion of readmissions would lead to an overestimate of incidence rates.
- Race and ethnicity are largely incomplete in the hospital discharge data and were not included in the analysis.
- Ohio residents treated in out-of-state hospitals are not consistently included, thereby affecting rates, particularly of border counties.
- Severity of injury is assumed based on type of medical treatment received (i.e., inpatient treatment is for more severe injuries than ED visits).

Behavioral Risk Factor Data:

- Data from the Pregnancy Risk Assessment Monitoring System (PRAMS), Ohio Youth Risk Behavior Survey (YRBS) and Behavioral Risk Factor Surveillance System (BRFSS) are based on self-reported behaviors by respondents. The accuracy of self-reported data depends on the respondents' ability to recall and willing to report the information. Self-reported data can lead to overestimates or underestimates of the true prevalence in the population depending on the topic being asked.
- Results from Ohio YRBS represent a random sample of students enrolled in high schools in Ohio. The results do not represent high school age youth who have dropped out of school.
- Results from the Ohio BRFSS represent a random sample of non-institutionalized adults ages 18 or older in Ohio with a landline in their home. The BRFSS excludes institutionalized adults and adults living in cell phone only households.