

WEAPON-RELATED INJURIES TO MASSACHUSETTS RESIDENTS • 1994-2007

Findings from the Weapon Related Injury Surveillance
System (WRISS)



**Injury Surveillance Program
Bureau of Health Information, Statistics, Research, and Evaluation
Massachusetts Department of Public Health**

August 2009

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System (WRISS)



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Dedication:

Physicians, nurses, clerks, and other emergency department personnel see every day the tragedy of violence and injury in the faces of their patients and families. They know that tracking public health events is crucial to developing solutions, and have been submitting the critical data upon which this report is based, for nearly twenty years. To all past and present emergency department providers for their commitment over the years of treating patients with weapon injuries and for submitting the necessary data to access the burden, we gratefully dedicate this report.

To obtain additional copies of this report, contact:

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This and other Massachusetts Department of Public Health publications and materials can be accessed on-line at: <http://www.state.ma.us/dph/pubstats.htm>

To obtain more information on injuries to Massachusetts residents, contact Beth Hume at the Injury Surveillance Program (617-624-5648), or on-line at: <http://www.mass.gov/dph/bhsre/isp/isp.htm>

For information on how to prevent injuries, contact the Division of Violence and Injury Prevention Program (617-624-5463), or on-line at: <http://www.mass.gov/dph/fch/injury>

For other Department of Public Health data, register for MassCHIP, the Department's free internet-accessible data warehouse: <http://masschip.state.ma.us/>

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Appendix A: City-Specific Weapon Injury Data

Assault-related Gunshot and Sharp Instrument Injury Reports Among Residents of:

Boston	Lynn
Brockton	New Bedford
Fall River	Springfield
Lawrence	Worcester

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Executive Summary

In 1989, the Injury Surveillance Program at the MA Department of Public Health developed a surveillance system to monitor selected weapon injuries treated within Massachusetts acute care hospital emergency departments. The system was built upon an existing mandate requiring medical clinicians to report information on gunshot wounds and “criminally suspicious” sharp instrument wounds to state officials. The system expanded the number of data elements and was the first in the nation to collect data through the emergency department. It began as a pilot project with selected hospitals in the Boston, Springfield, and Lawrence areas participating, and was in place statewide by the end of 1993 with all acute care hospitals in Massachusetts reporting. The system is known today as the Weapon Related Injury Surveillance System (WRISS).

We report WRISS data from the

beginning of statewide reporting in 1994 through 2007. The case inclusion is based on the reporting mandate and includes all gun injury cases regardless of intent (assault, self-inflicted, unintentional or “accidental”, and unspecified or undetermined intent), and sharp instrument wound cases resulting from assault-related incidents. Hospitals report all gun types including those resulting from firearms, non-powder guns (e.g., “BB”, pellet guns), and other guns.

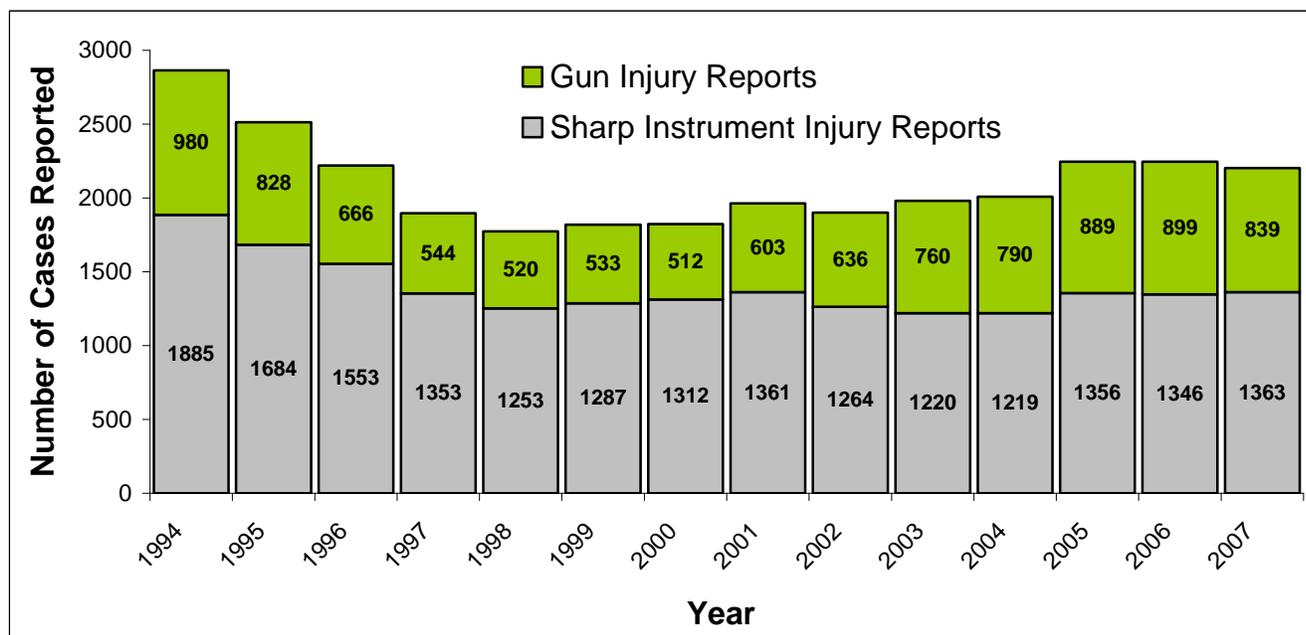
KEY FINDINGS

[‡] Indicates a statistically significant trend at the $P \leq .05$ level.

Magnitude and Trends

- Nearly 10,000 gunshot wound (GSW) reports among Massachusetts residents were filed with WRISS between 1994 and 2007.
 - 64% were assault-related

Figure 1. Number of Gun and Sharp Instrument Injury Reports, MA Residents, 1994–2007



Source: Weapon Related Injury Surveillance System (WRISS), MDPH

- (N=6,391), 22.2% were unintentional (N=2,223), 3.8% self-inflicted, and 10.1% undetermined.
- Over 19,000 assault-related sharp instrument wound (SIW) reports were filed with WRISS during the same time period. SIWs can be the result of knives, razors, broken glass, and other sharp instruments.
- The overall rate of assault-related weapon injury cases decreased sharply between 1994 and 1998 (average of 12.0% per year)[‡], then increased more gradually from 1999 through 2007 (average of 2.2% per year).[‡]
 - Despite recent increases, the overall rate in 2007 was still considerably lower than in 1994 (30.0 and 41.7 per 100,000 respectively).[‡]
- There were 3.4 times the number of assault-related SIWs than assault-related GSWs from 1994-2007.
- There was an overall decrease of 27.7% in the number of assault-related SIW cases reported to WRISS during the time period, with considerable declines occurring in the early years (1994-1998).[‡]
- There has been an increase in the rate of assault-related SIW cases in recent years, from 18.9 per 100,000 in 2004 to 21.2 per 100,000 in 2007.[‡]
 - Overall rates however, in 2007, were still considerably lower than those reported in 1994 (30.9 per 100,000).[‡]
- Eighty-nine percent of assault-related GSW cases reported to WRISS were the result of firearms (N=5,679); 10% were the result of non-powder guns such as BB guns.
- Assault-related firearm injury cases reported to WRISS, declined by 19.7% from 1994 to 2007.
 - Rates of assault-related firearm injury cases declined

by 57.8% from 1994 to 1997[‡] but have increased in recent years.

- Rates were lower in 2007 than in 1994 (7.8 and 10.2 per 100,000 respectively).[‡]

Demographics and Disparities

- There were important demographic patterns between 1994 and 2007.
- Rates of assault-related SIW cases was highest among 15-24 year olds. In 1994, the highest rates of assault-related SIW cases were among 15-19 year olds; however the rate for this age group was the fastest to decline and by 1997, the rate among 20-24 year olds had surpassed that among 15-19 year olds. This pattern has continued through 2007.
- Among females, the overall number of assault-related SIW cases declined by 46% and the rate declined by 49% between 1994 and 2007.
- Overall the number and rate of assault-related SIW cases among males declined between 1994 and 1998 then remained relatively stable, with an uptick occurring in recent years.
- There were 20 cities and towns with higher average annual rates of assault-related SIW cases during the 2005-2007 period than the statewide average annual rate of 21.0 per 100,000 (Table 6).
 - Those with the highest average annual rates include: Lawrence (95.3 per 100,000), Springfield (83.1 per 100,000), Chelsea (75.2 per 100,000), and New Bedford (74.9 per 100,000).
- There were 12 cities and towns with higher average annual rates of assault-related GSW cases for the period 2005 - 2007 than the

statewide average annual rate of 9.0 per 100,000 (Table 7).

- Those having the highest average annual rates include: Brockton (40.3 per 100,000), Springfield, (35.9 per 100,000), Boston (35.6 per 100,000), and Lawrence (28.8 per 100,000).
- Among assault-related firearm injury cases, nearly all groups examined including age groups and race/ethnicity experienced dramatic declines between 1994 and 1997.
- From 1998 through 2007 some of these same groups experienced considerable increases. For example, rates among Black, non-Hispanic residents ages 15-19 increased 8.9% per year between 1998 and 2007.
- Black, non-Hispanic residents had higher rates of assault-related firearm injury cases for the period 2005-2007, than Hispanic or White, non-Hispanic residents for all age groups.[‡]
 - The largest disparity in age-specific rates by race/ethnicity was among those 20-24 years of age. Black, non-Hispanic residents in this age group had a rate 68.7 times higher than White, non-Hispanic residents.[‡]

Other Findings

- The relative percent of assault-related GSW cases to SIW cases decreases with age:
 - Among persons ages 15-19, 40% of all assault-related weapon injury cases reported to WRISS were GSWs.
 - Among those aged 35 and older, 17% were the result of GSWs.
- Cases resulting from non-powder guns, such as BB and pellet guns,

have increased over the years for both assault-related and unintentional GSWs.

- Assault-related non-powder gun injury cases increased 215% from 1994 to 2007.
 - Youth, ages 15-19 had the highest number (N=71) for the period 2005-2007, followed by children ages 10-14 (N=41).
- The rate of unintentional firearm injury cases decreased by 59.3% between 1994 and 2000[‡] and then remained relatively stable through 2007.
 - Over half of the unintentional firearm injury cases reported to WRISS between 2005 and 2007 were to those between the ages of 25 and 54. Only 8% were to children through age 14.
- The most frequently noted circumstances for unintentional GSW cases were cleaning the gun (15.6%) and playing with the gun (14.3%).

While overall counts and rates of gun-related injury cases and assault-related sharp instrument wound cases declined from 1994 to 2007, the most dramatic declines occurred in the early years while more recent years have seen substantial increases in certain populations and categories.

The data presented in this report illustrate clearly the burden of gunshot wounds and assault-related sharp instrument wounds on residents of the Commonwealth. During the time period examined, there were nearly 10,000 gun-related cases, the majority of which were assault-related (64%), and more than 19,000 assault-related sharp instrument wound cases to Massachusetts residents reported to WRISS.

REFERENCE SHEET - KEY FINDINGS BY INTENT AND WEAPON TYPE

ASSAULT-RELATED GUNSHOT WOUNDS	
<ul style="list-style-type: none"> Eighty-nine percent of assault-related gunshot wound cases reported to WRISS were the result of <u>firearms</u> (N=5,679); 10% were the result of non-powder guns such as BB or pellet guns. The highest number of assault-related <u>firearm</u> injury cases were reported to WRISS in 1994 (N=625), the second highest in 2006 (N=519). Rates of assault-related <u>firearm</u> injury cases declined by 57.8% from 1994 to 1997 but have increased considerably in recent years. Rates, however, were still lower in 2007 (7.8 per 100,000) than in 1994 (10.2 per 100,000).[‡] Rates of assault-related <u>firearm</u> injury cases among males averaged 13.9 times higher than females. 	<ul style="list-style-type: none"> Rates of assault-related age-adjusted <u>firearm</u> injury cases declined among all race and ethnic groups in the early years of WRISS: <ul style="list-style-type: none"> Black, non-Hispanic residents decreased by an average of 29.3% per year between 1994 and 1997.[‡] Hispanic residents decreased by an average of 38.2% per year between 1994 and 1996.[‡] White, non-Hispanic residents decreased by an average of 28.2% per year between 1994 and 1997.[‡] Rates of assault-related age-adjusted <u>firearm</u> injury cases among Hispanic residents remained relatively stable from 1996 through 2007, and increased among Black, non-Hispanic residents from 1997 through 2007.[‡]
UNINTENTIONAL GUNSHOT WOUNDS	NON-POWDER GUNSHOT WOUNDS
<ul style="list-style-type: none"> The rate of <u>unintentional firearm injury</u> cases decreased by 59.3% from 1994 and 2000[‡] then remained relatively stable through 2007. <ul style="list-style-type: none"> Over half of the unintentional firearm injury cases reported to WRISS (2005-2007) were to those between the ages of 25 and 54. 	<ul style="list-style-type: none"> Overall, unintentional gun injury cases resulting from <u>non-powder guns</u> such as BB and pellet guns, increased 67.4% from 1994 to 2007. Assault-related <u>non-powder gun injury</u> cases increased 215% from 1994 to 2007. Youth, ages 15-19 had the highest number from 2005 through 2007, followed by children ages 10-14.
ASSAULT-RELATED SHARP INSTRUMENT WOUNDS	
<ul style="list-style-type: none"> There was an overall decrease of 27.7% in the number of <u>assault-related SIW</u> cases reported to WRISS during the time period, with considerable declines occurring in the early years. There has been an increase in recent years, but the rate in 2007 (21.2 per 100,000), was still considerably lower than 1994 (30.9 per 100,000).[‡] 	<ul style="list-style-type: none"> Rates of <u>assault-related SIW</u> cases were highest among persons ages 15-24. The highest rates were among 15-19 year olds in 1994. However rates among this age group were the fastest to decline and by 1997, the rate among 20-24 year olds had surpassed that of 15-19 year olds. <ul style="list-style-type: none"> This pattern continued through 2007.

[‡] Indicates a statistically significant trend at the $P \leq .05$ level.

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Introduction

Magnitude of the Problem

Injuries are a serious public health problem in Massachusetts and the U.S. Weapon-related injuries from mechanisms such as guns and knives make up a small percentage of the overall injury burden, but can cause undue physical and emotional pain. In 2007, 231 Massachusetts residents died from firearm injuries. Most of these were homicides (48.9%) and suicides (48.5%).

- In 2007, 231 MA residents died as a result of firearm injuries by homicide, suicide, unintentional, or undetermined intent.¹
- Every year there are approximately 27,000 nonfatal assault-related injuries to MA residents resulting from guns, sharp instruments, and other mechanisms, treated within acute care hospitals.²
- The average length of stay of MA residents admitted to a hospital for treatment of assault-related firearm injuries is 8.7 days. The range was 1-76 days with a median of 4.0 days.²
- The average charge for hospital discharges related to unintentional firearm injuries in 2006 was \$38,840 and for assault-related firearm injuries the average charge was \$54,953.²
- In 2006, total charges for hospital discharges related to firearm injuries was over \$20,000,000.²

In an effort to better assess the burden of certain weapon injuries, the Massachusetts Department of Public Health applied for and received funding in 1989 from the Centers for Disease Control and Prevention (CDC) to implement a data collection system through acute care hospital emergency departments to obtain information on persons injured as a result of guns, regardless of intent, and sharp instrument injuries resulting from violent incidents.

The system began as a pilot project with selected hospitals in the Boston, Springfield, and Lawrence areas participating, and was in place statewide by the end of 1993 with all acute care hospitals in Massachusetts reporting. There was no other statewide system in place to monitor such injuries at the time. The system was the first in the nation to collect data through the emergency department and is known today as the Weapon Related Injury Surveillance System (WRISS).

WRISS was built upon a 1927 law requiring health care providers to report basic information on all gunshot wounds and “criminally suspicious” sharp instrument wounds to the State Police. The WRISS system expanded the existing form to include a number of additional data elements such as circumstance and relationship of the perpetrator to the patient. Hospitals continue to report the basic information to State Police and report all data elements to WRISS with the exception of patient name and reporting physician. Data received by WRISS is confidential and available only in aggregate form. Individual case level data is not available. An overview of the system is provided on pages 9-12.

Purpose of the Report

The purpose of this report is to present WRISS data from the beginning of statewide reporting in 1994 through 2007. The report, in addition to the executive summary and introduction, contains the following sections: 1) historical background and prevention framework, 2) an overview of all cases, 3) assault-related sharp instrument cases and assault-related gunshot cases, 4) unintentional firearm injuries, and 5) non-powder gunshot cases. Included in the appendix are assault-related summaries for selected cities.

Since the majority of cases captured by the system are assault-related this report includes a historical overview of the epidemic of violence that occurred in the U.S. and Massachusetts in the late 1980's and early 1990's, a description of the model used by the Centers for Disease Control and Prevention (CDC) in developing violence prevention strategies, and information on prevention programs and services within the Massachusetts Department of Public Health.

Data Notes

Cases are based on the individual injured and not the actual number of "wounds" or "injuries" treated. A person may have multiple gunshot wounds or stab wounds. Injury counts and rates presented in this report reflect the "reports" or "cases" reported to WRISS by hospital emergency departments.

While the system captures residents and non-residents treated within MA emergency departments, this report includes only Massachusetts residents. The case inclusion criteria includes patients injured by gun regardless of intent (assault, self-inflicted, unintentional or "accidental", and unspecified or undetermined intent), and patients injured by any sharp instrument wound resulting from an assault. Hospitals report all gunshot wound cases including those resulting from firearms, non-powder guns (e.g., "BB", pellet guns), and other guns. Analysis includes *all* dispositions including those subsequently admitted to the hospital, discharged, died, placed under observation, missing, or unknown.

WRISS does not capture all cases meeting our criteria. Based on periodic medical record reviews we estimate that WRISS captures between 80-90% of all gunshot wounds and 65-75% of all assault-related sharp instrument wounds treated within an emergency department. Hospital emergency departments are typically very busy and we expect that not every case will be captured and reported. For more information about underreporting please refer to Exclusions and Limitations (page 11).

The report includes trend data overall and by selected categories. The annual percent change (APC) was calculated using the JoinPoint Regression Program. For certain analyses several years (2005-2007) were combined for two reasons: 1) some variables were not captured for the entire 14-year period, and 2) to show a snapshot of what has been happening most recently. We used three years combined to ensure enough cases to analyze.

Rates presented throughout this report are typically “crude” rates which represent the actual or “true” rate of an injury for a given population. Crude rates can be very useful in setting prevention priorities. For race and ethnicity and for county maps we also present age-adjusted rates (adjusted to the 2000 U.S. standard population). Age-adjusting is a way to minimize distortions that occur by variations in the age distribution among different groups. Since age distributions vary by race and ethnicity, age-adjusted rates can be useful for comparing these groups, especially over time as age distributions shift. More information on age-adjusting is located in Appendix B.

Overview of WRISS

History and Development

Pilot Project – 1989

In 1989, in an effort to better assess the burden of weapon injuries (specifically gunshot wounds and sharp instrument wounds), the Massachusetts Department of Public Health applied for and received funding from the Centers for Disease Control and Prevention (CDC) to implement a data collection system through acute care hospital emergency departments. The system began as a pilot project with selected hospitals in the Boston, Springfield, and Lawrence areas participating. Data collection began in early 1990.

System Expansion – 1992

An additional CDC grant was secured to expand the system statewide, and by the end of 1993 every acute care hospital emergency department (ED) in Massachusetts was reporting cases. The system is known today as the Weapon Related Injury Surveillance System (WRISS).

State Funding – 1997

CDC funding for firearm related research came to an end in 1997. The Massachusetts Department of Public Health made a commitment at that time to maintain the system. All acute care hospital EDs continue to participate.

Mandate

Chapter 112, Section 12A,
Mass General Law

WRISS was built upon an existing mandate dating back to 1927 that requires health care providers to report all gunshot and “criminally suspicious” (assault-related) sharp instrument wounds to the State Police. Basic information such as age, sex, and date of visit is a requirement under Massachusetts General Law. Other

variables such as circumstance and relationship, are reported by all Massachusetts acute care hospital emergency departments on a voluntary basis and are confidential. Data are released in aggregate form only with no identifying information released.

Definitions

Injury	Injury and wound are used interchangeably throughout this report.
Cases/Reports	The number of gunshot wounds and sharp instrument wounds refers to the number of individuals injured (and reported to WRISS) and not the number of injuries treated.
Gunshot Wound (GSW)	Any injury resulting from any gun including firearms, non-powder guns such as pellet or BB guns, and non-traditional guns such as nail, paintball, and taser guns.
Unintentional Gunshot Wound	Injuries of an unintentional (“accidental”) nature. Patient or another person shot patient “accidentally”.
Self-inflicted Gunshot Wound	Injuries of an intentional self-inflicted nature. Patient intended to harm self.
Assault-related Gunshot Wound	Gunshot wounds resulting from acts of violence inflicted by another person, such as assaults, mutual fights, and acts of self-defense. Bystanders who are wounded during an attack are included.
Unknown or Unspecified Intent	Insufficient evidence is provided to determine whether the injury was assault-related, unintentional, or self-inflicted in nature.
Non-powder Gun (NPG)	Any gun that uses compressed air, gas or a mechanical spring action rather than gun powder to propel ammunition.
Sharp Instrument Wound (SIW)	Injuries resulting from any sharp instrument such as a knife, glass, razor, machete, scissors, screwdriver, etc.
WRISS Case Criteria	
Gunshot Wounds	All gunshot wounds regardless of intent (e.g., violence, unintentional, self-inflicted) and inflicted with any type of gun (e.g., firearm, non-powder gun).
Assault-related Sharp Instrument Wounds	“Criminally suspicious” sharp instrument wounds - defined as any assault-related sharp instrument wound, including stabbings or lacerations inflicted during an assault, fight, robbery, or argument.

System Strengths

Report form	The WRISS reporting form was designed with input from hospital personnel. It is one-page with check boxes to facilitate speed, ease, and compliance. Instructions are provided on the back of the form. The form is typically filled out by the medical provider or nurse manager.
Minimal delay between data submission and analysis	The amount of time it takes to obtain the reports at the Department, enter them into the system, and analyze them is minimal – about two weeks. This is one of the system’s greatest strengths. Initial reports of <i>provisional</i> data can be released in less than a month. Annual data are typically available three to four months after years end. (2007 data became available in March of 2008). Nearly all hospitals report cases as they occur (day of visit).
Reporting mandate	Broad awareness of the mandate (Chapter 112, Section 12A, MGL) and periodic communication with hospitals increases reporting.
Race and Ethnicity	Race and ethnicity have <i>always</i> been mutually exclusive categories in WRISS allowing for the calculation of rates based on standard population groupings such as “Black, Non-Hispanic”, “Hispanic”, and “White, Non-Hispanic”.

Exclusions and Limitations

WRISS does not capture all deaths	Persons that are not transported to the emergency department for treatment, such as those that are pronounced dead at the scene, are not captured by WRISS. The Registry of Vital Records and Statistics is a better source for fatalities. This is especially true for self-inflicted gunshot wounds which are most often fatal and not transferred to an ED for treatment.
WRISS does not capture all violence	WRISS includes a subset of assault-related injuries. Blunt trauma injuries such as those resulting from fists, bats, and other objects are not captured in the system.
Only MA Acute Care Emergency Departments report to WRISS	MA residents treated in non-Massachusetts emergency departments are not captured by the system.
Underreporting	Underreporting presents a problem. Based on periodic medical record reviews, the

statewide compliance rate for reporting gunshot wounds is 80-90% and for assault-related sharp instrument wounds 65-75%. Periodic record reviews indicate that overall reporting levels have not fluctuated a great deal over time.

Reporting among individual hospitals, however, may fluctuate. Due to the busy nature of the emergency department and personnel turn-over we do not expect to receive all cases. With limited resources ISP staff must rely on tracking the number of monthly reports submitted and following-up with hospitals that drop off from expected levels, conduct periodic reviews of selected hospitals, and provide year-to-date totals on a monthly basis to keep awareness up.

Numbers and rates provided in the report *are not adjusted* for underreporting.

Conclusion

Weapon-related injuries exact a heavy toll on Massachusetts residents. While the types of weapon-related injuries captured by WRISS result in many deaths every year, there are 12 times as many nonfatal gunshot and assault-related sharp instrument injuries which may result in temporary or long-term pain and psychological effects.^{1,2} Over the 14-year period that WRISS has been collecting statewide data a number of changes have occurred, from dramatic declines in the early years of reporting to an uptick in recent years of weapon injury cases within certain age groups, and race and ethnic populations. It is hoped that the data presented in this report can be used for informing policy decisions, and prioritizing existing resources for prevention purposes.

¹ Registry of Vital Records and Statistics, MDPH

² Inpatient Hospital Discharge Database, Outpatient Emergency Department Database, Observation Stays Database, Division of Health Care Finance and Policy. Please note that the Observation Stays Database began in 1998 and the Outpatient Emergency Department Database began in 2002.

Historical Background and Prevention Framework

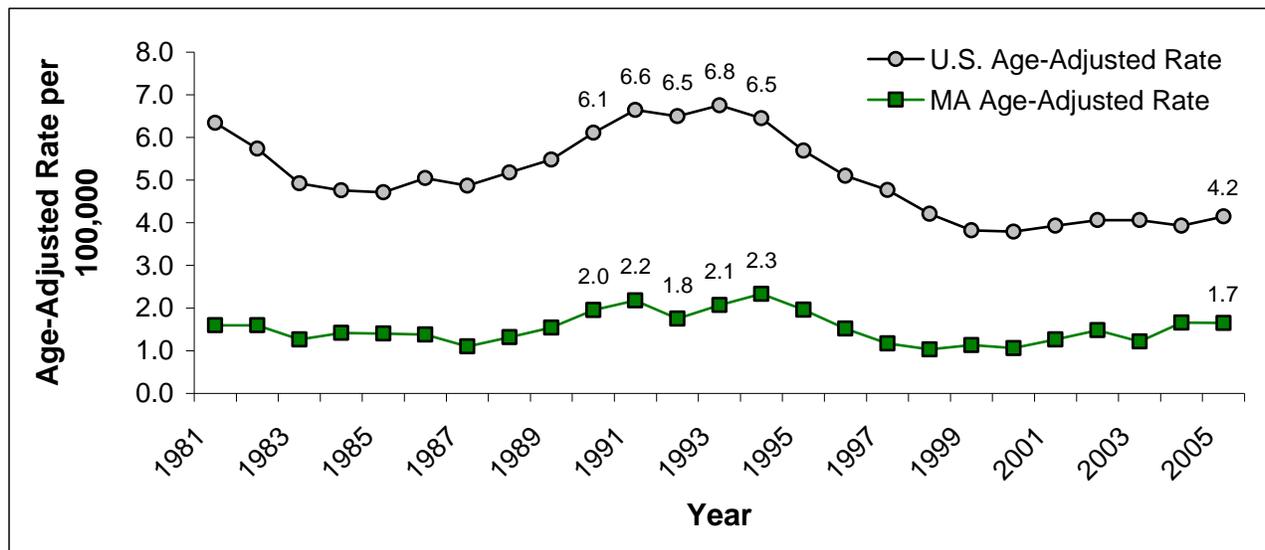
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Historical Background and Prevention Framework

During the late 1980's and early 1990's violence, especially firearm-related violence in the U.S. and in Massachusetts began increasing at alarming rates. The use of "crack" cocaine and the struggle for control of distribution markets was considered to be one of the major triggers for this increase.³

Historically, Massachusetts has had lower homicide rates than the nation including those resulting from firearms. Even at the height of the epidemic, Massachusetts compared favorably to the U.S. as a whole (Figure 2). The age-adjusted firearm-related homicide rate in Massachusetts in 1991 was 2.2 per 100,000 compared to the U.S. age-adjusted homicide rate of 6.6 per 100,000.⁴ Nonetheless, the homicide rate in Massachusetts in 1991 was 26.5% higher than it had been five years prior in 1986 (4.3 and 3.4 per 100,000 respectively), and the firearm homicide rate was 57.1% higher (2.2 and 1.7 per 100,000 respectively).⁴

Figure 2. Age-Adjusted Firearm-related Homicide Rates in the U.S. and Massachusetts, 1981-2005

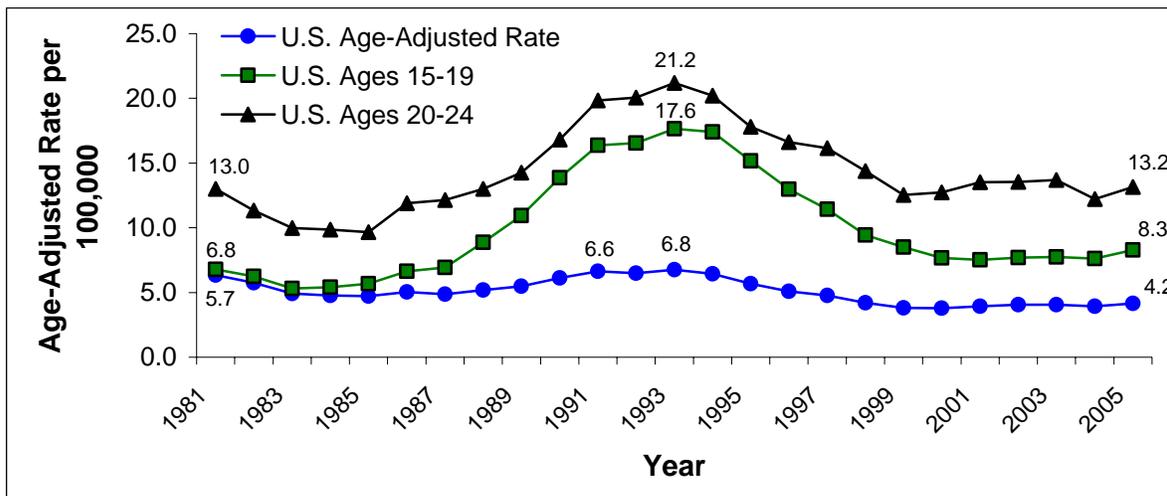


Source: Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS)

Most affected by the increase in firearm homicides were younger age groups (ages 15-19 and 20-24) both nationally and in Massachusetts (see Figures 3 and 4).⁴

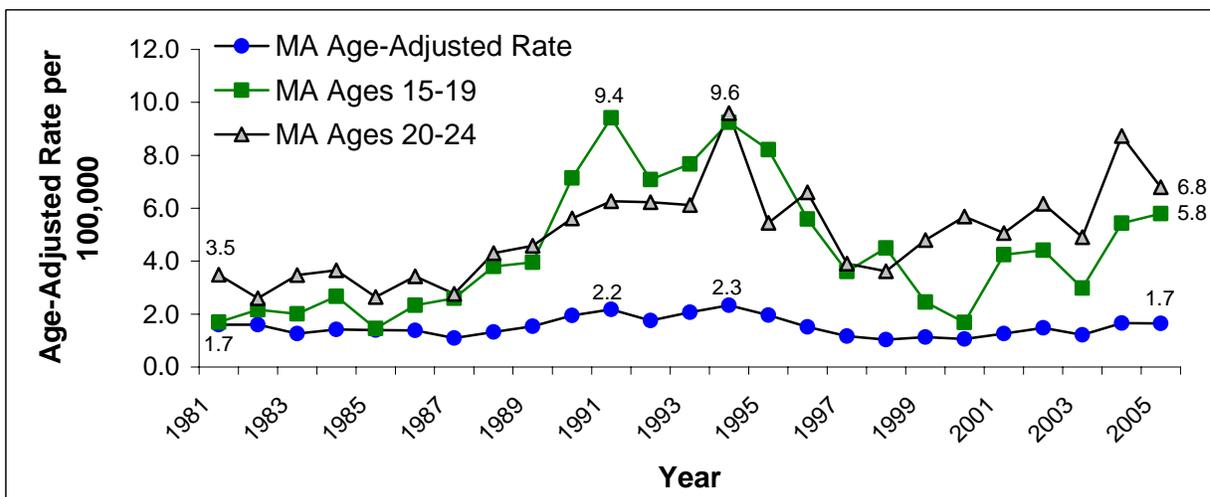
In response to the escalating violence, cities and towns across the state began setting up coalitions and task forces and implementing specific interventions in the late 1980's and early 1990's. Sentencing laws were re-written with stricter mandatory sentences for certain crimes, and "community policing" began to take hold as a useful tool in the law enforcement community. In 1998, the Office of the Attorney General provided new regulations related to the sale, storage, and safety of handguns (940 CMR 16.00). Local efforts, such as midnight basketball and other athletics programs, after school programs at Boys and Girls Clubs and YMCAs, gang mediation, street worker outreach, neighborhood walks and vigils, gun buyback programs, and many other programs were implemented.

Figure 3. Age-Adjusted Firearm-related Homicide Rates in the U.S. by Selected Age Groups, 1981-2005



Source: Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS)

Figure 4. Age-Adjusted Firearm-related Homicide Rates in Massachusetts by Selected Age Groups, 1981-2005



Source: Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS)

In Boston, the Boston Gun Project, Operation Ceasefire, Jobs for Youth, the Boston Ten Point Coalition, and many other programs were created. The Boston Ten Point Coalition, a faith-based coalition, began working closely with the Boston Police Department to improve communication and strengthen relationships between police and residents.³ Because of the successful multi-disciplinary strategies and collaborations, this era was deemed “The Boston Miracle.”

Figure 5. Number of Assault-related Gunshot and Sharp Instrument Wound Reports, Boston Residents, 1991-2007

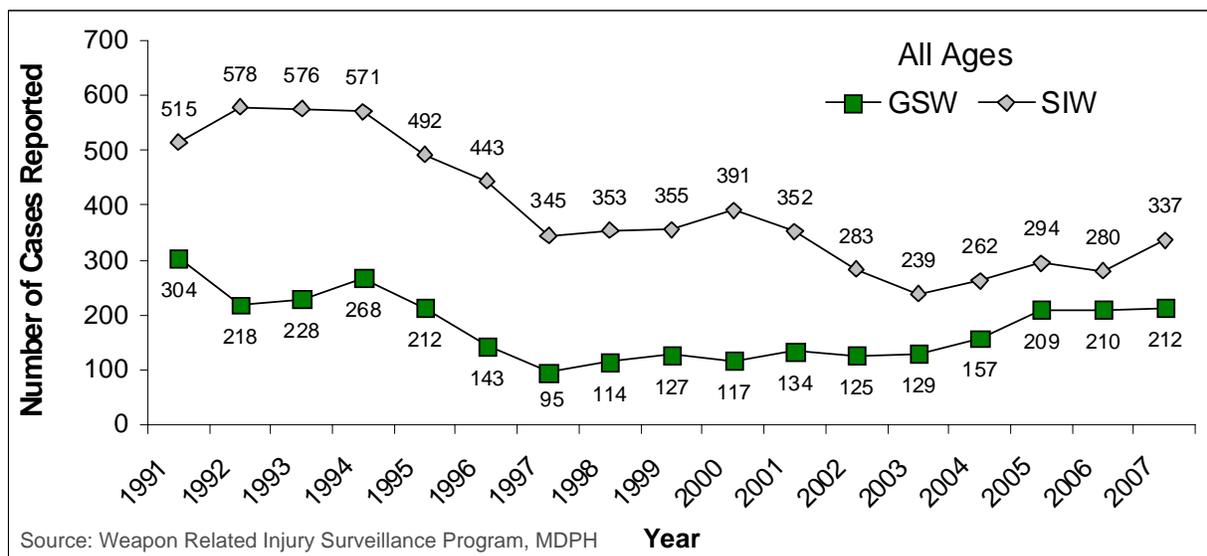
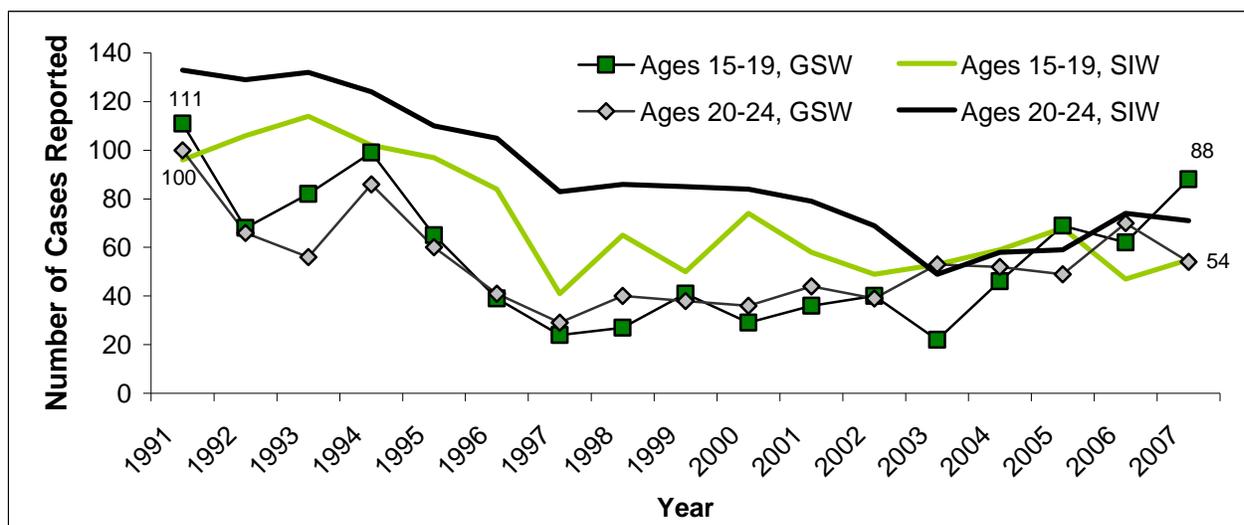


Figure 6. Number of Assault-related Gunshot and Sharp Instrument Wound Reports, Boston Residents, Ages 15-24, 1991-2007



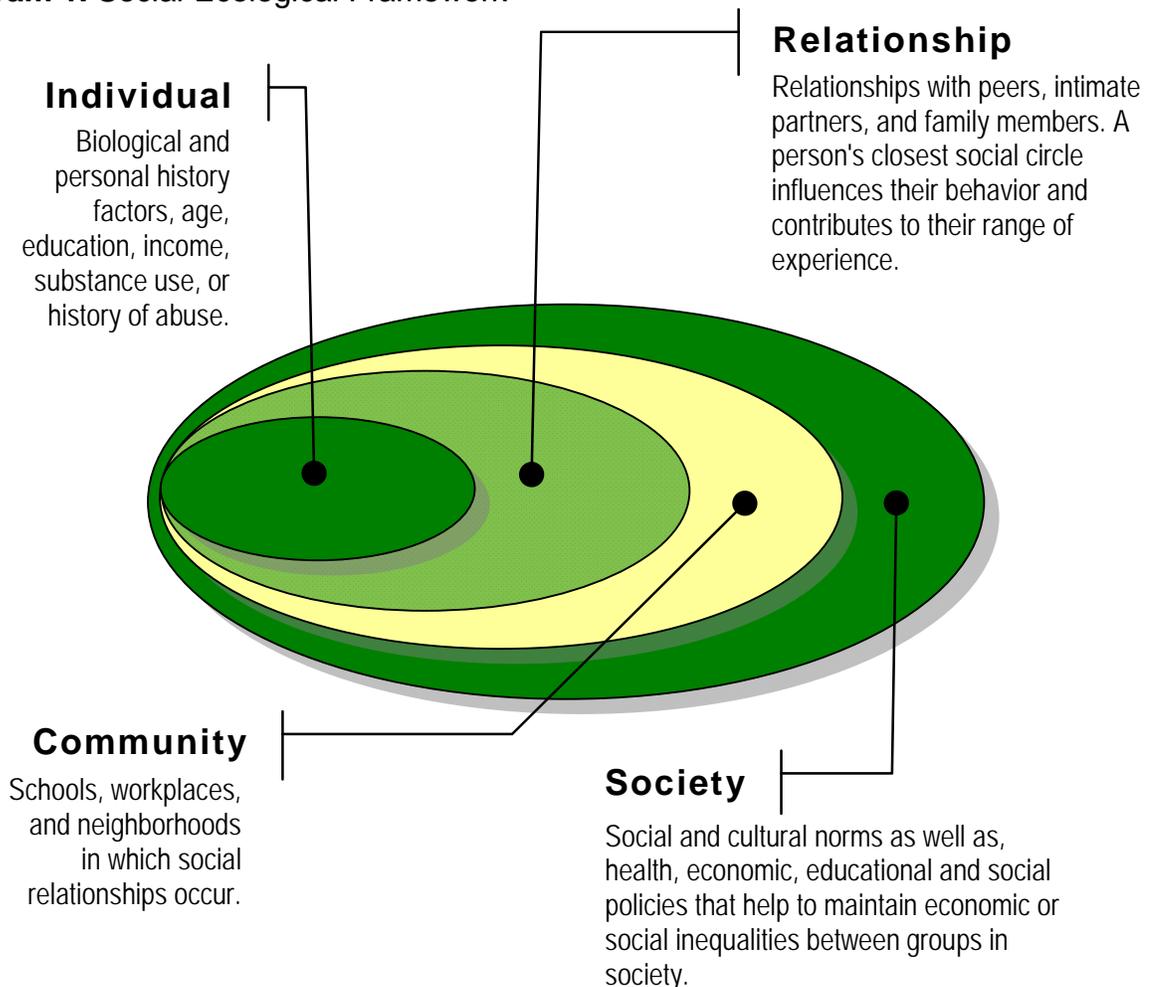
Figures 5 and 6 show the assault-related gunshot and sharp instrument trends for Boston residents during 1991 through 2007. There were dramatic declines in the number of assault-related gun and sharp instrument injury cases reported to WRISS during the mid 1990's for all ages and in particular among persons ages 15-19 and 20-24.

While it cannot be stated conclusively that the measures taken during the early to mid-1990's caused the dramatic declines in the number of cases reported. It is fair to say that there was an increase in local and state initiatives, financial resources, and attention focused on giving youth positive options in their lives, for the very purpose of reducing crime and violence.

In 2006 a startling increase in the number of homicides was noted in major cities across the nation. A group of concerned police chiefs came together to discuss this development and to bring attention to the continued need for strategies to prevent violence.⁶ At the same time the Surgeon General's Report on Youth Violence warned against complacency in reducing violence noting that youth, as reported in national surveys, are just as engaged in violent activity today as they were in the 1980's and early 1990's.⁷

The Centers for Disease Control and Prevention (CDC) uses a social-ecological framework in developing strategies to reduce violence. Diagram 1 illustrates this four-tier model which takes into account the "complex interplay between the individual, personal relationships, the community, and society."⁸

Diagram 1. Social-Ecological Framework⁸



Strategies based on this model target each of these levels with developmentally appropriate interventions that are employed across the life span.⁹ Interventions then are not specific to any one agency or area of focus but many. Public health, law enforcement, criminal justice, community agencies and organizations, the business community, faith-based groups, and the medical community, are all important players in the successful prevention of violence.

While many strategies to reduce youth violence or risk factors for youth violence have not been thoroughly evaluated, some have been demonstrated to be effective. Some of these include training in parenting during infancy and early childhood, home visitation, preschool enrichment programs, and social development programs implemented in early childhood through adolescence.⁹ Mentoring programs, incentives for high risk youth to complete secondary schooling, and family therapy are also considered effective programs during adolescence. There are also many programs that have been shown to be ineffective; information about drug abuse, individual counseling, programs based on basic military training, programs that include learning about the brutality of prison life by interacting with inmates, peer mediation or peer counselling, and gun buyback programs.⁹

The Massachusetts Department of Public Health employs a social-ecological approach by providing a broad range of activities and efforts to reduce violence across the lifespan. The Department's Division of Violence and Injury Prevention works with faith-based communities, clinicians, community-based programs, academic centers, and multiple coalitions to prevent sexual and domestic violence, suicide and self-inflicted injuries, shaken baby syndrome, violence against gay, lesbian, bisexual and transgender youth, rural and immigrant populations, recidivism among batterers, among other initiatives. Within this Division, the Massachusetts Youth Violence Prevention Program (MYVPP), works closely with the Massachusetts Coalition for Youth Violence Prevention (MCYVP). This Coalition consists of over 30 community-based organizations, academic centers, faith-based organizations, research organizations, municipalities and state agencies representing multiple facets of youth violence prevention. The MYVPP in partnership with the MCYVP is developing a comprehensive statewide strategic plan to prevent youth violence.

While violent behavior may never be completely eradicated, the dramatic decline of assault-related injuries and the record low number of homicides in the Commonwealth that preceded this decade prove that substantial reductions are possible. A coordinated multi-level approach involving partners across disciplines is one of the critical components of a successful strategy. In addition, "effective" developmentally and culturally appropriate programs and interventions that are specifically targeted to people across the lifespan, and that are implemented within a variety of settings, are more likely to be successful in reducing violence than a single intervention. This knowledge of what works is important as we confront violence today.

Information on the Division of Violence and Injury Prevention can be found on-line at: <http://www.mass.gov/dph/fch/violence> or by contacting the Division of Violence and Injury Prevention directly at:

Tel. (617) 624-5463

Fax (617) 624-5075

³Kennedy, David and Braga, Anthony. "The Youth Homicide Epidemic in Boston." Unpublished. 1999: 40-42

⁴Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. February 18, 2009. Available from: www.cdc.gov/ncipc/wisqars

⁵Winship, Christopher. "End of a Miracle?". Harvard University. March 2002.

⁶Police Executive Research Forum. "A Gathering Storm – Violent Crime in America". Washington, D.C. October 2006.

⁷Centers for Disease Control and Prevention. Surgeon General's Report on Youth Violence. Atlanta, GA. www.surgeongeneral.gov

⁸Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Violence Prevention.

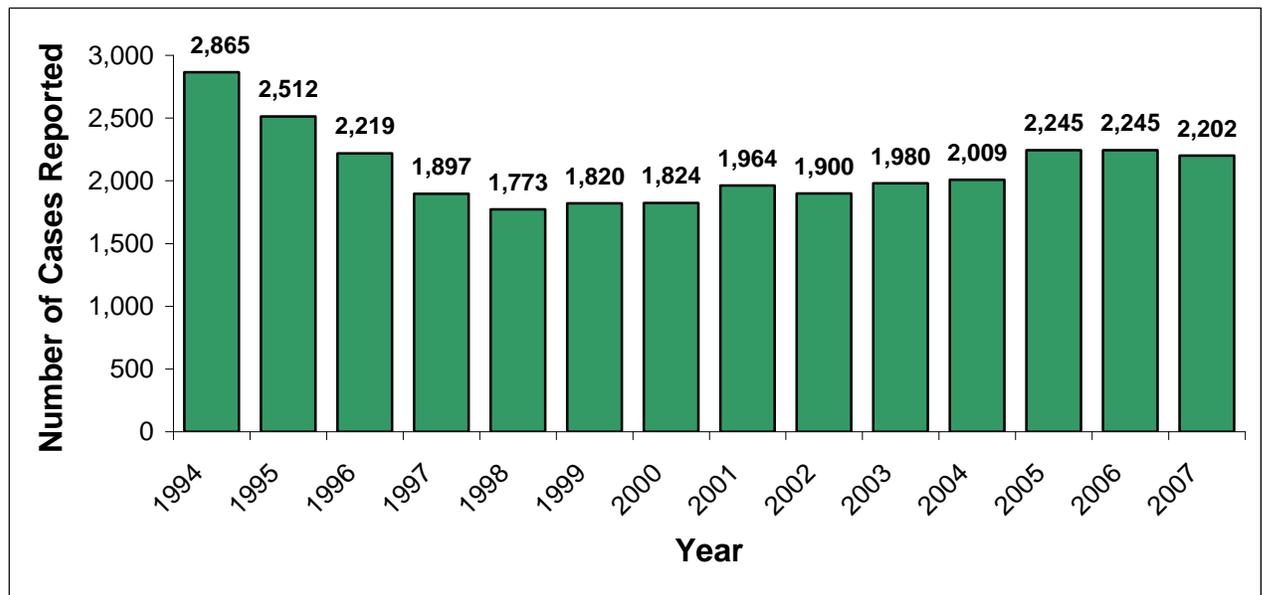
⁹Dahlberg LL, Krug EG. Violence-a global public health problem. In: Krug E, Dahlberg LL, Mercy JA, Zwi AB, Lozano R, eds. World Report on Violence and Health. Geneva, Switzerland: World Health Organization; 2002:1-56.

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**Section I. Total Weapon
Reports Among MA Residents,
1994-2007**

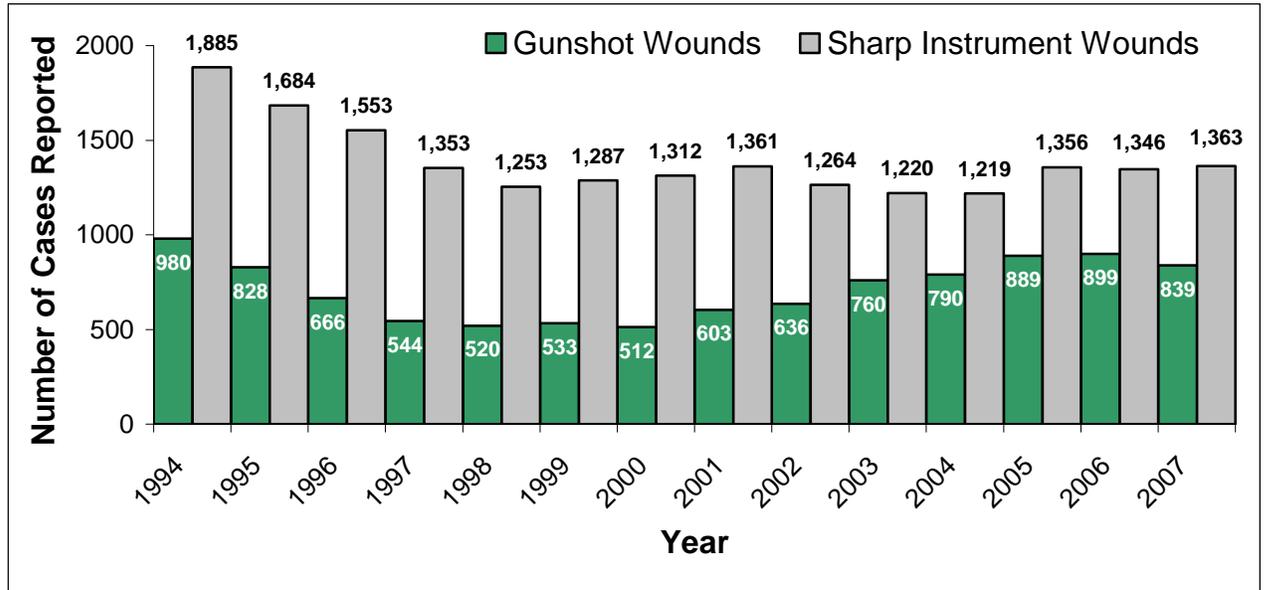
This section includes all Massachusetts resident cases reported to the Weapon Related Injury Surveillance System (WRISS) including self-inflicted, unintentional, assault-related, and undetermined intent gunshot wounds (GSWs), and assault-related sharp instrument wounds (SIWs). While the historical background section provided an overview on homicides both nationally and in Massachusetts, this section includes *all* cases captured by WRISS. It includes those who were subsequently admitted to a hospital, discharged, placed under observation, or died during treatment. Most WRISS cases (97%) are nonfatal; only 3% of all cases, 1% of assault-related SIW, and 8% of assault-related GSW cases died during treatment.

Figure 7. Total Number of Gun and Sharp Instrument Injury Reports by Year, MA Residents, 1994-2007



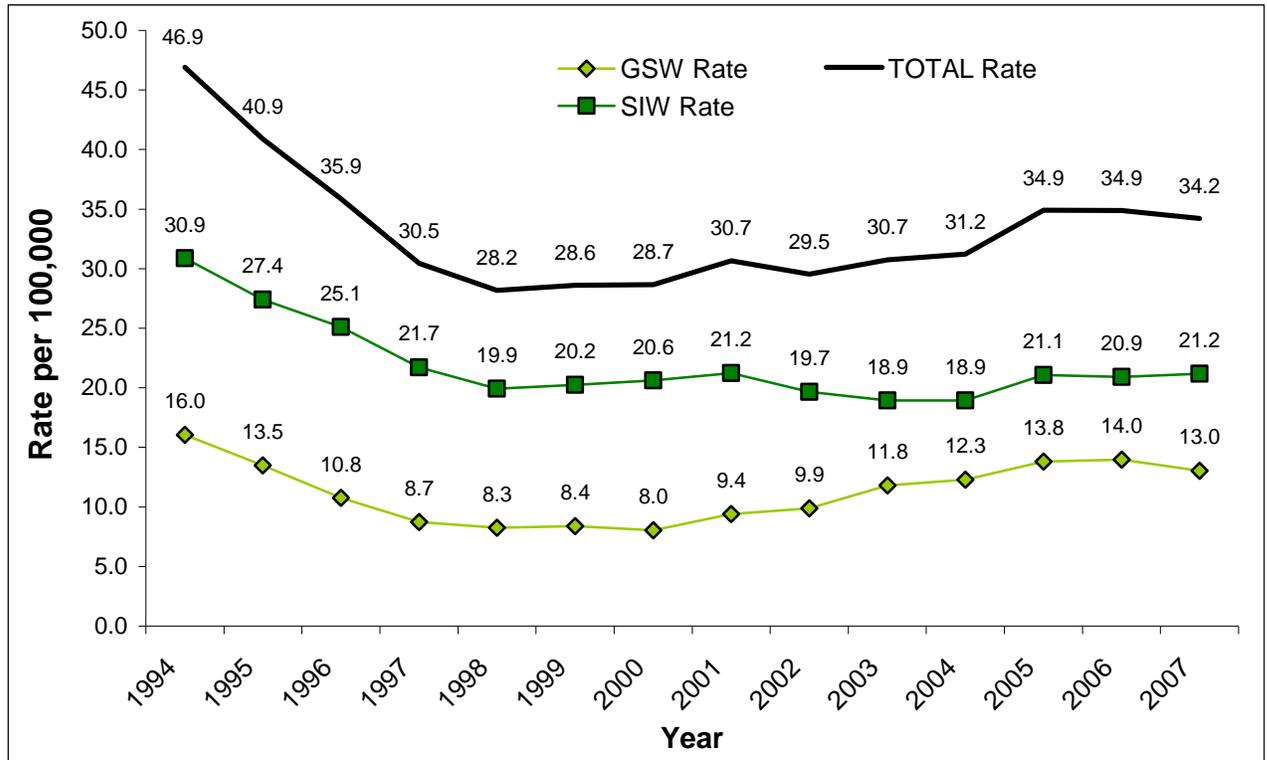
- ◆ From 1994 through 2007, there were 9,999 gun-related and 19,456 sharp instrument injury reports (Total=29,455) among Massachusetts residents (Figures 7 and 8).
- ◆ 1994 had the highest number of reported cases (N=2,865) and 1998 had the lowest number of reported cases (N=1,773), a decrease of 38%.
- ◆ Between 1997 and 2003 the number of cases reported to WRISS was less than 2,000 per year.

Figure 8. Total Number of Reported Cases by Weapon Type and Year, MA Residents, 1994-2007



- ◆ 1994 had the highest number of reported cases for both gun (N=980) and sharp instrument (N=1,885) injuries during the 14-year period. The lowest number of gun injury reports was in 2000 (N=512) and the lowest number of sharp instrument injury reports was in 2004 (N=1,219).
- ◆ An overall decrease of gun and sharp instrument injury reports combined (38.1%) occurred between 1994 (N=2,865) and 1998 (N=1,773). While sharp instrument injury reports leveled off from 1999 through 2007, gun injury reports increased 63.8% from 2000 (N=512) through 2007 (N=839).

Figure 9: Rate of Gun and Sharp Instrument Injury Reports by Year, MA Residents, 1994-2007



- ◆ Overall, the rate of gun and sharp instrument injury reports decreased an average of 12.4% per year during the first five years (1994 -1998) then increased an average of 2.7% per year from 1998 through 2007.
- ◆ The crude rate of gun injury cases decreased sharply (an average of 19% per year) between 1994 and 1997 then decreased slightly through 2000. From 2000 to 2007, the crude rate of gun-related reports increased an average of 11.4% per year.
- ◆ The crude rate of sharp instrument injury reports decreased an average of 10.3% per year between 1994 and 1998, and remained relatively stable from 1998 through 2007.

Table 1: Total Number of Gun-related Injury Reports by Intent and Year, MA Residents, 1994-2007

	Total Gun-related Injury Reports				
	Assault-Related	Unintentional	Self-Inflicted	Unspecified	TOTAL
	N	N	N	N	N
1994	662	163	47	108	980
1995	526	155	47	100	828
1996	393	166	35	72	666
1997	312	158	26	48	544
1998	318	117	31	54	520
1999	375	94	26	38	533
2000	328	130	21	33	512
2001	379	138	26	60	603
2002	400	145	15	76	636
2003	479	174	27	80	760
2004	486	213	16	75	790
2005	579	196	16	98	889
2006	588	189	16	106	899
2007	566	185	26	62	839
TOTAL	6,391	2,223	375	1,010	9,999

Table 1 shows the total number of gun-related reports by intent. This includes all guns including firearms, non-powder guns (e.g., pellet or BB guns), and non-traditional guns such as nail guns.

Gunshot Wound Reports:

- ◆ Between 1994 and 2007, there were a total of 9,999 gunshot wound reports.
- ◆ The majority of which were assault-related (64%), followed by unintentional (22%), and those where intent was unknown or unspecified (10%).
- ◆ Self-inflicted gunshot wounds accounted for only 3.8% of total GSWs reported. Self-inflicted GSWs are often fatal and in many cases would not be captured by WRISS (i.e., such deaths are likely to go directly to the medical examiner's office).

Assault-related GSWs:

- ◆ There was a total of 6,391 assault-related GSWs reported to WRISS.
- ◆ The highest number was reported in 1994 (N=662) and the lowest in 1997 (N=312).
- ◆ There was a sharp decline between 1994 and 1997 (an average of 23.6% per year) and a slower, gradual increase between 1998 and 2007 (an average of 7.3% per year).

Unintentional GSWs:

- ◆ There was a total of 2,223 unintentional or "accidental" GSWs reported to WRISS.
- ◆ The highest number was reported in 2004 (N=213), and lowest in 1999 (N=94).

Table 2: Total Number of Assault-related Gun and Sharp Instrument Injury Reports by Weapon Type and Year, MA Residents, 1994-2007

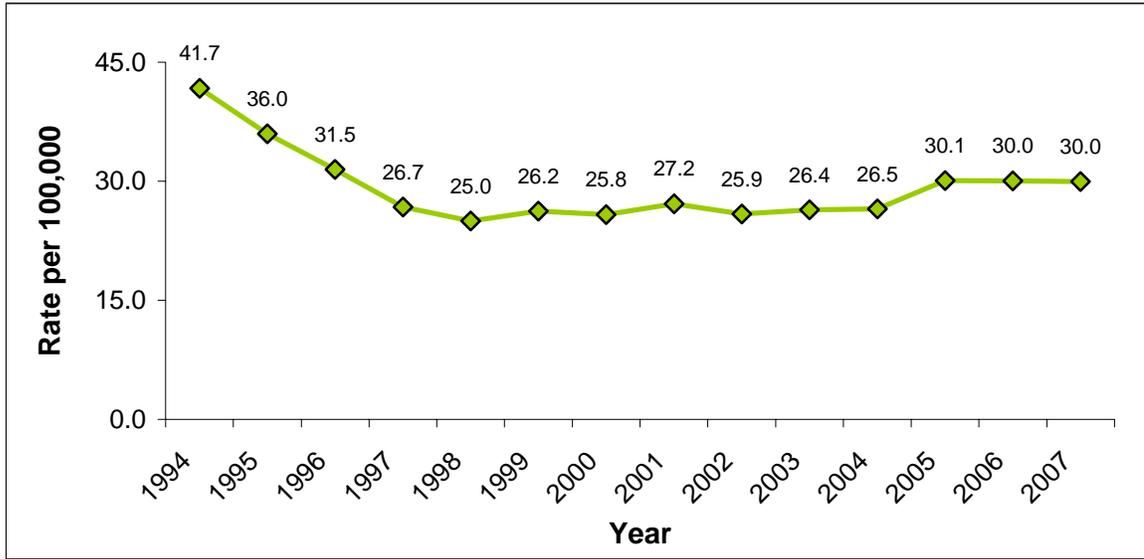
	Total Assault-related Gun and Sharp Instrument Injury Reports									
	Firearm		Non-powder Gun		Other Gun		Sharp Instrument		TOTAL	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	625	10.2	37	0.6	0	--	1,885	30.9	2,547	41.7
1995	503	8.2	20	0.3	3	--	1,684	27.4	2,210	36.0
1996	337	5.5	43	0.7	13	0.2	1,553	25.1	1,946	31.5
1997	270	4.3	25	0.4	17	0.3	1,353	21.7	1,665	26.7
1998	291	4.6	20	0.3	7	0.1	1,253	19.9	1,571	25.0
1999	339	5.4	30	0.5	6	0.1	1,287	20.2	1,662	26.3
2000	286	4.5	34	0.5	8	0.1	1,312	20.6	1,640	25.8
2001	335	5.2	42	0.7	2	--	1,361	21.2	1,740	27.2
2002	343	5.3	48	0.7	9	0.1	1,264	19.7	1,664	25.9
2003	402	6.2	69	1.1	8	0.1	1,220	18.9	1,699	26.4
2004	420	6.5	62	1.0	4	--	1,219	18.9	1,705	26.5
2005	507	7.9	72	1.1	0	--	1,356	21.1	1,935	30.1
2006	519	8.1	67	1.0	2	--	1,346	20.9	1,934	30.0
2007	502	7.8	63	1.0	1	--	1,363	21.2	1,929	30.0
TOTAL	5,679	6.4	632	0.7	80	0.1	19,456	21.9	25,847	29.1

Table 2 includes all assault-related injuries by type of weapon. There were a total of 25,847 assault-related gun and sharp instrument injury reports for Massachusetts residents filed with WRISS from 1994 through 2007. Assault-related gun and sharp instrument injury cases are further explored in Section II.

- ◆ Seventy-five percent of assault-related injury reports were due to sharp instruments, 22% were due to firearms and 2.4% were due to non-powder guns.
- ◆ Overall, assault-related injury reports declined by an average of 11.2% per year from 1994 to 1998 then increased by an average of 2.5% per year from 1998 to 2007.
- ◆ Assault-related firearm injury reports decreased by an average of 25.6% per year from 1994 to 1997, then increased by an average of 7.2% per year from 1997 to 2007.
- ◆ Assault-related non-powder gun injury reports increased 70.3% from 1994 (N=37) to 2007 (N=63).
- ◆ Assault-related sharp instrument injury reports decreased 27.6% over the course of the 14-year period.

Section II. Assault-related Weapon Injury Reports

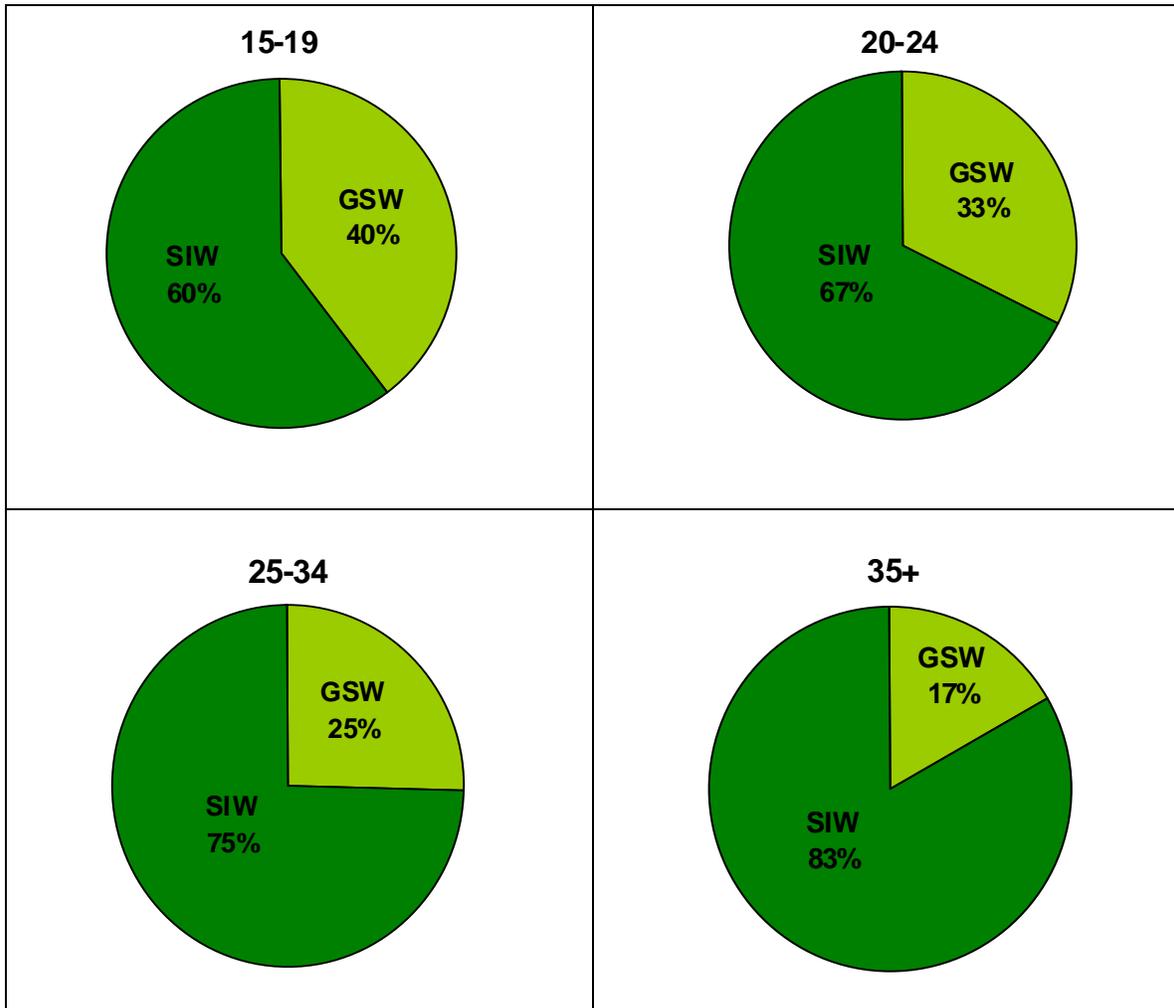
Figure 10: Trend in Rates of Assault-related Injury Reports, MA Residents, 1994-2007



Year	Assault-related Weapon Injury Reports	
	N	Crude Rate per 100,000
1994	2,547	41.7
1995	2,210	36.0
1996	1,946	31.5
1997	1,665	26.7
1998	1,571	25.0
1999	1,662	26.3
2000	1,640	25.8
2001	1,740	27.2
2002	1,664	25.9
2003	1,699	26.4
2004	1,705	26.5
2005	1,935	30.1
2006	1,934	30.0
2007	1,929	30.0

- ◆ The overall rate of assault-related weapon injury cases decreased sharply (average of 12% per year) between 1994 and 1998, then increased more gradually from 1999 through 2007 (average of 2.2% per year).
- ◆ The overall rate of assault-related weapon injury cases was still considerably lower in 2007 (30.0 per 100,000) than in 1994 (41.7 per 100,000); an overall decrease of 28%.
- ◆ The number and rate of assault-related weapon injury cases are largely driven by sharp instrument-related cases.

Figure 11: Percent of Assault-related Sharp Instrument vs. Gunshot Wound Reports by Age Group, 2005-2007*

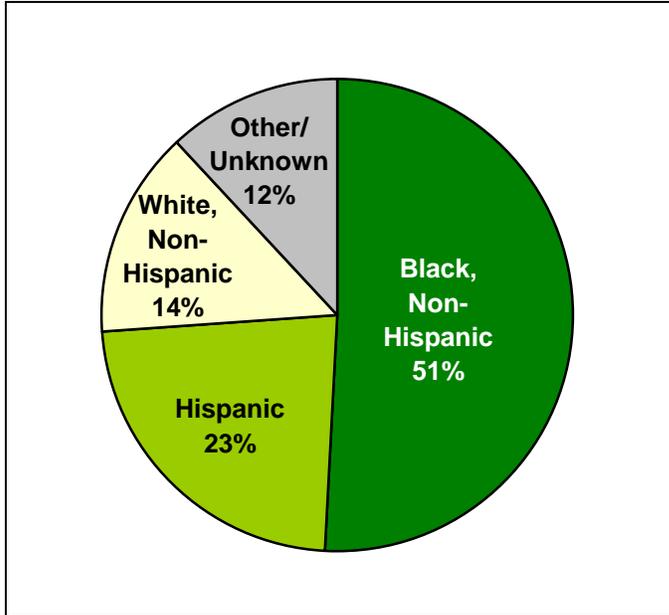


In 2005-2007

- ◆ The relative percent of assault-related GSW to SIW cases decreases with age.
- ◆ Among persons ages 15-19, 40% of all assault-related weapon injuries reported to WRISS in 2005-2007 were the result of GSWs.
- ◆ Compared to persons ages 15-19, the percentage of assault-related GSW reports was less among persons between the ages of 20 and 24 (33%), persons ages 25-34, (25%), and persons ages 35 and older (17%).

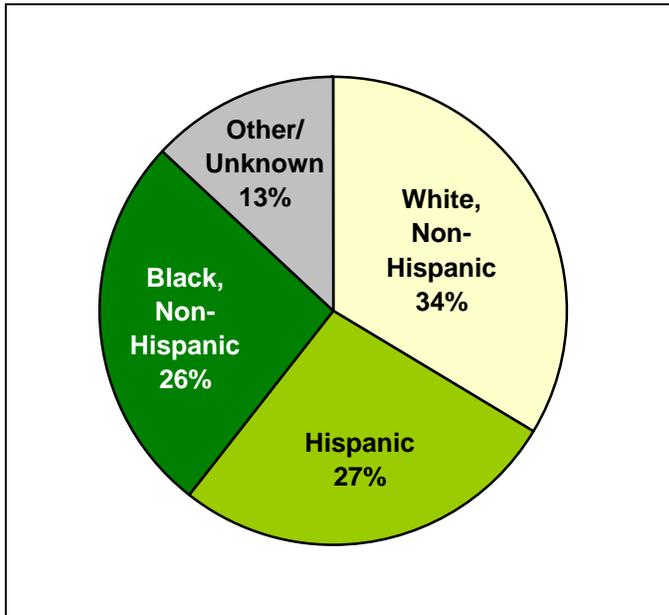
**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Figure 12: Percent of Race and Ethnicity for Assault-related Gunshot Wound Reports, 2005-2007*



◆ Among assault-related gunshot wound cases, Black, Non-Hispanic residents accounted for the majority of cases reported to WRISS (51%), followed by Hispanic residents (23%).

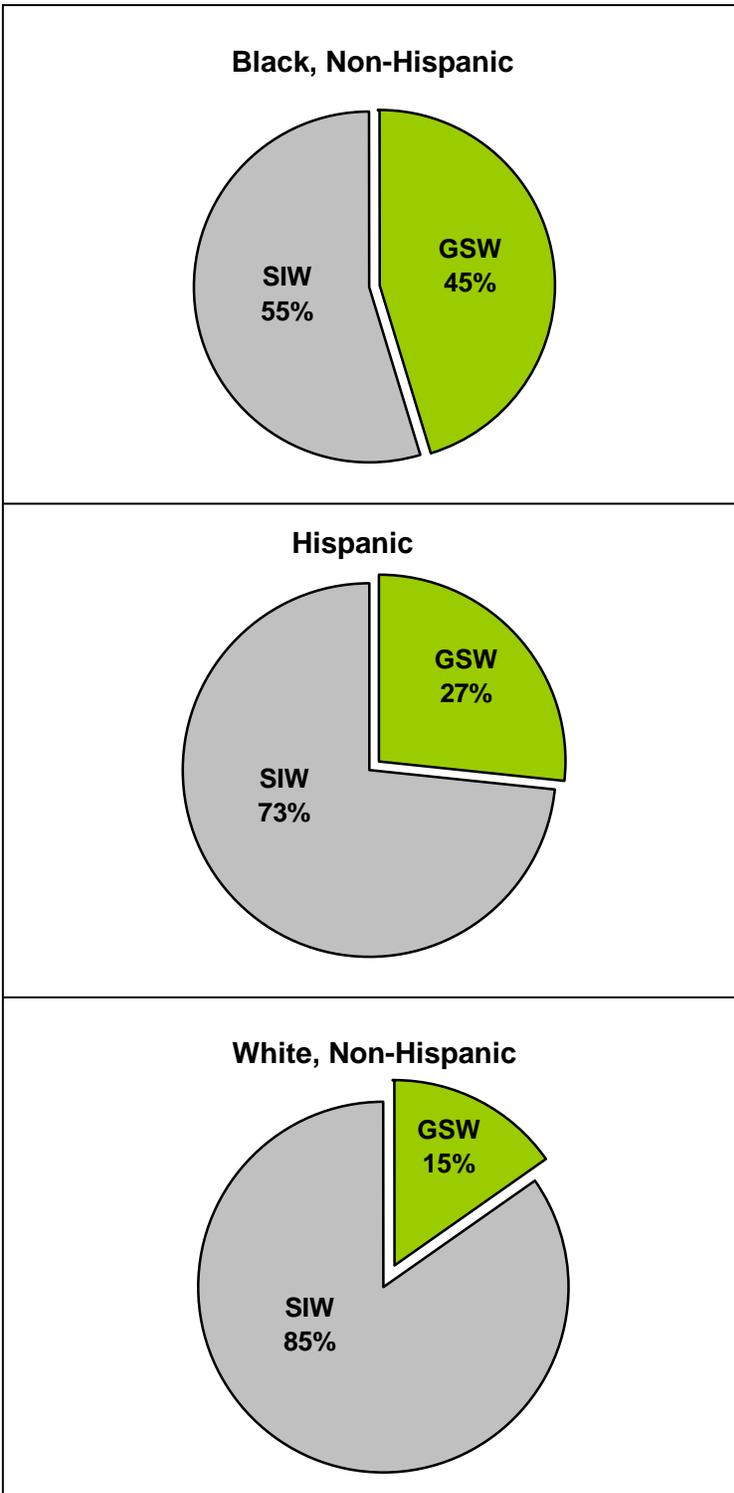
Figure 13: Percent of Race and Ethnicity for Assault-related Sharp Instrument Wound Reports, 2005-2007*



◆ Among assault-related sharp instrument wound cases, White, Non-Hispanic residents accounted for the majority of cases reported to WRISS (34%), followed by Hispanic residents (27%).

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

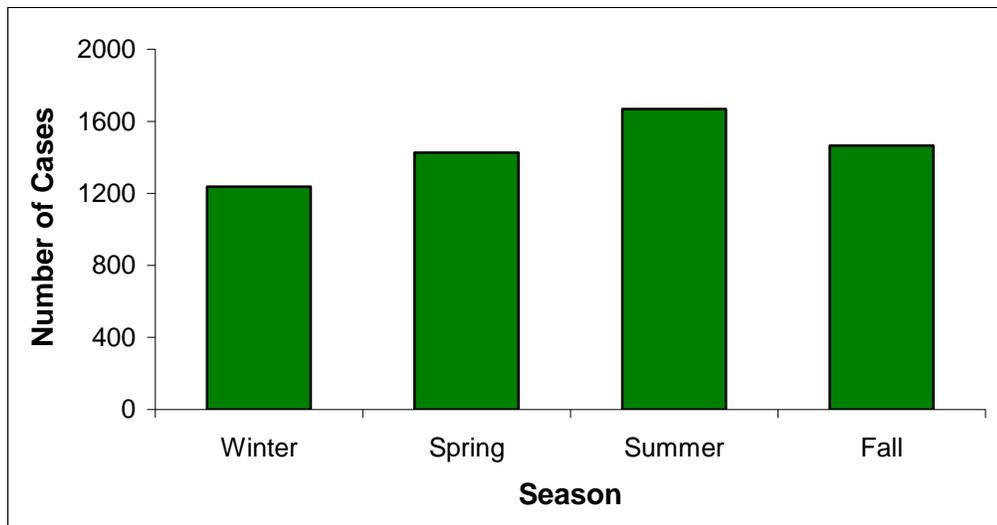
Figure 14: Percent of Assault-related Sharp Instrument Wound vs. Gunshot Wound Reports by Race and Ethnicity, 2005-2007*



- ◆ The relative percent of assault-related GSWs to SIWs varies by race/ethnicity.
- ◆ Among Black, Non-Hispanic residents, 45% of assault-related weapon cases reported to WRISS in 2005-2007 were the result of gunshot wounds.
- ◆ Among Hispanic residents, 27% of assault-related weapon cases reported to WRISS were the result of gunshot wounds, and among White, Non-Hispanic residents, 15% of cases were gunshot wounds.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Figure 15. Number of Assault-related Sharp Instrument and Gunshot Wound Reports by Season, MA Residents, 2005-2007*

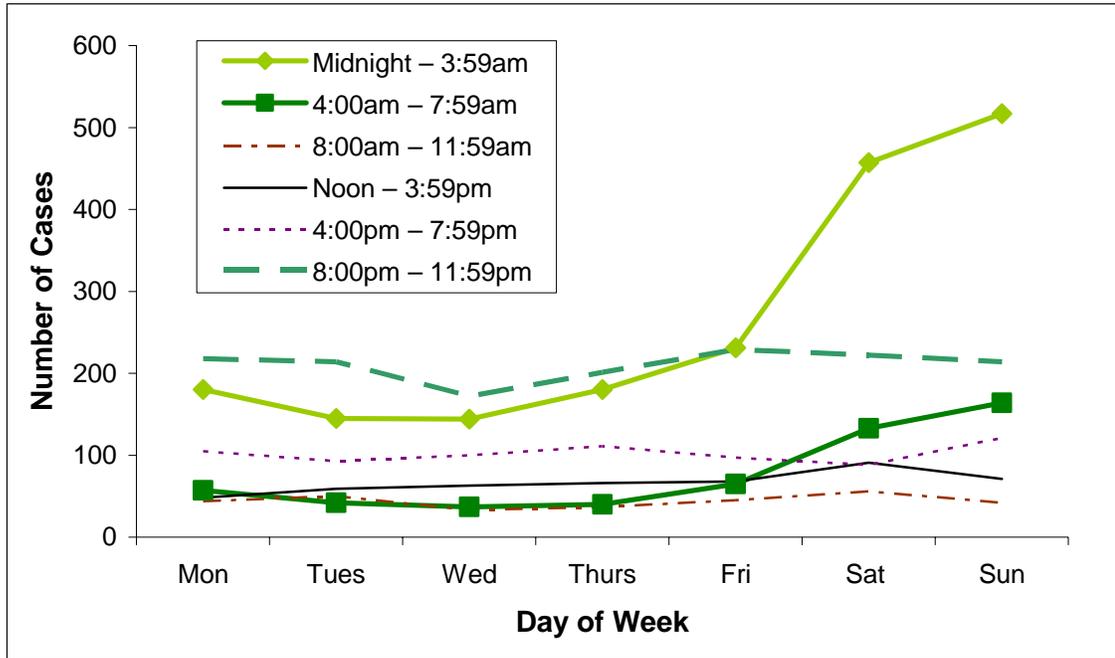


Month of ED Visit	Season	Number	Percent of Total
Dec-Feb	Winter	1237	21.3
March-May	Spring	1427	24.6
June-Aug	Summer	1668	28.8
Sept-Nov	Fall	1466	25.3

- ◆ In 2005-2007, more assault-related weapon injuries reported to WRISS occurred in the summer (28.8%) than in other seasons, although this difference was *not* statistically significant.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Figure 16. Number of Assault-related Sharp Instrument and Gunshot Wound Reports by Day of Week and Time of Day, MA Residents, 2005-2007*



Time of Arrival at ED	Day of Week							
	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Missing
8:00am – 11:59am	44	50	33	37	45	56	42	2
Noon – 3:59pm	48	59	63	66	68	91	71	1
4:00pm – 7:59pm	105	93	100	111	97	88	121	1
8:00pm – 11:59pm	218	214	172	201	229	222	214	4
Midnight – 3:59am	180	145	144	180	231	457	517	7
4:00am – 7:59am	57	42	37	40	65	133	164	6
TOTAL**	652	603	549	635	735	1047	1129	21
Percent	12.2	11.3	10.3	11.9	13.7	21.1	19.6	n/a

**Does not include cases for which time of arrival is missing.

In 2005-2007:

- ◆ Not surprisingly, the time periods with the highest number of assault-related weapon injury cases arriving at the ED, occurred from 8:00 p.m. to 11:59 p.m., and midnight to 3:59 a.m. This held true for every day of the week.
- ◆ The number of cases arriving at the ED between 8:00 p.m. and 11:59 p.m. remained steady over the course of the week while the number of cases in other time periods, for example midnight to 3:59 a.m. increased on the weekend.
- ◆ Forty-one percent of cases arrived at the ED on the weekend (Saturday and Sunday).

*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

Table 3. Number of Assault-related Sharp Instrument and Gunshot Wound Reports by Relationship of Assailant to Patient, MA Residents, 2005-2007*

Relationship of Assailant to Patient ¹	3 Year Total N		
	Male	Female	TOTAL*
Spouse / Partner	168	88	265
Other Family	99	37	140
Acquaintance	359	92	460
Stranger	797	114	943
Police	12	1	14
Gang Member	54	2	63
Other non-Family	45	15	61
Unknown	2361	189	2636
Missing / Invalid	1034	146	1216

*Includes cases for which sex was missing (N=185).

¹ Circumstance and relationship variables frequently include a high percentage of missing and unknown cases in data collection systems for a variety of reasons including the unwillingness to disclose information that may place the patient at legal disadvantage or at personal risk.

Note: Due to the large number of cases with unknown and missing values for relationship, care must be taken in interpreting this data.

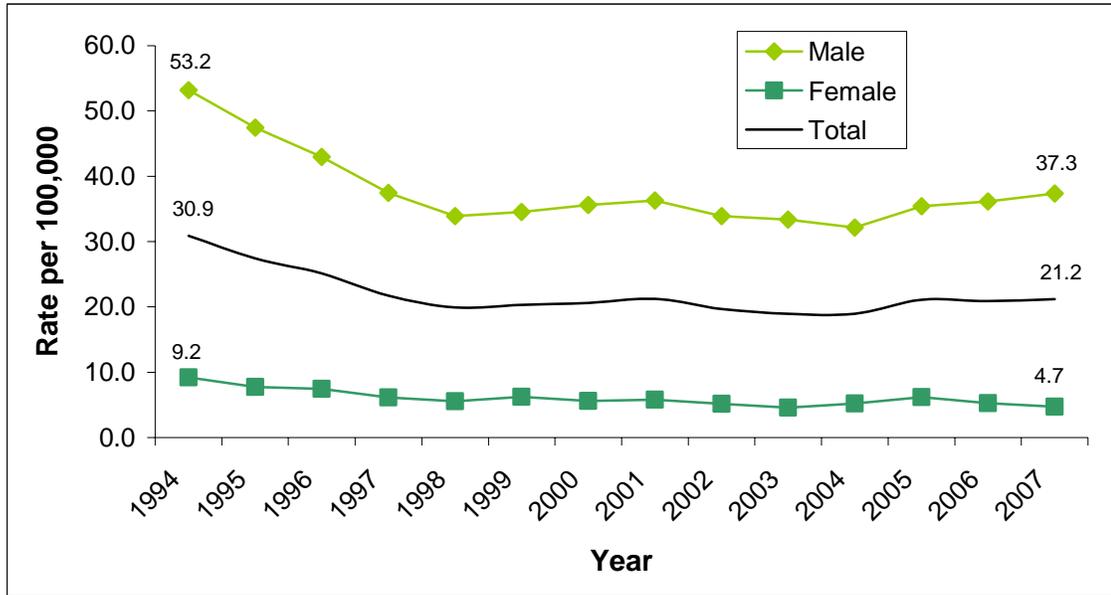
In 2005-2007:

- ◆ Relationship of the assailant to the patient was *not* reported or was unknown in 66.4% of cases – 68.9% of males and 49% of females.
- ◆ Among males, in cases where the relationship was reported (N=1,534), 10.7% reported the assailant as a spouse/partner of the patient, 6.3% as a family member, and 51.0% as a stranger.
- ◆ Among females, in cases where relationship was reported (N=349), 24.5% reported the assailant as a spouse/partner of the patient, 10.3% as a family member, and 31.8%, as a stranger.

*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

ASSAULT-RELATED SHARP INSTRUMENT WOUNDS (SIWs)

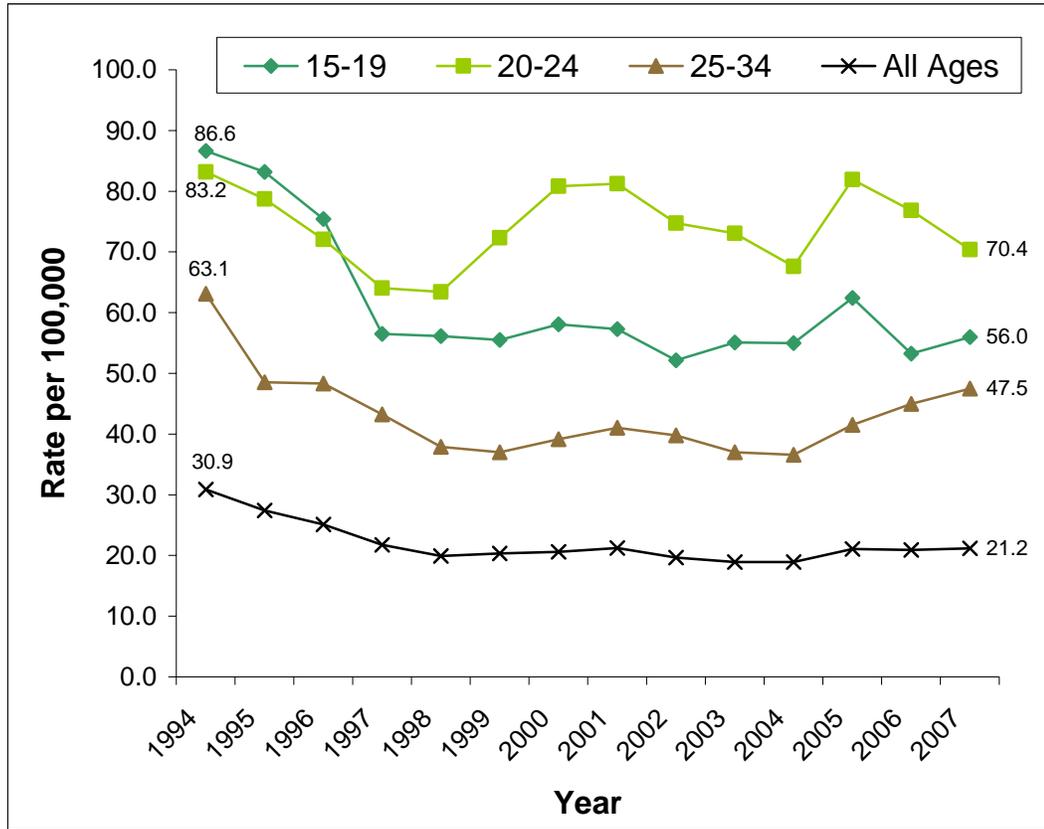
Figure 17. Trend in Rate of Assault-related Sharp Instrument Wound Reports by Sex, MA Residents, 1994-2007



Year	Males		Females		TOTAL	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	1566	53.2	291	9.2	1885	30.9
1995	1406	47.4	246	7.7	1684	27.4
1996	1283	43.0	238	7.4	1553	25.1
1997	1127	37.5	197	6.1	1353	21.7
1998	1031	33.9	181	5.6	1253	19.9
1999	1055	34.5	204	6.2	1287	20.3
2000	1091	35.6	185	5.6	1312	20.6
2001	1122	36.3	192	5.8	1361	21.2
2002	1052	33.9	172	5.2	1264	19.7
2003	1038	33.3	152	4.6	1220	19.0
2004	1000	32.1	173	5.2	1219	18.9
2005	1102	35.4	206	6.2	1356	21.1
2006	1127	36.2	175	5.3	1346	21.0
2007	1164	37.3	157	4.7	1363	21.2

- ◆ The number of assault-related sharp instrument wound reports among males was approximately six times higher than among females.
- ◆ Rates of assault-related sharp instrument wound reports decreased an average of 10.3% per year from 1994 to 1998, then increased 0.4% per year through 2007.
- ◆ Rates of assault-related sharp instrument wound reports among males decreased substantially (average of 10.7% per year between 1994 and 1998), fluctuated from 1999 through 2004, and increased in more recent years (5.3% per year 2005-2007).
- ◆ Rates of assault-related sharp instrument wound reports decreased gradually among females, an average of 3.7% per year between 1994 and 2007.

Figure 18. Trend in Rate of Assault-related Sharp Instrument Wound Reports by Selected Age Groups, MA Residents, 1994-2007



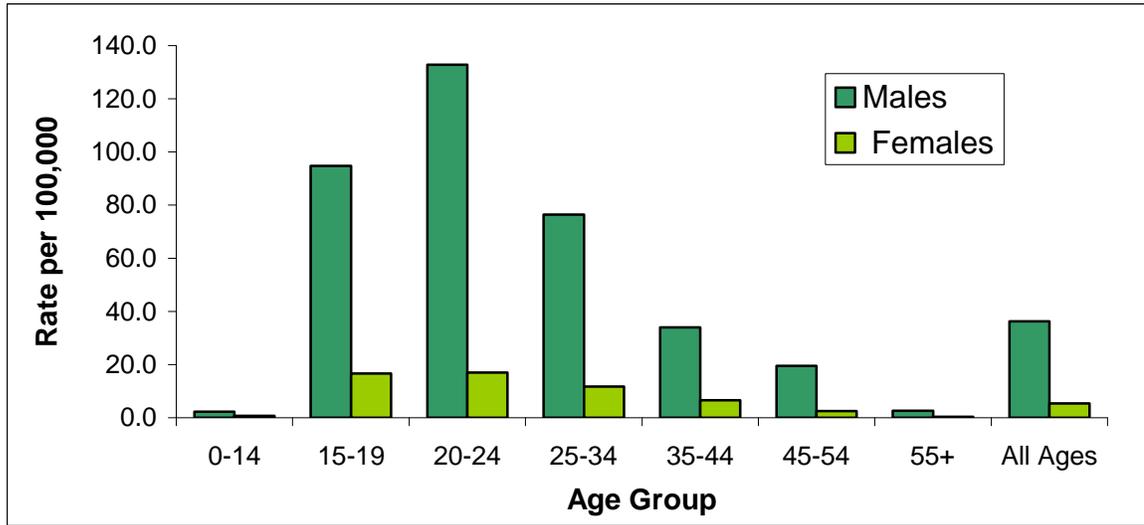
Year	15-19		20-24		25-34		All Ages	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	337	86.6	414	83.2	663	63.1	1885	30.9
1995	331	83.2	383	78.7	505	48.5	1684	27.4
1996	307	75.4	338	72.1	499	48.3	1553	25.1
1997	232	56.5	297	64.0	443	43.3	1353	21.7
1998	235	56.2	295	63.4	381	37.9	1253	19.9
1999	232	55.5	315	72.3	358	37.0	1287	20.3
2000	242	58.1	329	80.8	362	39.1	1312	20.6
2001	243	57.3	337	81.2	374	41.0	1361	21.2
2002	224	52.2	315	74.7	357	39.8	1264	19.7
2003	239	55.1	313	73.1	319	37.0	1220	18.9
2004	241	55.0	295	67.6	320	36.6	1219	18.9
2005	277	62.4	363	81.9	348	41.5	1356	21.1
2006	238	53.3	345	76.9	373	45.0	1346	20.9
2007	250	56.0	316	70.4	394	47.5	1363	21.2

- ◆ Rates of assault-related sharp instrument wound reports are highest among those 15-24 years of age. In 1994, the highest rates of assault-related sharp instrument wound

reports were among 15-19 year olds; however rates among this age group were the fastest to decline and by 1997, the rate among 20-24 year olds had surpassed that among 15-19 year olds. This gap has continued through 2007.

- ◆ The largest decreases in rates were between 1994 and 1998 among 15-19 (35%) and 25-34 year olds (24%).
- ◆ Among 15-19 year olds, rates decreased by an average of 11.4% per year between 1994 and 1998 and then remained relatively stable.
- ◆ Rates decreased between 1994 and 1997 by an average of 6.0% among 20-24 year olds and then increased an average of 1.1% per year through 2007.
- ◆ Among those 25-34 years of age, rates decreased by an average of 11.5% per year between 1994 and 1998 and then increased an average of 1.9% per year through 2007.

Figure 19. Rate of Assault-related Sharp Instrument Wound Reports by Sex and Age Group, MA Residents, 2005-2007*

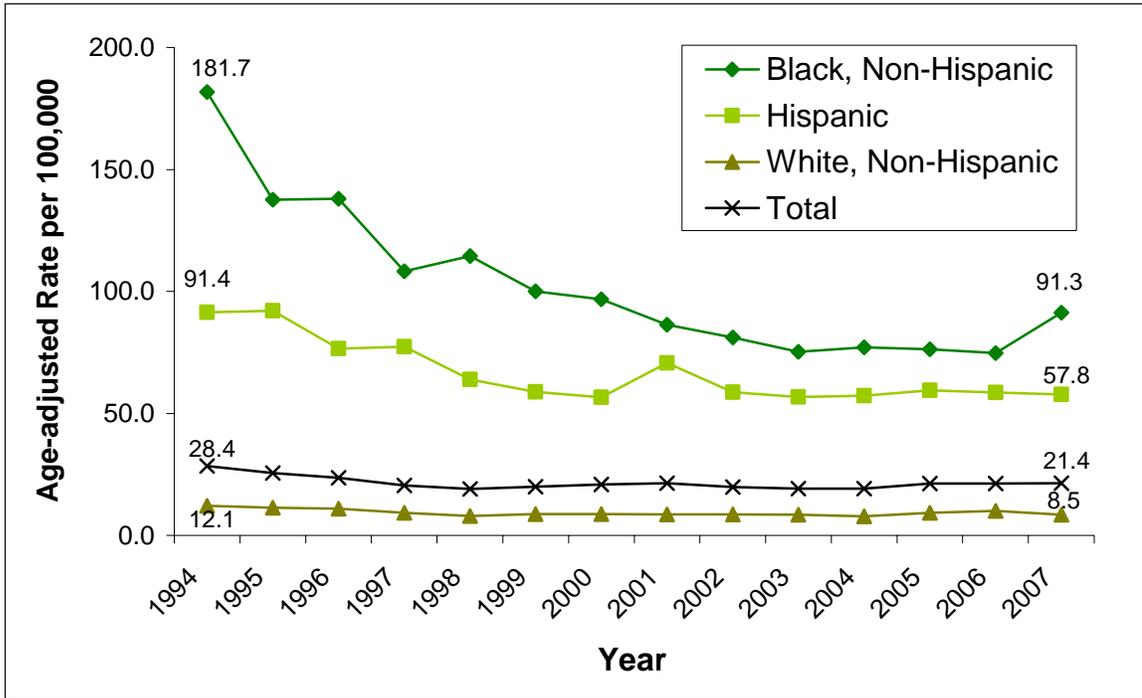


Age Group	Males		Females		Total	
	3 Year N	Avg. Annual Crude Rate per 100,000	3 Year N	Avg. Annual Crude Rate per 100,000	3 Year N	Avg. Annual Crude Rate per 100,000
0-14	41	2.2	12	0.7	54	1.5
15-19	640	94.8	110	16.6	765	57.2
20-24	888	132.8	114	17.0	1024	76.4
25-34	954	76.5	146	11.7	1115	44.6
35-44	500	33.9	101	6.6	613	20.5
45-54	275	19.5	38	2.6	313	10.8
55+	54	2.6	10	0.4	64	1.4
TOTAL	3393	36.3	538	5.4	4065	21.1

- ◆ Males had 6.3 times more sharp instrument wound reports than females.
- ◆ Males had higher numbers and rates of sharp instrument wound reports than females for all age groups.
- ◆ Overall, the rate of assault-related sharp instrument wound reports among males was 6.7 times higher than the rate among females.
- ◆ Rates of assault-related sharp instrument wound reports were highest among those 20-24 years of age in both males and females. In this age group, males had a 7.8 times higher rate of injury than females.

*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

Figure 20. Trend in Age-adjusted Rate* of Assault-related Sharp Instrument Wound Reports by Race/Ethnicity, MA Residents, 1994-2007



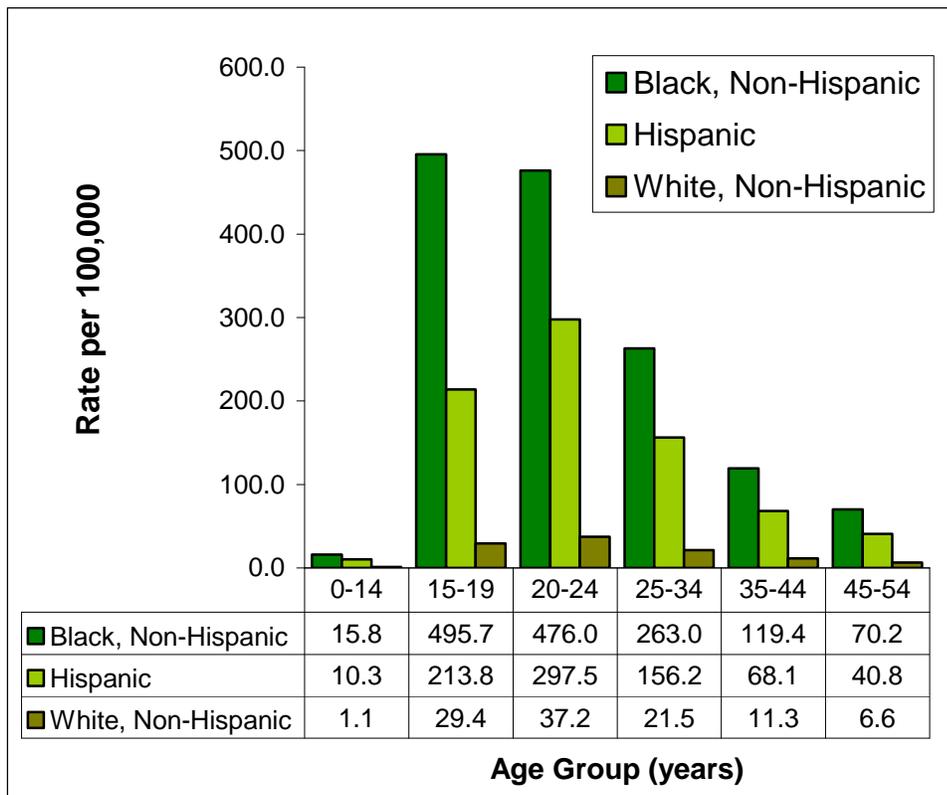
Year	Black, Non-Hispanic		Hispanic		White, Non-Hispanic		TOTAL	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	586	211.3	355	111.2	687	12.9	1885	30.9
1995	436	156.9	356	109.4	643	12.0	1684	27.4
1996	436	157.5	309	92.6	617	11.4	1553	25.1
1997	346	124.5	312	91.2	518	9.6	1353	21.7
1998	358	127.8	258	73.2	453	8.3	1253	19.9
1999	343	110.4	277	70.4	462	8.6	1287	20.3
2000	386	106.3	306	70.7	438	8.3	1312	20.6
2001	355	95.5	382	84.9	436	8.2	1361	21.2
2002	335	88.5	331	71.3	432	8.2	1264	19.7
2003	318	82.8	324	67.9	422	8.0	1220	18.9
2004	332	85.4	335	68.7	388	7.4	1219	18.9
2005	339	86.0	368	73.7	460	8.8	1356	21.1
2006	331	82.8	366	71.6	490	9.4	1346	20.9
2007	398	99.6	364	71.2	417	8.0	1363	21.2

*Please note that we have included age-adjusted rates for figure 20 to adjust for any age differences between races, but have included crude rates in the table.

- ◆ Black, non-Hispanic residents had the highest number and rate of assault-related sharp instrument wounds for all years examined followed by Hispanic residents. White, non-Hispanic residents consistently had the lowest number and rate of assault-related sharp instrument wounds.

- ◆ Overall, age-adjusted rates of assault-related sharp instrument wounds decreased by an average of 8.9% per year between 1994 and 1998 then rose slightly by an average of 0.9% per year between 1998 and 2007.
- ◆ The largest change was seen among Black, non-Hispanic residents, among whom the age-adjusted rate of assault-related sharp instrument wounds decreased by an average of 8.5% per year between 1994 and 2003 and then increased by an average of 4.0% per year through 2007.
- ◆ Among Hispanic residents, the age-adjusted rate of assault-related sharp instrument wounds decreased by an average of 8.6% per year between 1994 and 1999 and then remained relatively stable, decreasing by an average of 0.6% per year through 2007.
- ◆ In 1994, the age-adjusted rate of assault-related sharp instrument wounds among Black, non-Hispanic residents was 1.9 times higher than the rate in Hispanic residents and 16.4 times higher than the rate in White, non-Hispanic residents. By 2007, Black, non-Hispanic residents had a 1.6 times higher age-adjusted rate of assault-related sharp instrument wounds than Hispanic residents and a 10.7 times higher rate than White, non-Hispanic residents.

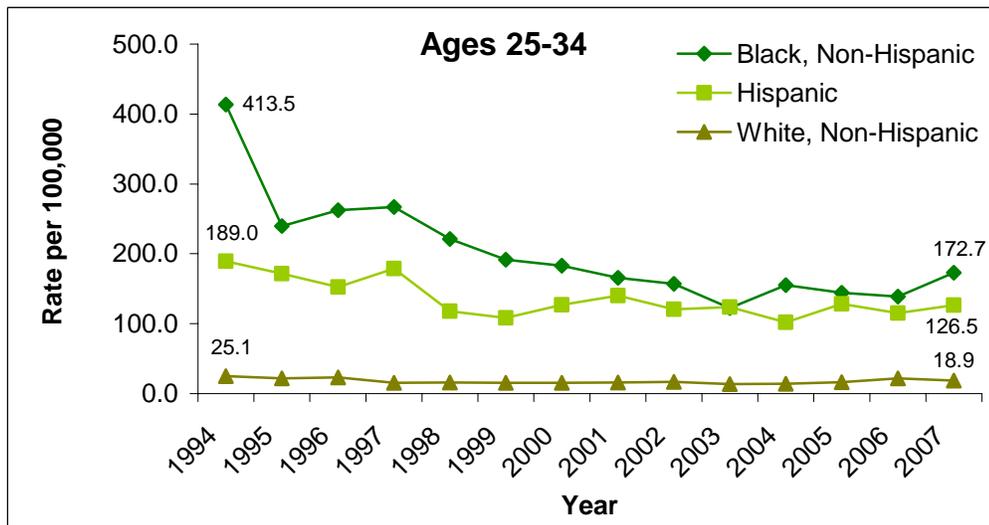
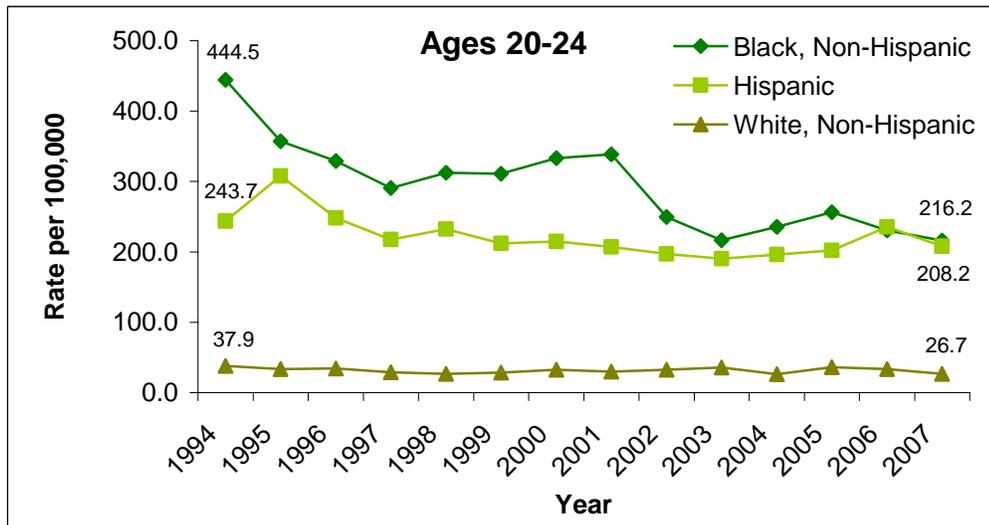
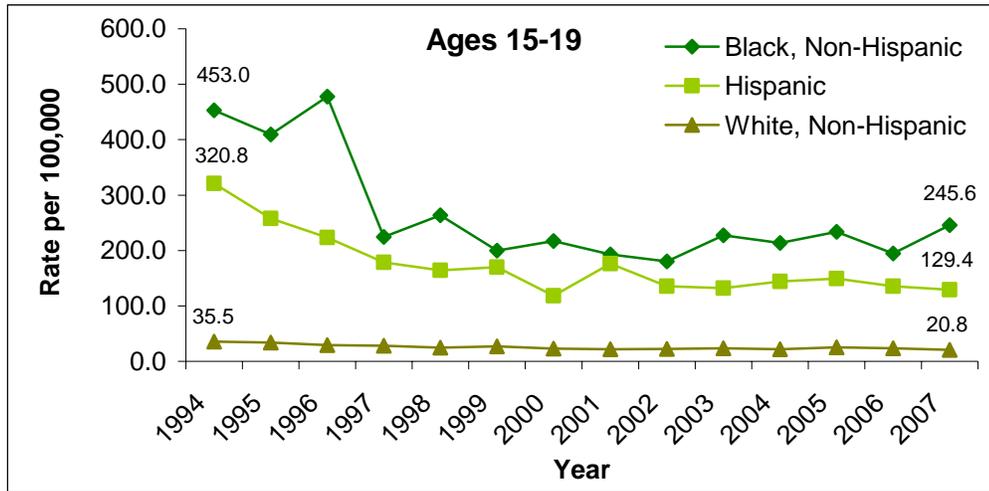
Figure 21. Rates of Assault-related Sharp Instrument Wound Reports by Age Group and Race/Ethnicity, MA Residents, 2005-2007*



- ◆ At all ages, Black non-Hispanics and Hispanics had higher rates for assault-related sharp instrument wound cases than White non-Hispanics (Figure 21).
- ◆ The largest disparity in age-specific rates of assault-related sharp instrument wound cases between Black, non-Hispanic residents and White, non-Hispanic residents was in 15-19 year olds, among whom Black, non-Hispanic residents had a 16.9 times higher rate than White, non-Hispanic residents.
- ◆ The largest disparity in age-specific rates of assault-related sharp instrument wound cases between Black, non-Hispanic residents and Hispanic residents was also in 15-19 year olds, among whom Black, non-Hispanic residents had a 2.3 times higher rate than Hispanic residents.
- ◆ The largest disparity in age-specific rates of assault-related sharp instrument wound cases between Hispanic residents and White, non-Hispanic residents was in 20-24 year olds, among whom Hispanic residents had an 8 times higher rate than White, non-Hispanic residents.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Figure 22. Trend in Rate of Assault-related Sharp Instrument Wound Reports for Selected Age Groups by Race/Ethnicity, MA Residents, 1994-2007



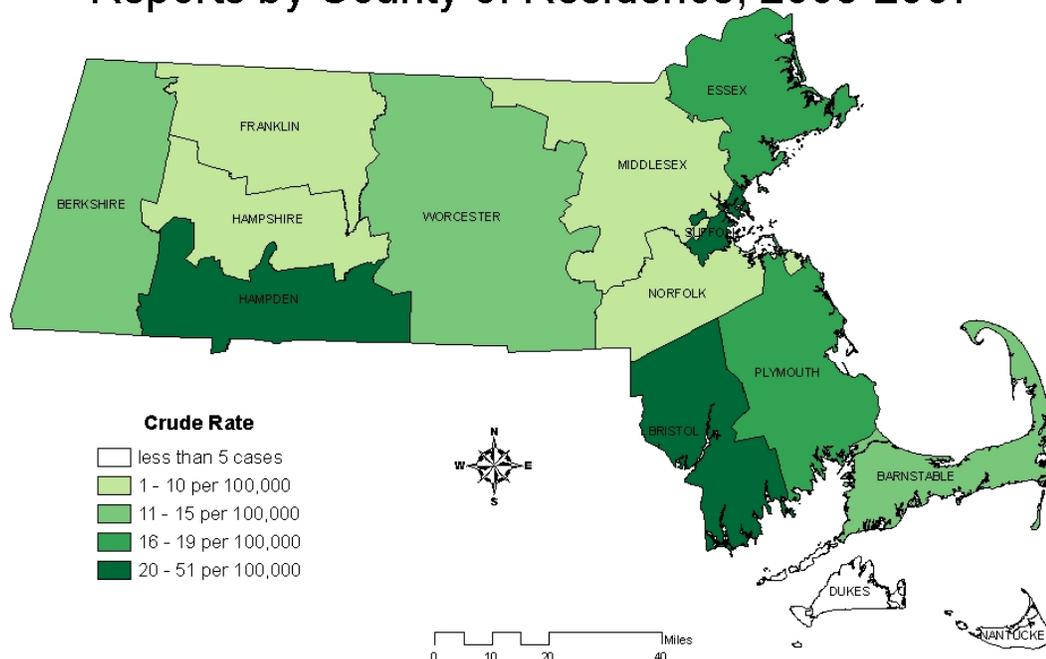
- ◆ Changes in the rate of sharp instrument wound cases over time varied by both race/ethnicity and age group (Figure 22). Please note that the beginning or ending of a significant trend may not correspond to the year with the lowest or highest rate.

- ◆ Among 15-19 year olds:
 - The rate among Black, non-Hispanic residents decreased by an average of 16.7% per year from 1994 through 1999. Since 1999, the rate has increased 1.4% per year.
 - Among Hispanic residents, the rate decreased by an average of 16.1% per year from 1994 through 1998. Since 1998, the rate has increased 1.7% per year.
 - Among White, non-Hispanic residents, the rate decreased by an average of 6.8% per year from 1994 through 2000 and then remained relatively stable, decreasing by only 0.2% per year through 2007.

- ◆ Among 20-24 year olds:
 - The rate among Black, non-Hispanic residents decreased by an average of 4.4% per year from 1994 through 2007.
 - Among Hispanic residents, the rate decreased by an average of 1.9% per year from 1994 through 2007.
 - Among White, non-Hispanic residents, the rate decreased by only an average of 0.7% per year from 1994 through 2007.

- ◆ Among 25-34 year olds:
 - The rate among Black, non-Hispanic residents decreased by an average of 9.9% per year from 1994 through 2003 and then increased by an average of 5.2% per year through 2007.
 - Among Hispanic residents, the rate decreased by an average of 3.1% per year from 1994 through 2007.
 - Among White, non-Hispanic residents, the rate decreased by an average of 10.6% per year from 1994 through 1999 and then increased by an average of 3.3% per year through 2007.

Map 1. Rate of Assault-related Sharp Instrument Wound Reports by County of Residence, 2005-2007



County	3-Year Total N	Average Annual Crude Rate per 100,000	Average Annual Age-adjusted Rate per 100,000
BARNSTABLE	87	12.9	15.3
BERKSHIRE	60	15.2	16.7
BRISTOL	515	31.5	32.3
DUKES	0	--	--
ESSEX	413	18.7	20.3
FRANKLIN	13	6.0	6.6
HAMPDEN	524	37.9	38.6
HAMPSHIRE	30	6.5	5.8
MIDDLESEX	428	9.7	9.9
NANTUCKET	4	--	--
NORFOLK	146	7.4	8.3
PLYMOUTH	258	17.4	18.4
SUFFOLK	1054	51.0	44.7
WORCESTER	336	14.3	14.4
UNKNOWN	197	n/a	n/a
STATEWIDE	4065	21.1	21.3

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

- ◆ Rates for assault-related sharp instrument wounds by county of residence are presented on Map 1.
- ◆ Suffolk County had the highest number and rate of assault-related sharp instrument wounds. Suffolk County has approximately 11% of the MA population but 27% of sharp instrument wounds where the county of residence was known.
- ◆ Hampden County had the second highest number and rate of assault-related sharp instrument wounds. Hampden County has approximately 7% of the MA population but 13.5% of the sharp instrument wounds where the county of residence was known.
- ◆ Middlesex County has the largest population but the fourth highest number and ninth highest rate of assault-related sharp instrument wounds.

Table 4. Assault-related Sharp Instrument Wound Reports by Circumstance, MA Residents, 2005-2007*

Circumstance¹	3-Year Total Number
Altercation / fight	1439
Attack / assault / jumped	1009
Robbed / mugged / theft / carjack	258
Intervening in argument/fight	123
Unwilling to disclose	93
Drug-related	23
Possible road rage	3
Police Officer injured	2
Other	63
Missing / Unknown	1052

¹ Circumstance and relationship variables frequently include a high percentage of missing and unknown cases in data collection systems for a variety of reasons including the unwillingness to disclose information that may place the patient at legal disadvantage or at personal risk.

Note: Due to the large number of unknown and missing values, care must be taken in interpreting this data.

- ◆ Circumstance information was reported for 74% of sharp instrument wound cases.
- ◆ Among cases where circumstance information was reported, 47.8% involved an altercation or fight and in 33.5% of cases the patient was attacked/assaulted/jumped.

Table 5 (page 47) includes average annual assault-related sharp instrument wound rates for cities and towns with populations over 25,000 for a three year period (2005-2007).

- ◆ There were 20 cities and towns with a higher rate of assault-related sharp instrument wound cases than the statewide annual average of 21.0 per 100,000.
- ◆ Cities and towns with the highest rates of assault-related sharp instrument wound cases include: Lawrence (95.3 per 100,000), Springfield (83.1 per 100,000), New Bedford (74.9 per 100,000), Chelsea (75.2 per 100,000), and Fall River (63.8 per 100,000).

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Table 5. Assault-related Sharp Instrument Wound Cases by Residency, 2005-2007*

Patient's City of Residence	Population	2005-2007 Cases	Average Annual Rate	Patient's City of Residence	Population	2005-2007 Cases	Average Annual Rate
Group 1: Towns over 175,000 population:				Group 4: continued			
Boston	590,763	911	51.4	Chelsea	32,792	74	75.2
Worcester	175,454	137	26.0	Danvers	25,833	2	--
TOTAL Group 1:	766,217	1048	45.6	Dartmouth	31,366	15	15.9
Group 2: Towns 75,000-175,000 population:				Dracut	29,385	6	6.8
Brockton	94,191	146	51.7	Everett	37,008	34	30.6
Cambridge	101,365	26	8.5	Falmouth	33,590	24	23.8
Fall River	91,474	175	63.8	Fitchburg	40,050	57	47.4
Lowell	103,229	104	33.6	Franklin	31,267	3	--
Lynn	87,991	81	30.7	Gloucester	30,564	6	6.5
New Bedford	92,538	208	74.9	Holyoke	39,765	58	48.6
Newton	82,819	7	2.8	Leominster	41,549	17	13.6
Quincy	91,058	29	10.6	Lexington	30,231	1	--
Springfield	151,176	377	83.1	Marlborough	38,062	7	6.1
TOTAL Group 2:	895,841	1153	42.9	Melrose	26,666	7	8.8
Group 3: Towns 50,000-75,000 population:				Methuen	44,259	20	15.1
Brookline	55,241	2	--	Milford	27,523	9	10.9
Chicopee	54,428	32	19.6	Milton	25,902	9	11.6
Framingham	64,762	19	9.8	N Andover	27,196	5	--
Haverhill	60,176	31	17.2	N Attleboro	27,946	10	11.9
Lawrence	70,662	202	95.3	Natick	31,886	3	--
Malden	55,595	37	22.2	Needham	28,368	0	0.0
Medford	55,681	32	19.2	Northampton	28,592	7	8.2
Peabody	51,734	14	9.0	Norwood	28,365	3	--
Plymouth	55,516	25	15.0	Pittsfield	43,497	40	30.7
Somerville	74,554	56	25.0	Randolph	30,326	25	27.5
Taunton	56,074	40	23.8	Revere	46,833	57	40.6
Waltham	59,352	14	7.9	Salem	41,343	19	15.3
Weymouth	53,606	23	14.3	Saugus	27,107	6	7.4
TOTAL Group 3:	767,381	527	22.9	Shrewsbury	33,262	2	--
Group 4: Towns 25,000-50,000 population:				Stoughton	26,901	9	11.2
Agawam	28,510	9	10.5	Tewksbury	29,418	2	--
Amherst	34,049	5	--	W Springfield	27,849	14	16.8
Andover	33,475	4	--	Watertown	32,165	4	--
Arlington	41,075	6	4.9	Wellesley	26,987	4	--
Attleboro	43,283	16	12.3	Westfield	40,460	12	9.9
Barnstable	47,380	25	17.6	Woburn	37,010	11	9.9
Beverly	39,538	8	6.7	TOTAL Group 4:	1,583,611	674	14.2
Billerica	41,391	5	--	Group 5: Towns under 25,000 population:			
Braintree	34,185	8	7.8	TOTAL Group 5:	2,424,143	466	6.4
Bridgewater	25,695	3	--	Massachusetts:			
Chelmsford	33,707	3	--	TOTAL Statewide:	6,437,193	4065	21.0

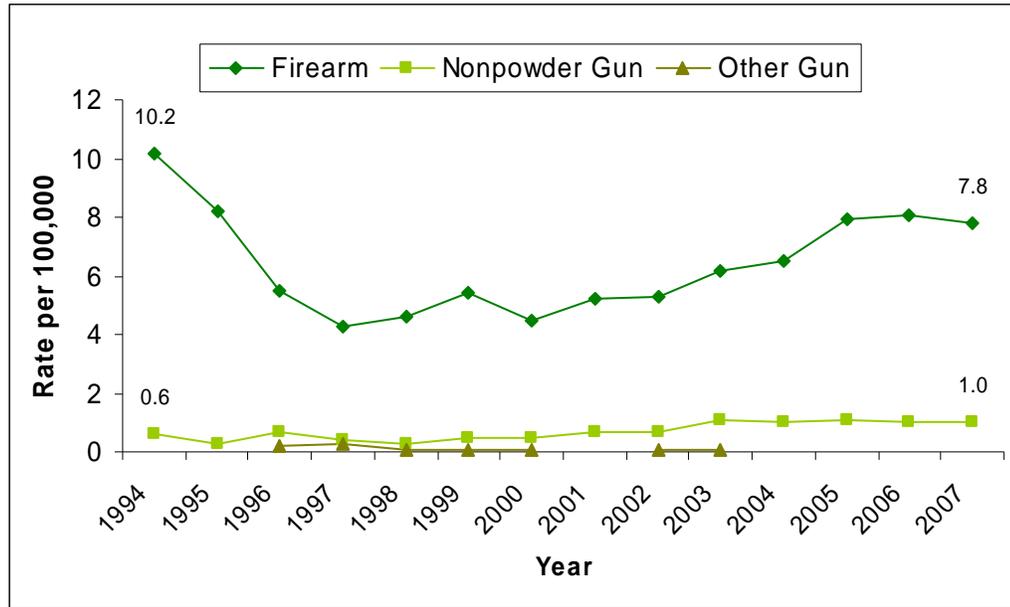
Rates presented are crude rates per 100,000 population.

*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

GUNSHOT WOUNDS

Assault-related GUNSHOT Wound Cases

Figure 23. Trend in Rate of Assault-related Gunshot Wound Reports by Year and Weapon Type, MA Residents, 1994-2007



Year	Total Assault-related Gunshot Wound Reports							
	Firearm		Non-powder Gun		Other Gun		TOTAL	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	625	10.2	37	0.6	0	--	662	10.8
1995	503	8.2	20	0.3	3	--	526	8.6
1996	337	5.5	43	0.7	13	0.2	393	6.4
1997	270	4.3	25	0.4	17	0.3	312	5.0
1998	291	4.6	20	0.3	7	0.1	318	5.1
1999	339	5.4	30	0.5	6	0.1	375	5.9
2000	286	4.5	34	0.5	8	0.1	328	5.2
2001	335	5.2	42	0.7	2	--	379	5.9
2002	343	5.3	48	0.7	9	0.1	400	6.2
2003	402	6.2	69	1.1	8	0.1	479	7.4
2004	420	6.5	62	1.0	4	--	486	7.6
2005	507	7.9	72	1.1	0	--	579	9.0
2006	519	8.1	67	1.0	2	--	588	9.1
2007	502	7.8	63	1.0	1	--	566	8.8
TOTAL	5,679	--	632	--	80	--	6,391	--

- ◆ Assault-related firearm injury reports decreased by an average of 25.6% per year from 1994 to 1997, then increased by an average of 7.2% per year from 1997 to 2007.
- ◆ Assault-related non-powder gun injury cases increased by an average of 9.0% per year from 1994 to 2007 .

Table 6. Assault-related Gunshot Wound Reports by Residency, 2005-2007*

Patient's City of Residence	Population	2005-2007 Cases	Average Annual Rate	Patient's City of Residence	Population	2005-2007 Cases	Average Annual Rate
Group 1: Towns over 175,000 population:				Group 4: continued			
Boston	590,763	631	35.6	Chelsea	32,792	25	25.4
Worcester	175,454	62	11.8	Danvers	25,833	0	0.0
TOTAL Group 1:	766,217	693	30.1	Dartmouth	31,366	1	--
Group 2: Towns 75,000-175,000 population:				Dracut	29,385	3	--
Brockton	94,191	114	40.3	Everett	37,008	6	5.4
Cambridge	101,365	15	4.9	Falmouth	33,590	3	--
Fall River	91,474	22	8.0	Fitchburg	40,050	19	15.8
Lowell	103,229	37	11.9	Franklin	31,267	0	0.0
Lynn	87,991	36	13.6	Gloucester	30,564	2	--
New Bedford	92,538	80	28.8	Holyoke	39,765	40	33.5
Newton	82,819	0	0.0	Leominster	41,549	4	--
Quincy	91,058	7	2.6	Lexington	30,231	0	0.0
Springfield	151,176	163	35.9	Marlborough	38,062	1	--
TOTAL Group 2:	895,841	474	17.6	Melrose	26,666	3	--
Group 3: Towns 50,000-75,000 population:				Methuen	44,259	4	--
Brookline	55,241	1	--	Milford	27,523	3	--
Chicopee	54,428	6	3.7	Milton	25,902	5	--
Framingham	64,762	2	--	N Andover	27,196	0	0.0
Haverhill	60,176	9	5.0	N Attleboro	27,946	0	0.0
Lawrence	70,662	61	28.8	Natick	31,886	0	0.0
Malden	55,595	12	7.2	Needham	28,368	0	0.0
Medford	55,681	5	--	Northampton	28,592	3	--
Peabody	51,734	4	--	Norwood	28,365	0	0.0
Plymouth	55,516	3	--	Pittsfield	43,497	7	5.4
Somerville	74,554	11	4.9	Randolph	30,326	13	14.3
Taunton	56,074	16	9.5	Revere	46,833	10	7.1
Waltham	59,352	2	--	Salem	41,343	3	--
Weymouth	53,606	5	--	Saugus	27,107	1	--
TOTAL Group 3:	767,381	137	6.0	Shrewsbury	33,262	1	--
Group 4: Towns 25,000-50,000 population:				Stoughton	26,901	2	--
Agawam	28,510	2	--	Tewksbury	29,418	2	--
Amherst	34,049	0	0.0	W Springfield	27,849	4	--
Andover	33,475	1	--	Watertown	32,165	0	0.0
Arlington	41,075	1	--	Wellesley	26,987	0	0.0
Attleboro	43,283	1	--	Westfield	40,460	0	0.0
Barnstable	47,380	3	--	Woburn	37,010	2	--
Beverly	39,538	0	0.0	TOTAL Group 4:	1,583,611	179	3.8
Billerica	41,391	1	--	Group 5: Towns under 25,000 population:			
Braintree	34,185	2	--	TOTAL Group 5: 2,424,143 76 1.0			
Bridgewater	25,695	1	--	Massachusetts:			
Chelmsford	33,707	0	0.0	TOTAL Statewide: 6,437,193 1733 9.0			

Rates presented are crude rates per 100,000 population.

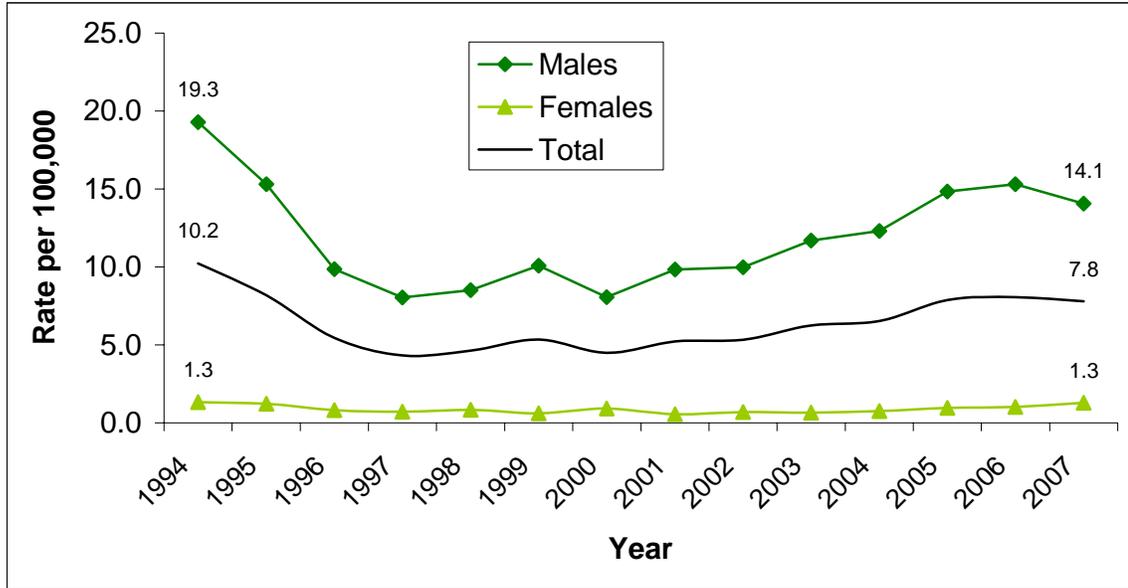
*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

Table 6 (page 49) includes average annual rate of assault-related gunshot wound cases for cities and towns with populations over 25,000 for a three year period (2005-2007).

- ◆ There were 12 cities and towns with a higher rate of assault-related gunshot wound cases than the statewide annual average of 9.0 per 100,000.
- ◆ Those having the highest rates include: Brockton (40.3 per 100,000), Springfield, (35.9 per 100,000), Boston (35.6 per 100,000), Lawrence (28.8 per 100,000), and New Bedford (28.8 per 100,000).

Assault-related FIREARM Injuries

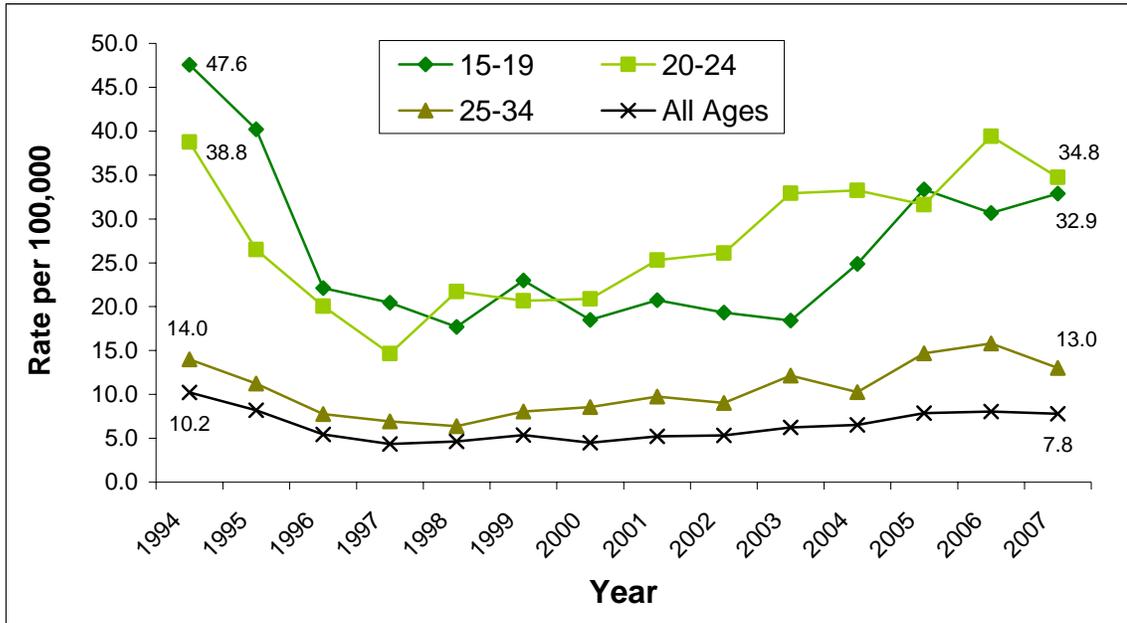
Figure 24. Trend in Rate of Assault-related Firearm Injury Reports by Sex, MA Residents, 1994-2007



Year	Males		Females		Total	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	568	19.3	42	1.3	625	10.2
1995	454	15.3	39	1.2	503	8.2
1996	294	9.8	26	0.8	337	5.4
1997	242	8.0	23	0.7	270	4.3
1998	259	8.5	27	0.8	291	4.6
1999	308	10.1	20	0.6	339	5.4
2000	247	8.1	30	0.9	286	4.5
2001	304	9.8	18	0.5	335	5.2
2002	310	10.0	23	0.7	343	5.3
2003	364	11.7	22	0.7	402	6.2
2004	383	12.3	25	0.8	420	6.5
2005	462	14.8	32	1.0	507	7.9
2006	477	15.3	34	1.0	519	8.1
2007	438	14.1	43	1.3	502	7.8

- ◆ Rates of assault-related firearm injury cases for males have been consistently higher than rates for females
- ◆ Rates of assault-related firearm injury cases among females decreased by an average of 9.8% per year from 1994-2001 and then increased by an average of 13.9% per year through 2007.
- ◆ Among males, rates of assault-related firearm injury cases decreased by an average of 26.8% per year from 1994-1997 and then increased by an average of 7.0% per year through 2007.

Figure 25. Trend in Rate of Assault-related Firearm Injury Reports by Selected Age Groups, MA Residents, 1994-2007

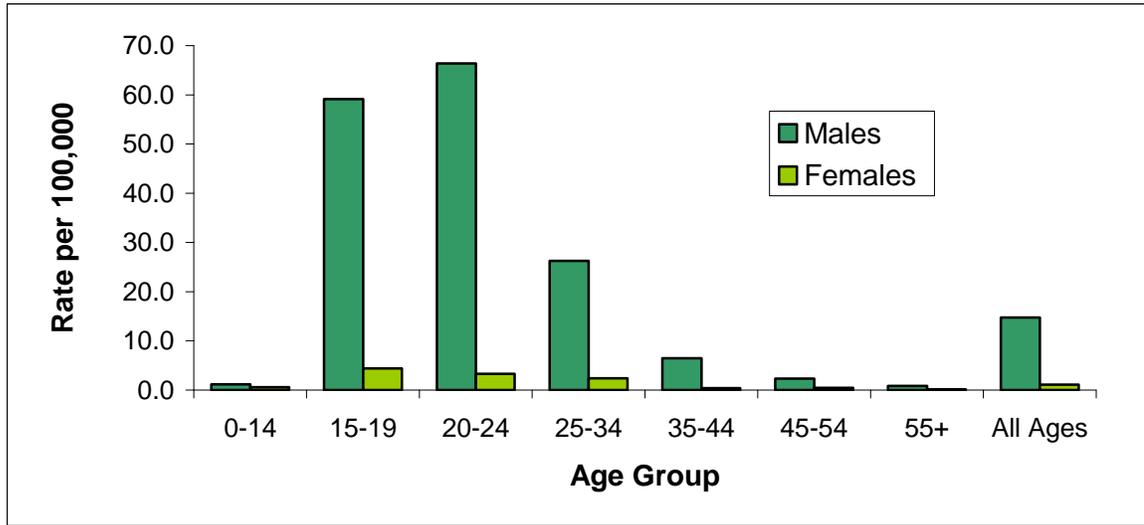


Year	15-19		20-24		25-34		ALL AGES	
	N	Rate	N	Rate	N	Rate	N	Rate
1994	185	47.6	193	38.8	147	14.0	625	10.2
1995	160	40.2	129	26.5	117	11.2	503	8.2
1996	90	22.1	94	20.0	80	7.7	337	5.4
1997	84	20.5	68	14.7	71	6.9	270	4.3
1998	74	17.7	101	21.7	64	6.4	291	4.6
1999	96	23.0	90	20.7	78	8.1	339	5.4
2000	77	18.5	85	20.9	79	8.5	286	4.5
2001	88	20.7	105	25.3	89	9.8	335	5.2
2002	83	19.3	110	26.1	81	9.0	343	5.3
2003	80	18.4	141	32.9	107	12.2	402	6.2
2004	109	24.9	145	33.2	88	10.2	420	6.5
2005	148	33.3	140	31.6	123	14.7	507	7.9
2006	137	30.7	177	39.4	131	15.8	519	8.1
2007	147	32.9	156	34.8	108	13.0	502	7.8

- ◆ In 1994, the highest rate of assault-related firearm injury cases was among the 15-19 year old age group (47.6 per 100,000) followed by persons aged 20-24 (38.8 per 100,000). These two age groups had consistently higher rates than persons aged 25-34 since 1994.
- ◆ Rates of assault-related firearm injury cases decreased sharply from 1994 through 1997 among persons aged 15-19 and 20-24; an average decline of 29.7% per year among those 15-19 and an average decline of 23.7% per year among 20-24 year olds.

- ◆ The 15-19 year old age group continued to have the highest rates until 1997. In 1998, rates among the 20-24 year old age group surpassed that of persons 15-19 and continued to rise substantially through 2007 (average of 9.4% per year).
- ◆ Rates among the 15-19 year old age group remained relatively stable from 1998 through 2003 then increased by an average of 15.1% per year from 2003 to 2007.
- ◆ In 2007, the rate of assault-related firearm injury cases was nearly the same for persons aged 15-19 and 20-24 (32.9 and 34.8 per 100,000).
- ◆ Among the 25-34 year old age group rates of assault-related firearm injury cases decreased more gradually, an average of 22.3% per year from 1994 through 1997, and then increased an average of 8.6% per year from 1997 through 2007.

Figure 26. Rates of Assault-related Firearm Injury Reports by Sex and Age Group, MA Residents, 2005-2007*

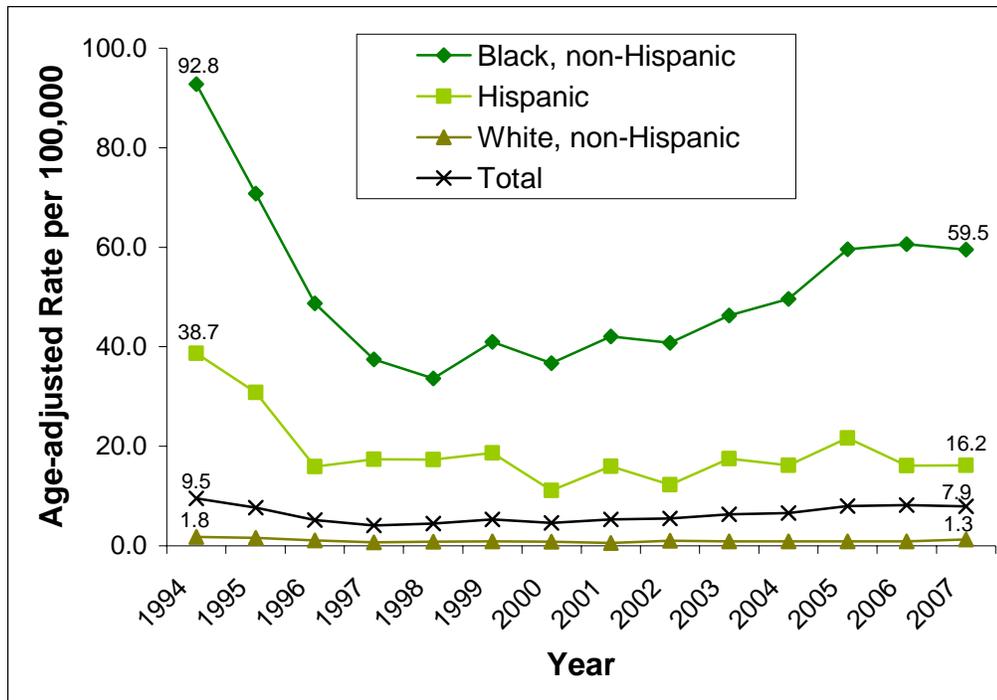


Age Group	Males		Females		Total	
	3 Year Total N	Avg. Annual Rate per 100,000	3 Year Total N	Avg. Annual Rate per 100,000	3 Year Total N	Avg. Annual Rate per 100,000
0-14	21	1.1	10	0.6	31	0.9
15-19	399	59.1	29	4.4	432	32.3
20-24	444	66.4	22	3.3	473	35.3
25-34	327	26.2	30	2.4	362	14.5
35-44	95	6.4	6	0.4	102	3.4
45-54	33	2.3	7	0.5	41	1.4
55+	17	0.8	3	--	21	0.5
TOTAL	1377	14.7	109	1.1	1528	7.9

- ◆ Males had higher numbers and rates of assault-related firearm injury reports than females for all age groups.
- ◆ Rates of assault-related firearm injury cases were higher among males than females for all age groups. The largest discrepancy by gender was among 20-24 year olds among whom males have greater than 20 times the rate of females.
- ◆ Among females, the highest rate of assault-related firearm injury cases was among 15-19 year olds, whereas among males, the rate was highest in 20-24 year olds.

*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

Figure 27. Trend in Age-adjusted Rate of Assault-related Firearm Injury Reports by Race/Ethnicity, MA Residents, 1994-2007



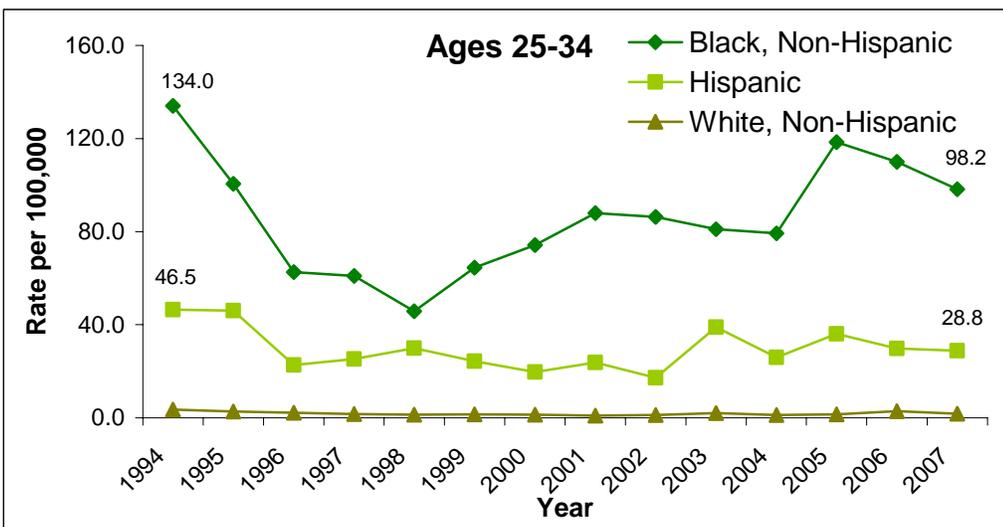
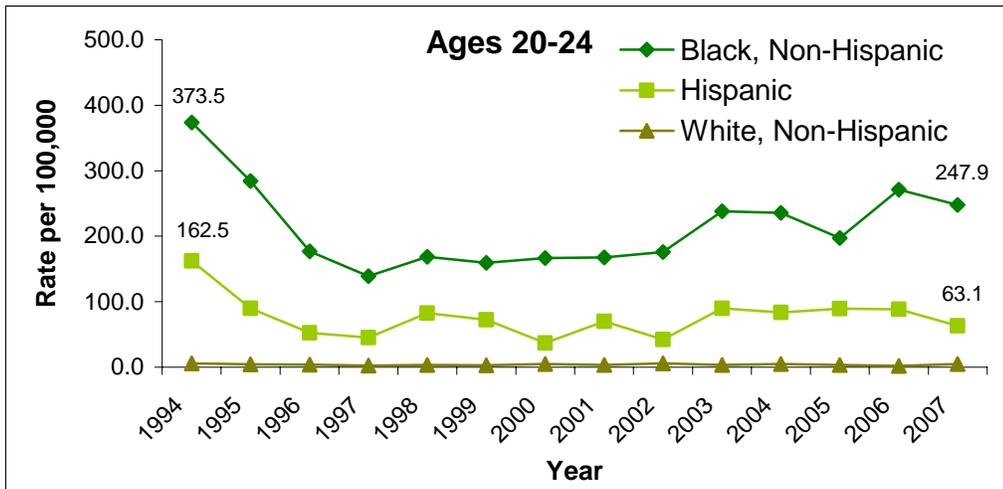
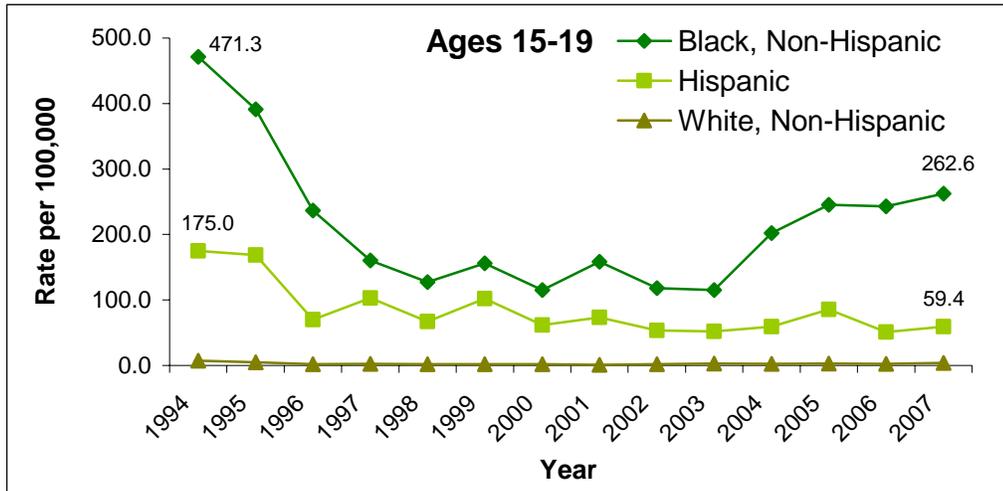
Year	Black, Non-Hispanic		Hispanic		White, Non-Hispanic		TOTAL	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	321	115.7	151	47.3	102	1.9	625	10.2
1995	241	86.7	124	38.1	92	1.7	503	8.2
1996	160	57.8	62	18.6	62	1.1	337	5.4
1997	122	43.9	75	21.9	38	0.7	270	4.3
1998	110	39.3	73	20.7	44	0.8	291	4.6
1999	147	47.3	93	23.6	50	0.9	339	5.4
2000	151	41.6	63	14.5	40	0.8	286	4.5
2001	182	49.0	90	20.0	29	0.5	335	5.2
2002	178	47.1	70	15.1	48	0.9	343	5.3
2003	204	53.1	111	23.3	46	0.9	402	6.2
2004	227	58.4	103	21.1	45	0.9	420	6.5
2005	272	69.0	139	27.8	42	0.8	507	7.9
2006	285	71.3	108	21.1	43	0.8	519	8.1
2007	280	70.1	104	20.4	62	1.2	502	7.8

*Please note that we have included age-adjusted rates for figure 27 to adjust for any age differences between races, but have included crude rates in the table.

- ◆ Age-adjusted rates of assault-related firearm injury cases for Black non-Hispanics and Hispanics have been consistently higher than rates for White, non-Hispanics.

- ◆ Rates of age-adjusted assault-related firearm injury cases among Black, non-Hispanic residents decreased by an average of 29.3% per year between 1994 and 1997 and then increased by an average of 6.0% per year through 2007.
- ◆ Among Hispanic residents, age-adjusted assault-related firearm injury rates decreased by an average of 38.2% per year between 1994 and 1996 and then remained relatively stable through 2007.
- ◆ Among White, non-Hispanic residents, age-adjusted assault-related firearm injury rates decreased by an average of 28.2% per year between 1994 and 1997 and then increased by an average of 3.5% per year through 2007.
- ◆ In 2007, the age-adjusted rate for Black, non-Hispanic residents was 45.8 times higher than the rate for White, non-Hispanic residents and 3.7 times higher than the rate for Hispanic residents.
- ◆ White, non-Hispanic residents who suffered an assault-related firearm injury were considerably older than their Black, non-Hispanic, and Hispanic counterparts. In 2005-2007, the average age for White, non-Hispanics was 28.2 years vs. the average for Black, non-Hispanics of 22.4 years, and the average for Hispanic residents of 23.2 years.

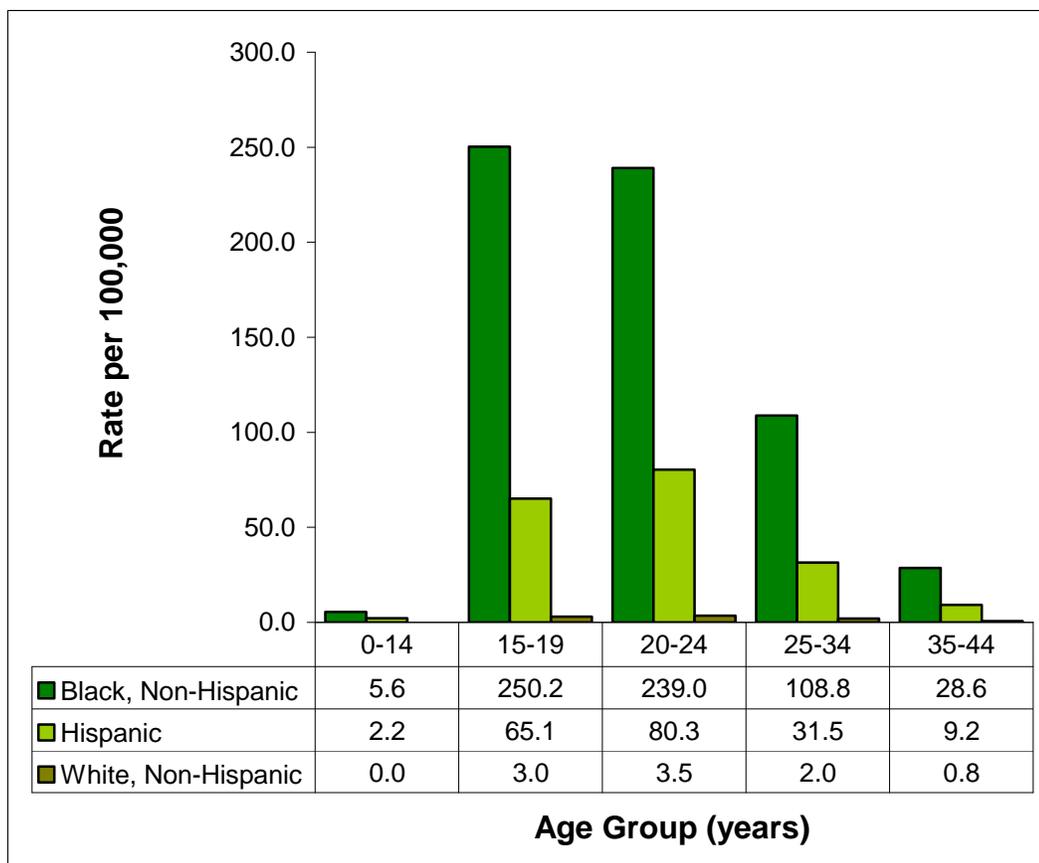
Figure 28. Trend in Rate of Assault-related Firearm Injury Reports by Selected Age Groups and Race/Ethnicity, 1994-2007



Changes in the rate of assault-related firearm injury cases over time varied by both race/ethnicity and age group as shown in Figure 28 (page 57). Please note that the beginning or ending of a significant trend may not correspond to the year with the lowest or highest rate.

- ◆ Rates of assault-related firearm injury cases for Black, non-Hispanics and Hispanics have been consistently higher than rates for White, non-Hispanics for every age group.
- ◆ Among 15-19 year olds:
 - The rate among Black, non-Hispanic residents decreased by an average of 31.3% per year from 1994 through 1998 and then increased by an average of 8.9% per year through 2007.
 - Among Hispanic residents, the rate decreased by an average of 6.8% per year from 1994 through 2007.
 - Among White, non-Hispanic residents, the rate decreased by an average of 31.7% per year from 1994 through 1998 and then increased by an average of 9.2% per year through 2007.
- ◆ Among 20-24 year olds:
 - The rate among Black, non-Hispanic residents decreased by an average of 27.7% per year from 1994 through 1997 and then increased by an average of 6.3% per year through 2007.
 - Among Hispanic residents, the rate decreased by only an average of 0.9% per year from 1994 through 2007.
 - Among White, non-Hispanic residents, the rate decreased by only an average of 1.6% per year from 1994 through 2007.
- ◆ Among 25-34 year olds:
 - The rate among Black, non-Hispanic residents decreased by an average of 25.2% per year from 1994 through 1997 and then increased by an average of 7.8% per year through 2007.
 - Among Hispanic residents, the rate decreased by an average of 1.3% per year from 1994 through 2007.
 - Among White, non-Hispanic residents, the rate decreased by an average of 13.7% per year from 1994 through 2001 and then increased by an average of 12.8% per year through 2007.

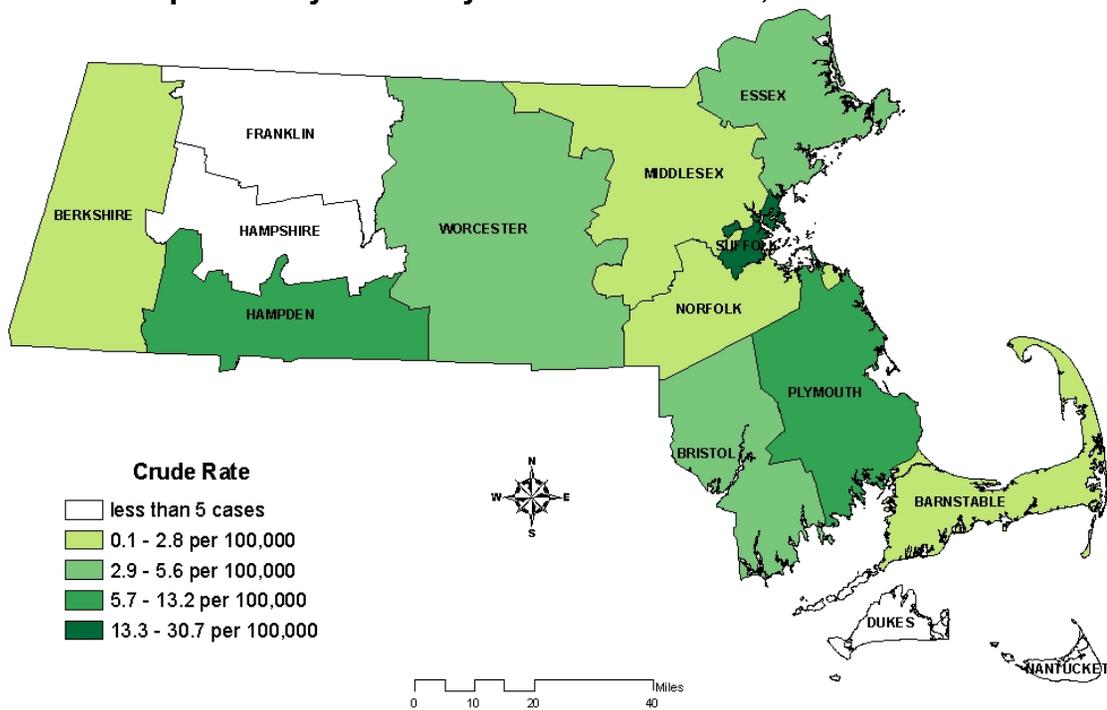
Figure 29. Rate of Assault-related Firearm Injury Reports by Age Group and Race/Ethnicity, MA Residents, 2005-2007*



- ◆ Black, non-Hispanic residents had much higher rates of assault-related firearm injury cases than Hispanic or White, non-Hispanic residents for all age groups (Figure 29).
- ◆ The largest disparity in age-specific rates of assault-related firearm injury cases by race/ethnicity was among those 20-24 years of age. Black, non-Hispanic residents had a rate 68.7 times higher and Hispanic residents had a rate 23.1 times higher than that of White, non-Hispanic residents. In this age group, Black, non-Hispanic residents also had a rate 3 times higher than Hispanic residents. However, the largest disparity between the rate in Black, non-Hispanic and Hispanic residents was among 15-19 year olds, where the rate in Black, non-Hispanic residents was 3.8 times higher than that of Hispanic residents.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Map 2. Rate of Assault-related Firearm Injury Reports by County of Residence, 2005-2007



County	3-Year Total N	Avg. Annual Crude Rate	Avg. Annual Age-adjusted Rate
BARNSTABLE	8	1.2	1.4
BERKSHIRE	5	--	--
BRISTOL	92	5.6	5.8
DUKES	0	--	--
ESSEX	111	5.0	5.4
FRANKLIN	1	--	--
HAMPDEN	183	13.2	13.2
HAMPSHIRE	3	--	--
MIDDLESEX	85	1.9	2.0
NANTUCKET	0	--	--
NORFOLK	38	1.9	2.2
PLYMOUTH	118	8.0	8.6
SUFFOLK	634	30.7	26.0
WORCESTER	81	3.4	3.5
UNKNOWN	169	n/a	n/a
STATEWIDE	1528	7.9	8.0

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

- ◆ Rates for assault-related firearm injury cases by county of residence are presented on Map 2 (page 60).
- ◆ Suffolk County had the highest number and rate of assault-related firearm injury cases. Suffolk County has approximately 11% of the MA population but 46.7% of the assault-related firearm injury cases where the county of residence was known.
- ◆ Hampden County had the second highest number and rate of assault-related firearm injury cases. Hampden County has approximately 7% of the MA population but 13.5% of the assault-related firearm injury cases where the county of residence was known.
- ◆ Plymouth County had the third highest number and rate of assault-related firearm injury cases. Plymouth County has approximately 7.6% of the MA population but 8.7% of the assault-related firearm injury cases where the county of residence was known.
- ◆ Middlesex County had among the lowest rates of assault-related firearm injury cases. Middlesex County has approximately 22.8% of the MA population but only 6.3% of the assault-related firearm injury cases where the county of residence was known.

Table 7. Assault-related Firearm Injury Reports by Circumstance, MA Residents, 2005-2007

Circumstance¹	3-Year Total N
Heard Shots*	226
Drive-by	196
Altercation / fight	105
Attack / assault / jumped	82
Robbed / mugged / theft / carjack	56
Unwilling to disclose	37
Intervening in argument/fight	7
Drug-related	3
Committing / fleeing crime	2
Police Officer injured	1
Ricochet	1
Other	48
Unknown / Missing	764

**"Heard Shots" was added as a circumstance option in 2006. In 2005, most of these cases were coded as missing/unknown. ¹ Circumstance and relationship variables frequently include a high percentage of missing and unknown cases in data collection systems for a variety of reasons including the unwillingness to disclose information that may place the patient at legal disadvantage or at personal risk.

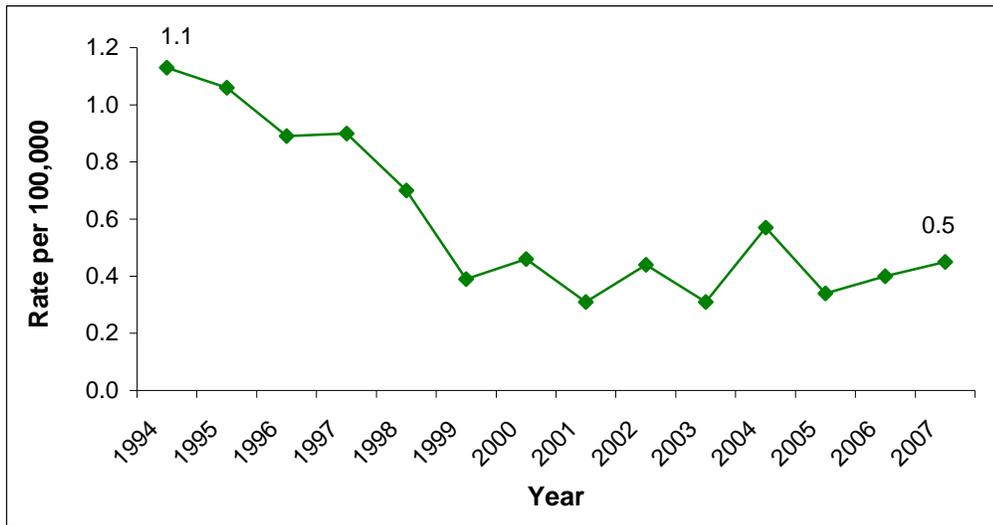
Note: Due to the large number of unknown and missing values, care must be taken in interpreting this data.

- ◆ Circumstance information was reported to WRISS for 50% of assault-related firearm injury cases.
- ◆ Among cases where circumstance information was reported, 29.6% were reported to be "heard shots" and 26% were reported as a drive-by shooting.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Section III. Unintentional Firearm Injury Reports

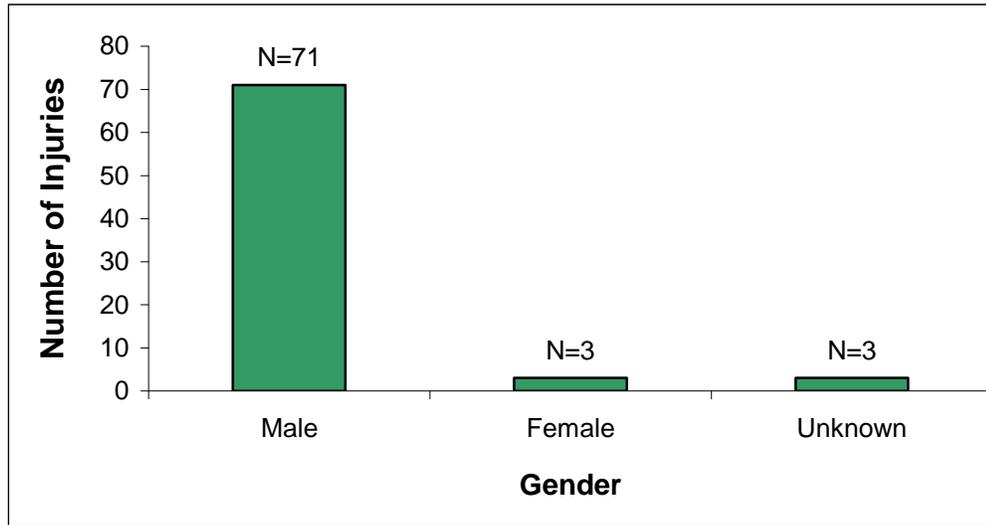
Figure 30. Trend in Rate of Unintentional Firearm Injury Reports, MA Residents, 1994-2007



Year	N	Crude Rate per 100,000
1994	69	1.1
1995	65	1.1
1996	55	0.9
1997	56	0.9
1998	44	0.7
1999	25	0.4
2000	29	0.5
2001	20	0.3
2002	28	0.4
2003	20	0.3
2004	37	0.6
2005	22	0.3
2006	26	0.4
2007	29	0.5

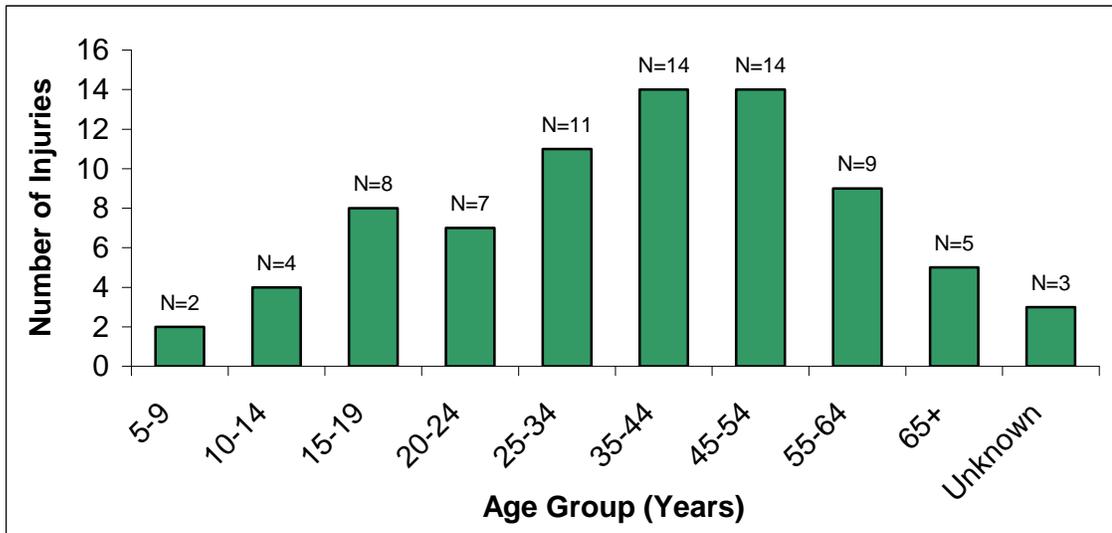
- ◆ The rate of unintentional firearm injury cases decreased by 59.3% between 1994 and 2000 and then remained relatively stable through 2007.

Figure 31. Unintentional Firearm Injury Reports by Sex, MA Residents, 2005-2007*



- ◆ Ninety-two percent of all unintentional firearm injury cases occurred among males. Less than 4% of these injuries were to females (Figure 31).

Figure 32. Unintentional Firearm Injury Reports by Age Group, MA Residents, 2005-2007*



- ◆ Over half of the unintentional firearm injury cases reported to WRISS between 2005 and 2007 were to those between 25 and 54 years of age (N=39).
- ◆ Less than 8% of these injuries (N=6) were to children less than 14 years of age.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Table 8. Unintentional Firearm Injury Reports by Circumstance, MA Residents, 2005-2007*

Circumstance	3-Yr Total N
Cleaning gun	12
Playing with gun	11
Thought gun not loaded	8
Hunting	8
Target/firing practice	7
Gun dropped/moved/caught	6
Loading/unloading gun	5
Gun Malfunction	4
Handling / accidental discharge	4
Ricochet	2
Thought safety was engaged	1
Other	4
Unknown/Missing	5

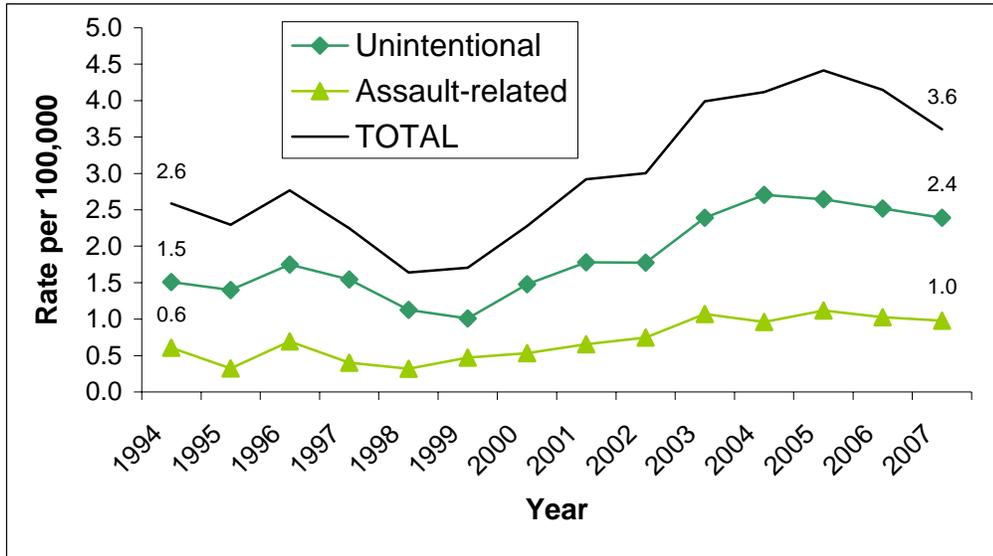
- ◆ The most frequently noted circumstances for unintentional firearm injury cases were cleaning the gun (15.6%) and playing with the gun (14.3%).

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Section IV. Non-powder Gun Injury Reports

Non-powder guns (e.g., pellet, BB) use compressed air, gas or a mechanical spring action rather than gun powder to propel ammunition. These guns are generally accepted as relatively harmless toys but can inflict serious pain and injury, and in rare cases death. Non-powder guns are *real* guns. Moreover, modern technology has contributed to the development of more powerful non-powder guns capable of shooting projectiles at velocities comparable to many pistols

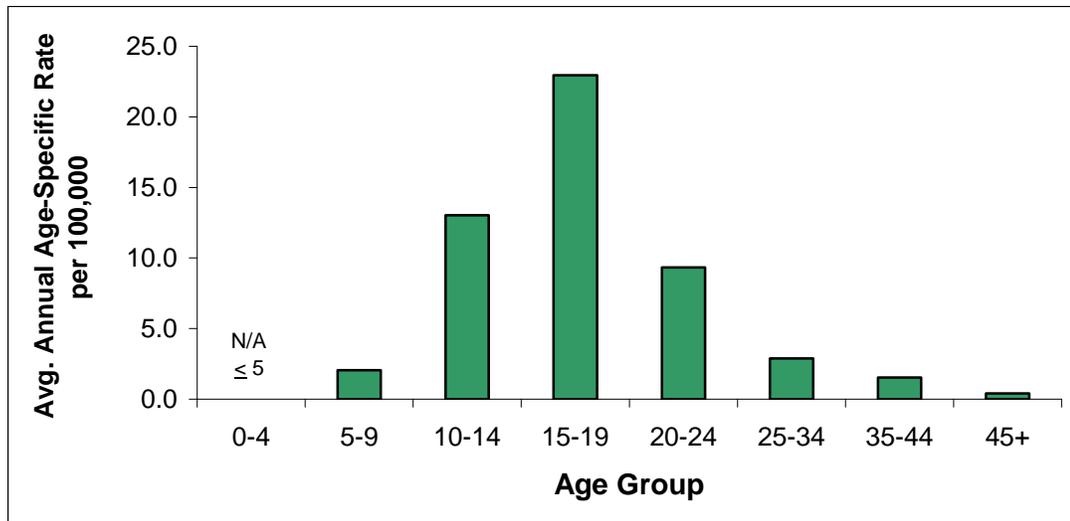
Figure 33. Trend in Rate of Non-Powder Gun Injury Reports by Intent, MA Residents, 1994-2007



Year	Unintentional		Assault-related		TOTAL	
	N	Crude Rate per 100,000	N	Crude Rate per 100,000	N	Crude Rate per 100,000
1994	92	1.5	37	0.6	158	2.6
1995	86	1.4	20	0.3	141	2.3
1996	108	1.7	43	0.7	171	2.8
1997	96	1.5	25	0.4	140	2.2
1998	71	1.1	20	0.3	103	1.6
1999	64	1.0	30	0.5	108	1.7
2000	94	1.5	34	0.5	145	2.3
2001	114	1.8	42	0.7	187	2.9
2002	114	1.8	48	0.7	193	3.0
2003	154	2.4	69	1.1	257	4.0
2004	174	2.7	62	1.0	265	4.1
2005	170	2.6	72	1.1	284	4.4
2006	162	2.5	66	1.0	267	4.1
2007	154	2.4	63	1.0	232	3.6

- ◆ Rates of total non-powder gun (NPG) injury cases decreased by an average of 8.6% per year between 1994 and 1999, increased by an average of 24.3% per year between 1999 and 2003, then decreased by 1.6% per year through 2007.
- ◆ Rates of assault-related NPG injury cases increased by an average of 8.8% per year between 1994 and 2007.
- ◆ Rates of unintentional NPG injury cases decreased by an average of 6.6% per year between 1994 and 1999, increased further by an average of 19.1% per year through 2004, and then decreased by an average of 4.8% per year through 2007.

Figure 34. Rates of Non-powder Gun Injury Reports by Age Group, MA Residents, 2005-2007*



Age Group	3-Year Total N	Avg. Annual Rate per 100,000
0-4	3	--
5-9	24	2.1
10-14	162	13.0
15-19	307	23.0
20-24	125	9.3
25-34	72	2.9
35-44	46	1.5
45+	30	0.4

- ◆ Overall, rates of non-powder gun injury cases were highest among those residents 15-19 years of age followed by those 10-14 years of age.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Figure 35. Unintentional Non-powder Gun as a Percent of All Unintentional Gun Injury Reports by Sex, MA Residents, 2005-2007*

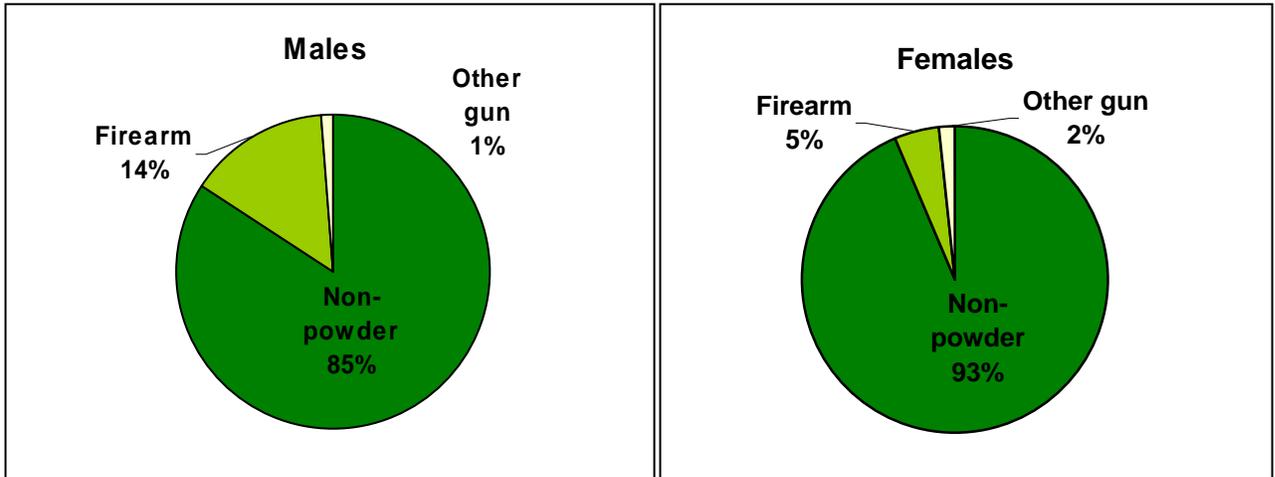
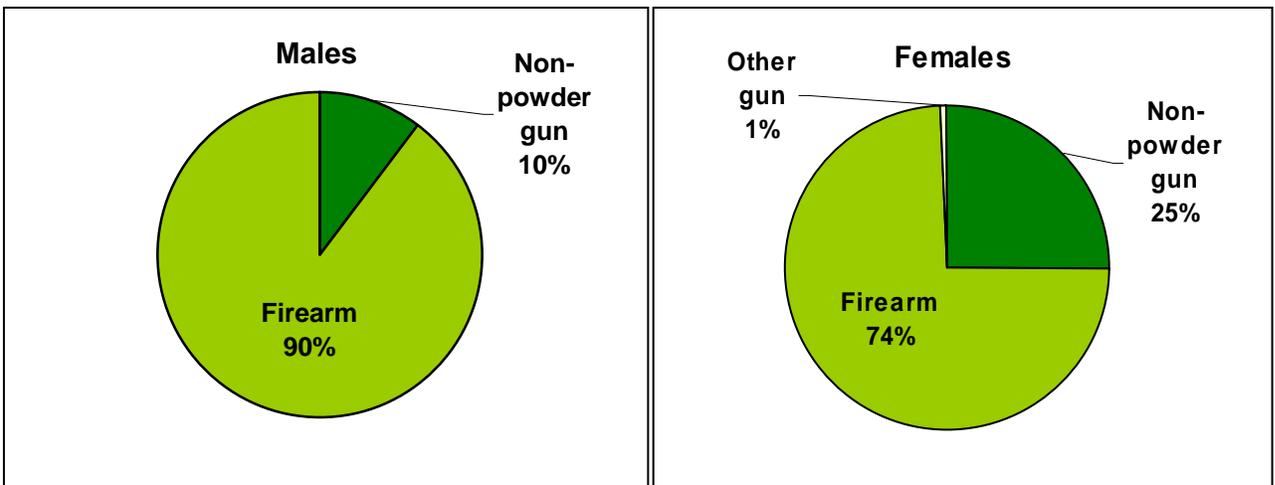


Figure 36. Assault-related Non-powder Gun as a Percent of All Assault-related Gun Injury Reports by Sex, MA Residents, 2005-2007*



- ◆ Non-powder gun injury cases as a percent of all gun injury cases were higher among females than males for both unintentional and assault-related injuries.
- ◆ Among males, non-powder gun injury cases accounted for 85% of unintentional and 10% of assault-related gun injury cases.
- ◆ Among females, non-powder gun injury cases accounted for 93% of unintentional and 25% of assault-related gun injury cases.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Table 9. Number of Non-powder Gun Injury Reports, Intent by Age Group, Sex, and Circumstance, 2005-2007*

	2005-2007 (Aggregate)	
	Unintentional	Assault-related
Age Group		
0-4	2	1
5-9	17	6
10-14	104	41
15-19	204	71
20-24	84	23
25-34	44	18
35-44	18	17
45-54	6	15
55-64	0	2
65+	0	2
Unknown	7	6
Gender		
Male	413	160
Female	58	37
Unknown	15	5
Circumstance		
Playing with gun	172	0
Thought gun not loaded	76	1
Target/firing practice	47	0
Ricochet	39	0
Gun dropped/moved/caught	23	0
Cleaning gun	20	0
Loading/unloading gun	14	0
Handling / accidental discharge	10	0
Gun malfunction	9	0
Thought safety engaged	7	0
Hunting	2	0
Unwilling to disclose	1	0
Robbed/mugged/theft/carjack	0	5
Altercation/fight	0	17
Attack/assault/jumped	0	25
Drive-by	0	69
Legal intervention	0	8
Other	18	17
Missing	26	15
Unknown	22	45

- ◆ The most commonly noted circumstance for unintentional non-powder gun injury cases was playing with the gun.
- ◆ For assault-related non-powder gun injury cases, the most commonly noted circumstance was drive-by.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

Table 10. Non-powder Gun Injury Cases by Intent and Location of Injury, MA Residents, 2005-2007*

Location of Incident	Intent of Injury		
	Assault-related	Unintentional	All Intents
House/Apt	45	330	390
Street	117	24	162
Park/Recreation area	9	38	61
School/Grounds	4	1	5
Other	17	31	57
Unknown/Missing	10	62	109

- ◆ Of the unintentional non-powder gun injury cases where the location of the incident was noted, 77.8% occurred at a house or apartment and 8.9% occurred in a park or recreational area.
- ◆ Of the assault-related non-powder gun injury cases where the location of the incident was noted, 60.9% occurred in the street and 23.4% occurred at a house or apartment.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

The location of the incident varied by the age of the victim.

- ◆ For all age groups, 60-80% of unintentional non-powder gun injury cases occurred at a house or apartment.

Figure 37. Unintentional Non-powder Gun Injury Reports by Location of Incident and Age Group of Patient, MA Residents, 2005-2007*

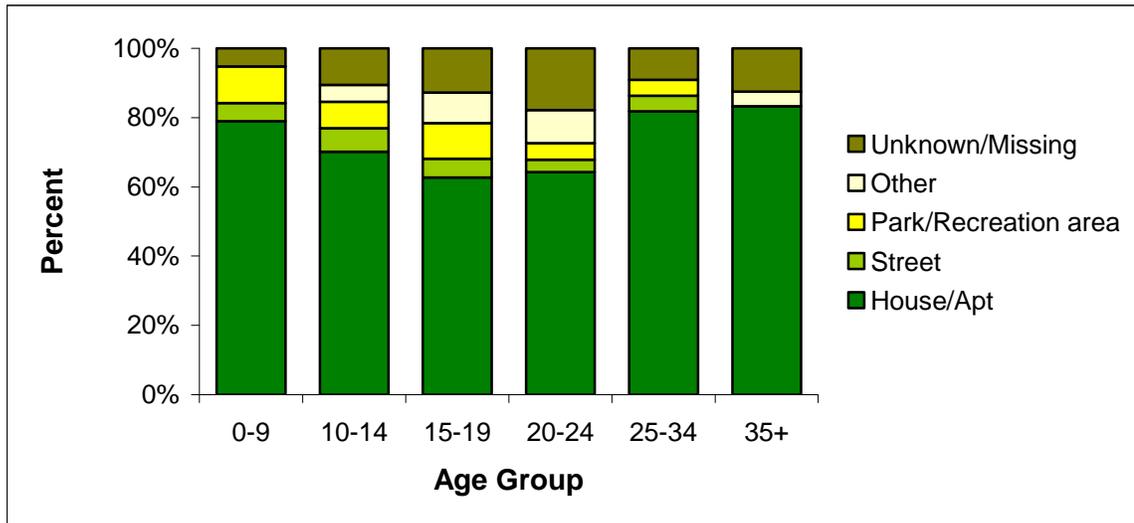
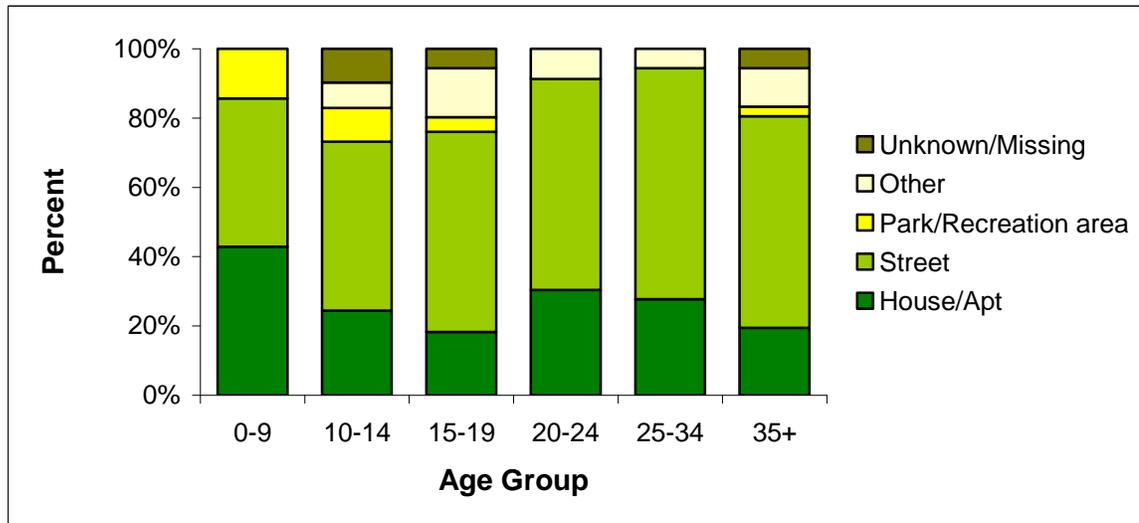


Figure 38. Assault-related Non-powder Gun Injury Reports by Location of Incident and Age Group of Patient, MA Residents, 2005-2007*



- ◆ For all age groups, greater than 40% of assault-related non-powder gun injury cases occurred on the street.
- ◆ Forty-three percent of assault-related non-powder gun injury cases among children 0-9 years of age occurred at a house or apartment.
- ◆ Twenty-seven percent of assault-related non-powder gun injury cases where the location of the incident was known among children 10-14 years of age occurred at a house or apartment.

*This period is used to show the most recent patterns, one year does not always include enough cases to analyze.

Table 11. Non-powder Gun Injury Reports by Intent and Relationship of Shooter to Patient, MA Residents, 2005-2007*

Relationship ¹	Intent of Injury		
	Assault-related	Unintentional	All Intents
Self	0	202	211
Acquaintance	21	164	191
Family member / Significant other	8	48	57
Stranger	35	6	41
Other	8	12	25
Unknown/Missing	130	54	259

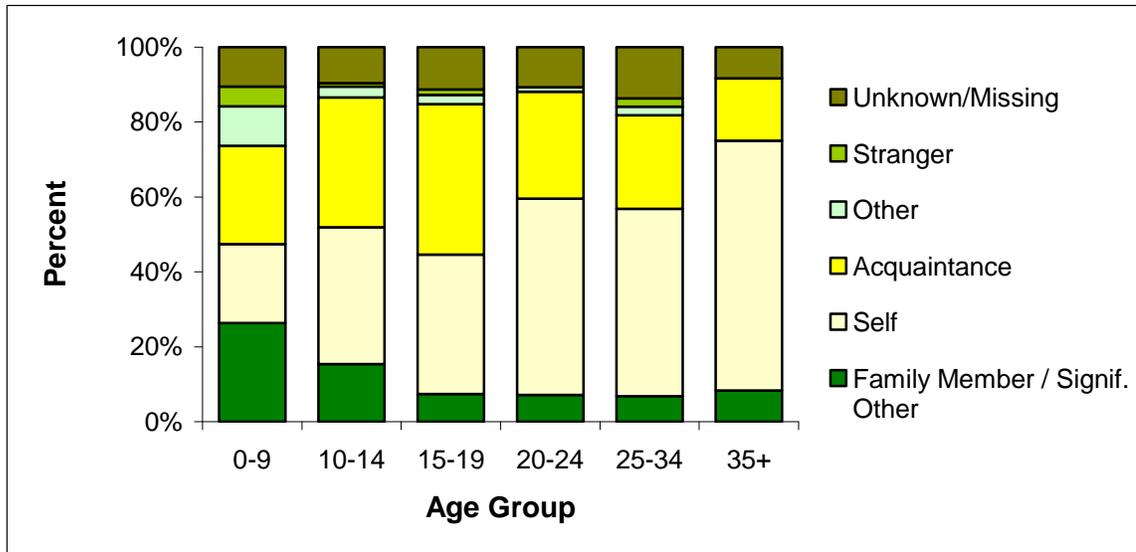
¹ Circumstance and relationship variables frequently include a high percentage of missing and unknown cases in data collection systems for a variety of reasons including the unwillingness to disclose information that may place the patient at legal disadvantage or at personal risk.

- ◆ In 46.7% of the unintentional non-powder gun injury cases where this relationship was known, the victim was also the shooter.
- ◆ In 64.4% of assault-related non-powder gun injury cases, the relationship of the shooter to the victim was unknown or missing. Among unintentional non-powder gun injuries, this relationship was unknown or missing in only 11.1% of cases.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

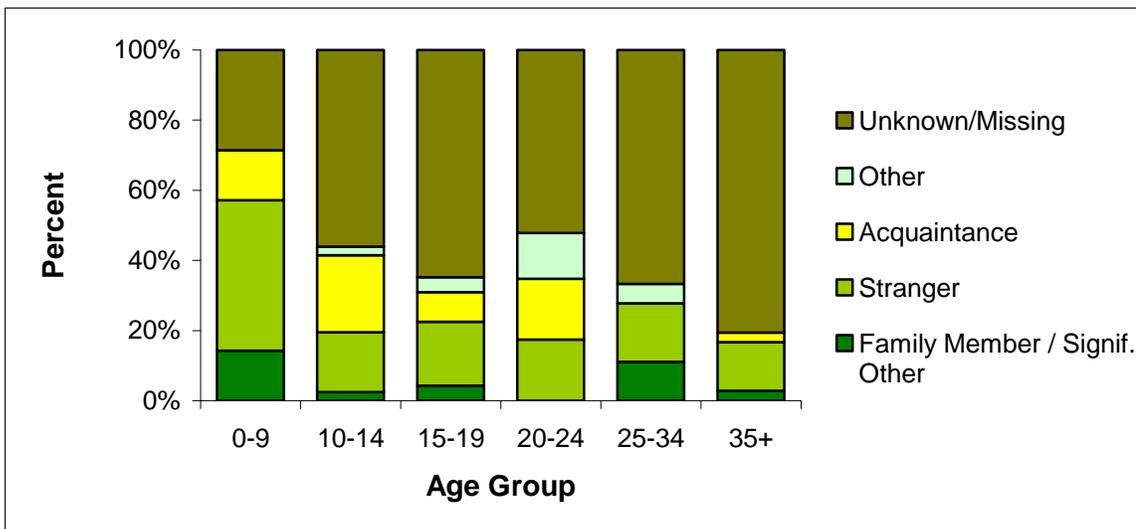
The relationship of the shooter to the victim varies by the age group of the victim.

Figure 39. Unintentional Non-powder Gun Injury Reports by Relationship of Shooter to Patient by Age Group of Patient, MA Residents, 2005-2007



- ◆ For all age groups, except children ages 0-9, the majority of cases of unintentional non-powder gun injury cases, the shooter was the patient (self) or an acquaintance of the patient.

Figure 40. Assault-related Non-powder Gun Injury Reports by Relationship of Shooter to Patient by Age Group of Patient, MA Residents, 2005-2007



- ◆ For assault-related non-powder gun injury cases, among all age groups over 10, greater than half of cases had missing or unknown information on the relationship of the shooter to the patient.
- ◆ In 60% of assault-related non-powder gun injury cases among children aged 0-9 where the relationship of the shooter to the patient was known, the shooter was a stranger.

**This period is used to show the most recent patterns, one year does not always include enough cases to analyze.*

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Appendix A. City-Specific Weapon Injury Data

Please note that based on medical record reviews, the statewide hospital compliance rate for reporting gunshot wounds to WRISS is considered to be 80-90% and for assault-related sharp instrument wounds, 65-75%. Periodic audits conducted over the years indicate that the statewide reporting level has fluctuated very little.

However, compliance among individual hospitals may fluctuate from year to year. A hospital may experience turn over in staff that may result in fewer reports (or more reports) submitted to WRISS. With limited resources it is not possible to review hospital reporting levels of all Massachusetts acute care hospital emergency departments. Staff must rely on tracking the number of monthly reports submitted and following-up with hospitals that drop off from expected levels, as well as periodic reviews of selected hospitals. For example, in 2000, the WRISS hospital liaison identified one hospital in the Springfield area whose reporting had dropped off considerably. After working with this hospital to improve reporting levels, the number of cases submitted to WRISS by this hospital increased.

Numbers and rates provided in the report, including the city-specific summary pages (pages 78-85), are not adjusted for underreporting.

There are also areas of the state where patients may be more likely to be treated at an out-of-state hospital. Patients in the New Bedford and Fall River areas may be treated at a Massachusetts or Rhode Island acute care hospital. Cases treated at out-of-state facilities will not be captured by WRISS.

Finally, numbers presented here will differ from official police counts. While WRISS is a system designed to capture injury-related information, police data typically reflect crimes occurring within the borders of their jurisdiction.

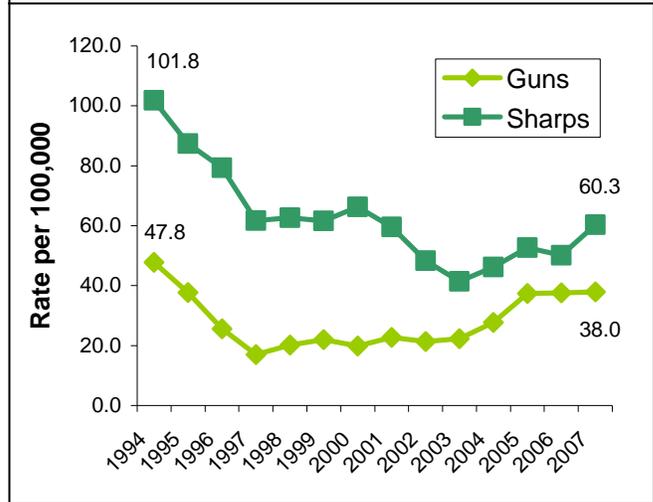
Weapon Injury Data

Boston Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Boston (n=1542)	Statewide (n=5798)
Age	Rate per 100,000	
0-14	15.5	3.7
15-19	334.5	98.8
20-24	209.5	119.6
25-34	118.6	57.2
35-44	71.9	23.9
45+	23.8	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	233.6	167.3
White, Non-Hispanic	19.3	10.3
Hispanic	107.1	98.5
Sex	Rate per 100,000	
Male	165.1	52.7
Female	19.8	6.9
Wound	Percent	
Gunshot	40.9%	29.9%
Sharp Instrument	59.1%	70.1%
Location of Incident	Percent	
Bar / Club	2.9%	5.8%
House / Apt	11.5%	21.4%
Street	64.7%	41.9%
Other	6.7%	9.9%
Unknown / Missing	14.3%	21.1%
Circumstance	Percent	
Altercation / Fight	20.6%	26.9%
Attacked / "Jumped"	15.5%	19.3%
Drive-by	3.6%	4.6%
Drug-related	0.4%	0.5%
Legal Intervention	11.0%	4.1%
Robbery	4.2%	5.5%
Other	7.5%	7.0%
Unknown / Missing	37.3%	32.2%

Figure 1. Assault-related Weapon Injuries to Boston Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Boston residents (92.0 per 100,000) was 3.1 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Boston residents was 4.2 times higher than the statewide rate. The rate of assault-related sharp instrument wounds to Boston residents was 2.6 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Boston residents decreased by an average of 30.4% per year from 1994 through 1997 and then increased by an average of 8.0% per year through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Boston residents decreased by an average of 15.5% per year from 1994 through 1997, remained stable through 2000, then decreased further by an average of 13.7% per year through 2003. The rate has increased in recent years (an average of 8.5% per year from 2004 through 2007).

Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

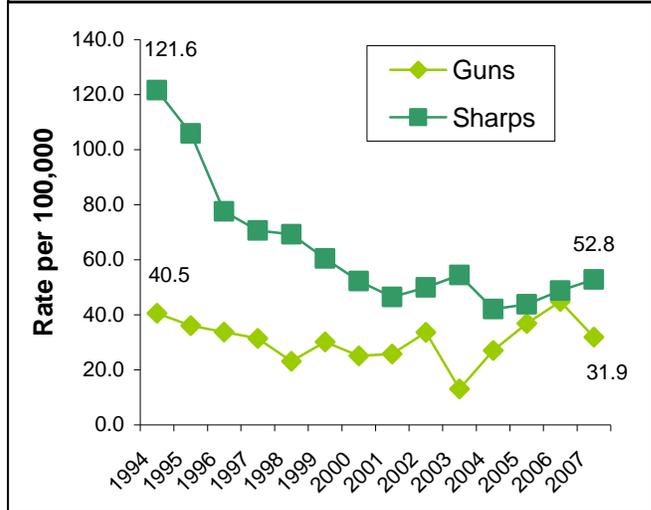
Weapon Injury Data

Brockton Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Brockton (n=260)	Statewide (n=5798)
	Rate per 100,000	
Age		
0-14	8.8	3.7
15-19	252.2	98.8
20-24	377.6	119.6
25-34	153.7	57.2
35-44	58.4	23.9
45+	14.0	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	141.1	167.3
White, Non-Hispanic	26.5	10.3
Hispanic	151.7	98.5
Sex	Rate per 100,000	
Male	150.8	52.7
Female	21.7	6.9
Wound	Percent	
Gunshot	43.9%	29.9%
Sharp Instrument	56.2%	70.1%
Location of Incident	Percent	
Bar / Club	6.5%	5.8%
House / Apt	18.9%	21.4%
Street	41.2%	41.9%
Other	10.4%	9.9%
Unknown / Missing	23.1%	21.1%
Circumstance	Percent	
Altercation / Fight	21.5%	26.9%
Attacked / "Jumped"	20.0%	19.3%
Drive-by	7.7%	4.6%
Drug-related	0.8%	0.5%
Legal Intervention	3.5%	4.1%
Robbery	6.9%	5.5%
Other	5.8%	7.0%
Unknown / Missing	33.9%	32.2%

Figure 1. Assault-related Weapon Injuries to Brockton Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Brockton residents (86.3 per 100,000) was 2.9 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Brockton residents decreased by an average of 0.75% per year from 1994 through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Brockton residents decreased by an average of 11.9% per year from 1994 through 2001 and then increased by an average of 1.0% per year through 2007.
- ◆ In 2005-2007, Brockton had 1.6% of the state's population, but 6.6% of assault-related gunshot wounds and 4.5% of sharp instrument wounds were to Brockton residents.

Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

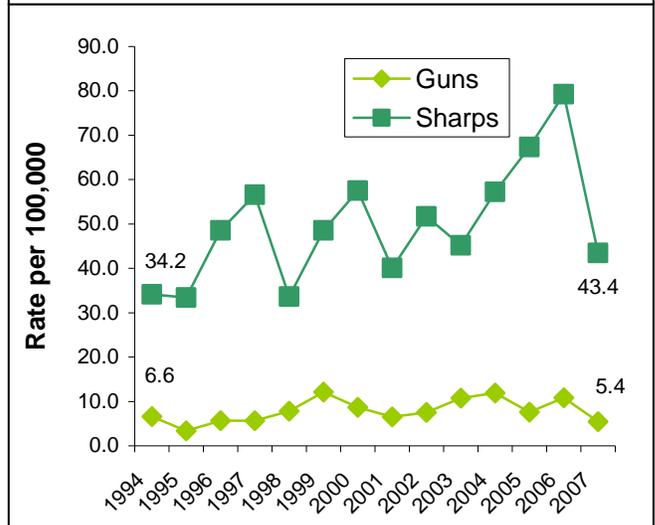
Weapon Injury Data

Fall River Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Fall River (n=197)	Statewide (n=5798)
	Rate per 100,000	
Age		
0-14	9.4	3.7
15-19	173.4	98.8
20-24	227.5	119.6
25-34	159.6	57.2
35-44	74.3	23.9
45+	15.1	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	385.8	167.3
White, Non-Hispanic	46.8	10.3
Hispanic	177.2	98.5
Sex	Rate per 100,000	
Male	122.8	52.7
Female	20.4	6.9
Wound	Percent	
Gunshot	11.2%	29.9%
Sharp Instrument	88.8%	70.1%
Location of Incident	Percent	
Bar / Club	7.6%	5.8%
House / Apt	31.5%	21.4%
Street	40.6%	41.9%
Other	11.7%	9.9%
Unknown / Missing	8.6%	21.1%
Circumstance	Percent	
Altercation / Fight	34.5%	26.9%
Attacked / "Jumped"	38.6%	19.3%
Drive-by	3.1%	4.6%
Drug-related	1.0%	0.5%
Legal Intervention	0.0%	4.1%
Robbery	5.1%	5.5%
Other	5.6%	7.0%
Unknown / Missing	12.2%	32.2%

Figure 1. Assault-related Weapon Injuries to Fall River Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Fall River residents (71.3 per 100,000) was 2.4 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Fall River residents increased by an average of 4.1% per year from 1994 through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Fall River residents increased by an average of 3.8% per year from 1994 through 2007.
- ◆ In 2005-2007, Fall River had 1.4% of the state's population, but 1.3% of assault-related gunshot wounds and 4.3% of assault-related sharp instrument wounds were to Fall River residents.

Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

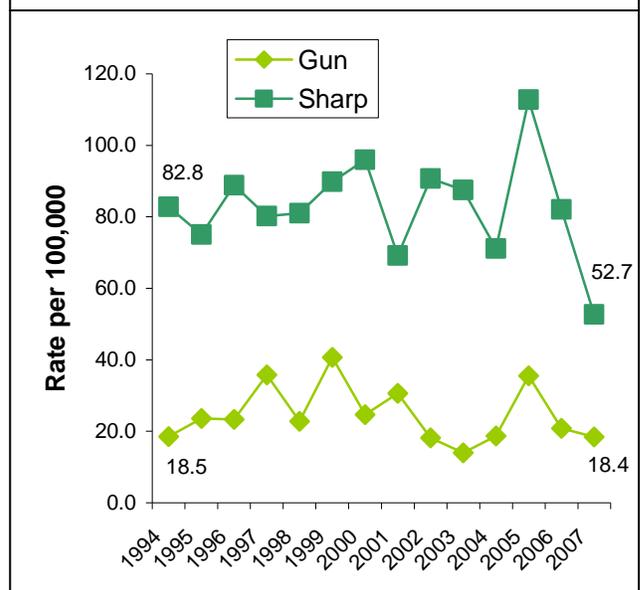
Weapon Injury Data

Lawrence Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Lawrence (n=263)	Statewide (n=5798)
Rate per 100,000		
Age		
0-14	6.0	3.7
15-19	302.7	98.8
20-24	393.9	119.6
25-34	196.1	57.2
35-44	77.9	23.9
45+	21.5	6.1
Rate per 100,000		
Race		
Black, Non-Hispanic	69.1	167.3
White, Non-Hispanic	21.1	10.3
Hispanic	120.9	98.5
Rate per 100,000		
Sex		
Male	186.1	52.7
Female	25.5	6.9
Percent		
Wound		
Gunshot	23.2%	29.9%
Sharp Instrument	76.8%	70.1%
Percent		
Location of Incident		
Bar / Club	6.1%	5.8%
House / Apt	17.1%	21.4%
Street	25.1%	41.9%
Other	3.8%	9.9%
Unknown / Missing	47.9%	21.1%
Percent		
Circumstance		
Altercation / Fight	20.5%	26.9%
Attacked / "Jumped"	20.9%	19.3%
Drive-by	3.8%	4.6%
Drug-related	0.0%	0.5%
Legal Intervention	1.5%	4.1%
Robbery	3.0%	5.5%
Other	2.7%	7.0%
Unknown / Missing	47.5%	32.2%

Figure 1. Assault-related Weapon Injuries to Lawrence Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Lawrence residents (107.4 per 100,000) was 3.6 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Lawrence residents decreased by an average of 1.5% per year from 1994 through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Lawrence residents increased by 0.8% per year from 1994 through 2007.
- ◆ In 2005-2007, Lawrence had 1.3% of the state's population, but 3.5% of assault-related gunshot wounds and 5.0% of assault-related sharp instrument wounds were to Lawrence residents.

Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

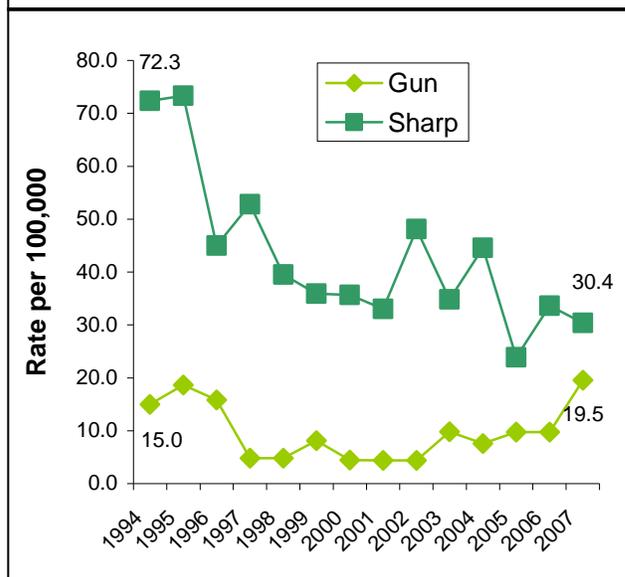
Weapon Injury Data

Lynn Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Lynn (n=117)	Statewide (n=5798)
	Rate per 100,000	
Age		
0-14	4.7	3.7
15-19	155.4	98.8
20-24	202.9	119.6
25-34	56.2	57.2
35-44	24.7	23.9
45+	7.6	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	74.1	167.3
White, Non-Hispanic	15.5	10.3
Hispanic	62.2	98.5
Sex	Rate per 100,000	
Male	77.2	52.7
Female	5.7	6.9
Wound	Percent	
Gunshot	30.8%	29.9%
Sharp Instrument	69.2%	70.1%
Location of Incident	Percent	
Bar / Club	12.0%	5.8%
House / Apt	26.5%	21.4%
Street	18.8%	41.9%
Other	12.8%	9.9%
Unknown / Missing	29.9%	21.1%
Circumstance	Percent	
Altercation / Fight	24.8%	26.9%
Attacked / "Jumped"	19.7%	19.3%
Drive-by	6.8%	4.6%
Drug-related	0.0%	0.5%
Legal Intervention	0.9%	4.1%
Robbery	6.0%	5.5%
Other	2.6%	7.0%
Unknown / Missing	39.3%	32.2%

Figure 1. Assault-related Weapon Injuries to Lynn Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Lynn residents (42.3 per 100,000) was 1.4 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Lynn residents decreased by an average of 22.2% per year from 1994 through 2000 and then increased by an average of 21.0% per year through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Lynn residents decreased by an average of 5.7% per year from 1994 through 2007.
- ◆ In 2005-2007, Lynn had 1.4% of the state's population, but 2.1% of the assault-related gunshot wounds and 2.0% of the assault-related sharp instrument wounds were to Lynn residents.

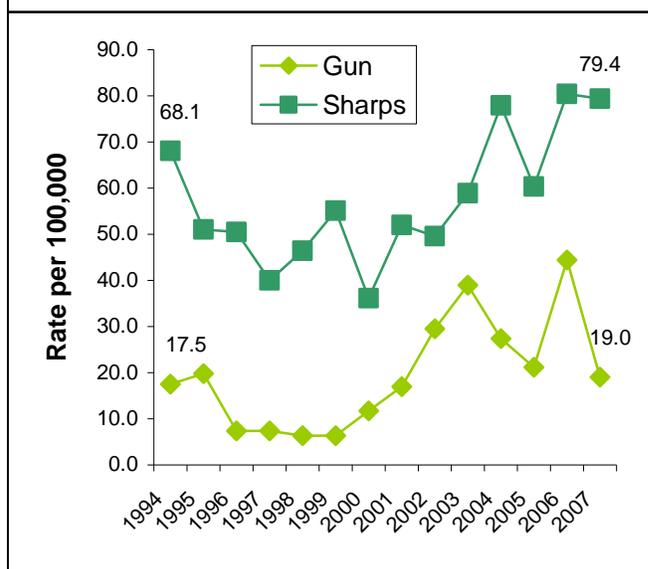
Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

Weapon Injury Data New Bedford Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	New Bedford (n=288)	Statewide (n=5798)
	Rate per 100,000	
Age		
0-14	16.1	3.7
15-19	307.5	98.8
20-24	386.8	119.6
25-34	190.5	57.2
35-44	93.0	23.9
45+	23.4	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	324.9	167.3
White, Non-Hispanic	47.4	10.3
Hispanic	228.8	98.5
Sex	Rate per 100,000	
Male	185.5	52.7
Female	22.2	6.9
Wound	Percent	
Gunshot	27.8%	29.9%
Sharp Instrument	72.2%	70.1%
Location of Incident	Percent	
Bar / Club	8.0%	5.8%
House / Apt	31.3%	21.4%
Street	41.7%	41.9%
Other	8.0%	9.9%
Unknown / Missing	11.1%	21.1%
Circumstance	Percent	
Altercation / Fight	27.8%	26.9%
Attacked / "Jumped"	21.5%	19.3%
Drive-by	7.6%	4.6%
Drug-related	0.7%	0.5%
Legal Intervention	1.4%	4.1%
Robbery	8.7%	5.5%
Other	12.9%	7.0%
Unknown / Missing	19.4%	32.2%

Figure 1. Assault-related Weapon Injuries to New Bedford Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to New Bedford residents (101.6 per 100,000) was 3.4 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to New Bedford residents decreased by an average of 27.8% per year from 1994 through 1998, then increased by an average of 47.5% per year through 2003 and then decreased by an average of 10.9% per year through 2007.
- ◆ The rate of assault-related sharp instrument wounds to New Bedford residents increased by an average of 15.3% per year from 1994 through 1997 and then increased by an average of 7.0% per year through 2007.
- ◆ In 2005-2007, 1.5% of the state's population resided in New Bedford, but 4.6% of assault-related gunshot wounds and 5.1% of assault-related sharp instrument wounds were to New Bedford residents.

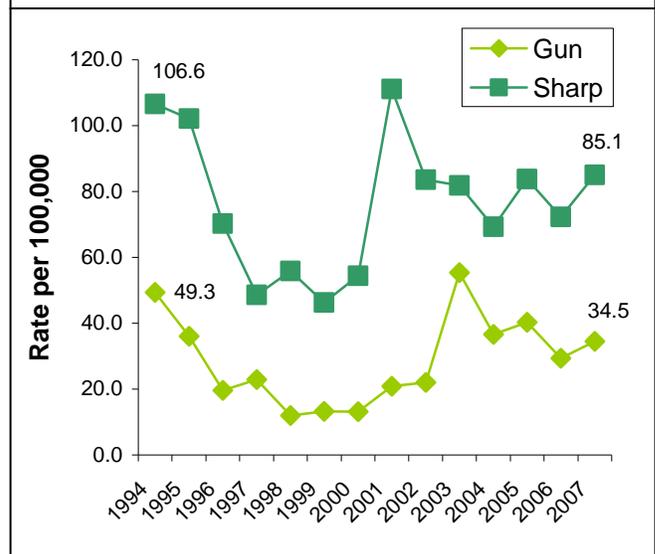
Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

Weapon Injury Data Springfield Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Springfield (n=540)	Statewide (n=5798)
Age	Rate per 100,000	
0-14	16.1	3.7
15-19	298.2	98.8
20-24	356.1	119.6
25-34	231.0	57.2
35-44	102.9	23.9
45+	23.6	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	201.5	167.3
White, Non-Hispanic	28.0	10.3
Hispanic	159.5	98.5
Sex	Rate per 100,000	
Male	200.3	52.7
Female	32.1	6.9
Wound	Percent	
Gunshot	30.2%	29.9%
Sharp Instrument	69.8%	70.1%
Location of Incident	Percent	
Bar / Club	5.2%	5.8%
House / Apt	25.7%	21.4%
Street	37.6%	41.9%
Other	9.4%	9.9%
Unknown / Missing	22.0%	21.1%
Circumstance	Percent	
Altercation / Fight	34.6%	26.9%
Attacked / "Jumped"	14.6%	19.3%
Drive-by	7.4%	4.6%
Drug-related	0.6%	0.5%
Legal Intervention	2.0%	4.1%
Robbery	6.5%	5.5%
Other	6.1%	7.0%
Unknown / Missing	28.2%	32.2%

Figure 1. Assault-related Weapon Injuries to Springfield Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Springfield residents (115.1 per 100,000) was 3.8 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Springfield residents decreased by an average of 25.9% per year from 1994 through 1999, then increased by an average of 41.9% per year through 2003 and then decreased by an average of 6.5% per year through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Springfield residents decreased by an average of 22.4% per year from 1994 through 1997 and then increased by an average of 5.2% per year through 2007.
- ◆ In 2005-2007, 2.4% of the state's population resided in Springfield, but 9.4% of assault-related gunshot wounds and 9.3% of assault-related sharp instrument wounds were to Springfield residents.

Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

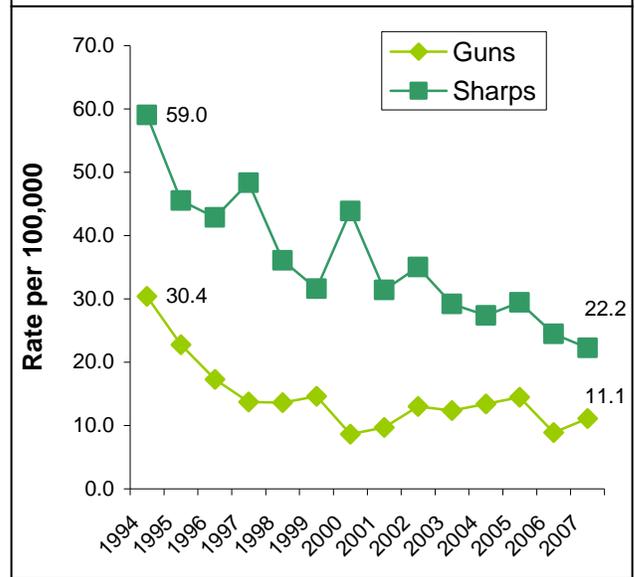
Weapon Injury Data

Worcester Residents

Table 1. Victims of Assault-related Weapon Injuries for Selected Categories, 2005-2007

	Worcester (n=199)	Statewide (n=5798)
Age	Rate per 100,000	
0-14	2.9	3.7
15-19	104.8	98.8
20-24	104.9	119.6
25-34	61.0	57.2
35-44	27.6	23.9
45+	8.2	6.1
Race	Rate per 100,000	
Black, Non-Hispanic	101.9	167.3
White, Non-Hispanic	14.5	10.3
Hispanic	72.4	98.5
Sex	Rate per 100,000	
Male	64.9	52.7
Female	6.4	6.9
Wound	Percent	
Gunshot	31.2%	29.9%
Sharp Instrument	68.8%	70.1%
Location of Incident	Percent	
Bar / Club	4.5%	5.8%
House / Apt	26.1%	21.4%
Street	30.2%	41.9%
Other	11.1%	9.9%
Unknown / Missing	28.1%	21.1%
Circumstance	Percent	
Altercation / Fight	24.6%	26.9%
Attacked / "Jumped"	18.6%	19.3%
Drive-by	8.0%	4.6%
Drug-related	1.0%	0.5%
Legal Intervention	2.0%	4.1%
Robbery	3.5%	5.5%
Other	8.5%	7.0%
Unknown / Missing	33.7%	32.2%

Figure 1. Assault-related Weapon Injuries to Worcester Residents by Weapon Type and Year



Data Highlights:

- ◆ For 2005-2007, the rate of assault-related weapon injuries to Worcester residents (36.9 per 100,000) was 1.2 times higher than the statewide rate.
- ◆ The rate of assault-related gunshot wounds to Worcester residents decreased by an average of 5.5% per year from 1994 through 2007.
- ◆ The rate of assault-related sharp instrument wounds to Worcester residents decreased by an average of 6.0% per year from 1994 through 2007.

Caution should be used when interpreting the data presented here. Reports submitted to WRISS will differ from local police numbers due to differences in case criteria, and reporting among participating hospitals, can fluctuate from year to year.

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Appendix B.
Methods and Technical Notes

Methods and Technical Notes

Residency

Residents from other states who were treated within a Massachusetts hospital were excluded from analysis. Cases where patient residency (city of residency or zip code) was unknown or missing were assumed to be Massachusetts residents. For 2005-2007 2.7% of cases reported were from other states and 6% were unknown or missing.

Rates

All rates reported are per 100,000 individuals.

Crude Rates

The crude rate represents the “true” number of occurrences of a health event in a specified time and population per unit time. It is calculated as follows.

Formula:

$$\text{Crude Rate} = \frac{\text{\# of resident gun-related injuries in a year}}{\text{resident population for that year}} \times 100,000$$

Age-Specific Rates

These are crude rates but based on specific subgroups (e.g., age, sex, and race/ethnicity). The numerator and denominator refer to the same group.

Formula:

$$\text{Crude Rate} = \frac{\text{\# of resident gun-related injuries among males aged 15-19}}{\text{resident population of males aged 15-19 for that year}} \times 100,000$$

Age-Adjusted Rates

A summary rate designed to minimize the distortions created by differences in age distribution when comparing rates for populations with different age compositions. Age-adjusted rates are useful when comparing rates from different populations or in the same population over time. For example, if one wished to compare the 1998 rates between Barnstable County (Cape Cod) and Hampshire County, the age-adjusted formula would account for the fact that 24% of the Barnstable County residents were 65 years of age or older, whereas only 11% of the Hampshire County residents were in this age group.

Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of a standard population. The weighted age-specific

rates are then added to produce the adjusted rate for all ages combined. Age-adjusted rates presented are age-adjusted to the 2000 U.S. standard population.

Trend Data

The Joinpoint Regression Program was used to calculate the average percent of change per year or AAPC (average annual percent change), a summary measure of trend over a pre-specified fixed interval. The Joinpoint statistical software indicates where changes have occurred over time. Information about this software and how the AAPC is computed can be found at: <http://srab.cancer.gov/joinpoint/>.

Population

Population data: 1994-1999 was obtained from MassCHIP

[\(http://masschip.state.ma.us/\)](http://masschip.state.ma.us/)

2000-2006 MARS v2006 (2006 estimates used for 2007)

The most recent population data by city and town is 2005 estimates (obtained from MassCHIP). These were used for city summary pages.