

Central Ohio Trauma System (COTS) 2011 Report
Motor Vehicle Crash, Falls and Assault Injuries in Central Ohio
A Public Health Assessment

2011

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Central Ohio Trauma System



ABOUT THE CENTRAL OHIO TRAUMA SYSTEM (“COTS”)

COTS was founded in 1997. COTS’ mission is to reduce injuries and save lives by improving and coordinating trauma care, emergency care and disaster preparedness systems. COTS addresses a need that is otherwise unmet among its stakeholders---that of coordinating system-wide improvements in emergency medical care and medical surge capabilities affecting Central and Southeastern Ohio. COTS is a voluntary, cooperative, self-regulatory organization and maintains a 501(c)(3) Internal Revenue status for charitable, educational and scientific intent. COTS’ goals are:

- To sustain an inclusive system where community partners work together to resolve issues associated with trauma & emergency care;
- To maintain COTS’ two databases and use them to improve emergency care and injury prevention programming in Central Ohio;
- To facilitate initiatives that accomplish appropriate resource utilization while

reducing deaths and disabilities from trauma, strokes, heart attacks and other emergency health conditions; and

- To coordinate and improve healthcare partners’ medical disaster preparedness and response.

COTS is an affiliate organization of the Columbus Medical Association.

The COTS Board of Trustees is comprised of health care experts from hospitals, emergency medical services (EMS) providers, physicians, and representatives from local government health agencies serving Central Ohio. The COTS Board meets quarterly. Board meetings are open to the public.

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Trauma Data in Central Ohio

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 26 hospitals currently contribute data to the RTR:

Adena Health System, Chillicothe, Ohio

Berger Health System, Circleville, Ohio

Coshocton County Memorial Hospital, Coshocton, Ohio

Diley Ridge Medical Center, Canal Winchester, 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

Licking Memorial Health System, Newark 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

Riverside Methodist Hospital, Columbus, Ohio

Southeastern Ohio Regional Medical Center, Cambridge, Ohio

Since its inception in 1999, the RTR has collected data on more than 120,000 trauma patients---an average of over 10,000 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. 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.



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.

2011 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.S². Trauma deaths in this age group are particularly concerning 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-six 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 (Franklin County) sustains on average 689 trauma deaths every year and about 3,737 trauma-related hospital admissions. The “top five” causes of trauma-related hospitalization in our region are Falls (5,555), Motor Vehicle Traffic Crashes (2,229), “Struck by or Against” an object such as occurs

in an assault or an inadvertent projectile⁴ (1,067), Firearm Related Injuries (600), and Fire or Hot Object Injuries (413). 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.

In Franklin County the injury rates for the “top five” mechanisms of injury in the region have all increased since 2002 except for Other Transport Related Injuries which remained the same at 7 per 100,000. The rate per 100,000 of hospitalization due to Falls has increased by 63%. The rate of hospitalizations from Struck by/Against increased 58%, while the rate of hospitalizations from Firearm injuries increased 31%, however there was a slight decline in this rate compared to 2007 from 18/100,000 to 17 in 2010. Fire/Hot Object injury increased at a rate of 50%. The rate of hospitalizations from Motor Vehicle Crashes is less dramatic than the others, with an increase of 6%.

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 2010, the Central Ohio community likely spent upwards of \$85,240,697 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. 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.

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

²Centers 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.

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

⁴Excludes a projectile from a firearm

⁵Assuming a 3% increase per year in the cost of medical care and hospitalization and no increase or decrease in cases from 2007-2010 (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

Franklin County is a large, urban county with a 2010 population of 1,163,414, which is an 8.8% increase from the 2000 census. According to the 2010 census the primary racial groups are White (69%) and Black (21%). However, 8.4% of the population is foreign born and 10.6% speak a language other than English. These are some factors that might influence our population risks for injuries. Both injury related fatalities and hospitalizations increased over the last 3 years since the last report.

Injury Mortality and 48 hour Hospitalizations

Years	Fatalities # (Rate/100,000)	Hospitalizations # (Rate/100,000)
2005-07 (avg./yr.)	630 (59)	3250 (310)
2008-10 (avg./yr.)	689 (62)	3737 (343)
Change	+59 (9% inc.)	+487 (15% inc.)

Unintentional injuries or accidents account for 62% of fatal injuries and 83% of 48 hour hospitalizations. Other injury categories are self-inflicted injuries and assault injuries. The number and rate per 100,000 for fatal assaults decreased from 2007 to 2010. However the number and rate of unintentional and self-inflicted injuries increased.

Number and Rate/100,000 of Injury Fatalities and Hospitalizations by Intentionality

Years	Unintentional	
	Fatal # (rate)	Hosp. # (rate)
2005-07 (avg./yr)	377(37)	2685 (261)
2008-2010 (avg./yr)	432 (40)	3119 (292)
Change	+55 (15%)	+434 (16%)
Years	Self-inflicted	
	Fatal # (rate)	Hosp. # (rate) (suicide)
2005-07 (avg./yr)	128 (12)	36 (3)
2008-2010 (avg./yr)	134 (12)	47 (4)
Change	+6	+11
Years	Assault	
	Fatal # (rate)	Hosp # (rate)
2005-07 (avg./yr)	108 (9)	493 (43)
2008-2010 (avg./yr)	97 (8)	546 (46)
Change	-11	+53

Tables 1-3 through 1-7 show the gender, age, and race distribution for the three main injury categories. These are unintentional, self-inflicted, and intentional, for 48 hour hospitalizations. Compared to the 2009 injury report for years 2005-2007, the numbers of injuries and rate per 100,000 people for most gender, age, and racial groups have increased.

Average Number of 48 hour Injury Hospitalizations per Year and Rate per 100,000 by Gender and Race

Years	Gender		Race	
	Male	Female	Black	White
2005-07	1921 (376)	1329 (236)	730 (354)	2261 (288)
2008-10	2142 (412)	1595 (272)	826 (380)	2578 (322)
Change	+221 (12%)	+266 (20%)	+96 (13%)	+317 (14%)

Males continue to be at higher risk for injury hospitalization than females, however the gap is narrowing. In 2005-07 there were 1.5 males hospitalized for every female, whereas from 2008-10 there was only 1.3. The number of females hospitalized increased by 20% from 2007 to 2010 whereas males increased by only 12%.

Section 1: All Causes of External Injury Hospitalizations

The highest risk age groups for unintentional injury hospitalizations continues to be those age 45 and older. For intentional injuries the high risk age groups are ages 15-24 (92/100,000) and 25-44 (65/100,000). This is similar to the 2005-07 reports when the rates were age 90 and 64 respectively. For intentional injuries, Black youth continue to be at highest risk. The rate per 100,000 for White youth ages 15-24 is 39, the rate for Black youth ages 15-24 is 241. This is a 6 fold higher risk. This has not changed from the 2005-07 report.

Intentional Injury Hospitalization for 15-24 year olds by Race

Years	Black 15-24 yr. old	White 15-24 yr. old
2005-07	257 (243/100,000)	133 (39/100,000)
2008-10	276 (241/100,000)	121 (39/100,000)
Change	+19 (7%)	-12 (9%)

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	2005-07		2008-10		Adjusted-Rate Trend BarChart	Rate % Change	Mechanism of Injury Hospitalization	2009		2010		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number*	Rate				Number*	Rate	Number	Rate		
All	9,751	310	11,212	343		10.7%	All	3750	346	3807	344		-0.5%
Falls	4,329	149	5,555	181		21.6%	Falls	1893	185	1871	180		-2.5%
Motor Vehicle Traffic (MVT)	2,294	69	2,229	65		-6.2%	Motor Vehicle Traffic (MVT)	760	67	768	66		-1.2%
Struck by/Against	837	25	1,067	30		21.3%	Struck by/Against	333	29	377	31		8.9%
Firearm	625	18	600	17		-6.8%	Firearm	188	16	204	16		4.5%
Fire/Hot Object	280	8	413	12		41.5%	Fire/Hot Object	119	10	153	13		26.4%
Cut/Pierce	383	11	352	10		-11.3%	Cut/Pierce	109	9	129	11		17.0%
Transport, Other	245	7	241	7		-5.0%	Other Specified and Classifiable	65	6	74	6		12.2%
Other Specified and Classifiable	179	5	209	6		12.0%	Transport, Other	74	6	69	6		-6.4%
Pedal Cyclist, Other (Non-MVT related)	130	4	168	5		23.2%	Pedal Cyclist, Other (Non-MVT related)	71	6	45	4		-38.0%
Unspecified	156	5	110	3		-31.2%	Unspecified	45	4	32	3		-27.9%
Natural/Environmental	72	5	102	3		-31.2%	Natural/Environmental	40	3	24	2		-38.7%
Machinery	70	2	43	3		36.7%	Pedestrian, Other (Non-MVT related)	5	**	14	**		N/A
Other Specified, Not Elsewhere Classifiable	71	2	38	1		-39.5%	Other Specified, Not Elsewhere Classifiable	14	**	13	**		N/A
Pedestrian, Other (Non-MVT related)	19	**	26	1	N/A	N/A	Machinery	12	**	12	**		N/A
Suffocation	13	**	24	1	N/A	N/A	Drowning/Submersion	3	**	9	**		N/A
Drowning/Submersion	24	1	16	**	N/A	N/A	Suffocation	11	**	7	**		N/A
Overexertion	15	**	11	**	N/A	N/A	Overexertion	3	**	5	**		N/A
Poisoning	9	**	4	**	N/A	N/A	Poisoning	1	**	1	**		N/A
Adverse Effects (Drugs/Medical)	0	**	0	**	N/A	N/A	Adverse Effects (Drugs/Medical)	0	**	0	**		N/A

Injury Hospitalization By Intentionality	2005-07		2008-10		Adjusted-Rate Trend BarChart	Rate % Change	Injury Hospitalization By Intentionality	2009		2010		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Unintentional	8,056	261	9,356	292		11.6%	Unintentional	3,163	296	3,155	290		-2.0%
Intentional	1,479	43	1,638	46		7.1%	Intentional	505	43	568	47		9.0%
Self-Inflicted	109	3	137	4		19.0%	Self-Inflicted	46	4	63	5		32.9%
Undetermined	92	3	69	2		-26.8%	Undetermined	32	3	17	**		N/A
Other	15	**	12	**	N/A	N/A	Other	4	**	4	**		N/A
Adverse Effects	0	**	0	**	N/A	N/A	Adverse Effects	0	**	0	**		N/A

* Data will not add up to total ("All" category). Four cases in 2009 could not be matched up to a specific mechanism of injury category.

** 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 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	2005-07		2008-10		Adjusted-Rate Trend BarChart	Rate % Change	Injury Hospitalization	2009		2010		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Falls	4,311	148	5,541	181		21.8%	Falls	1,887	184	1,865	180		-2.6%
Motor Vehicle Traffic (MVT)	2,289	69	2,226	65		-6.1%	Motor Vehicle Traffic (MVT)	760	67	768	66		-1.2%
Fire/Hot Object	275	8	410	12		42.7%	Fire/Hot Object	118	10	151	13		25.8%
Struck by/Against	272	8	281	8		-0.6%	Struck by/Against	90	8	88	8		-5.3%
Transport, Other	245	7	241	7		-5.0%	Transport, Other	74	6	69	6		-6.4%
Pedal Cyclist, Other (Non-MVT related)	130	4	168	5		23.2%	Pedal Cyclist, Other (Non-MVT related)	71	6	45	4		-38.0%
Natural/Environmental	71	2	102	3		38.1%	Cut/Pierce	21	2	36	3		63.9%
Cut/Pierce	120	4	85	2		-33.0%	Natural/Environmental	40	3	24	2		-38.7%
Other Specified and Classifiable	67	2	75	2		7.2%	Unspecified	25	2	21	2		-12.1%
Unspecified	52	2	59	2		11.6%	Other Specified and Classifiable	28	2	20	2		-34.6%

Leading Intentional Injury Hospitalization	2005-07		2008-10		Adjusted-Rate Trend BarChart	Rate % Change	Leading Intentional Injury Hospitalization	2009		2010		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Struck by/Against	559	17	781	22		32.7%	Struck by/Against	240	21	287	24		15.2%
Firearm	480	13	466	13		-4.7%	Firearm	133	11	152	12		9.4%
Cut/Pierce	199	6	196	5		-3.5%	Cut/Pierce	69	6	59	5		-15.3%
Other Specified and Classifiable	105	3	133	4		21.7%	Other Specified and Classifiable	37	3	54	5		51.0%
Unspecified	96	3	44	1		-56.1%	Unspecified	17	**	11	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	33	1	8	**	N/A	N/A	Falls	1	**	3	**	N/A	N/A
Falls	1	**	4	**	N/A	N/A	Fire/Hot Object	0	**	1	**	N/A	N/A
Motor Vehicle Traffic (MVT)	1	**	2	**	N/A	N/A	Other Specified, Not Elsewhere Classifiable	6	**	1	**	N/A	N/A
Fire/Hot Object	4	**	1	**	N/A	N/A							
Poisoning	0	**	1	**	N/A	N/A							

Leading Self-Inflicted Injury Hospitalization	2005-07		2008-10		Adjusted-Rate Trend BarChart	Rate % Change	Leading Self-Inflicted Injury Hospitalization	2009		2010		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Cut/Pierce	49	1	66	2		29.6%	Cut/Pierce	18	**	33	3		N/A
Firearm	32	1	33	1		-8.5%	Firearm	12	**	16	**		N/A
Suffocation	8	**	21	1	N/A	N/A	Suffocation	10	**	7	**		N/A
Falls	5	**	6	**	N/A	N/A	Falls	3	**	3	**		N/A
Other Specified, Not Elsewhere Classifiable	3	**	5	**	N/A	N/A	Other Specified, Not Elsewhere Classifiable	2	**	3	**		N/A
Poisoning	4	**	2	**	N/A	N/A	Poisoning	0	**	1	**		N/A
Drowning/Submersion	0	**	1	**	N/A	N/A	Fire/Hot Object	1	**	0	**		N/A
Fire/Hot Object	0	**	1	**	N/A	N/A							
Motor Vehicle Traffic (MVT)	3	**	1	**	N/A	N/A							
Other Specified and Classifiable	4	**	1	**	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 1: All Causes of External Injury Hospitalizations

Table 1-3: All Causes of Franklin County Injury Hospitalizations by Intent and Age, 2008-10.

Age-Group	All		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	496	194.0	412	161.2	0	0	82	32.1	2	<1
05-14	644	145.8	610	138.1	8	1.8	23	5.2	3	<1
15-24	1,390	281.0	857	173.3	40	8.1	457	92.4	33	6.7
25-44	2,599	236.1	1794	163.0	61	5.5	712	64.7	25	2.3
45-64	2,675	329.0	2312	284.4	23	2.8	333	41.0	5	<1
65-74	944	515.5	917	500.7	4	2.2	23	12.6	0	0
75+	2,464	1,536.7	2454	1530.4	1	<1	8	5.0	1	<1
All	11,212	343.3	9,356	291.7	137	3.9	1,638	45.5	69	2.0

*12 hospitalizations were categorized in the "Other" intentionality category

Table 1-4: All Causes of Franklin County Injury Hospitalizations for Males, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	301	230.5	258	197.6	0	0	42	32.2	1	<1
05-14	412	182.7	389	172.5	4	1.8	16	7.1	3	1.3
15-24	1,043	420.4	582	234.6	29	11.7	403	162.4	26	10.5
25-44	1,845	335.7	1,181	214.9	42	7.6	595	108.3	21	3.8
45-64	1,650	422.4	1,339	342.8	14	3.6	290	74.2	5	1.3
65-74	407	506.0	384	477.4	3	3.7	20	24.9	0	0
75+	769	1310.0	763	1,299.7	1	1.7	5	8.5	0	0
Total	6,427	411.6	4,896	326.0	93	5.4	1,371	76.5	56	3.0

*11 hospitalizations were categorized in the "Other" intentionality category

Table 1-5: All Causes of Injury Hospitalizations for Females by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	195	155.9	154	123.1	0	0	40	32.0	1	<1
05-14	232	107.2	221	102.2	4	1.9	7	3.2	0	0
15-24	347	140.8	275	111.6	11	4.5	54	21.9	7	2.8
25-44	754	136.8	613	111.2	19	3.5	117	21.2	4	<1
45-64	1,025	242.7	973	230.4	9	2.1	43	10.2	0	0
65-74	537	522.9	533	519.0	1	1.0	3	2.9	0	0
75+	1,695	1,667.6	1,691	1,663.7	0	0	3	3.0	1	1.0
Total	4,785	271.8	4,460	253.5	44	2.4	267	15.1	13	<1

*1 hospitalization was categorized in the "Other" intentionality category

Section 1: All Causes of External Injury Hospitalizations

Table 1-6: All Causes of Franklin County Injury Hospitalizations for Whites, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	242	166.45	199	136.88	0	0	42	28.89	1	<1
05-14	400	149.18	391	145.83	4	1.49	4	1.49	1	<1
15-24	720	218.2	559	169.39	25	7.58	128	38.79	8	2.42
25-44	1,503	195.4	1,166	151.56	51	6.63	269	34.96	12	1.56
45-64	1,925	311.8	1,757	284.61	20	3.24	146	23.65	2	<1
65-74	757	519.0	747	512.18	2	1.37	8	5.49	0	0
75+	2,187	1,633.9	2,179	1,627.97	1	<1	6	4.48	1	<1
Total	7,734	322.3	6,998	292.5	103	4.2	603	24.3	25	1.0

*5 hospitalizations were categorized in the "Other" intentionality category

Table 1-7: All Causes of Franklin County Injury Hospitalizations for Blacks, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	140	207.46	111	164.48	0	0	28	41.49	1	1.48
05-14	148	127.54	131	112.89	3	2.59	13	11.2	1	<1
15-24	501	438	186	162.61	14	12.24	276	241.29	23	20.11
25-44	775	375.99	400	194.06	8	3.88	352	170.77	13	6.31
45-64	595	404.63	427	290.38	3	2.04	161	109.49	3	2.04
65-74	127	433.09	113	385.35	2	6.82	12	40.92	0	0
75+	191	866.76	189	857.69	0	0	2	9.08	0	0
Total	2,477	379.5	1,557	253.8	30	3.9	844	115.8	41	5.2

*5 hospitalizations were categorized in the "Other" intentionality category

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 1-8 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 1-8 indicates that

the medical and hospitalization costs of injuries to Franklin County residents was over \$846,000,000. 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 1-8: Economic Burden of Injuries in Franklin County (Average cost per fatality; and average cost per 48-hour hospitalizations in 2000 dollars)

Cause of Injury	FATALITIES				48-HOUR HOSPITALIZATIONS			
	Number	Medical Costs	Productivity Costs	Total Costs	Number	Medical Costs	Productivity Costs	Total Costs
Falls	77	\$1,271,270 @ \$16,510	\$24,789,919 @ \$321,947	\$26,061,189	1,852	\$33,041,532 @ \$17,841	\$40,049,500 @ \$21,625	\$73,091,032
Motor Vehicle Crashes	93	\$726,051 @ \$7,807	\$98,959,719 @ \$1,064,083	\$99,685,770	743	\$22,059,670 @ \$29,690	\$41,695,647 @ \$56,118	\$63,755,344
Firearms	71	\$210,089 @ \$2,959	\$82,309,235 @ \$1,159,285	\$82,519,324	155	\$5,700,745 @ \$36,779	\$9,276,130 @ \$59,846	\$14,976,875
All Causes	689	\$5,144,074 @ \$7,466	\$656,494,358 @ \$952,822	\$661,638,432	3,737	\$67,422,954 @ \$18,042	\$117,345,537 @ \$31,401	\$184,768,491
TOTAL COSTS	661,638,432 + 184,768,491 = \$846,406,923							



SECTION 2:
Motor Vehicle Crash Injury Hospitalizations

Section 2: Motor Vehicle Crash Injury Hospitalizations

Motor vehicle crashes are the second leading cause of injury related 48 hour or longer hospitalizations in Franklin County. In 2008-10 there were 2,229 residents hospitalized 48 hours or longer, an average of 743 per year. This includes drivers and passengers as well as pedestrians and bicyclists in motor vehicle crashes and motorcycle operators and passengers. In the previous three year period, 2005-07 there were 2,294 hospitalizations, 765 per year average. The burden of motor vehicle related hospitalizations and fatalities has changed very little over the 6-year period.

Table 2-1 shows the age, gender, race, and zip code distribution for all crashes in 2008-10. The most hospitalizations are in the 20-24 year age group. The highest risk age group is the 80-84 year age group where the rate per 100,000 is 136. There continues to be about 1.5 males hospitalized for every female and about 3 White residents for every Black resident. In 2008-10 there were 25 more males hospitalized per year than in 2005-07 and about 4 more females per year. There were also 10 additional Black residents hospitalized per year in the most recent three year period compared to the previous three year period. The zip code

with the highest number of crash related hospitalizations is 43207, 137 residents. The top 10 zip codes account for 45% of all the motor vehicle hospitalizations.

Tables 2-2 through 2-6 show the age-gender and age-race relationships for motor vehicle hospitalizations. For males and females both, the highest number of hospitalizations is in the 25-44 year age group. The highest risk age group is 75+, at 140 per 100,000 for males and 95 per 100,000 for females. In 2005-07 the rate per 100,000 for 75+ age group was 135 for males and 82 for the females. This same distribution of number of hospitalizations and risk is in the White and Black populations. In both groups the highest number of hospitalizations is in the 25-44 age group and the highest risk is in the 75+ age group.

Most motor vehicle related hospitalizations are to motor vehicle occupants (71%). The rest are among motorcyclists (13%), pedestrians (12%), and pedal cyclists (2%). This is very similar to the distribution in the previous three year period, 2005-07. However there is a fairly large increase in the number of pedestrian related hospitalizations in 2010. The average number of pedestrian related

hospitalizations per year for 2008-10 is 90. In 2010 the number was 102, a 13% increase from the average and a 23% increase from 2009.

The 2010 Franklin County average use rate for car seat belts was 76% according to the Franklin County Safe Communities Program. Table 2-8 shows the that average use rate for crashes resulting in 48 hour or longer hospitalizations is 60%. According to the National Highway Traffic Safety Administration's National Center for Statistics and Analysis, Traffic Safety Facts, deaths and serious injuries could be reduced by approximately 50% with proper use of seat belts. Air bag deployments have increased from an average deployment rate of 32% in 2005-07 to a 40% rate in 2008-10 (Table 2-8). These deployments may have prevented fatalities or more serious injuries.

Table 2-8 shows that only 31-35% of motorcyclists hospitalized 48 hours or longer were wearing a motorcycle helmet. There is no mandatory motorcycle helmet law in Ohio except for cyclists under 18. According to an article in the American Journal of Public Health (1996 January; 86(1):41-45) unhelmeted riders are nearly three times more likely to sustain serious head injuries, and are more likely to be readmitted for follow up treatment and die from their injuries.

The cost of motor vehicle crashes is in Table 1-8. The total cost is \$163,441,114 per year, estimated using 2000 dollar estimates. For hospitalizations, medical expenses alone are an average of \$22,059,670 per year.

Motor Vehicle Related Fatalities and Hospitalizations 2005-2010, Number and Rate per 100,000

Year	Fatalities		Hospitalizations	
	Number	Rate/100,000	Number	Rate/100,000
2005-07 (avg./yr)*	100	9	765	69
2008-10 (avg./yr)*	93	8	743	65
Change	-7 (7%)		-12 (1.5%)	

*For fatalities the years are 2004-06 and 2007-09

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-1: Franklin County Unintentional Motor Vehicle Crash Hospitalizations: Demographic Number & Rate Trends

Characteristic Age-Group	2005-07		2008-10		Age-Specific Rate Trend Chart	Rate % Change	Characteristic Age-Group	2009		2010		Age-Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
00-04	24	10	29	11		18.5%	00-04	8	9	11	13		43.2%
05-09	35	16	54	24		46.3%	05-09	15	19	27	35		80.9%
10-14	52	24	50	23		-2.7%	10-14	22	32	13	18		-44.5%
15-19	240	108	160	69		-36.0%	15-19	62	82	48	59		-28.0%
20-24	269	111	238	90		-18.3%	20-24	80	99	64	62		-37.2%
25-29	243	67	218	65		-3.3%	25-29	71	61	81	79		29.3%
30-34	189	72	192	66		-8.7%	30-34	71	67	79	89		32.3%
35-39	196	81	177	73		-10.1%	35-39	65	81	59	73		-9.3%
40-44	193	81	164	72		-11.2%	40-44	52	69	55	71		3.7%
45-49	185	76	206	85		11.6%	45-49	79	98	52	65		-34.3%
50-54	165	78	165	72		-7.3%	50-54	48	64	67	84		32.5%
55-59	127	70	150	78		10.3%	55-59	48	76	56	83		10.2%
60-64	78	64	114	76		18.6%	60-64	38	77	48	88		13.5%
65-69	78	85	66	64		-24.9%	65-69	27	78	15	42		-47.0%
70-74	60	79	65	82		3.5%	70-74	24	90	24	90		1.0%
75-79	69	104	65	101		-2.2%	75-79	20	93	22	106		13.5%
80-84	46	94	69	136		44.5%	80-84	17	99	27	161		63.3%
85+	39	97	44	97		-0.1%	85+	13	86	20	129		50.7%

Gender	2005-07		2008-10		Gender Specific Rate Trend Chart	Rate % Change	Gender	2009		2010		Gender Specific Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	1392	87	1318	80		-8.3%	Male	434	79	473	85		8.2%
Female	897	53	908	51		-3.1%	Female	326	55	295	48		-13.0%

Race	2005-07		2008-10		Race Specific Rate Trend Chart	Rate % Change	Race	2009		2010		Race Specific Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	462	74	493	74		0.3%	Black	162	76	178	75		-1.4%
White	1594	65	1511	61		-6.7%	White	527	63	512	63		-0.1%

Top Ten Zip Code*	2005-07		2008-10		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2009		2010		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43207	127	5.5%	137	6.2%		7.9%	43207	46	6.1%	53	6.9%		15.2%
43228	113	4.9%	127	5.7%		12.4%	43228	48	6.3%	41	5.3%		-14.6%
43224	117	5.1%	105	4.7%		-10.3%	43123	24	3.2%	39	5.1%		62.5%
43232	88	3.8%	104	4.7%		18.2%	43224	32	4.2%	39	5.1%		21.9%
43123	87	3.8%	99	4.4%		13.8%	43232	40	5.3%	38	4.9%		-5.0%
43068	73	3.2%	94	4.2%		28.8%	43204	28	3.7%	36	4.7%		28.6%
43204	81	3.5%	91	4.1%		12.3%	43068	34	4.5%	32	4.2%		-5.9%
43229	99	4.3%	82	3.7%		-17.2%	43213	29	3.8%	31	4.0%		6.9%
43213	75	3.3%	82	3.7%		9.3%	43119	19	2.5%	29	3.8%		52.6%
43081	86	3.8%	74	3.3%		-14.0%	43081	30	3.9%	28	3.6%		-6.7%

*Ranked by 2010 or 2008-10 frequencies

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-2: Franklin County Motor Vehicle Crash Injury Hospitalizations by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	29	11.3	29	11.3	0	0	0	0	0	0
05-14	104	23.5	104	23.5	0	0	0	0	0	0
15-24	399	80.7	398	80.5	0	0	1	<1	0	0
25-44	753	68.4	751	68.2	1	<1	1	<1	0	0
45-64	635	78.1	635	78.1	0	0	0	0	0	0
65-74	131	71.5	131	71.5	0	0	0	0	0	0
75+	178	111.0	178	111.0	0	0	0	0	0	0
Total	2,229	64.9	2,226	64.77	1	<1	2	<1	0	0

Table 2-3: Franklin County Motor Vehicle Crash Injury Hospitalizations for Males, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	17	13.0	17	13.0	0	0	0	0	0	0
05-14	68	30.2	68	30.2	0	0	0	0	0	0
15-24	241	97.1	240	96.7	0	0	1	<1	0	0
25-44	459	83.5	458	83.3	0	0	1	<1	0	0
45-64	394	100.9	394	100.9	0	0	0	0	0	0
65-74	59	73.4	59	73.4	0	0	0	0	0	0
75+	82	139.7	82	139.7	0	0	0	0	0	0
Total	1,320	79.7	1,318	79.6	0	0	2	<1	0	0

Table 2-4: Franklin County Motor Vehicle Crash Injury Hospitalizations for Females by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	12	9.6	12	9.6	0	0	0	0	0	0
05-14	36	16.6	36	16.6	0	0	0	0	0	0
15-24	158	64.1	158	64.1	0	0	0	0	0	0
25-44	294	53.4	293	53.2	1	<1	0	0	0	0
45-64	241	57.1	241	57.1	0	0	0	0	0	0
65-74	72	70.1	72	70.1	0	0	0	0	0	0
75+	96	94.5	96	94.5	0	0	0	0	0	0
Total	909	51.1	908	51.0	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, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	15	10.3	15	10.3	0	0	0	0	0	0
05-14	57	21.3	57	21.3	0	0	0	0	0	0
15-24	253	76.7	253	76.7	0	0	0	0	0	0
25-44	483	62.8	482	62.7	1	<1	0	0	0	0
45-64	456	73.9	456	73.9	0	0	0	0	0	0
65-74	99	67.9	99	67.9	0	0	0	0	0	0
75+	149	111.3	149	111.3	0	0	0	0	0	0
Total	1,512	60.9	1,511	60.8	1	<1	0	0	0	0

Table 2-6: Franklin County Motor Vehicle Crash Injury Hospitalizations for Blacks, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	8	11.9	8	11.9	0	0	0	0	0	0
05-14	32	27.6	32	27.6	0	0	0	0	0	0
15-24	103	90.1	102	89.2	0	0	1	<1	0	0
25-44	176	85.4	175	84.9	0	0	1	<1	0	0
45-64	134	91.1	134	91.1	0	0	0	0	0	0
65-74	21	71.6	21	71.6	0	0	0	0	0	0
75+	21	95.3	21	95.3	0	0	0	0	0	0
Total	495	74.1	493	73.8	0	0	2	<1	0	0

Section 2: Motor Vehicle Crash Injury Hospitalizations

Table 2-7: Franklin County Unintentional Motor Vehicle Crash Hospitalizations by Person

Unintentional MVC Hospitalization By Person	2005-07		2008-2010		Rate	Rate	Unintentional MVC Hospitalization By Person	2009		2010		Rate	Rate
	Number	Rate	Number	Rate	Trend BarChart	% Change		Number	Rate	Number	Rate	Trend BarChart	% Change
All	2,289	69	2,226	65		-6.1%	All	760	67	768	66		-1.2%
Occupant	1,638	50	1,587	46		-6.5%	Occupant	559	49	541	46		-5.5%
Motorcyclist	321	9	289	8		-11.8%	Motorcyclist	96	8	94	8		-7.1%
Pedestrian	242	7	271	8		6.1%	Pedestrian	83	7	102	9		19.2%
Pedal Cyclist	53	2	40	1		-30.1%	Pedal Cyclist	13	**	12	**	NA	N/A
Unspecified	24	1	31	1		29.9%	Unspecified	4	**	17	**	NA	N/A
Other	11	**	8	**	NA	N/A	Other	5	**	2	**	NA	N/A

Table 2-8: Franklin County Unintentional Motor Vehicle Crash Hospitalizations: Safety Device Use Trends

MVC - Occupant & Safety Device Use	Documented Use* (% Usage)									Percent Usage Trend BarChart
	2003	2004	2005	2006	2007	2008	2009	2010		
Seat belt or Car Seat	293 (60%)	318 (57%)	335 (55%)	290 (56%)	289 (56%)	308 (63%)	339 (61%)	322 (60%)		
Air Bag	126 (26%)	170 (30%)	156 (26%)	177 (34%)	178 (35%)	206 (42%)	223 (40%)	202 (37%)		
None	155 (32%)	119 (21%)	106 (18%)	80 (15%)	72 (14%)	53 (11%)	74 (13%)	92 (17%)		
N/A	27 (5%)	88 (16%)	122 (20%)	102 (20%)	108 (21%)	76 (16%)	87 (16%)	70 (13%)		
MVC - Motor & Pedal Cyclist Safety Device Use	Documented Use* (% Usage)									Percent Usage Trend BarChart
	2003	2004	2005	2006	2007	2008	2009	2010		
Motorcycle Helmet	31 (43%)	30 (37%)	50 (43%)	34 (37%)	40 (35%)	31 (31%)	31 (32%)	33 (35%)		
Pedal Cycle Helmet	1 (8%)	2 (11%)	3 (16%)	5 (28%)	3 (19%)	1 (7%)	3 (23%)	0 (%)		

*Number and percentage among those with any information documented



SECTION 3:
Fall Injury Hospitalizations

Section 3: Fall Injury Hospitalizations

Fall Related 48 Hour or Longer Hospitalizations, Number and Rate

Years	2002-04 (avg./yr)		2005-07 (avg./yr)		Change	2008-10 (avg./yr)		Change
	Number	Rate	Number	Rate		Number	Rate	
Males	473	107	635	144	+162 (34%)	814	180	+179 (28%)
Females	601	110	802	143	+201 (33%)	1033	176	+231 (29%)
Total	1074		1437		+363 (34%)	1847		+410 (28%)

Falls are the leading cause of injury related 48 hour or longer hospitalizations in Franklin County. For the three year period 2008-10, 5,541 residents were hospitalized due to a fall injury. This is an average of 1,847 per year. The next highest cause of injury related hospitalizations is motor vehicle crashes with an average of 743 per year. Every day, in Franklin County, 5 people are hospitalized as a result of a fall. Sixty percent (1101) are residents 60 years and older. The rate of hospitalizations per 100,000 population progressively increases from age group 20-24 to the age group 85 and over where the rate is 2,306 per

100,000. Fall related hospitalizations are increasing in Franklin County.

The table above illustrates how dramatically fall related hospitalizations have increased over the past 9 years. There was a 34% increase from 2001-04 to 2005-07 and an additional 28% increase in 2008-10. Fall injuries disproportionately impact elderly residents when health consequences are more severe and long-lasting.

Table 3-1 shows the location where falls occurred. The home continues to be the primary location for serious fall injuries; 62%

(3417) of all serious falls occur in the home. Almost 11% (590) occurred in residential institutions.

Tables 3-3 to 3-7 show the distribution of fall injury hospitalizations by age, gender, and race. There were significant increases in fall related hospitalizations in some age groups (25-44 to 75+ and total falls) for 2008-10 compared to 2005-07.

Both White and Black residents experienced increases in fall hospitalizations in 2008-10 compared to 2005-07. White residents experienced a 25% (874) increase, from 3,554 in 2005-07 to 4428 in 2008-10; Black residents experienced a 37% (193) increase, from 521 to 714 in 2008-10.

The cost of falls is estimated in Table 1-8. Total cost in year 2000 dollars is nearly \$100 million per year. This includes fatalities, hospitalizations, health care costs and lost productivity.



















Fall Related Hospitalizations by Age Group, 2005-07 and 2008-10

Age Group	Total Unintentional 2005-07		Total Unintentional 2008-10		Change
	Number	Rate/100,000	Number	Rate/100,000	
00-04	174	69	182	71	+8 (5%)
05-14	289	63	253	57	-36 (12%)
15-24	173	36	211	43	+38 (22%)
25-44	475	46	635	58	+160 (34%)*
45-64	1,001	128	1300	160	+299 (30%)*
65-74	511	302	726	396	+215 (42%)*
75+	1,688	1,106	2,234	1,393	+546 (32%)*
Total	4311	147	5,541	181	+1,230 (28%)*

*statistically significant increase

Section 3: Fall Injury Hospitalizations

Table 3-1: Franklin County Unintentional Fall Hospitalizations by Location

Unintentional Fall Location	2005-7		2008-10		Percentage Trend Chart	Number % Change	Unintentional Fall Location	2009		2010		Percentage Trend BarChart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
Home	2,511	58.2%	3,417	61.7%		36.1%	Home	1142	60.5%	1170	62.7%		2.5%
Residential Institution	521	12.1%	590	10.6%		13.2%	Residential Institution	195	10.3%	215	11.5%		10.3%
Not Determined	389	9.0%	422	7.6%		8.5%	Not Determined	164	8.7%	121	6.5%		-26.2%
Public Facility	293	6.8%	376	6.8%		28.3%	Public Facility	140	7.4%	103	5.5%		-26.4%
Recreational/Sport Place	203	4.7%	231	4.2%		13.8%	Recreational/Sport Place	73	3.9%	82	4.4%		12.3%
Work	177	4.1%	189	3.4%		6.8%	Street	62	3.3%	63	3.4%		1.6%
Street	140	3.2%	185	3.3%		32.1%	Work	69	3.7%	56	3.0%		-18.8%
Other	74	1.7%	125	2.3%		68.9%	Other	42	2.2%	50	2.7%		19.0%
Farm	3	<1.0%	6	<1.0%		100.0%	Farm	0	N/A	5	<1.0%		N/A

*Ranked by 2008-10 or 2010 frequencies

Section 3: Fall Injury Hospitalizations

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

Characteristic	2005-07		2008-10		Age-Specific Rate Trend Chart	Rate % Change	Characteristic	2009		2010		Age-Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Age-Group							Age-Group						
00-04	174	69	182	71		2.6%	00-04	68	79	57	69		-12.7%
05-09	168	77	146	64		-17.6%	05-09	46	60	48	63		4.9%
10-14	121	56	107	50		-10.5%	10-14	27	39	46	62		60.2%
15-19	74	33	117	51		51.8%	15-19	43	57	32	40		-30.8%
20-24	99	41	94	36		-12.3%	20-24	29	36	33	32		-10.6%
25-29	107	29	140	41		41.1%	25-29	46	40	55	54		35.5%
30-34	84	32	158	54		69.1%	30-34	59	56	46	52		-7.3%
35-39	105	43	151	62		43.1%	35-39	50	62	43	53		-14.0%
40-44	179	75	186	81		8.5%	40-44	54	71	67	87		21.7%
45-49	203	84	270	112		33.3%	45-49	89	111	93	116		4.3%
50-54	271	128	340	149		16.3%	50-54	118	157	109	137		-12.3%
55-59	280	155	347	180		15.7%	55-59	112	177	127	189		7.1%
60-64	247	203	343	229		12.7%	60-64	110	224	118	216		-3.6%
65-69	230	249	348	335		34.3%	65-69	116	337	112	310		-7.8%
70-74	281	371	378	477		28.5%	70-74	126	470	116	437		-7.0%
75-79	373	560	501	781		39.4%	75-79	178	828	157	754		-9.0%
80-84	521	1062	689	1353		27.4%	80-84	246	1431	234	1399		-2.2%
85+	794	1980	1044	2306		16.5%	85+	370	2434	372	2397		-1.5%

Gender	2005-07		2008-10		Gender Specific Rate Trend Chart	Rate % Change	Gender	2009		2010		Gender Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	1906	147	2442	180		22.4%	Male	812	181	831	180		-0.6%
Female	2405	143	3099	176		22.9%	Female	1075	182	1034	174		-4.3%

Race	2005-07		2008-10		Race Specific Rate Trend Chart	Rate % Change	Race	2009		2010		Race Specific Rate Trend BarChart	Rate % Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	521	105	714	132		25.7%	Black	250	144	231	120		-16.9%
White	3554	155	4428	186		20.0%	White	1508	188	1497	190		1.0%

Top Ten Zip Code*	2005-07		2008-10		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2009		2010		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43081	246	5.7%	302	5.5%		22.8%	43229	95	5.0%	91	4.9%		-4.2%
43229	220	5.1%	261	4.7%		18.6%	43081	129	6.8%	85	4.6%		-34.1%
43207	194	4.5%	259	4.7%		33.5%	43207	88	4.7%	80	4.3%		-9.1%
43068	174	4.0%	246	4.4%		41.4%	43213	62	3.3%	78	4.2%		25.8%
43230	180	4.2%	240	4.3%		33.3%	43230	80	4.2%	76	4.1%		-5.0%
43224	159	3.7%	226	4.1%		42.1%	43235	63	3.3%	75	4.0%		19.0%
43214	172	4.0%	212	3.8%		23.3%	43026	72	3.8%	74	4.0%		2.8%
43123	134	3.1%	207	3.7%		54.5%	43228	58	3.1%	73	3.9%		25.9%
43213	139	3.2%	200	3.6%		43.9%	43068	89	4.7%	71	3.8%		-20.2%
43228	125	2.9%	190	3.4%		52.0%	43224	81	4.3%	71	3.8%		-12.3%

*Ranked by 2010 or 2008-10 frequencies

Section 3: Fall Injury Hospitalizations

Table 3-3: Franklin County Fall Injury Hospitalizations by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	183	71.6	182	71.2	0	0	0	0	1	<1
05-14	254	57.5	253	57.3	0	0	1	<1	0	0
15-24	213	43.1	211	42.7	1	<1	0	0	1	<1
25-44	641	58.2	635	57.7	3	<1	2	<1	1	<1
45-64	1,303	160.3	1,300	159.9	1	<1	1	<1	1	<1
65-74	727	397.0	726	396.4	1	<1	0	0	0	0
75+	2,234	1,393.2	2,234	1,393.2	0	0	0	0	0	0
Total	5,555	181.0	5,541	180.6	6	<1	4	<1	4	<1

Table 3-4: Franklin County Fall Injury Hospitalizations for Males, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	123	94.2	122	93.4	0	0	0	0	1	0.8
05-14	150	66.5	150	66.5	0	0	0	0	0	0
15-24	153	61.7	151	60.9	1	<1	0	0	1	0.4
25-44	403	73.3	399	72.6	2	<1	1	<1	1	0.2
45-64	674	172.6	672	172.0	0	0	1	<1	1	0.3
65-74	284	353.1	283	351.8	1	1.2	0	0	0	0
75+	665	1,132.8	665	1,132.8	0	0	0	0	0	0
Total	2,452	180.1	2,442	179.5	4	<1	2	<1	4	<1

Table 3-5: Franklin County Fall Injury Hospitalizations for Females by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	60	48.0	60	48.0	0	0	0	0	0	0
05-14	104	48.1	103	47.6	0	0	1	<1	0	0
15-24	60	24.3	60	24.3	0	0	0	0	0	0
25-44	238	43.2	236	42.8	1	<1	1	<1	0	0
45-64	629	148.9	628	148.7	1	<1	0	0	0	0
65-74	443	431.4	443	431.4	0	0	0	0	0	0
75+	1,569	1,543.6	1,569	1,543.6	0	0	0	0	0	0
Total	3,103	176.5	3,099	176.2	2	<1	2	<1	0	0

Section 3: Fall Injury Hospitalizations

Table 3-6: Franklin County Fall Injury Hospitalizations for Whites, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	99	68.1	99	68.1	0	0	0	0	0	0
05-14	163	60.8	163	60.8	0	0	0	0	0	0
15-24	137	41.5	135	40.9	1	<1	0	0	1	<1
25-44	422	54.9	418	54.3	2	<1	1	<1	1	<1
45-64	1,026	166.2	1,024	165.9	1	<1	0	0	1	<1
65-74	594	407.3	594	407.3	0	0	0	0	0	0
75+	1,995	1,490.5	1,995	1,490.5	0	0	0	0	0	0
Total	4436	186.781	4428	186.446	4	<1	1	<1	3	<1

Table 3-7: Franklin County Fall Hospitalizations for Blacks, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	35	51.9	34	50.4	0	0	0	0	1	<1
05-14	50	43.1	50	43.1	0	0	0	0	0	0
15-24	35	30.6	35	30.6	0	0	0	0	0	0
25-44	128	62.1	126	61.1	1	<1	1	<1	0	0
45-64	220	149.6	219	148.9	0	0	1	<1	0	0
65-74	89	303.5	88	300.1	1	<1	0	0	0	0
75+	162	735.2	162	735.2	0	0	0	0	0	0
Total	719	133.0	714	132.2	2	<1	2	<1	1	<1



SECTION 4:
Firearm Injury Hospitalizations

Section 4: Firearm Injury Hospitalizations

Firearm injuries occur when a firearm is discharged intentionally (self-inflicted or assault) or unintentionally (accident). In Franklin County there were an average of 200 firearm related 48 hour or longer hospitalizations per year for the three year period 2008-10. This is compared to an average of 208 hospitalizations for the previous three year period 2005-07. This is a modest 4% decrease. The rate per 100,000 population was 16.5 for 2008-10 (Table 4-1) compared to 17.9 for 2005-07.

The age group at greatest risk is the 15-24 year old group (Table 4-1) with an average of 95 hospitalizations per year and a rate of 57.4 per 100,000. In the period 2005-07 there were 281 (94/year) serious firearm injuries in this age group, 58.1 per 100,000. This age group has more than twice the risk of the next highest risk group, 25-44 year olds.

Intentional firearm injuries outnumber unintentional injuries 11:1 and self-inflicted injuries 14:1. There were an average of 155 intentional firearm injuries per year, a rate of 13 per 100,000 compared to an average of 15 unintentional injuries per year, 1.2 per 100,000 (Table 4-1).

Males in Franklin County are at much greater risk to firearm injuries than females. The average number of males injured

by firearms in 2008-10 was 173 per year compared to an average of 27 females per year, a ratio of 6:1. Males are six times more likely to be seriously injured by a firearm than females. In the previous three year period the risk ratio was 9:1, 187 males per year compared to 21 females. There were an average of 6 additional females hospitalized per year and 14 fewer males than in 2005-07. This is a 29% increase in females and a 7% decrease in males.

Males are also at greater risk for unintentional firearm injury hospitalizations. There were 44 unintentional firearm

hospitalizations in 2008-10, about 15 per year. Thirty-eight were males and 6 were females, a male:female ratio of 6:1. The ratio of males to females for self-inflicted firearm injuries in 2008-10 was 3:1, eight males per year compared to 3 females (Tables 4-2 and 4-3).

The total cost of firearm related hospitalizations and fatalities for one year (average per year 2007-09 for fatalities and 2008-10 for hospitalizations) is \$97,496,199, medical expenses were \$5,910,834 (Table 1-8). This is a low estimate because cost data is in year 2000 dollars.

Firearm Injury Hospitalizations for Males and Females, 2008-10

Age Group	Males		Females		Ratio M:F
	Number	Rate per 100,000	Number	Rate per 100,000	
00-04	0	0	0	0	-
05-14	6	3	1	<1	6:1
15-24	253	102	31	13	8:1
25-44	206	38	38	7	5:1
45-64	50	13	9	2	6:1
65-74	3	4	1	1	3:1
75+	2	3	0	0	-
Total	520	29	80	5	7:1

Section 4: Firearm Injury Hospitalizations

Table 4-1: Franklin County Firearm Injury Hospitalizations by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	0	0	0	0	0	0	0	0	0	0
05-14	7	1.6	3	<1	0	0	2	<1	2	<1
15-24	284	57.4	25	5.1	9	1.8	219	44.3	30	6.1
25-44	244	22.2	12	1.1	18	1.6	194	17.6	16	1.5
45-64	59	7.3	3	<1	5	<1	47	5.8	3	<1
65-74	4	2.2	0	0	0	0	4	2.2	0	0
75+	2	1.3	1	<1	1	<1	0	0	0	0
Total	600	16.5	44	1.2	33	<1	466	12.9	51	1.4

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

Table 4-2: Franklin County Firearm Injury Hospitalizations for Males by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	0	0	0	0	0	0	0	0	0	0
05-14	6	2.7	2	<1	0	0	2	<1	2	<1
15-24	253	102.0	23	9.3	8	3.2	198	79.8	23	9.3
25-44	206	37.5	10	1.8	13	2.4	166	30.2	13	2.4
45-64	50	12.8	2	<1	2	<1	42	10.8	3	<1
65-74	3	3.7	0	0	0	0	3	3.7	0	0
75+	2	3.4	1	1.7	1	1.7	0	0	0	0
Total	520	28.6	38	2.1	24	1.3	411	22.6	41	2.2

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

Table 4-3: Franklin County Firearm Injury Hospitalizations for Females by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	0	0	0	0	0	0	0	0	0	0
05-14	1	<1	1	<1	0	0	0	0	0	0
15-24	31	12.6	2	<1	1	<1	21	8.5	7	2.8
25-44	38	6.9	2	<1	5	<1	28	5.1	3	<1
45-64	9	2.1	1	<1	3	<1	5	1.2	0	0
65-74	1	1.0	0	0	0	0	1	1.0	0	0
75+	0	0	0	0	0	0	0	0	0	0
Total	80	4.6	6	<1	9	<1	55	3.2	10	<1

Section 4: Firearm Injury Hospitalizations

Table 4-4: Franklin County Firearm Injury Hospitalizations for Whites, by Intent and Age, 2008-10.

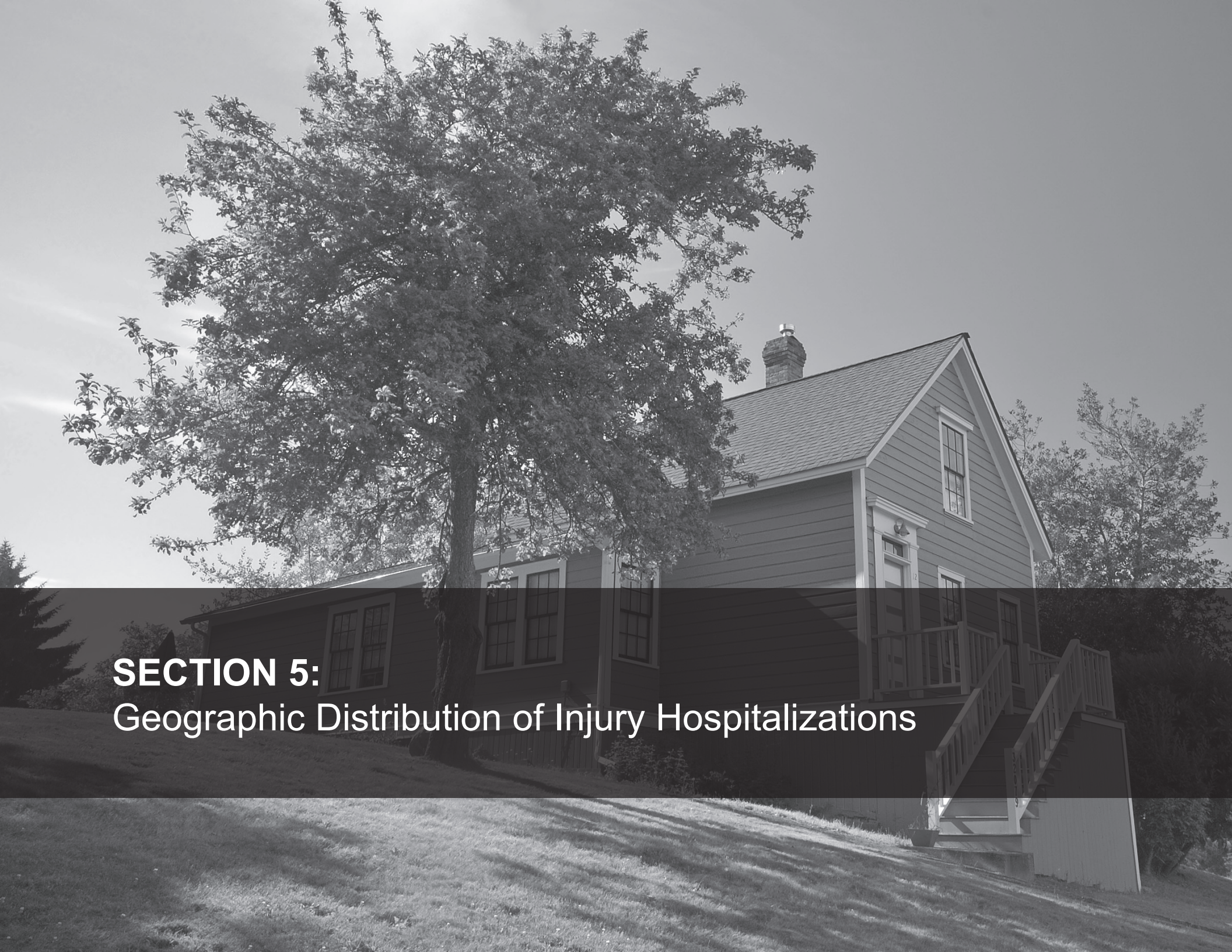
Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	0	0	0	0	0	0	0	0	0	0
05-14	1	0.4	1	<1	0	0	0	0	0	0
15-24	55	16.7	8	2.4	5	1.5	36	10.9	6	1.8
25-44	65	8.5	6	<1	13	1.7	39	5.1	4	<1
45-64	19	3.1	3	<1	2	<1	14	2.3	0	0
65-74	2	1.4	0	0	0	0	2	1.4	0	0
75+	2	1.5	1	<1	1	<1	0	0	0	0
Total	144	5.9	19	<1	21	<1	91	3.8	10	<1

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

Table 4-5: Franklin County Firearm Injury Hospitalizations for Blacks, by Intent and Age, 2008-10.

Age-Group	Total		Unintentional		Self-Inflicted		Intentional		Undetermined	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
00-04	0	0	0	0	0	0	0	0	0	0
05-14	4	3.5	1	<1	0	0	2	1.7	1	<1
15-24	204	178.4	15	13.1	4	3.5	162	141.6	22	19.2
25-44	162	78.6	5	2.4	5	2.4	139	67.4	12	5.8
45-64	35	23.8	0	0	3	2.0	28	19.0	3	2.0
65-74	1	3.4	0	0	0	0	1	3.4	0	0
75+	0	0	0	0	0	0	0	0	0	0
Total	406	53.2	21	2.6	12	1.5	332	43.7	38	4.9

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



SECTION 5:
Geographic Distribution of Injury Hospitalizations

Section 5: Geographic Distribution of Injury Hospitalizations

The distribution of injuries requiring 48 hour hospitalization is throughout the county. However the risk level for residents based on their location can be estimated. Table 5-1 through 5-4 show numbers and rates of various causes of injury to residents living in different quadrants of the county (Northwest, Northeast, Southwest, and Southeast). Refer to the map in the Appendix to better identify the four quadrants.

Residents in the Southwest and Southeast quadrants have increased risk for motor

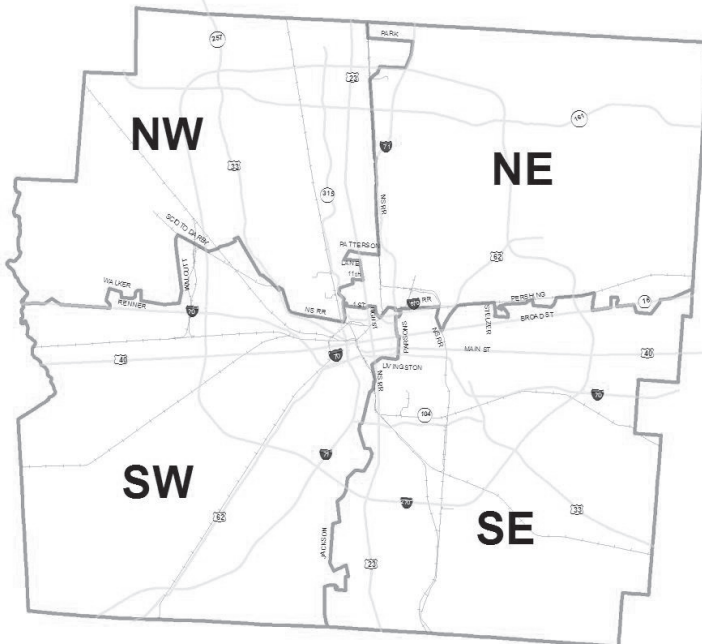
vehicle related hospitalizations. Their rates per 100,000 are 74 and 80 respectively. Whereas residents in the Northwest quadrant are half as likely to experience a motor vehicle related hospitalization, their rate per 100,000 is 36. The rate per 100,000 for residents in the Northeast quadrant is 56.

For fall injury hospitalizations the rates per 100,000 are more uniform across the county. The range is 147 per 100,000 in the Southwest quadrant to 189 in the Northeast quadrant. Firearm related hospitalizations

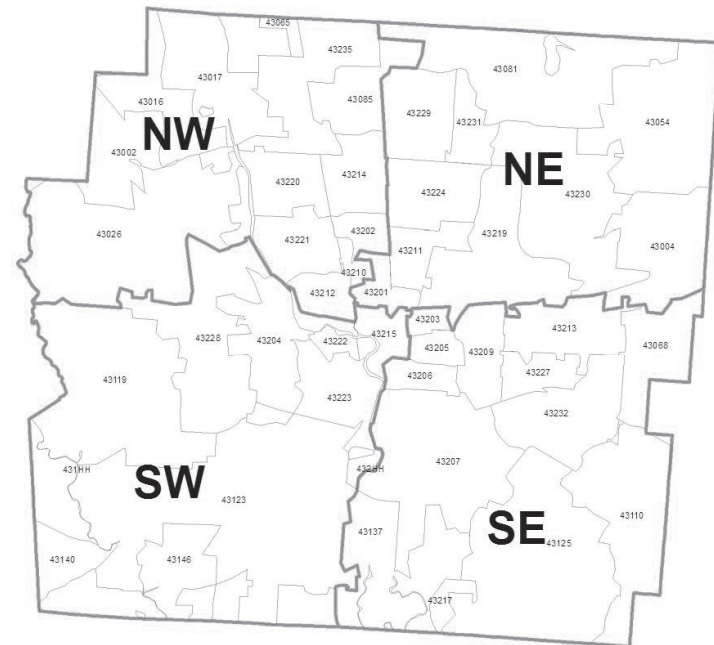
range from 16.8 per 100,000 in the Southwest quadrant and 18 per 100,000 in the Northeast to 26.1 in the Southeast. At 2.8 per 100,000 residents in the Northwest quadrant have about one-tenth the risk as residents in Southeast Franklin County for firearm related hospitalizations.

Age is also an important factor. Residents 15-44 years old in Southeast and Southwest quadrants have a greater risk for motor vehicle related hospitalizations than residents 15-44 in the other two quadrants.

Regions with available corresponding named/identifiable boundaries



Regions with corresponding U.S. Census Bureau ZCTA Boundaries



Section 5: Geographic Distribution of Injury Hospitalizations

Table 5-1: Northwest Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2008-10.

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	348	36.1	5	8.6	12	10.4	82	55.1	109	36.9	85	36.2	19	39.7	36	77.7
Unintentional	348	36.1	5	8.6	12	10.4	82	55.1	109	36.9	85	36.2	19	39.7	36	77.7
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Falls	1,322	158.3	31	53.0	67	57.8	54	36.3	111	37.5	251	106.8	141	294.9	667	1,439.0
Unintentional	1,320	158.1	31	53.0	67	57.8	54	36.3	110	37.2	251	106.8	140	292.8	667	1,439.0
Intentional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Self Inflicted	2	<1	0	0	0	0	0	0	1	<1	0	0	1	2.1	0	0
Undetermined	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Firearm	29	2.8	0	0	0	0	13	8.7	14	4.7	2	0.9	0	0	0	0
Unintentional	2	<1	0	0	0	0	2	1.3	0	0	0	0	0	0	0	0
Intentional	18	1.747	0	0	0	0	8	5.4	9	3.0	1	0.4	0	0	0	0
Self Inflicted	6	<1	0	0	0	0	1	0.7	4	1.4	1	0.4	0	0	0	0
Undetermined	1	<1	0	0	0	0	1	<1	0	0	0	0	0	0	0	0
Other	2	<1	0	0	0	0	1	<1	1	<1	0	0	0	0	0	0
All	2,052	234.1	63	107.8	131	113.0	210	141.0	350	118.3	420	178.7	167	349.3	711	1533.9
Unintentional	1,918	220.7	54	92.4	128	110.5	171	114.8	298	100.8	392	166.8	166	347.2	709	1529.6
Intentional	103	10.3	9	15.4	1	0.9	29	19.5	39	13.2	23	9.8	0	0.0	2	4.3
Self Inflicted	25	2.5	0	0	2	1.7	8	5.4	10	3.4	4	1.7	1	2.1	0	0
Undetermined	2	<1	0	0	0	0	1	<1	1	0.3	0	0	0	0	0	0
Other	4	<1	0	0	0	0	1	<1	2	0.7	1	<1	0	0	0	0

Section 5: Geographic Distribution of Injury Hospitalizations

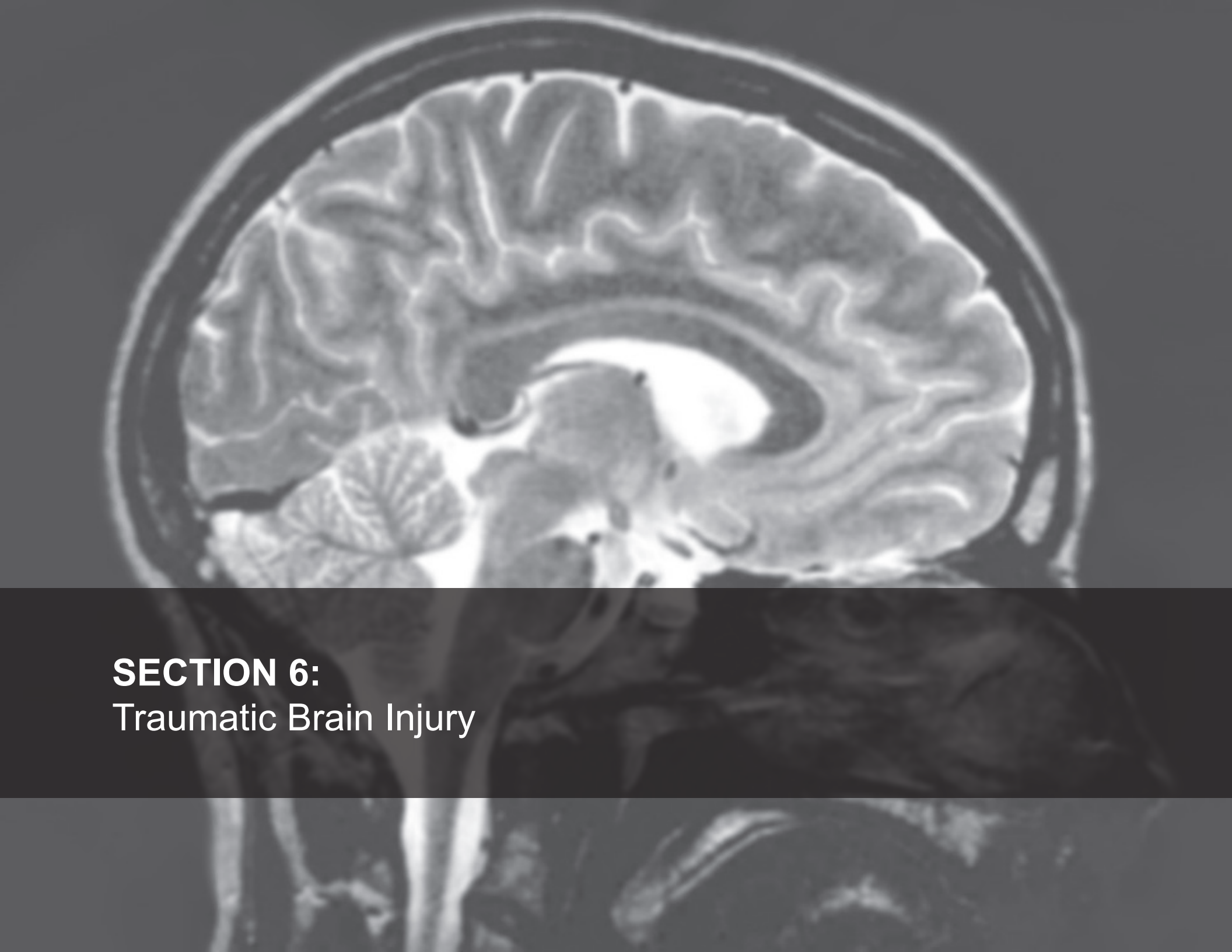
Table 5-2: Northeast Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2008-10.

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	562	55.814	5	6.8	26	20.0	99	52.8	182	60.5	172	74.0	36	70.7	42	99.4
Unintentional	562	55.814	5	6.8	26	20.0	99	52.8	182	60.5	172	74.0	36	70.7	42	99.4
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Falls	1,588	188.8	61	82.8	76	58.4	52	27.7	185	61.4	381	163.8	222	436.2	611	1,445.6
Unintentional	1,582	188.2	60	81.5	75	57.6	52	27.7	183	60.8	379	163.0	222	436.2	611	1445.6
Intentional	3	<1	0	0	1	<1	0	0	1	<1	1	<1	0	0	0	0
Self Inflicted	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
Undetermined	2	<1	1	1.4	0	0	0	0	0	0	1	<1	0	0	0	0
Firearm	208	18.0	0	0	3	2.3	102	54.4	82	27.2	20	8.6	1	2.0	0	0
Unintentional	17	1.467	0	0	1	<1	9	4.8	6	2.0	1	0.4	0	0	0	0
Intentional	156	13.501	0	0	1	<1	77	41.1	60	19.9	17	7.3	1	2.0	0	0
Self Inflicted	8	0.742	0	0	0	0	2	1.1	6	2.0	0	0.0	0	0	0	0
Undetermined	26	2.229	0	0	1	<1	14	7.5	9	3.0	2	<1	0	0	0	0
Other	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
All	3,095	333.1	157	213.1	168	129.0	396	211.2	695	230.8	731	314.3	281	552.1	667	1,578.1
Unintentional	2,551	283.4	132	179.2	157	120.6	229	122.1	466	154.8	630	270.9	271	532.5	666	1,575.7
Intentional	475	43.4	23	31.2	7	5.4	143	76.3	200	66.4	92	39.6	10	19.7	0	0
Self Inflicted	31	2.9	0	0.0	3	2.3	8	4.3	15	5.0	5	2.2	0	0	0	0
Undetermined	36	3.2	2	2.7	1	0.8	16	8.5	12	4.0	4	1.7	0	0	1	2.4
Other	2	<1	0	0	0	0	0	0	2	<1	0	0	0	0	0	0

Section 5: Geographic Distribution of Injury Hospitalizations

Table 5-4: Southwest Region Selected External Injury Hospitalization Mechanisms, by Intent and Age, 2008-10.

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	523	74.0	9	16.4	29	30.7	93	92.3	190	86.1	144	83.4	28	73.6	30	107.9
Unintentional	523	74.0	9	16.4	29	30.7	93	92.3	190	86.1	144	83.4	28	73.6	30	107.9
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Falls	900	147.4	44	80.3	51	54.0	59	58.6	146	66.2	225	130.2	104	273.5	272	978.3
Unintentional	895	146.7	44	80.4	51	54.0	58	57.6	143	64.9	224	130.2	104	274.0	272	980.3
Intentional	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
Self Inflicted	3	<1	0	0	0	0	1	1.0	1	<1	1	<1	0	0	0	0
Undetermined	1	<1	0	0	0	0	0	0	1	<1	0	0	0	0	0	0
Firearm	123	16.8	0	0	2	2.1	57	56.6	47	21.3	14	8.1	3	7.9	0	0
Unintentional	6	0.8	0	0	1	1.1	3	3.0	1	0.5	1	<1	0	0	0	0
Intentional	101	13.8	0	0	0	0	48	47.7	38	17.2	12	7.0	3	7.9	0	0
Self Inflicted	6	<1	0	0	0	0	3	3.0	3	1.4	0	0	0	0	0	0
Undetermined	7	<1	0	0	1	1.1	3	3.0	3	1.4	0	0	0	0	0	0
Other	3	<1	0	0	0	0	0	0	2	<1	1	<1	0	0	0	0
All	2,256	335.4	143	261.2	150	158.9	321	319.0	628	284.9	551	319.6	153	403.2	310	1,117.2
Unintentional	1,788	272.0	114	208.2	143	151.5	200	198.7	422	191.5	457	265.1	143	376.8	309	1,113.6
Intentional	416	56.2	29	53.0	5	5.3	108	107.3	178	80.8	87	50.5	8	21.1	1	3.6
Self Inflicted	37	5.1	0	0	1	1.1	9	8.9	19	8.6	6	3.5	2	5.3	0	0
Undetermined	10	1.4	0	0	1	1.1	3	3.0	6	2.7	0	0	0	0	0	0
Other	5	<1	0	0	0	0	1	1.0	3	1.4	1	<1	0	0	0	0

A sagittal MRI scan of the human brain, showing the cerebral cortex, white matter, and ventricular system. The image is in grayscale and shows a clear view of the brain's internal structure.

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 often a serious consequence of an injury event. An injured person with a TBI may not survive. Those that do survive have a significant risk of long term disability. As shown in Figure 6-1 TBI's occur in 26-29% of all injury-related hospitalizations of 48 hours or longer. The number of TBI's are increasing: in 2004 there were 765 injury related TBI's compared

to 1096 in 2010, a 43% increase. In 2007 43% (381) of all TBI's were related to falls and 35%(309) were related to motor vehicle crashes. In 2010, 50% (548) were related to falls and 27% (294) to motor vehicle crashes.

Table 6-2 provides additional details about TBI's and motor vehicle crashes. All residents involved in a motor vehicle crash are at risk for a TBI. Using a safety device (seat belt or helmet) reduces this risk. The average seat belt use rate for

Franklin County is 76% according to the most recent Ohio Department of Public Safety survey. Occupants hospitalized for motor vehicle crash related injuries with a TBI were wearing a seat belt 48% of the time (2003-2010 average). Twenty-five per cent of motorcyclists hospitalized due to a crash were wearing a helmet. Motor vehicle occupants hospitalized with no TBI were wearing a seat belt 65% of the time and 44% of motorcyclists with no TBI were wearing a helmet.

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

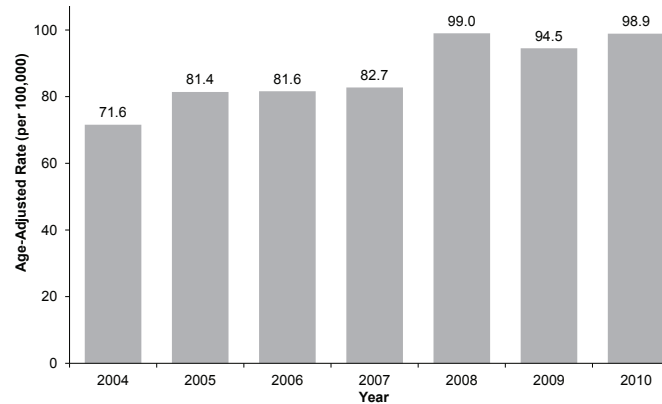


Figure 6-2: TBI Age-Adjusted Rate per 100,000 population, by Year

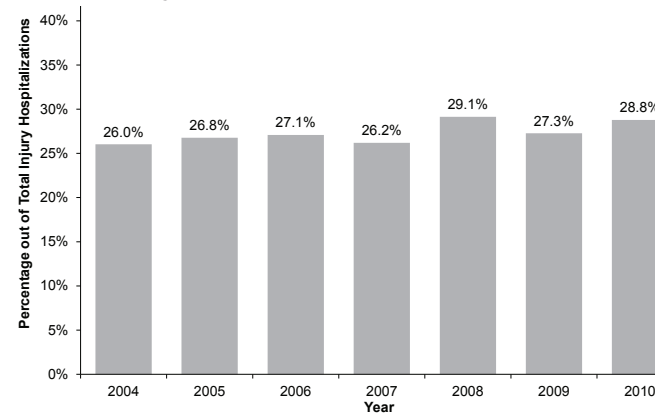


Table 6-1: Franklin County Traumatic Brain Injury by Leading Injury Hospitalization Mechanisms, Number and Percentage, by Year.

	2004	2005	2006	2007	2008	2009	2010
All TBIs	765	860	856	885	1065	1023*	1096
Fall Related TBIs	226 (29.5%)	310 (40.5%)	309 (36.1%)	381 (43.1%)	509 (47.8%)	502 (49.1%)	548 (50%)
Motor Vehicle Crash Related TBIs	340 (44.4%)	350 (45.8%)	320 (37.4%)	309 (34.9%)	316 (29.7%)	295 (28.8%)	294 (26.8%)
Struck By/Against Person or Object Related TBIs	89 (11.6%)	103 (13.5%)	110 (12.9%)	101 (11.4%)	142 (13.3%)	122 (11.9%)	155 (14.1%)
All Other Mechanism Related TBIs	110 (14.4%)	97 (11.3%)	117 (13.7%)	94 (10.6%)	98 (9.2%)	103 (10.1%)	99 (9%)

*Note: Summing up specific TBIs will not add up to total. One TBI case could not be assigned a specific mechanism due to an incomplete E-code (missing 4th digit).

Section 6: Traumatic Brain Injury

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

	Year	Number of TBI	Total MVT By Person	TBI Percentage of Total Trend Chart	TBI Rate Trend Chart	
All Persons	2003	267	676	39.5%	24.5	
	2004	339	764	44.4%	30.6	
	2005	350	812	43.1%	31.2	
	2006	319	737	43.3%	28.7	
	2007	309	740	41.8%	27.3	
	2008	315	698	45.1%	27.9	
	2009	295	760	38.8%	25.5	
	2010	294	768	38.3%	25.0	
	Occupants	2003	197	492	40.0%	18.0
		2004	251	561	44.7%	22.6
2005		263	604	43.5%	23.6	
2006		225	520	43.3%	20.1	
2007		207	514	40.3%	18.3	
2008		224	487	46.0%	20.0	
2009		214	559	38.3%	18.5	
2010		207	541	38.3%	17.6	
Motorcyclists		2003	26	72	36.1%	2.3
		2004	29	82	35.4%	2.4
	2005	47	115	40.9%	3.9	
	2006	32	93	34.4%	2.7	
	2007	53	113	46.9%	4.6	
	2008	40	99	40.4%	3.4	
	2009	38	96	39.6%	3.4	
	2010	37	94	39.4%	3.1	
	Pedestrians	2003	31	79	39.2%	3.1
		2004	37	86	43.0%	3.4
2005		29	64	45.3%	2.7	
2006		48	96	50.0%	4.6	
2007		33	82	40.2%	3.0	
2008		35	86	40.7%	3.1	
2009		33	83	39.8%	2.9	
2010		36	102	35.3%	3.1	
Pedal Cyclists		2003	5	12	41.7%	N/A*
		2004	12	18	66.7%	N/A*
	2005	7	19	36.8%	N/A*	
	2006	11	18	61.1%	N/A*	
	2007	9	16	56.3%	N/A*	
	2008	7	15	46.7%	N/A*	
	2009	6	13	46.2%	N/A*	

	Year	TBI usage number	No-TBI Usage Number	Total MVT TBI*	Total MVT No-TBI*	TBI Percent Use	No-TBI Percent Use	Percent Usage Trend Chart	
Occupant Safety Belt and Car Seat Use	2003	85	208	192	300	44%	69%		
	2004	106	212	251	310	42%	68%		
	2005	115	220	263	341	44%	65%		
	2006	107	183	225	295	48%	62%		
	2007	104	185	207	307	50%	60%		
	2008	124	184	224	274	55%	67%		
	2009	112	227	214	345	52%	66%		
	2010	102	220	207	345	49%	64%		
	2003-10	855	1639	1783	2517	48%	65%		
	Motorcyclist Helmet Use	2003	4	27	25	47	16%	57%	
		2004	6	24	29	53	21%	45%	
2005		14	36	47	68	30%	53%		
2006		10	24	32	61	31%	39%		
2007		16	24	53	60	30%	40%		
2008		6	25	39	60	15%	42%		
2009		11	20	38	58	29%	34%		
2010		8	25	37	57	22%	44%		
2003-10		75	205	300	464	25%	44%		

*Total among those with documented usage/non-usage of safety equipment.

Section 6: Traumatic Brain Injury

Table 6-3: Franklin County Traumatic Brain Injury: 2008-10 Demographic Numbers, Percentages, and Rates

2008-10				2008-10			
Age-Group	Number	Rate	Age-Specific Rate Chart	Leading Zip Codes	Number	Percent of Total	Percent of Total Chart
00-04	111	43		43207	178	6.0%	
05-09	55	24		43228	147	4.9%	
10-14	68	32		43229	140	4.7%	
15-19	172	74		43068	126	4.2%	
20-24	223	85		43081	125	4.2%	
25-29	227	67		43123	118	4.0%	
30-34	184	63		43230	115	3.9%	
35-39	194	80		43204	111	3.7%	
40-44	205	89		43224	109	3.7%	
45-49	225	93		43232	103	3.5%	
50-54	243	106		43026	98	3.3%	
55-59	182	94		43213	98	3.3%	
60-64	146	97		43227	90	3.0%	
65-69	125	120		43215	89	3.0%	
70-74	132	167		43211	84	2.8%	
75-79	190	296		43214	82	2.8%	
80-84	199	391		43223	81	2.7%	
85+	303	669		43119	72	2.4%	

2008-10				2008-10			
Gender	Number	Rate	Rate Chart	Race	Number	Rate	Rate Chart
Male	1994	131		Black	553	89	
Female	1190	67		White	2120	88	



SECTION 7:
Injury Mortality

Section 7: Injury Mortality

In 2007-09 there was an average of 689 injury related fatalities per year for Franklin County residents. This compares to an average of 630 for the years 2004-06 (Table 7-3). This is an increase of 9%. Taken together, unintentional (accidents) and intentional (homicides and suicides) injuries are the third leading cause of death for Franklin County residents (Table 7-1). Unintentional injuries alone are the leading cause of death if Years of Productive Life Lost before age 65 (YPLL) is the measure. Injuries are also the leading cause of death for residents 1-44 years old (Table 7-2).

Poisoning is the leading cause of unintentional injury fatality. It has increased from an average of 79 poisoning fatalities per year in 2002-04 to an average of 146 per year in 2004-06 (85% increase) to an average of 206 per year in 2007-09 (41% increase) (Table 7-3). Male poisoning deaths increased from an average of 80 per year in 2004-06 to an average of 110 per year in 2007-09, a 38% increase. During the same timeframes females poisoning deaths increased from 36 per year to 68, an 89% increase. The age groups at greatest risk for poisoning fatalities are 40-44 and 50-54 at 39 per 100,000 (Table 7-6).

Table 7-1: Top 20 Franklin County Leading Causes of Death, 2007-09.

Rank	Cause of Death	Number	Rate	YPLL Rank	YPLL
1	Malignant Neoplasm	5,716	194.5	2	22,289
2	Diseases of the Heart	5,573	193.4	4	16,168
3	Chronic lower respiratory disease	1,449	51.8	12	2,117
4	Accidents	1,298	40.0	1	24,775
5	Cerebrovascular Disease	1,285	45.3	9	3,153
6	Diabetes mellitus	745	25.2	8	3,391
7	Alzheimers Disease	697	25.4	19	51
8	Influenza and Pneumonia	518	18.3	13	1,747
9	Nephritis, nephritic syndrome and nephrosis	486	17.1	15	1,151
10	Suicide	403	11.7	6	9,197
11	Septicemia	332	11.3	14	1,646
12	Chronic liver disease and cirrhosis	312	9.8	10	2,673
13	Homicide	290	8.1	5	9,496
14	Essential primary hypertension and hypertensive renal disease	274	9.7	16	586
15	Certain conditions originating in the perinatal period	257	7.2	3	16,640
16	Parkinsons Disease	237	8.8	20	18
17	Pneumonitis due to solids and liquids	179	6.3	17	470
18	In Situ Benign Unknown Behavior Neoplasm	124	4.4	18	414
19	HIV disease	116	3.5	11	2,360
20	Congenital malformations, deformations and chromosomal abnormalities	110	3.2	7	5,453

Table 7-2: Franklin County Leading Causes of Death by Age-Group, 2007-09.

Rank	Age Group							
	<1	01-04	05-14	15-24	25-44	45-64	65-74	75+
1	Short Gestation (115)	Accidents (Unintentional Injuries) (17)	Accidents (Unintentional Injuries) (14)	Accidents (Unintentional Injuries) (110)	Accidents (Unintentional Injuries) (387)	Malignant Neoplasm (1,825)	Malignant Neoplasm (1,392)	Diseases of the Heart (3,266)
2	Congenital Anomalies (65)	Congenital Anomalies (8)	Malignant Neoplasm (12)	Homicide (89)	Malignant Neoplasm (194)	Diseases of the Heart (1,226)	Diseases of the Heart (905)	Malignant Neoplasm (2,279)
3	SIDS (47)	Homicide & Malignant Neoplasm Tied (3)	Homicide & Cerebrovascular Disease Tied (5)	Suicide (62)	Diseases of the Heart (164)	Accidents (Unintentional Injuries) (395)	Chronic lower respiratory disease (347)	Chronic lower respiratory disease (857)
4	Maternal Pregnancy Complications (34)			Malignant Neoplasm (9)	Suicide (152)	Diabetes mellitus (245)	Cerebrovascular Disease (196)	Cerebrovascular Disease (838)
5	Accidents (Unintentional Injuries) (23)	3 Tied (1)	Diseases of the Heart (4)	2 Tied (6)	Homicide (126)	Chronic lower respiratory disease (230)	Diabetes mellitus (164)	Alzheimers Disease (644)

Section 7: Injury Mortality

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

Mechanism of Injury Mortality	2004-06		2007-09		Adjusted-Rate Trend BarChart	Rate % Change	Mechanism of Injury Mortality	2008		2009		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
All	1,891	59	2068	62		5.1%	All	738	67	663	60		-10.9%
Poisoning	440	13	620	18		36.4%	Poisoning	217	19	183	16		-18.1%
Firearm	417	12	444	13		4.3%	Firearm	158	13	137	12		-11.7%
Motor Vehicle Traffic	300	9	278	8		-9.5%	Fall	83	9	94	10		11.7%
Fall	168	6	231	8		31.1%	Motor Vehicle Traffic	98	9	89	8		-9.0%
Suffocation	189	6	181	5		-7.4%	Suffocation	66	6	53	5		-16.7%
Unspecified	157	6	107	4		-38.3%	Unspecified	40	4	32	3		-24.9%
Drowning/Submersion	33	1	36	1		12.4%	Cut/Pierce	8	**	17	**	N/A	N/A
Cut/Pierce	33	1	33	1		-6.2%	Drowning/Submersion	15	**	12	**	N/A	N/A
Adverse Effects (Drugs/Medical)	31	1	31	1		-6.3%	Other Specified, Not Elsewhere Classifiable	10	**	10	**	N/A	N/A
Other Specified, Not Elsewhere Classifiable	32	1	30	1		-15.7%	Adverse Effects (Drugs/Medical)	13	**	10	**	N/A	N/A
Fire/Hot Object	48	1	28	1		-41.4%	Other Specified and Classifiable	5	**	10	**	N/A	N/A
Other Specified and Classifiable	14	**	19	**	N/A	N/A	Fire/Hot Object	15	**	7	**	N/A	N/A
Pedestrian, Other (Non-MVT related)	6	**	10	**	N/A	N/A	Pedestrian, Other (Non-MVT related)	2	**	5	**	N/A	N/A
Land Transport, Other	6	**	7	**	N/A	N/A	Land Transport, Other	3	**	3	**	N/A	N/A
Natural/Environmental	6	**	4	**	N/A	N/A	Natural/Environmental	1	**	1	**	N/A	N/A
Transport, Other	3	**	3	**	N/A	N/A	Machinery	1	**	0	**	N/A	N/A
Machinery	3	**	2	**	N/A	N/A	Transport, Other	1	**	0	**	N/A	N/A
Pedal Cyclist, Other (Non-MVT related)	1	**	2	**	N/A	N/A	Pedal Cyclist, Other (Non-MVT related)	2	**	0	**	N/A	N/A
Struck by/Against	4	**	2	**	N/A	N/A							

Injury Mortality By Intentionality	2004-06		2007-09		Adjusted-Rate Trend BarChart	Rate % Change	Injury Mortality By Intentionality	2008		2009		Adjusted-Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Unintentional	1,131	37	1,298	40		9.0%	Unintentional	470	44	404	37		-15.0%
Suicide	383	12	403	12		1.3%	Suicide	133	11	124	11		-4.2%
Homicide	324	9	290	8		-11.7%	Homicide	110	9	98	8		-13.2%
Undetermined	20	1	46	1		129.6%	Undetermined	12	**	27	2	N/A	N/A
Other	33	1	31	1	N/A	-11.4%	Other	13	**	10	**	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							Leading Unintentional Injury Mortality								
2004-06		2007-09		Adjusted-Rate Trend	Rate	BarChart	%Change	2008		2009		Adjusted-Rate Trend	Rate	BarChart	%Change
Number	Rate	Number	Rate					Number	Rate	Number	Rate				
Poisoning	348	10	532	15		48.3%	Poisoning	191	17	146	12		-26.9%		
Motor Vehical Traffic (MVT)	300	9	278	8		-9.5%	Fall	80	8	93	10		14.3%		
Fall	152	6	226	8		39.7%	Motor Vehical Traffic (MVT)	98	9	89	8		-9.0%		
Suffocation	72	3	83	3		4.7%	Suffocation	28	3	25	2		-5.1%		
Unspecified	135	5	76	3		-48.0%	Unspecified	31	3	19	**		N/A		
Drowning	29	1	26	1		-8.6%	Drowning	11	**	8	**	N/A	N/A		
Fire/Hot Object	42	1	23	1		-46.2%	Other Specified and Classifiable	5	**	8	**	N/A	N/A		
Other Specified and Classifiable	8	**	15	**	N/A	N/A	Fire/Hot Object	11	**	6	**	N/A	N/A		
Pedestrian, Other (Non-MVT related)	6	**	10	**	N/A	N/A	Pedestrian, Other (Non-MVT related)	2	**	5	**	N/A	N/A		
Other Specified, Not Elsewhere Classifiable	12	**	7	**	N/A	N/A	Other Specified, Not Elsewhere Classifiable	3	**	2	**	N/A	N/A		

Leading Intentional Injury Mortality							Leading Intentional Injury Mortality								
2004-06		2007-09		Adjusted-Rate Trend	Rate	BarChart	%Change	2008		2009		Adjusted-Rate Trend	Rate	BarChart	%Change
Number	Rate	Number	Rate					Number	Rate	Number	Rate				
Firearm	232	6	212	6		-9.0%	Firearm	84	7	68	6		-19.6%		
Cut/Pierce	28	1	23	1		-25.5%	Unspecified	7	**	10	**	N/A	N/A		
Unspecified	19	**	22	1	N/A	N/A	Cut/Pierce	7	**	10	**	N/A	N/A		
Other Specified, Not Elsewhere Classifiable	17	**	16	**	N/A	N/A	Other Specified, Not Elsewhere Classifiable	5	**	4	**	N/A	N/A		
Suffocation	10	**	10	**	N/A	N/A	Suffocation	6	**	2	**	N/A	N/A		
Other Specified and Classifiable	2	**	3	**	N/A	N/A	Other Specified and Classifiable	0	**	2	**	N/A	N/A		
Fire/Hot Object	4	**	2	**	N/A	N/A	Poisoning	0	**	1	**	N/A	N/A		
Poisoning	9	**	1	**	N/A	N/A	Fire/Hot Object	1	**	1	**	N/A	N/A		
Struck by/Against	1	**	1	**	N/A	N/A									
Fall	1	**	0	**	N/A	N/A									

Leading Self-Inflicted Injury Mortality							Leading Self-Inflicted Injury Mortality								
2004-06		2007-09		Adjusted-Rate Trend	Rate	BarChart	%Change	2008		2009		Adjusted-Rate Trend	Rate	BarChart	%Change
Number	Rate	Number	Rate					Number	Rate	Number	Rate				
Firearm	175	5	224	7		20.9%	Firearm	52	5	85	8		57.8%		
Suffocation	106	3	88	2		-18.2%	Suffocation	49	4	30	3		-38.4%		
Poisoning	74	2	63	2		-19.3%	Poisoning	29	3	24	2		-19.8%		
Cut/Pierce	5	**	8	**	N/A	N/A	Cut/Pierce	0	**	3	**	N/A	N/A		
Drowning/Submersion	2	**	7	**	N/A	N/A	Drowning/Submersion	1	**	2	**	N/A	N/A		
Other Specified, Not Elsewhere Classifiable	1	**	4	**	N/A	N/A	Other Specified, Not Elsewhere Classifiable	0	**	1	**	N/A	N/A		
Unspecified	0	**	3	**	N/A	N/A	Falls	2	**	1	**	N/A	N/A		
Fire/Hot Object	15	**	3	**	N/A	N/A	Fire/Hot Object	5	**	0	**	N/A	N/A		
Falls	2	**	1	**	N/A	N/A									
Other Specified and Classifiable	3	**	1	**	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	2004-06		2007-09		Age-Specific Rate Trend Chart	Rate % Change	Characteristic	2008		2009		Age-Specific Rate Trend BarChart	Rate % Change
	Age-Group	Number	Rate	Number				Rate	Age-Group	Number	Rate		
00-04	43	17	51	20		14.0%	00-04	24	28	14	16		-42.1%
05-09	16	7	10	4		-40.3%	05-09	6	8	2	3		-67.6%
10-14	17	8	10	5		-38.5%	10-14	5	7	5	7		0.6%
15-19	116	53	89	40		-25.0%	15-19	26	35	29	38		11.2%
20-24	150	59	177	74		24.2%	20-24	62	78	61	76		-2.5%
25-29	175	50	178	50		-0.4%	25-29	70	58	46	40		-31.6%
30-34	148	57	158	54		-5.2%	30-34	46	48	59	56		17.2%
35-39	143	60	142	58		-2.5%	35-39	56	69	41	51		-26.0%
40-44	170	69	200	87		25.8%	40-44	70	92	63	83		-9.4%
45-49	196	81	220	91		11.7%	45-49	91	113	62	77		-31.6%
50-54	137	66	191	86		30.9%	50-54	64	87	56	74		-14.5%
55-59	91	52	151	81		54.1%	55-59	52	83	47	74		-11.1%
60-64	68	58	69	50		-14.9%	60-64	20	43	26	53		21.6%
65-69	51	56	62	62		10.5%	65-69	17	51	25	73		42.2%
70-74	36	48	46	59		24.2%	70-74	18	69	15	56		-19.4%
75-79	74	111	81	124		11.8%	75-79	32	146	29	135		-7.9%
80-84	74	154	86	169		9.5%	80-84	31	182	32	186		2.0%
85+	186	480	147	337		-29.8%	85+	48	330	51	336		1.6%

Gender	2004-06		2007-09		Gender Specific Rate Trend Chart	Rate % Change	Gender	2008		2009		Gender Specific Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Male	1294	86	1396	90		4.1%	Male	254	44	217	37		-15.2%
Female	597	35	672	38		9.2%	Female	484	92	446	87		-6.2%

Race	2004-06		2007-09		Race Specific Rate Trend Chart	Rate % Change	Race	2008		2009		Race Specific Rate Trend BarChart	Rate %Change
	Number	Rate	Number	Rate				Number	Rate	Number	Rate		
Black	476	79	498	78		-0.9%	Black	186	87	165	79		-9.4%
White	1313	55	1482	60		9.6%	White	519	63	479	58		-7.3%

Top Ten Zip Code*	2004-06		2007-09		Zip Specific Percentage Trend Chart	Number % Change	Top Ten Zip Code*	2008		2009		Zip Specific Percentage Trend Chart	Number % Change
	Number	Percent	Number	Percent				Number	Percent	Number	Percent		
43207	103	5.4%	156	7.7%		51.5%	43207	54	7.7%	61	9.2%		13.0%
43228	94	5.0%	109	5.4%		16.0%	43228	32	4.6%	39	5.9%		21.9%
43204	87	4.6%	103	5.1%		18.4%	43224	40	5.7%	30	4.5%		-25.0%
43224	88	4.7%	91	4.5%		3.4%	43206	15	2.1%	28	4.2%		86.7%
43223	85	4.5%	85	4.2%		0.0%	43204	39	5.6%	27	4.1%		-30.8%
43232	66	3.5%	73	3.6%		10.6%	43211	30	4.3%	26	3.9%		-13.3%
43211	82	4.3%	72	3.5%		-12.2%	43227	11	1.6%	26	3.9%		>100%
43123	70	3.7%	65	3.2%		-7.1%	43081	20	2.8%	23	3.5%		15.0%
43206	48	2.5%	65	3.2%		35.4%	43026	15	2.1%	22	3.3%		46.7%
43213	53	2.8%	62	3.1%		17.0%	43223	31	4.4%	22	3.3%		-29.0%

*Ranked by 2007-09 or 2009 frequencies

Section 7: Injury Mortality

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

Characteristic		2004-06		2007-09		Age-Specific Rate	Rate	Characteristic		2008		2009		Age-Specific Rate	Rate
Age-Group	Number	Rate	Number	Rate	Trend Chart	% Change	Age-Group	Number	Rate	Number	Rate	Trend BarChart	% Change		
00-04	1	0	1	0		-3.7%	00-04	1	1	0	0		-100.0%		
05-09	0	0	0	0		N/A	05-09	0	0	0	0		N/A		
10-14	0	0	0	0		N/A	10-14	0	0	0	0		N/A		
15-19	5	2	8	4		56.5%	15-19	4	5	2	3		-50.2%		
20-24	23	9	24	10		9.8%	20-24	6	8	8	10		32.1%		
25-29	32	9	48	13		46.8%	25-29	16	13	15	13		-2.4%		
30-34	30	12	62	21		83.5%	30-34	14	14	27	26		76.3%		
35-39	41	17	54	22		29.4%	35-39	16	20	16	20		1.1%		
40-44	58	24	90	39		65.9%	40-44	34	45	25	33		-26.0%		
45-49	66	27	79	33		19.1%	45-49	38	47	15	19		-60.4%		
50-54	46	22	87	39		77.6%	50-54	29	39	19	25		-35.9%		
55-59	23	13	46	25		85.7%	55-59	18	29	12	19		-34.4%		
60-64	13	11	11	8		-29.0%	60-64	5	11	2	4		-62.6%		
65-69	0	0	12	12		N/A	65-69	4	12	3	9		-27.5%		
70-74	3	4	4	5		29.6%	70-74	2	8	1	4		-51.6%		
75-79	4	6	4	6		2.1%	75-79	3	14	0	0		-100.0%		
80-84	1	2	2	4		88.5%	80-84	1	6	1	6		-1.2%		
85+	2	5	0	0		-100.0%	85+	0	0	0	0		N/A		

Gender		2004-06		2007-09		Gender Specific Rate	Rate	Gender		2008		2009		Gender Specific Rate	Rate
Gender	Number	Rate	Number	Rate	Trend Chart	% Change	Gender	Number	Rate	Number	Rate	Trend BarChart	%Change		
Male	240	15	329	19		30.0%	Male	115	21	87	15		-30.2%		
Female	108	6	203	12		85.7%	Female	76	13	59	10		-23.3%		

Race		2004-06		2007-09		Race Specific Rate	Rate	Race		2008		2009		Race Specific Rate	Rate
Race	Number	Rate	Number	Rate	Trend Chart	% Change	Race	Number	Rate	Number	Rate	Trend BarChart	%Change		
Black	75	13	89	15		13.9%	Black	35	17	18	9		-49.0%		
White	269	11	432	17		58.9%	White	153	18	124	14		-20.2%		

Top Ten Zip Code*		2004-06		2007-09		Zip Specific Percentage	Number	Top Ten Zip Code*		2008		2009		Zip Specific Percentage	Number
Zip Code*	Number	Percent	Number	Percent	Trend Chart	% Change	Zip Code*	Number	Percent	Number	Percent	Trend Chart	% Change		
43207	34	9.8%	52	10.0%		52.9%	43207	15	8.3%	20	13.7%		33.3%		
43228	15	4.3%	38	7.3%		>100%	43228	7	3.9%	15	10.3%		>100%		
43204	14	4.0%	32	6.1%		>100%	43206	4	2.2%	10	6.8%		>100%		
43223	27	7.8%	27	5.2%		0.0%	43211	7	3.9%	6	4.1%		-14.3%		
43206	8	2.3%	21	4.0%		>100%	43215	7	3.9%	6	4.1%		-14.3%		
43232	11	3.2%	21	4.0%		90.9%	43123	9	5.0%	5	3.4%		-44.4%		
43123	14	4.0%	20	3.8%		42.9%	43201	3	1.7%	5	3.4%		66.7%		
43213	13	3.7%	19	3.6%		46.2%	43204	15	8.3%	5	3.4%		-66.7%		
43215	11	3.2%	19	3.6%		72.7%	43205	4	2.2%	5	3.4%		25.0%		
43201	15	4.3%	16	3.1%		6.7%	43213	6	3.3%	5	3.4%		-16.7%		

*Ranked by 2007-09 or 2009 frequencies

Section 7: Injury Mortality

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

Characteristic		2004-06		2007-09		Age-Specific Rate	Rate	Characteristic		2008		2009		Age-Specific Rate	Rate
Age-Group	Number	Rate	Number	Rate	Trend Chart	% Change	Age-Group	Number	Rate	Number	Rate	Trend BarChart	% Change		
00-04	4	2	5	2		20.2%	00-04	2	2	2	2		-0.7%		
05-09	7	3	1	0		-86.4%	05-09	0	0	0	0		N/A		
10-14	5	2	4	2		-16.4%	10-14	2	3	2	3		0.7%		
15-19	33	15	28	12		-17.0%	15-19	11	15	9	12		-18.4%		
20-24	28	11	33	14		24.1%	20-24	10	13	10	12		-0.9%		
25-29	43	12	33	9		-24.9%	25-29	13	11	7	6		-44.0%		
30-34	24	9	21	7		-22.3%	30-34	7	7	5	5		-34.7%		
35-39	22	9	21	9		-6.2%	35-39	7	9	6	7		-13.4%		
40-44	22	9	20	9		-2.8%	40-44	8	10	5	7		-37.1%		
45-49	29	12	33	14		13.2%	45-49	17	21	8	10		-52.7%		
50-54	17	8	14	6		-22.7%	50-54	5	7	8	11		56.4%		
55-59	15	9	15	8		-7.1%	55-59	3	5	6	9		96.8%		
60-64	8	7	11	8		15.4%	60-64	0	0	7	14		N/A		
65-69	14	15	4	4		-74.0%	65-69	1	3	2	6		93.4%		
70-74	9	12	11	14		18.8%	70-74	5	19	3	11		-42.0%		
75-79	8	12	8	12		2.1%	75-79	3	14	3	14		1.7%		
80-84	4	8	11	22		>100%	80-84	3	18	5	29		64.7%		
85+	8	21	5	11		-44.5%	85+	1	7	1	7		-4.3%		

Gender		2004-06		2007-09		Gender Specific Rate	Rate	Gender		2008		2009		Gender Specific Rate	Rate
Gender	Number	Rate	Number	Rate	Trend Chart	% Change	Gender	Number	Rate	Number	Rate	Trend BarChart	%Change		
Male	202	13	200	12		-1.5%	Male	68	12	65	12		0.0%		
Female	98	6	78	4		-23.2%	Female	30	5	24	4		-23.7%		

Race		2004-06		2007-09		Race Specific Rate	Rate	Race		2008		2009		Race Specific Rate	Rate
Race	Number	Rate	Number	Rate	Trend Chart	% Change	Race	Number	Rate	Number	Rate	Trend BarChart	%Change		
Black	58	9	71	11		12.3%	Black	22	11	30	13		20.0%		
White	213	9	186	8		-13.2%	White	69	8	54	7		-21.3%		

Top Ten Zip Code*		2004-06		2007-09		Zip Specific Percentage	Number	Top Ten Zip Code*		2008		2009		Zip Specific Percentage	Number
Zip Code*	Number	Percent	Number	Percent	Trend Chart	% Change	Zip Code*	Number	Percent	Number	Percent	Trend Chart	% Change		
43207	12	4.0%	29	10.7%		>100%	43207	10	11.1%	15	16.9%		50.0%		
43123	23	7.7%	15	5.6%		-34.8%	43228	5	5.6%	8	9.0%		60.0%		
43228	13	4.3%	15	5.6%		15.4%	43119	2	2.2%	5	5.6%		>100%		
43204	8	2.7%	13	4.8%		62.5%	43211	1	1.1%	5	5.6%		>100%		
43229	9	3.0%	12	4.4%		33.3%	43219	3	3.3%	5	5.6%		66.7%		
43219	5	1.7%	11	4.1%		>100%	43026	2	2.2%	4	4.5%		100.0%		
43235	3	1.0%	11	4.1%		>100%	43081	1	1.1%	4	4.5%		>100%		
43211	4	1.3%	10	3.7%		>100%	43235	2	2.2%	4	4.5%		100.0%		
43232	16	5.3%	10	3.7%		-37.5%	43204	5	5.6%	3	3.4%		-40.0%		
43119	11	3.7%	9	3.3%		-18.2%	43209	1	1.1%	3	3.4%		>100%		

*Ranked by 2007-09 or 2009 frequencies

Section 7: Injury Mortality

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

Characteristic		2004-06		2007-09		Age-Specific Rate	Rate	Characteristic		2008		2009		Age-Specific Rate	Rate
Age-Group	Number	Rate	Number	Rate	Trend Chart	% Change		Age-Group	Number	Rate	Number	Rate	Trend BarChart	% Change	
00-04	0	0	0	0		N/A		00-04	0	0	0	0		N/A	
05-09	0	0	4	2		N/A		05-09	2	3	2	3		-2.9%	
10-14	3	1	1	0		-65.1%		10-14	0	0	1	1		N/A	
15-19	44	20	24	11		-46.6%		15-19	8	11	7	9		-12.8%	
20-24	48	19	56	23		22.8%		20-24	22	28	19	24		-14.4%	
25-29	46	13	37	10		-21.3%		25-29	17	14	8	7		-51.0%	
30-34	29	11	28	10		-14.3%		30-34	9	9	11	10		11.7%	
35-39	17	7	19	8		9.8%		35-39	12	15	5	6		-57.9%	
40-44	15	6	16	7		14.0%		40-44	6	8	6	8		0.6%	
45-49	11	5	14	6		26.6%		45-49	2	2	5	6		151.1%	
50-54	9	4	7	3		-27.0%		50-54	4	5	1	1		-75.6%	
55-59	2	1	5	3		>100%		55-59	2	3	3	5		47.5%	
60-64	4	3	0	0		-100.0%		60-64	0	0	0	0		N/A	
65-69	1	1	0	0		-100.0%		65-69	0	0	0	0		N/A	
70-74	0	0	0	0		N/A		70-74	0	0	0	0		N/A	
75-79	3	4	1	2		-66.0%		75-79	0	0	0	0		N/A	
80-84	0	0	0	0		N/A		80-84	0	0	0	0		N/A	
85+	0	0	0	0		N/A		85+	0	0	0	0		N/A	

Gender		2004-06		2007-09		Gender Specific Rate	Rate	Gender		2008		2009		Gender Specific Rate	Rate
	Number	Rate	Number	Rate	Trend Chart	% Change		Number	Rate	Number	Rate	Trend BarChart	%Change		
Male	207	12	184	10		-12.0%		Male	74	12	56	9		-25.9%	
Female	25	1	28	2		13.8%		Female	10	2	12	2		29.9%	

Race		2004-06		2007-09		Race Specific Rate	Rate	Race		2008		2009		Race Specific Rate	Rate
	Number	Rate	Number	Rate	Trend Chart	% Change		Number	Rate	Number	Rate	Trend BarChart	%Change		
Black	161	22	153	21		-6.9%		Black	64	27	46	18		-30.6%	
White	52	2	48	2		-8.6%		White	15	2	20	2		35.7%	

Top Ten Zip Code*		2004-06		2007-09		Zip Specific Percentage	Number	Top Ten Zip Code*		2008		2009		Zip Specific Percentage	Number
	Number	Percent	Number	Percent	Trend Chart	% Change		Number	Percent	Number	Percent	Trend Chart	% Change		
43211	20	8.6%	20	9.7%		0.0%		43211	6	7.6%	10	14.7%		66.7%	
43224	10	4.3%	19	9.2%		90.0%		43224	7	8.9%	7	10.3%		0.0%	
43232	14	6.0%	15	7.2%		7.1%		43206	4	5.1%	5	7.4%		25.0%	
43206	11	4.7%	14	6.8%		27.3%		43227	1	1.3%	5	7.4%		400.0%	
43207	12	5.2%	14	6.8%		16.7%		43232	5	6.3%	5	7.4%		0.0%	
43219	13	5.6%	14	6.8%		7.7%		43207	5	6.3%	4	5.9%		-20.0%	
43205	15	6.5%	10	4.8%		-33.3%		43223	5	6.3%	4	5.9%		-20.0%	
43209	7	3.0%	10	4.8%		42.9%		43219	7	8.9%	3	4.4%		-57.1%	
43223	11	4.7%	10	4.8%		-9.1%		43081	1	1.3%	2	2.9%		100.0%	
43227	7	3.0%	9	4.3%		28.6%		43203	1	1.3%	2	2.9%		100.0%	

*Ranked by 2007-09 or 2009 frequencies



SECTION 8:
Regional Leading Mechanisms of
External Injury Hospitalizations

Section 8: Leading Mechanisms

The COTS registry collects injury information from 27 hospitals in 15 counties in the Central Ohio region. For the years 2008-10 this was an average of 10,205 hospital admissions per year. In 2005-07 the average was 8709 per year. This is a 17% increase in injury related hospital admissions of 48 hours or longer. Table 8-1 shows the increases in injury submissions over the period 2002-2010 by the various injury mechanisms. Franklin county residents comprise about one-third (37%) of all hospital admissions of 48 hours or longer. Including Franklin County the top three causes of injury admissions are falls, motor vehicle crashes, and struck by or against an object.

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

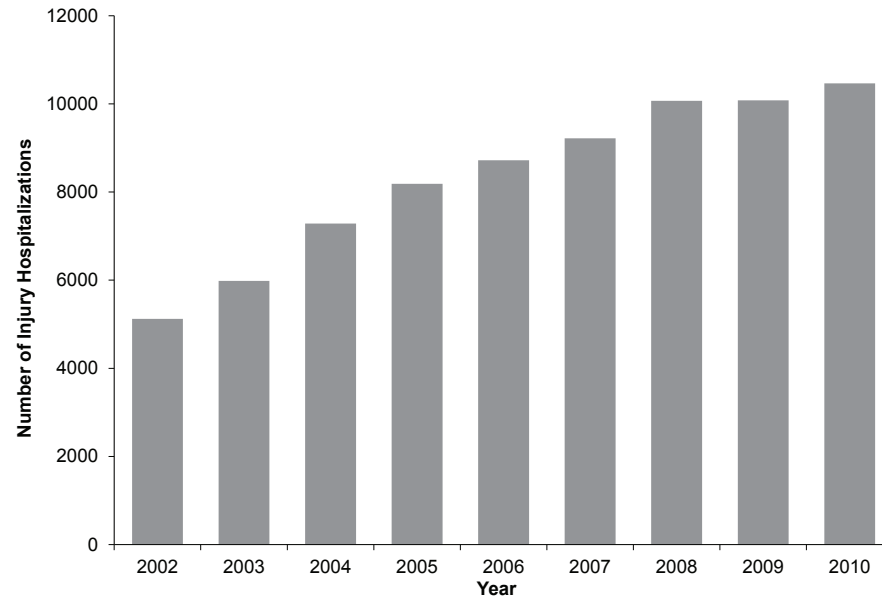


Figure 8-2: COTS Injury Hospitalizations by Intent and Year HeatMap, Percentage and Number

Intent	Year									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Unintentional	88.9% (4554)	89.9% (5381)	87.9% (6404)	88.5% (7244)	88.3% (7701)	88.8% (8189)	88.4% (8900)	88.1% (8876)	87.9% (9200)	
Assault	9.0% (459)	8.6% (514)	10.3% (752)	9.8% (800)	10.0% (868)	9.4% (866)	10.1% (1021)	9.9% (996)	10.1% (1052)	
Self-Inflicted	1.3% (69)	1.1% (63)	1.3% (92)	1.1% (89)	1.1% (96)	1.1% (97)	1.0% (104)	1.3% (133)	1.6% (171)	
Other/Undetermined	0.8% (39)	0.4% (26)	0.5% (36)	0.6% (53)	0.6% (56)	0.7% (68)	0.4% (45)	0.7% (74)	0.4% (42)	

2008-2009
5000,00
10000,00
5000,00
5273,46
8036,71
122,54



M-DAX



APPENDIX

4,80
40,00
15,26
19,34
433,14

2,45C
23,10
17,01
8,90
288,71

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

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.

APPENDIX: Glossary

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 2009, as labeled in the chapters and tables.

Non-fatal Injuries (Injury Hospitalizations):

The data relating to non-fatal injuries, from years 2002 through 2010, 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. 2010 Franklin County, OH, COTS Hospitalization Rates and Mechanism of Injury Death Rates:
 - A. 2000-09 population figures were derived from the National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2009, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2009). Prepared under a collaborative arrangement with the U.S. Census Bureau; released June 20, 2010.
Available from:
http://www.cdc.gov/nchs/nvss/bridged_race.htm as of July 23, 2010.
 - B. 2010 Population figures from US 2010 Decennial Census Summary File 1.
2. 2008-2010 Franklin County, OH, Zip-Code Region Age-Specific and Age-Adjusted COTS Hospitalization Rates: 2010 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

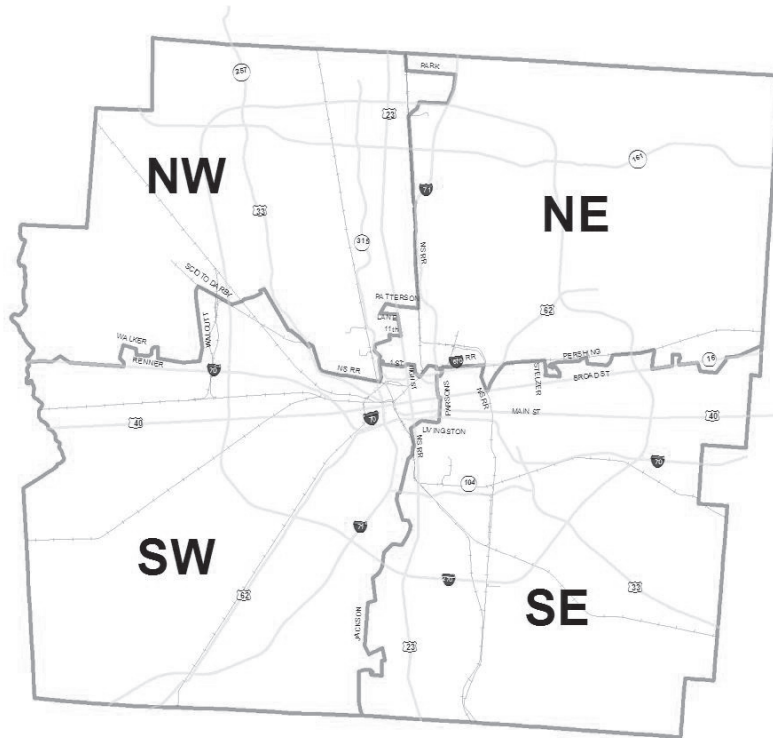
Southwest = 43119, 43123, 43146, 43204, 43215, 43222, 43223, 43228

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

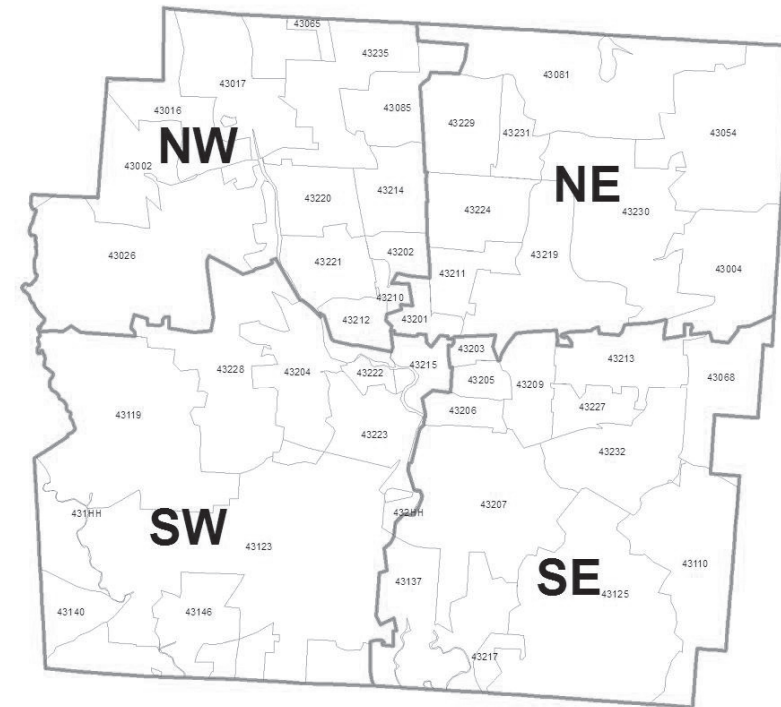
APPENDIX: Analysis

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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