

2004

Hamilton County Injury Surveillance Report 2004



HAMILTON COUNTY
GENERAL HEALTH DISTRICT

April 2006

Errata: Hamilton County Injury Surveillance Report 2004

A correction has been made to the *Hamilton County Injury Surveillance Report 2004*. It applies to page 12 (Figure 2) of this report: Percent of Injury Deaths in Persons 20-64 Years of Age, by Mechanism (n=1,240) – Hamilton County, Ohio 2000-2004. An error was detected in the bulleted text on this page. The figure and corresponding key are correct.

Incorrect text: Motor vehicle-related injuries accounted for 23 percent of injury deaths.

Correct text: Motor vehicle-related injuries accounted for 15 percent of injury deaths.

We apologize for any inconvenience.

**Hamilton County General Health District
June 2007**

Hamilton County Injury Surveillance Report 2004

**Hamilton County General Health District
Department of Community Health Services**

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Message from the Health Commissioner

One of the long-term goals of the Hamilton County General Health District is to reduce injury and injury-related deaths in Hamilton County residents. One way we work toward this goal is by routinely analyzing data collected through the Hamilton County Injury Surveillance System (HCISS), which is the basis for the *Hamilton County Injury Surveillance Report 2004*.

This report shows us that each day during 2004 an average of 211 Hamilton County residents suffered an injury that resulted in death, hospitalization or an emergency department (ED) visit. It is clear that injury is a significant public health issue but, like most diseases, injury can be prevented. By providing data that show the causes, results and demographics of the most common types of injuries among Hamilton County residents, the *Hamilton County Injury Surveillance Report 2004* serves as a vital resource in developing and maintaining programs that reduce the incidence of injury in our communities.

I want to thank area hospitals, physicians and the Hamilton County Coroner's Office for their cooperation in providing information for the HCISS and, in turn, for this report. I hope you find the *Hamilton County Injury Surveillance Report 2004* to be a valuable tool in the effort to make Hamilton County an even safer and more enjoyable place to live and work.

Timothy I. Ingram
Health Commissioner
Hamilton County General Health District

Message from the Medical Advisory Committee Chairman

Injury continues to be one of the most significant health issues we face today, both in terms of premature death and disability, and the burden it creates on our health care system. In Hamilton County, we have the Hamilton County Injury Surveillance System (HCISS), a tremendous tool for tracking statistics regarding the most common types of injuries in the county, whether they are fatal, require hospitalization, or can be treated in the emergency department.

These data from the HCISS are compiled to create the *Hamilton County Injury Surveillance Report 2004*. This report provides invaluable information and identifies trends that assist community leaders, public health professionals, and injury prevention experts in developing programs that reduce the incidence of the most common types of injuries.

The HCISS is the primary component of the *Hamilton County Injury Surveillance Report 2004*, but it is certainly not the only component. Without the cooperation of area hospitals and the Hamilton County Coroner's Office, the HCISS and this report would not be possible. I commend my colleagues and thank them for their continued participation in this process. We will all continue to work toward preventing injury and ensuring the safety of the residents and communities that make up Hamilton County.

Richard Ruddy, M.D.

Chairman of the Hamilton County Injury Surveillance System
Medical Advisory Committee

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Glossary

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). The E Code describes the environmental events, circumstances and conditions as to the cause of injury or poisoning.

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.

Injury Type

The nature of the injury as defined by ICD-9-CM codes. It identifies the medical condition associated with the injury and describes the body part involved.

Injury 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.

Intent

Whether or not the injury was purposeful. Three categories of intent are used in this report:

1 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.

2 Unintentional Injuries

Occurs without purposeful intent.

3 Undetermined

Intent is not known or could not be identified.

Mechanism

Mechanism describes the cause of the injury. Explained as the agent, instrument or activity involved in the incident, such as fall or poisoning. See Appendix B for mechanism definitions.

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.

Surveillance

A system to monitor local hospitals to determine the incidence of injury in the community.

Introduction

This is the ninth annual injury report of the Hamilton County Injury Surveillance System (HCISS). The *Hamilton County Injury Surveillance Report 2004* summarizes injuries in Hamilton County residents aged 20-64 years old, and provides an overview of injury among all Hamilton County residents in 2004 (Figure 14, Tables 3-5) for year-to-year comparisons to other reports. The 2003 report summarized injuries specific to children. The 2005 report will highlight injuries in the elderly population.

Injury Data

Injury data in this report are for Hamilton County residents who died or were treated in hospitals that provide data for the HCISS. Injury is examined separately according to deaths, non-fatal hospitalizations and non-fatal emergency department (ED) visits. Data are also classified by injury mechanism (cause) and intent. Injury mechanism varies by age. With this focus, a more comprehensive picture of the extent of injuries in Hamilton County residents can be seen. The age group covered is 20-64 years. The participating hospitals and methods of data collection can be found in Appendix A.

Because reporting of statistics over multiple years stabilizes numeric fluctuations commonly found in single year reporting, injury data in this report are presented for the years 2000-2004, unless otherwise noted. Rates are reported as crude rates and are not age-adjusted.

Mortality Data

Using mortality data in an injury report shows a snapshot of how injury ranks as a percentage of all deaths. The most current mortality data are for 2002 and were obtained from the Ohio Department of Health mortality files.

This report also examines the top three causes of death for Hamilton County adults aged 20-64 years for the years 1998-2002 (Table 2). More information on mortality can be found in Appendix A. For a full report on Mortality data, access the Hamilton County General Health District Web site, www.hamiltoncountyhealth.org, and click on "Publications, Reports and Links" from the homepage.

Healthy People 2010 Goals

A long term goal of the Hamilton County General Health District is to reduce injury and injury-related deaths among Hamilton County residents. The Centers for Disease Control and Prevention's *Healthy People 2010* provides a measure of how Hamilton County compares to the United States in achieving targeted objectives (Healthy People 2010).

Healthy People 2010 is a comprehensive set of national disease prevention and health promotion objectives designed to measure the nation's progress over time. Critical, injury specific health objectives have been identified. Most objectives are not specific for adults, so the objectives are shown for the general population. Objectives specific to children or elderly are not presented. Additionally, the target objectives relating to state wide objectives are not noted.

Selected objectives are shown in Table 1. The national baseline, the U.S. and Hamilton County rate/percent for the most current year, and the 2010 national target rate/percent, are provided for each objective for the general population.

TABLE 1. Selected Critical 2010 Injury-Specific Health Objectives

Obj #	Objective	U.S. Baseline Percent/Rate* (yr)	U.S. Most Current Percent/Rate** (yr)	Hamilton Co. Percent/Rate^ (yr)	2010 Target Percent/Rate*
2010 Injury Health Objectives					
15-01	Reduce hospitalizations for non-fatal head injuries	60.6 (1998)	NA	32	45
15-02	Reduce hospitalizations for non-fatal spinal cord injuries	4.5 (1998)	NA	1.3	2.4
15-03	Reduce firearm-related deaths	11.3 (1998)	10.3 (2003)	12.5	4.1
15-05	Reduce non-fatal firearm-related injuries	24.0 (1997)	21.7 (2004)	32.8	8.6
15-07	Reduce non-fatal poisonings	348.4 (1997)	291.8 (2004)	140.1	292
15-08	Reduce deaths caused by poisonings	6.8 (1998)	9.8 (2003)	12.8	1.5
15-12	Reduce hospital ED visits caused by injuries	131 per 1,000 persons (1997)	101 per 1,000 persons (2004)	84.9 per 1,000 persons	126 per 1,000 persons
Unintentional Injury Prevention					
15-13	Reduce deaths caused by unintentional injuries	35.0 (1998)	37.22 (2003)	25.0	17.5
15-15	Reduce deaths caused by motor vehicle crashes	15.6 (1998)	15.3 (2003)	5.9	9.2
15-16	Reduce pedestrian deaths on public roads	1.9 (1998)	1.7 (2003)	0.8	1.0
15-17	Reduce non-fatal injuries caused by motor vehicle crashes	1,181 (1998)	1,020 (2004)	1,060	933
15-18	Reduce non-fatal pedestrian injuries on public roads	26 (1998)	NA	50	19
15-19	Increase use of safety belts	69%	NA	77% ¹	92%
15-25	Reduce residential fire deaths	1.2 (1998)	0.97 (2003)	0.5	0.2
15-27	Reduce deaths from falls	4.7 (1998)	6.1 (2003)	7.5	3.0
15-29	Reduce drownings	1.6 (1998)	1.33 (2003)	0.8	0.9
15-30	Reduce hospital ED visits for non-fatal dog bite injuries	151.4 (1997)	116.4 (2004)	113.0	114
Violence and Abuse Prevention					
15-32	Reduce homicides	6.5 (1998)	6.2 (2003)	8.4	3.0
Objective 18 Mental Health Disorders					
18-1	Reduce the suicide rate	11.3 (1998)	10.7 (2003)	12.4	5.0

*Rates are per 100,000 persons unless otherwise stated.

** Rates were obtained from WISQARS (www.cdc.gov/ncipc/wisqars/)

^Hamilton County non-fatal rates based on ED visit data only, unless otherwise stated

¹DUI task force (Source observational study conducted by the Hamilton County Sheriff DUI task force

Hamilton County rate is significantly higher or lower than U.S. baseline.

Leading Causes of Death in Hamilton County, Ohio, Adults

Table 2 illustrates the top three leading causes of all deaths among Hamilton County, Ohio adults age 20-64 years old, for the five year period 1998-2002. During this time there were 8,654 deaths from all causes among 20-64 year olds.

- Injuries accounted for 13 percent of all deaths.
- In the United States for the years 1999-2002:
 - unintentional injury ranked third among all deaths
 - suicide ranked fourth among deaths
 - homicides ranked ninth among deaths

TABLE 2. Top Three Leading Causes of All Deaths in Persons 20-64 Years of Age – Hamilton County, Ohio, 1998-2002

Rank	Cause	Number
1	All Malignant Cancer	2,632
2	Heart Disease	1,905
3	Injury	1,122
Total number of deaths		8,654
Percent of all deaths due to injuries		13%

Source: ODH Mortality files

Adult Injury Deaths, in Hamilton County, Ohio, Adults

Figure 1 represents the total number of injury deaths, non-fatal hospitalizations, and non-fatal ED visits, for Hamilton County residents aged 20-64 years old, for the five year period 2000-2004.

FIGURE 1. Injury Pyramid, for Persons 20-64 Years of Age, Hamilton County, Ohio, 2000-2004 (n=210,391)

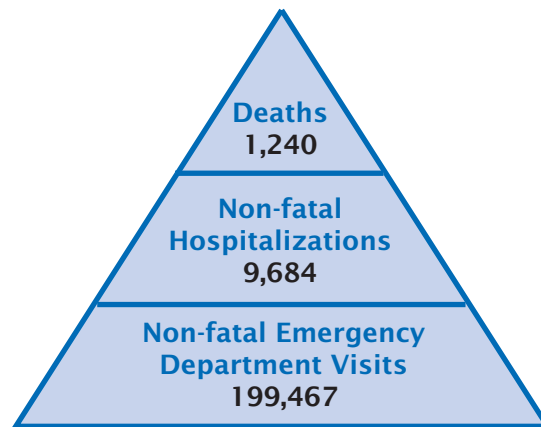
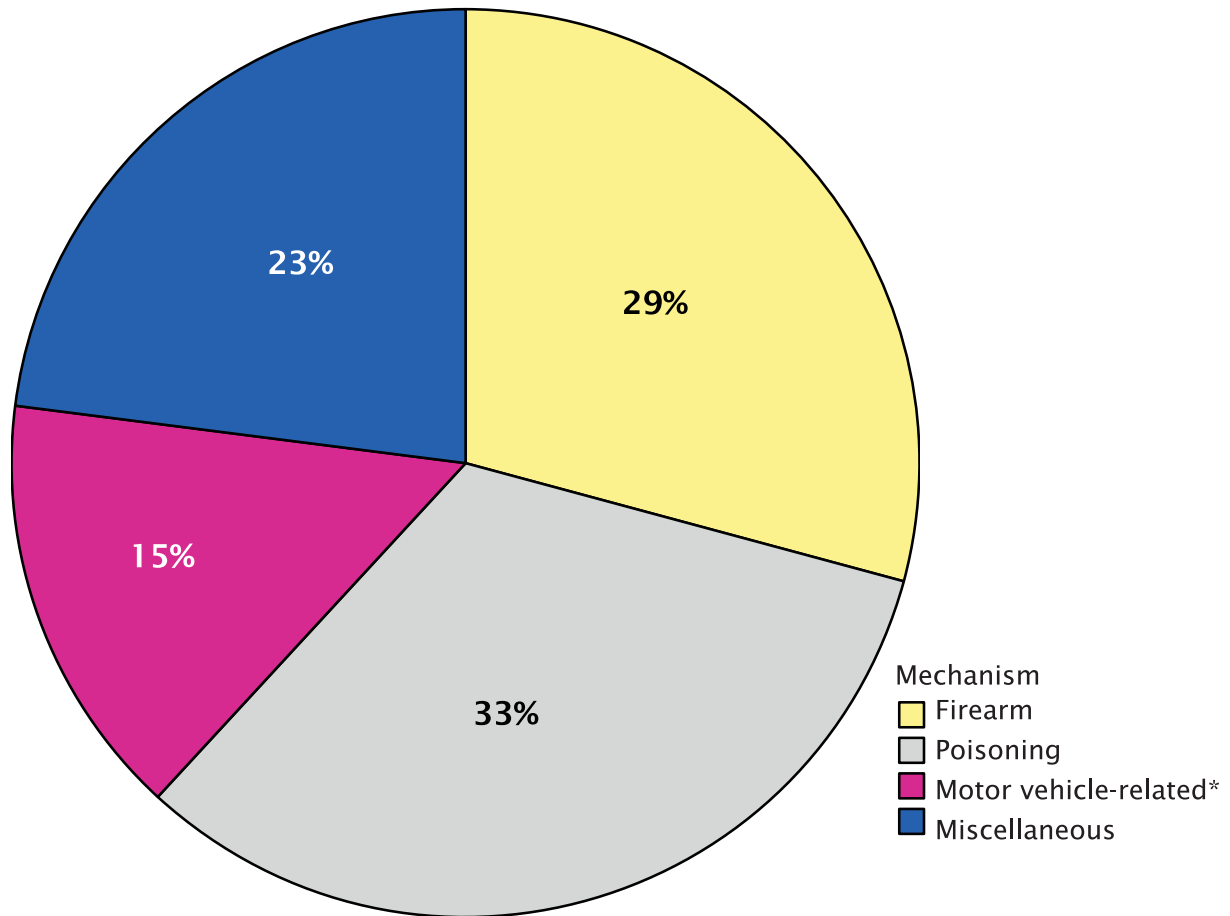


FIGURE 2. Percent of Injury Deaths in Persons 20-64 Years of Age, by Mechanism (n=1,240) – Hamilton County, Ohio 2000-2004

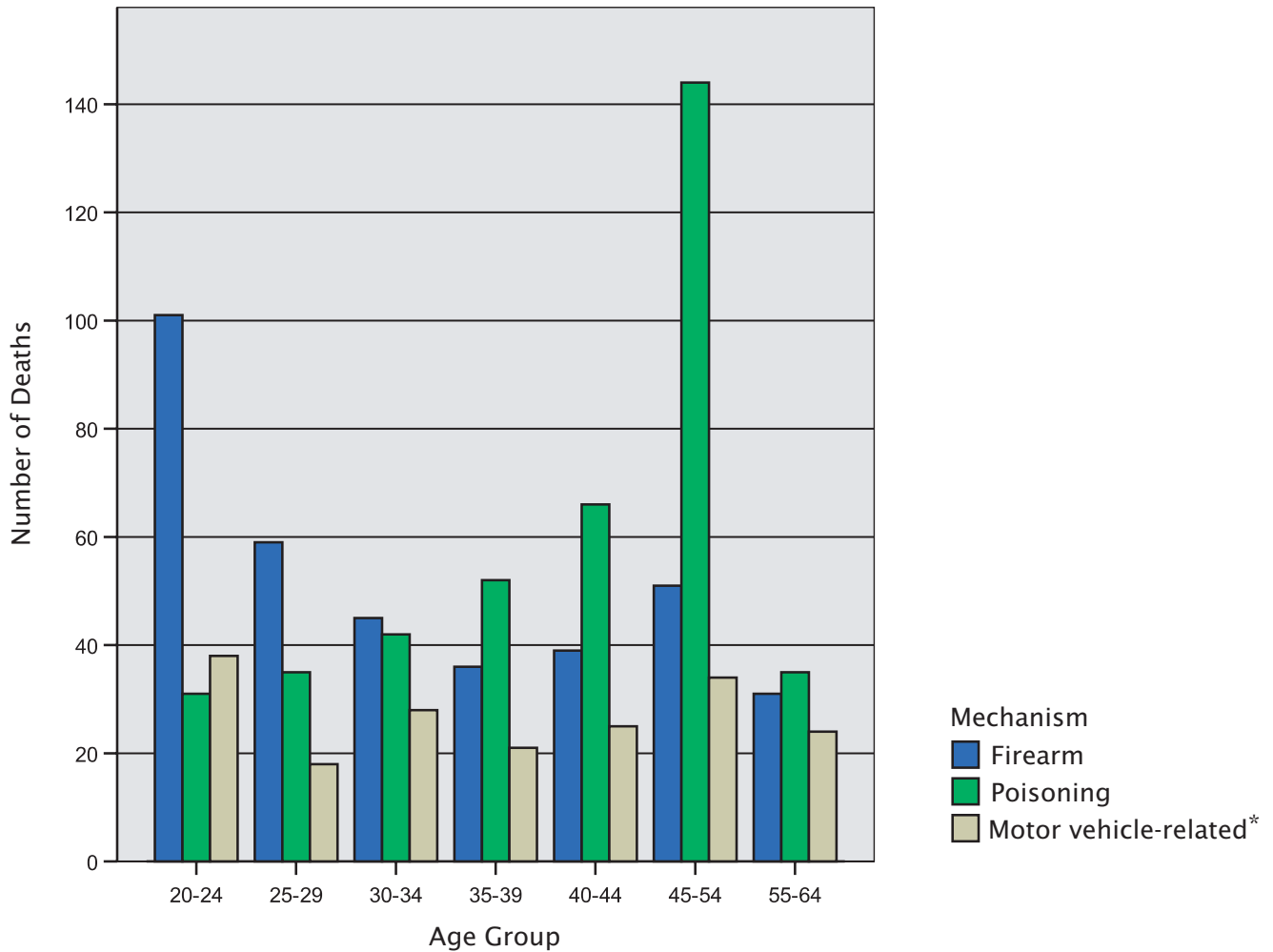


*Motor vehicle-related includes motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic mechanisms of injury

In Hamilton County, Ohio from 2000-2004, 33 percent of injury deaths in persons 20-64 years of age were due to poisoning.

- During the five year period from 2000-2004, 405 adults died from poisoning.
- Firearms accounted for 29 percent (n=362) of injury deaths.
- Motor vehicle-related injuries accounted for 23 percent of injury deaths.
- Top causes of injury deaths in the miscellaneous category were falls (7 percent), suffocation (6 percent), and struck, by against injuries.

FIGURE 3. Number of Injury Deaths in Persons 20-64 Years of Age, by Age, by Mechanism - Hamilton County, Ohio, 2000-2004

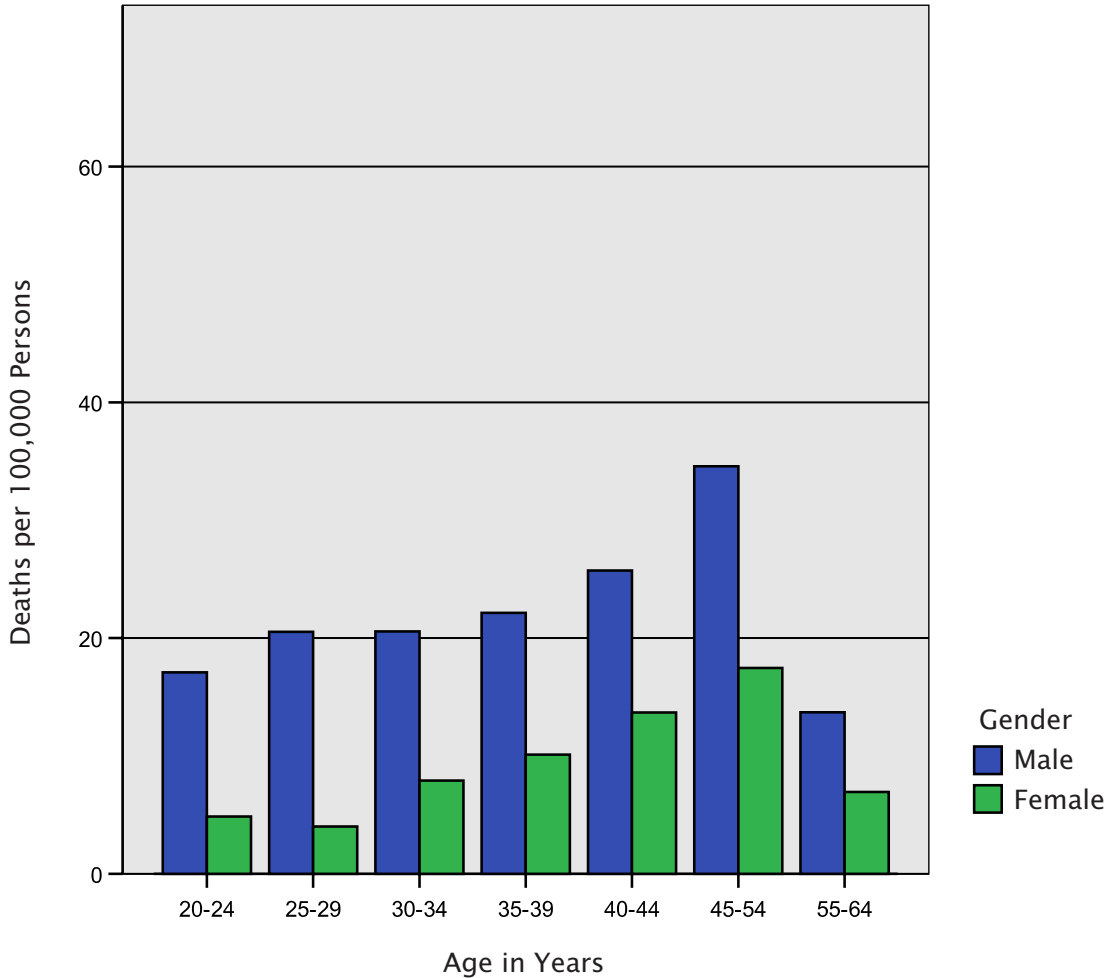


*Motor vehicle-related includes motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic mechanisms of injury

In Hamilton County adult injury deaths for the years 2000-2004, the mechanism of injury differs substantially by age group.

- Most injury deaths were due to poisoning. The highest number of poisoning deaths occurred in persons age 45-54 years old (n=144).
- In the 20-24 year old age group, 101 deaths were due to firearm injuries.
- Traffic fatalities accounted for a total of 188 deaths in adults aged 20-64 years.

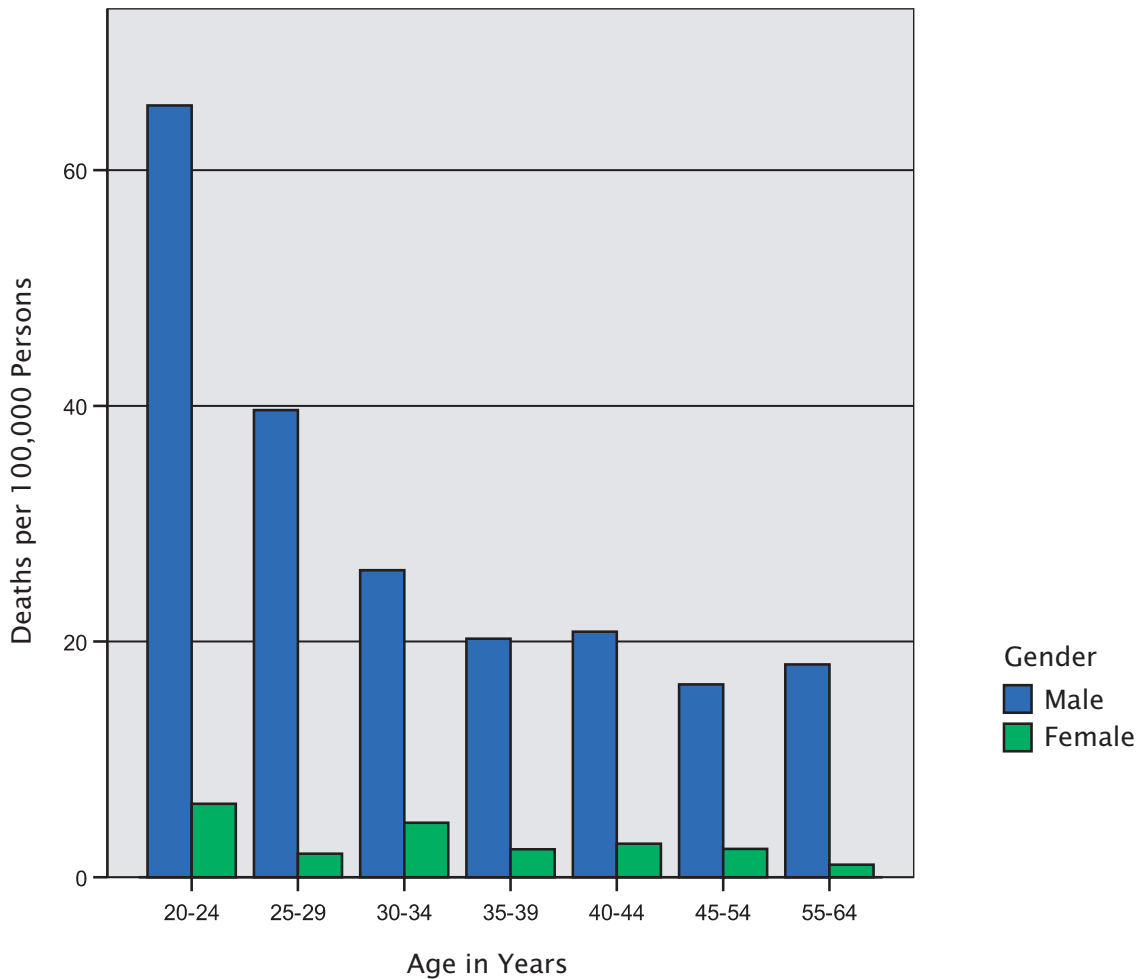
FIGURE 4. Poisoning Death Rates in Persons 20-64 Years of Age, by Age, by Gender - Hamilton County, Ohio, 2000-2004



The rate of death due to poisonings varied across age groups and was significantly higher in males than females in all age groups.

- The highest rate of poisoning was in 45-54 year old males – 35 per 100,000 persons.
- For 45-54 year old males, the 2000-2003 United States rate for poisoning was 22 per 100,000 persons. The Ohio rate 19 per 100,000.
- Eighty-five percent (n=79) of the 45-54 year old male poisoning deaths were unintentional, which includes: drug users/abuse intention unclear/non-suicidal; therapeutic misuse; and recreational drug use/accidental death.
- Of the 93 total poisoning deaths in males age 45-54, 64 were attributed to heroin or cocaine use.

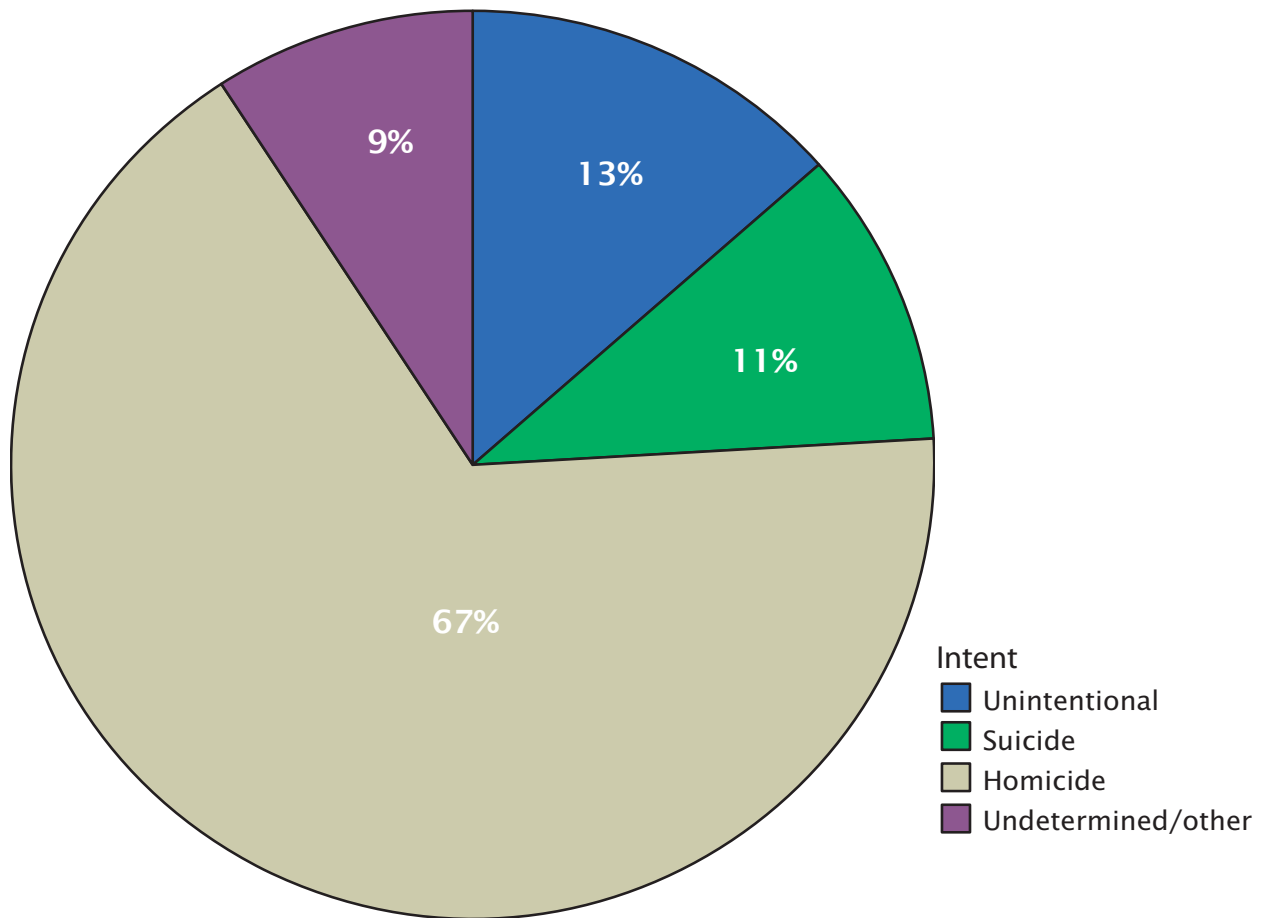
FIGURE 5. Firearm Death Rates in Persons 20-64 Years of Age, by Age, by Gender - Hamilton County, Ohio, 2000-2004



Deaths due to firearms are significantly higher in males than females across the age groups.

- Males aged 20-24 years had the highest rate of death due to firearm injuries - 65 per 100,000.
- For 20-24 years old males, the 2000-2003 United States rate for firearm deaths was 37 per 100,000 persons. The Ohio rate was 28 per 100,000 for 2000-2003.

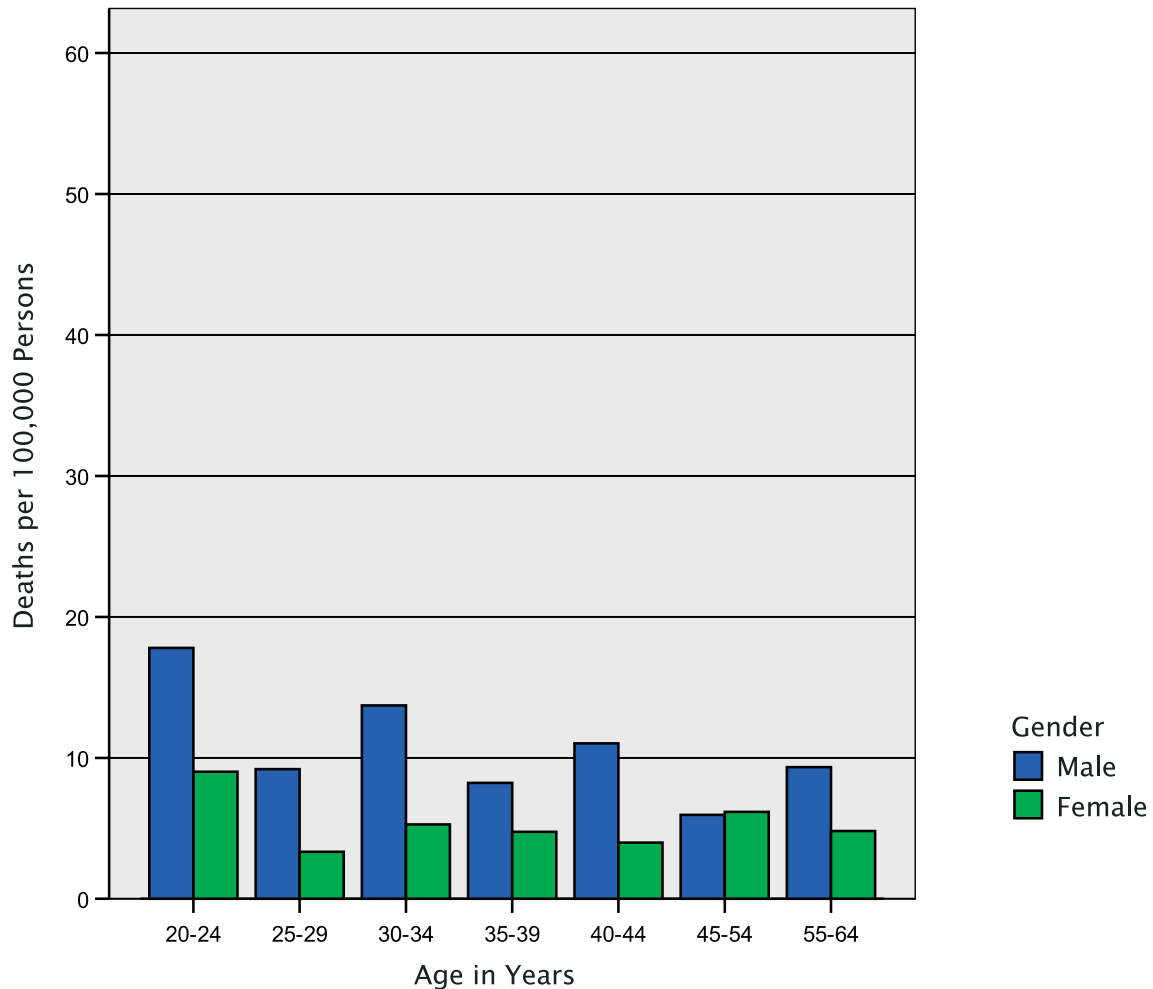
FIGURE 6. Percent of Firearm Deaths in Persons 20-64 Years of Age, by Intent (n=1,682) - Hamilton County, Ohio, 2000-2004



Deaths due to firearms were mostly homicides.

- Sixty-seven percent of deaths were homicides.
- Fifty-six percent of firearm victims were black.

FIGURE 7. Motor Vehicle-related* Injury Death Rates in Persons 20-64 Years of Age, by Age, by Gender - Hamilton County, Ohio, 2000-2004



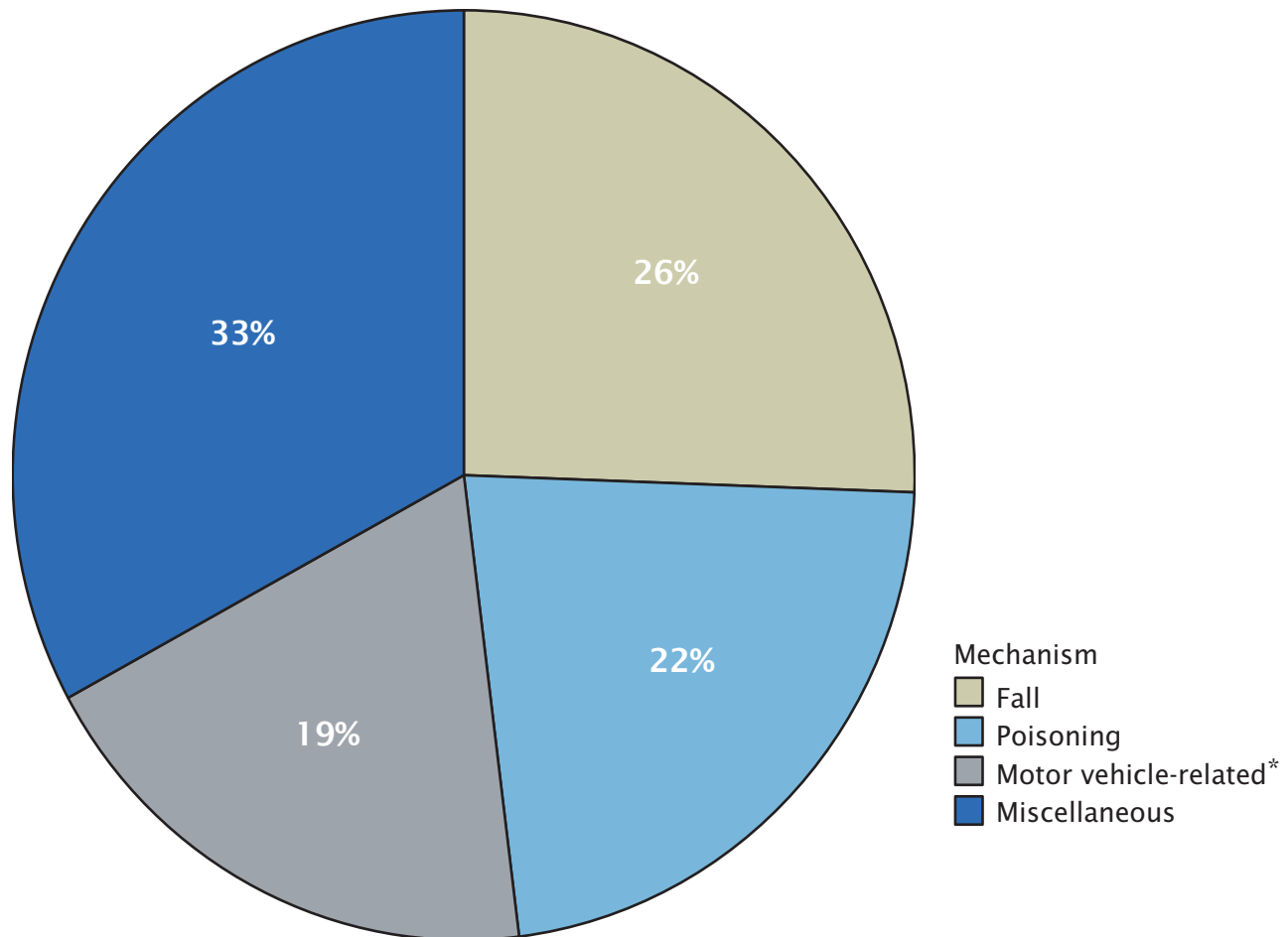
*Motor vehicle-related includes motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic mechanisms of injury

Deaths due to motor vehicle-related injuries include the mechanisms of motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic categories. The economic burden of motor vehicle-related deaths and injuries in the United States is estimated to be more than \$150 billion a year. (NCIPC. <http://www.cdc.gov/ncipc/duip/mvsafety.htm>) For specific information on Ohio crashes, visit the National Highway Transportation Safety Administration Web site at <http://www.nhtsa.dot.gov/stsi/>.

- Males had a higher rate of death due to motor vehicle-related injuries than females, except for the 45-54 year age group, where the rate was six per 100,000 persons for both males and females.
- The highest rate of motor vehicle-related deaths was in 20-24 year old males - 18 per 100,000 persons.
- For the United States from 2000-2003, the rate of motor vehicle-related deaths in males 20-24 years old was 41 per 100,000 persons. The Ohio rate was 29 per 100,000.

Non-fatal Injury Hospitalizations in Hamilton County, Ohio, Adults

FIGURE 8. Percent of Non-fatal Injury Hospitalizations in Persons 20-64 Years of Age, by Mechanism (n=9,684) – Hamilton County, Ohio, 2000-2004

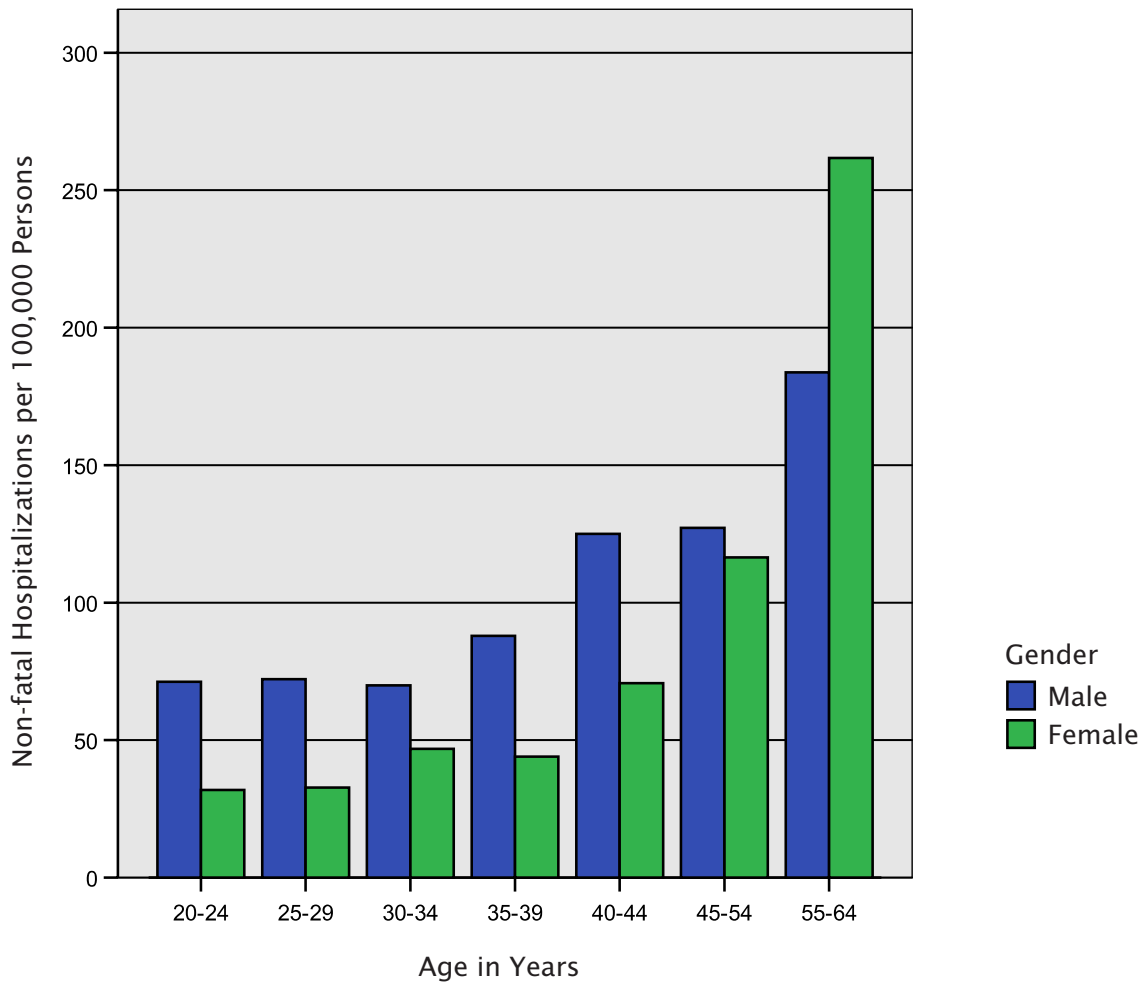


* Motor vehicle-related includes motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic mechanisms of injury

In Hamilton County, Ohio from 2000-2004, the majority of non-fatal injury hospitalizations in adults were attributed to falls (26 percent), poisonings (22 percent), and motor vehicle-related injuries (19 percent).

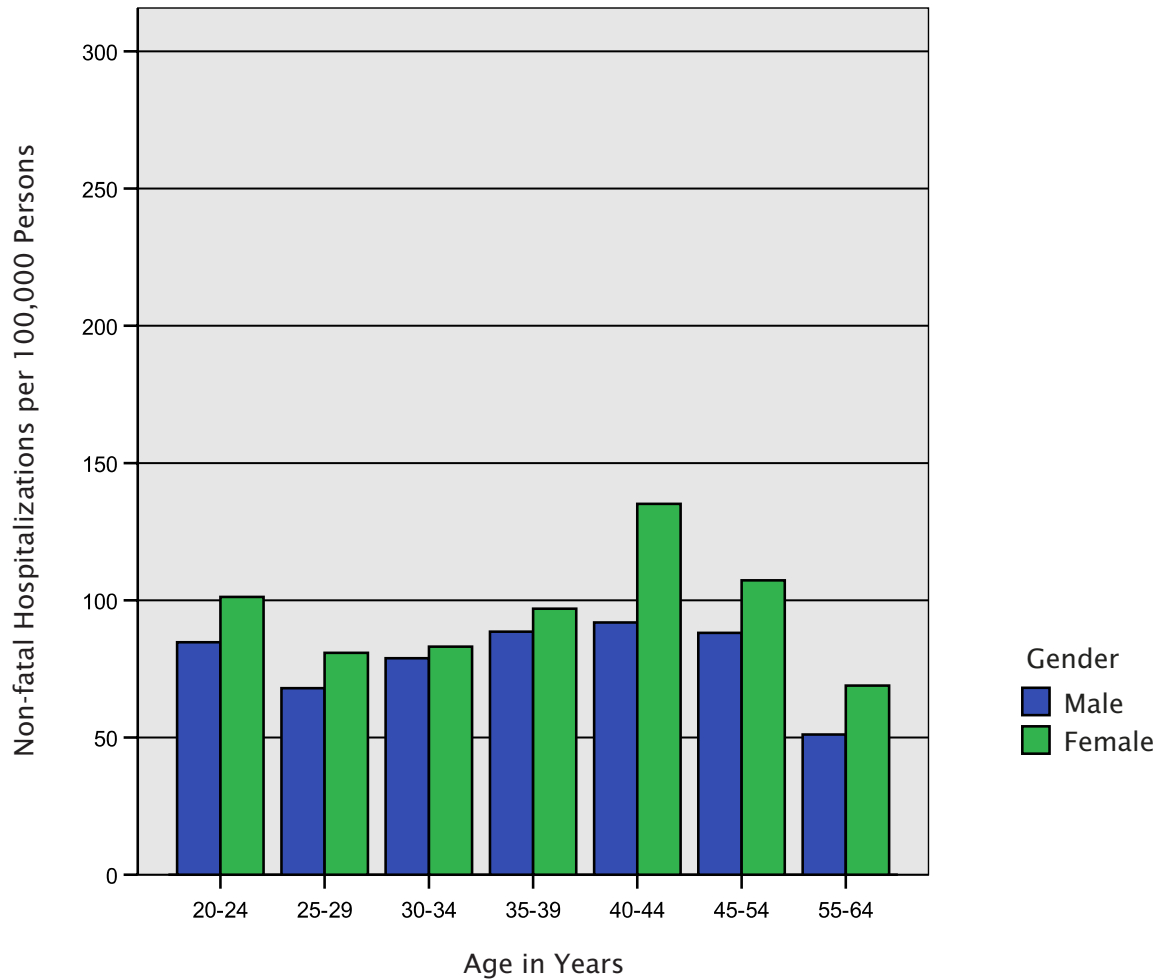
- Most injury hospitalizations, 26 percent (n=2,478), were from falls.
- Poisonings accounted for 22 percent (n=2,174) of hospitalizations.
- Motor vehicle-related injuries accounted for 19 percent (n=1,841) of hospitalizations.
- Top mechanisms of non-fatal injury hospitalizations in the miscellaneous category include: struck by, against (n=648); cut/pierce (n=477); and firearm (n=436).

FIGURE 9. Non-fatal Fall Hospitalizations in Persons 20-64 Years of Age, by Age, by Gender - Hamilton County, Ohio, 2000-2004



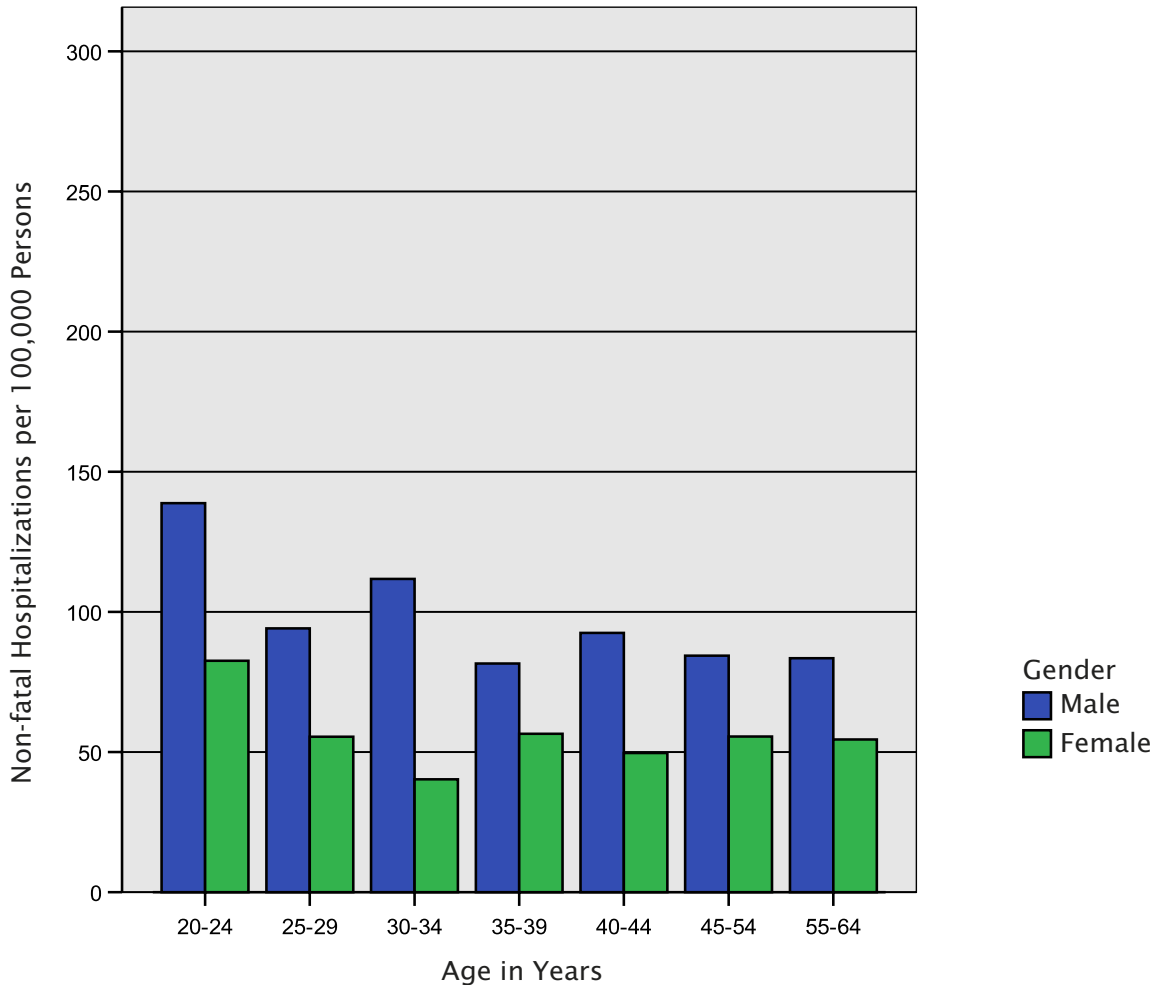
- For Hamilton County adults, the highest rate of non-fatal fall hospitalizations was in females aged 55-64 years (262 per 100,000 persons).
- From 2001-2004, the non-fatal fall hospitalization rate for U.S. females aged 55-64 years was 179 per 100,000 persons (Ohio specific rates not available).

FIGURE 10. Non-fatal Poisoning Hospitalizations in Persons 20-64 Years of Age, by Age, by Gender – Hamilton County, Ohio, 2000-2004



- Hamilton County females had higher rates of poisoning hospitalizations than males for all age groups.
- The highest rate of poisoning was in females aged 40-44 years (135 per 100,000 persons).
- From 2001-2004, the non-fatal poisoning hospitalization rate for 40-44 year old females in the United States was 119 per 100,000 persons (Ohio specific rates not available).

FIGURE 11. Non-fatal Motor Vehicle-related* Hospitalizations in Persons 20-64 Years of Age, by Age, by Gender - Hamilton County, Ohio, 2000-2004

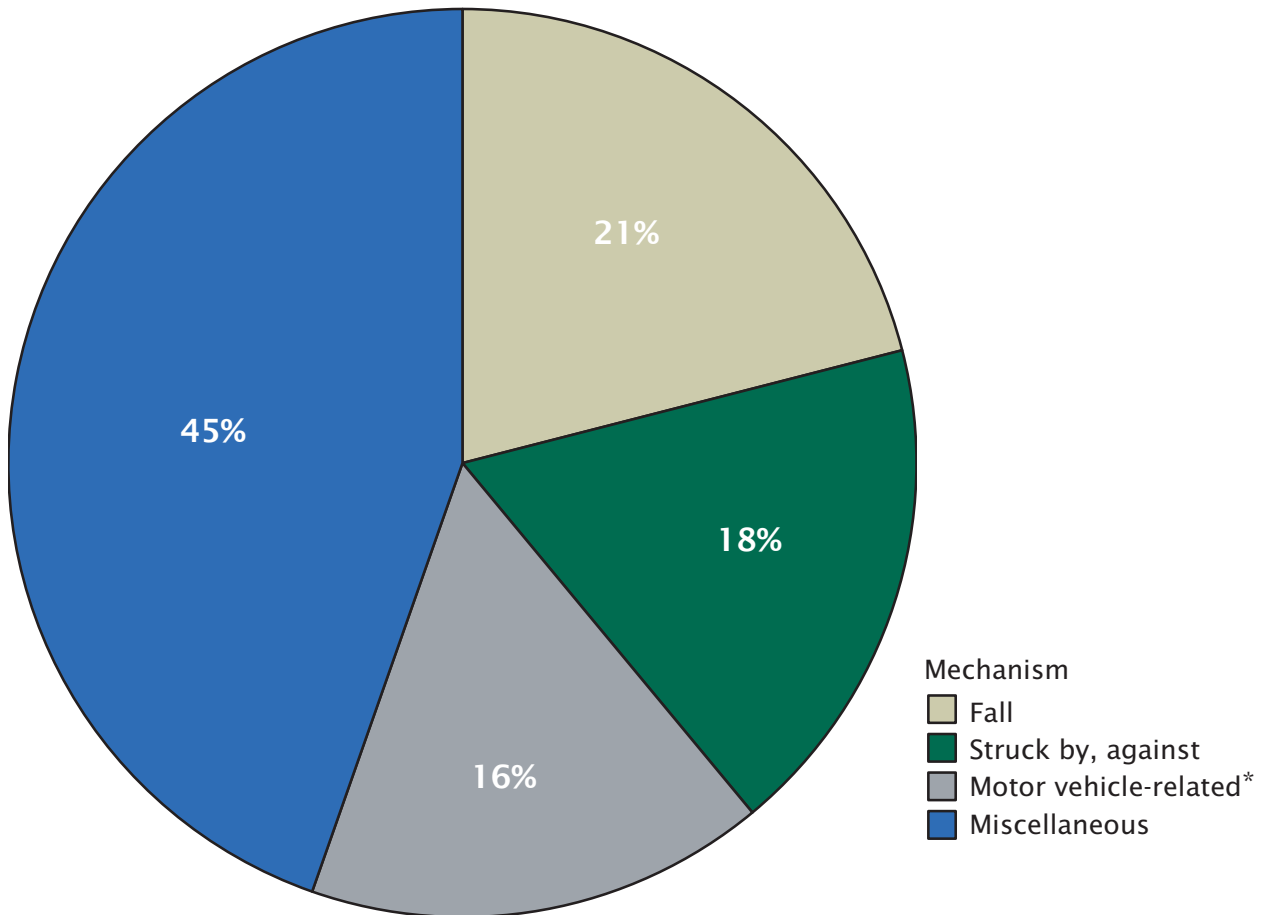


*Motor vehicle-related includes motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic mechanisms of injury

- Hamilton County males had higher rates of motor vehicle-related hospitalizations than females for all age groups.
- The highest rate of motor vehicle-related hospitalizations was in males aged 20-24 years (139 per 100,000 persons).
- From 2001-2004, the non-fatal motor vehicle-related hospitalization rate for 20-24 year old males in the United States was 230 per 100,000 persons (Ohio specific rates not available).

Non-fatal Emergency Department Visits in Hamilton County, Ohio, Adults

FIGURE 12. Percent of Non-fatal ED Visits in Persons 20-64 Years of Age, by Mechanism (n=199,467) - Hamilton County, Ohio, 2000-2004

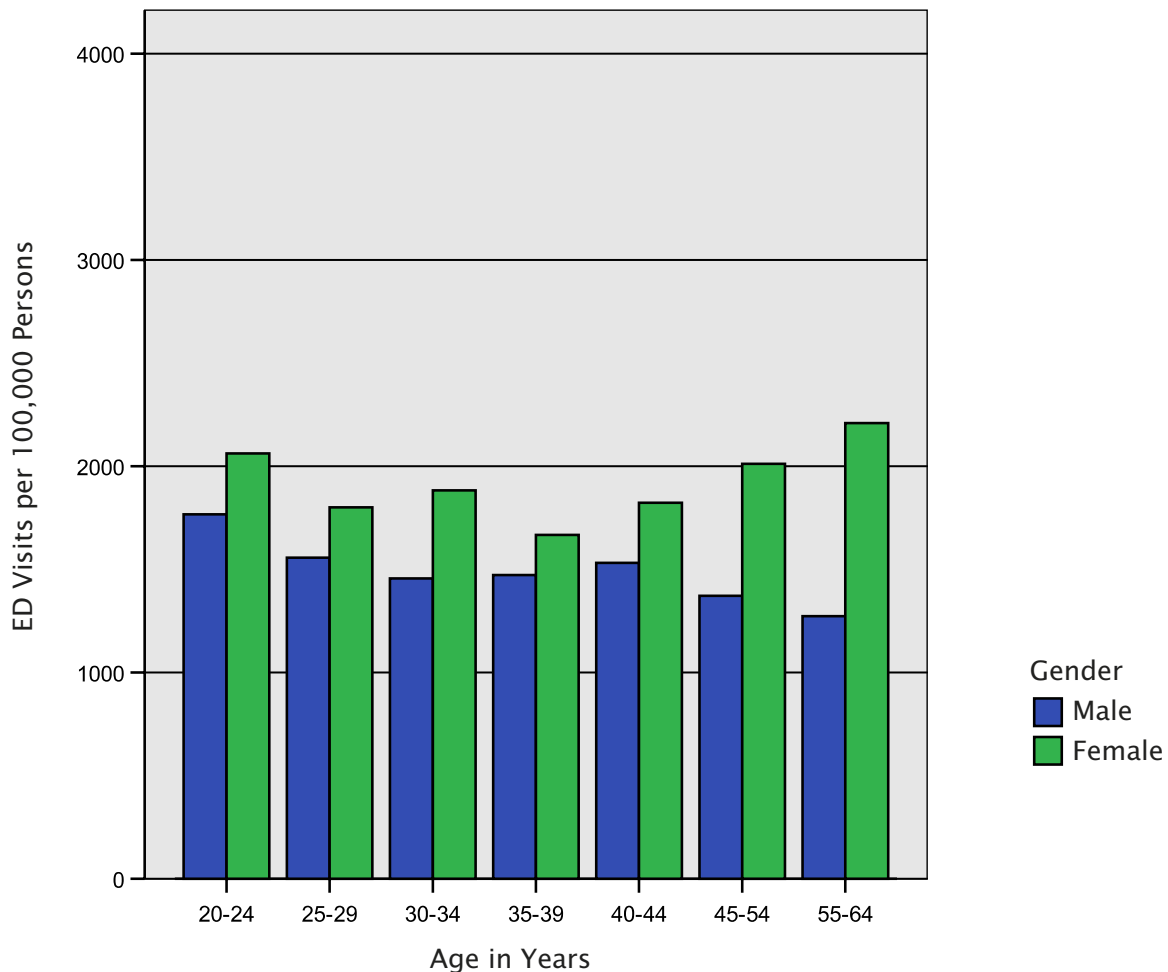


*Motor vehicle-related includes motor vehicle occupant, motor vehicle other, bicycle, pedestrian, and other traffic mechanisms of injury

From 2000-2004, the top injury mechanisms for Hamilton County adults who visited an ED were falls; struck by, against; and motor vehicle-related injuries.

- The most injury ED visits were from falls (21 percent).
- Over 35,000 persons were seen in the ED due to struck by, against injuries.
- Motor vehicle-related injuries accounted for 16 percent (n=32,693) of ED visits.
- Top mechanisms of non-fatal injury ED Visits in the miscellaneous category were over exertion (26,452) and cut/pierce (23,744).

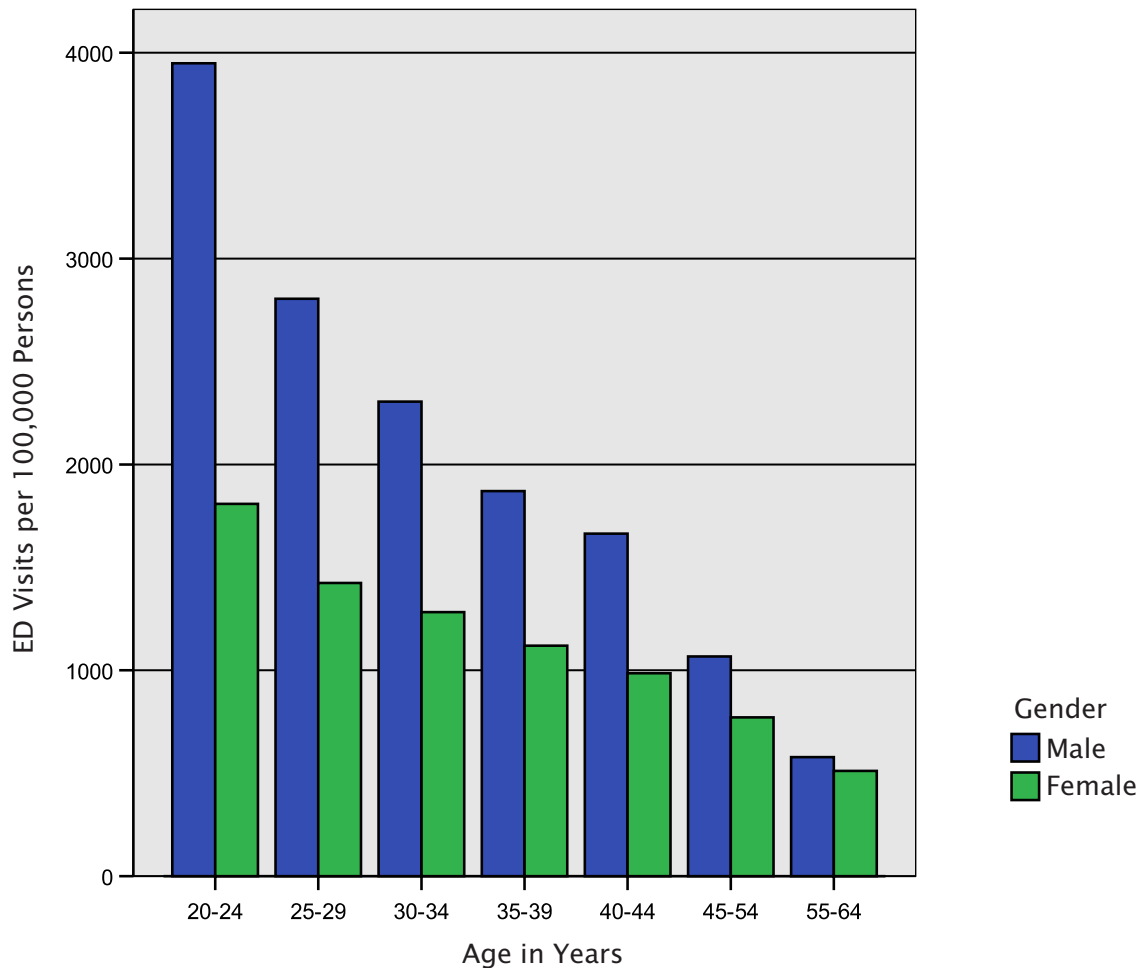
FIGURE 13. Non-fatal Fall ED Visits in Persons 20-64 Years of Age, by Age, by Gender – Hamilton County, Ohio, 2000-2004



For the years 2000-2004, falls were the primary mechanism of injury for ED visits in Hamilton County adults aged 20-64 years.

- The rate of fall injuries varied the most in the 55-64 year age group, where females had a rate of 2,209 per 100,000 versus 1,273 per 100,000 in males.
- For the United States in the years 2001-2004, the fall injury rate in 55-64 year old females was 2,181 per 100,000 persons compared to a rate of 1,343 per 100,000 in males the same age (Ohio specific rates not available).

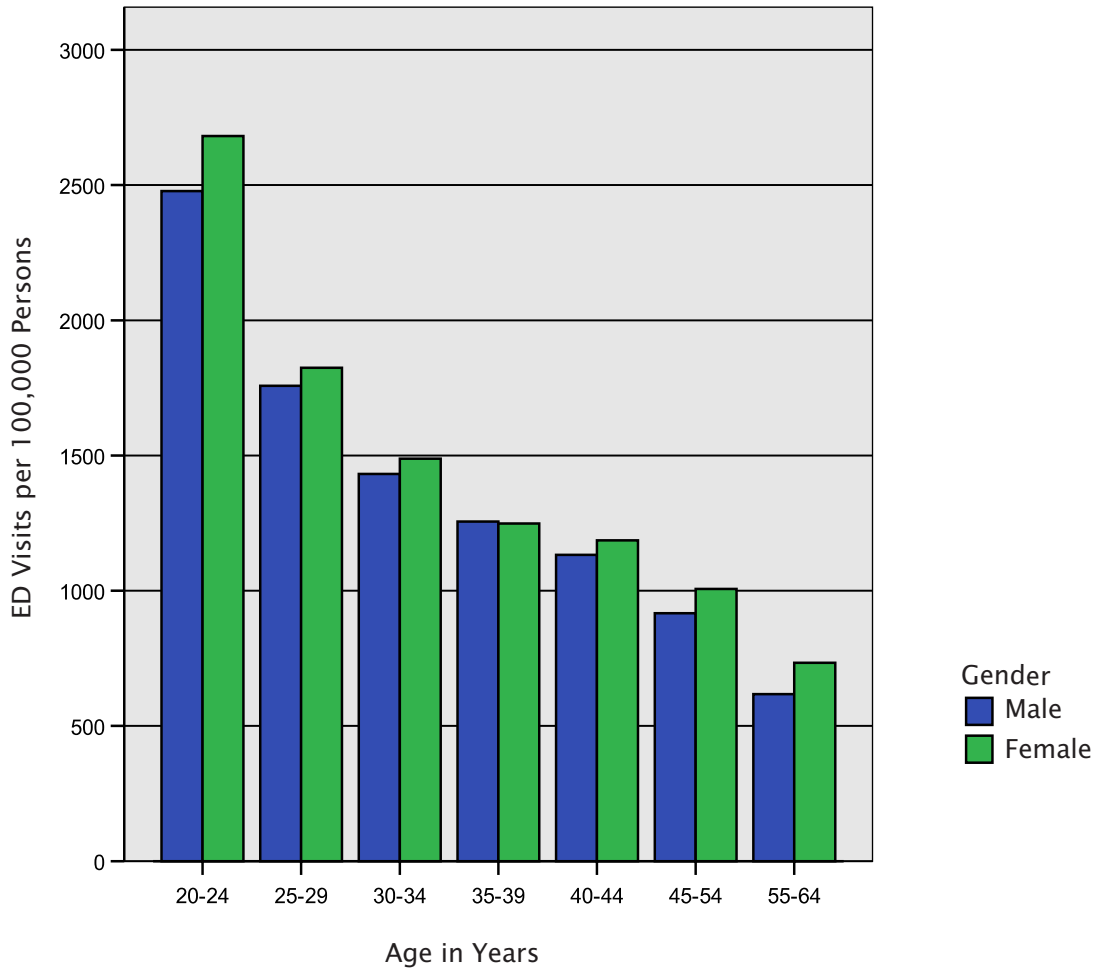
FIGURE 14. Non-fatal Struck by, Against ED Visits in Persons 20-64 Years of Age, by Age, by Gender – Hamilton County, Ohio, 2000-2004



Struck by, against injuries are defined as injuries that occur as a result of being hit by blunt objects or persons. For example, an injury resulting from a falling object, sport activity, fight or brawl, would constitute a struck by, against injury. See Appendix B for coding description.

- Of the 35,849 struck by, against injuries seen in the ED for adult residents of Hamilton County, 76 percent were unintentional.
- Fourteen percent (n=4,942) were classified as sport injuries, and 43 percent were (n=15,415) classified as non-specific/other.
- Rates were highest in 20-24 year old males – 3,948 per 100,000 persons.
- The comparable U.S. rate (years 2001-2004) for males 20-24 years old was 4,065 per 100,000 persons (Ohio specific rates not available).

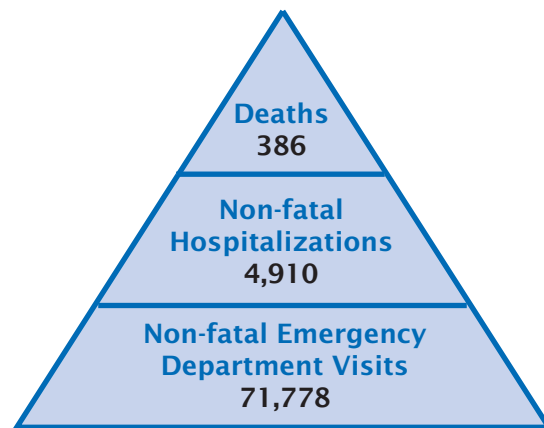
FIGURE 15. Non-fatal Motor Vehicle-related ED Visits in Persons 20-64 Years of Age, by Age, by Gender - Hamilton County, Ohio, 2000-2004



- The rates of non-fatal ED visits due to motor vehicle-related injuries for males and females were similar among all age groups.
- The highest rates for both females and males were in the 20-24 year old age group - 2,681 and 2,478 per 100,000, respectively.
- In the United States for the years 2001-2004, the motor vehicle-related injury rate among 20-24 year olds was 2,664 per 100,000 females compared to 2,737 in males (Ohio specific rates not available).

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FIGURE 16. Injury Pyramid Hamilton County, Ohio, 2004 (n=77,074)



In 2004, an average of 211 Hamilton County residents a day incurred an injury resulting in death, hospitalization or ED visit.

Tables 3-5 show 2004 injury data for all age groups by mechanism and intent for deaths, non-fatal hospitalizations and non-fatal ED visits. These tables are directly comparable to the tables in the *Hamilton County Injury Surveillance Report 2003* (Yund 2003, pg. 24-26).

As in 2003, firearms and poisonings were the top mechanisms of injury deaths for all age groups combined. Falls remain the number one cause of injury deaths in persons over the age of 65 years, accounting for 48 of the 84 (57 percent) injury deaths in this age group.

Falls remained the top cause of injury hospitalizations and ED visits. Sixty-eight percent of fall injuries that resulted in hospitalization were in persons over the age of 65 years. The highest number of ED visits were in 1-4 year olds (n=2,723).

TABLE 3. Injury Deaths, by Mechanism, by Intent, by Age - Hamilton County, Ohio, 2004

Mechanism Group	Age Group															Total
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65-74	75-84	>85	
Cut/pierce	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	4
Drowning	0	2	0	0	3	0	0	0	0	0	1	0	0	0	1	7
Fall	0	0	0	0	0	0	0	1	3	3	6	2	9	17	22	63
Fire	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1	4
Firearm	0	0	0	0	9	26	17	10	5	8	14	7	6	1	3	106
MV - occupant	1	1	0	1	6	7	2	1	2	2	4	3	5	3	0	38
MV - motorcyclist	0	0	0	0	0	3	0	0	1	0	1	0	0	0	0	5
Pedestrian	0	0	0	0	0	0	0	1	1	0	2	2	0	1	0	7
Transport, other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Environment	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Poisoning	0	0	0	1	3	11	5	8	10	11	39	10	6	2	1	107
Struck by, against	0	0	0	0	1	0	0	0	0	1	2	1	0	0	1	6
Suffocation	4	1	0	2	2	3	7	0	1	4	5	2	1	1	0	33
Bite/sting	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Machinery	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Unspecified	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Other specified	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	5	5	0	4	24	51	31	21	23	33	76	29	29	25	30	386

Intent	Age Group															Total
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65-74	75-84	>85	
Unintentional	5	5	0	2	11	20	7	10	13	14	44	13	20	21	25	210
Self-inflicted	0	0	0	2	5	10	10	6	7	11	25	13	8	4	4	105
Assault/alleged abuse	0	0	0	0	8	21	14	5	3	8	7	3	1	0	1	71
Underdetermined/other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	5	0	4	24	51	31	21	23	33	76	29	29	25	30	386

TABLE 4. Non-fatal Injury Hospitalizations, by Mechanism, by Intent, by Age - Hamilton County, Ohio, 2004

Mechanism Group	Age Group															Total
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65-74	75-84	>85	
Cut/pierce	0	9	11	34	53	17	15	15	12	9	19	4	2	0	0	200
Drowning	0	1	3	1	1	0	0	0	0	0	1	0	0	0	1	8
Fall	23	42	42	42	33	25	37	25	36	70	164	180	288	641	605	2253
Fire	0	0	1	0	1	1	1	0	0	0	2	0	0	0	1	7
Firearm	0	0	1	4	31	38	18	14	6	4	15	2	1	0	0	134
Hot object/substance	0	1	1	0	1	0	1	2	0	2	2	4	0	2	2	18
MV - occupant	2	5	6	11	44	50	23	21	21	27	45	28	25	27	8	343
MV - motorcyclist	0	0	0	1	2	3	0	7	2	6	16	5	3	0	0	45
Bicyclist	0	2	14	11	6	3	2	2	2	2	5	3	1	2	0	55
Pedestrian	1	5	12	12	3	5	4	4	8	7	12	3	6	3	2	87
MV - other	0	0	0	0	4	4	1	3	2	2	3	2	2	3	0	26
Transport, other	0	1	2	4	7	3	3	5	0	5	7	4	3	7	2	53
Environment	0	0	0	0	0	1	1	0	0	1	5	0	1	2	2	13
Overexertion	0	1	0	3	7	11	11	6	3	10	16	14	6	12	7	107
Poisoning	7	42	5	49	153	52	48	49	60	87	132	56	47	31	16	834
Struck by, against	4	10	18	28	53	30	16	15	13	17	30	6	2	8	4	254
Suffocation	0	0	1	0	2	0	0	0	1	3	4	1	1	4	2	19
Bite/sting	1	2	3	2	4	2	5	5	4	8	2	2	2	2	2	46
Machinery	1	2	3	2	4	2	5	5	4	8	2	2	2	2	2	46
Unspecified	0	1	0	0	1	3	1	3	0	3	11	4	1	0	1	29
Other specified	7	7	3	7	12	12	12	9	15	19	32	31	27	30	16	239
Total	61	137	125	214	432	271	206	195	190	301	537	359	422	784	676	4910

Intent	Age Group															Total
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65-74	75-84	>85	
Unintentional	39	128	117	145	193	164	125	121	128	206	412	325	408	774	671	3956
Self-inflicted	0	0	5	62	167	33	36	30	34	50	68	24	3	6	4	522
Assault/alleged abuse	19	7	3	7	57	61	34	35	21	34	39	1	3	2	0	323
Undetermined/other	3	2	0	0	15	13	11	9	7	11	18	9	8	2	1	109
Total	61	137	125	214	432	271	206	195	190	301	537	359	422	784	676	4910

TABLE 5. Non-fatal Injury ED Visits, by Mechanism, by Intent, by Age - Hamilton County, Ohio, 2004

Mechanism Group	Age Group															Total
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65-74	75-84	>85	
Cut/pierce	56	489	576	673	777	782	625	542	546	551	780	383	207	136	36	7159
Drowning	2	0	2	2	2	0	0	0	0	4	1	0	0	0	0	13
Fall	325	2723	2052	2008	1105	1000	934	893	870	1056	1974	1333	1152	1617	1049	20091
Fire	2	15	13	18	20	19	19	8	13	9	31	11	9	6	1	194
Firearm	0	2	2	28	70	68	36	23	18	15	13	1	1	0	0	277
Hot object/substance	26	144	51	49	72	110	59	44	49	78	88	33	26	13	0	842
MV - occupant	6	83	159	210	928	1157	866	631	596	561	915	407	241	118	29	6907
MV - motorcyclist	0	0	1	1	4	40	24	22	23	22	30	6	3	0	0	176
Bicyclist	0	55	310	346	83	43	29	22	24	35	50	23	6	3	0	1029
Pedestrian	1	13	41	61	64	35	27	39	20	36	43	16	16	11	3	426
MV - other	0	5	8	8	47	65	66	35	40	42	56	23	16	7	3	421
Transport, other	0	6	25	46	49	40	27	25	32	23	32	19	5	5	4	338
Environment	3	8	10	5	26	22	15	10	19	19	27	8	5	12	2	191
Overexertion	8	230	195	777	821	852	781	750	675	618	837	333	179	124	44	7224
Poisoning	32	209	40	52	179	105	79	84	68	99	134	53	27	20	3	1184
Struck by, against	92	1070	1286	2040	2021	1454	1160	879	820	804	984	401	185	187	83	13466
Suffocation	20	11	6	3	4	3	3	1	2	2	3	3	1	5	1	68
Bite/sting	11	162	212	178	159	203	196	174	158	166	251	170	100	64	15	2219
Machinery	0	0	2	2	18	29	25	23	28	39	55	36	11	7	3	278
Unspecified	75	327	269	525	599	434	355	306	313	341	451	211	104	100	47	4457
Other specified	52	657	492	455	530	477	421	323	302	316	418	161	99	67	48	4818
Total	711	6209	5752	7487	7578	6938	5747	4834	4616	4836	7173	3631	2393	2502	1371	71778

Intent	Age Group															Total
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65-74	75-84	>85	
Unintentional	694	6113	5686	7159	6536	5926	5017	4334	4132	4296	6664	3508	2371	2489	1367	66292
Self-inflicted	0	0	4	27	128	106	75	78	43	89	69	15	3	1	2	640
Assault/alleged abuse	8	33	48	271	832	864	629	402	425	434	422	105	17	11	2	4503
Undetermined/other	9	63	14	30	82	42	26	20	16	17	18	3	2	1	0	343
Total	711	6209	5752	7487	7578	6939	5747	4834	4616	4836	7174	3631	2393	2502	1371	71778

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Appendix A - Methodology and Calculations

Case Selection

Case Definition

Cases in this report included Hamilton County residents admitted to a hospital within Hamilton County, including Mercy Hospital Clermont, Mercy Hospital Fairfield, and/or who were seen by the coroner with a primary diagnosis of injury (see below). Individuals treated or injured in Hamilton County but who were not residents of Hamilton County were excluded.

Injury Classification

Primary medical diagnosis was coded by medical records organization's (WHO) *International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9)* coding system. This system is designed to promote international comparability in the collection, processing, classification, and presentation of health data. The *ICD-9 N* codes are used as the primary medical diagnosis and describe the nature of the injury and the body part involved. Further classification of these injury diagnoses into external cause of injury, or *ICD-9 E* Codes, describe the event, or how the injury occurred, and make it possible to distinguish among injury mechanisms. For example, an *E* Code could tell if a broken femur resulted from a fall or from a motor vehicle crash. The *E* Code matrix in Appendix B is grouped into mutually exclusive categories to describe the mechanism (cause) and intent (purposefulness) of an injury (Annest, 1999).

Injury Definition

Cases with a primary discharge diagnosis *ICD-9 N* code in the 800 to 995.89 range were included in the data collection. Injuries due to medical or surgical complications were excluded from analysis by *ICD-9 E* Codes:

- Misadventures in medical care E870 - E879.9
- Drug's adverse effects in therapeutic use E930 - E949.9
- Late effects E929.0 - E929.9, E959, E969, E977, E989, E999

Confidentiality

All patient and institution identifiers were removed prior to aggregation in the final database. Users of HClSS data will:

- Use the data for statistical reporting and analysis only.
- Make no attempt to learn the identity of any person or establishment included in these data.

Duplicate Case Deletion

Any duplicate records for the same individual, and/or for the same injury which resulted in death or hospitalization within a two-week time period, were deleted from the database. For ED visits, a four-day time frame was used. Cases were matched within and between institutions. The record representing the most serious injury was kept for analysis (e.g., a case that was hospitalized and then died became a death, an ED visit that was then hospitalized became a hospitalization).

Data Sources

Mortality Data

Starting in 1999, national mortality data have been coded using the *International Classification of Disease - 10th Revision (ICD-10)* mechanism and cause of injury coding. This classification system replaced the *Ninth Revision (ICD-9)* which was used from 1979 through 1998. Due to this change from *ICD-9 to ICD-10*, causes of death from 1999 to 2001 are directly comparable, but not to prior years (NCHS 2005).

Hospital admissions resulting in death certificates issued by the Hamilton County Coroner's office provided information on the mechanisms of death for those county residents whose cause of death was injury (suicide, homicide, unintentional or undetermined).

Hospital Admission and Emergency Department Data

In the Hamilton County Injury Surveillance Report 2004, data from ED visits is not directly comparable to national estimates of ED visits. The national data looks only at first time visits to the ED and counts those who died or were admitted. Data from the HCISS considers ED visits of those treated and released and may include people who are seen more than once throughout the year.

Information from hospital discharge data were provided by individual institutions for all patients whose primary diagnosis was that of injury admitted from Jan. 1- Dec. 31, 2004. In some cases, the institution providing data was unable to provide records based on the date of admission. In this instance, records were obtained based on discharge date, which was consistent with case ascertainment in previous years.

Records were classified according to the type of patient visit— inpatient, 23-hour observation, or ED visit. For data analysis, patients with non-fatal injuries classified as inpatient or 23-hour observation were considered hospitalized. Non-fatal ED visits, or those treated and released, were analyzed separately.

Data were provided in electronic format by the following hospitals: Cincinnati Children's Hospital Medical Center; Deaconess Hospital; Health Alliance - Christ Hospital; Health Alliance - Jewish Hospital Kenwood; Health Alliance - University Hospital; Mercy Franciscan Hospital Mount Airy; Mercy Franciscan Hospital Western Hills; Mercy Hospital Anderson; Mercy Hospital Clermont; Mercy Hospital Fairfield; TriHealth, Inc. - Bethesda North Hospital; and TriHealth, Inc. - Good Samaritan Hospital.

Completeness of Records

Of the records collected with *ICD-9* N codes denoting medical treatment for an injury, 11 percent were not E Coded. Therefore, the extent of the injury problem within Hamilton County may be under-reported.

2000 Census Data

Census data for 2000 were obtained from the U.S. Census Bureau Web site. Data for Hamilton County include the population of all 49 political jurisdictions and only the Hamilton County portion of populations from the communities of Loveland, Milford and Sharonville.

Hamilton County Geographic Data

The full data file is batch geo-coded using enhanced TIGER files providing the state and county FIPS code based on city, name and ZIP code. For more accurate coding, Cincinnati Area Geographical Information System (CAGIS) street files were used on the probable Hamilton County data for jurisdiction assignment. TIGER files supplemented addresses known to be in Hamilton County, but not included in the CAGIS files because of private street address. A total of 8,223 records were not matched to a political jurisdiction (10.7 percent).

Statistics

Reporting of Percentages

It should be noted that the percentages in this report have been rounded to a whole number within one percentage point of the actual figure. Due to this rounding, the exact number of events cannot be accurately calculated by taking a percentage of the total "n" reported. In addition, percentages do not add to 100 in all cases. Numbers cited in the text as exact counts represent the true number of cases.

Rate Calculation

A rate is a summary statistic used to obtain a standard by which comparisons to other groups or geographic areas can be made. 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. The 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.

Quality Assurance

Chart audits were performed on 20 randomly selected cases - 10 each for hospitalization and ED visits - for all hospitals providing data. Checks were performed on the electronic data field used for statistical analysis to determine accuracy in recording and transferring data.

Results were within an error rate of ± 1 percent for all fields. Missing data are reported as unknown.

Appendix B – E Code Matrix for Mortality and Morbidity Data

(effective Aug. 16, 2004)

INTENT					
Mechanism	Description	Unintentional	Self-inflicted	Assault/ alleged abuse	Undetermined/ other
Cut/pierce	Cut and pierced by instruments or objects.	E920.0-.9	E956	E966	E986, E974
Drowning	Injury caused by a lack of oxygen resulting from insufficient air and ingestion of water. May occur with or without involvement of watercraft.	E830.0-.9, E832.0-.9, E910.0-.9	E954	E964	E984
Fall	Falls from different levels or same level (such as tripping, stumbling, or fainting). Includes self-inflicted falls (jumping from high place) and assault falls (pushed from high place).	E880.0-0--E866.9, E888	E957.0-.9	E968.1	E987.0-.9
Fire	Injuries caused by fire and flames, including those from smoke inhalation.	E890.0-E899	E958.1 E979.3	E968.0	E988.1
Firearm*	Injuries caused by the discharge of a handgun, rifle, etc.	E922.0-.3, .8, .9	E955.0-.4 E979-4	E965.0-.4	E985.0-.4, E970
Hot object/ substance	Injuries caused by hot liquids, steam, and chemicals.	E924.0-.9	E958.2,.7	E961, E968.3	E988.2,.7
Machinery	Injuries associated with machinery used in various industrial and occupational activities.	E919(0-.9)			
Motor vehicle occupant†	Driver or passenger.	E810-E819(0,.1)		E968.5	
Motor vehicle motorcyclist†	Driver or passenger of motorcycle.	E810-E819(2,.3)			
Motor vehicle other†	When injured person was coded as unspecified person. Occupant of vehicle other than above, occupant of streetcar, person on railway train, unauthorized rider of motor vehicle. Rider of animal; occupant of animal drawn vehicle.	E810-E819(.9), E810-E819(.4), E810-E819(.8), E810-E819(.5)	E958.5		E988.5
Bicycle	Includes all injuries among bicyclists involving and not involving motor vehicle traffic incidents. Includes: hit by a motor vehicle, hit by train, hit by other bicyclist, or hit by motor vehicle while not in traffic.	E800-E807(.3), E820-E825(.6), E826.1,.9, E827-829(.1), E810-E819(.6)			
Pedestrian	Pedestrian hit by a motor vehicle where the collision did or did not occur in traffic, hit by a train, or another means of transportation.	E800-807(.2), E820- E825(.7), E826-E829(.0), E810-E819(.7)			
Transport, other	Injuries associated with other means of transportation: railway, off-road and other motor vehicles not in traffic, other surface transport, water, and aircraft.	E800-E807(.0,.1,.8,.9), E820-E825(.0-.5,.8,.9), E826.2-.8, E827-E829(.2-.9), E831.0-.9,E833.9-E845.9	E958.6		E988.6
Environment	Injuries caused by excessive heat or cold, lightning, disastrous storms or land movements, other environmental factors.	E900.0-E909, E928.0-.2	E958.3		E988.3
Bite/sting#	Bites by animals or stings/bites by insect.	E905.0-.6,.9, E906.0-.4,.5,.9			
Overexertion	Injuries caused by excessive physical or strenuous movements.	E927			
Poisoning	Overdose of drugs (prescription or street drugs) and other solids, liquids, gases, or vapors. Does not include injuries resulting from "drugs or medicinal and biological substances causing adverse effects in therapeutic use."	E850.0-E869.9	E950.0-E952.9	E962.0-.9	E980.0-E982.9 E972
Struck by, against	Hit by blunt object or person, i.e., injuries resulting from: falling objects, sport activities, fight or brawl.	E916-E917.9		E960.0, E968.2	E973, E975
Suffocation	Inhalation and ingestion of food or other objects that block respiration, and other mechanical means that hinder breathing (plastic bag over nose or mouth, suffocation by bedding, unintentional or intentional hanging or strangulation).	E911-E913.9	E953.9-.9	E963	E983.0-.9
Other specified (classifiable and not elsewhere classifiable†)	Injuries not assigned to specific categories within the matrix.	E846-E848, E914-E915, E918, E921.0-.9, E922.4, .5, E923.0-.9, E925.0-E926.9, E928.3, E929.6-.5, E928.8, E929.8	E955.5,.6,.7,.9 E958.9,.4, E958.8, E959	E960.1, E965.5-.9, E967.0-.9, E968.4,.6,.7, E968.8, E969 E979.0-.2, E979.5-.9	E985.5-.7, E988.0,.4, E971, E978, E990-E994, E996, E997.0-.2, E988.8, E989, E977, E995, E997.8, E998, E999
Unspecified		E887, E928.9, E929.9	E958.9	E968.9	E988.9, E976, E997.9

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

† Motor vehicle injuries involving automobiles, vans, trucks, motorcycles, and other motorized cycles known or assumed to be traveling on public roads or highways. These categories do not include non-traffic and off-road injuries.

E906.5 (bite from unspecified animal) is specific to the ICD-9-CM and, therefore, only applies to morbidity coding.

¶ E849 (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 a first-listed E Code and should only appear as an additional code to specify the place of occurrence of the injury incident.

Resource:

Recommended Framework of E-code Groupings for Presenting Injury Mortality and Morbidity Data, May 15, 2003.

<http://www.cdc.gov/ncipc/whatsnew/matrix2.htm>.

Accessed December 2005.



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