

INJURY IN VIRGINIA

2007

A Report on Injury-Related Deaths and
Hospitalizations

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A Report on Injury-Related Deaths and Hospitalizations in Virginia

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EXECUTIVE SUMMARY

Purpose Of The Report

Injuries were the third leading cause of death for all Virginia residents, killing 3,965 Virginia residents in 2007. Injury was the leading cause of death for Virginians between 1 and 40 years of age. Injuries accounted for a majority of all deaths among children and adolescents. Injuries in Virginia also resulted in enormous health care costs. Virginians spent a total of 203,590 days in a hospital and over 1 billion dollars were billed by hospitals because of injury. In addition to economic loss, injuries result in loss of productivity and stress to the victim, family, and other caregivers.

Epidemiologic studies have shown that the causes of injuries are predictable and preventable and not randomly occurring accidents. By examining injury patterns, we can identify groups at high risk and potentially modifiable factors, which affect the occurrence of injury. Consideration of the data provided in this report will enable us to more effectively allocate resources for the prevention and implementation of intervention programs.

What You Will Find In This Report

This report is an analysis of injury-related deaths and inpatient hospitalizations for the Commonwealth of Virginia, using injury-related mortality and hospital discharge data. This report focuses on injuries that occurred during 2007. Hospital discharge data only reflects injuries that result in a hospital admission, and does not include injuries that were treated in emergency rooms, urgent care centers, physicians' offices, at schools, at home or at other venues. It also does not include information on the outcome of an injury after hospital discharge. Hospitalization may only signal the beginning of a long-term morbidity. Costly rehabilitative stay in a nursing facility or at-home care may follow an injury hospitalization.

A new section on emergency room injury data has been included in this years report. As mentioned earlier, hospital discharge data does not include injuries that were treated in an emergency room or urgent care center. Injury related emergency room visits were estimated from the ESSENCE surveillance system conducted through the Virginia Department of Health's Office of Epidemiology. This information highlights the increased knowledge a statewide emergency department surveillance system would bring to the injury prevention community.

How You Can Use This Report

The ultimate goal of this report is to help drive local and state injury prevention programming, initiatives, and evaluation and to serve as a catalyst for injury-related policy development.

Information and facts in this report can be used to:

- ❖ Target resources
- ❖ Write or support grants
- ❖ Initiate or support legislative action
- ❖ Encourage further research
- ❖ Promote an overall better understanding of the injury problem in Virginia
- ❖ Educate and raise awareness among the public and media through presentations and campaigns
- ❖ Educate legislators at the local, state, and national level
- ❖ Use as a guide when planning data based injury prevention efforts and allocating resources

Key Findings

Virginia Injury Hospitalizations and Death, 2007

In 2007, 3,965 Virginians died from an injury, 42,093 were hospitalized because of an injury and an estimated 421,700 were treated in emergency departments and urgent care centers for an injury. The following highlights the findings in this report:

- 82% of injury hospitalizations and 66% of injury deaths were unintentional in nature and represented the majority of injuries in Virginia.
- Falls were the leading cause of injury hospitalization accounting for 44% of all injury hospitalizations. Poisonings were the second leading cause of hospitalizations accounting for 16% of hospitalizations.
- Firearms were the leading cause of injury deaths accounting for 21% of injury deaths.
- Motor vehicle traffic crashes, poisonings, and falls were the three leading causes of unintentional injury deaths, accounting for over 77% of all injury deaths.
- The state suicide rate was almost three times higher than the homicide rate.
- Injury hospital and death rates were highest among the elderly 75 and older.
- Females were more likely to be hospitalized for an injury, while males were more likely to die from an injury.
- Black Virginians were less likely than white Virginians to be hospitalized or to die from unintentional or self-inflicted injuries, but they were five times more likely to be hospitalized for an assault and almost six times more likely to die from a homicide.
- Roanoke City Health District had the highest injury hospitalization rate in the state, while Lenowisco Health District had the highest injury death rate.

For more information on injury data in your community or in Virginia, visit VOIRS, the Virginia Online Injury Reporting System at <http://www.vahealth.org/Injury/voirs/>. This system contains data from 1999-2007 and allows you to create customized injury data reports on various mechanisms (causes) and intents of injury by geographic and demographic variables.



NEED FOR EMERGENCY DEPARTMENT DATA IN VIRGINIA

Injury is a major health concern in Virginia. Injuries are the leading cause of death for Virginians between the age of 1 and 44 (60% of Virginia's population). In 2007, there were over 42,000 injury-related hospital discharges in Virginia. These injury hospital stays resulted in charges of more than one billion dollars. However, injuries do not always result in death or hospitalization.

It is estimated that for every individual admitted from a hospital in Virginia for an injury, another 10 are treated in emergency departments (EDs) for injuries and released every year. Despite this, there is no statewide collection of injury data from hospital emergency departments in Virginia. In Virginia death and hospital admission is used as a proxy for injury case severity. This is done despite knowing that clinical criteria for admission to a hospital may vary considerably, and that economic and other factors play a role in the care that an injured victim may or may not be able to receive by being admitted to a hospital.

While no statewide injury emergency department data system exists, the Virginia Department of Health, Division of Epidemiology currently collects chief complaint data from emergency departments and urgent care centers around the state on a voluntary basis. However, the main purpose of this surveillance system, titled ESSENCE, is the early recognition of disease events, including outbreaks and potential bioterrorism events; not injury surveillance.

The Division of Injury and Violence Prevention partnered with the Office of Epidemiology to obtain injury-related chief complaint records for the calendar year 2007. Records were included in this report only if the chief complaint narrative indicated an injury had occurred. This was done by searching chief complaint fields for injury "key words". The variables included in the final dataset were; date, region and district where the ED/Urgent Care Center was located, admission status to a hospital, chief complaint narrative, gender, age. The admission status to a hospital was not complete for all of the records and not every ED/Urgent Care Center in Virginia participates in ESSENCE. As a result, admission status and geographic information were not included in the final analysis.

While this data provides the injury prevention community with information not currently available, there are limitations. First, external-cause of injury codes (ecodes) are not collected and ICD-CM-9 code information is incomplete. This hinders the specific identification of the mechanism, intent, and nature of injury identified in the chief-complaint. In some cases the mechanism, intent, or nature of injury could be derived from the chief complaint narrative, but in many cases this information is unknown. Second, information on whether an injury resulted in a hospital admission or death was not complete and therefore was not included in the analysis. As a result, a particular injury case could be included in the ED/Urgent Care Center estimates, injury hospital discharges, or injury deaths. Third, submission of emergency department/urgent care chief complaint data is voluntary. Currently, not all EDs/Urgent Care Centers in Virginia submit this information. As of the end of 2007, 49 emergency departments and 28 Urgent Care Centers in Virginia were submitting chief complaint data to VDH. Due to these limitations, the emergency department/urgent care data presented in this report is an underestimate of the actual number of Virginians seen in EDs/Urgent Care Centers for injuries in 2007.

While the data derived from this surveillance system should be interpreted with caution, it highlights the knowledge the injury prevention community would gain from a statewide surveillance system that uniformly collects ED visit information from every Virginia emergency department. The following pages will emphasize the value of an ED data in injury surveillance efforts.

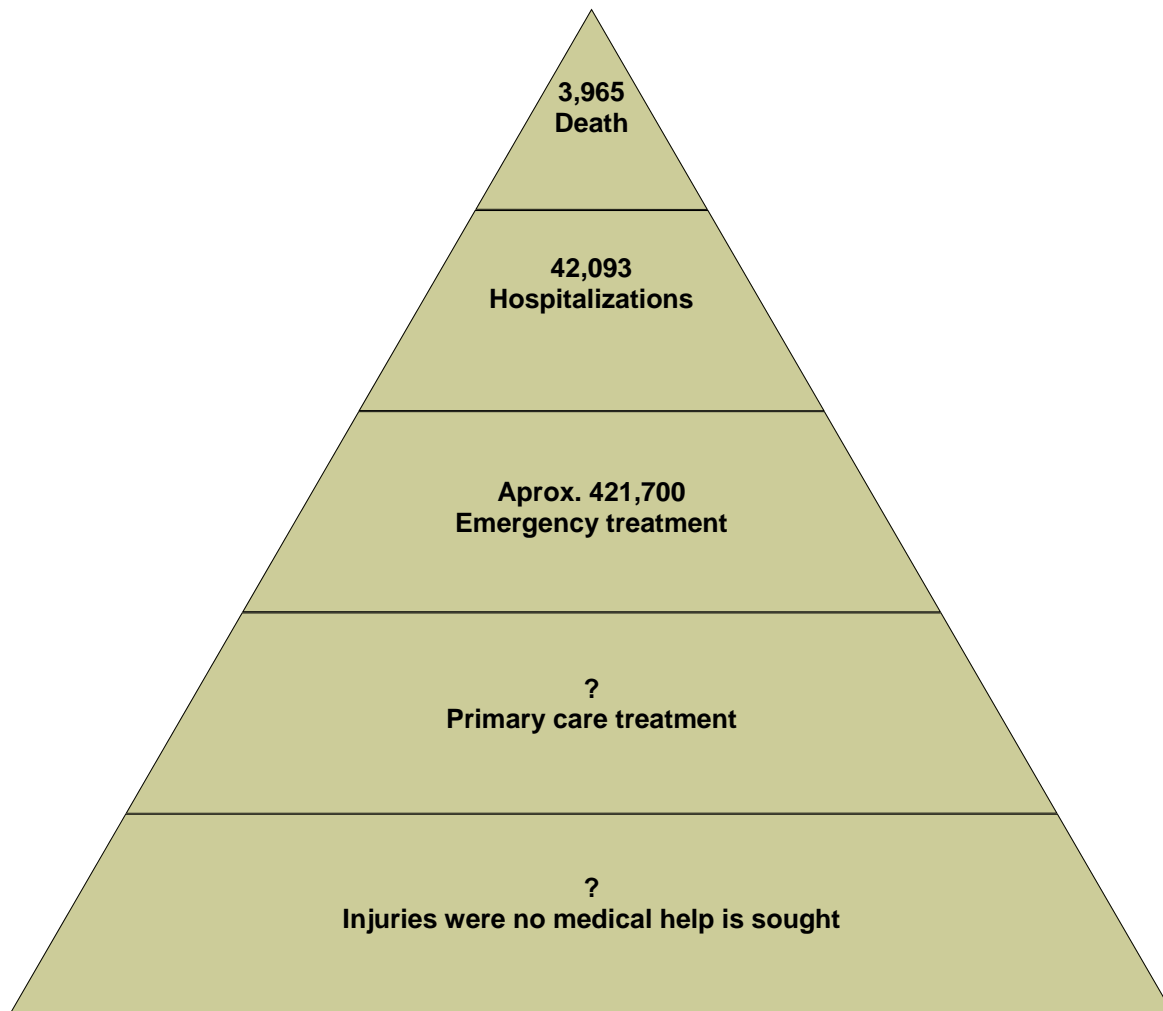
Emergency Department/Urgent Care Injury Cases

According to the World Health Organization (WHO), in the world's high-income countries (including the U.S.), for every one injury fatality, 30 people are hospitalized, and 300 are treated in emergency rooms; even more are treated in other health care facilities or receive no treatment at all.

The injury experience is often presented as a pyramid. The pyramid top is composed of deaths, which are fewer in number, but more visible. Following deaths are severe injuries resulting in hospitalization and disability. The third category is less-severe injuries, requiring emergency room treatment. Next are injuries treated in primary care settings. At the bottom of the pyramid are injuries which do not receive attention in a health care setting.

Injury data availability is in direct proportion to case *severity*, and in inverse proportion to case *frequency*. A lot is known about the relatively small number of injury deaths, less about hospital inpatient cases, and still less about cases resulting in neither death nor hospitalization. It is important not to under-rate the importance, in human and economic terms, of 'less-severe' injuries.

Figure 1. Injury Pyramid for Virginia, 2007



Emergency Department/Urgent Care Injury Cases

In 2007, an estimated 421,700 injury cases were seen in Virginia emergency departments and urgent care centers. The two tables below examine injury ED/urgent care center data by gender, age, and selected mechanism compared to the same data available from hospital discharge and death data.

From these two tables, it is evident that hospital discharge and death data alone are inadequate measures of Virginia's injury burden. Looking at Table 2, it is clear that motor vehicle injuries, falls, bites/stings, and cut/pierce injuries are under represented in hospital discharge and death data reporting.

A more detailed analysis of hospital discharges and deaths will be presented later in this report.

Table 1. ED/Urgent care center injuries by gender and age compared to hospital discharge injuries and injury deaths, Virginia 2007

	ED/Urgent Care Center		Injury Hospital Discharges		Injury Deaths	
	N	%	N	%	N	%
Gender						
Male	218,610	51.84%	19,616	46.6%	2,751	69.4%
Female	203,069	48.15%	22,476	53.4%	1,214	30.6%
Unknown	21		1		--	--
Age						
<1	4,068	0.96%	293	0.7%	34	0.86%
1-4	27,624	6.55%	572	1.36%	33	0.83%
5-9	25,056	5.94%	488	1.16%	29	0.73%
10-14	33,211	7.88%	859	2.04%	38	0.96%
15-19	40,188	9.53%	2,321	5.51%	225	5.67%
20-24	40,592	9.63%	2,590	6.15%	393	9.91%
25-34	64,764	15.36%	4,047	9.61%	590	14.88%
35-44	58,495	13.87%	4,840	11.5%	626	15.79%
45-54	50,289	11.93%	5,113	12.15%	675	17.02%
55-64	30,358	7.20%	4,175	9.92%	398	10.04%
65-74	17,007	4.03%	4,196	9.97%	290	7.31%
75 +	30,048	7.13%	12,599	29.93%	633	15.96%
Unknown	--	--	--	--	1	0.03%
Total Injuries	421,700	100%	42,093	100%	3,965	100%

Table 2. ED/Urgent care center injuries by mechanism compared to hospital discharge injuries and injury deaths, Virginia 2007

Injury Mechanism	# ED/Urgent Care Center	# Hospital Discharges	# Deaths
Motor Vehicle	48,218	3,833	879
Motorcycle	597	623	125
Bicycle	1,024	331	10
Bites and stings	24,189	669	0
Burns	7,329	600	103
Falls	58,132	18,671	461
Drowning	77	57	84
Suffocation/Choking	919	239	351
Foreign Body	3,168	421	0
Cut/Pierce	8,258	1,629	63
Firearm	1,363	581	820
Suicide/self-inflicted	4,806	5,121	872

Emergency Department/Urgent Care Injury Cases

Sports/Recreational Activities

Participating in sports and recreational activities is a natural part of many Virginian's lives; it can play a vital role in maintaining a healthy mind and body. However, participating in these activities makes one susceptible to injury; particularly children. Research has found that nationally, more than one-quarter of all emergency department injuries for children are sports-related (Injury Free Kids Coalition).

Currently, in Virginia, limited sports injury data is available through hospital discharge and death data. In these data systems, sports related injuries are lumped into broad categories, and it impossible to determine what sport/activity a victim was involved in when the injury occurred. This greatly limits prevention efforts. The ED/Urgent Care Center data provides a clearer picture of injury sports related injuries in Virginia. By examining the chief complaint narrative, many of the sports/recreation injury cases were able to be grouped into categories based on a specific activity. Further information on the nature of injury can then be determined if the chief-complaint narrative identifies it. This will allow for even more defined and targeted prevention efforts.

Table 3. Sports/Recreational ED/urgent care center injuries compared to hospital discharges and deaths, Virginia 2007

Sports/Recreation Activity	# ED/Urgent Care Center	# Hospital Discharges	# Deaths
Football	419	n/a	n/a
Baseball/Softball	402	n/a	n/a
Basketball	239	n/a	n/a
Soccer	215	n/a	n/a
Volleyball	13	n/a	n/a
Roller-skating	30	30	--
Ski/Snowboard	72	31	--
Playground	186	85	0
Sports (Misc. Sports Balls)	171	n/a	n/a
Sports NOS	97	275	10*
Total	1,844	421	10

*Roller skates, skis, and snowboard injury deaths are all coded into one broad group for injury deaths. For the purpose of this table, those deaths are recorded under 'Sports NOS'. There were 10 injury deaths in 2007 related to roller skates, skis, or snowboards.

HOSPITAL INJURY DISCHARGES

In 2007 Virginia hospitals reported a total of 42,093 hospital discharges that had an injury diagnosis and a valid E-code. A valid E-code is one that notes the cause of the injury, rather than the place of occurrence of the injury (i.e. home, work, school). Overall, injury accounted for almost 6% of all hospital discharges. Table 4 presents injury-related hospital discharge rates. Crude rates represent the actual experience of the population. Age-adjusted rates are provided for comparison with other morbidity data.

Table 4. Injury Hospitalization Rates

Age	Total Hospital Discharges (HD)	Total Injury Hospital Discharges (HD)	% HD due to Injury	Injury HD rate per 100,000*	Age-adjusted rate per 100,000**
<1	108,960	293	0.27%	275.98	3.81
1-4	10,592	572	5.40%	138.75	7.68
5-9	6,565	488	7.43%	99.07	7.19
10-14	7,450	859	11.53%	172.59	12.60
15-19	23,246	2,321	9.98%	435.64	31.44
20-24	40,507	2,590	6.39%	474.48	31.54
25-34	90,555	4,047	4.47%	384.60	52.14
35-44	80,612	4,840	6.00%	417.23	67.85
45-54	94,182	5,113	5.43%	446.40	60.19
55-64	101,445	4,175	4.12%	486.84	42.47
65-74	104,019	4,196	4.03%	855.69	56.51
75 +	165,213	12,599	7.63%	3,005.77	181.40
Total	724,386	42,093	5.81%	545.81	554.82

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

**Adjusted to 2000 standard population

In 2007, Virginians spent a total of 203,590 days in a hospital and over 1 billion dollars were billed by hospitals as a result of injury.

The 5 Leading causes of Injury Hospitalization in Virginia were:

1. Fall
2. Poisoning
3. Motor Vehicle Traffic
4. Cut/Pierce
5. Struck By/ Against

CAUSE AND INTENT OF INJURY RATES

In 2007, falls were the leading cause (44%) of all injury hospitalizations. Poisoning ranked second accounting for almost 16% of injury hospitalizations. Motor Vehicle Traffic (MVT) ranked third at 10.8%, with occupant injuries accounting for a majority of these injuries. These three causes were responsible for 70% of all injury hospitalizations.

Table 5. External Causes of Injury Hospitalizations

	N	%	Rate per 100,000*	Age Adjusted Rate per 100,000**
Cause				
Bites and stings	669	1.59%	8.67	8.61
Cut/pierce	1,629	3.87%	21.12	21.08
Drowning/submersion	57	0.14%	0.74	0.76
Fall	18,671	44.36%	242.10	252.75
Fire/flame	227	0.54%	2.94	2.94
Firearm	581	1.38%	7.53	7.47
Hot object/substance	373	0.89%	4.84	4.85
MVT Motorcyclist	623	1.48%	8.08	7.81
MVT Occupant	3,259	7.74%	42.26	41.88
MVT Other	46	0.11%	0.60	0.59
MVT Pedal cyclist	78	0.19%	1.01	1.05
MVT Pedestrian	307	0.73%	3.98	3.97
MVT Unspecified	221	0.53%	2.87	2.79
Machinery	249	0.59%	3.23	3.15
Other natural/environmental	362	0.86%	4.69	4.60
Other specified and classifiable	1,843	4.38%	23.90	23.71
Other specified, not elsewhere classifiable	592	1.41%	7.68	7.53
Overexertion	525	1.25%	6.81	6.84
Pedal cyclist, other	253	0.6%	3.28	3.30
Pedestrian, other	59	0.14%	0.77	0.75
Poisoning	6,607	15.7%	85.67	84.86
Struck by, against	1,511	3.59%	19.59	19.71
Suffocation	239	0.57%	3.10	3.17
Transport, other	805	1.91%	10.44	10.40
Unspecified	2,307	5.48%	29.91	30.25
Intent				
Unintentional	34,461	81.87%	446.84	456.65
Self-Inflicted	5,121	12.17%	66.40	66.03
Assault	1,573	3.74%	20.40	20.17
Undetermined	899	2.14%	11.66	11.46
Other	39	0.09%	0.51	0.51
Total Hospitalizations	42,093	100%	545.81	554.82

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

** Adjusted to 2000 standard population

CHARGE AND LENGTH OF STAY OF INJURY DISCHARGES

As seen in Table 6, in 2007, the average length of stay in a hospital for an injury was 5 days. These hospitalizations resulted in charges of more than one billion, with a median charge of \$15,913 per episode of care.

Table 6. Charges and Length of Stay for Injury Hospitalizations

	# of Discharges	Median Charge	Total Charges	Avg. LOS	Total LOS
Cause					
Bites and stings	669	\$8,182	\$8,440,312	3	1,997
Cut/pierce	1,629	\$10,278	\$251,33,082	4	7,326
Drowning/submersion	57	\$11,086	\$1,478,074	3	185
Fall	18,671	\$19,441	\$495,198,577	5	97,594
Fire/flare	227	\$11,677	\$6,776,101	6	1,338
Firearm	581	\$24,980	\$24,003,615	6	3,484
Hot object/substance	373	\$10,119	\$6,806,143	5	2,023
MVT Motorcyclist	623	\$25,261	\$25,999,894	6	3,529
MVT Occupant	3,259	\$21,665	\$124,991,889	6	18,187
MVT Other	46	\$19,736	\$1,204,120	4	191
MVT Pedal cyclist	78	\$20,422	\$2,190,755	6	448
MVT Pedestrian	307	\$25,876	\$14,470,330	8	2,451
MVT Unspecified	221	\$19,060	\$6,903,584	5	1,011
Machinery	249	\$18,129	\$6,499,007	4	943
Other natural/environmental	362	\$10,563	\$5,675,316	4	1,306
Other specified and classifiable	1,843	\$16,662	\$49,008,900	7	12,400
Other specified, not elsewhere classifiable	592	\$15,185	\$14,205,708	7	3,946
Overexertion	525	\$13,806	\$9,589,515	3	1,809
Pedal cyclist, other	253	\$17,547	\$5,853,521	4	940
Pedestrian, other	59	\$21,442	\$2,368,733	7	397
Poisoning	6,607	\$7,953	\$82,186,979	3	19,601
Struck by, against	1,511	\$14,904	\$32,903,831	4	6,039
Suffocation	239	\$16,295	\$5,889,767	6	1,358
Transport, other	805	\$17,474	\$21,430,808	4	3,208
Unspecified	2,307	\$15,975	\$52,730,691	5	11,879
Intent					
Unintentional	34,461	\$17,754	\$906,366,689	5	173,512
Self-inflicted	5,121	\$7,760	\$61,672,413	4	18,814
Assault	1,573	\$17,749	\$44,172,863	5	7,445
Undetermined	899	\$10,495	\$17,784,593	4	3,365
Other	39	\$20,960	\$1942,694	12	454
Age					
<1	293	\$6,724	\$3,659,372	3	960
1-4	572	\$7,984	\$8,096,349	3	1,941
5-9	488	\$10,433	\$7,136,327	3	1,535
10-14	859	\$11,600	\$13,978,467	4	3,264
15-19	2,321	\$12,554	\$50,183,751	4	9,658
20-24	2,590	\$13,638	\$62,557,044	4	10,884
25-34	4,047	\$12,816	\$90,637,894	4	15,787
35-44	4,840	\$13,415	\$111,919,469	4	20,894
45-54	5,113	\$14,940	\$126,088,191	5	23,346
55-64	4,175	\$17,527	\$113,348,634	5	21,351
65-74	4,196	\$18,874	\$114,333,122	5	22,758
Total Hospitalizations	42,093	\$15,913	\$1,031,939,252	5	203,590

Source: VHI Patient Level Database, 2007

INTENT OF INJURY HOSPITALIZATIONS

Intent of hospitalization injury rates are presented in Table 7. Unintentional injury rates were highest for the elderly, while self-inflicted injury and assault rates were highest for adolescents between the ages of 15 and 19 and young adults between 20 and 24. Falls were the leading cause of unintentional injury, accounting for a majority (54%) of all unintentional injury hospitalizations. Motor vehicle traffic incidents accounted for 13.1% of unintentional injuries. The leading causes of unintentional injury hospitalizations are shown in Table 8. Striking injuries, firearms, and cut/pierce injuries were the leading causes of assault injury hospitalizations, accounting for almost 72% of all assault related hospital discharges. Poisoning accounted for almost 79% of self-inflicted injury hospitalizations.

Table 7. Intent of Injury Rates by Age Group

Age	Unintentional			Self-inflicted		
	N	Rate per 100,000*	Age Adjusted Rate per 100,000**	N	Rate per 100,000*	Age Adjusted Rate per 100,000**
<1	241	227.00	3.14	--	--	--
1-4	550	133.42	7.38	--	--	--
5-9	472	95.83	6.95	4	0.81	0.06
10-14	675	135.62	9.90	154	30.94	2.26
15-19	1,323	248.32	17.92	740	138.89	10.02
20-24	1,529	280.11	18.62	671	122.92	8.17
25-34	2,455	233.31	31.63	1076	102.26	13.86
35-44	3,127	269.56	43.83	1196	103.10	16.77
45-54	3,835	334.82	45.15	874	76.31	10.29
55-64	3,720	433.78	37.85	279	32.53	2.84
65-74	4,055	826.94	54.61	73	14.89	0.98
75 +	12,479	2,977.14	179.67	54	12.88	0.78
Total	34,461	446.84	456.65	5,121	66.40	66.03

Age	Assault			Undetermined		
	N	Rate per 100,000*	Age-Adjusted Rate per 100,000**	N	Rate per 100,000*	Age-Adjusted Rate per 100,000**
<1	32	30.14	0.42	20	18.84	0.26
1-4	13	3.15	0.17	9	2.18	0.12
5-9	10	2.03	0.15	2	0.41	0.03
10-14	21	4.22	0.31	9	1.81	0.13
15-19	200	37.54	2.71	55	10.32	0.75
20-24	290	53.13	3.53	96	17.59	1.17
25-34	353	33.55	4.55	154	14.64	1.98
35-44	284	24.48	3.98	225	19.40	3.15
45-54	233	20.34	2.74	168	14.67	1.98
55-64	79	9.21	0.80	93	10.84	0.95
65-74	28	5.71	0.38	37	7.55	0.50
75 +	30	7.16	0.43	31	7.40	0.45
Total	1,573	20.40	20.17	899	11.66	11.46

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

** Adjusted to 2000 standard population

Injury Hospitalizations in Virginia, 2007

Table 8. Intent of Injury Hospitalization by Cause

	INTENT														
	Unintentional			Self-Inflicted			Assault			Undetermined			Other		
	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %
Bites and stings	642	1.86%	95.96%	--	--	--	27	1.72%	4.04%	--	--	--	--	--	--
Cut/pierce	501	1.45%	30.76%	801	15.64%	49.17%	321	20.41%	19.71%	6	0.67%	0.37%	--	--	--
Drowning/submersion	53	0.15%	92.98%	3	0.06%	5.26%	--	--	--	1	0.11%	1.75%	--	--	--
Fall	18,633	54.07%	99.80%	19	0.37%	0.10%	4	0.25%	0.02%	15	1.67%	0.08%	--	--	--
Fire/flame	201	0.58%	88.55%	19	0.37%	8.37%	2	0.13%	0.88%	5	0.56%	2.2%	--	--	--
Firearm	131	0.38%	22.55%	54	1.05%	9.29%	328	20.85%	56.45%	57	6.34%	9.81%	11	28.21%	1.89%
Hot object/substance	363	1.05%	97.32%	3	0.06%	0.80%	4	0.25%	1.07%	3	0.33%	0.8%	--	--	--
MVT Motorcyclist	623	1.81%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	3,259	9.46%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	28	0.08%	60.87%	11	0.21%	23.91%	5	0.32%	10.87%	2	0.22%	4.35%	--	--	--
MVT Pedal cyclist	78	0.23%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	307	0.89%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	221	0.64%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	249	0.72%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	359	1.04%	99.17%	--	--	--	--	--	--	3	0.33%	0.83%	--	--	--
Other specified and classifiable	1,730	5.02%	93.87%	15	0.29%	0.81%	86	5.47%	4.67%	1	0.11%	0.05%	11	28.21%	0.60%
Other specified, not elsewhere classifiable	205	0.59%	34.63%	100	1.95%	16.89%	155	9.85%	26.18%	128	14.24%	21.62%	4	10.26%	0.68%
Overexertion	525	1.52%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	253	0.73%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	59	0.17%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	1,931	5.60%	29.23%	4,022	78.54%	60.87%	4	0.25%	0.06%	650	72.3%	9.84%	--	--	--
Struck by, against	1,029	2.99%	68.10%	--	--	--	471	29.94%	31.17%	--	--	--	11	28.21%	0.73%
Suffocation	203	0.59%	84.94%	36	0.70%	15.06%	--	--	--	--	--	--	--	--	--
Transport, other	805	2.34%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	2,073	6.02%	89.86%	38	0.74%	1.65%	166	10.55%	7.20%	28	3.11%	1.21%	2	5.13%	0.09%
Total	34,461	100%	81.87%	5,121	100%	12.16%	1,573	100%	3.73%	899	100%	2.14%	39	100%	0.1%

Source: VHI Patient Level Database, 2007

CAUSE OF INJURY BY GENDER

The three types of injuries that had the highest hospitalization rates for both males and females in 2007 were falls, poisonings, and MVT occupant injuries. Overall, males were less likely to be hospitalized for injuries than were females. However, males were eleven times more likely to be hospitalized for machinery injuries, eight times more likely to be hospitalized for motorcycle injuries, and seven and a half times more likely to be hospitalized for firearm injuries than women. Women were more likely to be hospitalized for poisonings and fall injuries than were their male counterparts. See Table 9 for more information. **Relative risks (RR) with 95% confidence intervals that do not include a RR of 1.0 are considered statistically significant.**

Table 9. Injury Hospitalizations by Gender

	Male N	%	Rate per 100,000*	Female N	%	Rate per 100,000*	Male to Female R.R. (95%CI)
Cause							
Bites and stings	347	1.77%	9.17	322	1.43%	8.20	1.12 (0.95, 1.29)
Cut/pierce	979	4.99%	25.86	650	2.89%	16.55	1.56 (1.41, 1.72)
Drowning/submersion	40	0.2%	1.06	17	0.08%	0.43	2.44 (1.06, 3.83)
Fall	6,521	33.24%	172.28	12,149	54.05%	309.37	0.56 (0.54, 0.57)
Fire/flare	159	0.81%	4.20	68	0.3%	1.73	2.43 (1.74, 3.11)
Firearm	511	2.61%	13.50	70	0.31%	1.78	7.57 (5.68, 9.47)
Hot object/substance	232	1.18%	6.13	141	0.63%	3.59	1.71 (1.35, 2.06)
MVT Motorcyclist	554	2.82%	14.64	69	0.31%	1.76	8.33 (6.25, 10.41)
MVT Occupant	1,792	9.14%	47.34	1,467	6.53%	37.36	1.27 (1.18, 1.35)
MVT Other	27	0.14%	0.71	19	0.08%	0.48	1.47 (0.61, 2.34)
MVT Pedal cyclist	63	0.32%	1.66	15	0.07%	0.38	4.36 (1.90, 6.81)
MVT Pedestrian	210	1.07%	5.55	97	0.43%	2.47	2.25 (1.71, 2.79)
MVT Unspecified	112	0.57%	2.96	109	0.48%	2.78	1.07 (0.78, 1.35)
Machinery	228	1.16%	6.02	21	0.09%	0.53	11.26 (6.23, 16.30)
Other natural/environmental	226	1.15%	5.97	136	0.61%	3.46	1.72 (1.36, 2.09)
Other specified and classifiable	1,141	5.82%	30.14	702	3.12%	17.88	1.69 (1.53, 1.84)
Other specified, not elsewhere classifiable	426	2.17%	11.25	166	0.74%	4.23	2.66 (2.19, 3.14)
Overexertion	241	1.23%	6.37	284	1.26%	7.23	0.88 (0.73, 1.03)
Pedal cyclist, other	214	1.09%	5.65	39	0.17%	0.99	5.69 (3.75, 7.64)
Pedestrian, other	26	0.13%	0.69	33	0.15%	0.84	0.82 (0.40, 1.24)
Poisoning	2,598	13.24%	68.64	4,009	17.84%	102.09	0.67 (0.64, 0.71)
Struck by, against	1,144	5.83%	30.22	367	1.63%	9.35	3.23 (2.85, 3.61)
Suffocation	124	0.63%	3.28	115	0.51%	2.93	1.12 (0.83, 1.40)
Transport, other	512	2.61%	13.53	293	1.3%	7.46	1.81 (1.55, 2.07)
Unspecified	1,189	6.06%	31.41	1,118	4.97%	28.47	1.10 (1.01, 1.19)
Intent							
Unintentional	15,891	81.01%	419.84	18,569	82.62%	472.85	0.89 (0.87, 0.91)
Self-Inflicted	1,958	9.98%	51.73	3,163	14.07%	80.54	0.64 (0.61, 0.68)
Assault	1,266	6.45%	33.45	307	1.37%	7.82	4.28 (3.75, 4.81)
Undetermined	464	2.37%	12.26	435	1.94%	11.08	1.11 (0.96, 1.25)
Other	37	0.19%	0.98	2	0.01%	0.05	19.19 (-8.12, 46.51)
Total Hospitalizations	19,616	100%	518.25	22,476	100%	572.34	0.91 (0.89, 0.92)

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

CAUSE OF INJURY BY RACE

The three types of injuries that had the highest hospitalization rates for both Black Virginians and White Virginians were falls, poisonings, and MVT occupant injuries. Caution should be used when examining differences between races, as other confounding variables, such as socioeconomic status and education were not accounted for in this analysis. See Table 10 for more information. **Relative risks (RR) with 95% confidence intervals that do not include a RR of 1.0 are considered statistically significant.**

Table 10. Injury Hospitalizations by Race

	White N	%	Rate per 100,000*	Black N	%	Rate per 100,000*	Black to White R.R. (95%CI)
Cause							
Bites and stings	513	1.62%	8.99	94	1.33%	5.96	0.66 (0.52, 0.81)
Cut/pierce	1,013	3.2%	17.76	381	5.41%	24.15	1.36 (1.20, 1.52)
Drowning/submersion	34	0.11%	0.60	14	0.2%	0.89	1.49 (0.56, 2.42)
Fall	15,543	49.11%	272.51	1,949	27.67%	123.56	0.45 (0.43, 0.47)
Fire/flame	147	0.46%	2.58	66	0.94%	4.18	1.62 (1.15, 2.09)
Firearm	161	0.51%	2.82	383	5.44%	24.28	8.60 (7.02, 10.19)
Hot object/substance	190	0.6%	3.33	155	2.2%	9.83	2.95 (2.32, 3.58)
MVT Motorcyclist	465	1.47%	8.15	95	1.35%	6.02	0.74 (0.58, 0.90)
MVT Occupant	2,152	6.8%	37.73	700	9.94%	44.38	1.18 (1.08, 1.28)
MVT Other	30	0.09%	0.53	12	0.17%	0.76	1.45 (0.48, 2.41)
MVT Pedal cyclist	45	0.14%	0.79	23	0.33%	1.46	1.85 (0.92, 2.78)
MVT Pedestrian	141	0.45%	2.47	101	1.43%	6.40	2.59 (1.93, 3.25)
MVT Unspecified	152	0.48%	2.66	46	0.65%	2.92	1.09 (0.73, 1.46)
Machinery	184	0.58%	3.23	34	0.48%	2.16	0.67 (0.42, 0.91)
Other natural/environmental	236	0.75%	4.14	103	1.46%	6.53	1.58 (1.21, 1.94)
Other specified and classifiable	1,313	4.15%	23.02	341	4.84%	21.62	0.94 (0.83, 1.05)
Other specified, not elsewhere classifiable	334	1.06%	5.86	212	3.01%	13.44	2.30 (1.90, 2.69)
Overexertion	396	1.25%	6.94	96	1.36%	6.09	0.88 (0.68, 1.07)
Pedal cyclist, other	196	0.62%	3.44	28	0.4%	1.78	0.52 (0.31, 0.72)
Pedestrian, other	38	0.12%	0.67	12	0.17%	0.76	1.14 (0.40, 1.88)
Poisoning	4,982	15.74%	87.35	1,143	16.23%	72.46	0.83 (0.78, 0.88)
Struck by, against	938	2.96%	16.45	386	5.48%	24.47	1.49 (1.31, 1.66)
Suffocation	172	0.54%	3.02	42	0.6%	2.66	0.88 (0.59, 1.18)
Transport, other	687	2.17%	12.04	57	0.81%	3.61	0.30 (0.22, 0.38)
Unspecified	1,589	5.02%	27.86	570	8.09%	36.14	1.30 (1.17, 1.42)
Intent							
Unintentional	26,581	83.98%	466.03	5,205	73.9%	329.98	0.71 (0.69, 0.73)
Self-Inflicted	3,889	12.29%	68.18	764	10.85%	48.44	0.71 (0.66, 0.77)
Assault	566	1.79%	9.92	801	11.37%	50.78	5.12 (4.57, 5.67)
Undetermined	596	1.88%	10.45	260	3.69%	16.48	1.58 (1.35, 1.81)
Other	19	0.06%	0.33	13	0.18%	0.82	2.47 (0.73, 4.22)
Total Hospitalizations	31,651	100%	554.92	7,043	100%	446.51	0.80 (0.78, 0.83)

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

INTENT BY AGE

Unintentional injuries accounted for a majority of injuries across all of the age groups. For the very young (age 0-9) assaults exceeded self-inflicted injuries. For all other ages, self-inflicted injuries exceeded assault injuries. See Table 11 for more information.

Table 11. Intent of Injury by Age Group

Intent	<1		1-4		5-9		10-14		15-19	
	N	%	N	%	N	%	N	%	N	%
Unintentional	241	82.25%	550	96.15%	472	96.72%	675	78.58%	1323	57.00%
Self-Inflicted	--	--	--	--	4	0.82%	154	17.93%	740	31.88%
Assault	32	10.92%	13	2.27%	10	2.05%	21	2.44%	200	8.62%
Undetermined	20	6.83%	9	1.57%	2	0.41%	9	1.05%	55	2.37%
Other	--	--	--	--	--	--	--	--	3	0.13%
Total	293	100%	572	100%	488	100%	859	100%	2321	100%

Intent	20-24		25-34		35-44		45-54		55-64	
	N	%	N	%	N	%	N	%	N	%
Unintentional	1,529	59.03%	2,455	60.66%	3,127	64.61%	3,835	75%	3,720	89.10%
Self-Inflicted	671	25.91%	1,076	26.59%	1,196	24.71%	874	17.09%	279	6.68%
Assault	290	11.20%	353	8.72%	284	5.87%	233	4.56%	79	1.89%
Undetermined	96	3.71%	154	3.81%	225	4.65%	168	3.29%	93	2.23%
Other	4	0.15%	9	0.22%	8	0.17%	3	0.06%	4	0.10%
Total	2,590	100%	4,047	100%	4,840	100%	5,113	100%	4,175	100%

Intent	65-74		75 +		Total	
	N	%	N	%	N	%
Unintentional	4,055	96.64%	12,479	99.05%	34,461	81.87%
Self-Inflicted	73	1.74%	54	0.43%	5,121	12.17%
Assault	28	0.67%	30	0.24%	1,573	3.74%
Undetermined	37	0.88%	31	0.25%	899	2.14%
Other	3	0.07%	5	0.04%	39	0.09%
Total	4,196	100%	12,599	100%	42,093	100%

Source: VHI Patient Level Database, 2007

Injury Hospitalizations in Virginia, 2007

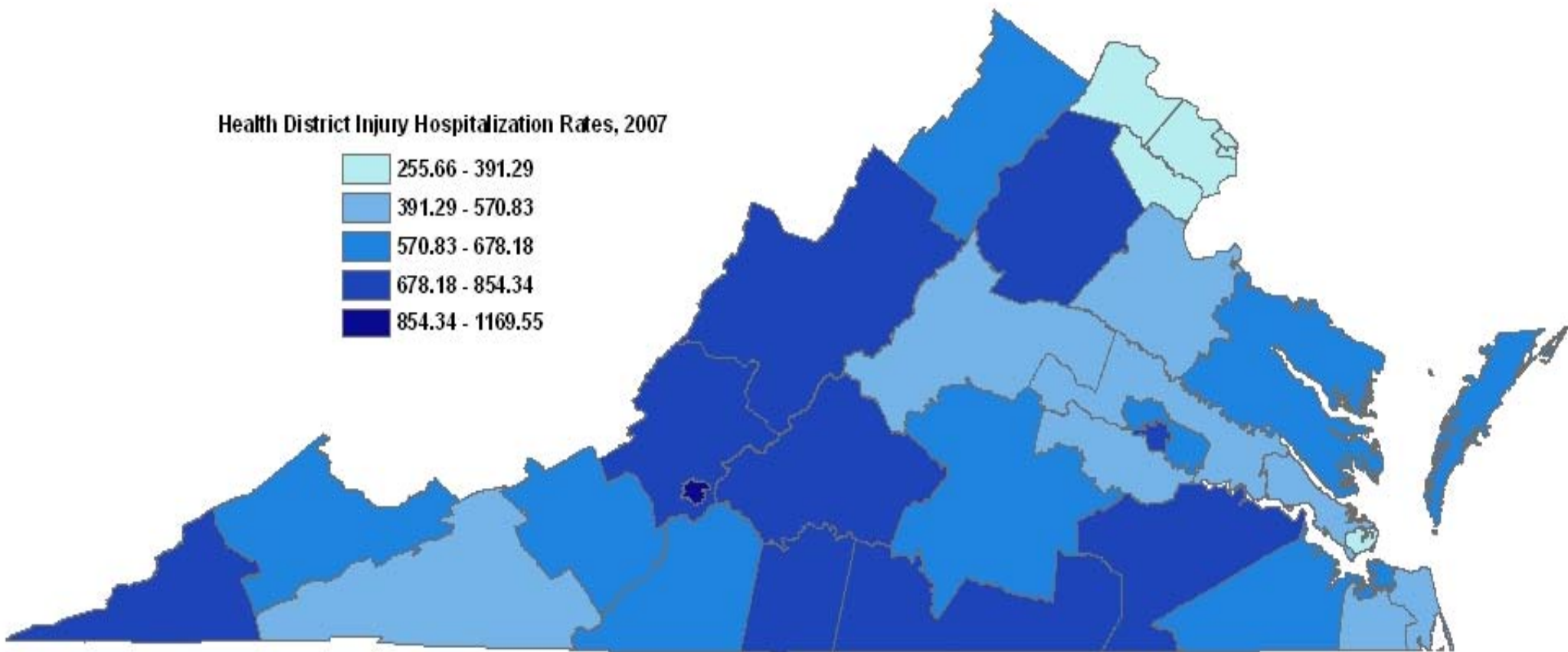
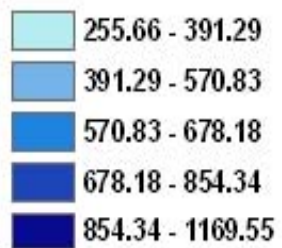
Table 12. Injury Hospitalizations by Health District

	Unintentional		Self-Inflicted		Assault		Undetermined		Other		Total	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Alexandria	330	235.67	35	25.00	20	14.28	7	5.00	--	--	392	279.95
Alleghany	1,157	659.81	137	78.13	28	15.97	21	11.98	1	0.57	1,344	766.45
Arlington	426	208.24	80	39.11	14	6.84	3	1.47	--	--	523	255.66
Central Shenandoah	1,713	620.51	251	90.92	31	11.23	29	10.50	--	--	2,024	733.17
Central Virginia	1,774	728.30	230	94.42	36	14.78	39	16.01	2	0.82	2,081	854.34
Chesapeake	1,027	468.62	107	48.82	74	33.77	40	18.25	3	1.37	1,251	570.83
Chesterfield	1,480	428.61	323	93.54	59	17.09	38	11.00	1	0.29	1,901	550.53
Chickahominy	718	499.18	57	39.63	17	11.82	15	10.43	--	--	807	561.06
Crater	773	500.69	255	165.17	59	38.22	20	12.95	2	1.30	1,109	718.32
Cumberland Plateau	589	522.34	114	101.10	12	10.64	39	34.59	1	0.89	755	669.56
Eastern Shore	293	564.70	36	69.38	14	26.98	4	7.71	--	--	347	668.77
Fairfax	2,752	263.47	595	56.96	98	9.38	39	3.73	3	0.29	3487	333.83
Hampton	489	333.93	39	26.63	31	21.17	13	8.88	1	0.68	573	391.29
Henrico	1,383	477.19	241	83.15	62	21.39	37	12.77	3	1.04	1,726	595.54
Lenowisco	499	544.53	111	121.13	15	16.37	29	31.65	--	--	654	713.68
Lord Fairfax	1,173	548.61	148	69.22	33	15.43	16	7.48	--	--	1,370	640.75
Loudoun	682	244.62	116	41.61	15	5.38	26	9.33	1	0.36	840	301.29
Mount Rogers	912	480.47	128	67.43	10	5.27	22	11.59	--	--	1,072	564.77
New River	941	546.28	149	86.50	16	9.29	18	10.45	1	0.58	1,125	653.10
Norfolk City	1,145	485.69	130	55.14	156	66.17	49	20.78	3	1.27	1,483	629.06
Peninsula	1,345	412.69	112	34.37	100	30.68	18	5.52	4	1.23	1,579	484.49
Piedmont	603	598.75	50	49.65	20	19.86	10	9.93	--	--	683	678.18
Pittsylvania/Danville	684	646.67	71	67.12	25	23.64	56	52.94	2	1.89	838	792.26
Portsmouth	554	543.31	61	59.82	52	51.00	11	10.79	--	--	678	664.92
Prince William	1,032	253.41	248	60.90	58	14.24	30	7.37	1	0.25	1,369	336.16
Rappahannock	1,332	426.60	211	67.58	37	11.85	24	7.69	1	0.32	1,605	514.03
Rappahannock/Rapidan	1,009	609.81	114	68.90	21	12.69	22	13.30	2	1.21	1,168	705.91
Richmond City	1,027	513.18	222	110.93	157	78.45	57	28.48	1	0.50	1,464	731.55
Roanoke City	854	922.25	132	142.55	72	77.75	22	23.76	3	3.24	1,083	1,169.55
Southside	607	710.38	49	57.35	22	25.75	13	15.21	--	--	691	808.69
Thomas Jefferson	980	436.06	143	63.63	40	17.80	22	9.79	--	--	1,185	527.28
Three Rivers	762	535.49	59	41.46	17	11.95	19	13.35	1	0.70	858	602.96
Virginia Beach	1,958	450.38	184	42.32	79	18.17	43	9.89	2	0.46	2,266	521.23
West Piedmont	736	525.25	112	79.93	29	20.70	29	20.70	--	--	906	646.57
Western Tidewater	722	505.15	71	49.68	44	30.78	19	13.29	--	--	856	598.91
Total	34,461	446.84	5,121	66.40	1,573	20.40	899	11.66	39	0.51	42,093	545.81

Source: VHI Patient Level Database, 2007

Figure 2. Injury Hospitalizations by Health District

Health District Injury Hospitalization Rates, 2007



NATURE OF THE INJURY

The Barrell Matrix groups ICD-9-CM injury codes by the body region of the injury and the nature of the injury. The rows of the matrix are based on principal body region and the columns of the matrix are eleven nature of injury categories. A copy can be found at http://www.cdc.gov/nchs/data/ice/final_matrix_post_ice.pdf.

Table 13 presents the nature of the injury discharges for Virginia during 2007. Tables 14 and 15 present the different breakdowns of the body areas involved. Table 16 presents the nature of the injuries by age groups, and Table 17 presents the nature of the injury for the various reporting mechanisms.

Table 13. Nature of the Injury

Nature of Injury	N	%
Amputations	67	0.16%
Blood Vessels	59	0.14%
Burns	578	1.37%
Crushing	31	0.07%
Dislocation	309	0.73%
Fractures	21,437	50.93%
Internal Organs	3,198	7.6%
Nerves	31	0.07%
Open Wounds	3,109	7.39%
Sprains & Strains	935	2.22%
Superficial / Contusion	2,781	6.61%
System Wide & Late Effects	9,144	21.72%
Unspecified	414	0.98%
Total	42,093	100%

Source: VHI Patient Level Database, 2007

Table 14. Body Regions

	N	%
Body Region		
Extremities	17,830	42.36%
Head & Neck	6,197	14.72%
Spine & Back	3,590	8.53%
Torso	5,071	12.05%
Unclassifiable by Site	9,405	22.34%
Major Body Region		
Lower Extremity	12,196	28.97%
Other Head, Face, Neck	3,267	7.76%
Other & Unspecified	261	0.62%
SCI	199	0.47%
System Wide & Late Effects	9,144	21.72%
TBI	2,930	6.96%
Torso	5,071	12.05%
Upper Extremity	5,634	13.38%
VCI	3,391	8.06%
Total	42,093	100%

Injury Hospitalizations in Virginia, 2007

Table 15. Detailed Body Regions

Detail Body Region	N	%
Abdomen	723	1.72%
Back & Buttock	177	0.42%
Cervical SCI	124	0.29%
Cervical VCI	875	2.08%
Chest	2,389	5.68%
Eye	241	0.57%
Face	1,511	3.59%
Foot & Toes	761	1.81%
Forearms & Elbow	1,580	3.75%
Hand & Wrist & Fingers	1,540	3.66%
Head, Face, Neck Unspecified	877	2.08%
Hip	5,744	13.65%
Knee	445	1.06%
Lower Leg & Ankle	3,445	8.18%
Lumbar SCI	21	0.05%
Lumbar VCI	1,224	2.91%
Neck	105	0.25%
Other Head	533	1.27%
Other & Unspecified Lower Extremity	865	2.05%
Other & Unspecified Upper Extremity	420	1%
Other, Multiple, Not Elsewhere Classified	9	0.02%
Pelvis & Urogenital	1,574	3.74%
Sacrum Coccyx SCI	4	0.01%
Sacrum Coccyx VCI	304	0.72%
Shoulder & Upper Arm	2,094	4.97%
Spine & Back Unspecified SCI	14	0.03%
Spine & Back Unspecified VCI	26	0.06%
System Wide & Late Effects	9,144	21.72%
Thoracic/Dorsal SCI	36	0.09%
Thoracic/Dorsal VCI	962	2.29%
Trunk	208	0.49%
Type 1 TBI	2,051	4.87%
Type 2 TBI	687	1.63%
Type 3 TBI	192	0.46%
Unspecified	252	0.6%
Upper Leg & Thigh	936	2.22%
Total	42,093	100%

Source: VHI Patient Level Database, 2007

Injury Hospitalizations in Virginia, 2007

Table 16. Nature of Injury by Age Groups

Nature Of The Injury	<1 N	%	1-4 N	%	5-9 N	%	10-14 N	%
Amputations	1	0.34%	2	0.35%	--	--	1	0.12%
Blood Vessels	--	--	--	--	2	0.41%	2	0.23%
Burns	19	6.48%	80	13.99%	25	5.12%	27	3.14%
Crushing	--	--	1	0.17%	--	--	--	--
Dislocation	--	--	--	--	1	0.20%	8	0.93%
Fractures	118	40.27%	180	31.47%	195	39.96%	355	41.33%
Internal Organs	34	11.6%	36	6.29%	74	15.16%	97	11.29%
Nerves	2	0.68%	1	0.17%	--	--	--	--
Open Wounds	10	3.41%	50	8.74%	57	11.68%	104	12.11%
Sprains & Strains	--	--	4	0.70%	1	0.20%	11	1.28%
Superficial / Contusion	42	14.33%	58	10.14%	50	10.25%	91	10.59%
System Wide & Late Effects	60	20.48%	153	26.75%	71	14.55%	154	17.93%
Unspecified	7	2.39%	7	1.22%	12	2.46%	9	1.05%
Total	293	100%	572	100%	488	100%	859	100%

Nature Of the Injury	15-19 N	%	20-24 N	%	25-34 N	%	35-44 N	%
Amputations	4	0.17%	6	0.23%	7	0.17%	12	0.25%
Blood Vessels	6	0.26%	6	0.23%	13	0.32%	6	0.12%
Burns	23	0.99%	44	1.7%	72	1.78%	75	1.55%
Crushing	3	0.13%	2	0.08%	5	0.12%	5	0.10%
Dislocation	21	0.90%	20	0.77%	46	1.14%	52	1.07%
Fractures	802	34.55%	953	36.8%	1,384	34.2%	1,688	34.88%
Internal Organs	231	9.95%	265	10.23%	294	7.26%	265	5.48%
Nerves	1	0.04%	2	0.08%	3	0.07%	5	0.10%
Open Wounds	260	11.2%	319	12.32%	428	10.58%	428	8.84%
Sprains & Strains	36	1.55%	35	1.35%	90	2.22%	125	2.58%
Superficial / Contusion	178	7.67%	102	3.94%	195	4.82%	275	5.68%
System Wide & Late Effects	734	31.62%	819	31.62%	1,464	36.17%	1,859	38.41%
Unspecified	22	0.95%	17	0.66%	46	1.14%	45	0.93%
Total	2,321	100%	2,590	100%	4,047	100%	4,840	100%

Nature Of the Injury	45-54 N	%	55-64 N	%	65-74 N	%	75+ N	%
Amputations	18	0.35%	8	0.19%	2	0.05%	6	0.05%
Blood Vessels	11	0.22%	5	0.12%	4	0.1%	4	0.03%
Burns	91	1.78%	52	1.25%	32	0.76%	38	0.3%
Crushing	6	0.12%	4	0.1%	1	0.02%	4	0.03%
Dislocation	52	1.02%	27	0.65%	27	0.64%	55	0.44%
Fractures	2,018	39.47%	2,216	53.08%	2,547	60.7%	8,981	71.28%
Internal Organs	320	6.26%	282	6.75%	335	7.98%	965	7.66%
Nerves	8	0.16%	6	0.14%	2	0.05%	1	0.01%
Open Wounds	421	8.23%	249	5.96%	204	4.86%	579	4.6%
Sprains & Strains	143	2.8%	116	2.78%	127	3.03%	247	1.96%
Superficial / Contusion	314	6.14%	266	6.37%	297	7.08%	913	7.25%
System Wide & Late Effects	1,666	32.58%	897	21.49%	575	13.7%	692	5.49%
Unspecified	45	0.88%	47	1.13%	43	1.02%	114	0.90%
Total	5,113	100%	4,175	100%	4,196	100%	12,599	100%

Source: VHI Patient Level Database, 2007

Table 17. Nature of Injury by Cause of Injury

Nature of the Injury	Bites and Stings		Cut/Pierce		Drowning/ Submersion		Fall		Fire/Flame		Firearm		Hot object/ substance	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Amputations	2	0.30%	15	0.92%	--	--	1	0.01%	--	--	2	0.34%	--	--
Blood Vessels	--	--	20	1.23%	--	--	10	0.05%	--	--	9	1.55%	--	--
Burns	--	--	--	--	--	--	2	0.01%	173	76.21%	--	--	351	94.1%
Crushing	1	0.15%	--	--	--	--	2	0.01%	--	--	--	--	--	--
Dislocation	2	0.30%	--	--	--	--	117	0.63%	--	--	2	0.34%	--	--
Fractures	17	2.54%	102	6.26%	11	19.3%	14,181	75.95 %	10	4.41%	317	54.56%	3	0.8%
Internal Organs	3	0.45%	209	12.83%	6	10.53%	1,411	7.56%	1	0.44%	141	24.27%	--	--
Nerves	--	--	2	0.12%	--	--	6	0.03%	--	--	1	0.17%	--	--
Open Wounds	251	37.52%	1025	62.92%	--	--	866	4.64%	12	5.29%	105	18.07%	6	1.61%
Sprains & Strains	3	0.45%	8	0.49%	--	--	376	2.01%	2	0.88%	--	--	1	0.27%
Superficial / Contusion	208	31.09%	225	13.81%	2	3.51%	1,425	7.63%	8	3.52%	2	0.34%	9	2.41%
System Wide & Late Effects	175	26.16%	12	0.74%	38	66.67%	38	0.2%	21	9.25%	1	0.17%	3	0.8%
Unspecified	7	1.05%	11	0.68%	--	--	236	1.26%	--	--	1	0.17%	--	--
Total	669	100%	1,629	100%	57	100%	18,671	100%	227	100%	581	100%	373	100%

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Table 17. Nature of Injury by Cause of Injury Cont'

Nature of the Injury	MVT Motorcyclist		MVT Occupant		MVT Other		MVT Pedal cyclist		MVT Pedestrian		MVT Unspecified		Machinery	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Amputations	1	0.16%	--	--	--	--	--	--	--	--	--	--	22	8.84%
Blood Vessels	--	--	1	0.03%	--	--	1	1.28%	--	--	1	0.45%	--	--
Burns	--	--	--	--	--	--	--	--	--	--	1	0.45%	5	2.01%
Crushing	1	0.16%	--	--	--	--	--	--	1	0.33%	--	--	5	2.01%
Dislocation	11	1.77%	38	1.17%	1	2.17%	1	1.28%	4	1.3%	6	2.71%	--	--
Fractures	525	84.27%	2304	70.7%	29	63.04%	57	73.08%	248	80.78%	147	66.52%	165	66.27%
Internal Organs	46	7.38%	472	14.48%	4	8.7%	13	16.67%	28	9.12%	23	10.41%	12	4.82%
Nerves	--	--	2	0.06%	--	--	--	--	1	0.33%	--	--	--	--
Open Wounds	20	3.21%	148	4.54%	5	10.87%	3	3.85%	5	1.63%	7	3.17%	29	11.65%
Sprains & Strains	9	1.44%	97	2.98%	1	2.17%			4	1.30%	13	5.88%	5	2.01%
Superficial / Contusion	9	1.44%	170	5.22%	6	13.04%	2	2.56%	15	4.89%	16	7.24%	5	2.01%
System Wide & Late Effects	1	0.16%	6	0.18%	--	--	--	--	1	0.33%	5	2.26%	--	--
Unspecified	--	--	21	0.64%	--	--	1	1.28%	--	--	2	0.90%	1	0.4%
Total	623	100%	3259	100%	46	100%	78	100%	307	100%	221	100%	249	100%

Table 17. Nature of Injury by Cause of Injury Cont'

Nature of the Injury	Other natural/ environmental		Other specified and classifiable		Other specified, not elsewhere classifiable		Overexertion		Pedal cyclist, other		Pedestrian, other		Poisoning	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Amputations	--	--	11	0.6%	3	0.51%	--	--	--	--	--	--	--	--
Blood Vessels	--	--	1	0.05%	3	0.51%	1	0.19%	--	--	--	--	--	--
Burns	1	0.28%	33	1.79%	2	0.34%	--	--	--	--	--	--	8	0.12%
Crushing	--	--	5	0.27%	--	--	1	0.19%	--	--	1	1.69%	--	--
Dislocation	1	0.28%	10	0.54%	--	--	24	4.57%	3	1.19%	2	3.39%	--	--
Fractures	52	14.36%	194	10.53%	58	9.8%	321	61.14%	170	67.19%	46	77.97%	42	0.64%
Internal Organs	14	3.87%	71	3.85%	23	3.89%	4	0.76%	56	22.13%	6	10.17%	12	0.18%
Nerves	--	--	2	0.11%			2	0.38%	--	--	--	--	1	0.02%
Open Wounds	13	3.59%	79	4.29%	25	4.22%	2	0.38%	9	3.56%	2	3.39%	94	1.42%
Sprains & Strains	3	0.83%	15	0.81%	4	0.68%	145	27.62%	3	1.19%	--	--	12	0.18%
Superficial / Contusion	19	5.25%	47	2.55%	48	8.11%	10	1.9%	9	3.56%	2	3.39%	34	0.51%
System Wide & Late Effects	259	71.55%	1,365	74.06%	416	70.27%	3	0.57%	1	0.4%	--	--	6398	96.84%
Unspecified	--	--	10	0.54%	10	1.69%	12	2.29%	2	0.79%	--	--	6	0.1%
Total	362	100%	1,843	100%	592	100%	525	100%	253	100%	59	100%	6607	100%

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Table 17. Nature of Injury by Cause of Injury Cont'

Nature of the Injury	Struck by, against		Suffocation		Transport, other		Unspecified	
	N	%	N	%	N	%	N	%
Amputations	6	0.40%	--	--	1	0.12%	3	0.13%
Blood Vessels	7	0.46%	--	--	1	0.12%	4	0.17%
Burns	--	--	--	--	1	0.12%	1	0.04%
Crushing	8	0.53%	--	--	1	0.12%	5	0.22%
Dislocation	24	1.59%	--	--	9	1.12%	54	2.34%
Fractures	835	55.26%	9	3.77%	630	78.26%	964	41.79%
Internal Organs	226	14.96%	4	1.67%	93	11.55%	320	13.87%
Nerves	--	--	--	--	--	--	14	0.61%
Open Wounds	148	9.79%	3	1.26%	25	3.11%	227	9.84%
Sprains & Strains	23	1.52%	1	0.42%	15	1.86%	195	8.45%
Superficial / Contusion	180	11.91%	13	5.44%	25	3.11%	292	12.66%
System Wide & Late Effects	14	0.93%	205	85.77%	2	0.25%	180	7.80%
Unspecified	40	2.65%	4	1.67%	2	0.25%	48	2.08%
Total	1,511	100%	239	100%	805	100%	2,307	100%

Source: VHI Patient Level Database, 2007

INJURY AS A PROPORTION OF ALL CAUSES OF DEATH

In 2007, out of 57,835 total deaths in Virginia, 3,965 were the result of an injury. Overall, injury deaths accounted for 6.8% of all deaths occurring in 2007. Injury deaths accounted for a majority of childhood deaths and over half of the deaths for adolescents and adults between the ages of 10 and 34. Age-adjusted rates are provided for comparison to other sources of mortality data. See Table 18 and Figure 3 for more information.

Table 18. Injury as a Proportion of all Causes of Death

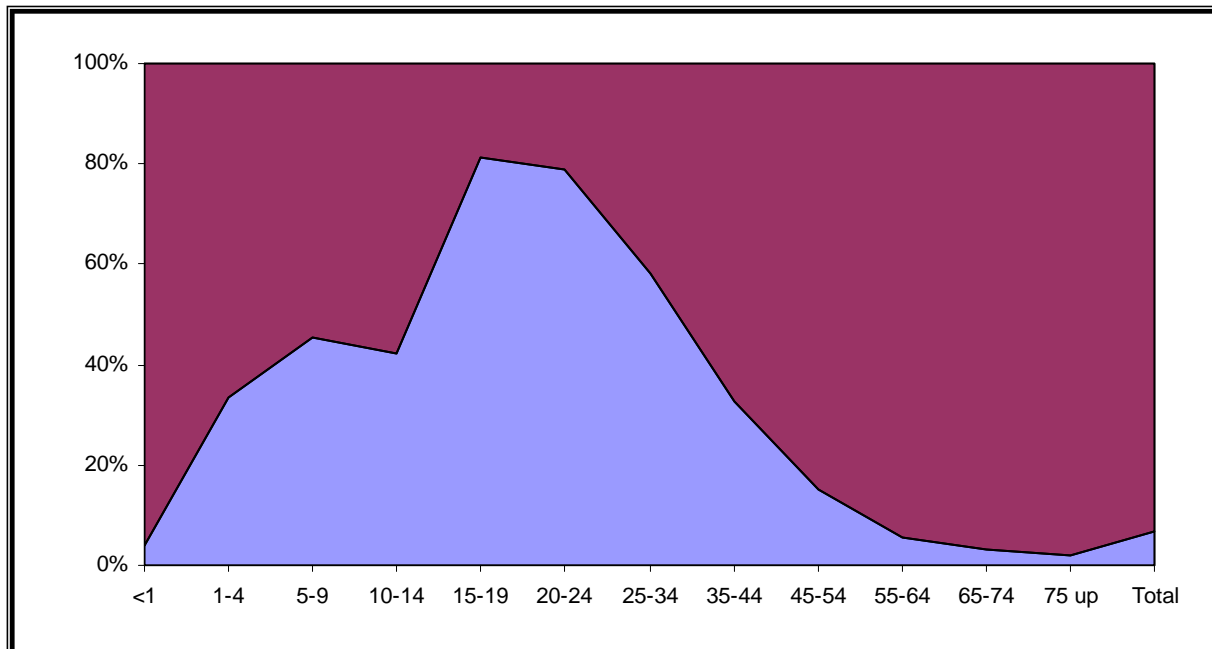
Age	Total Deaths	Total Injury Deaths	% Deaths due to Injury	Injury Death rate per 100,000**	Age-adjusted rate per 100,000***
<1	839	34	4.05%	32.03	0.44
1-4	99	33	33.33%	8.00	0.44
5-9	64	29	45.31%	5.89	0.43
10-14	90	38	42.22%	7.64	0.56
15-19	277	225	81.23%	42.23	3.05
20-24	497	393	79.07%	72.00	4.79
25-34	1013	590	58.24%	56.07	7.60
35-44	1,919	626	32.62%	53.96	8.78
45-54	4,454	675	15.15%	58.93	7.95
55-64	7,179	398	5.54%	46.41	4.05
65-74	9,632	290	3.01%	59.14	3.91
75 +	31,770	633	1.99%	151.02	9.11
Total	57,835	3,965*	6.85%	51.41	51.10

*One age unknown

**Crude rate per 100,000 population

***Adjusted to 2000 standard population

Figure 3. Injury as a Proportion of All Causes of Death by Age



CAUSE AND INTENT OF INJURY DEATH

The leading causes of injury deaths were motor vehicle traffic crashes (MVT) (25.5%), firearms (20.6%), and poisonings (19.3%). Table 19 provides the number and rate of deaths due to all types of injuries. The majority of injury deaths (65.8%) were the result of unintentional injuries. Suicides accounted for 21.9% of injury deaths and homicides for 10.4% of injury deaths.

MVT categories accounted for 38.7% of unintentional injury deaths, followed by poisoning (21.1%) and falls (17.1%). These three causes accounted for 77% of all unintentional injury deaths (see Table 22). Firearms, poisonings, and suffocations were the leading causes of suicide deaths, while firearms were the leading cause of homicide injury deaths accounting for 73.3% of homicide deaths.

Table 19. Cause of Injury Death

	N	%	Rate per 100,000*	Age Adjusted Rate per 100,000**
Cause				
Cut/Pierce	63	1.59%	0.82	0.79
Drowning	84	2.12%	1.09	1.07
Fall	461	11.63%	5.98	6.30
Fire/Flame	102	2.57%	1.32	1.30
Firearm	820	20.68%	10.63	10.41
Hot object/substance	1	0.03%	0.01	0.01
Machinery	14	0.35%	0.18	0.19
MVT Motorcyclist	125	3.15%	1.62	1.57
MVT Occupant	300	7.56%	3.89	3.89
MVT Pedal cyclist	7	0.17%	0.09	0.09
MVT Pedestrian	72	1.81%	0.93	0.92
MVT Unspecified	507	12.78%	6.57	6.50
Natural/environmental	32	0.81%	0.41	0.41
Other specified, not elsewhere classifiable	66	1.66%	0.86	0.85
Unspecified	27	0.68%	0.35	0.34
Other land transport	37	0.93%	0.48	0.48
Pedal cyclist, other	3	0.08%	0.04	0.03
Pedestrian, other	22	0.55%	0.29	0.28
Other specified and classifiable	48	1.21%	0.62	0.62
Other transport	22	0.55%	0.29	0.28
Poisoning	765	19.29%	9.92	9.70
Struck by, against	36	0.91%	0.47	0.46
Suffocation	351	8.85%	4.55	4.60
Intent				
Unintentional	2,609	65.8%	33.83	33.89
Suicide	872	21.99%	11.31	11.04
Homicide	416	10.49%	5.39	5.30
Legal/War	13	0.32%	0.17	0.16
Undetermined	55	1.38%	0.71	0.70
Total Deaths	3,965	100%	51.41	51.10

Source: Virginia Center for Health Statistics, 2007

*Crude rate per 100,000 population

**Adjusted to 2000 standard population

INTENT OF INJURY DEATHS

Intent of injury related deaths by age groups are presented in Table 20. Unintentional and suicide injury death rates were highest among the elderly population (75 and over). Homicide death rates were highest among 20-24 year olds.

The Virginia unintentional injury rate was slightly lower than the United states 2005 rate, 33.83 compared to 39.06 per 100,000. Virginia had slightly higher rates for suicide injury deaths then did the United States in 2005 (11.04 compared to 10.88 per 100,000 respectively).

Table 20. Intent of Injury Deaths by Age Groups

Age	Intent								
	Unintentional			Suicide			Homicide		
	N	Rate per 100,000 *	Age-adjusted rate per 100,000**	N	Rate per 100,000*	Age-adjusted rate per 100,000**	N	Rate per 100,000*	Age-adjusted rate per 100,000**
<1	24	22.61	0.31	--	--	--	9	8.48	0.12
1-4	28	6.79	0.38	--	--	--	5	1.21	0.07
5-9	28	5.68	0.41	--	--	--	1	0.20	0.01
10-14	30	6.03	0.44	4	0.80	0.06	4	0.80	0.06
15-19	136	25.53	1.84	33	6.19	0.45	53	9.95	0.72
20-24	245	44.88	2.98	64	11.72	0.78	78	14.29	0.95
25-34	355	33.74	4.57	118	11.21	1.52	99	9.41	1.28
35-44	364	31.38	5.10	181	15.60	2.54	68	5.86	0.95
45-54	404	35.27	4.76	205	17.90	2.41	55	4.80	0.65
55-64	242	28.22	2.46	119	13.88	1.21	29	3.38	0.30
65-74	211	43.03	2.84	65	13.26	0.88	9	1.84	0.12
75 +	541	129.07	7.79	83	19.80	1.20	6	1.43	0.09
Total	2,609	33.83	33.89	872	11.31	11.04	416	5.39	5.30

Source: Virginia Center for Health Statistics, 2007

*Crude rate per 100,000 population

**Age-adjusted to 2000 standard population

Table 21. Virginia and United states Comparison

Intent	VA 2006 Age Adjusted Rate per 100,000	US 2005 Age Adjusted Rate per 100,000
Unintentional	33.89	39.06
Suicide	11.04	10.88
Homicide	5.30	6.09
Legal/War	0.16	0.14
Undetermined	0.70	1.59
Total	51.10	57.76

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Table 22. Intent of Injury Death by Cause

	INTENT														
	Unintentional			Suicide			Homicide			Undetermined			Legal/War		
	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %
Cut/Pierce	3	0.11%	4.76%	11	1.26%	17.46%	48	11.54%	76.19%	1	1.82%	1.59%	--	--	--
Drowning	71	2.72%	84.52%	10	1.15%	11.90%	2	0.48%	2.38%	1	1.82%	1.19%	--	--	--
Fall	447	17.13%	96.96%	14	1.61%	3.04%	--	--	--	--	--	--	--	--	--
Fire/Flame	102	3.91%	100.00%	--	--	--	--	--	--	--	--	--	--	--	--
Firearm	10	0.38%	1.22%	485	55.62%	59.15%	305	73.32%	37.20%	7	12.73%	0.85%	13	100%	1.59%
Hot object/substance	1	0.04%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	14	0.54%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	125	4.79%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	300	11.49%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedal cyclist	7	0.26%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	72	2.75%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	507	19.43%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Natural/environmental	32	1.23%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classifiable	31	1.19%	46.97%	7	0.80%	10.61%	20	4.81%	30.30%	8	14.55%	12.12%	--	--	--
Unspecified	0			1	0.11%	3.70%	21	5.05%	77.78%	5	9.09%	18.52%	--	--	--
Other land transport	36	1.38%	97.30%	--	--	--	1	0.24%	2.70%	--	--	--	--	--	--
Pedal cyclist, other	3	0.11%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	22	0.84%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	41	1.57%	85.42%	3	0.34%	6.25%	4	0.96%	8.33%	--	--	--	--	--	--
Other transport	22	0.84%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	552	21.16%	72.16%	180	20.64%	23.53%	1	0.24%	0.13%	32	58.18%	4.18%	--	--	--
Struck by, against	33	1.26%	91.67%				3	0.72%	8.33%	0			--	--	--
Suffocation	178	6.82%	50.71%	161	18.46%	45.87%	11	2.64%	3.13%	1	1.82%	0.28%	--	--	--
Total	2,609	100%	65.80%	872	100%	21.99%	416	100%	10.49%	55	100%	1.39%	13	100%	0.33%

Source: Virginia Center for Health Statistics, 2007

CAUSE AND INTENT OF INJURY DEATH BY GENDER

In 2007, the injury death rate for males was two times higher than that for females. Table 23 shows the rates for the various causes of death by gender. Males were five times more likely to die from a firearm injury. Also, the risk of death by suicide was almost three times higher for males than females. **Relative risks (RR) with 95% confidence intervals that do not include 1.0 are considered statistically significant.**

Table 23. Injury Death by Gender

	Male N	%	Rate per 100,000*	Female N	%	Rate per 100,000*	Male to Female R.R. (95%CI)
Cause							
Cut/Pierce	48	1.74%	1.27	15	1.24%	0.38	3.32 (1.40, 5.24)
Drowning	60	2.18%	1.59	24	1.98%	0.61	2.59(1.37, 3.82)
Fall	253	9.2%	6.68	208	17.13%	5.30	1.26(1.03, 1.49)
Fire/Flame	58	2.11%	1.53	44	3.62%	1.12	1.37(0.83, 1.90)
Firearm	688	25.01%	18.18	132	10.87%	3.36	5.41(4.40, 6.41)
Hot object/substance	--	--	--	1	0.08%	0.03	--
Machinery	14	0.51%	0.37	--	--	--	--
MVT Motorcyclist	113	4.11%	2.99	12	0.98%	0.31	9.77(3.96, 15.58)
MVT Occupant	203	7.37%	5.36	97	7.99%	2.47	2.17(1.65, 2.70)
MVT Pedal cyclist	7	0.25%	0.18	--	--	--	--
MVT Pedestrian	54	1.96%	1.43	18	1.48%	0.46	3.11(1.45, 4.77)
MVT Unspecified	342	12.43%	9.04	165	13.59%	4.20	2.15(1.75, 2.55)
Natural/environmental	26	0.95%	0.69	6	0.49%	0.15	4.50(0.50, 8.49)
Other specified, not elsewhere classifiable	43	1.56%	1.14	23	1.89%	0.59	1.94(0.96, 2.92)
Unspecified	19	0.69%	0.50	8	0.66%	0.20	2.46(0.43, 4.50)
Other land transport	27	0.98%	0.71	10	0.82%	0.25	2.80(0.77, 4.83)
Pedal cyclist, other	3	0.11%	0.08	--	--	--	--
Pedestrian, other	15	0.55%	0.40	7	0.58%	0.18	2.22(0.23, 4.22)
Other specified and classifiable	37	1.34%	0.98	11	0.91%	0.28	3.49(1.14, 5.84)
Other transport	17	0.62%	0.45	5	0.41%	0.13	3.53(0.01, 7.05)
Poisoning	460	16.72%	12.15	305	25.12%	7.77	1.56(1.34, 1.79)
Struck by, against	34	1.24%	0.90	2	0.16%	0.05	17.64(-7.52, 42.79)
Suffocation	230	8.36%	6.08	121	9.97%	3.08	1.97(1.54, 2.41)
Intent							
Unintentional	1731	62.92%	45.73	878	72.32%	22.36	2.05(1.88, 2.21)
Suicide	645	23.44%	17.04	227	18.69%	5.78	2.95(2.50, 3.39)
Homicide	324	11.71%	8.56	92	7.57%	2.34	3.65(2.81, 4.50)
Legal/War	13	0.47%	0.34	--	--	--	--
Undetermined	38	1.38%	1.00	17	1.4%	0.43	2.32(0.99, 3.65)
Total Deaths	2,751	100%	72.68	1,214	100%	30.91	2.35(2.19, 2.51)

Source: Virginia Center for Health Statistics, 2007

*Crude rate per 100,000 population

CAUSE AND INTENT OF INJURY BY RACE

White Virginians had a slightly higher rate of injury death in 2007 than Black Virginians, but there were some differences by cause. Black Virginians had almost twice the risk of death due to a firearm injury and were two times more likely to die from a cut/pierce injury. Caution should be used when examining differences between races, as other confounding variables, such as socioeconomic status and education were not accounted for in this analysis. See Table 24 for more information. **RR relative risk with 95% confidence intervals that include 1.0 are considered not statistically significant.**

Table 24. Injury Death by Race

	White N	%	Rate per 100,000*	Black N	%	Rate per 100,000*	Black to White RR (95%CI)
Cause							
Cut/Pierce	37	1.21%	0.65	24	2.97%	1.52	2.35(1.14, 3.55)
Drowning	61	2%	1.07	19	2.35%	1.20	1.13(0.55, 1.71)
Fall	415	13.58%	7.28	36	4.46%	2.28	0.31(0.21, 0.42)
Fire/Flame	63	2.06%	1.10	35	4.33%	2.22	2.01(1.18, 2.84)
Firearm	549	17.96%	9.63	250	30.94%	15.85	1.65(1.40, 1.89)
Hot object/substance	1	0.03%	0.02	--	--	--	--
Machinery	11	0.36%	0.19	3	0.37%	0.19	0.99(-0.27, 2.25)
MVT Motorcyclist	102	3.33%	1.79	20	2.47%	1.27	0.71(0.37, 1.05)
MVT Occupant	242	7.91%	4.24	54	6.68%	3.42	0.81(0.57, 1.04)
MVT Pedal cyclist	4	0.13%	0.07	2	0.24%	0.13	1.81(-1.26, 4.88)
MVT Pedestrian	48	1.57%	0.84	20	2.47%	1.27	1.51(0.72, 2.29)
MVT Unspecified	403	13.18%	7.07	90	11.13%	5.71	0.81(0.62, 0.99)
Natural/environmental	23	0.75%	0.40	8	0.99%	0.51	1.26(0.25, 2.27)
Other specified, not elsewhere classifiable	42	1.37%	0.74	20	2.48%	1.27	1.72(0.81, 2.64)
Unspecified	14	0.46%	0.25	12	1.49%	0.76	3.10(0.71, 5.49)
Other land transport	29	0.95%	0.51	8	0.99%	0.51	1.00(0.22, 1.78)
Pedal cyclist, other	1	0.03%	0.02	--	--	--	--
Pedestrian, other	20	0.65%	0.35	2	0.25%	0.13	0.36(-0.16, 0.89)
Other specified and classifiable	35	1.14%	0.61	13	1.61%	0.82	1.34(0.49, 2.20)
Other transport	20	0.65%	0.35	1	0.12%	0.06	0.18(-0.18, 0.54)
Poisoning	649	21.23%	11.38	107	13.24%	6.78	0.60(0.47, 0.72)
Struck by, against	27	0.88%	0.47	8	0.99%	0.51	1.07(0.23, 1.92)
Suffocation	261	8.54%	4.58	76	9.41%	4.82	1.05(0.78, 1.32)
Intent							
Unintentional	2098	68.63%	36.78	452	55.94%	28.66	0.78(0.70, 0.86)
Suicide	757	24.76%	13.27	87	10.77%	5.52	0.42(0.32, 0.51)
Homicide	155	5.07%	2.72	249	30.82%	15.79	5.81(4.64, 6.97)
Legal/War	4	0.13%	0.07	9	1.11%	0.57	8.14(-1.45, 17.72)
Undetermined	43	1.41%	0.75	11	1.36%	0.70	0.93(0.31, 1.54)
Total Deaths	3,057	100%	53.60	808	100%	51.23	0.96(0.88, 1.03)

Source: Virginia Center for Health Statistics, 2007

*Crude rate per 100,000 population

INTENT OF INJURY DEATH BY AGE

Table 25 depicts the distribution of injury deaths by intent for all age groups. Overall, 65.8% of deaths were due to unintentional injury, 21.9% were suicide-related and 10.5% were due to homicides. Within all age categories, unintentional injuries were the leading intent for injury death. Suicide deaths exceeded homicide deaths for all persons ages 25 and older.

Table 25. Intent of Injury Deaths by Age Groups

Intent	<1		1-4		5-9		10-14		15-19	
	N	%	N	%	N	%	N	%	N	%
Unintentional	24	70.59%	28	84.85%	28	96.55%	30	78.95%	136	60.44%
Suicide	--	--	--	--	--	--	4	10.53%	33	14.67%
Homicide	9	26.47%	5	15.15%	1	3.45%	4	10.53%	53	23.56%
Legal/War	--	--	--	--	--	--	--	--	--	--
Undetermined	1	2.94%	--	--	--	--	--	--	3	1.33%
Total	34	100%	33	100%	29	100%	38	100%	225	100%

Intent	20-24		25-34		35-44		45-54		55-64	
	N	%	N	%	N	%	N	%	N	%
Unintentional	245	62.34%	355	60.17%	364	58.15%	404	59.85%	242	60.8%
Suicide	64	16.28%	118	20%	181	28.91%	205	30.37%	119	29.9%
Homicide	78	19.85%	99	16.78%	68	10.86%	55	8.15%	29	7.29%
Legal/War	4	1.02%	4	0.68%	3	0.48%	1	0.15%	1	0.25%
Undetermined	2	0.51%	14	2.37%	10	1.6%	10	1.48%	7	1.76%
Total	393	100%	590	100%	626	100%	675	100%	398	100%

Intent	65-74		75 +		Total	
	N	%	N	%	N	%
Unintentional	211	72.76%	541	85.47%	2,609	65.8%
Suicide	65	22.41%	83	13.11%	872	21.99%
Homicide	9	3.1%	6	0.95%	416	10.49%
Legal/War	--	--	--	--	13	0.33%
Undetermined	5	1.72%	3	0.47%	55	1.39%
Total	290	100%	633	100%	3,965	100%

Source: Virginia Center for Health Statistics, 2007

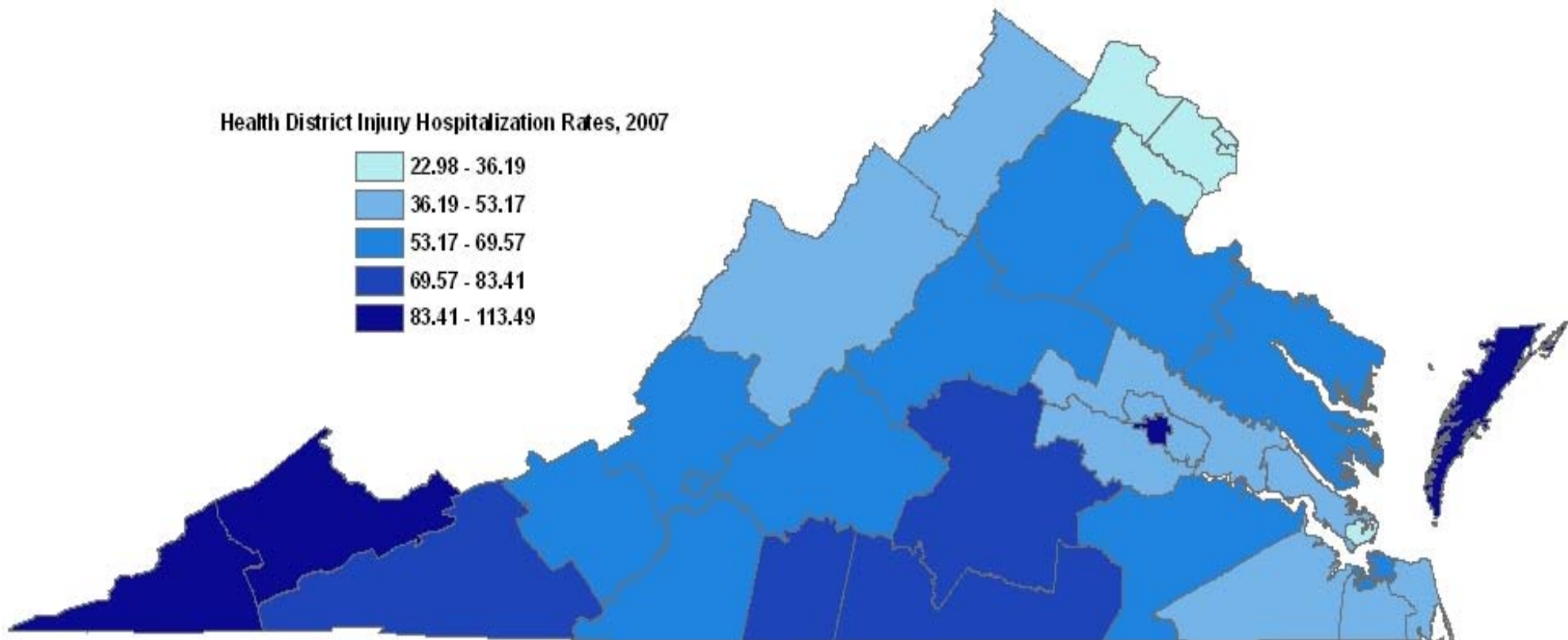
Injury Deaths in Virginia, 2007

Table 26. Injury Deaths by Health District

	Unintentional		Suicide		Homicide		Legal/War		Undetermined		Total	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Alexandria	25	17.85	9	6.43	9	6.43	--	--	--	--	43	30.71
Alleghany	75	42.77	21	11.98	6	3.42	1	0.57	--	--	103	58.74
Arlington	32	15.64	11	5.38	3	1.47	--	--	1	0.49	47	22.98
Central Shenandoah	102	36.95	36	13.04	5	1.81	--	--	2	0.72	145	52.52
Central Virginia	108	44.34	22	9.03	6	2.46	--	--	2	0.82	138	56.65
Chesapeake	69	31.48	18	8.21	13	5.93	1	0.46	1	0.46	102	46.54
Chesterfield	100	28.96	31	8.98	14	4.05	--	--	2	0.58	147	42.57
Chickahominy	52	36.15	21	14.60	--	--	--	--	1	0.70	74	51.45
Crater	70	45.34	18	11.66	15	9.72	--	--	--	--	103	66.72
Cumberland Plateau	80	70.95	25	22.17	4	3.55	--	--	1	0.89	110	97.55
Eastern Shore	37	71.31	4	7.71	8	15.42	--	--	1	1.93	50	96.37
Fairfax	188	18.00	93	8.90	22	2.11	--	--	10	0.96	313	29.97
Hampton	29	19.80	12	8.19	11	7.51	--	--	1	0.68	53	36.19
Henrico	96	33.12	25	8.63	9	3.11	--	--	1	0.35	131	45.20
Lenowisco	69	75.30	27	29.46	5	5.46	--	--	3	3.27	104	113.49
Lord Fairfax	69	32.27	30	14.03	2	0.94	1	0.47	--	--	102	47.71
Loudoun	49	17.58	20	7.17	1	0.36	--	--	--	--	70	25.11
Mount Rogers	107	56.37	39	20.55	7	3.69	--	--	2	1.05	155	81.66
New River	75	43.54	32	18.58	11	6.39	--	--	1	0.58	119	69.08
Norfolk City	85	36.06	29	12.30	45	19.09	2	0.85	3	1.27	164	69.57
Peninsula	74	22.71	31	9.51	28	8.59	2	0.61	1	0.31	136	41.73
Piedmont	66	65.53	10	9.93	7	6.95	--	--	1	0.99	84	83.41
Pittsylvania/Danville	58	54.83	13	12.29	11	10.40	--	--	1	0.95	83	78.47
Portsmouth	37	36.29	13	12.75	16	15.69	1	0.98	2	1.96	69	67.67
Prince William	73	17.93	32	7.86	16	3.93	--	--	5	1.23	126	30.94
Rappahannock	123	39.39	43	13.77	14	4.48	1	0.32	2	0.64	183	58.61
Rappahannock/Rapidan	73	44.12	26	15.71	6	3.63	--	--	1	0.60	106	64.06
Richmond City	104	51.97	22	10.99	62	30.98	--	--	2	1.00	190	94.94
Roanoke City	30	32.40	18	19.44	7	7.56	1	1.08	4	4.32	60	64.79
Southside	54	63.20	11	12.87	6	7.02	--	--	--	--	71	83.09
Thomas Jefferson	103	45.83	27	12.01	8	3.56	--	--	--	--	138	61.40
Three Rivers	65	45.68	20	14.05	5	3.51	--	--	1	0.70	91	63.95
Virginia Beach	110	25.30	53	12.19	16	3.68	2	0.46	1	0.23	182	41.86
West Piedmont	62	44.25	26	18.55	7	5.00	--	--	2	1.43	97	69.22
Western Tidewater	60	41.98	4	2.80	11	7.70	1	0.70	--	--	76	53.17
Total	2,609	33.83	872	11.31	416	5.39	13	0.17	55	0.71	3,965	51.41

Source: Virginia Center for Health Statistics, 2007

Figure 4. Injury Death Rates by Health District



TRAUMATIC BRAIN INJURY DEATH

In 2007, Virginia reported 1,360 deaths that had at least one traumatic brain injury (TBI) cause*. TBI rates were highest among elderly adults aged 75 and older (see Table 27). Table 28 and Table 29 present the intent of TBI deaths by gender and race.

Fifty-seven percent of TBI deaths were due to unintentional injuries, almost 30% to suicides, and 12% to homicides (see Table 28).

RR relative risk with 95% confidence intervals that include 1.0 are considered not statistically significant.

Table 27. TBI Deaths by Age Group, 2007

Age	N	%	TBI rate per 100,000**	Age-adjusted rate per 100,000***
<1	8	0.59%	7.54	0.10
1-4	6	0.44%	1.46	0.08
5-9	12	0.88%	2.44	0.18
10-14	11	0.81%	2.21	0.16
15-19	110	8.09%	20.65	1.49
20-24	164	12.06%	30.04	2.00
25-34	186	13.68%	17.68	2.40
35-44	161	11.84%	13.88	2.26
45-54	211	15.51%	18.42	2.48
55-64	132	9.71%	15.39	1.34
65-74	104	7.65%	21.21	1.40
75 +	254	18.68%	60.60	3.66
Total	1,360*	100%	17.63	17.55

Source: Virginia Center for Health Statistics, 2007

*One age unknown

**Crude rate per 100,000 population

***Adjusted to 2000 standard population

Table 28. Intent of TBI Deaths by Gender, 2007

Intent	Male N	Rate per 100,000	Female N	Rate per 100,000*	Male to Female R.R. (95% CI)
Unintentional	538	14.21	238	6.06	2.35(1.99, 2.70)
Suicide	343	9.06	58	1.48	6.14(4.43, 7.84)
Homicide	117	3.09	52	1.32	2.33(1.57, 3.10)
Legal/War	2	0.05	--	--	--
Undetermined	6	0.16	--	--	--
Total	1,006	26.58	354	9.01	2.95(2.59, 3.31)

Source: Virginia Center for Health Statistics, 2007

Table 29. Intent of TBI Deaths by Race, 2007

Intent	White N	Rate per 100,000	Black N	Rate per 100,000*	Black to White R.R. (95%CI)
Unintentional	643	11.27	110	6.97	0.62(0.49, 0.74)
Suicide	353	6.19	37	2.35	0.38(0.25, 0.51)
Homicide	73	1.28	88	5.58	4.36(3.01, 5.71)
Legal/War	--	--	2	0.13	--
Undetermined	10	0.18	1	0.06	0.36(-0.38, 1.10)
Total	1,079	18.92	238	15.09	0.80(0.69, 0.91)

Source: Virginia Center for Health Statistics, 2007

Traumatic Brain Injury

Table 30. TBI Deaths by Cause of Injury and Intent, 2007

	INTENT														
	Unintentional			Suicide			Homicide			Undetermined			Legal intervention		
	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %
Cut/Pierce	1	0.13%	33.33%	--	--	--	2	1.18%	66.67%	--	--	--	--	--	--
Drowning	1	0.13%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Fall	245	31.57%	98%	5	1.25%	2.00%	--	--	--	--	--	--	--	--	--
Fire/Flame	1	0.13%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Firearm	4	0.52%	0.76%	390	97.26%	73.86%	130	76.92%	24.62%	2	16.67%	0.38%	2	100%	0.38%
Machinery	2	0.26%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	126	27.88%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	47	10.40%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedal cyclist	3	0.66%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	41	9.07%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	235	51.99%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Natural/environmental	1	0.13%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classified	15	1.93%	38.46%	4	1.00%	10.26%	15	8.88%	38.46%	5	41.67%	12.82%	--	--	--
Unspecified	--	--	--	--	--	--	14	8.28%	77.78%	4	33.33%	22.22%	--	--	--
Other land transport	15	1.93%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	2	0.26%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	6	0.77%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	7	0.90%	63.64%	2	0.50%	18.18%	2	1.18%	18.18%	--	--	--	--	--	--
Other transport	4	0.52%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	5	0.64%	83.33%	--	--	--	--	--	--	1	8.33%	16.67%	--	--	--
Struck by, against	15	1.93%	83.33%	--	--	--	3	1.78%	16.67%	--	--	--	--	--	--
Suffocation	--	--	--	--	--	--	3	1.78%	100%	--	--	--	--	--	--
Total	776	100%	57.06%	401	100%	29.49%	169	100%	12.43%	12	100%	0.88%	2	100%	0.15%

Source: Virginia Center for Health Statistics, 2007

TRAUMATIC BRAIN INJURY HOSPITALIZATIONS

There were a total of 4,375 hospital discharges with at least one TBI related diagnosis. TBI hospitalization rates were highest among infants and the elderly (see Table 31). The average length of stay for a TBI related hospitalization was 6 days, with a median charge of almost \$18,191 per episode of care (See Table 32).

A majority (91.2%) of hospitalizations were due to unintentional injuries. Males have almost two times more likely to be hospitalized with a TBI than females. Overall, White Virginians were more likely than Black Virginians to be hospitalized with a TBI; however, Black Virginians were three times more likely to suffer from an assault-related TBI hospitalization than White Virginians (See Tables 33 and 34). Caution should be used when examining differences between races, as other confounding variables, such as socioeconomic status and education were not accounted for in this analysis. ***RR relative risk with 95% confidence intervals that include 1.0 are considered not statistically significant.***

Table 31. TBI Hospitalizations by Age Group

Age	N	%	TBI rate per 100,000**	Age-adjusted rate per 100,000***
<1	115	2.63%	108.32	1.50
1-4	91	2.08%	22.07	1.22
5-9	74	1.69%	15.02	1.09
10-14	122	2.79%	24.51	1.79
15-19	339	7.75%	63.63	4.59
20-24	396	9.05%	72.55	4.82
25-34	401	9.17%	38.11	5.17
35-44	397	9.07%	34.22	5.57
45-54	487	11.13%	42.52	5.73
55-64	372	8.5%	43.38	3.78
65-74	402	9.19%	81.98	5.41
75 +	1,179	26.95%	281.28	16.98
Total	4,375	100%	1.49	57.65

Source: VHI Patient Level Database, 2007

**Crude rate per 100,000 population

***Adjusted to 2000 standard population

Table 32. TBI Hospitalizations Length of Stay and Charges

Age	N	Avg LOS	Total LOS	Median Charge	Total Charge
<1	115	3	365	\$7,214	\$1,687,411
1-4	91	3	286	\$10,594	\$1,719,181
5-9	74	2	180	\$10,994	\$1,258,561
10-14	122	3	354	\$12,429	\$2,421,852
15-19	339	6	2,005	\$20,863	\$14,250,184
20-24	396	6	2,215	\$21,157	\$15,402,743
25-34	401	6	2,453	\$21,479	\$15,667,400
35-44	397	8	3,014	\$21,972	\$18,350,343
45-54	487	7	3,408	\$22,126	\$20,701,877
55-64	372	7	2,672	\$18,857	\$14,149,852
65-74	402	6	2,389	\$16,773	\$12,803,134
75 +	1,179	6	6,939	\$16,245	\$31,242,234
Total	4,375	6	26,280	\$18,191	\$149,654,772

Source: VHI Patient Level Database, 2007

Traumatic Brain Injury

Table 33. Intent of TBI Hospitalization by Gender

Intent	Male N	Rate per 100,000*	Female N	Rate per 100,000*	Male to Female R.R. (95% CI)
Unintentional	2,331	61.58	1,660	42.27	1.46 (1.37, 1.55)
Self-inflicted	30	0.79	8	0.20	3.89 (0.86, 6.93)
Assault	272	7.19	53	1.35	5.32 (3.76, 6.89)
Undetermined	12	0.32	7	0.18	1.78 (0.12, 3.44)
Other	1	0.03	--	--	--
Total	2,646	69.91	1,728	44.00	1.59 (1.49, 1.69)

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

Table 34. Intent of TBI Hospitalization by Race

Intent	White N	Rate per 100,000*	Black N	Rate per 100,000*	Black to White R.R. (95%CI)
Unintentional	2,880	50.49	567	35.95	0.71 (0.65, 0.78)
Self-inflicted	26	0.46	6	0.38	0.83 (0.09, 1.58)
Assault	144	2.52	125	7.92	3.14 (2.39, 3.89)
Undetermined	9	0.16	7	0.44	2.81 (0.03, 5.59)
Other	--	--	1	0.06	--
Total	3,059	53.63	706	44.76	0.83 (0.77, 0.90)

Source: VHI Patient Level Database, 2007

*Crude rate per 100,000 population

Traumatic Brain Injury

Table 35. TBI Hospitalizations by Cause of Injury and Intent, 2007

	INTENT														
	Unintentional			Self-inflicted			Assault			Undetermined			Other		
	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %	Count	Column N %	Row N %
Bites and stings	2	0.05%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Cut/pierce	1	0.03%	7.14%	--	--	--	13	4%	92.86%	--	--	--	--	--	--
Drowning/submersion	4	0.10%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Fall	2,134	53.46%	99.72%	2	5.26%	0.09%	3	0.92%	0.14%	1	5.26%	0.05%	--	--	--
Fire/flare	3	0.08%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Firearm	5	0.13%	8.47%	23	60.53%	38.98%	27	8.31%	45.76%	3	15.79%	5.08%	1	100%	1.69%
MVT Motorcyclist	137	3.43%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	990	24.8%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	10	0.25%	83.33%	2	5.26%	16.67%	--	--	--	--	--	--	--	--	--
MVT Pedal cyclist	26	0.65%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	107	2.68%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	36	0.9%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	18	0.45%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	14	0.35%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	23	0.58%	53.49%	5	13.16%	11.63%	15	4.62%	34.88%	--	--	--	--	--	--
Other specified, not elsewhere classifiable	1	0.03%	4%	2	5.26%	8%	20	6.15%	80%	2	10.53%	8%	--	--	--
Overexertion	2	0.05%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	77	1.93%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	12	0.3%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	7	0.18%	50%	3	7.89%	21.43%	--	--	--	4	21.05%	28.57%	--	--	--
Struck by, against	150	3.76%	44.78%	--	--	--	185	56.92%	55.22%	--	--	--	--	--	--
Suffocation	--	--	--	1	2.63v	100%	--	--	--	--	--	--	--	--	--
Transport, other	168	4.21%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	65	1.63%	47.79%	--	--	--	62	19.08%	45.59%	9	47.37%	6.62%	--	--	--
Total	3,992	100%	91.25%	38	100%	0.87%	325	100%	7.43%	19	100%	0.43%	1	100%	0.02%

Source: VHI Patient Level Database, 2007

CHILDREN UNDER 1 YEAR OF AGE

Injury Deaths

In 2007, unintentional injuries were the fourth leading cause of death for this age group. There were 34 injury deaths reported for children less than one year of age. Injury deaths accounted for 4.05% of all deaths for this age group. Seventy-one percent of injury deaths were due to unintentional injuries and 26% were due to homicide. The crude injury death rate was 32.03 per 100,000 and the age adjusted injury death rate was 0.44 per 100,000. Table 57 presents the numbers and causes of injury death. Table 36 presents the cause and intent of injury death.

Table 36. Cause and Intent of Injury Deaths, Children <1

	N	%
Cause of Injury		
Suffocation	15	44.12%
Fire/Flame	2	5.88%
Drowning	1	2.94%
Fall	1	2.94%
Firearm	1	2.94%
MVT Occupant	1	2.94%
MVT Unspecified	1	2.94%
Natural/environmental	1	2.94%
Other specified and classifiable	7	20.59%
Other specified, not elsewhere classifiable	2	5.88%
Unspecified	2	5.88%
Intent		
Unintentional	24	70.59%
Homicide	9	26.47%
Undetermined	1	2.94%
Total Deaths	34	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

In 2007, there were 293 hospitalization injuries for children under one year of age. The crude injury hospitalization rate was 275.98 per 100,000 and the age adjusted injury hospitalization rate was 3.81 per 100,000. Injury hospitalizations accounted for 0.27% of all hospital discharges for this age group. Table 37 describes the cause and intent of injury hospitalizations.

Table 37. Cause and intent of Injury Hospitalizations, Children <1

	N	%
Cause		
Fall	83	28.33%
Poisoning	26	8.87%
Hot object/substance	19	6.48%
Suffocation	12	4.1%
Other natural/environmental	9	3.07%
Bites and stings	7	2.39%
Struck by, against	6	2.05%
MVT Occupant	4	1.37%
Cut/pierce	3	1.02%
Overexertion	3	1.02%
Firearm	2	0.68%
Unspecified	77	26.28%
Other specified and classifiable	32	10.92%
Other specified, not elsewhere classifiable	10	3.41%
Intent		
Unintentional	241	82.25%
Assault	32	10.92%
Undetermined	20	6.83%
Total Hospitalizations	293	100%

Source: VHI Patient Level Database, 2007

CHILDREN 1 TO 4 YEARS OF AGE

Injury Deaths

Unintentional injury was the leading cause of death for this age group. Eighty-five percent of the injury deaths were unintentional. Injuries accounted for 33.3% of all deaths for children between the ages of 1 and 4. There were 33 injury deaths reported for this age group. The crude injury death rate for this group was 8.00 per 100,000. The age-adjusted injury death rate was 0.44 per 100,000. The causes and intent of injury deaths are shown in Table 38.

Table 38. Cause and Intent of Injury Deaths, Children 1-4

	N	%
Cause of Injury		
Drowning	13	39.39%
Fire/Flame	3	9.09%
MVT Occupant	3	9.09%
MVT Unspecified	3	9.09%
Suffocation	3	9.09%
Firearm	1	3.03%
Natural/environmental	1	3.03%
Poisoning	1	3.03%
Other specified, not elsewhere classifiable	1	3.03%
Unspecified	2	6.06%
Other specified and classifiable	2	6.06%
Intent		
Unintentional	28	84.85%
Homicide	5	15.15%
Total Deaths	33	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were 572 injury hospitalizations for this age group, with an injury discharge rate of 138.75 per 100,000. Injury-related discharges accounted for 5.4% of all hospital discharges for this age group. The age-adjusted injury discharge rate was 7.68 per 100,000. Falls accounted for 29.3% of injury hospitalizations and poisonings accounted for 15.7%. The causes and intents for hospitalizations are shown in Table 39.

Table 39. Cause of Injury Hospitalization for Children 1-4 Years

	N	%
Cause		
Fall	168	29.37%
Poisoning	90	15.73%
Hot object/substance	71	12.41%
MVT Occupant	37	6.47%
Bites and stings	34	5.94%
Struck by, against	31	5.42%
Cut/pierce	5	0.87%
Drowning/submersion	14	2.45%
Fire/flame	10	1.75%
Other natural/environmental	9	1.57%
MVT Pedestrian	7	1.22%
Suffocation	7	1.22%
Transport, other	7	1.22%
Firearm	4	0.7%
Overexertion	4	0.7%
Machinery	3	0.52%
Pedestrian, other	3	0.52%
Pedal cyclist, other	2	0.35%
MVT Other	1	0.17%
Other specified and classifiable	45	7.87%
Unspecified	16	2.8%
Other specified, not elsewhere classifiable	4	0.7%
Intent		
Unintentional	550	96.15%
Assault	13	2.27%
Undetermined	9	1.57%
Total Hospitalizations	572	100%

Source: VHI Patient Level Database, 2007

CHILDREN 5 TO 9 YEARS OF AGE

Injury Deaths

Injury deaths accounted for 45% of all deaths in this age group, with unintentional injuries being the leading cause of death. There were 29 injury deaths during 2007 for this age group. Ninety-seven percent of injury deaths were from unintentional injuries and 3% were homicides. The crude injury death rate was 5.89 per 100,000 and the age-adjusted injury death rate was 0.43 per 100,000. Information on cause and intent of injury deaths is presented in Table 40.

Table 40. Cause and Intent of Injury Deaths, Children 5-9 Years

	N	%
Cause		
MVT Unspecified	6	20.68%
Drowning	5	17.24%
MVT Occupant	5	17.24%
Fire/Flame	3	10.34%
MVT Pedestrian	2	6.9%
Pedestrian, other	2	6.9%
Firearm	1	3.45%
MVT Pedal cyclist	1	3.45%
Other natural/environmental	1	3.45%
Poisoning	1	3.45%
Struck by, against	1	3.45%
Suffocation	1	3.45%
Intent		
Unintentional	28	96.55%
Homicide	1	3.45%
Total Deaths	29	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were 488 hospitalizations for children in this age group. Injury discharges accounted for 7.43% of all hospital discharges. The hospitalization rate was 99.07 per 100,000 and the age-adjusted rate was 7.19 per 100,000. Falls were the leading cause of injury hospitalization, followed by bites and stings. Bicycle related injuries (Pedal cyclist and MVT pedal cyclist) accounted for 6.7% of injury hospitalizations. Information on hospitalizations is presented in Table 41.

Table 41. Cause of Injury Hospitalizations, Children 5-9 Years

	N	%
Cause		
Fall	160	32.79%
Bites and stings	47	9.63%
Struck by, against	43	8.81%
MVT Occupant	36	7.38%
Pedal cyclist, other	28	5.74%
Poisoning	23	4.71%
Transport, other	22	4.51%
Hot object/substance	17	3.48%
MVT Pedestrian	15	3.07%
Cut/pierce	11	2.25%
Fire/flame	8	1.64%
Drowning/submersion	7	1.43%
MVT Pedal cyclist	5	1.02%
Suffocation	5	1.02%
Machinery	3	0.61%
Other natural/environmental	3	0.61%
Pedestrian, other	3	0.61%
MVT Motorcyclist	1	0.2%
Overexertion	1	0.2%
Other specified and classifiable	31	6.35%
Unspecified	14	2.87%
Other specified, not elsewhere classifiable	5	1.02%
Intent		
Unintentional	472	96.72%
Assault	10	2.05%
Self-inflicted	4	0.82%
Undetermined	2	0.41%
Total Hospitalizations	488	100%

Source: VHI Patient Level Database, 2007

CHILDREN 10 TO 14 YEARS OF AGE

Injury Deaths

Forty-two percent of all deaths for this age group were attributed to an injury, with unintentional injury being the leading cause of death. Seventy-nine percent of injury deaths were unintentional, 11% were suicides and 11% were homicides (See Table 42). MVT related injuries were the leading cause of injury death, followed by fire/flame and suffocation. The crude injury death rate was 7.64 per 100,000, and the age-adjusted injury death rate was 0.56 per 100,000. Table 42 presents the causes and intents of injury deaths.

Table 42. Cause of Injury Death, Children 10-14 Years

	N	%
Cause		
Fire/Flame	7	18.42%
MVT Unspecified	6	15.78%
MVT Occupant	5	13.16%
Suffocation	5	13.16%
Firearm	4	10.53%
Other land transport	2	5.26%
Poisoning	2	5.26%
Drowning	1	2.63%
MVT Motorcyclist	1	2.63%
MVT Pedal cyclist	1	2.63%
MVT Pedestrian	1	2.63%
Natural/environmental	1	2.63%
Struck by, against	1	2.63%
Other specified, not elsewhere classifiable	1	2.63%
Intent		
Unintentional	30	78.95%
Suicide	4	10.53%
Homicide	4	10.53%
Total Deaths	38	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were 859 hospitalizations due to injury for this age group and injury hospitalizations accounted for 11.53% of all hospital discharges. The injury hospitalization rate was 172.59 per 100,000, and the age-adjusted rate was 12.60 per 100,000. Falls were the leading cause of hospitalization, followed by poisoning. Hospitalization injury causes and intents are presented in Table 43.

Table 43. Cause of Injury Hospitalizations, Children 10-14 Years

	N	%
Cause		
Fall	178	20.72%
Poisoning	106	12.34%
Struck by, against	100	11.64%
Cut/pierce	92	10.71%
Transport, other	59	6.87%
MVT Occupant	54	6.29%
Pedal cyclist, other	33	3.84%
MVT Pedestrian	20	2.33%
Fire/flame	16	1.86%
Hot object/substance	16	1.86%
MVT Pedal cyclist	16	1.86%
Suffocation	12	1.4%
Bites and stings	11	1.28%
Firearm	11	1.28%
Overexertion	7	0.81%
Drowning/submersion	6	0.7%
MVT Motorcyclist	6	0.7%
Other natural/environmental	6	0.7%
Machinery	4	0.47%
MVT Other	3	0.35%
MVT Unspecified	1	0.12%
Pedestrian, other	1	0.12%
Other specified and classifiable	48	5.59%
Unspecified	38	4.42%
Other specified, not elsewhere classifiable	15	1.75%
Intent		
Unintentional	675	78.58%
Self-inflicted	154	17.93%
Assault	21	2.44%
Undetermined	9	1.05%
Total Hospitalizations	859	100%

Source: VHI Patient Level Database, 2007

ADOLESCENTS 15 TO 19 YEARS OF AGE

Injury Deaths

The three leading causes of death for this age group in Virginia were unintentional injury, homicide, and suicide. These deaths accounted for 81% of all deaths for this age group. There were 225 deaths due to injury in 2007. Sixty percent of injury deaths were unintentional, 24% were homicides and 15% were suicides (See Table 44). MVT injury was the leading cause of death, followed by firearm and poisoning injury. The age-specific injury death rate for adolescents was 42.23 per 100,000 and the age-adjusted death rate was 3.05 per 100,000. Causes of injury death are presented in Table 44.

Table 44. Cause and Intent of Injury Deaths, Adolescents 15-19

	N	%
Cause		
MVT Unspecified	72	32%
MVT Occupant	33	14.66%
Firearm	68	30.22%
Poisoning	14	6.22%
Suffocation	11	4.89%
Drowning	5	2.22%
Fall	5	2.22%
Fire/Flame	3	1.33%
Other transport	3	1.33%
MVT Motorcyclist	2	0.89%
MVT Pedestrian	2	0.89%
Struck by, against	2	0.89%
Cut/Pierce	1	0.44%
Machinery	1	0.44%
Other land transport	1	0.44%
Other specified, not elsewhere classifiable	1	0.44%
Intent		
Unintentional	136	60.44%
Homicide	53	23.56%
Suicide	33	14.67%
Total Deaths	225	100%

Source: Virginia Center for Health Statistics, 2007

Age Specific Analysis For Injury Deaths and Hospitalizations in Virginia, 2007

Injury Hospitalizations

There were 2,321 hospitalizations from injuries among adolescents in 2007; for an injury hospitalization rate of 435.64 per 100,000. Injury hospitalizations accounted for 9.9% of all hospitalizations for adolescents. The age-adjusted injury hospitalization rate was 331.44 per 100,000. Poisoning was the leading cause of injury hospitalization, followed by MVT occupant injuries. Data for injury hospitalization causes and intents are presented in Table 45.

Table 45. Cause and Intent of Injury Hospitalizations, Adolescents 15-19

	N	%
Cause		
Poisoning	641	27.62%
MVT Occupant	415	17.88%
Cut/pierce	266	11.46%
Struck by, against	191	8.23%
Fall	181	7.8%
Firearm	105	4.52%
Transport, other	91	3.92%
MVT Motorcyclist	36	1.55%
Overexertion	27	1.16%
MVT Pedestrian	26	1.12%
Bites and stings	25	1.08%
Pedal cyclist, other	17	0.73%
Fire/flame	14	0.6%
MVT Unspecified	13	0.56%
Machinery	12	0.52%
Hot object/substance	11	0.47%
MVT Other	10	0.43%
Drowning/submersion	9	0.39%
MVT Pedal cyclist	7	0.3%
Other natural/environmental	6	0.26%
Suffocation	5	0.22%
Pedestrian, other	1	0.04%
Other specified and classifiable	87	3.75%
Unspecified	84	3.62%
Other specified, not elsewhere classifiable	41	1.77%
Intent		
Unintentional	1,323	57%
Self-inflicted	740	31.88%
Assault	200	8.62%
Undetermined	55	2.37%
Other	3	0.13%
Total Hospitalizations	2,321	100%

Source: VHI Patient Level Database, 2007

ADULTS 20 TO 24 YEARS OF AGE

Injury Deaths

Unintentional injury, homicide and suicide were the three leading causes of deaths for this age group, with injury deaths accounting for 79% of all deaths. Over 62% of injury deaths were from unintentional injuries, 20% were from homicides and 16% were from suicides. The age-specific injury death rate was 72.00 per 100,000, and the age-adjusted rate was 4.79 per 100,000. Causes and intents of injury deaths for this age group are presented in Table 46.

Table 46. Cause and Intent of Injury Deaths, Young Adults 20-24

	N	%
Cause		
Firearm	98	24.94%
MVT Unspecified	89	22.64%
Poisoning	67	17.05%
MVT Occupant	41	10.43%
MVT Motorcyclist	24	6.11%
Suffocation	20	5.09%
Cut/Pierce	12	3.05%
Fall	7	1.78%
Fire/Flame	6	1.53%
Drowning	4	1.02%
MVT Pedestrian	4	1.02%
Other land transport	3	0.76%
Pedestrian, other	2	0.51%
Natural/environmental	1	0.25%
Other specified, not elsewhere classifiable	9	2.29%
Unspecified	5	1.27%
Other specified and classifiable	1	0.25%
Intent		
Unintentional	245	62.34%
Suicide	64	16.28%
Homicide	78	19.85%
Legal/War	4	1.02%
Undetermined	2	0.51%
Total Deaths	393	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were 2,590 hospitalizations due to injury for this age group. Injury hospitalizations accounted for 6.3% of all hospitalizations for young adults. The injury hospitalization rate was 474.48 per 100,000, and the age-adjusted rate was 31.54 per 100,000. Poisoning and MVT occupant injuries were the leading causes of injury hospitalizations for young adults. Table 47 presents the causes of injury.

Table 47. Cause and Intent of Injury Hospitalizations, Young Adults 20-24

	N	%
Cause		
Poisoning	667	25.75%
MVT Occupant	481	18.57%
Fall	264	10.19%
Cut/pierce	253	9.77%
Firearm	145	5.6%
Struck by, against	136	5.25%
MVT Motorcyclist	66	2.55%
Transport, other	54	2.08%
Bites and stings	45	1.74%
MVT Unspecified	36	1.39%
MVT Pedestrian	28	1.08%
Fire/flame	24	0.93%
Hot object/substance	24	0.93%
Other natural/environmental	22	0.85%
Pedal cyclist, other	19	0.73%
Machinery	18	0.69%
Overexertion	17	0.66%
Suffocation	8	0.31%
MVT Other	5	0.19%
Pedestrian, other	4	0.15%
MVT Pedal cyclist	2	0.08%
Other specified and classifiable	135	5.21%
Unspecified	81	3.13%
Other specified, not elsewhere classifiable	56	2.16%
Intent		
Unintentional	1,529	59.03%
Self-inflicted	671	25.91%
Assault	290	11.2%
Undetermined	96	3.71%
Other	4	0.15%
Total Hospitalizations	2,590	100%

Source: VHI Patient Level Database, 2007

ADULTS 25 TO 34 YEARS OF AGE

Injury Deaths

Injury deaths accounted for 58% of all deaths for this age group in 2007. Overall, unintentional injury, suicide, and homicide were the leading causes of death for this age group. Sixty percent of injury deaths were unintentional, 20% were suicides and 17% homicides (See Table 48). Poisoning and firearm injuries were the leading causes of injury deaths in 2007. The age-specific injury death rate was 56.07 per 100,000 and the age-adjusted injury death rate was 7.60 per 100,000. Causes and intents of injury deaths are presented in Table 48.

Table 48. Cause and Intent of Injury Deaths, Adults 25-34

	N	%
Cause		
Poisoning	158	26.78%
Firearm	143	24.24%
MVT Unspecified	79	13.38%
Suffocation	43	7.29%
MVT Occupant	39	6.61%
MVT Motorcyclist	34	5.76%
Fall	15	2.54%
Drowning	11	1.86%
Cut/Pierce	9	1.53%
MVT Pedestrian	8	1.36%
Other land transport	8	1.36%
Struck by, against	7	1.19%
Fire/Flame	5	0.85%
Pedestrian, other	4	0.68%
Natural/environmental	3	0.51%
Other transport	3	0.51%
Machinery	2	0.34%
Other specified, not elsewhere classifiable	8	1.36%
Other specified and classifiable	7	1.19%
Unspecified	4	0.68%
Intent		
Unintentional	355	60.17%
Suicide	118	20%
Homicide	99	16.78%
Legal/War	4	0.68%
Undetermined	14	2.37%
Total Deaths	590	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were 4,047 injury related hospitalizations among adults aged 25-34, with an injury hospitalization rate of 384.60 per 100,000. Injury hospitalizations accounted for 4.4% of all hospital discharges for this age group. The age-adjusted rate was 52.14 per 100,000. Poisoning was the leading cause of injury hospitalization, followed by MVT occupant related injuries. Causes and intent of injury hospitalizations are presented in Table 49.

Table 49. Cause of Injury Hospitalizations, Adults 25-34

	N	%
Cause		
Poisoning	1,180	29.16%
MVT Occupant	518	12.8%
Fall	504	12.45%
Cut/pierce	332	8.2%
Struck by, against	198	4.89%
Firearm	152	3.76%
MVT Motorcyclist	133	3.29%
Transport, other	113	2.79%
Bites and stings	75	1.85%
Overexertion	55	1.36%
Hot object/substance	42	1.04%
MVT Pedestrian	42	1.04%
MVT Unspecified	40	0.99%
Machinery	34	0.84%
Other natural/environmental	34	0.84%
Pedal cyclist, other	25	0.62%
Fire/flame	24	0.59%
Suffocation	22	0.54%
MVT Pedal cyclist	11	0.27%
Drowning/submersion	7	0.17%
MVT Other	6	0.15%
Pedestrian, other	6	0.15%
Other specified and classifiable	237	5.86%
Unspecified	158	3.9%
Other specified, not elsewhere classifiable	99	2.45%
Intent		
Unintentional	2,455	60.66%
Self-inflicted	1,076	26.59%
Assault	353	8.72%
Undetermined	154	3.81%
Other	9	0.22%
Total Hospitalizations	4,047	100%

Source: VHI Patient Level Database, 2007

ADULTS 35 TO 64 YEARS OF AGE

Injury Deaths

There were 1,699 injury-related deaths in Virginia in this age group. The injury death rate was 53.71 per 100,000. Fifty-nine percent of injury deaths were unintentional, 30% were suicides and 9% were homicides. Poisoning injuries accounted for over 28% of all injury deaths. Information on causes of injury deaths is presented in Table 50.

Table 50. Cause of Injury Deaths, Adults 35-64

	N	%
Cause of Injury		
Poisoning	491	28.9%
Firearm	379	22.31%
MVT Unspecified	172	10.12%
Suffocation	127	7.47%
MVT Occupant	112	6.59%
Fall	86	5.06%
MVT Motorcyclist	56	3.29%
Fire/Flame	43	2.53%
Cut/Pierce	34	2%
Drowning	34	2%
MVT Pedestrian	32	1.88%
Struck by, against	19	1.12%
Natural/environmental	14	0.82%
Other land transport	14	0.82%
Other transport	12	0.71%
Pedestrian, other	8	0.47%
MVT Pedal cyclist	4	0.23%
Machinery	3	0.18%
Hot object/substance	1	0.06%
Other specified, not elsewhere classifiable	26	1.53%
Other specified and classifiable	21	1.24%
Unspecified	11	0.65%
Intent		
Unintentional	1,010	59.45%
Suicide	505	29.72%
Homicide	152	8.95%
Legal/War	5	0.29%
Undetermined	27	1.59%
Total Deaths	1,699	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were a total of 14,128 hospitalizations due to injury for adults in this age group. The injury hospitalization rate was 446.66 per 100,000. Falls and poisoning were the leading causes of injury hospitalizations in 2007. Causes and intent of injury hospitalizations are presented in Table 51.

Table 51. Cause and Intent of Injury Hospitalizations, Adults 35-64

	N	%
Cause		
Fall	4,077	28.86%
Poisoning	3,250	23%
MVT Occupant	1,221	8.64%
Bites and stings	318	2.25%
Cut/pierce	600	4.25%
Struck by, against	586	4.15%
MVT Motorcyclist	352	2.49%
Overexertion	211	1.49%
Other natural/environmental	164	1.16%
Firearm	147	1.04%
Machinery	142	1.01%
Hot object/substance	130	0.92%
MVT Pedestrian	127	0.9%
MVT Unspecified	104	0.74%
Pedal cyclist, other	102	0.72%
Fire/flame	95	0.67%
Suffocation	59	0.42%
MVT Pedal cyclist	33	0.23%
Pedestrian, other	27	0.19%
MVT Other	19	0.13%
Drowning/submersion	13	0.09%
Transport, other	365	2.58%
Unspecified	865	6.12%
Other specified and classifiable	818	5.79%
Other specified, not elsewhere classifiable	303	2.14%
Intent		
Unintentional	10,682	75.61%
Self-inflicted	2,349	16.63%
Assault	596	4.22%
Undetermined	486	3.44%
Other	15	0.11%
Total Hospitalizations	14,128	100%

Source: VHI Patient Level Database, 2007

ADULTS 65 YEARS OF AGE AND OLDER

Injury Deaths

There were 923 deaths due to injury among adults over 65. Falls accounted 38% of injury deaths. Eighty-one percent of injury deaths were unintentional, 16% were suicides and 2% were homicides. The injury death rate for this age group was 101.48 per 100,000. Table 52 presents the causes of injury deaths and Table 52 present the intents of injury deaths.

Table 52. Cause and Intent of Injury Deaths, Adults 65 and Older

	N	%
Cause of Injury		
Fall	347	37.59%
Suffocation	126	13.65%
Firearm	125	13.54%
MVT Unspecified	79	8.55%
MVT Occupant	61	6.60%
Poisoning	31	3.36%
Fire/Flame	30	3.25%
MVT Pedestrian	23	2.49%
Drowning	10	1.08%
Cut/Pierce	7	0.76%
Machinery	8	0.87%
Natural/environmental	10	1.08%
Other land transport	9	0.98%
MVT Motorcyclist	8	0.86%
Pedestrian, other	6	0.65%
Struck by, against	6	0.65%
Other transport	4	0.43%
Pedal cyclist, other	2	0.22%
MVT Pedal cyclist	1	0.11%
Other specified, not elsewhere classifiable	18	1.95%
Other specified and classifiable	10	1.08%
Unspecified	2	0.22%
Intent		
Unintentional	752	81.47%
Suicide	148	16.03%
Homicide	15	1.63%
Undetermined	8	0.87%
Total Deaths	923	100%

Source: Virginia Center for Health Statistics, 2007

Injury Hospitalizations

There were 16,795 hospitalizations due to injury among adults 65 and older. Falls accounted for over three-fourths of hospitalizations. The injury hospitalization rate for this age group was 1,846.57 per 100,000. Table 53 presents the cause and intent of injury hospitalizations.

Table 53. Cause and Intent of Injury Related Hospitalizations, Adults 65 and Older

	N	%
Cause		
Fall	13,056	77.74%
Poisoning	624	3.72%
MVT Occupant	493	2.94%
Struck by, against	220	1.31%
Overexertion	200	1.19%
Other natural/environmental	109	0.65%
Suffocation	109	0.65%
Bites and stings	107	0.64%
Transport, other	94	0.56%
Cut/pierce	67	0.4%
Hot object/substance	43	0.26%
MVT Pedestrian	42	0.25%
Fire/flame	36	0.21%
Machinery	33	0.2%
MVT Motorcyclist	29	0.17%
MVT Unspecified	27	0.16%
Pedal cyclist, other	27	0.16%
Firearm	15	0.09%
Pedestrian, other	14	0.08%
MVT Pedal cyclist	4	0.02%
MVT Other	2	0.01%
Drowning/submersion	1	0.01%
Unspecified	974	5.8%
Other specified and classifiable	410	2.44%
Other specified, not elsewhere classifiable	59	0.35%
Intent		
Unintentional	16,534	98.45%
Self-inflicted	127	0.76%
Assault	58	0.35%
Undetermined	68	0.4%
Other	8	0.05%
Total Hospitalizations	16,795	100%

Source: VHI Patient Level Database, 2007

CONCLUSIONS

This report summarizes the injury-related inpatient hospitalizations and deaths for the calendar year 2007 and provides an estimated number of injury related visits to emergency departments/urgent care centers in Virginia. Data presented in this report demonstrates the importance of injury prevention. Although the financial cost of injury is staggering, the human suffering, diminished quality of life, and loss caused by injury is the greatest burden.

We hope that this report will help all Virginians to better understand injury and to recognize injury as a serious public health concern that must be addressed. Injuries are often both portrayed and perceived as “accidents” caused by chance or carelessness rather than preventable events which can be addressed through behavior change, environmental modifications, and the innovative use of safety devices.

The data in this report, together with other sources of injury and health-related data, are intended to be used to design and implement targeted prevention strategies. Modern approaches to injury prevention are grounded in a public health framework that considers an injury to be the product of the interaction between an individual, the agent or object that causes injury, and the physical and social environment. Injury prevention can target any one or more of these factors.

The general approaches to injury prevention used today illustrate the interdisciplinary, multifaceted nature of preventive efforts. These approaches include education, environment or product modification, and enforcement of legal or regulatory requirements.

For example, education, such as advice from pediatricians to new parents about the use of infant car seats or bicycle helmets, can be used to promote changes in individual behavior that reduce the risk of injury. Education or training of professionals working in the field involves specifying the most effective way to deliver appropriate messages and interventions for injury prevention.

Another strategy in injury prevention involves passing legislation, such as regulations requiring smoke detectors in homes. Finally, environmental modifications, like designated pathways for bicyclists and one-story housing designs for senior citizen housing, are ways to prevent injuries without change by individuals.

The Division of Injury and Violence Prevention (DIVP) has a vision – for Virginia to be a place where people live, learn, work and play safely. Parents, educators, healthcare providers and others can actively participate in raising awareness and enhancing skills to prevent injury and violence in communities. DIVP uses a variety of strategies for prevention including research and assessment, policy development, training and community education, promotion and dissemination of safety devices, public awareness activities, and funding of local projects, to implement best or promising practices. For more information on injury prevention, including general information, topical information, evidence-based practices and training information, please visit the DIVP website at <http://www.vahealth.org/injury>, or contact us at:

Division of Injury & Violence Prevention
Virginia Department of Health
109 Governor St., 8th Floor
Richmond, VA 23219

Office Phone: 804-864-7732
Fax: 804-864-7748
Injury Prevention Hotline: 1-800-732-8333
Email: civp@vdh.virginia.gov

REFERENCES

Injury Free Coalition for Kids. Sports Injury Prevention. Retrieved Jan 2009.

http://www.injuryfree.org/safetytpc_display.cfm?PermanentId=75C650E2-2718-41AB-B1BC0504AB625450

Barell, V., Aharonson-Daniel, L., Fingerhut, LA, Mackenzie, EJ, Ziv, A., Boyko, V., Abargel, A., Avitzour, M., & Heruti, R. (2002). An introduction to the Barell body region by nature of injury diagnosis matrix. *Injury Prevention*, 8,91-96.

Klein, RJ, Schoenborn CA. Age adjustment using the 2000 projected U.S. population. Healthy People Statistical Notes, no.20. Hyattsville, Maryland: National Center for Health Statistics. January 2001.

Injury Surveillance Workgroup. *Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance*. Marietta (GA): State and Territorial Injury Prevention Directors Association; 2003.

Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). (2005) Retrieved Jan 2009. Available from URL: www.cdc.gov/ncipc/wisqars

APPENDIX A: TECHNICAL NOTES

CASE DEFINITIONS

Injury events for this report were identified from death records, hospital discharges, and emergency department/urgent care center visits. Rates were calculated using population data from the National Center for Health Statistics. The following sections will describe the data sources in more detail.

Mortality Data

The injury mortality data was provided by the Virginia Center for Health Statistics, Virginia Department of Health. National mortality data was obtained from the Centers for Disease Control and Prevention National Vital Statistics Reports, Deaths: Final Data for 2007.

Cause and manner of death were identified according to the International Classification of Diseases, Tenth Revision (ICD-10) codes on death certificates. Injury deaths were grouped into twenty-five mechanisms (see below) and five intents (unintentional, suicide, homicide, legal intervention, undetermined) using ICD-10 code identified as the underlying cause of death. The underlying cause of death is defined as the disease or injury that initiated the sequence of events leading directly to the death, or the circumstance of the accident or violence that caused the injury. The underlying cause of an injury death would be coded as the mechanism that caused the injury (e.g., a motor vehicle traffic event) rather than the injuries that resulted from that event.

The ICD-10 injury mortality framework used for this report can be found on the web at http://www.cdc.gov/nchs/data/ice/icd10_transcode.pdf. This framework was developed by The International Collaborative Effort (ICE) on Injury Statistics, sponsored by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS).

External Cause of Injury Mortality (ICD-10)

- ❖ Cut/Pierce
- ❖ Drowning
- ❖ Fall
- ❖ Fire/Flame
- ❖ Firearm
- ❖ Hot object/substance
- ❖ Machinery
- ❖ Motor vehicle traffic (MVT) Occupant (either driver or passenger)
- ❖ MVT Motorcyclist
- ❖ MVT Pedal cyclist
- ❖ MVT Pedestrian
- ❖ MVT Unspecified
- ❖ Natural/environmental
- ❖ Other specified, not elsewhere classifiable
- ❖ Unspecified
- ❖ Other land transport
- ❖ Pedal cyclist, other
- ❖ Pedestrian, other
- ❖ Other specified and classifiable
- ❖ Other transport
- ❖ Poisoning
- ❖ Struck by, against
- ❖ Suffocation

Hospitalization Data

Hospitalization data was provided by Virginia Health Information, Inc (VHI). When a hospital admission occurs due to injury in Virginia, External Cause of Injury Codes (E-codes) are recorded to reflect the mechanism (cause) and intent of the injury. Other demographic and hospital information such as race, gender, sex, diagnoses, payer status, length of stay, and related charges are also included at the patient level.

Cause and manner of hospitalization were identified using ICD-9-CM injury codes and E-codes. For this report, an injury-related discharge was a case with at least one injury-related ICD-9-CM code and a valid external cause of injury code (E-code). A valid E-code is one that designates the mechanism and intent of the injury, not the physical location where the injury occurred (such as home, work, school etc). Several E-codes were excluded from the analysis, including E849 (location of injury) and E930-949, E870-879 (adverse effects of medical care and drugs).

The following are valid ICD9-CM and E-codes used in analysis:

Valid ICD-9-CM injury code: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85

Valid External cause of injury code (E-code): E800-E999, excluding codes E849, E967, E869.4, E870-E879, and E930-E949

Preliminary data analysis indicated that there were a total of 831,421 hospitalizations in 2007. Of these, 54,972 (6.6%) had at least one injury-related ICD-9-CM diagnosis. A valid E-code was present in 85% of these discharges. For this report, a total of 38,635 injury related discharges were included. Injury hospitalizations are most likely underreported in this dataset and the resulting analyses.

Hospitalizations were grouped into twenty-four mechanisms (see below) and intent (unintentional, self-inflicted, assault, undetermined or other). The STIPDA (2003) recommended framework of E-code groupings for presenting morbidity data can be found on the web at <http://www.stipda.org/associations/5805/files/HospitalDischargeData.pdf>.

External Cause of Injury Hospitalization (ICD-9-CM and E-code)

- ❖ Cut/Pierce
- ❖ Drowning/submersion
- ❖ Fall
- ❖ Fire/Flame
- ❖ Hot object/substance
- ❖ Firearm
- ❖ Machinery
- ❖ Motor vehicle traffic (MVT) Occupant
- ❖ MVT Motorcyclist
- ❖ MVT Pedal cyclist
- ❖ MVT Pedestrian
- ❖ MVT Other
- ❖ MVT Unspecified
- ❖ Pedal cyclist, other
- ❖ Pedestrian, other
- ❖ Transport, other
- ❖ Natural/environmental
- ❖ Bites and stings
- ❖ Overexertion
- ❖ Poisoning
- ❖ Struck by, against
- ❖ Suffocation
- ❖ Other specified and classifiable
- ❖ Other specified, not elsewhere classifiable
- ❖ Unspecified

Emergency Department/Urgent Care Data

The Virginia Department of Health's ESSENCE (Electronic Surveillance System for the Early Notification of Community-Based Epidemics) surveillance system was used to obtain estimates of injury related emergency department and urgent care visits for 2007. The main purpose of this system is the early recognition of disease events, including outbreaks and potential bioterrorism events; not injury surveillance.

Submission of emergency department/urgent care chief complaint data is voluntary. Currently, not all EDs/Urgent Care Centers in Virginia submit this information. By the end of 2007, 49 emergency departments and 28 Urgent Care Centers in Virginia were submitting chief complaint data to VDH.

Records were included in analysis only if the chief complaint narrative indicated an injury had occurred. This was done by searching chief complaint fields for injury "key words". As a result, the data presented in this report is an underestimate of the actual number of Virginians seen in Eds/Urgent Care Centers for injuries and should be interpreted with caution. For more information on what injury key words were used, please contact Christina Sloan at the Division of Injury and Violence Prevention, Virginia Department of Health, christina.sloan@vdh.virginia.gov or 804-864-7745.

For more information on the ESSENCE surveillance system and how it is used for early recognition of disease events, please contact Michael Coletta with the Office of Epidemiology, Virginia Department of Health at Michael.Coletta@vdh.virginia.gov or 804-864-8099.

Population Data

Population data was obtained from the National Center for Health Statistics. 2007 population data was obtained by age, race, and gender.

CALCULATIONS

All rates in this report are considered crude rates unless otherwise stated. Rates based on numbers of 20 or less are considered unstable due to random chance factors and should be interpreted with caution. When rates are based on events of 20 or less, apparent changes may be attributed to the small numerator rather than actual change in injury occurrence.

Crude Rates

Crude rates represent the actual experience of the population and provide data for the allocation of health resources and public health planning. Rates were calculated using the following formula:

$$(\text{Number of injury events}/\text{At-risk population}) \times 100,000$$

For example, there were 765 poisoning deaths in Virginia in 2007. To determine the rate of poisoning related deaths use the following calculation:

Number of poisoning related deaths in Virginia for 2007: **765**

Virginia population for 2007: **7,712,091**

$$(765/7,712,091) \times 100,000 = \mathbf{9.92 \text{ per } 100,000}$$

Age-Adjusted Rates

Age adjustment – where age specific rates are applied to a standard age distribution, eliminates the differences in crude rates that may result from different age distributions of populations. Thus age-adjusted rates can be used for comparison to other age adjusted rates, provided both are adjusted to the same population. As a caveat, an age-adjusted rate has no meaning by itself, it is only useful to compare to another standardized rate. All adjusted rates in this report are per 100,000 Virginia population and are adjusted to the 2000 U.S. standard population using the direct method.

Relative Risk

Relative risks (RR) and confidence intervals (CI) are provided for a comparison among gender and race injury data. Relative risks with 95% confidence intervals that do not include a RR of 1.0 are considered statistically significant. Statistical significance is a mathematical measure of the difference between groups. The difference is said to be statistically significant if it is greater than what might be expected to happen by chance alone.

GLOSSARY

Assault: Intentional infliction of bodily harm

Bites and stings: This category includes injuries resulting from bites/stings from animals, spiders, and insects

Cause (Mechanism): The cause, or mechanism of injury, is the way in which the person sustained the injury; how the person was injured; or the process by which the injury occurred.

Cut/pierce: Injury resulting from an inclusion, slash, perforation, or puncture by a pointed or sharp instrument, weapon or object. This category does not include injury from being struck by or against a blunt object or bite wounds. This category includes injuries caused by butting and piercing instruments, such as knives, swords, and daggers; power lawn mowers, power hand tools, and household appliances; and other specified and unspecified sharp objects.

Drowning: Suffocation (asphyxia) resulting from submersion in water or other liquid with and without involvement of watercraft

Falls: Injury received when a person descends abruptly due to the force of gravity and strikes a surface at the same or lower level.

Fire/flame: Severe exposure to flames, heat or chemicals that leads to tissue damage in the skin or places deeper in the body; injury from smoke inhalation to the upper airway, lower airway or lungs (excludes transport crash fires)

Hot object/substance: This category includes injuries resulting from exposure to heat and hot substances (i.e. boiling water, gases, vapors, appliances, tools)

Firearm: A penetrating force injury resulting from a bullet or other projectile shot from a powder-charge gun. This category includes gunshot wounds from powder-charged handguns, shotguns and rifles. This category does not include injury caused by compressed air-powdered paint gun or a nail gun, which falls in the "other specified" category.

Homicide: Death resulting from the intentional use of force or power, threatened or actual, against another person, group, or community.

Hospitalization: An inpatient stay at a non-federal hospital.

Intent (Manner): Intent of injury is whether an injury was caused by an act carried out on purpose by one's self or by another person(s), with the goal of injuring or killing.

Legal Intervention/War: Legal intervention injuries are inflicted by the police or other law-enforcing agents, including military on duty, in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order, and other legal actions. Excludes injuries caused by civil insurrections. War related injury deaths are injuries to military personnel or civilians caused by war or civil insurrection, including those occurring during the time of war or insurrection and after cessation of hostilities. Legal Intervention/War is only used for the coding of injury mortality data.

LOS (Length of stay): Length of stay in a hospital measured in days.

Appendix A: Technical Notes

Machinery: Injury that involves operating machinery, such as drill presses, fork lifts, large power-saws, jack hammers, and commercial meat slicers. This category does not include injury involving machines not in operation, falls from escalators or moving sidewalks, or injuries from powered lawn mowers or other powered hand tools or home appliances.

Morbidity: Illness, disease, or disability that is non-fatal

Mortality: Death

Motor vehicle traffic crash (MVT): This category includes injuries resulting from motor vehicle traffic crashes involving automobiles, vans, trucks, motorcycles, and other motorized cycles know or assumed to be traveling on public roads or highways.

Motor vehicle traffic (MVT) Occupant: Either a driver or passenger injured as a result of a motor vehicle traffic crash

MVT Motorcyclist: Any person riding on a motorcycle or in a sidecar or trailer attached to such a vehicle injured as a result of a collision with a motor vehicle on a public road

MVT Pedal cyclist: Any person riding on a pedal cycle or in a sidecar or trailer attached to such a vehicle injured as a result of a collision with a motor vehicle on a public road

MVT Pedestrian: A pedestrian is injured as a result of a collision with a motor vehicle on a public road

MVT Other/Unspecified: An injury resulting from a motor vehicle traffic crash not otherwise specified

Natural/environmental: Injury resulting from exposure to adverse natural and environmental conditions, such as severe heat, severe cold, lightning, sunstroke, large storms, and natural disasters, as well as lack of food or water.

Other specified and classifiable: This category includes injuries related to battering/maltreatment, caught between objects, foreign bodies entering orifice, etc.

Other specified, not elsewhere classifiable: includes late effects of injuries, etc.

Overexertion: Working the body or a body part too hard, causing damage to muscle, tendon, ligament, cartilage, joint or peripheral nerve (i.e. common cause of strains, sprains, and twisted ankles). This category includes overexertion from lifting, pushing or pulling, or from excessive force.

Poisoning: Ingestion, inhalation, absorption through the skin, or injection of so much of a drug, toxin (biologic or non biologic), or other chemical, that a harmful effect results, such as a drug overdoses. This category does not include harmful effects from normal therapeutic drugs (i.e. unexpected adverse effects to a drug administered correctly to treat a condition) or a bacterial illness.

Self-Inflicted: Intentionally self-inflicted injury that does not result in death

Suicide: Intentionally self-inflicted injury that ends in death

Struck by/against: Injury resulting from being struck by (hit) or crushed by a human, animal, or inanimate object or force other than a vehicle or machinery; injury caused by striking (hitting) against a human, animal or inanimate object or force other than a vehicle or machinery.

Appendix A: Technical Notes

Suffocation: This category includes injuries that result in a threat to breathing (i.e. strangulation and airway obstruction)

Unspecified: This category includes injuries not otherwise specified (NOS)

Pedal cyclist, other: A bicyclist injured without involving a motor vehicle on a public highway, such as falling off, or colliding with a stationary object

Other land transport (mortality data only): Transportation related injuries that are nontraffic related (vehicle crash that occurs entirely in any place other than a public highway). This category includes railroad, animal-drawn transport, off-road vehicles, and vehicles mainly used for industrial and agriculture purposes.

Other Transport (mortality data only): This category includes injuries related to watercraft and aircraft

Transport, other (hospitalization data only): that are nontraffic related (vehicle accident that occurs entirely in any place other than a public highway). This category includes watercraft, aircraft, railroad, animal-drawn transport, off-road vehicles, and vehicles mainly used for industrial and agriculture purposes.

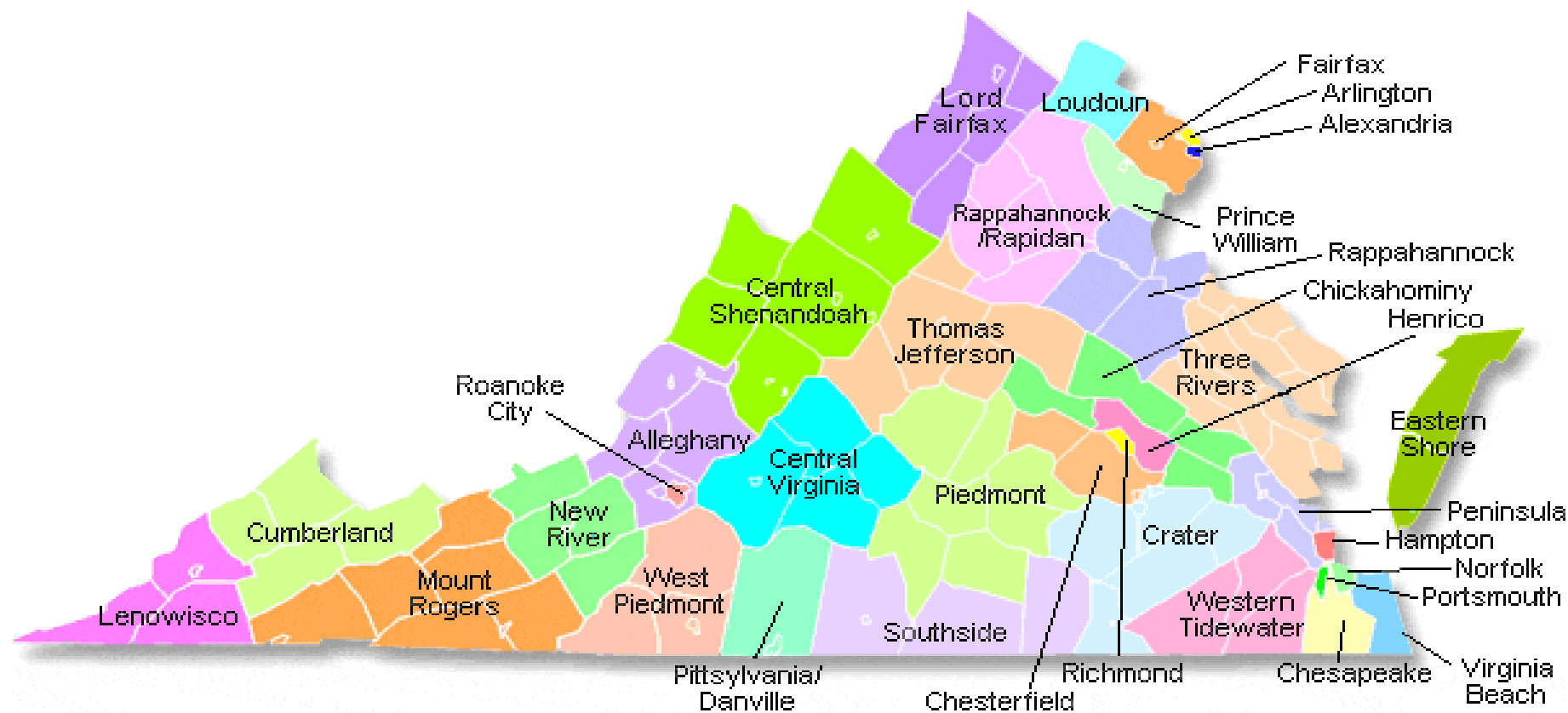
Appendix B: Health Districts

Appendix B: Health Districts

Table 54. Listing of Health Districts by Locality

Health District	Locality	Health District	Locality	Health District	Locality	
Alleghany	Alleghany County	Fairfax	Fairfax City	Prince William	Manassas City	
	Botetourt County		Fairfax County		Manassas Park City	
	Covington City		Falls Church City		Prince William County	
	Craig County	Hampton	Hampton City	Rappahannock	Caroline County	
	Roanoke County	Henrico	Henrico County		Fredericksburg City	
Arlington	Arlington County	Lenowisco	Lee County		King George County	
			Norton City			
Central Shenandoah	Augusta County		Scott County		Spotsylvania County	
	Bath County		Wise County		Stafford County	
	Buena Vista City	Lord Fairfax	Clarke County	Rappahannock/ Rapidan	Culpeper County	
	Harrisonburg City		Frederick County		Fauquier County	
	Highland County		Page County		Madison County	
	Lexington City		Shenandoah County		Orange County	
	Rockbridge County		Warren County		Rappahannock County	
	Rockingham County		Winchester City		Richmond City	
	Staunton City	Loudoun	Loudoun County	Richmond City	Richmond City	
	Waynesboro City	Mount Rogers	Bland County	Roanoke City	Roanoke City	
	Central Virginia	Amherst County	Mount Rogers	Bristol City	Southside	Brunswick County
		Appomattox County		Carroll County		Halifax County
Bedford City		Galax City		Thomas Jefferson	Mecklenburg County	
Bedford County		Grayson County			Albemarle County	
Campbell County		Smyth County			Charlottesville City	
Lynchburg City		Washington County			Fluvanna County	
Chesapeake	Chesapeake City		Wythe County		Greene County	
Chesterfield	Chesterfield County	New River	Floyd County	Three Rivers	Louisa County	
	Colonial Heights City		Giles County		Nelson County	
	Powhatan County		Montgomery County		Essex County	
Chickahominy	Charles City County		Pulaski County		Gloucester County	
					King William County	
	Goochland County		Radford City		King and Queen County	
	Hanover County	Norfolk City	Norfolk City		Lancaster County	
Crater	New Kent County	Peninsula	James City County		Mathews County	
	Dinwiddie County			Newport News City		Middlesex County
						Northumberland County
	Emporia City		Poquoson City		Richmond County	
	Greensville County		Williamsburg City		Westmoreland County	
	Hopewell City		York County			
	Petersburg City	Piedmont	Amelia County	Virginia Beach	Virginia Beach City	
Cumberland Plateau	Prince George County	Piedmont	Buckingham County	West Piedmont	Franklin County	
	Surry County		Charlotte County		Henry County	
	Sussex County		Cumberland County		Martinsville City	
			Lunenburg County	Patrick County		
	Buchanan County			Nottoway County	Western Tidewater	Franklin City
	Dickenson County			Prince Edward County		Isle of Wight County
Eastern Shore	Russell County	Pittsylvania/ Danville	Danville City		Southampton County	
	Tazewell County		Pittsylvania County		Suffolk City	
	Accomack County					
	Northampton County	Portsmouth	Portsmouth City			

Figure 30. Map of Virginia's 35 Health Districts



Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 55. Injury Deaths, Mechanism by Intent, Children <1

Cause of Injury	Intent								
	Unintentional			Homicide			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Drowning	--	--	--	1	11.11%	100%	--	--	--
Fall	1	4.17%	100%	--	--	--	--	--	--
Fire/Flame	2	8.33%	100%	--	--	--	--	--	--
Firearm				1	11.11%	100%	--	--	--
MVT	2	8.33%	100%	--	--	--	--	--	--
Natural/environmental	1	4.17%	100%	--	--	--	--	--	--
Other specified, not elsewhere classifiable	--	--	--	1	11.11%	50%	1	100%	50%
Unspecified	--	--	--	2	22.22%	100%	--	--	--
Other specified and classifiable	3	12.5%	42.86%	4	44.44%	57.14%	--	--	--
Suffocation	15	62.5%	100%	--	--	--	--	--	--
Total	24	100%	70.59%	9	100%	26.47%	1	100%	2.94%

Table 56. Injury Deaths, Mechanism by Intent, Children 1-4 Years

Cause of Injury	INTENT					
	Unintentional			Homicide		
	Count	Column %	Row %	Count	Column %	Row %
Drowning	13	46.43%	100%	--	--	--
Fire/Flame	3	10.71%	100%	--	--	--
Firearm	--	--	--	1	20%	100%
MVT	6	21.43%	100%	--	--	--
Natural/environmental	1	3.57%	100%	--	--	--
Other specified, not elsewhere classifiable	--	--	--	1	20%	100%
Unspecified	--	--	--	2	40%	100%
Other specified and classifiable	2	7.14%	100%	--	--	--
Poisoning	--	--	--	1	20%	100%
Suffocation	3	10.71%	100%	--	--	--
Total	28	100%	84.85%	5	100%	15.15

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 57. Injury Deaths, Mechanism by Intent, Children 5-9 Years

Cause of Injury	INTENT					
	Unintentional			Homicide		
	Count	Column %	Row %	Count	Column %	Row %
Drowning	5	17.86%	100%	--	--	--
Fire/Flame	3	10.71%	100%	--	--	--
Firearm	--	--	--	1	100%	100%
MV TRAFFIC	14	50%	100%	--	--	--
Natural/environmental	1	3.57%	100%	--	--	--
Other Pedestrian	2	7.14%	100%	--	--	--
Poisoning	1	3.57%	100%	--	--	--
Struck by, against	1	3.57%	100%	--	--	--
Suffocation	1	3.57%	100%	--	--	--
Total	28	100%	96.55%	1	100%	3.45%

Table 58. Injury Deaths, Mechanism by Intent, Children 10-14 Years

Cause of Injury	Intent								
	Unintentional			Suicide			Homicide		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Drowning	1	3.33%	100%	--	--	--	--	--	--
Fire/Flame	7	23.33%	100%	--	--	--	--	--	--
Firearm	--	--	--	1	25%	25%	3	75%	75%
MVT	14	46.67%	100%	--	--	--	--	--	--
Natural/environmental	1	3.33%	100%	--	--	--	--	--	--
Other specified, not elsewhere classifiable	--	--	--	--	--	--	1	25%	100%
Other land transport	2	6.67%	100%	--	--	--	--	--	--
Poisoning	2	6.67%	100%	--	--	--	--	--	--
Struck by, against	1	3.33%	100%	--	--	--	--	--	--
Suffocation	2	6.67%	40%	3	75%	60%	--	--	--
Total	30	100%	78.95%	4	100%	10.53%	4	100%	10.53%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 59. Injury Deaths, Mechanism by Intent, Adolescents 15-19 Years

Cause of Injury	Intent											
	Unintentional			Suicide			Homicide			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Cut/Pierce	--	--	--	--	--	--	1	1.89%	100%	--	--	--
Drowning	4	2.94%	80%	1	3.03%	20%	--	--	--	--	--	--
Fall	2	1.47%	40%	3	9.09%	60%	--	--	--	--	--	--
Fire/Flame	3	2.21%	100%	--	--	--	--	--	--	--	--	--
Firearm	--	--	--	18	54.55%	26.47%	50	94.34%	73.53%	--	--	--
Machinery	1	0.74%	100%	--	--	--	--	--	--	--	--	--
MVT	109	80.15%	100%	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classifiable	--	--	--	--	--	--	1	1.89%	100%	--	--	--
Unspecified	--	--	--	--	--	--	--	--	--	1	33.33%	100%
Other land transport	1	0.74%	100%	--	--	--	--	--	--	--	--	--
Other transport	3	2.21%	100%	--	--	--	--	--	--	--	--	--
Poisoning	10	7.35%	71.43%	2	6.06%	14.29%	--	--	--	2	66.67%	14.29%
Struck by, against	2	1.47%	100%	--	--	--	--	--	--	--	--	--
Suffocation	1	0.74%	9.09%	9	27.27%	81.82%	1	1.89%	9.09%	--	--	--
Total	136	100%	60.44%	33	100%	14.67%	53	100%	23.56%	3	100%	1.33%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 60. Injury Deaths, Mechanism by Intent, Adults 20-24

Cause of Injury	Intent														
	Unintentional			Suicide			Homicide			Undetermined			Legal intervention		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Cut/Pierce	1	0.41%	8.33%	1	1.56%	8.33%	10	12.82%	83.33%	--	--	--	--	--	--
Drowning	4	1.63%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Fall	5	2.04%	71.43%	2	3.13%	28.57%	--	--	--	--	--	--	--	--	--
Fire/Flame	6	2.45%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Firearm	2	0.82%	2.04%	33	51.56%	33.67%	59	75.64%	60.20%				4	100%	4.08%
MVT	158	64.49%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Natural/environmental	1	0.41%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classifiable	1	0.41%	11.11%	3	4.69%	33.33%	4	5.13%	44.44%	1	50%	11.11%	--	--	--
Unspecified	--	--	--	1	1.56%	20%	4	5.13%	80%	--	--	--	--	--	--
Other land transport	3	1.22%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other Pedestrian	2	0.82%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	1	0.41%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	59	24.08%	88.06%	7	10.94%	10.45%	--	--	--	1	50%	1.49%	--	--	--
Suffocation	2	0.82%	10%	17	26.56%	85%	1	1.28%	5%	--	--	--	--	--	--
Total	245	100%	62.34%	64	100%	16.28%	78	100%	19.85%	2	100%	0.51%	4	100%	1.02%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 61. Injury Deaths, Mechanism by Intent, Adults 25-34

Cause of Injury	Intent														
	Unintentional			Suicide			Homicide			Undetermined			Legal intervention		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Cut/Pierce	--	--	--	1	0.85%	11.11%	8	8.08%	88.89%	--	--	--	--	--	--
Drowning	9	2.54%	81.82%	1	0.85%	9.09%	1	1.01%	9.09%	--	--	--	--	--	--
Fall	13	3.66%	86.67%	2	1.69%	13.33%	--	--	--	--	--	--	--	--	--
Fire/Flame	5	1.41%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Firearm	5	1.41%	3.50%	51	43.22%	35.66%	81	81.82%	56.64%	2	14.29%	1.4%	4	100%	2.8%
Machinery	2	0.56%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT	160	45.07%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Natural/environmental	3	0.85%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classifiable	1	0.28%	12.5%	--	--	--	3	3.03%	37.5%	4	28.57%	50%	--	--	--
Unspecified	--	--	--	--	--	--	3	3.03%	75%	1	7.14%	25%	--	--	--
Other land transport	8	2.25%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	4	1.13%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	7	1.97%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Transport, other	3	0.85%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	127	35.77%	80.38%	24	20.34%	15.19%	--	--	--	7	50%	4.43%	--	--	--
Struck by, against	6	1.69%	85.71%	--	--	--	1	1.01%	14.29%	--	--	--	--	--	--
Suffocation	2	0.56%	4.65%	39	33.05%	90.7%	2	2.02%	4.65%	--	--	--	--	--	--
Total	355	100%	60.17%	118	100%	20%	99	100%	16.78%	14	100%	2.37%	4	100%	0.68%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 62. Injury Deaths, Mechanisms by Intent, Adults 35-64

Cause of Injury	Intent														
	Unintentional			Suicide			Homicide			Undetermined			Legal intervention		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Cut/Pierce	1	0.10%	2.94%	7	1.39%	20.59%	26	17.11%	76.47%	--	--	--	--	--	--
Drowning	27	2.67%	79.41%	6	1.19%	17.65%	--	--	--	1	3.7%	2.94%	--	--	--
Fall	82	8.12%	95.35%	4	0.79%	4.65%	--	--	--	--	--	--	--	--	--
Fire/Flame	43	4.26%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Firearm	3	0.30%	0.79%	271	53.66%	71.5%	98	64.47%	25.86%	2	7.41%	0.53%	5	100%	1.32%
Hot object/substance	1	0.10%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	3	0.30%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT	376	37.23%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Natural/environmental	14	1.39%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classifiable	15	1.49%	57.69%	2	0.40%	7.69%	8	5.26%	30.77%	1	3.7%	3.85%	--	--	--
Unspecified	--	--	--	--	--	--	10	6.58%	90.91%	1	3.7%	9.09%	--	--	--
Other land transport	13	1.29%	92.86%	--	--	--	1	0.66%	7.14%	--	--	--	--	--	--
Pedestrian, other	8	0.79%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	18	1.78%	85.71%	3	0.59%	14.28%	--	--	--	--	--	--	--	--	--
Other transport	12	1.19%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	336	33.27%	68.43%	134	26.53%	27.29%	--	--	--	21	77.78%	4.28%	--	--	--
Struck by, against	17	1.68%	89.47%	--	--	--	2	1.32%	10.53%	--	--	--	--	--	--
Suffocation	41	4.06%	32.28%	78	15.45%	61.42%	7	4.61%	5.51%	1	3.7%	0.79%	--	--	--
Total	1,010	100%	59.45%	505	100%	29.72%	152	100%	8.95%	27	100%	1.59%	5	100%	0.29%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 63. Injury Deaths, Mechanisms by Intent, Adults 65 and Older

Cause of Injury	Intent											
	Unintentional			Suicide			Homicide			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Cut/Pierce	1	0.13%	14.29%	2	1.35%	28.57%	3	20%	42.86%	1	12.5%	14.29%
Drowning	8	1.06%	80%	2	1.35%	20%	--	--	--	--	--	--
Fall	344	45.74%	99.14%	3	2.03%	0.86%	--	--	--	--	--	--
Fire/Flame	30	3.99%	100%	--	--	--	--	--	--	--	--	--
Firearm	--	--	--	111	75%	88.8%	11	73.33%	8.8%	3	37.5%	2.40%
Machinery	8	1.06%	100%	--	--	--	--	--	--	--	--	--
MVT	172	22.87%	100%	--	--	--	--	--	--	--	--	--
Natural/environmental	10	1.33%	100%	--	--	--	--	--	--	--	--	--
Other specified, not elsewhere classifiable	14	1.86%	77.78%	2	1.35%	11.11%	1	6.67%	5.56%	1	12.5%	5.56%
Unspecified	--	--	--	--	--	--	--	--	--	2	25%	100%
Other land transport	9	1.2%	100%	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	2	0.27%	100%	--	--	--	--	--	--	--	--	--
Pedestrian, other	6	0.8%	100%	--	--	--	--	--	--	--	--	--
Other specified and classifiable	10	1.33%	100%	--	--	--	--	--	--	--	--	--
Other transport	4	0.53%	100%	--	--	--	--	--	--	--	--	--
Poisoning	17	2.26%	54.84%	13	8.78%	41.94%	--	--	--	1	12.5%	3.23%
Struck by, against	6	0.8%	100%	--	--	--	--	--	--	--	--	--
Suffocation	111	14.76%	88.1%	15	10.14%	11.9%	--	--	--	--	--	--
Total	752	100%	81.47%	148	100%	16.03%	15	100%	1.63%	8	100%	0.87%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 64. Injury Hospitalizations, Mechanism by Intent, Children <1

Cause of Injury	Intent								
	Unintentional			Assault			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	6	2.49%	85.71%	1	3.13%	14.29%	--	--	--
Cut/pierce	3	1.24%	100%	--	--	--	--	--	--
Fall	83	34.44%	100%	--	--	--	--	--	--
Firearm	1	0.41%	50%	1	3.13%	50%	--	--	--
Hot object/substance	18	7.47%	94.74%	--	--	--	1	5%	5.26%
MVT Occupant	4	1.66%	100%	--	--	--	--	--	--
Other natural/environmental	9	3.73%	100%	--	--	--	--	--	--
Other specified and classifiable	12	4.98%	37.5%	20	62.5%	62.5%	--	--	--
Other specified, not elsewhere classifiable	1	0.41%	10%	4	12.5%	40%	5	25%	50%
Overexertion	3	1.24%	100%	--	--	--	--	--	--
Poisoning	25	10.37%	96.15%	--	--	--	1	5%	3.85%
Struck by, against	6	2.49%	100%	--	--	--	--	--	--
Suffocation	12	4.98%	100%	--	--	--	--	--	--
Unspecified	58	24.07%	75.32%	6	18.75%	7.79%	13	65%	16.88%
Total	241	100%	82.25%	32	100%	10.92%	20	100%	6.83%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 65. Injury Hospitalizations, Mechanism by Intent, Children 1-4 Years

Cause of Injury	Intent								
	Unintentional			Assault			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	34	6.18%	100%	--	--	--	--	--	--
Cut/pierce	4	0.73%	80%	1	7.69%	20%	--	--	--
Drowning/submersion	13	2.36%	92.86%	--	--	--	1	11.11%	7.14%
Fall	167	30.36%	99.4%	--	--	--	1	11.11%	0.6%
Fire/flame	10	1.82%	100%	--	--	--	--	--	--
Firearm	3	0.55%	75%	1	7.69%	25%	--	--	--
Hot object/substance	70	12.73%	98.59%	--	--	--	1	11.11%	1.41%
MVT Occupant	37	6.73%	100%	--	--	--	--	--	--
MVT Other	1	0.18%	100%	--	--	--	--	--	--
MVT Pedestrian	7	1.27%	100%	--	--	--	--	--	--
Machinery	3	0.55%	100%	--	--	--	--	--	--
Other natural/environmental	9	1.64%	100%	--	--	--	--	--	--
Other specified and classifiable	39	7.09%	86.67%	6	46.15%	13.33%	--	--	--
Other specified, not elsewhere classifiable	3	0.55%	75%	1	7.69%	25%	--	--	--
Overexertion	4	0.73%	100%	--	--	--	--	--	--
Pedal cyclist, other	2	0.36%	100%	--	--	--	--	--	--
Pedestrian, other	3	0.55%	100%	--	--	--	--	--	--
Poisoning	85	15.45%	94.44%	1	7.69%	1.11%	4	4.44%	44.44%
Struck by, against	29	5.27%	93.55%	2	15.38%	6.45%	--	--	--
Suffocation	7	1.27%	100%	--	--	--	--	--	--
Transport, other	7	1.27%	100%	--	--	--	--	--	--
Unspecified	13	2.36%	81.25%	1	7.69%	6.25%	2	22.22%	12.5%
Total	550	100%	96.15%	13	100%	2.27%	9	100%	1.57%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 66. Injury Hospitalizations, Mechanism by Intent, Children 5-9 Years

Cause of Injury	Intent											
	Unintentional			Self-Inflicted			Assault			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	47	9.96%	100%	--	--	--	--	--	--	--	--	--
Cut/pierce	10	2.12%	90.91%	1	25%	9.09%	--	--	--	--	--	--
Drowning/submersion	7	1.48%	100%	--	--	--	--	--	--	--	--	--
Fall	159	33.69%	99.38%	1	25%	0.63%	--	--	--	--	--	--
Fire/flare	7	1.48%	87.5%	--	--	--	1	10%	12.5%	--	--	--
Hot object/substance	17	3.6%	100%	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	1	0.21%	100%	--	--	--	--	--	--	--	--	--
MVT Occupant	36	7.63%	100%	--	--	--	--	--	--	--	--	--
MVT Pedal cyclist	5	1.06%	100%	--	--	--	--	--	--	--	--	--
MVT Pedestrian	15	3.18%	100%	--	--	--	--	--	--	--	--	--
Machinery	3	0.64%	100%	--	--	--	--	--	--	--	--	--
Other natural/environmental	3	0.64%	100%	--	--	--	--	--	--	--	--	--
Other specified and classifiable	26	5.51%	83.87%	--	--	--	5	50%	16.13%	--	--	--
Other specified, not elsewhere classifiable	2	0.42%	40%	1	25%	20%	2	20%	40%	--	--	--
Overexertion	1	0.21%	100%	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	28	5.93%	100%	--	--	--	--	--	--	--	--	--
Pedestrian, other	3	0.64%	100%	--	--	--	--	--	--	--	--	--
Poisoning	20	4.24%	86.96%	1	25%	4.35%	--	--	--	2	100%	8.7%
Struck by, against	43	9.11%	100%	--	--	--	--	--	--	--	--	--
Suffocation	5	1.06%	100%	--	--	--	--	--	--	--	--	--
Transport, other	22	4.66%	100%	--	--	--	--	--	--	--	--	--
Unspecified	12	2.54%	85.71%	--	--	--	2	20%	14.29%	--	--	--
Total	472	100%	96.72%	4	100%	0.82%	10	100%	2.05%	2	100%	0.41%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 67. Injury Hospitalizations, Mechanism by Intent, Children 10-14 Years

Cause of Injury	Intent											
	Unintentional			Self-Inflicted			Assault			Undetermined		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	11	1.63%	100%	--	--	--	--	--	--	--	--	--
Cut/pierce	22	3.26%	23.91%	66	42.86%	71.74%	4	19.05%	4.35%	--	--	--
Drowning/submersion	6	0.89%	100%	--	--	--	--	--	--	--	--	--
Fall	177	26.22%	99.44%	--	--	--	--	--	--	1	11.11%	0.56%
Fire/flame	16	2.37%	100%	--	--	--	--	--	--	--	--	--
Firearm	5	0.74%	45.45%	1	0.65%	9.09%	5	23.81%	45.45%	--	--	--
Hot object/substance	14	2.07%	87.5%	--	--	--	1	4.76%	6.25%	1	11.11%	6.25%
MVT Motorcyclist	6	0.89%	100%	--	--	--	--	--	--	--	--	--
MVT Occupant	54	8%	100%	--	--	--	--	--	--	--	--	--
MVT Other	2	0.3%	66.67%	--	--	--	1	4.76%	33.33%	--	--	--
MVT Pedal cyclist	16	2.37%	100%	--	--	--	--	--	--	--	--	--
MVT Pedestrian	20	2.96%	100%	--	--	--	--	--	--	--	--	--
MVT Unspecified	1	0.15%	100%	--	--	--	--	--	--	--	--	--
Machinery	4	0.59%	100%	--	--	--	--	--	--	--	--	--
Other natural/environmental	6	0.89%	100%	--	--	--	--	--	--	--	--	--
Other specified and classifiable	45	6.67%	93.75%	--	--	--	2	9.52%	4.17%	1	11.11%	2.08%
Other specified, not elsewhere classifiable	8	1.19%	53.33%	6	3.9%	40%	1	4.76%	6.67%	--	--	--
Overexertion	7	1.04%	100%	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	33	4.89%	100%	--	--	--	--	--	--	--	--	--
Pedestrian, other	1	0.15%	100%	--	--	--	--	--	--	--	--	--
Poisoning	26	3.85%	24.53%	74	48.05%	69.81%	--	--	--	6	66.67%	5.66%
Struck by, against	94	13.93%	94%	--	--	--	6	28.57%	6%	--	--	--
Suffocation	8	1.19%	66.67%	4	2.6%	33.33%	--	--	--	--	--	--
Transport, other	59	8.74%	100%	--	--	--	--	--	--	--	--	--
Unspecified	34	5.04%	89.47%	3	1.95%	7.89%	1	4.76%	2.63%	--	--	--
Total	675	100%	78.58%	154	100%	17.93%	21	100%	2.44%	9	100%	1.05%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 68. Injury Hospitalizations, Mechanism by Intent, Adolescents 15-19 Years

Cause of Injury	Intent														
	Unintentional			Self-Inflicted			Assault			Undetermined			Other		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	21	1.59%	84	--	--	--	4	2%	16%	--	--	--	--	--	--
Cut/pierce	42	3.17%	15.79%	186	25.14%	69.92%	36	18%	13.53%	2	3.64%	0.75%	--	--	--
Drowning/submersion	9	0.68%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Fall	176	13.3%	97.24%	3	0.41%	1.66%	1	0.5%	0.55%	1	1.82%	0.55%	--	--	--
Fire/flame	12	0.91%	85.71%	2	0.27%	14.29%	--	--	--	--	--	--	--	--	--
Firearm	27	2.04%	25.71%	2	0.27%	1.9%	63	31.5%	60%	10	18.18%	9.52%	3	100%	2.86%
Hot object/substance	11	0.83%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	36	2.72%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	415	31.37%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	8	0.6%	80%	1	0.14%	10%	1	0.5%	10%	--	--	--	--	--	--
MVT Pedal cyclist	7	0.53%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	26	1.97%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	13	0.98%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	12	0.91%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	6	0.45%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	81	6.12%	93.1%	2	0.27%	2.3%	4	2%	4.6%	--	--	--	--	--	--
Other specified, not elsewhere classifiable	15	1.13%	36.59%	16	2.16%	39.02%	10	5%	24.39%	--	--	--	--	--	--
Overexertion	27	2.04%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	17	1.28%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	1	0.08%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	86	6.5%	13.42%	513	69.32%	80.03%	--	--	--	42	76.36%	6.55%	--	--	--
Struck by, against	125	9.45%	65.45%	--	--	--	66	33%	34.55%	--	--	--	--	--	--
Suffocation	3	0.23%	60%	2	0.27%	40%	--	--	--	--	--	--	--	--	--
Transport, other	91	6.88%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	56	4.23%	66.67%	13	1.76%	15.48%	15	7.5%	17.86%	--	--	--	--	--	--
Total	1,323	100%	57%	740	100%	31.88%	200	100%	8.62%	55	100%	2.37%	3	100%	0.13%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 69. Injury Hospitalizations, Mechanism by Intent, Adults 20-24 Years

Cause of Injury	Intent														
	Unintentional			Self-Inflicted			Assault			Undetermined			Other		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	37	2.42%	82.22%	--	--	--	8	2.76%	17.78 %	--	--	--	--	--	--
Cut/pierce	57	3.73%	22.53%	128	19.08%	50.59%	68	23.45%	26.88%	--	--	--	--	--	--
Fall	257	16.81%	97.35%	--	--	--	--	--	--	7	7.29%	2.65%	--	--	--
Fire/flame	22	1.44%	91.67%	2	0.3%	8.33%	--	--	--	--	--	--	--	--	--
Firearm	30	1.96%	20.69%	5	0.75%	3.45%	91	31.38%	62.76%	18	18.75%	12.41%	1	25%	0.69%
Hot object/substance	23	1.50%	95.83%	1	0.15%	4.17%	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	66	4.32%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	481	31.46%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	--	--	--	3	0.45%	60%	2	0.69%	40%	--	--	--	--	--	--
MVT Pedal cyclist	2	0.13%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	28	1.83%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	36	2.35%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	18	1.18%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	22	1.44%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	123	8.04%	91.11%	3	0.45%	2.22%	9	3.1%	6.67%	--	--	--	--	--	--
Other specified, not elsewhere classifiable	12	0.78%	21.43%	7	1.04%	12.5%	20	6.9%	35.71%	15	15.63%	26.79%	2	50%	3.57%
Overexertion	17	1.11%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	19	1.24%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	4	0.26%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	102	6.67%	15.29%	511	76.15%	76.61%	--	--	--	54	56.25%	8.1%	--	--	--
Struck by, against	55	3.6%	40.44%	--	--	--	80	27.59%	58.82%	--	--	--	1	25%	0.74%
Suffocation	2	0.13%	25%	6	0.89%	75%	--	--	--	--	--	--	--	--	--
Transport, other	54	3.53%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	62	4.05%	76.54%	5	0.75%	6.17%	12	4.14%	14.81%	2	2.08%	2.47%	--	--	--
Total	1529	100%	59.03%	671	100%	25.91%	290	100%	11.2%	96	100%	3.71%	4	100%	0.15%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 70. Injury Hospitalizations, Mechanism by Intent, Adults 25-34 Years

Cause of Injury	Intent														
	Unintentional			Self-Inflicted			Assault			Undetermined			Other		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	69	2.81%	92%	--	--	--	6	1.7%	8%	--	--	--	--	--	--
Cut/pierce	97	3.95%	29.22%	148	13.75%	44.58%	87	24.65%	26.2%	--	--	--	--	--	--
Drowning/submersion	7	0.29%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Fall	500	20.37%	99.21%	3	0.28%	0.6%	1	0.28%	0.2%	--	--	--	--	--	--
Fire/flame	16	0.65%	66.67%	7	0.65%	29.17%				1	0.65%	4.17%	--	--	--
Firearm	23	0.94%	15.13%	8	0.74%	5.26%	98	27.76%	64.47%	19	12.34%	12.5%	4	44.44%	2.63%
Hot object/substance	42	1.71%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	133	5.42%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	518	21.1%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	5	0.2%	83.33%	--	--	--	1	0.28%	16.67%	--	--	--	--	--	--
MVT Pedal cyclist	11	0.45%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	42	1.71%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	40	1.63%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	34	1.38%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	34	1.38%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	217	8.84%	91.56%	3	0.28%	1.27%	17	4.82%	7.17%	--	--	--	--	--	--
Other specified, not elsewhere classifiable	23	0.94%	23.23%	22	2.04%	22.22%	33	9.35%	33.33%	20	12.99%	20.2%	1	11.11%	1.01%
Overexertion	55	2.24%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	25	1.02%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	6	0.24%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	200	8.15%	16.95%	868	80.67%	73.56%	--	--	--	112	72.73%	9.49%	--	--	--
Struck by, against	112	4.56%	56.57%				83	23.51%	41.92%	--	--	--	3	33.33%	1.52%
Suffocation	8	0.33%	36.36%	14	1.3%	63.64%	--	--	--	--	--	--	--	--	--
Transport, other	113	4.6%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	125	5.09%	79.11%	3	0.28%	1.9%	27	7.65%	17.09%	2	1.3%	1.27%	1	11.11%	0.63%
Total	2455	100%	60.66%	1076	100%	26.59%	353	100%	8.72%	154	100%	3.81%	9	100%	0.22%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 71. Injury Hospitalizations, Mechanism by Intent, Adults 35-64 Years

Cause of Injury	Intent														
	Unintentional			Self-Inflicted			Assault			Undetermined			Other		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	310	2.9%	97.48%	--	--	--	8	1.34%	2.52%	--	--	--	--	--	--
Cut/pierce	224	2.1%	37.33%	256	10.9%	42.67%	116	19.46%	19.33%	4	0.82%	0.67%	--	--	--
Drowning/submersion	10	0.09%	76.92%	3	0.13%	23.08%	--	--	--	--	--	--	--	--	--
Fall	4061	38.02%	99.61%	11	0.47%	0.27%	1	0.17%	0.02%	4	0.82%	0.1%	--	--	--
Fire/flame	83	0.78%	87.37%	8	0.34%	8.42%	1	0.17%	1.05%	3	0.62%	3.16%	--	--	--
Firearm	36	0.34%	24.49%	33	1.4%	22.45%	65	10.91%	44.22%	10	2.06%	6.8%	3	20%	2.04%
Hot object/substance	125	1.17%	96.15%	2	0.09%	1.54%	3	0.5%	2.31%	--	--	--	--	--	--
MVT Motorcyclist	352	3.3%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	1221	11.43%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	10	0.09%	52.63%	7	0.3%	36.84%	--	--	--	2	0.41%	10.53%	--	--	--
MVT Pedal cyclist	33	0.31%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	127	1.19%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	104	0.97%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	142	1.33%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	161	1.51%	98.17%	--	--	--	--	--	--	3	0.62%	1.83%	--	--	--
Other specified and classifiable	791	7.4%	96.7%	7	0.3%	0.86%	15	2.52%	1.83%	--	--	--	5	33.33%	0.61%
Other specified, not elsewhere classifiable	117	1.1%	38.61%	41	1.75%	13.53%	77	12.92%	25.41%	67	13.79%	22.11%	1	6.67%	0.33%
Overexertion	211	1.98%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	102	0.95%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	27	0.25%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	899	8.42%	27.66%	1960	83.44%	60.31%	3	0.5%	0.09%	388	79.84%	11.94%	--	--	--
Struck by, against	366	3.43%	62.46%	--	--	--	215	36.07%	36.69%	--	--	--	5	33.33%	0.85%
Suffocation	49	0.46%	83.05%	10	0.43%	16.95%	--	--	--	--	--	--	--	--	--
Transport, other	365	3.42%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	756	7.08%	87.4%	11	0.47%	1.27%	92	15.44%	10.64%	5	1.03%	0.58%	1	6.67%	0.12%
Total	10682	100%	75.61%	2349	100%	16.63%	596	100%	4.22%	486	100%	3.44%	15	100%	0.11%

Appendix C: Injury Deaths and Hospitalizations by Mechanism, Intent, and Age Group

Table 72. Injury Hospitalizations, Mechanism by Intent, Adults 65 and Older

Cause of Injury	Intent														
	Unintentional			Self-Inflicted			Assault			Undetermined			Other		
	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %	Count	Column %	Row %
Bites and stings	107	0.65%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Cut/pierce	42	0.25%	62.69%	16	12.6%	23.88%	9	15.52%	13.43%	--	--	--	--	--	--
Drowning/submersion	1	0.01%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Fall	13053	78.95%	99.98%	1	0.79%	0.01%	1	1.72%	0.01%	1	1.47%	0.01%	--	--	--
Fire/flame	35	0.21%	97.22%							1	1.47%	2.78%	--	--	--
Firearm	6	0.04%	40%	5	3.94%	33.33%	4	6.9%	26.67%	--	--	--	--	--	--
Hot object/substance	43	0.26%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Motorcyclist	29	0.18%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Occupant	493	2.98%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Other	2	0.01%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedal cyclist	4	0.02%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Pedestrian	42	0.25%	100%	--	--	--	--	--	--	--	--	--	--	--	--
MVT Unspecified	27	0.16%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Machinery	33	0.2%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other natural/environmental	109	0.66%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Other specified and classifiable	396	2.4%	96.59%	--	--	--	8	13.79%	1.95%	--	--	--	6	75%	1.46%
Other specified, not elsewhere classifiable	24	0.15%	40.68%	7	5.51%	11.86%	7	12.07%	11.86%	21	30.88%	35.59%	--	--	--
Overexertion	200	1.21%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedal cyclist, other	27	0.16%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Pedestrian, other	14	0.08%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Poisoning	488	2.95%	78.21%	95	74.8%	15.22%	--	--	--	41	60.29%	6.57%	--	--	--
Struck by, against	199	1.2%	90.45%	--	--	--	19	32.76%	8.64%	--	--	--	2	25%	0.91%
Suffocation	109	0.66%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Transport, other	94	0.57%	100%	--	--	--	--	--	--	--	--	--	--	--	--
Unspecified	957	5.79%	98.25%	3	2.36%	0.31%	10	17.24%	1.03%	4	5.88%	0.41%	--	--	--
Total	16534	100%	98.45%	127	100%	0.76%	58	100%	0.35%	68	100%	0.40	8	100%	0.05%

Division of Injury & Violence Prevention
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