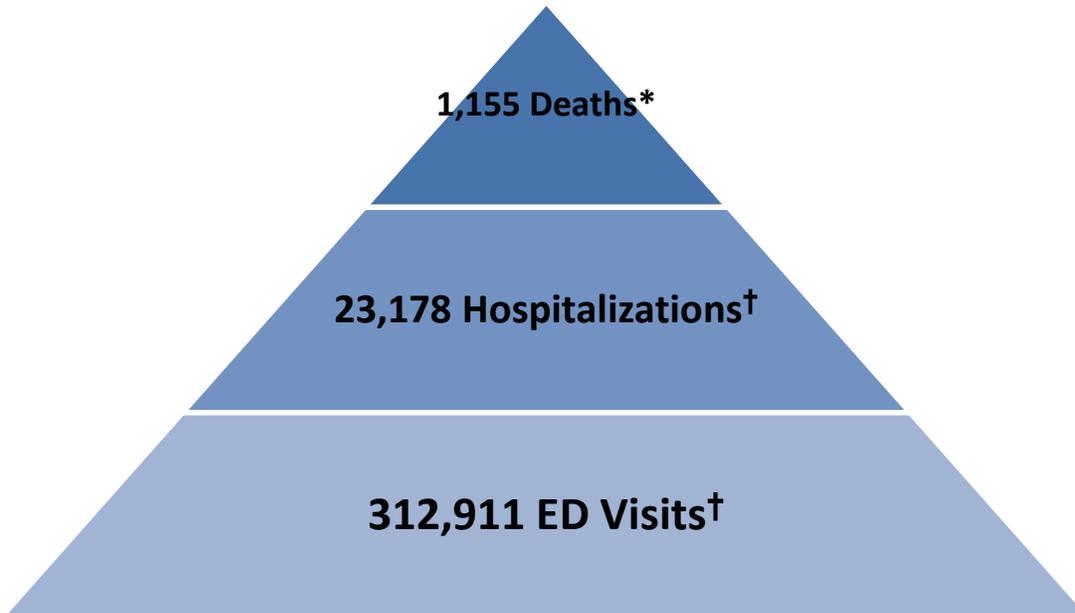


SECTION 3.5: FALLS



*SOURCE: OHIO DEPARTMENT OF HEALTH, VITAL STATISTICS

† SOURCE: OHIO HOSPITAL ASSOCIATION

CHAPTER HIGHLIGHTS:

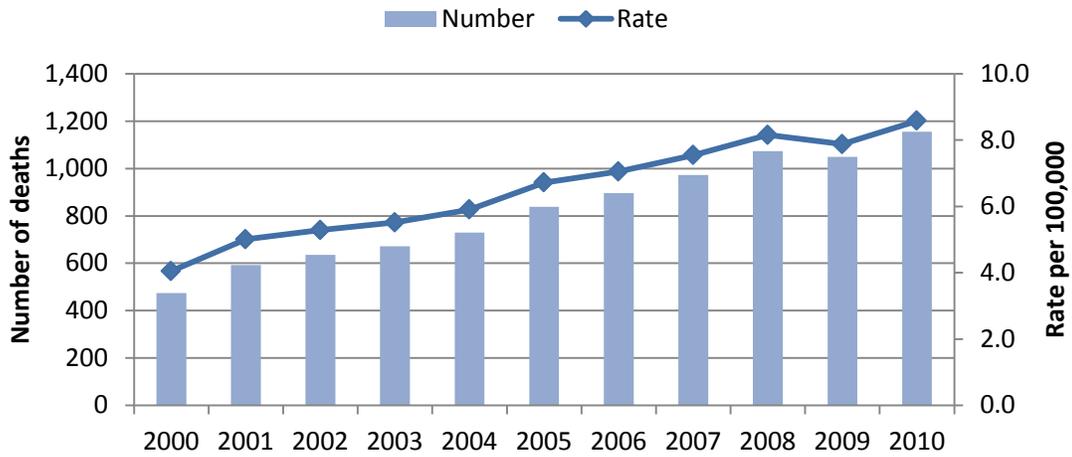
Patterns:

- Falls are one of the leading causes of fatal and non-fatal unintentional injuries in Ohio.
- Most fatal and non-fatal injuries caused occur among adults age 65 or older.
- Most non-fatal injuries result from slipping or tripping on an object on the same level, on a different level, and steps or stairs. A substantial percentage of non-fatal fall related injuries do not specify the cause of the fall.

Trends:

- Death rates have increased 115 percent since 2000 and ED visit rates increased 54 percent since 2002.
- Hospitalization rates have not changed since 2003.
- Most non-fatal injuries resulted from slipping or tripping on an object on the same level, on a different level, and steps or stairs throughout the study period.

Figure 7.1. Number and age adjusted rate of unintentional fall deaths by year, Ohio, 2000-2010



Source: Ohio Department of Health, Vital Statistics

DEATHS:

Nearly 1,200 deaths resulted from unintentional falls in 2010. The fall death rate was 8.6 per 100,000 (Figure 7.1). Males were more likely to die from a fall than females (10.5 versus 7.2 per 100,000). Fall fatality rates increased with age with the highest rates found among adults ages 85 or older (Figure 7.2). Whites were more likely to experience a fall related death (8.8 per 100,000) than blacks (6.3 per 100,000). See Table 7.1 for an unintentional falls death risk profile. Approximately one-half of fall related deaths had an unspecified cause. Other leading mechanisms included other fall from the same level (27 percent) and stairs or steps (10 percent) (Figure 7.3).

Table 7.1 Unintentional Falls Death Risk Profile		
	2010 At Risk Groups	Annual trend since 2000
Overall		+115%
Sex	Males	Males (largest increase)
Age	85 or older	85 or older (largest increase)
Race and ethnicity	Whites	Whites (largest increase)

TRENDS:

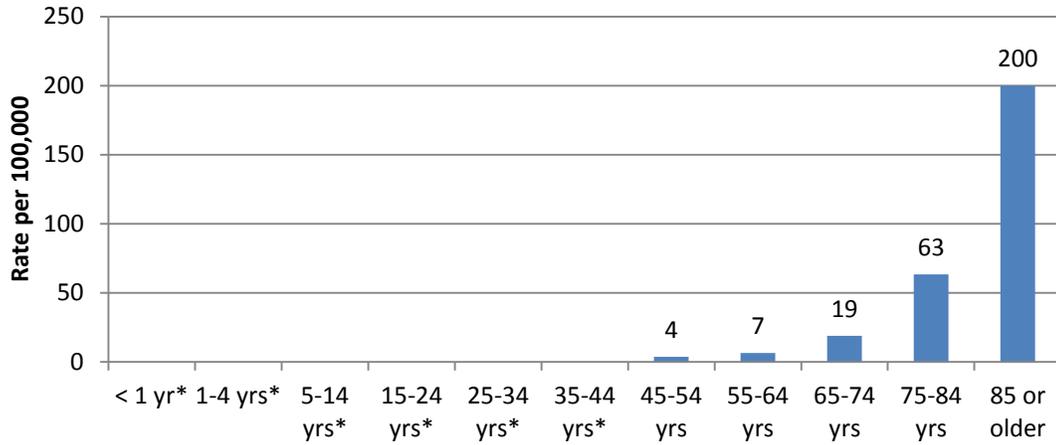
Fall related fatality rates increased 115 percent from 4.0 per 100,000 in 2000 to 8.6 per 100,000 in 2010. The average annual increase in rates was 0.4 per 100,000 per year. The increase in rates was greater among males (0.5 per 100,000 per year) than females (0.4 per 100,000 per year). The highest rates of fall fatalities were found among adults ages 85 or older throughout the period. The rates increased by an average of 11 per 100,000 per year. Rates were consistently higher among whites than blacks throughout the period. Rates among whites increased by an average of 0.5 per 100,000 per year while rates among blacks did not follow a linear trend. The largest increases in the number of fall fatalities were found among falls with an unspecified

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

cause (39 per year) and other falls on the same level (23 per year). See Tables 22a-c located at the end of the section for more detailed information on fall related fatalities.

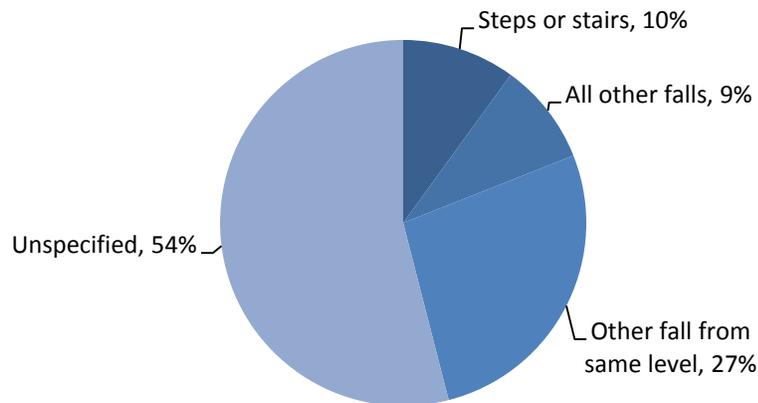
Figure 7.2. Death rates resulting from falls, by age, Ohio, 2010



Source: Ohio Department of Health, Vital Statistics

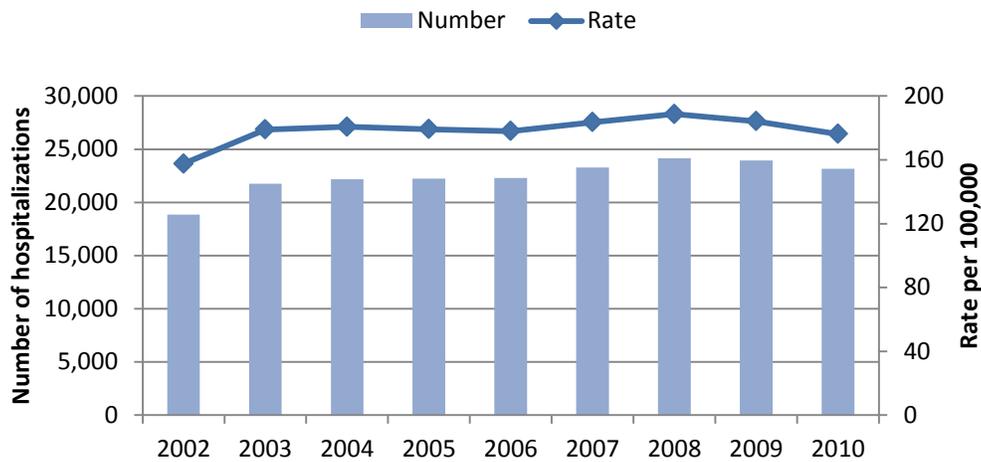
*Rates suppressed due to less than 20 deaths

Figure 7.3. Distribution of deaths resulting from unintentional falls by cause, Ohio, 2010



Source: Ohio Department of Health, Vital Statistics

Figure 7.4. Number and age adjusted rate for unintentional fall hospitalizations by year, Ohio, 2002-2010



Source: Ohio Hospital Association

HOSPITALIZATIONS:

In 2010, approximately 23,000 hospitalizations resulted from unintentional falls. The hospitalization rate was 176 per 100,000 (Figure 7.4). Overall hospitalization rates decreased with age from birth through age 14 and then increased with age among individuals 15 years or older. The highest rates were found among adults ages 75 or older (Figure 7.5). Hospitalization rates varied by sex with higher rates found among males from birth through age 54 while rates were higher among females among adults 55 or older. See Table 7.2 for an unintentional fall hospitalization risk profile.

The most common causes of fall related hospitalizations were tripping or slipping on the same level (37 percent), falling from an object at a different level (11 percent), and falling from or on stairs or steps (10 percent). Approximately 37 percent of falls did not have a specified cause (Figure 7.6).

TRENDS:

Hospitalizations resulting from unintentional falls largely remained the same in 2003-2010 (Figure 7.4). The pattern in hospitalizations did not follow a consistent trend for males or females. Hospitalization rates increased by an average of 44 per 100,000 per year among adults ages 85 or older while rates did not change or follow a consistent trend for all other age groups. The number of hospitalizations resulting from slipping, tripping, or stumbling on the same level increased by an average of 263 per year and falls resulting from other or unspecified mechanism increased by 159 per year. See Tables 24a-c located at the end of this section for more detailed information on the number and rate of unintentional fall related hospitalizations.

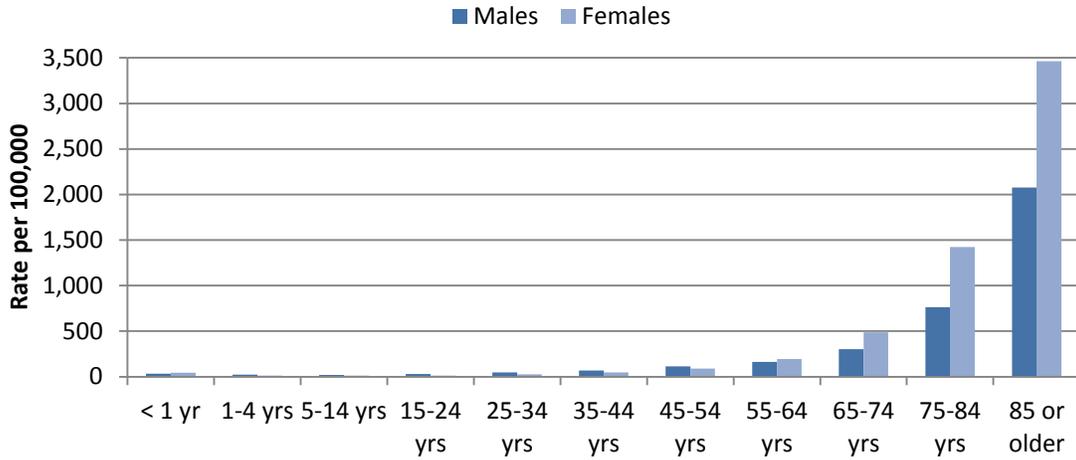
Table 7.2 Unintentional Falls Hospitalization Risk Profile

	2010 At Risk Groups	Annual trend since 2002
Overall		No change
Sex	Females	Similar for males and females
Age	75 or older	85 or older (largest increase)

Burden of Injury in Ohio, 2000-2010

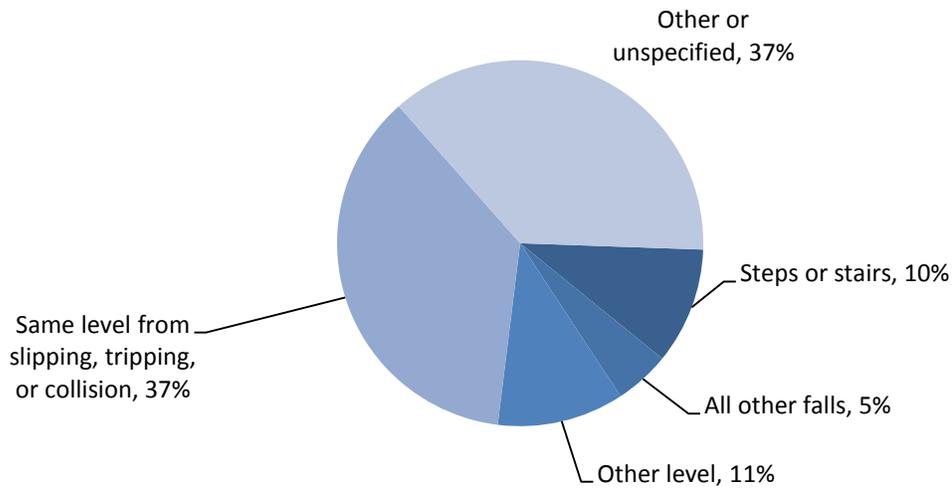
Ohio Violence and Injury Prevention Program, Ohio Department of Health

Figure 7.5. Hospitalization rates resulting from falls, by age and sex, Ohio, 2010



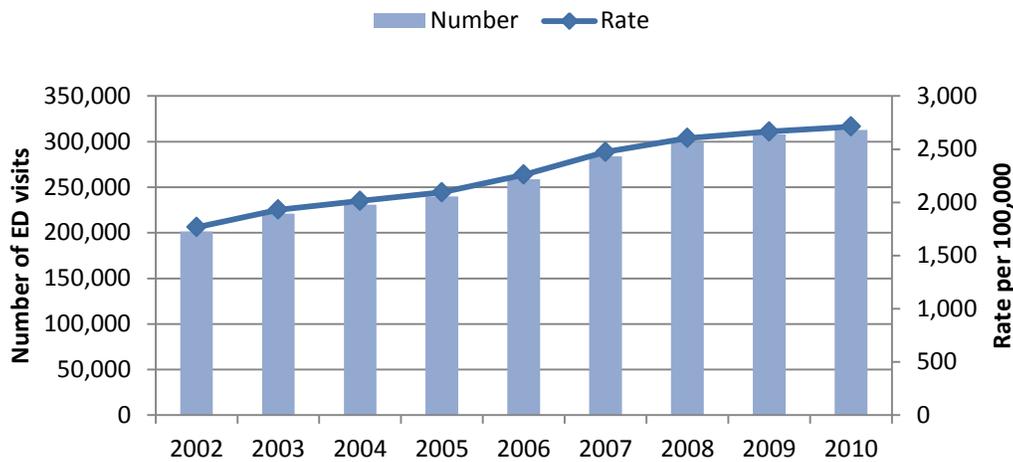
Source: Ohio Hospital Association

Figure 7.6. Distribution of hospitalizations resulting from unintentional falls by cause, Ohio, 2010



Source: Ohio Hospital Association

Figure 7.7. Number and age adjusted rate for unintentional fall ED visits by year, Ohio, 2002-2010



Source: Ohio Hospital Association

EMERGENCY DEPARTMENT VISITS:

In 2010, 312,911 ED visits were associated with unintentional falls. The ED visit rate was 2,711 per 100,000 (Figure 7.7). The rate of ED visits was higher among males from birth through age 14 and higher among females among individuals aged 15 or older. The highest rates of fall related ED visits were found among children ages 1-4 years and adults 75 or older (Figure 7.8). See Table 7.3 for an unintentional falls ED visit risk profile.

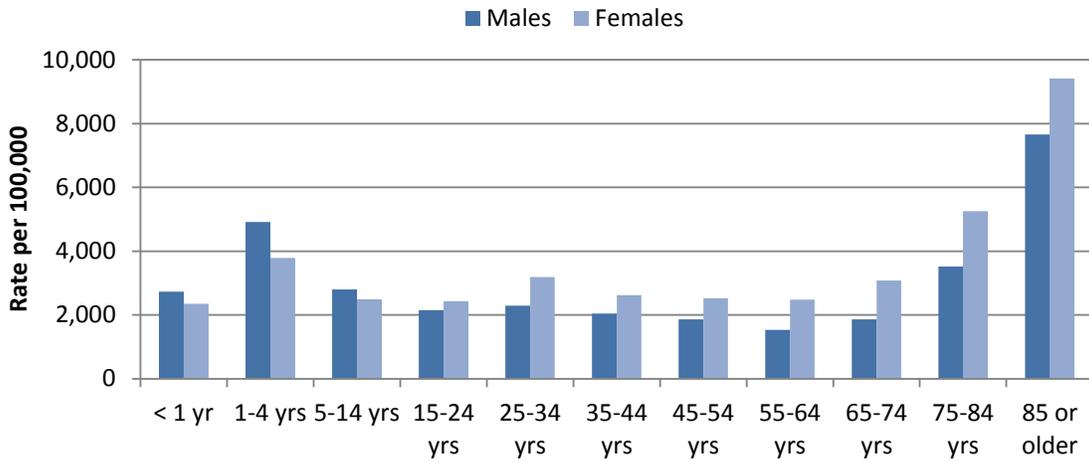
The most common causes of fall related ED visits were from slipping or tripping on the same level (36 percent), steps or stairs (14 percent), and from a different level (13 percent). In addition, 34 percent of falls had an unspecified cause (Figure 7.9).

	2010 At Risk Groups	Annual Trend since 2002
Overall		+54%
Sex	Females	Females (largest increase)
Age	75 or older	85 or older (largest increase)

TRENDS:

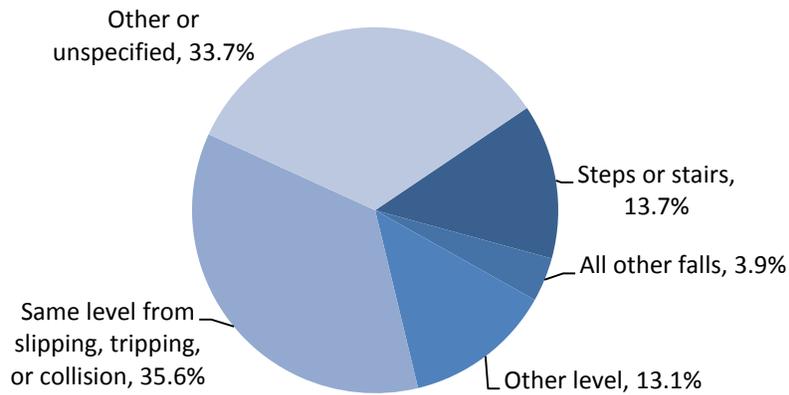
ED visits associated with unintentional falls increased 54 percent from 1,766 per 100,000 in 2002 to 2,771 per 100,000 in 2010 (Figure 7.7). The average annual increase was 126 per 100,000 per year. The increase in falls was higher among females (142 per 100,000 per year) compared to males (109 per 100,000). Rates increased among all age groups with the largest increases found among ages 85 or older (426 per 100,000 per year). The observed increase was largely driven by the substantial increase in falls caused by slipping or tripping on the same level (+5,933 per year), other or unspecified falls (4,795 per year) and stairs or steps (2,142 per year). See Tables 25a-c located at the end of this section for more detailed information on the number and rate of ED visits associated with unintentional falls.

Figure 7.8. ED visit rates resulting from falls, by age and sex, Ohio, 2010



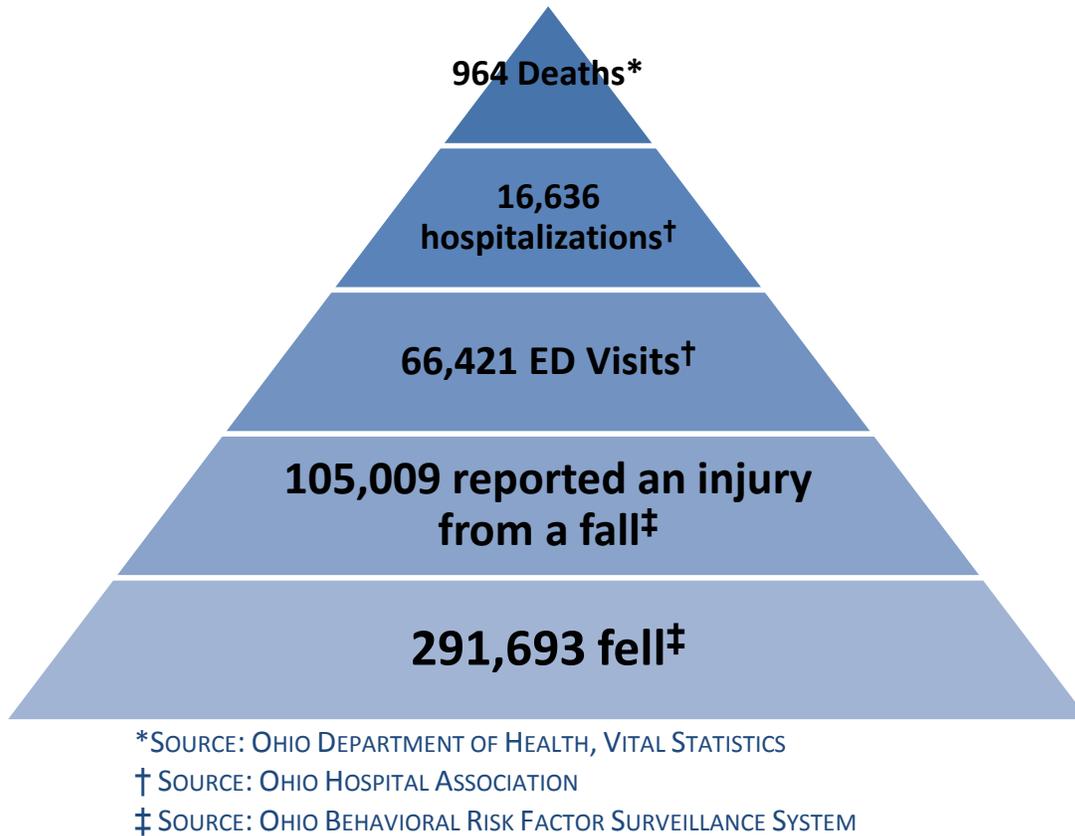
Source: Ohio Hospital Association

Figure 7.9. Distribution of ED visits resulting from unintentional falls by cause, Ohio, 2010



Source: Ohio Hospital Association

SECTION 3.6: FALLS AMONG ADULTS AGES 65 OR OLDER



CHAPTER HIGHLIGHTS:

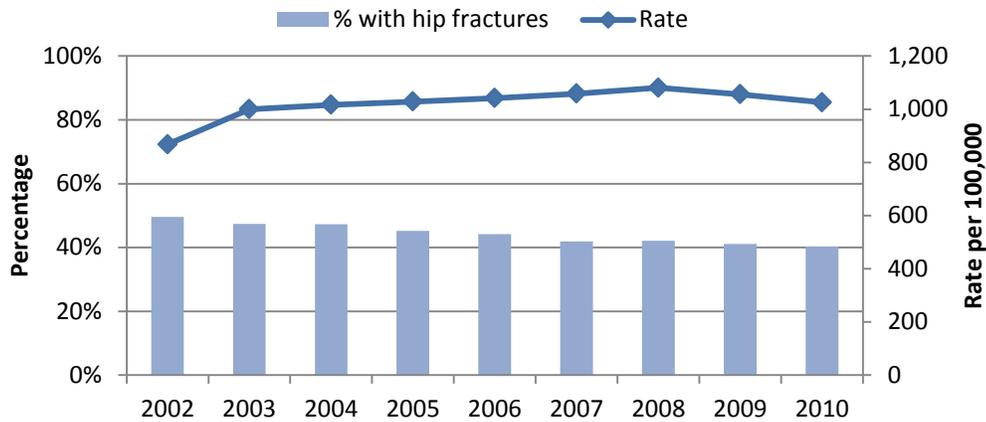
Patterns:

- Hip fractures are associated with 40 percent of fall related hospitalizations.
- 1 in 6 adults over the age of 45 reported a fall in the last 3 months.
 - Adults ages 45-54, retirees, and income levels near or below poverty were the most likely to report a fall.
- Among those who fell, 1 in 3 adults were injured by the fall.
 - Retirees and adults with incomes at or below poverty were the most likely to report a fall related injury.

Trends:

- The percentage of fall related hospitalizations with a hip fracture decreased since 2003.
- The percentage of adults who reported a fall in the last 3 months has not changed since 2006. However the percentage of adults who reported 4 or more falls has significantly increased.
- The percentage of adults who reported a fall-related injury has not changed since 2006.

Figure 7.10. Hospitalizations rates resulting from unintentional falls and percentage of falls with a hip fracture among adults 65 or older, by year, Ohio, 2002-2010



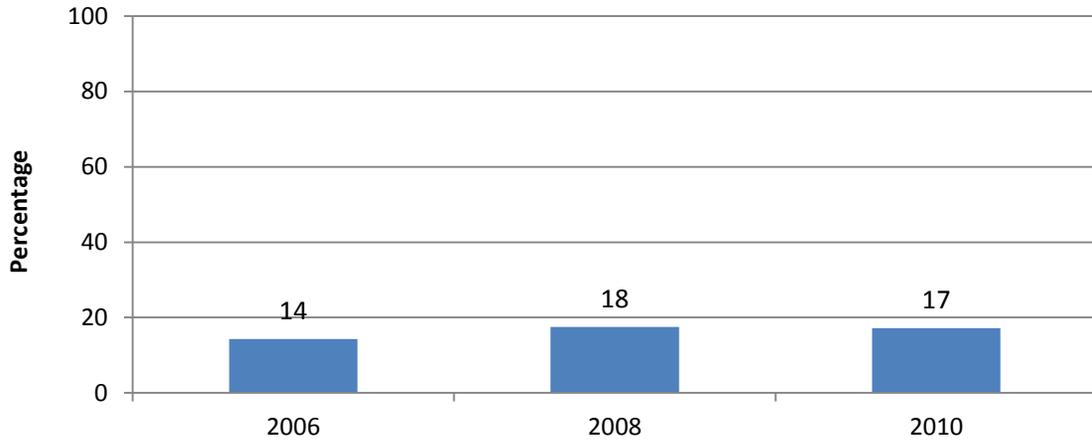
Source: Ohio Hospital Association

FALLS AND HIP FRACTURES AMONG OLDER ADULTS:

In 2010, 16,363 fall-related hospitalizations occurred among adults ages 65 or older. The age specific hospitalization rate was 1,026 per 100,000. Of the fall-related hospitalizations, 6,696 or 40 percent caused a hip fracture (Figure 7.10).

Fall related hospitalization rates remained the same since 2003 while the percentage of falls causing a hip fracture slightly decreased from 47 percent in 2003 to 40 percent in 2010 (Figure 7.10). The decrease in the percentage of fall related hip fractures is likely attributable to the decrease in external cause of injury coding rates. See Table 26a located at the end of this section for more details on hip fractures among adults ages 65 or older.

Figure 7.11. Percentage of adults aged 65 or older who reported a fall in the last 3 months, Ohio, 2006, 2008, and 2010



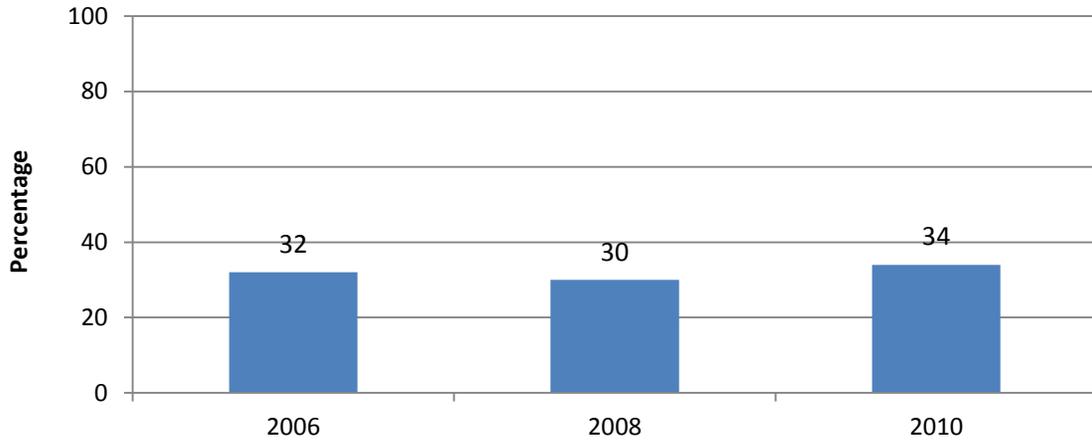
Source: Ohio Behavioral Risk Factor Surveillance System

FALL PATTERNS AND TRENDS:

Falls and health care resources associated with treating falls among older adults is a significant public health issue in Ohio. Nearly 300,000 or 17 percent of adults aged 65 or older reported a fall in the last 3 months in 2010 (Figure 7.11). Among those who reported a fall in the last 3 months, 61 percent fell one time, 31 percent fell 2 or 3 times, and 8 percent reported 4 or more falls.

Since 2006, the percentage of adults aged 65 or older who reported a fall in the last 3 months has not changed (Figure 7.11). See table 26a located at the end of this section for more detailed information on the prevalence of falls among adults ages 65 or older.

Figure 7.12. Percentage of adults aged 65 or older who reported a fall related injury among those who fell in the last 3 months, Ohio, 2006, 2008, and 2010



Source: Ohio Behavioral Risk Factor Surveillance System

FALL RELATED INJURY PATTERNS AND TRENDS:

Among adults who reported a fall in the last 3 months, approximately 100,000 or 34% reported an injury caused by a fall in 2010 (Figure 7.12). The percentage of adults who reported a fall related injury did not change significantly since 2006. See Table 26b located at the end of this section for more detailed information about and fall related injuries.

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

Table 23a. Number of deaths resulting from unintentional falls, by year, Ohio, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Overall	474	593	635	672	729	838	896	973	1,073	1,049	1,155
Sex											
Males	244	318	326	328	389	417	457	485	523	572	559
Females	230	275	309	344	340	421	439	488	550	477	596
Age											
< 1 yr	0	0	<5	<5	0	<5	<5	<5	<5	0	0
1-4 yrs	<5	0	0	5	<5	<5	<5	<5	<5	0	<5
5-14 yrs	<5	<5	<5	<5	<5	0	<5	<5	<5	<5	<5
15-24 yrs	5	6	3	9	6	6	6	10	6	7	<5
25-34 yrs	14	13	6	8	11	<5	8	11	5	6	15
35-44 yrs	18	25	21	20	26	30	23	24	20	18	10
45-54 yrs	26	49	50	32	33	52	49	50	69	73	64
55-64 yrs	41	48	37	43	83	59	72	63	87	88	96
65-74 yrs	65	80	82	89	87	104	112	137	112	121	161
75-84 yrs	146	184	202	213	235	278	286	279	334	318	343
85 or older	155	185	231	250	245	301	334	393	436	417	460
Race and ethnicity											
White‡	425	524	602	618	676	773	826	901	1,003	971	1,067
Black‡	41	61	28	43	42	51	62	52	57	63	75
Hispanic	<5	5	<5	8	<5	5	7	10	5	9	5
Other‡	<5	<5	<5	<5	<5	<5	<5	5	6	<5	7

‡Non-Hispanic

Source: Ohio Department of Health, Office of Vital Statistics

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

Table 23b. Death rates per 100,000 resulting from unintentional falls, by year, Ohio, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Trend (per yr)
Overall†	4.0	5.0	5.3	5.5	5.9	6.7	7.1	7.5	8.2	7.9	8.6	0.44
Sex†												
Males	5.4	6.9	7.2	7.2	8.1	8.7	9.4	9.9	10.5	11.1	10.5	0.53
Females	3.1	3.7	4.0	4.4	4.3	5.3	5.4	6.0	6.6	5.6	7.2	0.37
Age												
< 1 yr	*	*	*	*	*	*	*	*	*	*	*	*
1-4 yrs	*	*	*	*	*	*	*	*	*	*	*	*
5-14 yrs	*	*	*	*	*	*	*	*	*	*	*	*
15-24 yrs	*	*	*	*	*	*	*	*	*	*	*	*
25-34 yrs	*	*	*	*	*	*	*	*	*	*	*	*
35-44 yrs	*	1.4	1.2	1.2	1.5	1.8	1.4	1.5	1.3	1.2	*	*
45-54 yrs	1.7	3.0	3.0	1.9	1.9	3.0	2.8	2.9	3.9	4.2	3.7	0.18
55-64 yrs	4.0	4.7	3.4	3.8	7.1	4.9	5.7	4.8	6.5	6.4	6.6	0.27
65-74 yrs	8.3	10.3	10.6	11.6	11.3	13.5	14.5	17.4	13.7	14.5	18.9	0.86
75-84 yrs	26.9	33.5	36.4	38.1	42.0	49.7	51.3	50.4	61.0	58.8	63.5	3.56
85 or older	87.2	102.1	125.1	131.5	126.4	151.2	161.5	183.4	197.9	183.8	199.9	11.34
Race and ethnicity†												
White‡	4.0	4.9	5.5	5.6	6.1	6.9	7.2	7.8	8.5	8.1	8.8	0.47
Black‡	4.1	5.8	6.0	4.1	3.7	4.7	5.6	4.9	5.2	5.4	6.3	0.10 (NL)
Hispanic	*	*	*	*	*	*	*	*	*	*	*	*
Other‡	*	*	*	*	*	*	*	*	*	*	*	*

*Rates suppressed due to fewer than 20 deaths

‡Non-Hispanic

Source: Ohio Department of Health, Office of Vital Statistics

†Rates are age adjusted to 2000 U.S. standard population

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

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

Table 23c. Number of deaths resulting from unintentional falls, by mechanism and year, Ohio, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Same level	26	19	17	22	28	18	10	17	22	25	18	2%	*
Carried by other persons	<5	<5	<5	0	0	<5	0	<5	<5	<5	0	0%	*
Wheelchair	<5	<5	5	9	19	13	12	13	24	14	17	1%	*
Bed	15	9	15	25	13	21	13	25	17	22	20	2%	*
Chair	6	5	6	8	<5	9	9	<5	<5	8	9	1%	*
Other furniture	<5	0	<5	<5	<5	<5	8	<5	5	<5	<5	*	*
Playground	0	0	0	0	0	0	0	0	0	0	0	0%	*
Stairs or steps	67	102	86	92	99	103	110	100	102	102	119	10%	3.1
Ladder or scaffolding	10	13	17	10	18	16	11	15	12	14	17	1%	*
From/out of building	16	27	14	10	24	19	27	20	22	17	14	1%	*
Tree	5	<5	<5	5	6	<5	5	5	<5	<5	<5	*	*
Cliff	<5	<5	<5	8	<5	<5	0	<5	0	<5	<5	*	*
Jumping or diving in water (not drowning)	<5	<5	0	5	8	<5	<5	<5	0	0	<5	*	*
Other fall from different level	21	33	18	16	19	22	20	23	18	28	8	1%	*
Other fall from same level	84	84	92	108	157	200	182	208	249	263	307	27%	23.0
Unspecified	215	292	354	353	330	410	487	533	592	547	619	54%	38.8

*Rates suppressed due to fewer than 20 deaths

Source: Ohio Department of Health, Office of Vital Statistics

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

Table 24a. Number of hospitalization resulting from unintentional falls, by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Overall	18,868	21,761	22,168	22,234	22,310	23,271	24,149	23,945	23,178
Sex									
Males	6,524	7,506	7,757	7,415	7,362	7,809	8,240	8,108	7,847
Females	12,344	14,255	14,411	14,819	14,948	15,462	15,909	15,837	15,331
Age									
< 1 yr	47	52	56	75	95	75	80	71	55
1-4 yrs	168	145	167	200	266	249	264	254	107
5-14 yrs	403	399	383	445	532	581	554	440	241
15-24 yrs	436	528	483	458	475	488	446	465	364
25-34 yrs	569	638	621	563	523	535	608	517	540
35-44 yrs	1,118	1,128	1,152	971	916	941	910	871	860
45-54 yrs	1,454	1,700	1,716	1,691	1,503	1,746	1,862	1,855	1,778
55-64 yrs	1,539	1,964	2,100	2,125	2,020	2,272	2,454	2,519	2,597
65-74 yrs	2,609	3,028	3,085	3,073	2,987	3,190	3,355	3,330	3,421
75-84 yrs	5,567	6,555	6,570	6,580	6,631	6,576	6,775	6,455	6,242
85 or older	4,958	5,624	5,835	6,053	6,362	6,618	6,841	7,168	6,973
65 or older	13,134	15,207	15,490	15,706	15,980	16,384	16,971	16,953	16,636

Source: Ohio Hospital Association

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

Table 24b. Hospitalization rates per 100,000 resulting from unintentional falls, by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Trend (per yr)
Overall†	157.6	179.0	180.8	179.2	178.0	183.6	188.7	184.2	176.3	2 (NL)
Sex†										
Males	132.3	149.4	152.7	144.6	142.5	148.5	154.9	151.7	142.8	1 (NL)
Females	169.2	193.3	193.6	197.6	196.7	202.0	206.6	202.1	195.4	3 (NL)
Age										
< 1 yr	31.9	35.3	37.5	51.2	64.1	49.5	52.4	48.1	39.6	2 (NL)
1-4 yrs	27.9	24.2	28.0	33.7	45.3	42.4	44.7	42.9	18.4	1 (NL)
5-14 yrs	24.9	25.0	24.3	28.6	34.7	38.4	37.0	29.4	15.8	<1 (NL)
15-24 yrs	27.6	33.1	30.3	28.8	30.0	31.0	28.4	29.7	22.9	-0.5 (NL)
25-34 yrs	38.6	43.5	42.5	38.6	35.9	36.6	41.5	35.0	38.3	-0.5 (NL)
35-44 yrs	64.0	66.1	68.7	58.9	56.5	59.1	58.5	57.3	58.1	-1 (NL)
45-54 yrs	88.3	101.7	101.2	98.5	86.5	99.9	106.3	105.7	102.1	1 (NL)
55-64 yrs	142.1	174.5	179.7	175.1	160.7	174.9	184.1	181.7	178.8	3 (NL)
65-74 yrs	338.2	393.9	402.0	401.2	388.3	407.8	415.6	398.4	402.4	5 (NL)
75-84 yrs	1,006.4	1,179.1	1,182.1	1,187.2	1,206.7	1,211.3	1,266.4	1,190.7	1,153.0	14 (NL)
85 or older	2,624.7	2,870.0	2,910.9	2,924.5	2,961.5	2,974.1	2,991.9	3,151.9	3,026.1	44

†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 24c. Number of hospitalization resulting from unintentional falls, by type and year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Steps or stairs	2,048	2,171	2,257	2,283	2,305	2,358	2,329	2,424	2,381	10.3%	0.4
Ladders or scaffolding	673	785	793	697	723	743	754	666	759	3.3%	-1 (NL)
Building or other structure	371	399	346	330	304	351	310	270	256	1.1%	-15
Hole or other opening	70	68	57	48	59	47	48	57	57	0.2%	-2 (NL)
Other level	2,398	2,557	2,539	2,675	2,866	2,805	2,826	2,883	2,601	11.2%	42 (NL)
Same level from slipping, tripping, or stumbling	5,977	7,582	8,049	7,835	7,480	8,395	9,050	8,680	8,463	36.5%	263
Same level from collision, pushing, or shoving by other person	124	127	119	92	110	114	101	97	73	0.3%	-5
Other or unspecified	7,209	8,073	8,008	8,274	8,463	8,459	8,731	8,868	8,588	37.1%	159

Source: Ohio Hospital Association

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

Burden of Injury in Ohio, 2000-2010

Ohio Violence and Injury Prevention Program, Ohio Department of Health

Table 25a. Number of ED visits resulting from unintentional falls by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Overall	201,494	221,077	230,781	240,044	258,830	283,895	299,478	307,839	312,911
Sex									
Males	89,709	98,065	102,491	105,807	113,895	124,947	131,326	133,889	134,135
Females	111,785	123,012	128,290	134,237	144,935	158,948	168,152	173,950	178,776
Age									
< 1 yr	2,569	2,524	2,591	2,757	3,311	3,367	3,619	3,981	3,541
1-4 yrs	19,020	19,462	19,696	20,642	24,426	24,797	25,374	27,207	25,390
5-14 yrs	33,922	34,372	34,361	35,003	39,677	41,265	41,607	41,987	40,332
15-24 yrs	25,243	26,837	28,336	29,278	30,806	34,185	35,730	36,437	36,314
25-34 yrs	22,567	25,133	26,617	28,306	28,622	33,431	35,611	36,767	38,654
35-44 yrs	24,303	26,833	27,867	28,492	28,606	31,802	33,395	33,520	34,575
45-54 yrs	21,149	24,918	26,073	27,826	28,969	33,108	36,523	36,579	38,316
55-64 yrs	13,410	16,711	18,275	19,397	20,886	23,709	26,291	27,317	29,368
65-74 yrs	12,413	14,022	14,904	15,092	16,483	18,369	19,807	20,481	21,431
75-84 yrs	16,535	18,536	19,491	20,167	21,770	23,082	23,495	24,186	24,572
85 or older	10,363	11,729	12,570	13,084	15,274	16,780	18,026	19,377	20,418

Source: Ohio Hospital Association

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Table 25b. ED visit rates per 100,000 resulting from unintentional falls by year, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Trend (per yr)
Overall†	1,766	1,931	2,014	2,095	2,260	2,474	2,604	2,666	2,711	125.8
Sex†										
Males	1,640	1,793	1,874	1,935	2,087	2,285	2,395	2,440	2,444	109.1
Females	1,858	2,035	2,119	2,219	2,392	2,623	2,774	2,855	2,942	141.8
Age										
< 1 yr	1,746	1,712	1,736	1,882	2,235	2,221	2,372	2,695	2,547	129.4
1-4 yrs	3,161	3,254	3,307	3,473	4,161	4,218	4,292	4,597	4,364	192.6
5-14 yrs	2,100	2,150	2,176	2,253	2,585	2,724	2,780	2,810	2,649	97.6
15-24 yrs	1,595	1,683	1,776	1,838	1,947	2,171	2,273	2,328	2,289	100.6
25-34 yrs	1,530	1,714	1,822	1,942	1,965	2,288	2,433	2,487	2,741	145.6
35-44 yrs	1,392	1,572	1,663	1,729	1,763	1,996	2,147	2,205	2,336	115.2
45-54 yrs	1,285	1,490	1,537	1,620	1,668	1,894	2,086	2,085	2,199	113.6
55-64 yrs	1,238	1,485	1,564	1,598	1,662	1,825	1,973	1,971	2,022	94.0
65-74 yrs	1,609	1,824	1,942	1,970	2,143	2,348	2,454	2,451	2,521	115.5
75-84 yrs	2,989	3,334	3,507	3,639	3,962	4,252	4,392	4,461	4,539	119.4
85 or older	5,486	5,985	6,271	6,322	7,110	7,541	7,884	8,520	8,861	425.8

†Rates are age adjusted to 2000 U.S. standard population

Source: Ohio Hospital Association

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Table 25c. Number and percentage of ED visit rates resulting from unintentional falls by year and cause, Ohio, 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	% in 2010	Trend (per yr)
Steps or stairs	27,520	28,515	29,863	32,452	36,919	38,292	40,386	41,963	42,847	13.7%	2,142
Ladders or scaffolding	4,925	5,142	5,417	5,586	6,423	6,307	6,317	6,478	6,347	2.0%	204
Building or other structure	1,183	1,126	1,201	1,141	1,280	1,378	1,425	1,329	1,158	0.4%	20 (NL)
Hole or other opening	1,650	1,556	1,476	1,525	1,552	1,655	1,561	1,608	1,676	0.5%	9 (NL)
Other level	29,206	30,266	31,549	33,115	36,849	38,448	39,866	41,594	40,920	13.1%	1,713
Same level from slipping, tripping, or stumbling	63,412	77,448	80,965	81,981	81,104	97,727	108,420	108,688	111,305	35.6%	5,933
Same level from collision, pushing, or shoving by other person	3,778	4,095	3,511	3,786	4,196	4,082	4,037	4,109	3,141	1.0%	-19 (NL)
Other or unspecified	69,830	72,936	76,802	80,459	90,541	96,026	97,470	102,250	105,545	33.7%	4,795

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

Source: Ohio Hospital Association

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Table 26a. Prevalence of adults aged 65 or older who fell in last 3 months, Ohio, 2006, 2008, and 2010

	2006		2008		2010	
	Percent	95% CI	Percent	95% CI	Percent	95% CI
None	85.7	(82.7-88.7)	83.0	(81.6-84.5)	82.7	(81.1-84.4)
1 time	9.1	(6.7-11.4)	11.3	(10.1-12.5)	10.9	(9.6-12.3)
2 to 3 times	4.7	(2.7-6.7)	4.5	(3.6-5.3)	5.1	(4.1-6.2)
4 or more times	*	-	1.3	(0.8-1.7)	1.2	(0.8-1.7)

*Suppressed due to small cell sizes

Source: Ohio Behavioral Risk Factor Surveillance System

Table 26c. Prevalence of adults aged 65 or older who injured by a fall in last 3 months, Ohio, 2006, 2008, and 2010

	2006		2008		2010	
	Percent	95% CI	Percent	95% CI	Percent	95% CI
Injured	31.6	(20.8-42.4)	30.2	(25.9-34.5)	33.9	(29.0-38.9)

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

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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.
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- 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 Urbanity Classifications:

- County urbanity was derived from county of residence reported by Ohio Behavioral Risk Factor Surveillance System respondents. County urbanity 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
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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.
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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.
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