

Injuries are an important, and preventable, public health problem. Reducing injuries and the resulting disabilities and deaths is one of the Healthy Maine 2010 goals.<sup>1</sup> Effective injury prevention and control efforts range from preventing the injury from happening in the first place, to early diagnosis and management, to improving the final outcome by preventing further complications such as more severe injury, disability, or death.<sup>2</sup> The following describes Maine's injury surveillance strategies focusing, where possible, on those injuries that are associated with the home.

An injury can be described by its nature (e.g., fracture, concussion) and its cause. The cause of an injury is classified in terms of both intent and mechanism. Intent refers to whether the injury is deliberately inflicted and is categorized as unintentional, intentional self-injury/suicide, assault/homicide, legal intervention, operations of war, other (adverse effects), or undetermined. Mechanism refers to the external cause of injury, such as fall, firearm, motor vehicle traffic incident, or poisoning. While there may be some debate as to whether suicide prevention falls within the realm of healthy homes, safe gun storage certainly could be included in that subject.

Unintentional injuries were the leading cause of death among 1-44 year old Maine residents in 2003-2007, and the fifth leading cause of death among all ages combined.

Injuries from all intents combined continued to be a significant cause of mortality and morbidity in 2008, when every day, on average, there were two deaths due to injury and 22 hospital discharges with an injury principal diagnosis. In 2008, 6.6% of deaths of Maine residents were due to injury, and 5.3% of hospital discharges of Maine residents had an injury principal diagnosis. These percentages varied considerably by age and sex, with the greatest impact seen in 15-24 year old males, among whom 73.8% of deaths were due to injury and 19.9% of hospital discharges had an injury principal diagnosis.

This narrative provides 2008 Maine resident data on home related injury indicators. Most of the indicators describe deaths or hospital discharges due to a particular intent and/or mechanism. Data are presented for the following indicators:

- All injury deaths and hospital discharges
- Injury deaths and hospital discharges, by intent
  - Unintentional
- Injury deaths and hospital discharges, by mechanism
  - Unintentional drowning and nonfatal near-drowning
  - Unintentional fall
  - Unintentional fire
  - Firearm
  - Poisoning
- Injury deaths and/or hospital discharges, by type of injury

- Traumatic brain injury
- Hip fracture, among residents aged 65 years and older

Data presented for each indicator include counts (overall and by age and sex), as well as crude, age-adjusted, age-specific, and sex-specific rates. It is important to note that crude rates and age-adjusted rates serve different purposes. Crude rates (or the actual number of events) are used to measure or compare the absolute magnitude of injury indicators. Age-adjusted rates are used only for comparison purposes to control for age composition differences (e.g., to compare Maine with another state that has a much younger population or to look at Maine data for two years and control for the aging of the population over time). The calculated numeric value of an age-adjusted rate depends on the standard population used and therefore has no intrinsic meaning.<sup>4</sup> The age-adjusted rates presented in this report can only be compared with other age-adjusted rates that are adjusted to the same 2000 U.S. standard population. For the purpose of this report, where the focus is on the absolute burden of injury, comparisons between males and females or between various age groups are based on 95% confidence intervals placed around the crude rates.

All data presented in this report are from 2008, unless otherwise noted. The data primarily come from two surveillance data sources: (1) the 2008 Maine death certificate statistical dataset, maintained by the Office of Data, Research and Vital Statistics at the Maine Center for Disease Control and Prevention, and (2) the 2008 inpatient (hospital discharge) dataset, maintained by the Maine Health Data Organization. In keeping with the indicator definitions provided by the federal Centers for Disease Control and Prevention, the hospital discharge analysis was limited to discharges from general hospitals that had an injury (including poisoning) principal diagnosis. Supplemental data for select indicators were obtained from the 2009 Maine Integrated Youth Health Survey and the 2008 Behavioral Risk Factor Surveillance System survey.

## All Injury Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age- Adjusted Rate	#	Crude Rate	Age- Adjusted Rate
Overall	831	63.1	58.2	8,155	619.5	554.3
By sex:						
Male	550	85.6	83.6	3,618	563.2	553.8
Female	281	41.7	34.8	4,537	673.1	533.5
By age:						
<1 year	7	*	---	38	265.5	---
1-4 years	5	*	---	101	176.7	---
5-14 years	7	*	---	179	119.3	---
15-24 years	75	45.2	---	721	434.2	---
25-34 years	91	60.9	---	596	399.0	---
35-44 years	123	67.4	---	731	400.7	---
45-54 years	156	71.0	---	952	433.6	---
55-64 years	88	49.3	---	878	492.3	---
65-74 years	60	58.1	---	973	942.3	---
75-84 years	101	150.3	---	1,509	2,245.2	---
85+ years	118	410.9	---	1,477	5,142.9	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

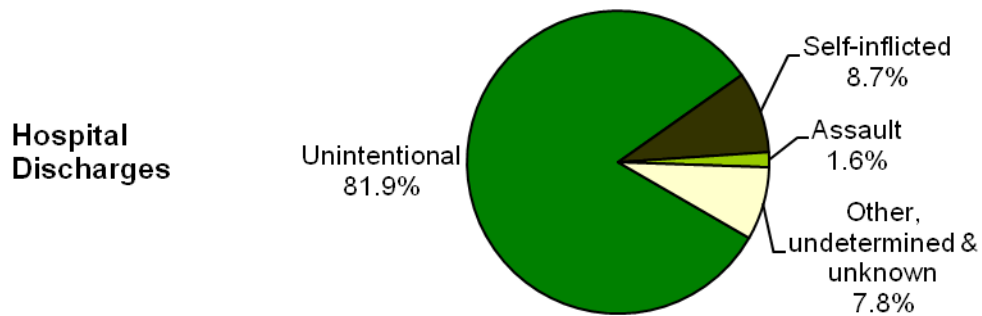
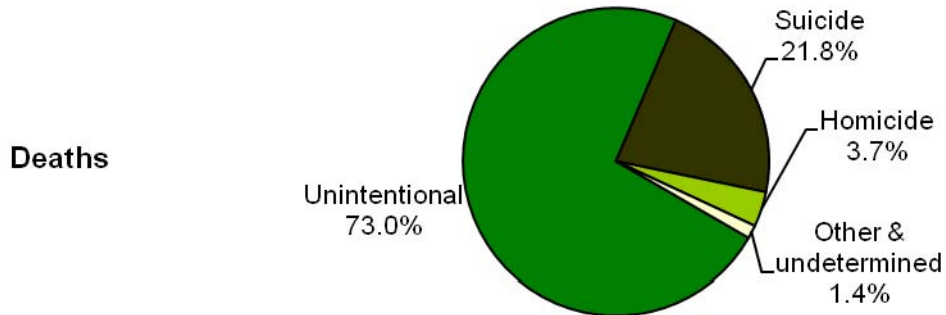
\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- There were 831 injury deaths and 8,155 injury hospital discharges among Maine residents in 2008. Every day, on average, there were two deaths and 22 hospital discharges that were injury related.
- Overall, 6.6% of deaths of Maine residents were due to injury and 5.3% of hospital discharges had an injury principal diagnosis. These percentages varied by sex and age; the greatest impact was seen in 15-24 year old males, among whom 73.8% of deaths were due to injury and 19.9% of hospital discharges had an injury principal diagnosis. (See Appendix A for complete sex- and age-specific percentages.)
- The leading causes of injury deaths were unintentional motor vehicle traffic incidents (18.8%), unintentional poisoning (18.2%), and suicide firearm (12.4%). The most common causes of injury hospital discharges were unintentional falls (52.4%), unintentional motor vehicle traffic incidents (9.9%), and self-inflicted poisoning (8.2%).
- Males were at significantly higher risk than females of injury death, while females were at significantly higher risk than males of injury hospital discharges.
- 85+ year olds were at significantly higher risk than other age groups of both injury deaths and hospital discharges.
- 65+ year olds represented only 15.1% of the Maine population in 2008, but they accounted for a third (33.6%) of injury deaths and almost half (48.5%) of injury hospital discharges. Three-fourths (78.5%) of the injury hospital discharges among 65+ year old women were due to unintentional falls.

Most injury deaths and hospital discharges among Maine residents in 2008 were due to unintentional causes. Seven out of every 10 injury deaths (73.0%) and eight out of every 10 injury hospital discharges (81.9%) were unintentional. The second most common intent was suicide or self-inflicted injury, which represented 21.8% of injury deaths and 8.7% of injury hospital discharges. Homicide and assault injuries were less common, accounting for 3.7% of injury deaths and 1.6% of injury hospital discharges.

## Injury Intent, Deaths and Hospital Discharges, Maine Residents, 2008



The following sections present information for these indicators:

- Unintentional
- Suicide and suicide attempt
- Homicide and assault

## Unintentional Injury Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age- Adjusted Rate	#	Crude Rate	Age- Adjusted Rate
Overall	607	46.1	42.0	6,676	507.1	445.2
By sex:						
Male	373	58.1	56.9	2,973	462.8	452.6
Female	234	34.7	28.3	3,703	549.3	418.3
By age:						
<1 year	4	*	---	26	181.7	---
1-4 years	3	*	---	94	164.5	---
5-14 years	6	*	---	157	104.6	---
15-24 years	53	31.9	---	484	291.5	---
25-34 years	61	40.8	---	402	269.1	---
35-44 years	81	44.4	---	463	253.8	---
45-54 years	98	44.6	---	719	327.5	---
55-64 years	60	33.6	---	753	422.2	---
65-74 years	42	40.7	---	864	836.7	---
75-84 years	91	135.4	---	1,370	2038.4	---
85+ years	108	376.1	---	1,344	4679.8	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- Unintentional injury refers to an incident where there was no intent to injure or harm oneself or another person.
- There were 607 unintentional injury deaths and 6,676 unintentional injury hospital discharges among Maine residents in 2008. Every day, on average, there were two deaths and 18 hospital discharges due to unintentional injury.
- Males were at significantly higher risk than females for unintentional injury deaths. A different pattern was seen among unintentional injury hospital discharges, where females were at significantly higher risk than males.
- 85+ year olds were at significantly higher risk than other age groups for both unintentional injury deaths and hospital discharges.
- 65+ year olds represented only 15.1% of the Maine population in 2008, but they accounted for 39.7% of unintentional injury deaths and 53.6% of unintentional injury hospital discharges.
- Falls, motor vehicle traffic incidents, and poisoning were the most common mechanisms involved in unintentional injury deaths and hospital discharges, though the actual rank order differed between the two. Specifically, the three leading mechanisms involved in unintentional injury deaths were motor vehicle traffic incidents (25.7%), poisoning (24.9%), and falls (15.2%). The three leading mechanisms involved in unintentional injury hospital discharges were falls (64.1%), motor vehicle traffic incidents (12.1%), and poisoning (5.9%).
- Maine has met the Healthy Maine 2010 target to reduce the rate of nonfatal unintentional injuries (as measured by nonfatal hospital discharges) to no more than 615.0 per 100,000 (age-adjusted), but has not yet met the target of reducing deaths caused by unintentional injury to no more than 27.0 per 100,000 (age-adjusted).<sup>1</sup>

The following sections present information for these indicators:

- Unintentional drowning and near drowning
- Unintentional fall
- Unintentional fire
- Firearm (all intents)
- Poisoning (all intents)

### Unintentional Drowning and Near-Drowning Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age- Adjusted Rate	#	Crude Rate	Age- Adjusted Rate
Overall	26	2.0	1.9	10	*	*
By sex:						
Male	25	3.9	3.7	7	*	*
Female	1	*	*	3	*	*
By age:						
<1 year	0	*	---	0	*	---
1-4 years	0	*	---	4	*	---
5-14 years	3	*	---	2	*	---
15-24 years	1	*	---	1	*	---
25-34 years	4	*	---	0	*	---
35-44 years	5	*	---	2	*	---
45-54 years	5	*	---	1	*	---
55-64 years	6	*	---	0	*	---
65-74 years	0	*	---	0	*	---
75-84 years	1	*	---	0	*	---
85+ years	1	*	---	0	*	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- There were 26 deaths and 10 hospital discharges due to unintentional drowning or near drowning among Maine residents in 2008. Every month, on average, there were two unintentional drowning deaths and one unintentional drowning or near-drowning hospital discharge.
- Almost all (96.2%) of the unintentional drowning deaths were males, as were 70.0% of unintentional drowning / near drowning hospital discharges.
- There is no drowning objective in Healthy Maine 2010.<sup>1</sup> Maine has not yet met the national Healthy People 2010 objective of no more than 0.9 drowning fatalities per 100,000 (age-adjusted).<sup>8</sup>

### Unintentional Fall-Related Injury Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age-Adjusted Rate	#	Crude Rate	Age-Adjusted Rate
Overall	92	7.0	5.6	4,276	324.8	269.6
By sex:						
Male	53	8.3	8.1	1,533	238.6	230.1
Female	39	5.8	3.9	2,743	406.9	289.6
By age:						
<1 year	0	*	---	11	*	---
1-4 years	0	*	---	27	47.2	---
5-14 years	0	*	---	59	39.3	---
15-24 years	2	*	---	106	63.8	---
25-34 years	0	*	---	101	67.6	---
35-44 years	3	*	---	183	100.3	---
45-54 years	4	*	---	331	150.7	---
55-64 years	7	*	---	451	252.9	---
65-74 years	11	*	---	628	608.2	---
75-84 years	30	44.6	---	1,166	1,734.8	---
85+ years	35	121.9	---	1,213	4,223.7	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- There were 92 deaths due to unintentional falls and 4,276 unintentional fall related hospital discharges among Maine residents in 2008. Every week, on average, there were two deaths and 82 hospital discharges that were due to unintentional falls.
- Females were at significantly higher risk than males of unintentional fall related hospital discharges; there were no significant differences by sex for deaths.
- 85+ year olds were at significantly higher risk than other age groups of both unintentional fall related deaths and hospital discharges.
- 65+ year olds represented only 15.1% of the Maine population in 2008, but they accounted for 82.6% of unintentional fall related deaths and 70.3% of unintentional fall related hospital discharges.
- Three-fourths (78.5%) of the injury hospital discharges among 65+ year old women were due to unintentional falls.
- Almost seven of every 10 deaths due to unintentional falls (65.2%) and one of every 10 unintentional fall related hospital discharges (11.9%) involved a traumatic brain injury.
- One of every three unintentional fall related hospital discharges (32.5%) involved a hip fracture; this percentage increased to 42.0% among 65+ year olds.
- The 2008 Behavioral Risk Factor Surveillance System survey found that one in five (20.3%) Maine adults aged 45 and older had fallen at least once in the past 3 months. Nearly a third (29.9%) of those who fell said at least one fall had caused an injury that made them limit their regular activities for at least 1 day or see a doctor.
- Maine has met the Healthy Maine 2010 target of no more than 366 nonfatal unintentional fall related hospital discharges per 100,000 (age-adjusted), but has not yet met the target of no more than 4.0 deaths due to falls per 100,000 residents (age-adjusted).<sup>1</sup>

## Unintentional Fire-Related Injury Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age- Adjusted Rate	#	Crude Rate	Age- Adjusted Rate
Overall	10	*	*	46	3.5	3.6
By sex:						
Male	7	*	*	41	6.4	6.4
Female	3	*	*	5	*	*
By age:						
<1 year	0	*	---	0	*	---
1-4 years	0	*	---	1	*	---
5-14 years	0	*	---	1	*	---
15-24 years	2	*	---	12	*	---
25-34 years	0	*	---	7	*	---
35-44 years	1	*	---	8	*	---
45-54 years	1	*	---	9	*	---
55-64 years	2	*	---	2	*	---
65-74 years	1	*	---	4	*	---
75-84 years	1	*	---	1	*	---
85+ years	2	*	---	1	*	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- Unintentional fire-related (exposure to fire, smoke, and flames) injuries accounted for 10 deaths and 46 hospital discharges among Maine residents in 2008. On average, there was one unintentional fire related death and four unintentional fire related hospital discharges every month.
- Seven of every 10 unintentional fire-related deaths (70.0%) and nine of every 10 hospital discharges (89.1%) were among males.

### Firearm-Related Injury Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age-Adjusted Rate	#	Crude Rate	Age-Adjusted Rate
Overall	121	9.2	8.4	23	1.7	1.9
By sex:						
Male	107	16.7	15.6	20	3.1	3.3
Female	14	*	*	3	*	*
By age:						
<1 year	0	*	---	0	*	---
1-4 years	0	*	---	0	*	---
5-14 years	0	*	---	2	*	---
15-24 years	12	*	---	6	*	---
25-34 years	14	*	---	6	*	---
35-44 years	18	*	---	4	*	---
45-54 years	33	15.0	---	2	*	---
55-64 years	15	*	---	1	*	---
65-74 years	12	*	---	1	*	---
75-84 years	9	*	---	0	*	---
85+ years	8	*	---	1	*	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- There were 121 firearm related deaths and 23 hospital discharges among Maine residents in 2008. Every month, on average, there were 10 firearm related deaths and two firearm related hospital discharges.
- Nearly nine out of every 10 firearm related deaths (88.4%) and hospital discharges (87.0%) occurred among males.
- There were no firearm related deaths and only two firearm related hospital discharges among Mainers under 15 years of age.
- Most (85.1%) of the firearm related deaths were suicides; 9.1% were homicides, 2.5% were unintentional, 2.5% were the result of legal intervention, and 0.8% were of undetermined intent. A different intent pattern was seen among firearm related hospital discharges, where less than half (43.5%) were self-inflicted, 26.1% were unintentional, 21.7% were assaults, 4.4% were the result of legal intervention, and 4.4% were of undetermined intent.
- There is no firearm injury objective in Healthy Maine 2010.<sup>1</sup> Maine has not yet met the national Healthy People 2010 objective of no more than 4.1 firearm related deaths per 100,000 (age-adjusted).<sup>8</sup>

## Poisoning Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age-Adjusted Rate	#	Crude Rate	Age-Adjusted Rate
Overall	189	14.4	14.1	1,153	87.6	88.2
By sex:						
Male	117	18.2	18.3	509	79.2	79.1
Female	72	10.7	10.0	644	95.5	97.3
By age:						
<1 year	1	*	---	3	*	---
1-4 years	0	*	---	32	56.0	---
5-14 years	0	*	---	25	16.7	---
15-24 years	11	*	---	202	121.7	---
25-34 years	37	24.8	---	174	116.5	---
35-44 years	46	25.2	---	248	135.9	---
45-54 years	68	31.0	---	229	104.3	---
55-64 years	14	*	---	118	66.2	---
65-74 years	9	*	---	72	69.7	---
75-84 years	3	*	---	36	53.6	---
85+ years	0	*	---	14	*	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- There were 189 poisoning deaths and 1,153 poisoning hospital discharges among Maine residents in 2008. Every week, on average, there were four deaths and 22 hospital discharges due to poisoning.
- Males were at significantly higher risk than females for poisoning deaths. Conversely, females were at significantly higher risk than males for poisoning hospital discharges.
- Poisoning deaths and hospital discharges were less common at the younger and older ends of the age spectrum. Nine of every 10 poisoning deaths (93.1%) and eight of every 10 poisoning hospital discharges (84.2%) occurred among 15-64 year olds.
- Eight of every 10 poisoning deaths (79.9%) were unintentional; another 16.4% were suicides. A different pattern was seen among poisoning hospital discharges, where 57.9% were self-inflicted and 34.1% were unintentional.
- Healthy Maine 2010 does not include any poisoning objectives.<sup>1</sup> Maine has not yet met the national Healthy People 2010 objective of reducing deaths caused by poisoning to no more than 1.5 per 100,000 (age-adjusted).<sup>8</sup> The 2008 Maine rate was 9 times greater than this target.

The following sections present information for these indicators:

- Hip fracture, in residents aged 65 years and older
- Traumatic brain injury

## Hip Fracture Injury Hospitalizations in Persons Aged 65 and Older, 2008

	#	Crude Rate
Overall	1,432	718.9
By sex:		
Male	371	432.9
Female	1,061	934.9
By age:		
65-74 years	224	216.9
75-84 years	567	843.6
85+ years	641	2,232.0

---

Rates are per 100,000.

## Data Highlights: 2008

- Hip fractures can cause serious health problems and can result in premature death or reduced quality of life.<sup>11</sup>
- There were 1,432 hip fracture hospital discharges among Maine residents aged 65 and older in 2008. Every day, on average, there were four hip fracture hospital discharges in this age group.
- Females were at significantly higher risk than males of having a hip fracture hospital discharge. The hospital discharge rate for females was twice that of males. Three-fourths (74.1%) of the hip fracture discharges among 65+ year old Mainers were for women.
- The risk of hip fracture hospital discharge increased significantly with increasing age among older Mainers. The risk among 85+ year olds was 10 times greater than the risk among 65-74 year olds.
- Nearly nine of every 10 hip fracture hospital discharges (88.3%) among 65+ year olds were known to be due to unintentional falls. (The cause of another 8.3% of hip fracture hospital discharges was not reported, so it is likely that the true percentage that are due to unintentional falls was more than 88.3%.)
- There are no hip fracture objectives in Healthy Maine 2010.<sup>1</sup> Maine has met the national Healthy People 2010 goal of reducing the hip fracture rate among 65+ year old males to no more than 474 per 100,000, but has not yet met the objective of reducing the rate among 65+ year old females to no more than 416 per 100,000.<sup>8</sup>

## Traumatic Brain Injury (TBI) Deaths and Hospitalizations, 2008

	Deaths			Hospitalizations		
	#	Crude Rate	Age- Adjusted Rate	#	Crude Rate	Age- Adjusted Rate
Overall	263	20.0	18.1	998	75.8	70.7
By sex:						
Male	195	30.4	29.0	624	97.1	96.2
Female	68	10.1	8.6	374	55.5	47.2
By age:						
<1 year	2	*	---	22	153.7	---
1-4 years	2	*	---	19	*	---
5-14 years	2	*	---	36	24.0	---
15-24 years	34	20.5	---	127	76.5	---
25-34 years	20	13.4	---	79	52.9	---
35-44 years	31	17.0	---	90	49.3	---
45-54 years	39	17.8	---	103	46.9	---
55-64 years	35	19.6	---	107	60.0	---
65-74 years	25	24.2	---	110	106.5	---
75-84 years	36	53.6	---	184	273.8	---
85+ years	37	128.8	---	121	421.3	---

Rates are per 100,000. Age-adjusted rates are adjusted to the 2000 U.S. standard population.

\*Rates are not calculated when the number of events is <20.

## Data Highlights: 2008

- Traumatic brain injury (TBI) occurs when sudden trauma results in injury to the brain. TBIs can result “when the head suddenly and violently hits an object, or when an object pierces the skull and enters brain tissue.”<sup>12</sup>
- There were 263 TBI related deaths and 998 TBI related hospital discharges among Maine residents in 2008. Every week, on average, there were five deaths and 19 hospital discharges that were TBI related.
- Males were at significantly higher risk than females for both TBI related deaths and hospital discharges.
- 85+ year olds were at significantly higher risk than other age groups for both TBI related deaths and hospital discharges.
- 65+ year olds represented only 15.1% of the Maine population in 2008, but they accounted for more than a third of TBI related deaths (37.3%) and hospital discharges (41.6%).
- Almost two-thirds of the TBI related deaths (60.1%) were unintentional, 32.7% were suicide, and 4.2% were homicide. The remaining 3.0% were of undetermined or unknown intent. A different pattern was seen among TBI related hospital discharges, nearly all of which (90.7%) were unintentional; 3.9% were assault, and 1.2% were self-inflicted. The remaining 4.2% were of undetermined or unknown intent.
- The three leading causes of TBI related deaths were self-inflicted firearm injury (31.9%), unintentional motor vehicle traffic incidents (26.2%), and unintentional falls (22.8%). The three leading causes of TBI related hospital discharges were unintentional falls (50.9%), unintentional motor vehicle traffic incidents (26.1%), and other unintentional transport incidents (4.3%; includes rail, water, and air transport, motor vehicle non-traffic incidents, and other road vehicle incidents).
- There is no TBI objective in Healthy Maine 2010.<sup>1</sup> Maine has not yet met the national Healthy People 2010 objective to reduce nonfatal head injury hospitalizations to no more than 45 per 100,000 (age-adjusted).<sup>8</sup>

### 1. Data sources

Deaths. The 2008 death certificate statistical dataset was used to describe injury deaths. The dataset includes deaths of all Maine residents, regardless of where the death occurred. It is a multiple cause of death file that includes not only the underlying cause of death, but also any contributing causes. All injury fatality indicators in this report, except traumatic brain injury, were calculated by searching the underlying cause of death field. The traumatic brain injury fatality indicator was calculated by searching both underlying and contributing cause fields. We used the federal Centers for Disease Control and Prevention’s (CDC) guidelines and definitions of injury indicators<sup>13</sup> whenever possible. Where CDC definitions were not available (i.e., unintentional injury fatalities), we followed the *External Cause of Injury Mortality Matrix for*

*ICD-10*.<sup>14</sup> Appendix B lists the specific ICD-10 codes used in defining the injury fatality indicators.

Hospital Discharges. The 2008 inpatient (hospital discharge) dataset from the Maine Health Data Organization was used to describe injury hospital discharges. The dataset includes discharges from all nonfederal hospitals in Maine. Following CDC guidelines, we limited our analysis to hospital discharges on which the principal diagnosis was an injury (i.e., ICD-9-CM code 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, or 995.80-995.85) and excluded discharges from psychiatric and rehabilitation hospitals. (Discharges from psychiatric and rehabilitation units in general hospitals are included in the analysis.) All injury hospital discharge indicators in this report, except traumatic brain injury and near-drowning, were calculated based on the first-listed external cause of injury code (E-code) that was not E849, E967, E869.4, E870-E879, or E930-E949. The E-code selection process followed CDC guidelines. The traumatic brain injury hospital discharge indicator was coded using nature of disease codes (N-codes). The near-drowning indicator was coded using a combination of E-codes and N-codes. We used CDC's guidelines and definitions of injury indicators<sup>13</sup> whenever possible. Where CDC definitions were not available (i.e., unintentional injury hospital discharges), we followed the *Recommended Framework of E-Code Groupings for Presenting Injury Mortality and Morbidity Data*.<sup>15</sup> Appendix C lists the specific ICD-9-CM codes used in defining the hospital discharge injury indicators.

Maine Integrated Youth Health Survey. The 2009 Maine Integrated Youth Health Survey was used to provide supplemental information for the suicide, assault, and unintentional motor vehicle traffic indicators. This written survey monitors select health conditions and health risk behaviors among Maine students. The middle school survey is administered to 7<sup>th</sup> and 8<sup>th</sup> graders. The high school survey is administered to 9<sup>th</sup> through 12<sup>th</sup> graders.

Behavioral Risk Factor Surveillance System. The Maine 2008 Behavioral Risk Factor Surveillance System survey was used to provide supplemental information for the unintentional falls and unintentional motor vehicle traffic indicators. The survey is administered by phone and tracks health conditions and risk behaviors among Mainers aged 18 years and older.

## **2. Rates**

Population data. 2008 population estimates used in calculating rates were obtained from the U.S. Census Bureau.<sup>16</sup>

Crude rates. Crude rates were calculated by dividing the number of events for a particular indicator by the 2008 population. Rates are expressed per 100,000 population. Crude rates were calculated for the population as a whole, by sex, and by age.

Age-adjusted rates. The direct method (applying age-specific Maine rates to the 2000 U.S. standard population) was used to calculate age-adjusted rates. Rates are expressed per 100,000 population. Age-adjusted rates were calculated for the population as a whole, and by sex.

Suppression of rates. Rates based on small numbers tend not to be reliable or precise, so following CDC practice,<sup>13</sup> rates were not calculated if the number of events was less than 20.

Using rates.<sup>4</sup> The choice of a crude rate versus an age-adjusted rate depends on the purpose for which a rate will be used. Crude rates (or the number of events) should be used to measure or compare the absolute magnitude of injury indicators. Age-adjusted rates should only be used for comparison purposes, when you want to control for differences due only to differences in age composition (e.g., to compare Maine with another state that has a much younger population or to look at Maine data for two different years and control for the aging of the population over time). The numeric value of an age-adjusted rate depends on the standard population used and therefore has no intrinsic meaning. The age-adjusted rates presented in this report can only be compared with other age-adjusted rates that were adjusted to the same 2000 U.S. standard population.

Comparing rates. Age- or sex-specific comparisons were done by placing 95% confidence intervals (not shown) around the crude rates. If the intervals did not overlap, the rates were considered to be statistically significantly different.

### **3. Limitations**

This report is subject to several limitations:

- Maine residents who were hospitalized for injuries in another state or at a federal hospital in Maine are not included.
- External cause of injury was not available for 6.5% of injury hospital discharges. As such, the counts and rates reported here for particular injury indicators (e.g., unintentional fall, poisoning) should be treated as minimum estimates.
- The deaths and hospital discharges reported here for a given injury indicator are not mutually exclusive; individuals who died in the hospital are included in both figures.
- A given person might appear more than once in the hospitalization counts and rates for a given indicator. This can occur if a person was hospitalized more than once at the same hospital for the same injury or was transferred from one hospital to another. Hence, the number of unique individuals who were hospitalized for a particular indicator will be less than the number of hospital discharges reported here for that indicator.
- The use of death and hospital discharge data means that this report reflects the more severe end of the injury spectrum and, as such, underestimates the overall burden of injury in Maine. A more complete picture of injury in the state would require information on individuals with injuries who (1) are treated and released from hospital emergency

departments; (2) are treated in non-hospital outpatient settings (e.g., primary care physician's offices), or (3) do not seek any treatment.

- Survey data reported here are based on self-report and may be subject to recall errors or to people giving the response they feel is expected or acceptable, rather than the response that most accurately reflects their behavior.

#### **4. Comparisons with Other Reports**

Care should be taken when comparing the data presented here with data in other reports. Comparisons should only be made if the methodologies are similar. For example, the CDC methodology used in this report limits hospitalization analyses to discharges from general hospitals for which the principal diagnosis was an injury. The results obtained using this method will differ from analyses that include all hospitals or all discharges, regardless of what the principal diagnosis was.

The indicator definitions used in this report are the same as those used in the 2005, 2006, and 2007 injury reports; however, some of the indicator definitions used here differ from those used in the 2004 injury report. Specifically:

- Non-traffic codes have been removed from the unintentional motor vehicle hospital discharge indicator.
- Additional diagnosis codes have been added to both the traumatic brain injury fatality indicator (i.e., ICD-10 S04.0) and hospital discharge indicator (i.e., ICD-9-CM 950.1-950.3 and 995.55).
- Terrorism codes (i.e., ICD-9-CM E979 and E999, ICD-10 U01-U03) have been added to indicator definitions where appropriate.

See Appendices B and C for complete indicator definitions used in this report.

The methodology used for the 2009 Maine Integrated Youth Health Survey differs somewhat from that used for the 2007 Maine Youth Risk Behavior Survey. As such, 2009 survey results presented here should not be compared with 2007 results presented in the 2008 Maine Injury Report, even when the question wording is similar or identical.

1. Bureau of Health, Maine Department of Health and Human Services. Healthy Maine 2010: Longer and Healthier Lives. *Augusta, ME*. Available at: <http://www.maine.gov/dhhs/boh/healthyme2k/hm2010a.htm>.
2. Holder Y, Peden M, Krug E, Lund J, Gururaj G, Kobusingye O, eds. *Injury Surveillance Guidelines*. Geneva: World Health Organization; 2001.
3. National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS). Available at: <http://www.cdc.gov/injury/wisqars/>. Accessed 10/6/2010.
4. U.S. Department of Health and Human Services. Tracking Healthy People 2010. *U.S. Government Printing Office*. Available at: [http://www.healthypeople.gov/Document/html/tracking/THP\\_PartA.htm#AgeAdjustment](http://www.healthypeople.gov/Document/html/tracking/THP_PartA.htm#AgeAdjustment). Accessed 7/14/2006.
5. 2009 Maine Integrated Youth Health Survey (MIYHS): Results of the High School Survey. Available at: <http://www.maine.gov/tools/whatsnew/attach.php?id=101987&an=1>. Accessed 10/6/2010.
6. 2009 Maine Integrated Youth Health Survey (MIYHS): Results of the Middle School Survey (7th and 8th Grades). Available at: <http://www.maine.gov/tools/whatsnew/attach.php?id=101986&an=1>. Accessed 10/6/2010.
7. The 8th Report of the Maine Domestic Abuse Homicide Review Panel – January 2010. Available at: <http://www.maine.gov/ag/dynld/documents/8th%20Report%20of%20the%20Maine%20Domestic%20Abuse%20Homicide%20Review%20Panel.pdf>. Accessed 10/1/2010.
8. U.S. Department of Health and Human Services. Healthy People 2010: Objectives for Improving Health. 2nd ed. *Washington, DC: U.S. Government Printing Office*. Available at: <http://www.healthypeople.gov/Document/tableofcontents.htm>. Accessed 10/15/2009.
9. *ICD-9-CM for Hospitals, Volumes 1, 2 & 3. Supplementary Classification of External Causes of Injury and Poisoning*; Ingenix, Inc.; 2003.
10. *2008 Behavioral Risk Factor Surveillance System, Maine Core Questions Data Report*.
11. Centers for Disease Control and Prevention. Hip Fractures Among Older Adults. Available at: <http://www.cdc.gov/HomeandRecreationalSafety/Falls/adulthipfx.html>. Accessed 10/15/2009.

12. National Institute of Neurological Disorders and Stroke -- National Institutes of Health. NINDS Traumatic Brain Injury Information Page (updated 7/8/05). Available at: <http://www.ninds.nih.gov/disorders/tbi/tbi.htm>. Accessed 10/4/2005.
13. Johnson RL, Thomas KE, Sarmiento K. State Injury Indicators: Instructions for Preparing 2005 Data. *Centers for Disease Control and Prevention, National Center for Injury Prevention and Control*. Available at: [http://www.cdc.gov/ncipc/dir/State\\_Injury\\_Indicators\\_05.pdf](http://www.cdc.gov/ncipc/dir/State_Injury_Indicators_05.pdf). Accessed 7/7/2009.
14. Centers for Disease Control and Prevention. External Cause of Injury Mortality Matrix for ICD-10 (12/10/2002). Available at: [http://www.cdc.gov/nchs/data/ice/icd10\\_transcode.pdf](http://www.cdc.gov/nchs/data/ice/icd10_transcode.pdf). Accessed 8/2/2005.
15. Centers for Disease Control and Prevention. Recommended Framework of E-Code Groupings for Presenting Injury Mortality and Morbidity Data (December 1, 2008). Available at: <http://www.cdc.gov/ncipc/osp/matrix2.htm>. Accessed 7/28/2009.
16. U.S. Census Bureau. State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2008 - RESIDENT Available at: <http://www.census.gov/popest/states/asrh/files/SC-EST2008-AGESEX-RES.csv>. Accessed 6/4/2009.