



Central Ohio Trauma System (COTS) 2009 Report

Motor Vehicle Crash, Falls and Assault Injuries in Central Ohio
A Public Health Assessment

09

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Trauma System

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Central Ohio Trauma System



Central Ohio Trauma System

ORGANIZATIONAL OVERVIEW

The Central Ohio Trauma System (COTS) is a not-for-profit (501[c][3]) that primarily serves emergency healthcare workers and their patients. The COTS Mission is to reduce injuries and save lives by improving and coordinating trauma care, emergency care, and disaster preparedness systems in Central Ohio. COTS' objectives are to:

1. Sustain an inclusive system where community partners work together to resolve issues associated with trauma, emergency care and medical disaster preparedness
2. Maintain COTS' two databases (the Regional Trauma Registry and the Emergency Department Real-time Activity Status) for reliable data analysis
3. Facilitate initiatives that accomplish appropriate resource utilization while reducing deaths and disabilities from trauma, strokes, heart attacks and other emergency health conditions

4. Coordinate healthcare partners' medical disaster preparedness and response

COTS is an affiliate organization of the Columbus Medical Association. COTS Board of Trustees members are appointed by their institutions and include:

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Central Ohio Trauma System

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Central Ohio Trauma System

The COTS Regional Trauma Registry (RTR) serves as the basis for this report. Founded in 1999, the RTR includes patients with serious injuries who are transferred to, admitted for 2 days or longer to, and/or die at a participating Central Ohio hospital. The following hospitals contribute data to the RTR:

Adena Regional Medical Center, Chillicothe, Ohio

Berger Health System, Circleville, Ohio

Coshocton County Memorial Hospital, Coshocton, Ohio

Doctors Hospital, Columbus, Ohio

Dublin Methodist Hospital, Dublin, Ohio

Fairfield Medical Center, Lancaster, Ohio

Genesis Healthcare System, Zanesville, Ohio

Grady Memorial Hospital, Delaware, Ohio

Grant Medical Center, Columbus, Ohio

Knox Community Hospital, Mt. Vernon, Ohio

Madison County Hospital, London, Ohio

Marion General Hospital, Marion, Ohio

Marietta Memorial Hospital, Marietta, Ohio

Memorial Hospital of Union County, Marysville, Ohio

Morrow County Hospital, Mt. Gilead, Ohio

Mount Carmel East, Columbus, Ohio

Mount Carmel New Albany Surgical Hospital, New Albany, Ohio

Mount Carmel St. Ann's, Westerville, Ohio

Mount Carmel West, Columbus, Ohio

Nationwide Children's Hospital, Columbus, Ohio

The Ohio State University Hospital East, Columbus, Ohio

The Ohio State University Medical Center, Columbus, Ohio

Pike Community Hospital, Waverly, Ohio

Riverside Methodist Hospital, Columbus, Ohio

Since its inception in 1999, the RTR has collected data on more than 93,000 trauma patients---an average of over 9,300 Central Ohioans annually who experience a potentially life-threatening injury. The RTR is intended to serve as a community resource beyond this

report by providing data that leads to improved trauma patient care. RTR data can serve as the basis for focusing injury prevention and trauma care initiatives on areas of highest need. The RTR can also provide benchmarks for measuring progress. RTR data is available to community researchers and injury prevention planners by contacting the Central Ohio Trauma System at (614) 240-7419.

To learn more about COTS' work in central Ohio or for extra copies of this report, contact the Central Ohio Trauma System at (614) 240-7419.



Lightened counties are those actively participating along with COTS in the Central Ohio Regional Trauma Registry.

Columbus Public Health

ORGANIZATIONAL OVERVIEW



Columbus Public Health

Columbus Public Health is the local health agency for the City of Columbus. Established in 1904, the department is charged with assuring conditions in which people can be healthy.

Columbus Public Health is made up of a range of programs providing clinical, environmental, health promotion, and population based services. The department has an annual budget of \$35 million and is staffed by nearly 500 full and part-time employees.

Mission

Columbus Public Health is a leader in improving the health and safety of Columbus by monitoring community health status, identifying and addressing public health threats, enforcing laws that protect the public's health, and providing services to prevent and control disease.

Our Vision

We are working to achieve this vision with injury prevention by maintaining programming that directly impacts specific injury categories.

- In-Home Day Care Inspections

address prevention for childhood injuries in the home, particularly from: falls; burns including water temperature; crib and toy safety; poisonings; no tobacco in the home where children are; no animals where the children are; cleanliness; freedom from mold and mildew; and car seat information.

- The Child Safety Seat Program provides safety seat checks and safety seats for children 0-8 years old to prevent injuries and deaths from motor vehicle crashes.
- The Safe Kids Program addresses the five leading causes of injury to children 0-14 years old (motor vehicle crashes, falls, drowning, bicycle safety, pedestrian safety and burns/fires). This is a collaborative project with 35 members and/or partners.
- The Safe Communities Program is focused on the prevention of traffic injuries and deaths caused by motor vehicle, motor cycle, pedestrian and bicycle crashes. This is also a partnership with other concerned individuals and agencies. They concentrate on teen crash prevention, alcohol-related crashes, motor cycle crashes, impaired driving and seat belt usage.

2009 Executive Summary

“Trauma” is a significant physical injury to human tissues and organs as a result of a transfer of energy from the environment¹. This energy typically occurs with a degree of rapidity and exceeds the body’s capacity to remain intact against it. Trauma is more than a simple cut or bruise; trauma implies the potential for death or long-term disability due to the severity of injury.

According to the Centers for Disease Control and Prevention (CDC), trauma is the leading cause of death in the 1-44 year-old age groups in the U.S.². Trauma deaths in this age group are particularly disconcerting because they involve “society’s youngest and potentially most productive members;” because these deaths are typically preventable; and because of possible long-term ramifications for decedents’ families and communities.

Twenty-three central Ohio hospitals from across fifteen counties provided data for this report. Data includes trauma-related deaths, patients who sustained an injury and were transferred from one hospital to another for care, and injured patients who were admitted for greater than 48 hours. These three parameters—death, transfer, and/or hospital admission of more than two days—help to delineate true “trauma patients” from those who sustain less serious injuries.

Central Ohio sustains on average 640 trauma deaths every year and about 3,200 trauma-related hospital admissions. The “top five” causes of trauma-related hospitalization in our region are Falls (4,329), Motor Vehicle Traffic Crashes (2,294), “Struck by or Against” an object such as occurs in an assault or an

inadvertent projectile⁴ (837), Firearms (625), and Cut or Pierce (such as would occur from an assault or inadvertent projectile⁴ (383). But in addition to these direct numbers of trauma victims, it is paramount to look at the rates (based on per 100,000) and costs of trauma as they affect the Central Ohio community.

The injury rates for the “top five” mechanisms of injury in the region have all increased since 2002. The rate of hospitalization due to Firearms has increased by 42%. The rate of hospitalizations from Falls and Struck by/Against increased at a nearly identical rate of about 31% each, while the rate of hospitalizations from a Cut/Pierce injury increased at a rate of 29%. The rate of hospitalizations from Motor Vehicle Crashes is less dramatic than the others, with an increase of 7.8%.

Trauma is not just “numbers” of severely injured people. Trauma equates to real dollars that are expended by our Central Ohio community, not just in patients’ medical bills but in lost wages, insurance administration costs, property damage, fire loss, employer costs, and decreased work productivity³. Trauma also costs our community money in terms of publicly-supported human services that are required to address each incident, such as the EMS and law enforcement personnel who care for these victims and/or the scene of the injury. Estimates are that in 2008, the Central Ohio community likely spent upwards of \$80,347,532 on medical care and hospitalization for trauma victims⁵.

Over 82% of the trauma cases in our region are the result of an unintentional injury meaning that they were preventable in some way or another. We know, for example, that most Fall

injuries occur in people who are 65 years of age and older, whereas the majority of Firearm injuries occur among people ages 15-24. Age-appropriate injury prevention programs could impact these types of injuries, i.e. fall prevention programs aimed at the elderly in which they or a family member are taught how to reduce the fall risk in their home. Besides age-related trends, data is also available that trends trauma by gender, race, zip code, and occurrence by day of the week. Injury prevention programming aimed at these specific trends could work to address each of the top five causes of trauma in our region.

To that end, this community injury report is dedicated to those in our community who conduct injury-prevention programming with the elderly, the youth, or any other at-risk group. This report is for our government leaders as they look at trauma trends and work to eradicate associated risks. This report is for the healthcare workers in our community who care for every trauma victim reflected on these pages. Lastly, this report is for you, the consumer and potential trauma victim, to be more aware of trauma, local trauma trends, and the need to consider injury prevention in aspects of your everyday life.

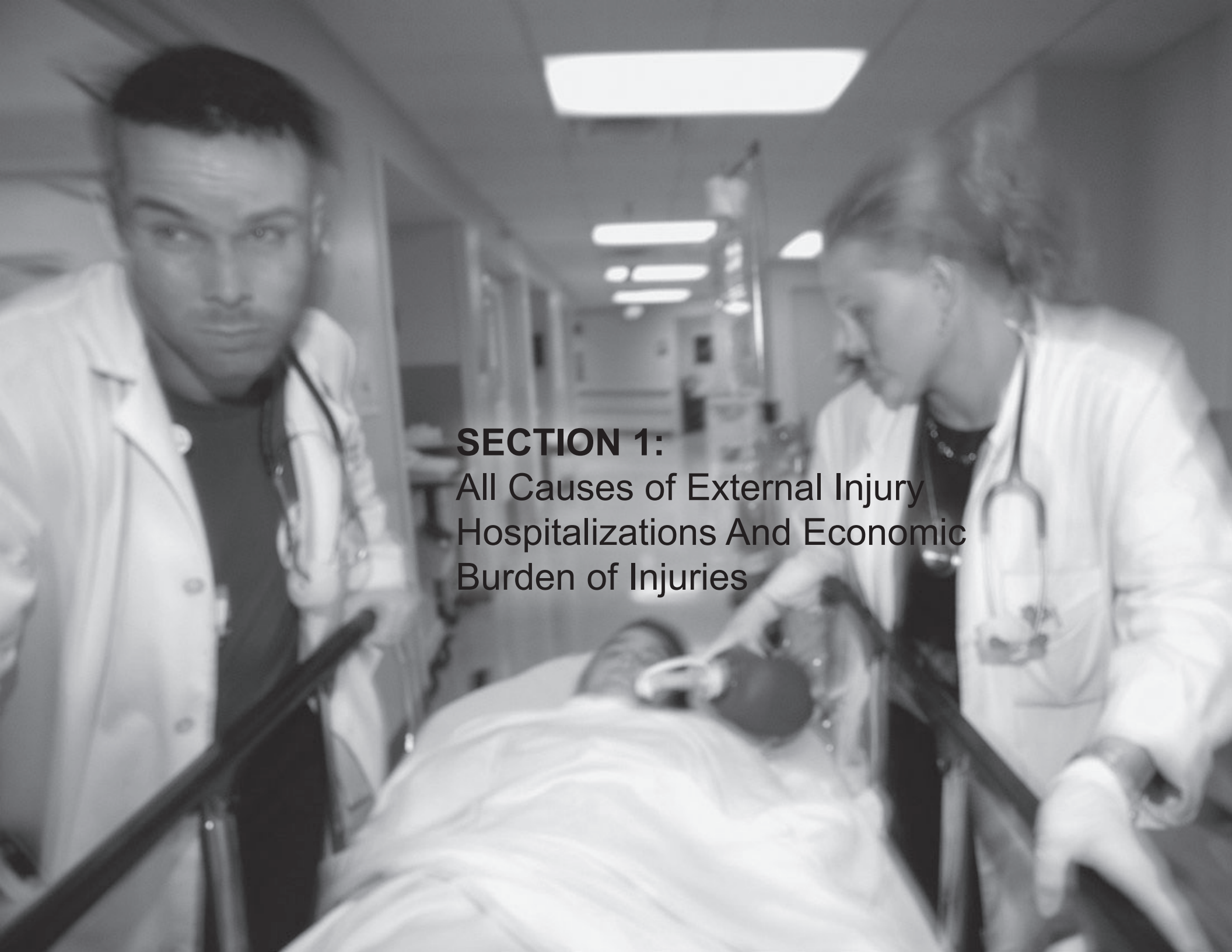
¹ Emergency Nurses Association, Chicago, IL. Trauma Nursing Core Course Curriculum (2007); p. 1 & 7.

² Centers for Disease Control and Prevention. Web-based injury statistics query and reporting system (WISQARS). Available at www.cdc.gov/cgi-bin/broker.exe. Accessed September 8, 2009.

³ The American College of Surgeons Committee on Trauma, Chicago, IL. Advanced Trauma Life Support for Doctors Course (2008); p. xviii.

⁴ Excludes a projectile from a firearm

⁵ Assuming a 3% increase per year in the cost of medical care and hospitalization and no increase or decrease in cases from 2004-2007 (See table 1-3).



SECTION 1:
All Causes of External Injury
Hospitalizations And Economic
Burden of Injuries

Section 1: All Causes of External Injury Hospitalizations

In Franklin County, injuries from all causes accounted for an average of 646 deaths and 3,250 non-fatal hospitalizations of 48 hours or longer per year for the years 2005-2007. Over 82% of the non-fatal injury related hospitalizations are as a result of an unintentional injury. About 15% are as a result of an intentional injury. The remaining 3% are divided between non-fatal suicide attempts and undetermined causes. The highest risk for an unintentional injury is in the 75+ age group while the highest risk for intentional injury is in the 15-24 age-group. The average number of 48 hours or longer hospitalizations per year for persons age 75 and over due to unintentional injury was 632. The average number per year for persons 15-24 due to intentional injury was 145 (Table 1-3).

Males account for 59% of all 48 hours or longer injury hospitalizations and 84% of intentional injury hospitalizations. For unintentional 48 hours or longer hospitalizations, males account for 54%. Males experience more injuries in all age groups except 65 and older for unintentional and self-inflicted 48 hours or longer hospitalizations and for all age groups (Table 1-4) except 0-4 for intentional injury hospitalizations (Table 1-5).

The level of risk for serious injuries (injuries that result in hospitalization for at least 48 hours) also varies by race according to tables 1-4 to 1-6. Even though the highest average number of serious injuries per year (2261) is in White residents, the highest rate of serious injury is in Black residents, 353.8 per 100,000 compared to the White rate of 287.7. This is a 16.5% higher rate. Nearly all of this difference is in the intentional injury category where Black residents are 5 times more likely to sustain a serious injury than White residents (115.6 per 100,000 population compared to 22.4). For unintentional injuries White residents are at greater risk, 260.5 per 100,000 compared to 226.8, a 13% difference (Tables 1-6 and 1-7).

Tables 1-1 and 1-2 show the degree to which serious injury hospitalizations have increased in Franklin County between 2002 and 2007. There was a 21% increase in the rate per 100,000 for all injuries. There are different magnitudes of change for different injury mechanisms. For firearm injuries the rate per 100,000 increase is nearly 43% while, for motor vehicle injuries, the increase is 8%.

Section 1: All Causes of External Injury Hospitalizations

Table 1-1: Franklin County Injury Hospitalization Number & Rate Trends by Mechanism & Intentionality

Mechanism of Injury Hospitalization	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Mechanism of Injury Hospitalization	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
All	7,987	255	9,751	309		21.1%	All	3160	300	3379	319		6.2%
Falls	3,232	112	4,329	148		31.6%	Falls	1359	140	1605	162		16.1%
Motor Vehicle Traffic (MVT)	2,100	64	2,294	69		7.8%	Motor Vehicle Traffic (MVT)	738	67	743	67		-0.3%
Struck by/Against	638	19	837	25		31.4%	Struck by/Against	254	23	313	28		22.2%
Firearm	448	13	625	18		42.8%	Firearm	241	21	179	15		-26.5%
Cut/Pierce	298	9	383	11		29.4%	Cut/Pierce	122	11	124	11		0.8%
Fire/Hot Object	271	8	280	8		0.9%	Fire/Hot Object	102	9	106	9		0.6%
Transport, Other	216	7	245	7		12.8%	Transport, Other	91	8	69	6		-22.7%
Other Specified and Classifiable	183	5	179	5		-4.5%	Other Specified and Classifiable	52	4	69	6		30.5%
Unspecified	182	6	156	5		-17.0%	Pedal Cyclist, Other (Non-MVT related)	44	4	45	4		3.3%
Pedal Cyclist, Other (Non-MVT related)	115	4	130	4		11.8%	Unspecified	57	5	43	4		-27.3%
Natural/Environmental	87	3	72	2		-18.1%	Natural/Environmental	19	**	25	2	N/A	N/A
Other Specified, Not Elsewhere Classifiable	59	2	71	2		18.7%	Machinery	22	2	20	2		-9.5%
Machinery	53	2	70	2		26.1%	Other Specified, Not Elsewhere Classifiable	24	2	18	**	N/A	N/A
Drowning/Submersion	15	**	24	1	N/A	N/A	Drowning/Submersion	12	**	6	**	N/A	N/A
Pedestrian, Other (Non-MVT related)	20	1	19	**	N/A	N/A	Poisoning	2	**	6	**	N/A	N/A
Overexertion	46	1	15	**	N/A	N/A	Overexertion	8	**	3	**	N/A	N/A
Suffocation	18	**	13	**	N/A	N/A	Pedestrian, Other (Non-MVT related)	9	**	3	**	N/A	N/A
Poisoning	5	**	9	**	N/A	N/A	Suffocation	4	**	2	**	N/A	N/A
Adverse Effects (Drugs/Medical)	6	**	0	**	N/A	N/A	Adverse Effects (Drugs/Medical)	0	**	0	**	N/A	N/A

Injury Hospitalization By Intentionality	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Injury Hospitalization By Intentionality	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Unintentional	6,703	218	8,056	260		19.2%	Unintentional	2,588	251	2,813	270		7.8%
Intentional	1,136	33	1,479	43		31.0%	Intentional	501	44	487	42		-3.9%
Self-Inflicted	95	3	109	3		16.3%	Self-Inflicted	40	4	32	3		-20.5%
Undetermined	47	1	92	3		94.5%	Undetermined	23	2	44	4		93.0%
Other	6	**	15	**	N/A	N/A	Other	8	**	3	**	N/A	N/A
Adverse Effects	6	**	0	**	N/A	N/A	Adverse Effects	0	**	0	**	N/A	N/A

** Data do not meet reliability or precision standards of the National Center for Health Statistics as they are based on less than 20 observations (numerator) and are not presented here.

Section 1: All Causes of External Injury Hospitalizations

Table 1-2: Franklin County Leading Mechanisms of Injury Hospitalization Number & Rate Trends by Intent

Leading Unintentional Injury Hospitalization	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Leading Unintentional Injury Hospitalization	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Falls	3,221	112	4,311	147		31.5%	Falls	1,352	139	1,600	162		16.3%
Motor Vehicle Traffic (MVT)	2,096	64	2,289	69		7.8%	Motor Vehicle Traffic (MVT)	737	67	740	66		-0.6%
Fire/Hot Object	264	8	275	8		1.7%	Fire/Hot Object	100	9	104	9		0.8%
Struck by/Against	220	7	272	8		24.6%	Struck by/Against	88	8	99	9		11.7%
Transport, Other	216	7	245	7		12.8%	Transport, Other	91	8	69	6		-22.7%
Pedal Cyclist, Other (Non-MVT related)	115	4	130	4		11.8%	Pedal Cyclist, Other (Non-MVT related)	44	4	45	4		3.3%
Cut/Pierce	111	3	120	4		9.3%	Cut/Pierce	38	3	30	3		-20.9%
Natural/Environmental	87	3	71	2		-19.1%	Natural/Environmental	19	**	25	2	N/A	N/A
Machinery	53	2	70	2		26.1%	Other Specified and Classifiable	17	**	25	2	N/A	N/A
Other Specified and Classifiable	83	2	67	2		-20.4%	Machinery	22	2	20	2		-9.5%

Leading Intentional Injury Hospitalization	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Leading Intentional Injury Hospitalization	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Struck by/Against	416	12	559	16		34.2%	Struck by/Against	161	14	214	19		31.9%
Firearm	353	10	480	14		39.7%	Firearm	188	16	128	11		-32.2%
Cut/Pierce	137	4	199	6		45.0%	Cut/Pierce	61	5	75	6		21.4%
Other Specified and Classifiable	96	3	105	3		6.2%	Other Specified and Classifiable	35	3	41	3		15.2%
Unspecified	100	3	96	3		-2.3%	Unspecified	41	4	21	2		-52.7%
Other Specified, Not Elsewhere Classifiable	25	1	33	1		28.7%	Other Specified, Not Elsewhere Classifiable	14	**	6	**	N/A	N/A
Fire/Hot Object	4	**	4	**	N/A	N/A	Fire/Hot Object	1	**	2	**	N/A	N/A
Falls	1	**	1	**	N/A	N/A							
Motor Vehicle Traffic (MVT)	1	**	1	**	N/A	N/A							
Suffocation	3	**	1	**	N/A	N/A							

Leading Self-Inflicted Injury Hospitalization	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Leading Self-Inflicted Injury Hospitalization	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Cut/Pierce	41	1	49	1		22.2%	Cut/Pierce	17	**	13	**	N/A	N/A
Firearm	21	1	32	1		50.1%	Firearm	16	**	9	**	N/A	N/A
Suffocation	13	**	8	**	N/A	N/A	Other Specified and Classifiable	0	**	2	**	N/A	N/A
Falls	6	**	5	**	N/A	N/A	Falls	2	**	2	**	N/A	N/A
Other Specified and Classifiable	4	**	4	**	N/A	N/A	Motor Vehicle Traffic (MVT)	1	**	2	**	N/A	N/A
Poisoning	3	**	4	**	N/A	N/A	Poisoning	1	**	2	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	3	**	3	**	N/A	N/A	Unspecified	0	**	1	**	N/A	N/A
Motor Vehicle Traffic (MVT)	1	**	3	**	N/A	N/A	Suffocation	2	**	1	**	N/A	N/A
Unspecified	0	**	1	**	N/A	N/A	Other Specified, Not Elsewhere Classifiable	1	**	0	**	N/A	N/A
Fire/Hot Object	2	**	0	**	N/A	N/A							
Drowning/Submersion	1	**	0	**	N/A	N/A							

** Data do not meet reliability or precision standards of the National Center for Health Statistics as they are based on less than 20 observations (numerator) and are not presented here.

Section 1: All Causes of External Injury Hospitalizations

Table 1-3: All Causes of Franklin County Injury Hospitalizations by Intent and Age, 2005-07.

Age-Group	All		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	413	162.5	354	139.3	0	0	59	23.2	0	0
05-14	644	140.4	622	135.6	2	<1	17	3.7	3	<1
15-24	1,428	295.2	932	192.7	31	6.4	436	90.1	26	5.4
25-44	2,454	238.1	1,702	165.2	40	3.9	656	63.7	48	4.7
45-64	2,194	281.5	1,859	238.5	30	3.9	288	37.0	13	1.7
65-74	710	419.3	692	408.6	3	1.8	14	8.3	1	<1
75+	1,907	1249.7	1,894	1,241.2	3	2.0	9	5.9	1	<1
All	9,751	308.6	8,056	259.7	109	3.2	1,479	42.6	92	2.6

Table 1-4: All Causes of Franklin County Injury Hospitalizations for Males, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	237	181.5	210	160.9	0	0	27	20.7	0	0
05-14	423	181.2	405	173.5	2	<1	14	6.0	2	<1
15-24	1,066	430.6	645	260.6	23	9.3	374	151.1	21	8.5
25-44	1,789	344.5	1,169	225.1	30	5.8	544	104.8	40	7.7
45-64	1,386	373.0	1,091	293.6	22	5.9	262	70.5	7	1.9
65-74	312	419.3	301	404.5	2	2.7	8	10.8	1	1.3
75+	548	1,011.0	537	990.7	2	3.7	8	14.8	1	1.8
Total	5,762	375.9	4,359	294.5	81	4.9	1,237	71.6	72	4.2

Section 1: All Causes of External Injury Hospitalizations

Table 1-5: All Causes of Injury Hospitalizations for Females by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	176	142.4	144	116.5	0	0	32	25.9	0	0
05-14	221	98.1	217	96.3	0	0	3	1.3	1	<1
15-24	362	153.3	287	121.5	8	3.4	62	26.3	5	2.1
25-44	665	130.1	533	104.3	10	2.0	112	21.9	8	1.6
45-64	808	198.1	768	188.3	8	2.0	26	6.4	6	1.5
65-74	398	419.2	391	411.8	1	1.1	6	6.3	0	0
75+	1,359	1,381.2	1,357	1,379.2	1	1.0	1	1.0	0	0
Total	3,989	236.3	3,697	219.4	28	1.6	242	14.0	20	1.1

Table 1-6: All Causes of Franklin County Injury Hospitalizations for Whites, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	215	137.1	187	119.3	0	0	28	17.9	0	0
05-14	413	138.1	400	133.8	2	<1	9	3.0	2	<1
15-24	777	230.3	618	183.2	20	5.9	133	39.4	5	1.5
25-44	1,463	200.8	1,170	160.6	29	4.0	244	33.5	16	2.2
45-64	1,601	262.9	1,444	237.1	26	4.3	122	20.0	7	1.2
65-74	591	432.7	577	422.4	3	2.2	10	7.3	1	<1
75+	1,724	1,334.7	1,715	1,327.8	2	1.6	7	5.4	0	0
Total	6,784	287.7	6,111	260.5	82	3.3	553	22.4	31	1.3

Section 1: All Causes of External Injury Hospitalizations

Table 1-7: All Causes of Franklin County Injury Hospitalizations for Blacks, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	123	182.7	107	158.9	0	0	16	23.8	0	0
05-14	140	117.4	132	110.7	0	0	7	5.9	1	<1
15-24	467	441.2	183	172.9	10	9.5	257	242.8	15	14.2
25-44	743	380.7	349	178.8	10	5.1	356	182.4	24	12.3
45-64	466	355.7	312	238.2	4	3.1	144	109.9	4	3.1
65-74	106	399.3	102	384.2	0	0	4	15.1	0	0
75+	144	725.5	141	710.4	1	5.0	2	10.1	0	0
Total	2,189	353.8	1,326	226.8	25	3.9	786	115.6	44	6.2

Table 1-8: All Causes of Franklin County Injury Hospitalizations, Other Race, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	75	249.6	60	199.7	0	0	15	49.9	0	0
05-14	91	224.5	90	222.0	0	0	1	2.5	0	0
15-24	184	454.2	131	323.4	1	2.5	46	113.6	6	14.8
25-44	248	231.9	183	171.1	1	<1	56	52.4	8	7.5
45-64	127	321.5	103	260.7	0	0	22	55.7	2	5.1
65-74	13	209.1	13	209.1	0	0	15	49.9	0	0
75+	39	1,088.8	38	1,060.9	0	0	0	0	1	27.9
Total	778	335.2	619	280.8	2	<1	140	46.6	17	7.3

Section 1: All Causes of External Injury Hospitalizations

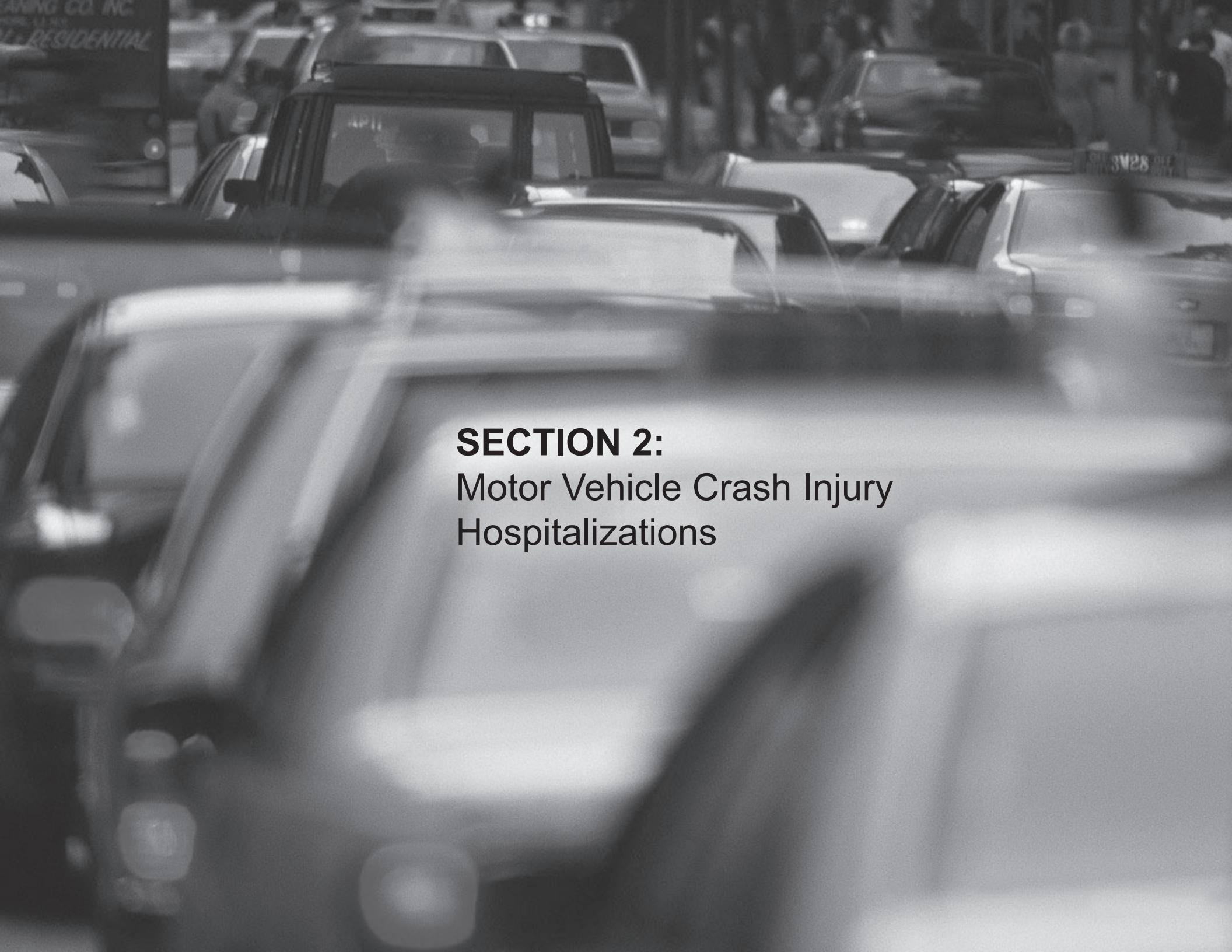
The Economic Burden of Injuries in Franklin County

Injuries are expensive from several perspectives. Medical treatment and rehabilitation is one component of the cost; productivity losses are another component. These represent the value of goods and services not produced because of injury-related illness and disability. Lost wages and fringe benefits as well as the lost ability to perform normal household responsibilities are also included in productivity losses. The data in Table 1-9 is extrapolated from data in the book "The Incidence and Economic Burden of Injuries in the United States". The costs are based

on injuries occurring in year 2000 and the cost of those injuries in that year. Inflation and increases in the cost of health care since 2000 make these estimates fairly low compared to what may be the actual cost, however they are still staggering. Table 1-9 indicates that the medical and hospitalization costs of injuries to Franklin County residents was over \$776,000,000. The productivity losses due to injury fatalities are inordinately high because injury fatalities affect young people more often than other causes of death. The average age for injury fatalities in 2007 is 46.

Table 1-9: Economic Burden of Injuries in Franklin County (Average cost per fatality in 2000 dollars; and average cost per 48-hour hospitalizations per year from 2004-2007 data)

Cause of Injury	FATALITIES				48-HOUR HOSPITALIZATIONS			
	Number	Medical Costs	Productivity Costs	Total Costs	Number	Medical Costs	Productivity Costs	Total Costs
Falls	56	\$924,560 @ \$16,510	\$18,029,032 @ \$321,947	\$18,953,592	1,438	\$25,655,358 @ \$17,841	\$31,096,750 @ \$21,625	\$56,752,108
Motor Vehicle Crashes	98	\$765,086 @ \$7,807	\$104,280,134 @ \$1,064,083	\$105,045,220	765	\$22,712,850 @ \$29,690	\$42,930,270 @ \$56,118	\$65,643,120
Firearms	76	\$224,884 @ \$2,959	\$88,105,660 @ \$1,159,285	\$88,330,544	160	\$5,884,640 @ \$36,779	\$9,575,360 @ \$59,846	\$15,460,000
All Causes	641	\$4,785,706 @ \$7,466	\$610,758,902 @ \$952,822	\$615,544,608	3250	\$58,636,500 @ \$18,042	\$102,053,250 @ \$31,401	\$160,689,750
TOTAL COSTS	615,544,608 + 160,689,750 = 776,234,358							



SECTION 2:
Motor Vehicle Crash Injury
Hospitalizations

Section 2: Motor Vehicle Crash Injury Hospitalizations

Motor vehicle crashes are the second leading cause of serious injuries (injuries that result in hospitalization for at least 48 hours). Between 2005 and 2007, 2,294 residents were hospitalized due to a motor vehicle crash (Table 2-2). This is 23% of all injury hospitalizations, an average of 765 per year or nearly 2 persons every day in Franklin County.

Males account for 61% of these cases; this is a rate of 86 per 100,000 male residents compared to a female rate of 53. About 1.5 males are hospitalized for every female.

Overall the age group at greatest risk is the 15-24 age group with a rate of 105 per 100,000 (Table 2-2). For males the highest risk age group is 75+ with a rate of 135 per 100,000 compared to a rate of 126 for 15-24 year old males. For females 15-24 is the most at risk age group: 84 per 100,000 compared to 82 per 100,000 for the 75+ age group (Tables 2-3 and 2-4).

There are also differences in risk level among race categories (Tables 2-5 to 2-7). The highest risk racial group is the "Other Race" category composed of all races other than Black or White. The rate per 100,000 for Other was 93 compared to 66 and 74 for White and Black categories respectively. In all three categories age groups

15-24 and 75+ are at highest risk.

Table 2-1 shows the change in rates per 100,000 for age groups, gender, and race/ethnicity between 2002 and 2007. The rate for 0-4 year olds declined substantially from 15 per 100,000 to 9 per 100,000. The age group with the largest rate increase is the 65-69 age group, going from 56 per 100,000 in 2002-04 to 83 in 2005-07. The rate per 100,000 increase for males is 13% compared to 3% for females. The increase for White residents is 13% compared to a 3% decrease for Black residents. Table 2-8 compares injury rates for various types of motor vehicle crash incidents. Pedestrian-related 48 hour or longer hospitalizations declined between 2002-04 and 2005-07. However there is a significant increase in motorcycle-related injuries. There were 219 per 100,000 in 2002-04 and 321 in 2005-07, this is a 45% increase in rate per 100,000 people.

Table 2-9 shows the number and percent use of safety devices for 2003-2007 for crashes resulting in an injury requiring at least a 48 hour hospitalization. Air bag deployments appear to be increasing, going from 26% in 2003 to 35% in 2007. Seat belt and car seat use have not varied substantially over the 5 year period.

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-1: Franklin County Unintentional MVC Hospitalizations: Demographic Number & Rate Trends

Characteristic Age-Group	2002-04		2005-07		Age-Specific Rate Trend Chart	Rate % Change	Characteristic Age-Group	2006		2007		Age-Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
00-04	37	15	24	9		-37.4%	00-04	2	2	8	9		297.5%
05-09	70	31	35	15		-51.1%	05-09	15	19	6	8		-60.9%
10-14	58	25	52	23		-9.5%	10-14	17	23	16	21		-5.3%
15-19	185	84	240	104		24.2%	15-19	69	90	68	87		-3.1%
20-24	284	106	269	107		0.1%	20-24	85	102	86	103		1.1%
25-29	198	74	243	99		32.4%	25-29	72	88	83	104		18.6%
30-34	170	61	189	71		16.8%	30-34	57	65	67	77		19.5%
35-39	174	68	196	74		8.5%	35-39	56	63	71	79		24.1%
40-44	214	82	193	76		-8.1%	40-44	69	81	64	76		-6.2%
45-49	156	66	185	74		12.5%	45-49	62	74	61	72		-2.4%
50-54	129	63	165	76		20.4%	50-54	66	91	47	63		-30.8%
55-59	93	59	127	69		15.7%	55-59	51	81	38	60		-26.0%
60-64	85	75	78	62		-17.4%	60-64	21	52	32	71		38.1%
65-69	50	56	78	83		49.5%	65-69	27	87	21	66		-24.9%
70-74	59	76	60	79		4.2%	70-74	20	79	18	71		-9.6%
75-79	56	84	69	107		26.2%	75-79	17	78	29	136		73.9%
80-84	41	91	46	97		6.9%	80-84	17	107	13	82		-24.0%
85+	35	93	39	96		3.6%	85+	14	104	12	86		-17.1%

Gender	2002-04		2005-07		Gender Specific Rate Trend Chart	Rate % Change	Gender	2006		2007		Gender Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	1227	77	1392	86		12.6%	Male	428	80	463	85		5.4%
Female	869	51	897	53		2.6%	Female	309	54	277	49		-10.6%

Race	2002-04		2005-07		Race Specific Rate Trend Chart	Rate % Change	Race	2006		2007		Race Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	468	76	462	74		-2.9%	Black	153	71	163	79		10.6%
White	1418	58	1594	65		12.5%	White	514	63	498	61		-3.7%
Other/Unk	210	91	233	93		1.9%	Other/Unk	70	85	79	81		-4.5%

Top Ten Zip Code*	2002-04		2005-07		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2006		2007		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43207	99	4.7%	127	5.5%		28.3%	43207	38	5.2%	44	5.9%		15.8%
43224	110	5.2%	117	5.1%		6.4%	43224	33	4.5%	39	5.3%		18.2%
43228	103	4.9%	113	4.9%		9.7%	43224	47	6.4%	35	4.7%		-25.5%
43229	108	5.2%	99	4.3%		-8.3%	43229	30	4.1%	35	4.7%		16.7%
43232	72	3.4%	88	3.8%		22.2%	43081	28	3.8%	29	3.9%		3.6%
43123	98	4.7%	87	3.8%		-11.2%	43204	30	4.1%	28	3.8%		-6.7%
43081	76	3.6%	86	3.8%		13.2%	43119	16	2.2%	27	3.6%		68.8%
43230	47	2.2%	84	3.7%		78.7%	43213	26	3.5%	27	3.6%		3.8%
43204	84	4.0%	81	3.5%		-3.6%	43068	20	2.7%	25	3.4%		25.0%
43223	65	3.1%	80	3.5%		23.1%	43123	30	4.1%	25	3.4%		-16.7%

*Ranked by 2007 frequencies

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-2: Franklin County Motor Vehicle Crash Injury Hospitalizations by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	24	9.4	24	9.4	0	0	0	0	0	0
05-14	87	19.0	87	19.0	0	0	0	0	0	0
15-24	510	105.4	509	105.2	1	<1	0	0	0	0
25-44	823	79.9	821	79.7	0	0	1	<1	1	<1
45-64	557	71.5	555	71.2	2	<1	0	0	0	0
65-74	138	81.5	138	81.5	0	0	0	0	0	0
75+	154	100.9	154	100.9	0	0	0	0	0	0
Total	2,294	69.1	2,289	68.9	3	<1	1	<1	1	<1

Table 2-3: Franklin County Motor Vehicle Crash Injury Hospitalizations for Males, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	14	10.7	14	10.7	0	0	0	0	0	0
05-14	54	23.1	54	23.1	0	0	0	0	0	0
15-24	311	125.6	311	125.6	0	0	0	0	0	0
25-44	541	104.2	539	103.8	0	0	1	<1	1	<1
45-64	339	91.2	337	90.7	2	<1	0	0	0	0
65-74	63	84.7	63	84.7	0	0	0	0	0	0
75+	73	134.7	73	134.7	0	0	0	0	0	0
Total	1,396	86.6	1,392	86.3	2	<1	1	<1	1	<1

Table 2-4: Franklin County Motor Vehicle Crash Injury Hospitalizations for Females, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	10	8.1	10	8.1	0	0	0	0	0	0
05-14	33	14.6	33	14.6	0	0	0	0	0	0
15-24	199	84.3	198	83.9	1	<1	0	0	0	0
25-44	282	55.2	282	55.2	0	0	0	0	0	0
45-64	218	53.5	218	53.5	0	0	0	0	0	0
65-74	75	79.0	75	79.0	0	0	0	0	0	0
75+	81	82.3	81	82.3	0	0	0	0	0	0
Total	898	52.9	897	52.8	1	<1	0	0	0	0

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-5: Franklin County Motor Vehicle Crash Injury Hospitalizations for Whites, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	12	7.7	12	7.7	0	0	0	0	0	0
05-14	49	16.4	49	16.4	0	0	0	0	0	0
15-24	335	99.3	335	99.3	0	0	0	0	0	0
25-44	544	74.7	542	74.4	0	0	1	<1	1	<1
45-64	416	68.3	414	68.0	2	<1	0	0	0	0
65-74	113	82.7	113	82.7	0	0	0	0	0	0
75+	129	99.9	129	99.9	0	0	0	0	0	0
Total	1,598	65.5	1,594	65.4	2	<1	1	<1	1	<1

Table 2-6: Franklin County Motor Vehicle Crash Injury Hospitalizations for Blacks, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	6	8.9	6	8.9	0	0	0	0	0	0
05-14	24	20.1	24	20.1	0	0	0	0	0	0
15-24	107	101.1	106	100.2	1	<1	0	0	0	0
25-44	183	93.8	183	93.8	0	0	0	0	0	0
45-64	103	78.6	103	78.6	0	0	0	0	0	0
65-74	21	79.1	21	79.1	0	0	0	0	0	0
75+	19	95.7	19	95.7	0	0	0	0	0	0
Total	463	74.0	462	73.9	1	<1	0	0	0	0

Table 2-7: Franklin County Motor Vehicle Crash Injury Hospitalizations, Other Race, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	6	20.0	6	20.0	0	0	0	0	0	0
05-14	14	34.5	14	34.5	0	0	0	0	0	0
15-24	68	167.9	68	167.9	0	0	0	0	0	0
25-44	96	89.8	96	89.8	0	0	0	0	0	0
45-64	38	96.2	38	96.2	0	0	0	0	0	0
65-74	4	64.3	4	64.3	0	0	0	0	0	0
75+	6	167.5	6	167.5	0	0	0	0	0	0
Total	233	92.9	233	92.9	0	0	0	0	0	0

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-8: Franklin County Unintentional MVC Hospitalization: Person

Unintentional MVT Hospitalization By Person	2002-04		2005-07		Rate	% Change	Trend BarChart	Rate	% Change	Trend BarChart
	Number	Rate	Number	Rate						
All	2,096	64	2,289	69		7.8%				
Occupant	1,534	47	1,638	50		5.8%				
Motorcyclist	219	6	321	9		44.5%				
Pedestrian	251	8	242	7		-5.2%				
Pedal Cyclist	43	1	53	2		18.5%				
Unspecified	39	1	24	1		-41.0%				
Other	9	**	11	**	NA	N/A				


Unintentional MVT Hospitalization By Person	2006		2007		Rate	% Change	Trend BarChart
	Number	Rate	Number	Rate			
All	737	67	740	66		-0.6%	
Occupant	520	47	514	46		-2.0%	
Motorcyclist	93	8	113	10		20.7%	
Pedestrian	96	9	82	7		-15.2%	
Pedal Cyclist	18	**	16	**	NA	N/A	
Unspecified	7	**	11	**	NA	N/A	
Other	3	**	4	**	NA	N/A	

*Ranked by 2007 frequencies

Table 2-9: Franklin County Unintentional MVC Hospitalization: Safety Device Use Trends

MVT - Occupant & Safety Device Use	2003		2004		2005		2006		2007		Percent Usage Trend BarChart
	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	
Seat belt or Car Seat	292	59%	318	57%	335	55%	290	56%	289	56%	
Air Bag	126	26%	170	30%	156	26%	177	34%	178	35%	
None	155	32%	119	21%	106	18%	80	15%	72	14%	
N/A	27	5%	88	16%	122	20%	102	20%	108	21%	

MVT - Motor & Pedal Cyclist Safety Device Use	2003		2004		2005		2006		2007		Percent Usage Trend BarChart
	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	Documented Use*	Percent Usage*	
Motorcycle Helmet	31	43%	30	37%	50	43%	34	37%	40	35%	
Pedal Cycle Helmet	1	8%	2	11%	3	16%	5	28%	3	19%	



SECTION 3:
Fall Injury Hospitalizations

Section 3: Fall Injury Hospitalizations

Falls are the leading cause of serious injury hospitalizations in Franklin County. There were 4,329 (44% of all serious injury hospitalizations) fall-related 48 hour or longer hospitalizations in 2005-2007 (Table 3-3). This is an average of 1,443 per year or about 4 per day in Franklin County.

The high-risk age groups for fall-related hospitalizations are 65-74 and 75+. The overall rate for the 75+ age group is 1,107 per 100,000 (Table 3-3). Males in this age group have a rate of 812 per 100,000 compared to 1,269 for females. In this age group males are about 36% less likely to sustain a serious fall-related injury in comparison to females. However males have a substantially

higher risk in age groups below age 65. Particularly the 15-24 year age group, the female rate is 15 per 100,000 compared to 57 for males. Males in this age group are nearly 4 times as likely as females to have a fall-related serious injury (Tables 3-4 and 3-5).


















Fall-related serious injuries are also more likely to occur to White residents. Overall the rate for White residents is 155 per 100,000 compared to 104 per 100,000 for Black residents and 139 for Other Race residents. The risk of a White resident is about 50% higher than a Black resident to have a fall related serious injury (Tables 3-6 to 3-8).

Table 3-1 also indicates the change in

rate per 100,000 between 2002-04 and 2005-07, as well as between 2006 and 2007 for age group, gender, race, and zip code of residency. All age groups are experiencing an increase in rate per 100,000 except 30-34 (3% decrease) and 35-39 (26% decrease) year olds. Male and female rates both increased 30% or more between 2002 and 2007. Increases were uniform throughout all racial groups, about a 30% increase in the rate per 100,000.

Table 3-1 demonstrates the location of the fall incident and the changes in the number of incidents per location between 2002-04 and 2005-07. The home remains the primary site for most serious fall injuries.

Table 3-1: Franklin County Unintentional Fall Hospitalizations: Type and Location Trends

Unintentional Fall Location	2002-04		2005-07		Percentage Trend Chart	Number % Change	Unintentional Fall Location	2006		2007		Percentage Trend BarChart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
Home	1,837	57.2%	2,511	58.2%		36.7%	Home	791	58.5%	938	58.6%		18.6%
Residential Institution	312	9.7%	521	12.1%		67.0%	Residential Institution	183	13.5%	178	11.1%		-2.7%
Not Determined	224	7.0%	389	9.0%		73.7%	Not Determined	106	7.8%	144	9.0%		35.8%
Public Facility	196	6.1%	293	6.8%		49.5%	Public Facility	89	6.6%	101	6.3%		13.5%
Recreational/Sport Place	158	4.9%	203	4.7%		28.5%	Work	48	3.6%	80	5.0%		66.7%
Work	154	4.8%	177	4.1%		14.9%	Recreational/Sport Place	65	4.8%	72	4.5%		10.8%
Street	172	5.4%	140	3.2%		-18.6%	Street	42	3.1%	55	3.4%		31.0%
Other	54	1.7%	74	1.7%		37.0%	Other	28	2.1%	32	2.0%		14.3%
Farm	3	<1.0%	3	<1.0%		0.0%							
Not Available	1	<1.0%	0	N/A	N/A	-100.0%							
Unknown	103	3.2%	0	N/A	N/A	-100.0%							

*Ranked by 2007 frequencies

Section 3: Fall Injury Hospitalizations

Table 3-2: Franklin County Unintentional Fall Hospitalizations: Demographic Number & Rate Trends

Characteristic	2002-04		2005-07		Age-Specific Rate Trend Chart	Rate % Change	Characteristic	2006		2007		Age-Specific Rate Trend BarChart	Rate % Change
	Age-Group	Number	Rate	Number				Rate	Age-Group	Number	Rate		
00-04	143	58	174	68		17.5%	00-04	58	68	55	64		-5.8%
05-09	136	60	168	72		20.9%	05-09	52	67	59	74		10.9%
10-14	82	36	121	53		49.1%	10-14	44	58	41	55		-6.3%
15-19	66	30	74	32		7.3%	15-19	23	30	31	40		32.5%
20-24	90	34	99	39		16.2%	20-24	21	25	42	50		99.8%
25-29	88	33	107	43		31.2%	25-29	36	44	35	44		0.0%
30-34	91	33	84	32		-3.0%	30-34	28	32	39	45		41.7%
35-39	137	54	105	40		-26.2%	35-39	27	31	45	50		63.2%
40-44	172	66	179	70		6.1%	40-44	52	61	62	74		20.6%
45-49	176	74	203	81		9.4%	45-49	70	84	62	73		-12.2%
50-54	195	95	271	124		30.9%	50-54	84	116	106	142		22.7%
55-59	179	114	280	151		32.6%	55-59	76	121	112	177		46.4%
60-64	172	153	247	197		29.3%	60-64	75	185	91	203		10.0%
65-69	168	187	230	246		31.2%	65-69	76	246	80	250		1.7%
70-74	208	268	281	371		38.5%	70-74	88	348	100	397		14.1%
75-79	310	467	373	576		23.3%	75-79	132	609	141	663		8.9%
80-84	299	663	521	1100		66.0%	80-84	154	973	188	1181		21.3%
85+	497	1321	794	1963		48.6%	85+	256	1903	311	2237		17.5%

Gender	2002-04		2005-07		Gender Specific Rate Trend Chart	Rate % Change	Gender	2006		2007		Gender Specific Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	1418	107	1906	144		34.6%	Male	576	131	708	159		21.4%
Female	1803	110	2405	143		29.7%	Female	776	139	892	157		12.9%

Race	2002-04		2005-07		Race Specific Rate Trend Chart	Rate % Change	Race	2006		2007		Race Specific Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	394	80	521	103		28.8%	Black	152	90	201	119		32.0%
White	2654	117	3554	155		32.0%	White	1130	148	1283	166		11.8%
Other/Unk	173	105	236	137		30.2%	Other/Unk	70	137	116	183		33.0%

Top Ten Zip Code*	2002-04		2005-07		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2006		2007		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43081	187	5.8%	246	5.7%		31.6%	43229	62	4.6%	99	6.2%		59.7%
43229	176	5.5%	220	5.1%		25.0%	43081	79	5.8%	87	5.4%		10.1%
43207	128	4.0%	194	4.5%		51.6%	43207	56	4.1%	79	4.9%		41.1%
43230	106	3.3%	180	4.2%		69.8%	43068	54	4.0%	72	4.5%		33.3%
43068	98	3.0%	174	4.0%		77.6%	43235	51	3.8%	69	4.3%		35.3%
43214	129	4.0%	172	4.0%		33.3%	43214	40	3.0%	67	4.2%		67.5%
43235	103	3.2%	170	3.9%		65.0%	43230	48	3.6%	63	3.9%		31.3%
43224	155	4.8%	159	3.7%		2.6%	43123	41	3.0%	56	3.5%		36.6%
43213	80	2.5%	139	3.2%		73.8%	43026	34	2.5%	54	3.4%		58.8%
43123	105	3.3%	134	3.1%		27.6%	43227	30	2.2%	53	3.3%		76.7%

*Ranked by 2007 frequencies

Section 3: Fall Injury Hospitalizations

Table 3-3: Franklin County Fall Injury Hospitalizations by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	174	68.5	174	68.5	0	0	0	0	0	0
05-14	289	63.0	289	63.0	0	0	0	0	0	0
15-24	177	36.6	173	35.8	2	<1	1	<1	1	<1
25-44	485	47.1	475	46.1	3	<1	0	0	7	<1
45-64	1,004	128.8	1,001	128.4	0	0	0	0	3	<1
65-74	511	301.7	511	301.7	0	0	0	0	0	0
75+	1,689	1,106.9	1,688	1,106.2	0	0	0	0	1	<1
Total	4,329	147.9	4,311	147.4	5	<1	1	<1	12	<1

Table 3-4: Franklin County Fall Injury Hospitalizations for Males, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	101	77.4	101	77.4	0	0	0	0	0	0
05-14	180	77.1	180	77.1	0	0	0	0	0	0
15-24	142	57.4	140	56.6	0	0	1	<1	1	<1
25-44	314	60.5	307	59.1	2	<1	0	0	5	1.0
45-64	531	142.9	530	142.7	0	0	0	0	1	<1
65-74	209	280.9	209	280.9	0	0	0	0	0	0
75+	440	811.8	439	809.9	0	0	0	0	1	1.8
Total	1,917	145.0	1,906	144.3	2	<1	1	<1	8	<1

Section 3: Fall Injury Hospitalizations

Table 3-5: Franklin County Fall Injury Hospitalizations for Females, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	73	59.1	73	59.1	0	0	0	0	0	0
05-14	109	48.4	109	48.4	0	0	0	0	0	0
15-24	35	14.8	33	14.8	2	<1	0	0	0	0
25-44	171	33.5	168	33.5	1	<1	0	0	2	<1
45-64	473	116.0	471	116.0	0	0	0	0	2	<1
65-74	302	318.1	302	318.1	0	0	0	0	0	0
75+	1,249	1,269.4	1,249	1,269.4	0	0	0	0	0	0
Total	2,412	143.7	2,405	143.3	3	<1	0	0	4	<1

Table 3-6: Franklin County Fall Injury Hospitalizations for Whites, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	107	68.2	107	68.2	0	0	0	0	0	0
05-14	194	64.9	194	64.9	0	0	0	0	0	0
15-24	129	38.2	127	37.7	1	<1	0	0	0	0
25-44	353	48.5	347	47.6	1	<1	0	0	0	0
45-64	808	132.7	806	132.4	0	0	0	0	0	0
65-74	430	314.8	430	314.8	0	0	0	0	0	0
75+	1,543	1,194.6	1,543	1,194.6	0	0	0	0	0	0
Total	3,564	155.1	3,554	154.7	2	<1	0	0	0	0

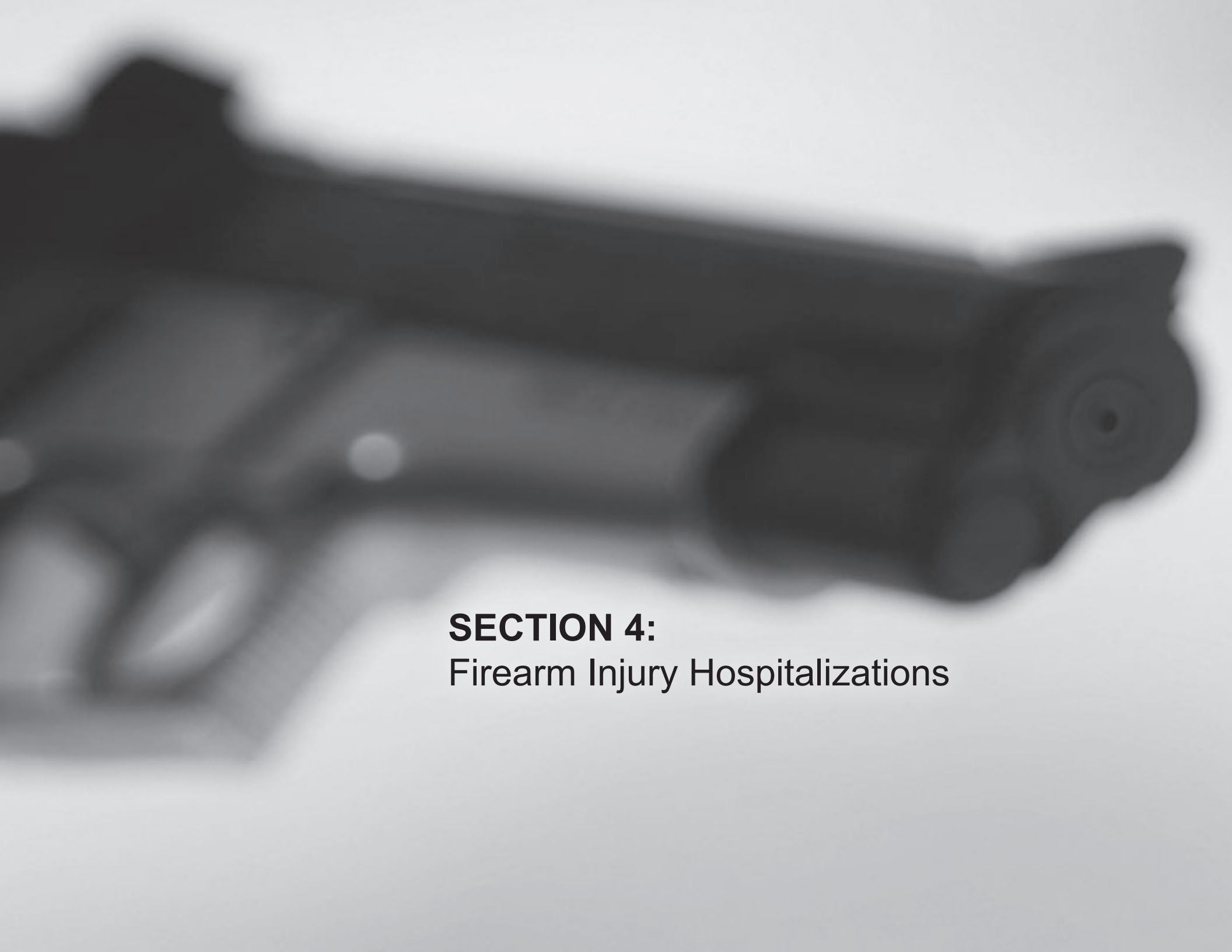
Section 3: Fall Injury Hospitalizations

Table 3-7: Franklin County Fall Hospitalizations for Blacks, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	37	55.0	37	55.0	0	0	0	0	0	0
05-14	51	42.8	51	42.8	0	0	0	0	0	0
15-24	19	18.0	18	17.0	1	<1	0	0	0	0
25-44	86	44.1	83	42.5	2	1	0	0	1	<1
45-64	147	112.2	146	111.5	0	0	0	0	1	<1
65-74	72	271.2	72	271.2	0	0	0	0	0	0
75+	114	574.3	114	574.3	0	0	0	0	0	0
Total	526	104.2	521	103.5	3	<1	0	0	2	<1

Table 3-8: Franklin County Fall Hospitalizations, Other Race, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	30	99.8	30	99.8	0	0	0	0	0	0
05-14	44	108.5	44	108.5	0	0	0	0	0	0
15-24	29	71.6	28	69.1	0	0	0	0	1	2.5
25-44	46	43.0	45	42.1	0	0	0	0	1	<1
45-64	49	124.0	49	124.0	0	0	0	0	0	0
65-74	9	144.7	9	144.7	0	0	0	0	0	0
75+	32	893.4	31	865.4	0	0	0	0	1	27.9
Total	239	139.3	236	139.3	0	0	0	0	3	2.6



SECTION 4:
Firearm Injury Hospitalizations

Section 4: Firearm Injury Hospitalizations

Firearm injuries occur when a firearm is discharged intentionally or unintentionally. In Franklin County, residents incurred an average of 208 firearm-related serious injuries (48 hour or greater hospitalizations) per year for the three- year period 2005-2007. This is a rate of 17.9 per 100,000 residents: a 42% increase from the previous three year period 2002-2004. In this period the average number per year was 149 and the rate was 13 per 100,000 (Table 1-1).

For the period 2005-2007, the age group at greatest risk is the 15-24 year olds. The number and rate in this group is 94 per year and 58 per 100,000. This is more than twice the rate of the next highest age group, 25-44 year olds, with a rate of 26 per 100,000. Intentional

firearm injuries out number unintentional firearm injuries by more than 8:1. There is an average of 160 intentional firearm injuries per year, a rate of 14 per 100,000 compared to an average of 20 unintentional firearm injuries at a rate of 2 per 100,000 (Table 4-1).

Males in Franklin County are at greater risk for firearm injury than females. The average number of males injured by firearms was 187 per year, a rate of 32.1 per 100,000 compared to an average of 21 females at a rate of 3.7 per 100,000 (Tables 4-2 and 4-3). This is a ratio of 9:1. Males are 9 times as likely as females to have a serious firearm injury. The male age group at greatest risk is the 15-24 year olds. They have an average of 85 firearm related 48 hour or

longer hospitalizations per year, about 7 each month. Males are also at greater risk for unintentional firearm injuries. They had an average of 19 per year compared to <2 per year for females (Tables 4-2 and 4-3).

There is also significant race disparity in serious firearm injuries. There is an average of 50 White residents with serious firearm injuries between 2005-2007, a rate of 6 per 100,000 compared to 138 Black residents, a rate of 58 per 100,000. Black residents, mostly males, have over nine times the risk for serious firearm injuries than White residents. Tables 4-2 thru 4-6 compare various types of firearm injuries by age group, gender, and racial group.

Table 4-1: Franklin County Firearm Related Injury Hospitalizations by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	3	1.2	2	<1	0	0	1	0.4	0	0
05-14	17	3.7	14	3.1	0	0	2	0.4	1	<1
15-24	281	58.1	30	6.2	9	1.9	225	46.5	16	3.3
25-44	264	25.6	11	1.1	11	1.1	212	20.6	25	2.4
45-64	51	6.5	2	<1	8	1.0	37	4.8	3	<1
65-74	5	3.0	2	1.2	2	1.2	1	0.6	0	0
75+	4	2.6	0	0	2	1.3	2	1.3	0	0
Total	625*	17.9	61	1.8	32	<1	480	13.7	45	1.3

*7 Firearm related hospitalizations were categorized in the "Other" intentionality category

Section 4: Firearm Injury Hospitalizations

Table 4-2: Franklin County Firearm Related Injury Hospitalizations for Males, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	2	1.5	2	1.5	0	0	0	0	0	0
05-14	13	5.6	11	4.7	0	0	1	0.4	1	<1
15-24	256	103.4	29	11.7	8	3.2	204	82.4	14	5.7
25-44	237	45.6	10	1.9	9	1.7	191	36.8	23	4.4
45-64	46	12.4	2	<1	6	1.6	35	9.4	2	<1
65-74	5	6.7	2	2.7	2	2.7	1	1.3	0	0
75+	3	5.5	0	0	1	1.8	2	3.7	0	0
Total	562*	32.1	56	3.3	26	1.7	434	24.5	40	2.2

*6 Firearm related male hospitalizations were categorized in the "Other" intentionality category

Table 4-3: Franklin County Firearm Related Injury Hospitalizations for Females by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	1	<1	0	0	0	0	1	<1	0	0
05-14	4	1.8	3	1.3	0	0	1	<1	0	0
15-24	25	10.6	1	<1	1	<1	21	8.9	2	<1
25-44	27	5.3	1	<1	2	<1	21	4.1	2	<1
45-64	5	1.2	0	0	2	<1	2	<1	1	<1
65-74	0	0	0	0	0	0	0	0	0	0
75+	1	1.0	0	0	1	1.0	0	0	0	0
Total	63*	3.7	5	<1	6	<1	46	2.7	5	<1

*1 Firearm related female hospitalization were categorized in the "Other" intentionality category

Section 4: Firearm Injury Hospitalizations

Table 4-4: Franklin County Firearm Related Injury Hospitalizations for Whites, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	1	<1	1	<1	0	0	0	0	0	0
05-14	1	<1	0	0	0	0	0	0	1	<1
15-24	59	17.5	10	3.0	4	1.2	44	13.0	1	<1
25-44	60	8.2	6	<1	9	1.2	40	5.5	3	<1
45-64	23	3.8	1	<1	6	1.0	14	2.3	2	<1
65-74	4	2.9	1	<1	2	1.5	1	<1	0	0
75+	2	1.6	0	0	1	<1	1	<1	0	0
Total	150*	6.1	19	<1	22	<1	100	4.0	7	<1

*2 Firearm related white hospitalizations were categorized in the "Other" intentionality category

Table 4-5: Franklin County Firearm Related Injury Hospitalizations for Blacks, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	1	1.5	1	1.5	0	0	0	0	0	0
05-14	13	10.9	11	9.2	0	0	2	1.7	0	0
15-24	201	189.9	17	16.1	5	4.7	164	155.0	14	13.2
25-44	177	90.7	4	2.1	2	1.0	152	77.9	16	8.2
45-64	19	14.5	1	<1	2	1.5	14	10.7	1	0.8
65-74	1	3.8	1	3.8	0	0	0	0	0	0
75+	2	10.1	0	0	1	5.0	1	5.0	0	0
Total	414	58.1	35	4.7	10	1.6	333	46.7	31	4.3

*5 Firearm related black hospitalizations were categorized in the "Other" intentionality category

Table 4-6: Franklin County Firearm Related Injury Hospitalizations, Other Race, by Intent and Age, 2005-07.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	1	3.3	0	0	0	0	1	3.3	0	0
05-14	3	7.4	3	7.4	0	0	0	0	0	0
15-24	21	51.8	3	7.4	0	0	17	42.0	1	2.5
25-44	27	25.3	1	<1	0	0	20	18.7	6	5.6
45-64	9	22.8	0	0	0	0	9	22.8	0	0
65-74	0	0	0	0	0	0	0	0	0	0
75+	0	0	0	0	0	0	0	0	0	0
Total	61	20.1	7	2.3	0	0	47	16.0	7	1.9



SECTION 5:
Geography

Section 5: Geography

Geographically, serious injuries (injuries requiring hospitalization for 48 hours or longer) can occur anywhere in Franklin County. However the risk level for people based on their zip code of residence can be estimated. Tables 5-1 through 5-4 show rates of various causes of injuries to residents living in different quarters of the county (Northwest, Northeast, Southwest, and Southeast). The high and low risk areas vary by mechanism or cause of injury.

For motor vehicle-related serious injury Northeast, Southeast, and Southwest areas are all between 72 and 85 injured persons per 100,000 residents whereas residents in the Northwest region experience half that rate, 43 per 100,000.

For fall injuries the rates are more uniform across the county. They go from 125 per 100,000 in the Southwest quadrant to 177 in the Northeast quadrant. Like motor vehicle injuries, the rates for firearm injuries are fairly uniform across three quadrants, Southwest, Northeast, and Southeast but are significantly lower in the Northwest quadrant where the rate is 4.1 per 100,000.

Age is also important. Residents who

are 15-24 years old in the Southeast and Southwest quadrants have greater risk of motor vehicle-related serious injury than residents that age in the other two quadrants. Residents 75+ in the Northeast quadrant are at greatest risk for a fall-related serious injury compared to residents in the other three quadrants.

Section 5: Geography

Table 5-1: Franklin County Northwest Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2005-07.

Mechanism/ Intent	Total		00-04		05-14		15-24		25-44		45-64		65-74		75+	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
MVC	375	42.5	4	7.2	5	4.5	103	76.4	121	39.7	84	47.5	20	47.2	38	86.4
Unintentional	373	42.2	4	7.2	5	4.5	103	76.4	120	39.4	83	46.9	20	47.2	38	86.4
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	1	<1	0	0	0	0	0	0	0	0	1	<1	0	0	0	0
Undetermined	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
Falls	1,077	140.5	30	53.7	87	77.9	60	44.5	90	29.5	215	121.6	98	231.1	497	1130.3
Unintentional	1,076	140.4	30	53.7	87	77.9	60	44.5	89	29.2	215	121.6	98	231.1	497	1130.3
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undetermined	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
Firearm	39	4.1	1	1.8	0	0	18	13.4	16	5.3	2	1.1	2	4.7	0	0
Unintentional	7	<1	1	1.8	0	0	4	3.0	1	<1	1	<1	0	0	0	0
Intentional	23	2.4	0	0	0	0	13	9.6	9	3.0	0	0	1	2.4	0	0
Self Inflicted	5	<1	0	0	0	0	0	0	3	1.0	1	<1	1	2.4	0	0
Undetermined	2	<1	0	0	0	0	0	0	2	<1	0	0	0	0	0	0
All	1,799	222.3	45	80.5	127	113.6	242	179.4	323	106.0	377	213.2	126	297.2	559	1271.3
Unintentional	1661	207.4	40	71.6	125	111.9	199	147.5	267	87.6	349	197.3	123	290.1	558	1269.0
Intentional	105	11.2	5	9.0	2	1.8	38	28.2	40	13.1	19	10.7	1	2.4	0	0
Self Inflicted	20	2.3	0	0	0	0	2	1.5	7	2.3	8	4.5	2	4.7	1	2.3
Undetermined	10	1.0	0	0	0	0	2	1.5	7	2.3	1	<1	0	0	0	0

Section 5: Geography

Table 5-2: Franklin County Northeast Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2005-07.

Mechanism/ Intent	Total		00-04		05-14		15-24		25-44		45-64		65-74		75+	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
MVC	644	72.0	6	9.2	25	19.9	140	85.7	249	85.6	143	82.4	49	111.6	32	89.9
Unintentional	643	71.9	6	9.2	25	19.9	140	85.7	248	85.2	143	82.4	49	111.6	32	89.9
Intentional	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
Self Inflicted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undetermined	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Falls	1,252	176.5	44	67.7	68	54.1	55	33.7	141	48.5	300	172.8	146	332.6	498	1400.4
Unintentional	1,243	175.7	44	67.7	68	54.1	52	31.8	135	46.4	300	172.8	146	332.6	498	1400.4
Intentional	1	<1	0	0	0	0	1	0.6	0	0	0	0	0	0	0	0
Self Inflicted	4	<1	0	0	0	0	1	0.6	3	1.0	0	0	0	0	0	0
Undetermined	4	<1	0	0	0	0	1	0.6	3	1.0	0	0	0	0	0	0
Firearm	206	20.1	1	1.5	4	3.2	102	62.4	78	26.8	15	8.6	2	4.6	4	11.3
Unintentional	22	2.2	1	1.5	4	3.2	10	6.1	5	1.7	1	0.6	1	2.3	0	0
Intentional	152	14.5	0	0	0	0	81	49.6	62	21.3	7	4.0	0	0	2	5.6
Self Inflicted	10	1.2	0	0	0	0	3	1.8	1	0.3	3	1.7	1	2.3	2	5.6
Undetermined	20	2.0	0	0	0	0	8	4.9	9	3.1	3	1.7	0	0	0	0
All	2,821	346.9	126	193.9	167	132.9	435	266.2	713	245.0	623	358.9	206	469.3	551	1549.4
Unintentional	2,309	294.5	110	169.3	163	129.8	259	158.5	501	172.2	529	304.7	202	460.2	545	1532.5
Intentional	443	45.0	16	24.6	3	2.4	158	96.7	184	63.2	75	43.2	3	6.8	4	11.3
Self Inflicted	32	3.6	0	0	1	<1	6	3.7	12	4.1	10	5.8	1	2.3	2	5.6
Undetermined	32	3.2	0	0	0	0	12	7.3	14	4.8	6	3.5	0	0	0	0

Section 5: Geography

Table 5-3: Franklin County Southeast Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2005-07.

Mechanism/ Intent	Total		00-04		05-14		15-24		25-44		45-64		65-74		75+	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
MVC	670	77.2	7	10.6	28	20.9	137	112.3	230	81.7	165	87.6	43	77.9	60	146.9
Unintentional	669	77.1	7	10.6	28	20.9	136	111.5	230	81.7	165	87.6	43	77.9	60	146.9
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	1	<1	0	0	0	0	1	<1	0	0	0	0	0	0	0	0
Undetermined	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Falls	1,210	154.6	44	66.4	67	50.2	21	17.2	131	46.6	280	148.6	182	329.6	485	1187.4
Unintentional	1,206	154.1	44	66.4	67	50.2	21	17.2	130	46.2	277	147.0	182	329.6	485	1187.4
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undetermined	4	<1	0	0	0	0	0	0	1	<1	3	1.6	0	0	0	0
Firearm	250	27.6	0	0	7	5.2	108	88.5	113	40.2	21	11.1	1	1.8	0	0
Unintentional	22	2.5	0	0	5	3.8	12	9.8	4	1.4	0	0	1	1.8	0	0
Intentional	198	21.9	0	0	2	1.5	85	69.7	92	32.7	19	10.1	0	0	0	0
Self Inflicted	10	1.1	0	0	0	0	4	3.3	4	1.4	2	1.1	0	0	0	0
All	2,988	354.9	130	196.2	178	133.3	409	335.3	783	278.3	682	361.9	248	449.1	558	1366.1
Unintentional	2,337	282.6	110	172.9	166	156.2	242	229.7	488	183.3	537	293.2	240	331.1	554	823.4
Intentional	587	65.2	20	30.2	10	7.5	145	118.9	267	94.9	133	70.6	8	14.5	4	9.8
Self Inflicted	27	3.0	0	0	1	<1	13	10.7	8	2.8	5	2.7	0	0	0	0
Undetermined	34	3.7	0	0	1	<1	8	6.6	19	6.8	6	3.2	0	0	0	0

Section 5: Geography

Table 5-4: Franklin County Southwest Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2005-07.

Mechanism/ Intent	Total		00-04		05-14		15-24		25-44		45-64		65-74		75+	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
MVC	537	84.6	7	14.1	29	32.4	113	126.0	207	93.4	138	109.4	23	70.5	19	77.1
Unintentional	536	84.4	7	14.1	29	32.4	113	126.0	207	93.4	137	108.6	23	70.5	19	77.1
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	1	<1	0	0	0	0	0	0	0	0	1	<1	0	0	0	0
Undetermined	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Falls	673	125.3	49	98.5	52	58.0	38	42.4	104	46.9	175	138.7	73	223.8	182	738.2
Unintentional	670	124.7	49	98.5	52	58.0	38	42.4	102	46.0	175	138.7	73	223.8	181	734.2
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undetermined	3	<1	0	0	0	0	0	0	2	<1	0	0	0	0	1	4.1
Firearm	129	19.1	1	2.0	6	6.7	53	59.1	56	25.3	13	10.3	0	0	0	0
Unintentional	10	1.6	0	0	5	5.6	4	4.5	1	<1	0	0	0	0	0	0
Intentional	107	15.8	1	2.0	0	0	46	51.3	49	22.1	11	8.7	0	0	0	0
Self Inflicted	6	<1	0	0	0	0	2	2.2	2	<1	2	1.6	0	0	0	0
All	1,907	315.4	103	207.1	144	160.7	314	350.2	593	267.7	436	345.5	111	340.3	205	831.5
Unintentional	1,520	257.9	86	172.9	140	156.2	206	229.7	406	183.3	370	293.2	108	331.1	203	823.4
Intentional	340	50.5	17	34.2	2	2.2	94	104.8	165	74.5	59	46.8	2	6.1	1	4.1
Self Inflicted	27	4.1	0	0	0	0	9	10.0	11	5.0	7	5.6	0	0	0	0
Undetermined	16	2.5	0	0	2	2.2	4	4.5	8	3.6	0	0	1	3.1	1	4.1



SECTION 6:
Traumatic Brain Injury

Section 6: Traumatic Brain Injury

Traumatic brain injuries (TBI) are caused by an external force to the head that results in physical, psychosocial and/or cognitive impairment. They are a serious consequence of an injury event. Often an injured person will not survive a TBI. However, those that do survive have a significant risk of long term disability. As shown in Figure 6-1 TBIs occur in 26-27% of all injury-related

48 hour or longer hospitalizations. Furthermore the number of TBIs are increasing; in 2004 there were 765 injury related TBIs compared to 885 in 2007, a 16% increase. Table 6-1 indicates that most injury-related TBIs are related to either a fall or a motor vehicle crash. Table 6-2 provides additional details of motor vehicle-related TBI cases. All residents involved in a motor vehicle

crash are at risk for TBI. Use of a safety device clearly impacts the risk of TBI for injured occupants and motorcyclists. The average safety belt use rate for Franklin County is nearly 80% but only 45% of injured occupants with a TBI were wearing a safety belt. Only 27% of motorcyclists with a TBI wore a helmet.

Figure 6-1: Percentage of TBI among Total Injury Hospitalizations by Year

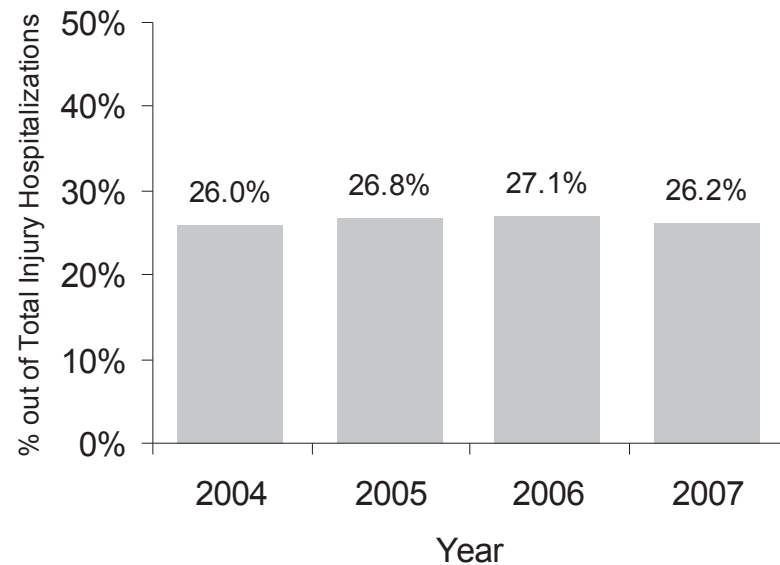
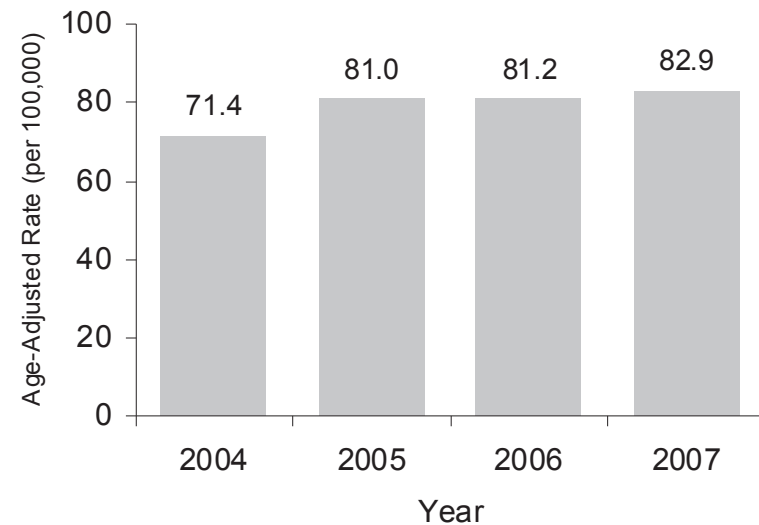


Figure 6-2: TBI Age-Adjusted Rate per 100,000 population, by Year

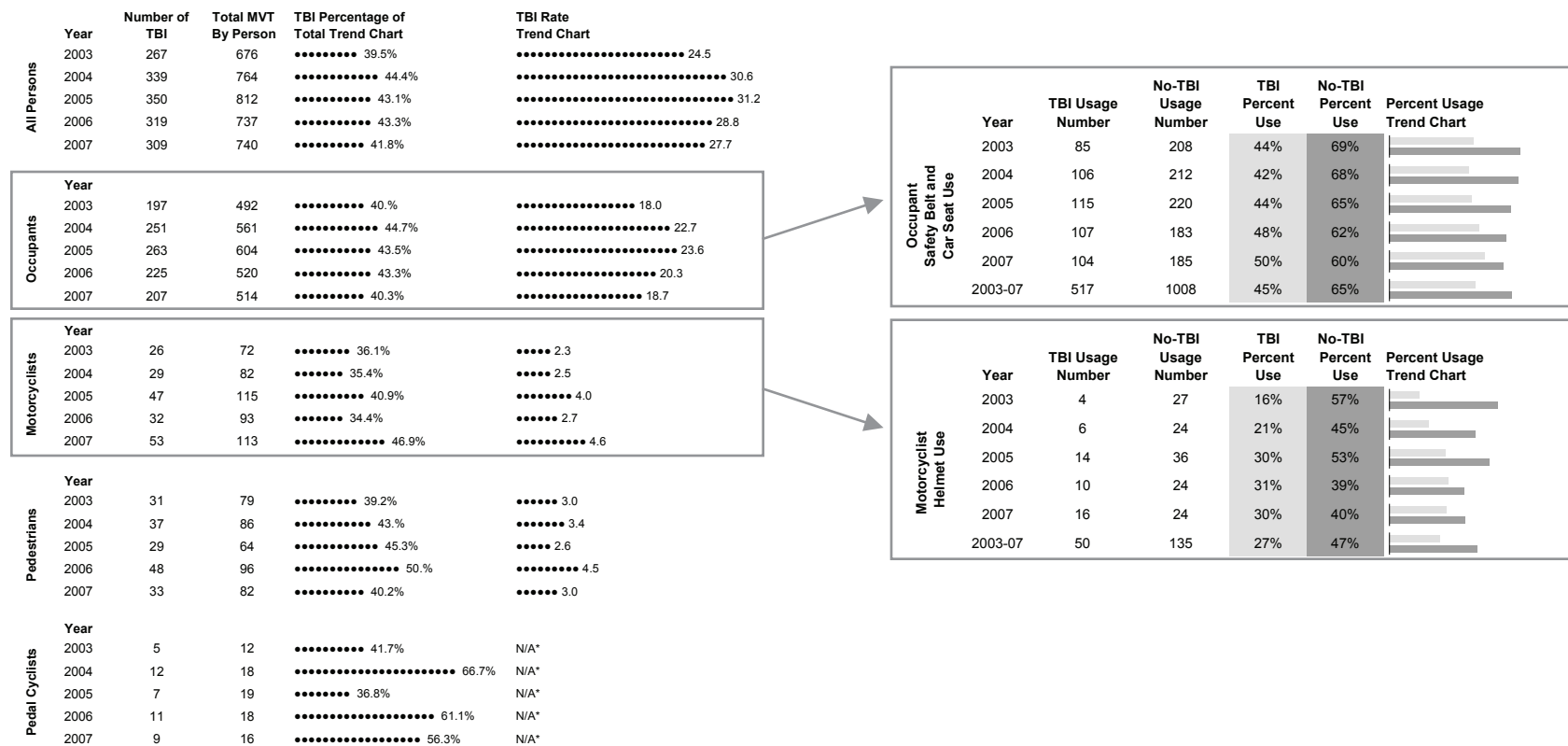


Section 6: Traumatic Brain Injury

Table 6-1: Franklin County Traumatic Brain Injury by Leading Injury Hospitalization Mechanisms, Number and Percentage, by Year.

	2004	2005	2006	2007
All TBIs	765	860	856	885
Fall Related TBIs	226 (30%)	310 (36%)	309 (36%)	381 (43%)
Motor Vehicle Crash Related TBIs	340 (44%)	350 (41%)	320 (37%)	309 (35%)
Struck By/Against Person or Object Related TBIs	89 (12%)	103 (12%)	110 (13%)	101 (11%)
All Other Mechanism Related TBIs	110 (14%)	97 (11%)	117 (14%)	94 (11%)

Table 6.2: Franklin County Unintentional MVC Hospitalization: Traumatic Brain Injury Trends



Section 6: Traumatic Brain Injury

Table 6-3: Franklin County Traumatic Brain Injury: 2005-07 Demographic Numbers, Percentages, and Rates

2005-07				2005-07			
Age-Group	Number	Rate	Age-Specific Rate Chart	Leading Zip Codes*	Number	Percent of Total	Percent of Total Chart
00-04	98	39		43207	159	6.1%	
05-09	44	19		43228	128	4.9%	
10-14	69	30		43229	106	4.1%	
15-19	188	81		43081	105	4.0%	
20-24	221	88		43232	96	3.7%	
25-29	204	83		43214	95	3.7%	
30-34	154	58		43223	92	3.5%	
35-39	152	58		43068	91	3.5%	
40-44	187	73		43204	90	3.5%	
45-49	208	83		43213	89	3.4%	
50-54	189	86		43224	88	3.4%	
55-59	139	75		43230	88	3.4%	
60-64	88	70		43123	87	3.3%	
65-69	104	111		43215	79	3.0%	
70-74	86	113		43227	79	3.0%	
75-79	127	196		43211	74	2.8%	
80-84	142	300		43026	72	2.8%	
85+	200	494		43206	64	2.5%	

2005-07				2005-07			
Gender	Number	Rate	Rate Chart	Race	Number	Rate	Rate Chart
Male	1683	112		Black	504	84	
Female	918	54		White	1854	78	
				Other/Unk	243	111	



SECTION 7:
Injury Mortality

Section 7: Injury Mortality

In 2005-2007 there was an average of 646 injury-related fatalities per year for Franklin County residents. This compares to 473 in 2003, a 37% increase. Taken together, unintentional and intentional (homicides and suicides) injuries are the third leading cause of death in Franklin County. They are the leading cause of death for “Years of Productive Life Lost” (YPLL) before age 65 because injuries disproportionately affect young people. Table 7-2 shows that injuries are the leading cause of death for Franklin County residents ages 1-44.

Although poisonings are not included in the COTS registry (poisonings are not an approved trauma category in the Ohio Trauma Registry inclusive criteria) poisoning-related mortality has increased significantly in the last three years. From 2002-2004 there was an average of 79 poisoning fatalities per year compared to 153 per year for 2005-07, a 94% increase. The male rate increased by 71% and the female rate increased by over 100% (Table 7-6) in this time period.

Table 7-1: Top 20 Franklin County Leading Causes of Death, 2005-07.

Rank	Cause of Death	Number	Rate	YPLL Rank	YPLL
1	Malignant Neoplasm	5618	200.4	2	21,179
2	Diseases of the Heart	5603	204.5	3	16,851
3	Chronic Lower Respiratory Disease	1462	54.7	12	2,283
4	Cerebrovascular Disease	1305	48.4	8	3,269
5	Unintentional Injury	1218	38.4	1	23,666
6	Diabetes Mellitus	788	28.0	9	3,178
7	Alzheimer's Disease	705	27.4	31	41
8	Influenza and Pneumonia	552	20.5	13	1,885
9	Nephritis, Nephritic Syndrome and Nephrosis	472	17.4	15	1,203
10	Suicide	418	12.5	6	9,620
11	Septicemia	324	11.6	14	1,525
12	Homicide	303	8.7	5	10,206
13	Chronic Liver Disease and Cirrhosis	289	9.2	11	2,813
14	Essential Primary Hypertension and Hypertensive Renal Disease	287	10.7	16	628
15	Certain Conditions Originating in the Perinatal Period	259	7.0	4	16,770
16	Parkinson's Disease	231	9.0	28	62
17	Pneumonitis Due to Solids and Liquids	185	7.0	21	326
18	HIV Disease	154	4.6	10	3,106
19	In Situ Benign Unknown Behavior Neoplasm	150	5.5	19	492
20	Aortic Aneurysm and Dissection	136	5.0	18	502

Table 7-2: Franklin County Leading Causes of Death by Age-Group, 2005-07.

Rank	Age Group							
	<1	01-04	05-14	15-24	25-44	45-64	65-74	75+
1	Short Gestation (101)	Accidents (Unintentional Injuries) (10)	Accidents (Unintentional Injuries) (18)	Accidents (Unintentional Injuries) (111)	Accidents (Unintentional Injuries) (376)	Malignant Neoplasm (1658)	Malignant Neoplasm (1370)	Heart Disease (3294)
2	Congenital Anomalies (73)	Congenital Anomalies (6)	Malignant Neoplasm (11)	Homicide (95)	Heart Disease (211)	Heart Disease (1157)	Heart Disease (924)	Malignant Neoplasm (2353)
3	SIDS (51)	Homicide (5)	Congenital Anomalies (4)	Suicide (62)	Malignant Neoplasm (209)	Accidents (Unintentional Injuries) (349)	Chronic Low. Resp. Disease (382)	Cerebrovascular Disease (865)
4	Maternal Pregnancy Complications (43)	Malignant Neoplasm (4)	Homicide (4)	Heart Disease (13)	Suicide (167)	Diabetes mellitus (232)	Cerebrovascular Disease (190)	Chronic Low. Resp. Disease (831)
5	Accidents (Unintentional Injuries) (23)	Influenza and Pneumonia (3)	Septicemia (2)	Malignant Neoplasm (13)	Homicide (133)	Chronic Low. Resp. Disease (231)	Diabetes mellitus (183)	Alzheimer's Disease (656)

Section 7: Injury Mortality

Table 7-3: Franklin County Injury Mortality: Number & Rate Trends by Mechanism & Intentionality

Mechanism of Injury Mortality	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Mechanism of Injury Hospitalization	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
All	1,611	52	1,987	61		18.7%	All	676	62	667	61		-2.6%
Poisoning	308	9	548	16		71.5%	Poisoning	189	17	220	19		15.7%
Firearm	356	11	442	13		24.1%	Firearm	139	12	149	13		7.3%
Motor Vehicle Traffic	286	9	293	9		2.5%	Motor Vehicle Traffic	89	8	91	8		0.5%
Suffocation	139	5	196	6		29.8%	Suffocation	81	7	62	6		-22.9%
Fall	131	5	167	6		23.3%	Fall	51	5	54	6		9.4%
Unspecified	164	6	134	5		-22.7%	Unspecified	49	5	35	4		-32.7%
Fire/Hot Object	45	1	40	1		-12.6%	Other Specified, Not Elsewhere Classifiable	12	**	10	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	28	1	37	1		22.4%	Drowning/Submersion	12	**	9	**	N/A	N/A
Cut/Pierce	34	1	31	1		-28.6%	Adverse Effects (Drugs/Medical)	13	**	8	**	N/A	N/A
Adverse Effects (Drugs/Medical)	35	1	30	1		-1.6%	Cut/Pierce	9	**	8	**	N/A	N/A
Drowning/Submersion	31	1	30	1		-1.7%	Fire/Hot Object	19	**	6	**	N/A	N/A
Other Specified and Classifiable	15	**	12	**	N/A	N/A	Other Specified and Classifiable	5	**	4	**	N/A	N/A
Pedestrian, Other (Non-MVT related)	7	**	6	**	N/A	N/A	Pedestrian, Other (Non-MVT related)	2	**	3	**	N/A	N/A
Natural/Environmental	12	**	5	**	N/A	N/A	Natural/Environmental	2	**	2	**	N/A	N/A
Land Transport, Other	7	**	5	**	N/A	N/A	Transport, Other	1	**	2	**	N/A	N/A
Transport, Other	3	**	4	**	N/A	N/A	Struck by/Against	0	**	2	**	N/A	N/A
Machinery	4	**	3	**	N/A	N/A	Machinery	1	**	1	**	N/A	N/A
Struck by/Against	1	**	3	**	N/A	N/A	Land Transport, Other	1	**	1	**	N/A	N/A
Pedal Cyclist, Other (Non-MVT related)	1	**	1	**	N/A	N/A	Pedal Cyclist, Other (Non-MVT related)	1	**	0	**	N/A	N/A

Injury Mortality By Intentionality	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Injury Hospitalization By Intentionality	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Unintentional	960	32	1,218	38		20.7%	Unintentional	408	39	424	39		1.9%
Suicide	301	9	418	13		35.5%	Suicide	140	13	146	13		3.1%
Homicide	292	8	303	9		2.6%	Homicide	110	9	82	7		-25.5%
Other	37	1	31	1		-21.5%	Other	13	**	8	**	N/A	N/A
Undetermined	21	1	17	**	N/A	N/A	Undetermined	5	**	7	**	N/A	N/A

** Data do not meet reliability or precision standards of the National Center for Health Statistics as they are based on less than 20 deaths (numerator) and are not presented here.

Section 7: Injury Mortality

Table 7-4: Franklin County Leading Mechanisms of Injury Mortality: Number & Rate Trends by Intent

Leading Unintentional Injury Mortality	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Leading Unintentional Injury Mortality	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Poisoning	238	7	458	13		85.6%	Poisoning	158	14	195	17		23.1%
Motor Vehicle Traffic (MVT)	286	9	293	9		2.5%	Motor Vehicle Traffic (MVT)	89	8	91	8		0.5%
Fall	123	5	155	6		22.0%	Fall	46	5	53	6		17.4%
Unspecified	137	5	117	4		-19.3%	Suffocation	26	3	30	3		11.5%
Suffocation	65	2	80	3		9.0%	Unspecified	44	5	26	3		-43.0%
Fire/Hot Object	29	1	38	1		25.7%	Drowning	12	**	7	**	N/A	N/A
Drowning	24	1	28	1		18.6%	Fire/Hot Object	17	**	6	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	11	**	12	**	N/A	N/A	Pedestrian, Other (Non-MVT related)	2	**	3	**	N/A	N/A
Pedestrian, Other (Non-MVT related)	7	**	6	**	N/A	N/A	Firearm	1	**	2	**	N/A	N/A
Other Specified and Classifiable	6	**	6	**	N/A	N/A	Natural/Environmental	2	**	2	**	N/A	N/A

Leading Intentional Injury Mortality	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Leading Intentional Injury Mortality	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Firearm	196	6	228	6		16.6%	Firearm	84	7	60	5		-28.1%
Cut/Pierce	30	1	24	1		-22.6%	Other Specified, Not Elsewhere Classifiable	7	**	7	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	15	**	22	1	N/A	N/A	Cut/Pierce	8	**	6	**	N/A	N/A
Unspecified	19	**	12	**	N/A	N/A	Unspecified	4	**	5	**	N/A	N/A
Suffocation	7	**	10	**	N/A	N/A	Suffocation	6	**	2	**	N/A	N/A
Other Specified and Classifiable	5	**	3	**	N/A	N/A	Other Specified and Classifiable	1	**	1	**	N/A	N/A
Poisoning	7	**	2	**	N/A	N/A	Struck by/Against	0	**	1	**	N/A	N/A
Falls	0	**	1	**	N/A	N/A							
Struck by/Against	2	**	1	**	N/A	N/A							
Drowning	1	**	0	**	N/A	N/A							

Leading Self-Inflicted Injury Mortality	2002-04		2005-07		Adjusted-Rate Trend BarChart	Rate % Change	Leading Self-Inflicted Injury Mortality	2006		2007		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Firearm	150	5	204	6		35.0%	Firearm	52	5	85	8		57.8%
Suffocation	66	2	105	3		55.2%	Suffocation	49	4	30	3		-38.4%
Poisoning	54	2	83	2		47.0%	Poisoning	29	3	24	2		-19.8%
Falls	8	**	10	**	N/A	N/A	Unspecified	0	**	3	**	N/A	N/A
Cut/Pierce	3	**	7	**	N/A	N/A	Cut/Pierce	1	**	2	**	N/A	N/A
Other Specified and Classifiable	3	**	3	**	N/A	N/A	Drowning/Submersion	0	**	1	**	N/A	N/A
Unspecified	3	**	3	**	N/A	N/A	Other Specified and Classifiable	2	**	1	**	N/A	N/A
Fire/Hot Object	5	**	2	**	N/A	N/A	Falls	5	**	0	**	N/A	N/A
Drowning/Submersion	5	**	1	**	N/A	N/A	Fire/Hot Object	2	**	0	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	1	**	0	**	N/A	N/A							

** Data do not meet reliability or precision standards of the National Center for Health Statistics as they are based on less than 20 deaths (numerator) and are not presented here.

Section 7: Injury Mortality

Table 7-5: Franklin County All Injury Mortality: Demographic Number & Rate Trends

Characteristic		2002-04		2005-07		Age-Specific Rate	Rate	Characteristic		2006		2007		Age-Specific Rate	Rate
Age-Group	Number	Rate	Number	Rate	Trend Chart	% Change		Age-Group	Number	Rate	Number	Rate	Trend BarChart	% Change	
00-04	40	16	43	17		3.8%		00-04	19	22	13	15		-32.0%	
05-09	10	4	13	6		27.3%		05-09	7	9	2	3		-72.1%	
10-14	30	13	11	5		-63.0%		10-14	4	5	0	0		-100.0%	
15-19	97	44	117	51		15.5%		15-19	35	45	34	43		-4.5%	
20-24	142	53	152	60		13.1%		20-24	45	54	54	64		19.9%	
25-29	127	48	186	75		58.0%		25-29	71	87	62	78		-10.2%	
30-34	134	48	159	60		24.7%		30-34	53	60	53	61		1.7%	
35-39	127	50	143	54		8.4%		35-39	58	66	45	50		-24.0%	
40-44	146	56	194	76		35.4%		40-44	60	71	67	80		13.0%	
45-49	146	61	206	82		33.8%		45-49	70	84	67	79		-5.1%	
50-54	110	53	168	77		43.8%		50-54	60	83	71	95		15.1%	
55-59	65	41	119	64		55.2%		55-59	36	57	52	82		43.5%	
60-64	40	36	73	58		64.3%		60-64	26	64	23	51		-19.8%	
65-69	51	57	47	50		-11.7%		65-69	9	29	20	62		>100%	
70-74	44	57	33	44		-23.1%		70-74	8	32	13	52		63.2%	
75-79	76	115	67	103		-9.7%		75-79	19	880	20	94		7.3%	
80-84	76	168	63	133		-21.0%		80-84	20	126	23	144		14.3%	
85+	150	399	193	477		19.7%		85+	76	565	48	345		-38.9%	

Characteristic		2002-04		2005-07		Gender Specific Rate	Rate	Characteristic		2006		2007		Gender Specific Rate	Rate
Gender	Number	Rate	Number	Rate	Trend Chart	% Change		Gender	Number	Rate	Number	Rate	Trend BarChart	% Change	
Male	1107	76	1352	88		15.7%		Male	459	89	466	90		1.7%	
Female	504	30	635	36		21.7%		Female	217	37	201	34		-9.0%	

Characteristic		2002-04		2005-07		Race Specific Rate	Rate	Characteristic		2006		2007		Race Specific Rate	Rate
Race	Number	Rate	Number	Rate	Trend Chart	% Change		Race	Number	Rate	Number	Rate	Trend BarChart	% Change	
Black	390	66	485	78		19.0%		Black	180	86	147	69		-18.9%	
White	1136	48	1409	58		21.1%		White	470	58	484	59		2.0%	
Other/Unk	85	43	93	40		-7.3%		Other/Unk	26	32	36	47		46.5%	

Characteristic		2002-04		2005-07		Zip Specific Percentage	Number	Characteristic		2006		2007		Zip Specific Percentage	Number
Zip Code*	Number	Percent	Number	Percent	Trend Chart	% Change		Zip Code*	Number	Percent	Number	Percent	Trend Chart	% Change	
43207	77	4.8%	118	5.9%		53.2%		43207	32	4.7%	41	6.1%		28.1%	
43204	66	4.1%	106	5.3%		60.6%		43228	29	4.3%	38	5.7%		31.0%	
43228	72	4.5%	101	5.1%		40.3%		43204	36	5.3%	37	5.5%		2.8%	
43223	72	4.5%	87	4.4%		20.8%		43223	35	5.2%	32	4.8%		-8.6%	
43232	53	3.3%	79	4.0%		49.1%		43232	30	4.4%	27	4.0%		-10.0%	
43229	65	4.0%	78	3.9%		20.0%		43123	30	4.4%	24	3.6%		-20.0%	
43224	76	4.7%	77	3.9%		1.3%		43206	15	2.2%	22	3.3%		46.7%	
43211	59	3.7%	75	3.8%		27.1%		43213	14	2.1%	22	3.3%		57.1%	
43123	73	4.5%	73	3.7%		0.0%		43229	30	4.4%	22	3.3%		-26.7%	
43214	51	3.2%	60	3.0%		17.6%		43209	14	2.1%	21	3.1%		50.0%	

*Ranked by 2005-07 or 2007 frequencies

Section 7: Injury Mortality

Table 7-6: Franklin County Unintentional Poisoning Mortality: Demographic Number & Rate Trends

Characteristic	2002-04		2005-07		Age-Specific Rate Trend Chart	Rate % Change	Characteristic	2006		2007		Age-Specific Rate Trend BarChart	Rate % Change
	Age-Group	Number	Rate	Number				Rate	Age-Group	Number	Rate		
00-04	0	0	1	0		N/A	00-04	0	0	0	0	N/A	
05-09	0	0	0	0		N/A	05-09	0	0	0	0	N/A	
10-14	4	2	0	0		-100.0%	10-14	0	0	0	0	N/A	
15-19	6	3	4	2		-36.2%	15-19	1	1	2	3	96.5%	
20-24	14	5	26	10		96.2%	20-24	8	10	10	12	24.9%	
25-29	20	8	42	17		>100%	25-29	15	18	17	21	16.6%	
30-34	21	8	45	17		>100%	30-34	14	16	21	24	52.6%	
35-39	32	13	51	19		53.5%	35-39	19	22	22	24	13.4%	
40-44	48	18	77	30		63.5%	40-44	26	31	31	37	20.6%	
45-49	40	17	80	32		89.7%	45-49	32	38	26	31	-19.4%	
50-54	28	14	72	33		>100%	50-54	25	34	39	52	51.7%	
55-59	9	6	35	19		>100%	55-59	8	13	16	25	98.7%	
60-64	6	5	15	12		>100%	60-64	8	20	4	9	-54.7%	
65-69	0	0	5	5		N/A	65-69	0	0	5	16	N/A	
70-74	1	1	3	4		>100%	70-74	2	8	1	4	-49.8%	
75-79	5	8	1	2		-79.5%	75-79	0	0	1	5	N/A	
80-84	2	4	0	0		-100.0%	80-84	0	0	0	0	N/A	
85+	2	5	1	2		-53.5%	85+	0	0	0	0	N/A	

Gender	2002-04		2005-07		Gender Specific Rate Trend Chart	Rate % Change	Gender	2006		2007		Gender Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	168	11	303	18		70.7%	Male	114	20	127	23	11.7%	
Female	70	4	155	9		>100%	Female	44	8	68	12	51.6%	

Race	2002-04		2005-07		Race Specific Rate Trend Chart	Rate % Change	Race	2006		2007		Race Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	62	11	87	14		31.3%	Black	40	20	36	18	-9.5%	
White	171	7	365	14		>100%	White	116	14	155	18	34.1%	
Other/Unk	5	2	6	3		77.8%	Other/Unk	2	3	4	5	48.2%	

Top Ten Zip Code*	2002-04		2005-07		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2006		2007		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43207	18	7.6%	45	9.8%		>100%	43207	15	9.5%	17	8.7%	13.3%	
43223	10	4.2%	35	7.6%		>100%	43228	7	4.4%	16	8.2%	>100%	
43228	7	2.9%	29	6.3%		>100%	43204	5	3.2%	12	6.2%	>100%	
43205	11	4.6%	22	4.8%		100.0%	43223	15	9.5%	12	6.2%	-20.0%	
43204	15	6.3%	21	4.6%		40.0%	43232	5	3.2%	9	4.6%	80.0%	
43201	8	3.4%	20	4.4%		>100%	43201	9	5.7%	8	4.1%	-11.1%	
43123	10	4.2%	18	3.9%		80.0%	43202	3	1.9%	8	4.1%	>100%	
43232	8	3.4%	18	3.9%		>100%	43213	5	3.2%	8	4.1%	60.0%	
43213	8	3.4%	17	3.7%		>100%	43026	2	1.3%	7	3.6%	>100%	
43206	5	2.1%	15	3.3%		>100%	43081	3	1.9%	7	3.6%	>100%	

*Ranked by 2005-07 or 2007 frequencies

Section 7: Injury Mortality

Table 7-7: Franklin County Unintentional Motor Vehicle Crash Mortality: Demographic Number & Rate Trends

Characteristic	2002-04		2005-07		Age-Specific Rate Trend Chart	Rate % Change	Characteristic	2006		2007		Age-Specific Rate Trend BarChart	Rate % Change
	Age-Group	Number	Rate	Number				Rate	Age-Group	Number	Rate		
00-04	5	2	2	1		-61.4%	00-04	0	0	1	1	N/A	
05-09	6	3	6	3		-2.1%	05-09	3	4	1	1	-67.4%	
10-14	8	4	4	2		-49.5%	10-14	0	0	0	0	N/A	
15-19	30	14	30	13		-4.3%	15-19	10	13	8	10	-21.4%	
20-24	30	11	29	11		2.2%	20-24	5	6	13	16	>100%	
25-29	31	12	41	17		42.7%	25-29	13	16	13	16	2.9%	
30-34	31	11	27	10		-8.5%	30-34	7	8	9	10	30.8%	
35-39	24	9	19	7		-23.8%	35-39	3	3	8	9	>100%	
40-44	25	10	25	10		1.9%	40-44	7	8	7	8	1.2%	
45-49	27	11	27	11		-5.2%	45-49	10	12	8	9	-20.7%	
50-54	19	9	14	6		-30.6%	50-54	6	8	1	1	-83.8%	
55-59	15	10	15	8		-15.3%	55-59	6	10	6	9	-0.7%	
60-64	5	4	11	9		98.1%	60-64	4	10	4	9	-9.4%	
65-69	13	15	10	11		-26.3%	65-69	2	6	1	3	-51.7%	
70-74	7	9	8	11		17.2%	70-74	2	8	3	12	50.7%	
75-79	7	11	8	12		17.1%	75-79	3	14	2	9	-32.0%	
80-84	1	2	7	15		>100%	80-84	2	13	3	19	49.1%	
85+	2	5	10	25		>100%	85+	6	45	3	22	-51.6%	

Gender	2002-04		2005-07		Gender Specific Rate Trend Chart	Rate % Change	Gender	2006		2007		Gender Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	196	12	202	13		3.4%	Male	65	12	67	13	3.9%	
Female	90	5	91	5		1.6%	Female	24	4	24	4	-1.0%	

Race	2002-04		2005-07		Race Specific Rate Trend Chart	Rate % Change	Race	2006		2007		Race Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	58	9	60	10		6.0%	Black	22	11	19	9	-21.0%	
White	208	8	204	8		-1.0%	White	61	7	63	8	3.5%	
Other/Unk	20	10	29	11		18.6%	Other/Unk	6	7	9	11	51.2%	

Top Ten Zip Code*	2002-04		2005-07		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2006		2007		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43123	25	8.7%	18	6.1%		-28.0%	43230	5	5.6%	6	6.6%	20.0%	
43232	12	4.2%	16	5.5%		33.3%	43123	5	5.6%	5	5.5%	0.0%	
43207	14	4.9%	14	4.8%		0.0%	43204	4	4.5%	5	5.5%	25.0%	
43224	15	5.2%	13	4.4%		-13.3%	43213	1	1.1%	5	5.5%	>100%	
43230	7	2.4%	13	4.4%		85.7%	43223	3	3.4%	5	5.5%	66.7%	
43204	8	2.8%	12	4.1%		50.0%	43232	7	7.9%	5	5.5%	-28.6%	
43223	11	3.8%	12	4.1%		9.1%	43235	2	2.2%	5	5.5%	>100%	
43081	14	4.9%	11	3.8%		-21.4%	43207	2	2.2%	4	4.4%	100.0%	
43110	8	2.8%	11	3.8%		37.5%	43211	1	1.1%	4	4.4%	>100%	
43213	14	4.9%	11	3.8%		-21.4%	43081	3	3.4%	3	3.3%	0.0%	

*Ranked by 2005-07 or 2007 frequencies

Section 7: Injury Mortality

Table 7-8: Franklin County Firearm Homicide: Demographic Number & Rate Trends

Characteristic		2002-04		2005-07		Age-Specific Rate	Rate	Characteristic		2006		2007		Age-Specific Rate	Rate	Rate
Age-Group	Number	Rate	Number	Rate	Trend Chart	% Change		Age-Group	Number	Rate	Number	Rate	Trend BarChart	% Change	% Change	
00-04	1	0	0	0		-100.0%		00-04	0	0	0	0		N/A	N/A	
05-09	1	0	0	0		-100.0%		05-09	0	0	0	0		N/A	N/A	
10-14	4	2	2	1		-49.5%		10-14	1	1	0	0		-100.0%	-100.0%	
15-19	38	17	42	18		5.8%		15-19	11	14	9	11		-19.6%	-19.6%	
20-24	44	16	47	19		12.9%		20-24	17	20	15	18		-11.9%	-11.9%	
25-29	29	11	51	21		89.7%		25-29	22	27	12	15		-43.9%	-43.9%	
30-34	30	11	27	10		-5.4%		30-34	10	11	8	9		-18.6%	-18.6%	
35-39	14	6	14	5		-3.7%		35-39	7	8	2	2		-72.0%	-72.0%	
40-44	12	5	15	6		27.4%		40-44	5	6	4	5		-19.1%	-19.1%	
45-49	8	3	15	6		77.8%		45-49	4	5	7	8		73.6%	73.6%	
50-54	6	3	9	4		41.2%		50-54	5	7	2	3		-61.1%	-61.1%	
55-59	2	1	1	1		-57.6%		55-59	1	2	0	0		-100.0%	-100.0%	
60-64	2	2	2	2		-10.0%		60-64	1	2	0	0		-100.0%	-100.0%	
65-69	1	1	0	0		-100.0%		65-69	0	0	0	0		N/A	N/A	
70-74	1	1	0	0		-100.0%		70-74	0	0	0	0		N/A	N/A	
75-79	3	5	3	5		2.5%		75-79	0	0	1	5		N/A	N/A	
80-84	0	0	0	0		N/A		80-84	0	0	0	0		N/A	N/A	
85+	0	0	0	0		N/A		85+	0	0	0	0		N/A	N/A	

Gender	2002-04		2005-07		Gender Specific Rate	Rate
	Number	Rate	Number	Rate	Trend Chart	% Change
Male	172	10	203	11		18.1%
Female	24	1	25	1		2.9%

Gender	2006		2007		Gender Specific Rate	Rate	Rate
	Number	Rate	Number	Rate	Trend BarChart	%Change	%Change
Male	74	13	54	9		-26.3%	-26.3%
Female	10	2	6	1		-39.4%	-39.4%

Race	2002-04		2005-07		Race Specific Rate	Rate
	Number	Rate	Number	Rate	Trend Chart	% Change
Black	125	18	163	23		24.2%
White	58	2	48	2		-15.5%
Other/Unk	13	4	17	5		25.2%

Race	2006		2007		Race Specific Rate	Rate	Rate
	Number	Rate	Number	Rate	Trend BarChart	%Change	%Change
Black	54	22	43	18		-20.9%	-20.9%
White	23	3	13	2		-42.7%	-42.7%
Other/Unk	7	7	4	4		-43.0%	-43.0%

Top Ten Zip Code*	2002-04		2005-07		Zip Specific Percentage	Number
	Number	Percent	Number	Percent	Trend Chart	% Change
43211	12	6.1%	23	10.1%		91.7%
43232	8	4.1%	17	7.5%		>100%
43205	7	3.6%	14	6.1%		100.0%
43206	14	7.1%	14	6.1%		0.0%
43207	6	3.1%	14	6.1%		>100%
43219	12	6.1%	14	6.1%		16.7%
43229	12	6.1%	11	4.8%		-8.3%
43203	6	3.1%	10	4.4%		66.7%
43204	8	4.1%	10	4.4%		25.0%
43224	14	7.1%	9	3.9%		-35.7%

Top Ten Zip Code*	2006		2007		Zip Specific Percentage	Number	Number
	Number	Percent	Number	Percent	Trend Chart	% Change	% Change
43206	5	6.0%	5	8.3%		0.0%	0.0%
43207	3	3.6%	5	8.3%		66.7%	66.7%
43224	0	0.0%	5	8.3%		N/A	N/A
43232	9	10.7%	5	8.3%		-44.4%	-44.4%
43209	1	1.2%	4	6.7%		300.0%	>100%
43211	12	14.3%	4	6.7%		-66.7%	-66.7%
43219	3	3.6%	4	6.7%		33.3%	33.3%
43205	2	2.4%	3	5.0%		50.0%	50.0%
43227	3	3.6%	3	5.0%		0.0%	0.0%
43203	4	4.8%	2	3.3%		-50.0%	-50.0%

*Ranked by 2005-07 or 2007 frequencies

SECTION 8:
Leading Mechanisms of External
Injury Hospitalizations



Section 8: Leading Mechanisms

The COTS registry collects injury information from 23 hospitals in 14 counties in the Central Ohio region. In 2007, this amounted to 9,220 48 hour hospital admissions throughout the region. That is an 80% increase over the number submitted to the registry in 2002 (Figure 8-1). Table 8-1 shows the increases in injury submissions over the period 2002-2007 by the various injury mechanisms. Franklin County residents comprise about one-third of all 48 hour or longer admissions and may have a disproportionate impact on the regional trends. However, including Franklin County residents, the top three causes of injury for the regions are the same as for Franklin County: falls, motor vehicle crashes, and struck by or against an object.

Figure 8-1: Total Number of COTS Injury Hospitalizations, by Year

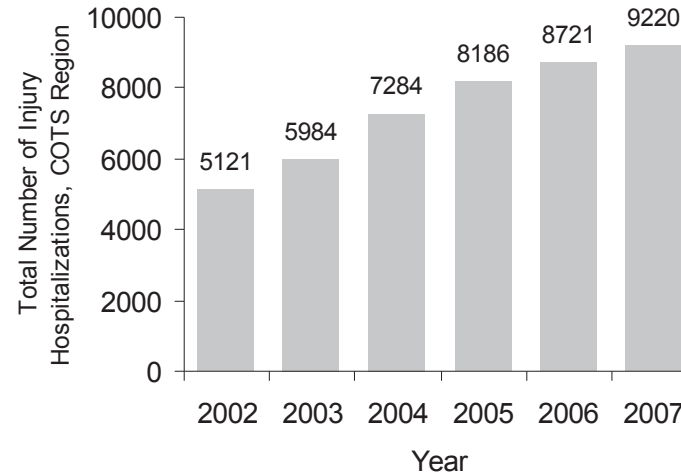


Figure 8-2: COTS Injury Hospitalizations by Intent and Year HeatMap, Percentage and Number

Intent	Year					
	2002	2003	2004	2005	2006	2007
Unintentional	88.9% (4554)	89.9% (5381)	87.9% (6404)	88.5% (7244)	88.3% (7701)	88.8% (8189)
Assault	9.0% (459)	8.6% (514)	10.3% (752)	9.8% (800)	10.0% (868)	9.4% (866)
Self-Inflicted	1.3% (69)	1.1% (63)	1.3% (92)	1.1% (89)	1.1% (96)	1.1% (97)
Other/Undetermined	0.8% (39)	0.4% (26)	0.5% (36)	0.6% (53)	0.6% (56)	0.7% (68)

Section 8: Leading Mechanisms

Table 8-1: Regional Leading Injury Hospitalization Mechanisms, Number and Percentage, by Year.

Mechanism	2002	2003	2004	2005	2006	2007
Falls	1,808 (35%)	2,147 (36%)	2,537 (35%)	2,920 (36%)	3,187 (37%)	3,734 (40%)
Motor Vehicle Crash	1,541 (30%)	1,853 (31%)	2,246 (31%)	2,406 (29%)	2,500 (29%)	2,418 (26%)
Struck by/Against Object or Person	374 (7%)	425 (7%)	575 (8%)	676 (8%)	707 (8%)	819 (9%)
Transport, Other	257 (5%)	294 (<5%)	389 (5%)	530 (6%)	489 (6%)	476 (5%)
Cut/Pierce	196 (<5%)	213 (<5%)	253 (<5%)	288 (<5%)	315 (<5%)	340 (<5%)
Fire/Hot Object	159 (<5%)	211 (<5%)	254 (<5%)	211 (<5%)	301 (<5%)	311 (<5%)
Firearm	166 (<5%)	221 (<5%)	241 (<5%)	301 (<5%)	320 (<5%)	262 (<5%)
Other Specified and Classifiable	129 (<5%)	152 (<5%)	209 (<5%)	222 (<5%)	227 (<5%)	219 (<5%)
Pedal Cyclist, Other (Non-MVC Related)	74 (<5%)	93 (<5%)	100 (<5%)	115 (<5%)	139 (<5%)	146 (<5%)
Machinery	100 (<5%)	119 (<5%)	148 (<5%)	155 (<5%)	154 (<5%)	138 (<5%)
Natural/Environmental	77 (<5%)	70 (<5%)	84 (<5%)	101 (<5%)	111 (<5%)	109 (<5%)
Unspecified	110 (<5%)	66 (<5%)	114 (<5%)	98 (<5%)	130 (<5%)	99 (<5%)
Other Specified, Not Elsewhere Classifiable	33 (<5%)	49 (<5%)	56 (<5%)	73 (<5%)	62 (<5%)	65 (<5%)
Overexertion	42 (<5%)	26 (<5%)	28 (<5%)	33 (<5%)	19 (<5%)	25 (<5%)
Drowning/Submersion	12 (<5%)	15 (<5%)	10 (<5%)	19 (<5%)	19 (<5%)	21 (<5%)
Pedestrian, Other (Non-MVC Related)	12 (<5%)	15 (<5%)	21 (<5%)	22 (<5%)	23 (<5%)	18 (<5%)
Suffocation	7 (<5%)	13 (<5%)	13 (<5%)	14 (<5%)	14 (<5%)	11 (<5%)
Poisoning	3 (<5%)	1 (<5%)	6 (<5%)	2 (<5%)	4 (<5%)	9 (<5%)
Adverse Effects to Drugs or Medical Care	8 (<5%)	0 (N/A)	0 (N/A)	0 (N/A)	0 (N/A)	0 (N/A)

APPENDIX: Glossary

Age-Adjusted Rate

A special kind of rate in which age-specific rates for a selected population are applied to a standard population to calculate what rate would be expected if the selected population had the same age distribution as the standard population. Note: Age-adjusted rates are artificial measurements and should never be compared to any other type of rate or be used to calculate the actual number of events (age-adjusted rates are further discussed in the Analysis section).

Age-Specific Rate

A statistical measure describing the number of events, which occur in a specified number of people in a specific age group within a defined time period, and allows the evaluation of an injury problem across different age groupings (age-specific rates are further discussed in the Analysis section).

Central Ohio Trauma System Trauma Registry

The central repository of trauma related data and information for the Central Ohio region.

E Code

The external cause of injury is defined by the World Health Organization's International Classification of Disease, 9th Revision Clinical Modification (ICD-

9-CM). In this publication, the E Code describes the environmental events, circumstances, and conditions as to the cause of injury or poisoning. Prior to 1999, E codes as defined by ICD-9 were also used for injury deaths. Starting with 1999 mortality data, injury deaths are coded according to ICD-10.

Injury

Damage to the body from exposure to thermal, mechanical, electrical, or chemical energy or from the absence of essentials such as heat or oxygen. Injury causes are classified by mechanism and intent.

Injury Frequency

Number of times an event or characteristic occurs in a given time.

Intent

Intent of Injury: The purpose and awareness of the risk of injury. There are two major categories of injury intentionality, "unintentional" and "intentional". Two smaller categories of intent include "legal intervention" and "undetermined".

Intentional Injuries

Deliberate injury, categorized as:

Assault/alleged abuse

Inflicted by one person on another. Considered homicide when the

outcome is death.

Self-inflicted

Purposefully inflicted by a person on his/herself. Considered suicide when the outcome is death.

Unintentional Injuries

Occurs without purposeful intent.

Undetermined

Intent is not known or could not be identified

Legal Intervention

Occurs during legal intervention

Mechanism (or Cause)

Mechanism describes the cause of the injury. Explained as the agent, instrument, or activity involved in the incident, such as fall or poisoning.

Some terms used to describe mechanism/causes of injury:

Cut/Pierce

Death/injury caused by cutting or piercing instruments or objects.

Drown

Death/injury caused by a lack of oxygen resulting from insufficient air and ingestion of water.

Natural/Environmental

APPENDIX: Glossary

Death/injury due to excessive heat or cold, lightning, natural disasters, and other environmental factors.

Falls

Death/injury resulting from falling, tripping, stumbling, pushing, colliding, or diving from different levels or the same level.

Firearms

Death/injury resulting from discharge of a handgun, rifle, shotgun, larger firearm, or other and unspecified firearm.

Fire/Hot

Death/injury resulting from asphyxia or poisoning from conflagration or ignition, burning by fire, hot substances or objects, caustic/corrosive materials, and steam.

Motor Vehicle Crash

Death/injury resulting from motor vehicle crash occurring on a public street or roadway.

Suffocation

Death/injury resulting from inhalation and ingestion of objects causing obstruction of the respiratory tract (mechanical suffocation), hanging, or strangulation.

Struck By/Against

Death/Injury resulting from being hit by blunt object or person.

Miscellaneous

A category for injury mechanism classification that represents a combination of several groupings for simplicity in reporting. In the injury matrix “other” is used to describe specific causes of injury and cannot be used as a general category.

Ohio Trauma Registry

The central repository of trauma related data and information for the state of Ohio.

Rate

Statistical measure that allows comparisons between different populations, such as geographical area or age group. An injury rate is calculated by dividing the number of people injured in a given time by the size of the population from which they are drawn. The number is then multiplied by 100,000 to obtain a standard rate. There are three main types of rates used in this document, crude, age-specific, age-adjusted which are further described in the Technical Notes section.

Years of Potential Life Lost (YPLL)

A measure of the impact of premature mortality on a population. It is calculated

as the sum of the differences between some predetermined end point and the ages of death for those who died before that end point. The two most commonly used end points are age 65 years and average life expectancy. Because of the way in which YPLL is calculated, this measure gives more weight to a death the earlier it occurs.

APPENDIX: Data

Sources of Data

Mortality:

Data relating to fatal injuries in Franklin County are from the State of Ohio Vital Statistics records. This report presents death certificate data from years 2002 through 2007, as labeled in the chapters and tables.

Non-fatal Injuries (Injury Hospitalizations):

The data relating to non-fatal injuries, from years 2002 through 2007, as labeled in the chapters and tables, is from the Central Ohio Trauma System Registry and its member hospitals.

Traumatic Brain Injuries (TBI):

This data are a subset of non-fatal injury hospitalizations from the Central Ohio Trauma System Registry. The patients included in this subset have one or more of the following ICD-9 nature of injury codes: 800.0-800.9, 801.0-801.9, 803.0-804.9, 850.0-854.1, 950.1-950.3, 959.01, or 995.55.

Population:

1. 2000-2007 Franklin County, OH, COTS Hospitalization Rates and Mechanism of Injury Death Rates: National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2007, by year, county, age,

bridged race, Hispanic origin, and sex (Vintage 2007). Prepared under a collaborative arrangement with the U.S. Census Bureau; released August 7, 2008.

Available from:

<http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm> as of September 5, 2008.

2. 2005-2007 Franklin County, OH, Zip-Code Region Age-Specific and Age-Adjusted COTS Hospitalization Rates: 2000 U.S. Census Bureau Zip Code Tabulation Area population estimates.

Limitations of Data

The COTS data on injury hospitalizations includes:

- Injured patients admitted to the hospital for 48 hours or greater
- Injured patients transferred in and out of hospitals for further evaluation regardless of length of stay
- Injured patients that died after arrival to a hospital regardless of their length of stay

COTS data does not include patients treated in the emergency room and released. The entire scope of non-fatal injury in Franklin County would require injury data from every hospital,

urgent care center, clinic, physician, Emergency Medical System (EMS) run, etc. Due to the limited data available, the numbers and figures in this monograph are not reflective of the total burden of injury in Franklin County and are approximations.

Since it is most likely that the real numbers of injury are higher, the estimates provided in this monograph should be regarded as conservative and interpreted with caution.

APPENDIX: Analysis

Ranking Leading Mechanisms of Injury Hospitalizations, Injury Mortality and All Causes of Death

Leading causes of death, fatal injuries, and non-fatal injuries are ranked according to descending frequencies or percentages. For example, the cause with the largest count or percentage is ranked 1st, the next largest count or percentage is ranked 2nd, etc.

Rate Calculations

Different types of rates are presented in this report. They include crude, age-specific and age-adjusted.

Crude Rate

Crude rates are calculated by dividing the number of people who were injured during a given time period by the size of the population from which they were drawn. By convention, this number is then multiplied by 100,000 to show a whole number instead of a fraction. Rates based on the actual number of events in the total population during the given time period are known as crude rates. The formula for the crude rate is as follows:

$$CR = \frac{\sum X}{\sum Y} \times 100,000$$

where X is the number of hospitalizations or deaths and Y is the total population size from which the hospitalization or deaths are drawn.

Age-specific Rate

Age-specific Rates are calculated by dividing the appropriate aggregated number of trauma hospital admissions or injury deaths (the numerator) for the age grouping and dividing by the population from that age grouping (the denominator). By convention, the computed number is multiplied by 100,000 to generate comparable rates. The general formula for the age-specific rates (ASR) used is as follows:

$$ASR = \frac{\sum X_i}{\sum Y_i} \times 100,000$$

where X is the number of hospitalizations or deaths and Y is the population size for the ith age group.

In addition, 95% Confidence Intervals (CI) for the age-specific rate were calculated using the approximation method formula based on the Poisson distribution:

Upper and Lower CI = $ASR \pm 2(SE)$

$$\text{Standard error (SE)} = \frac{ASR}{\sqrt{N}}$$

where N is the number of hospitalizations or deaths.

Age-Adjusted Rates

The direct method of age-adjustment was used in this report and is achieved by multiplying each age-specific

rate in the population of interest with the proportion of persons in the corresponding age group within a reference or standard population. The sum of these numbers is multiplied by 100,000 and represents the rate of injury death or injury hospitalization in the population of interest, if it had the same age structure as the standard population. Therefore, the influence of age, when comparing two age-adjusted rates, is controlled. (Note: Age-adjusted and crude rates should never be compared to one another.) The rates were adjusted according to the U.S. 2000 estimated population distribution. The general formula for the age-adjusted rate is as follows:

If the rate in the ith age class of area a is

$$r_{ia} = \frac{x_{ia}}{n_{ia}}$$

then DSR_a equals:

$$DSR_a = \frac{\sum_i r_{ia} n_{is}}{\sum_i n_{is}}$$

DSR_a = directly standardized rate for area a
n_{ia} = number of individuals in ith age class in area a

n_{is} = number of individuals in ith age class of standard area

x_{ia} = number of cases in ith age class of area a

APPENDIX: Analysis

Reliability

Rates, even when they are based on full population counts (as in this report), should be considered estimates and subject to error. The observed or crude hospitalization or death rate is an estimate of the true or underlying rate. Rates are subject to chance variation. The variation of the rate is directly related to the number of events used to calculate the rate. The smaller the number of events used to calculate the rate, the higher the variability of the rate. Rates based on unusually small numbers of events over a specified period of time or for a sparsely populated geographic area should be of particular concern and be used cautiously. When few events or small populations are evident in calculating/studying rates, multiple-year summary rates or average annual rates will sometimes provide a much better perspective by strengthening or enlarging the numbers used to calculate the rate.

An observed rate's variability can be estimated by its standard error (SE), which can be used to calculate a confidence interval (CI) to determine the range of probable values for the true or underlying rate (See above).

Note: Due to instability arising from small numbers the National Center

for Health Statistics considers rates based on 20 or fewer cases to be statistically unreliable and to be regarded with caution. Rates presented in this document calculated from small numbers should be interpreted cautiously.

Franklin County Zip Code Tabulation Area (ZCTA) Regions and Average Age-Adjusted Rates

Small area rates, such as zip code based rates, are often produced by using few events or small numbers in the numerator or denominator, and thus are often unstable rates with large variability. Maps created using these small area rates are often prone to cartographic visualization errors, where the picture of the underlying data distribution is not accurate. One method to overcome the small area numbers problem and visualization error is to aggregate smaller geographic entities into larger ones. The drawback to the aggregation into larger areas is the loss of information and spatial granularity, thus information on high or low areas within these larger areas are masked. The zip code tabulation area regions presented in this document are derived from U.S. Census ZCTA boundaries (NOTE: these are different from the U.S. Postal Service Zip Code boundaries. An explanation regarding ZCTAs and USPS Zip Codes can be found in <http://www.census.gov/geo/ZCTA/zcta.html>).

The ZCTAs used to form Franklin County regions used in this document are as follows:

Northwest = 43002, 43016, 43017, 43026, 43085, 43202, 43210, 43212, 43214, 43220, 43221, 43235

Northeast = 43004, 43054, 43081, 43201, 43211, 43219, 43224, 43229, 43230, 43231

Southeast = 43068, 43110, 43125, 43137, 43203, 43205, 43206, 43207, 43209, 43213, 43217, 43227, 43232

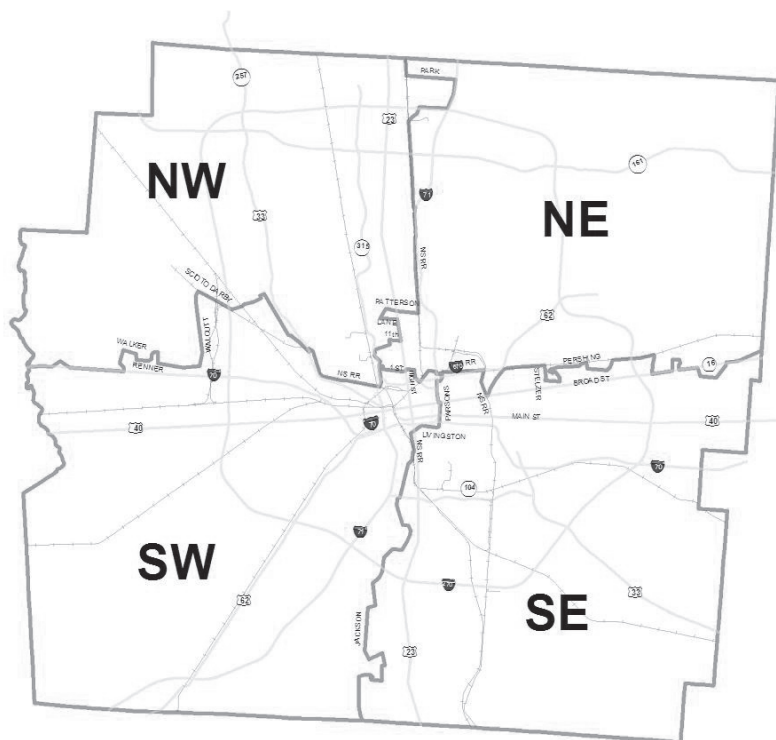
Southwest = 43119, 43123, 43146, 43204, 43215, 43222, 43223, 43228

Maps of the Franklin County ZCTA Regions are presented on the following page.

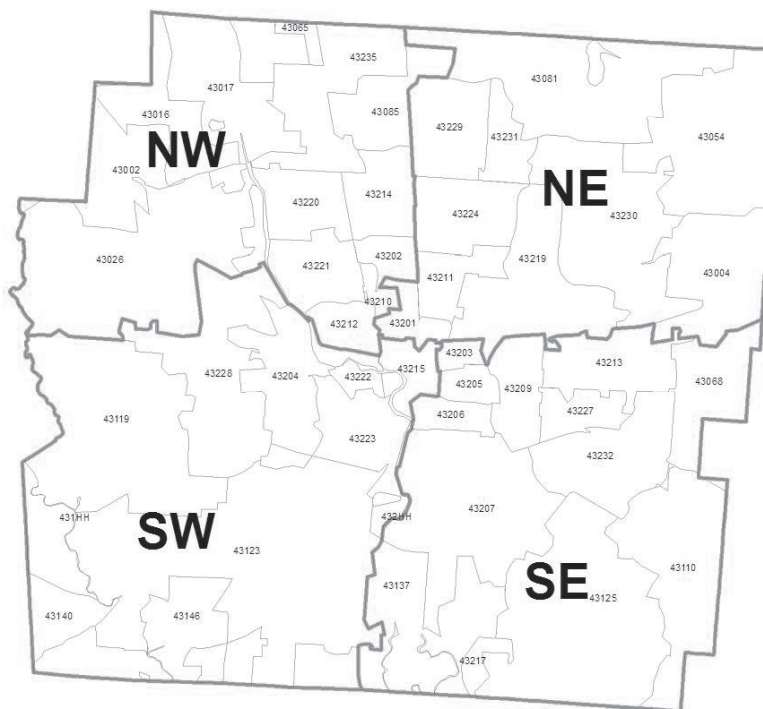
APPENDIX: Analysis

Franklin County Injury Hospitalizations Regions: Grouped U.S. Census Bureau Zip code Tabulation Areas (ZCTAs)

Regions with available corresponding named/identifiable boundaries



Regions with corresponding U.S. Census Bureau ZCTA Boundaries



APPENDIX: Analysis

Recommended framework of E-code groupings for presenting injury mortality and morbidity data (February 1, 2007)

This matrix contains the ICD-9 external-cause-of-injury codes used for coding of injury mortality data and additional ICD-9-CM external-cause-of-injury codes, designated in bold, only used for coding of injury morbidity data. In addition, a list of ICD-9-CM external-cause-of-injury codes that have been added since 1994 along with their descriptors is appended to the matrix.

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-inflicted	Assault	Undetermined	Other ¹
Cut/pierce	E920.0-9	E956	E966	E986	E974
Drowning/submersion	E830.0-9, E832.0-9, E910.0-9	E954	E964	E984	
Fall	E880.0-E886.9, E888	E957.0-9	E968.1	E987.0-9	
Fire/burn ³	E890.0-E899, E924.0-9	E958.1,.2,.7	E961, E968.0,.3, E979.3	E988.1,.2,.7	
Fire/flame ³	E890.0-E899	E958.1	E968.0, E979.3	E988.1	
Hot object/substance	E924.0-9	E958.2,.7	E961, E968.3	E988.2,.7	
Firearm ³	E922.0-.3,.8,.9	E955.0-4	E965.0-4, E979.4	E985.0-4	E970
Machinery	E919 (.0-9)				
Motor vehicle crash ^{2,3}	E810-E819 (.0-9)	E958.5	E968.5	E988.5	
Occupant	E810-E819 (.0,.1)				
Motorcyclist	E810-E819 (.2,.3)				
Pedal cyclist	E810-E819 (.6)				
Pedestrian	E810-E819 (.7)				
Unspecified	E810-E819 (.9)				
Pedal cyclist, other	E800-E807 (.3), E820-E825 (.6), E826.1,.9, E827-E829(.1)				
Pedestrian, other	E800-807(.2), E820-E825(.7), E826-E829(.0)				
Transport, other	E800-E807 (.0,.1,.8,.9), E820-E825 (.0-.5,.8,.9), E826.2-.8, E827-E829 (.2-.9), E831.0-9, E833.0-E845.9	E958.6		E988.6	
Natural/environmental	E900.0-E909, E928.0-2	E958.3		E988.3	
Bites and stings ³	E905.0-.6,.9, E906.0-.4,.5,.9				
Overexertion	E927				
Poisoning	E850.0-E869.9	E950.0-E952.9	E962.0-9, E979.6,.7	E980.0-E982.9	E972
Struck by, against	E916-E917.9		E960.0, E968.2		E973, E975
Suffocation	E911-E913.9	E953.0-9	E963	E983.0-9	
Other specified and classifiable ^{3,4}	E846-E848, E914-E915, E918, E921.0-9, E922.4,.5 , E923.0-9, E925.0-E926.9, E928(.3-.5) , E929.0-5	E955.5,.6,.7,.9 E958.0,.4	E960.1, E965.5-.9, E967.0-9, E968.4,.6, .7, E979 (.0-.2,.5,.8,.9)	E985.5,.6,.7 E988.0,.4	E971, E978, E990-E994, E996, E997.0-.2
Other specified, not elsewhere classifiable	E928.8, E929.8	E958.8, E959	E968.8, E969, E999.1	E988.8, E989	E977, E995, E997.8 E998, E999.0
Unspecified	E887, E928.9, E929.9	E958.9	E968.9	E988.9	E976, E997.9
All injury ³	E800-E869, E880-E929	E950-E959	E960-E969, E979 , E999.1	E980-E989	E970-E978, E990-E999.0
Adverse Effects					E870-E879, E930.0-E949.9
Medical care					E870-E879
Drugs					E930.0-E949.9
All external causes					E800-E999

¹Includes legal intervention (E970-E978) and operations of war (E990-E999).

²Three 4th-digit codes (.4 [occupant of streetcar], .5 [rider of animal], .8 [other specified person]) are not presented separately because of small numbers. However, because they are included in the overall motor vehicle traffic category, the sum of these categories can be derived by subtraction.

³Codes in bold are for morbidity coding only.

⁴E849 (place of occurrence) has been excluded from the matrix. For mortality coding, an ICD-9 E849 code does not exist. For morbidity coding, an ICD-9-CM E849 code should never be first-listed E code and should only appear as an additional code to specify the place of occurrence of the injury incident.

Note: ICD-9 E codes for coding underlying cause of death apply to injury-related death data from 1979 through 1998. Then there is a new ICD-10 external cause of injury matrix that applies to death data from 1999 and after. This can be found on the National Center for Health Statistics website.

APPENDIX: Analysis

Preliminary External Cause of Injury mortality Matrix for ICD-10 (December 10, 2002, National Center for Injury Prevention and Control, CDC)

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-inflicted	Assault	Undetermined	Other
Cut/pierce	W25-W29, W45	X78	X99	Y28	Y35.4
Drowning/submersion	W65-W74	X71	X92	Y21	
Fall	W00-W19	X80	Y01	Y30	
Fire/burn	X00-X19	X76-X77	X97-X98, *U01.3	Y26-Y27	Y36.3
Fire/flame	X00-X09	X76	X97	Y26	
Hot object/substance	X10-X19	X77	X98	Y27	
Firearm	W32-W34	X72-X74	X93-X95, *U01.4	Y22-Y24	Y35.0
Machinery	W24, W30-W31				
All Transport	V01-V99	X82	Y03, *U01.1	Y32	Y36.1
Motor vehicle crash	V02-V04 (.1,.9), V09.2, V12-V14 (.3-.9), V19 (.4-.6), V20-V28 (.3-.9), V29-V79 (.4-.9), V80 (.3-.5), V81.1, V82.1, V83-V86 (.0-.3), V87 (.0-.8), V89.2				
Occupant	V30-V39 (.4-.9), V40-V49 (.4-.9), V50-V59 (.4-.9), V60-V69 (.4-.9), V70-V79 (.4-.9), V83-V86 (.0-.3)				
Motorcyclist	V20-V28 (.3-.9), V29 (.4-.9)				
Pedal cyclist	V12-V14 (.3-.9), V19 (.4-.6)				
Pedestrian	V02-V04 (.1, .9), V09.2				
Unspecified	V80 (.3-.5), V81.1, V82.1,				
Pedal cyclist, other	V10-V11, V12-V14 (.0-.2), V15-V18, V19 (.0-.3, .8, .9)				
Pedestrian, other	V01, V02-V04 (.0), V05, V06, V09 (.0,.1,.3,.9)				
Other Land Transport	V20-V28 (.0-.2), V29 (.0-.3), V30-V39 (.0-.3), V40-V49 (.0-.3), V50-V59 (.0-.3), V60-V69 (.0-.3), V70-V79 (.0-.3), V80 (.0-.2, 6-.9), V81-V82 (.0, 2-.9), V83-V86 (.4-.9), V87.9, V88 (.0-.9), V89 (.0,.1,.3,.9)	X82	Y03	Y32	
Transport, other	V90-V99		*U01.1		Y36.1
Natural/environmental	W42, W43, W53-W64, W92-W99, X20-X39, X51-X57	E958.3		E988.3	
Overexertion	X50				
Poisoning	X40-X49	X60-X69	X85-X90, *U01.6-.7	Y10-Y19	Y35.2
Struck by, against	W20-W22, W50-W52	X79	Y00, Y04	Y29	Y35.3
Suffocation	W75-W84	X70	X91	Y20	
Other specified and classifiable	W23, W35-W41, W44, W49, W85-W91, Y85	X75, X81, *U03.0	X96, Y02, Y05-Y07, *U01 (.0, .2, .5)	Y25, Y31	Y35 (.1, .5), Y36 (.0, .2, 4-.8)
Other specified, not elsewhere classifiable	X58, Y86	X83, Y87.0	Y08, Y87.1, *U01.8, *U02	Y33, Y87.2	Y35.6, Y89 (.0, .1)
Unspecified	X59	X84, *U03.9	Y09, *U01.9	Y34, Y89.9	Y35.7 Y36.9
All injury	V01-X59, Y85-Y86	X60-X84, Y87.0	X85-Y09, Y87.1	Y10-Y34, Y87.2, Y89.9	Y35-Y36, Y89 (.0,.1)

Notes:

1. This framework was developed to be consistent with the framework developed based on ICD-9 external cause of injury codes as published in <http://www.cdc.gov/mmwr/PDF/rr/rr4614.pdf>
2. Drowning is the one external cause that has been redefined in this matrix. Codes for water transportation-related drowning, V90 and V92, are included in the transportation codes rather than with the drowning codes. In the ICD-9 version of the matrix, the comparable codes, E830 and E832, were included with drowning. This change was made to be consistent with other mechanisms involved with water transport-related injuries.
3. In this version, V81.1 and V81.1 were moved from the row for motor vehicle crash- occupant to the row for motor vehicle crash- other.
4. This version also contains the new ICD-10 codes for terrorism. The codes are bolded and are preceded with "**".

APPENDIX

Notes:



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