

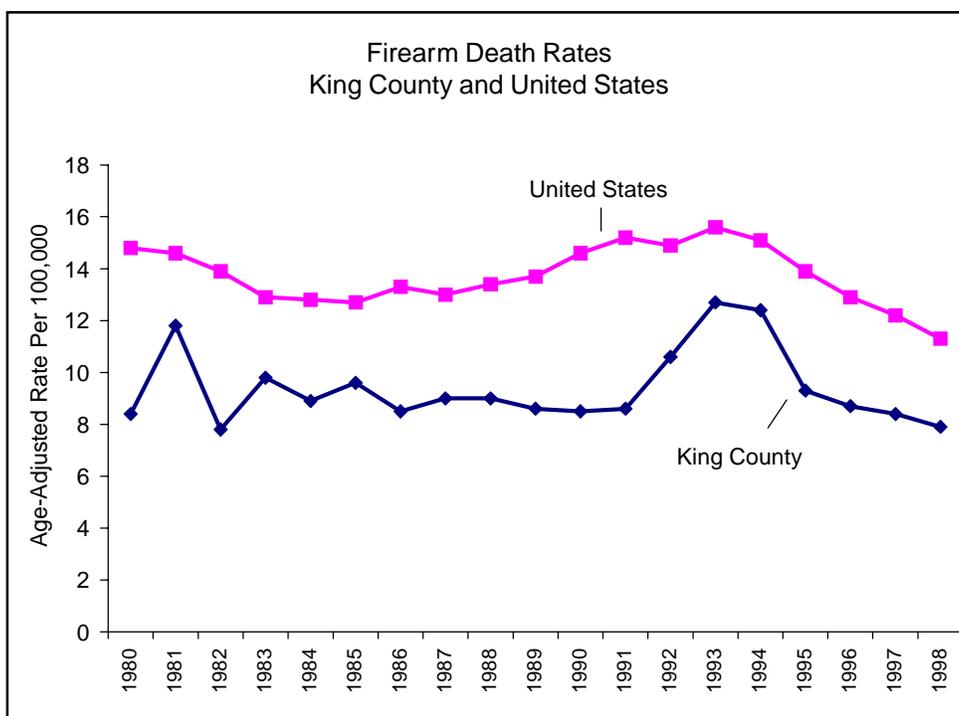
Public Health Data Watch

VOLUME 4 • NUMBER 2

AUGUST, 2000

Firearm Injuries and Deaths, King County & Seattle

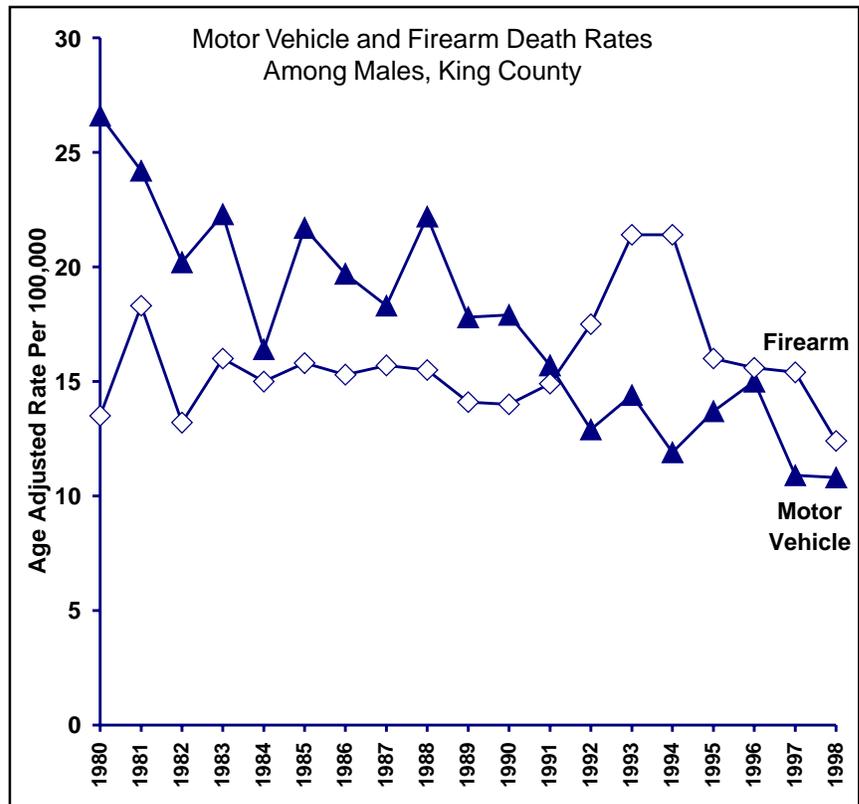
Recent Declines In Firearm Deaths



- Firearms are second to motor vehicles as the leading cause of death from an injury in King County and in the US.
- The King County age-adjusted firearm death rate has consistently been below the US rate.
- The King County age-adjusted firearm death rate was 7.9 deaths per 100,000 population in 1998. The 1998 rate was a 37.8% decrease from the 1993 age-adjusted rate of 12.7 deaths per 100,000 population.
- The firearm death rate has also been declining throughout the US. Between 1993 and 1998 the US age-adjusted rate of firearm death declined by 27.6%, from 15.6 per 100,000 in 1993 to 11.3 per 100,000 in 1998 (National Center for Health Statistics).

Firearms As A Public Health Priority In King County

- Firearms have replaced motor vehicles as the leading cause of injury death for many sub-populations of King County residents including:
 - All males
 - All African Americans
 - Asian youth age 15 – 24 years
 - Native American youth age 15 – 24 years



Injury Deaths Can Be Prevented

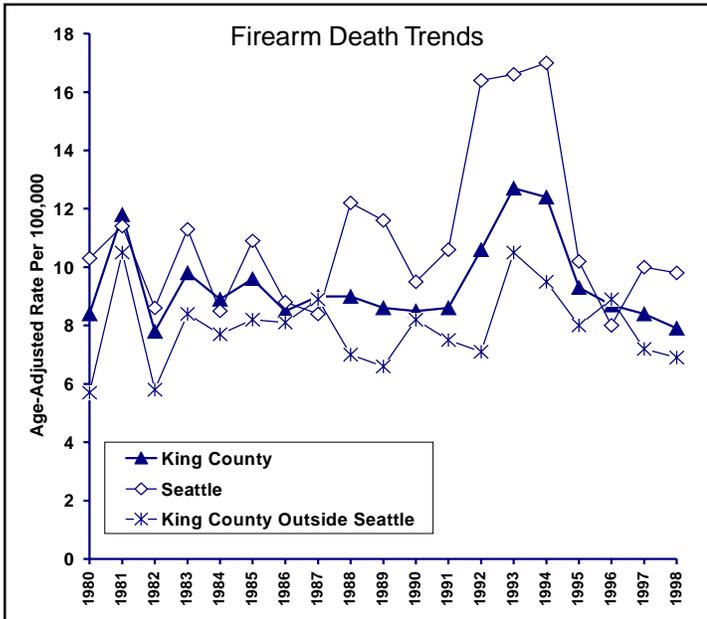
Targeted prevention efforts have demonstrated that injury deaths can be reduced. For example, significant declines in motor vehicle injury death rates have been achieved through a multifaceted approach including improvements in product safety, road engineering, driver training, and introduction of legislation to encourage safe driving. As a result of the declines in motor vehicle related deaths, firearms have now emerged as the leading cause of injury death in major segments of King County’s population. Despite recent improvements in the firearm death rate, firearms in our community continue to be an important public health issue.

About This Data Watch

This Data Watch presents King County and Seattle data related to firearm injuries that were severe enough to result in the death or hospitalization of the victim.

- The next section presents the most severe injuries – firearm deaths.
- The following section includes additional data about nonfatal injuries that resulted in hospitalization.
- The last section presents information about prevention of firearm injuries and deaths.

Firearm Deaths, Seattle & King County, 1980-1998

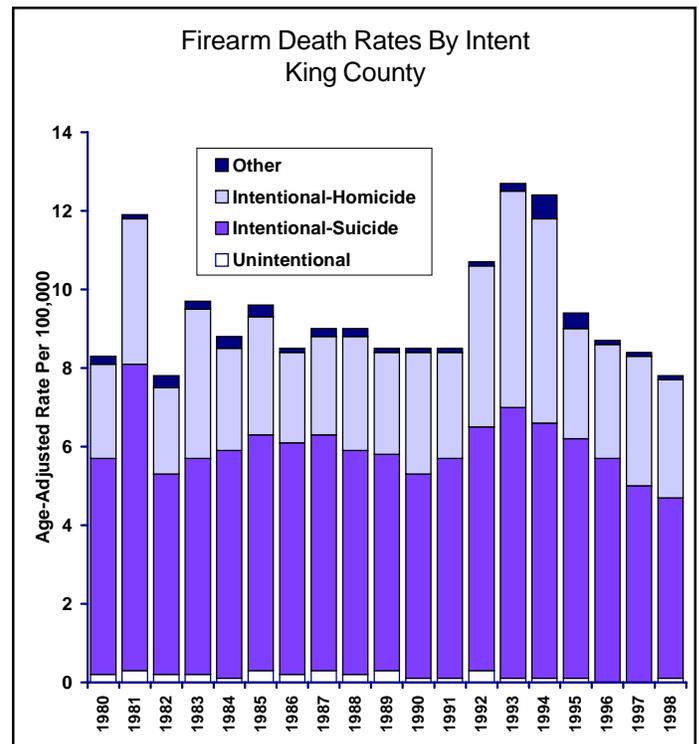


Trends in Firearm Deaths

- Prior to 1993, the firearm death rate was stable in King County. Firearms killed an average of 137 persons per year during this period.
- In 1993 and 1994, King County experienced a significant increase in firearm deaths. This increase was due to a significant increase in Seattle that began in 1992 and continued through 1994. The rise in the rate among those residing in King County outside Seattle during this time was not statistically significant. In 1993 and 1994, 194 and 197 persons were killed by firearms in King County respectively.
- Since 1994, firearm death rates have returned to their pre-1993 levels. The annual number of firearm fatalities from 1995 through 1998 are 148, 148, 127, and 135 respectively.

Firearm Deaths By Intent*

- The overwhelming majority of firearm deaths in King County, 97%, are intentional. Suicide accounts for 67% of these intentional deaths and homicide accounts for the remaining 33%. Only 1% of all King County firearm deaths are unintentional. Intent can not be determined or is attributed to law enforcement in 2% of King County firearm deaths (shown in chart as "other" intent).
- The significant increase in firearm deaths in 1993 and 1994 resulted from a significant increase in firearm homicides. Firearm related suicides also increased slightly, but not significantly, during this period.
- The significant decline in firearm deaths since 1994 is due to a dramatic decline in firearm homicides.
- The causes of the 1993-1994 increase in firearm homicides may include increases in gang activity, crack cocaine use, and availability of firearms.
- The decline in firearm homicides since 1994 may be due to increases in law enforcement activities, stricter laws and sentencing, legislation requiring background checks for handgun purchases from Federally licensed dealers, and increases in community violence prevention programs.

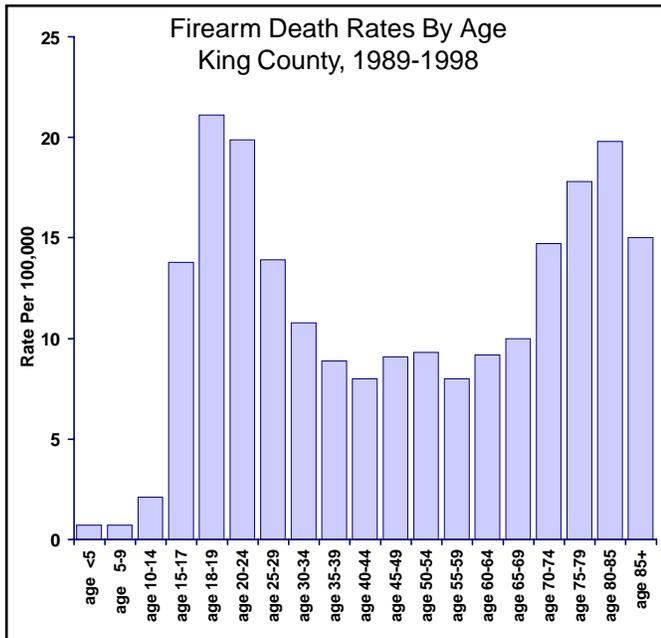
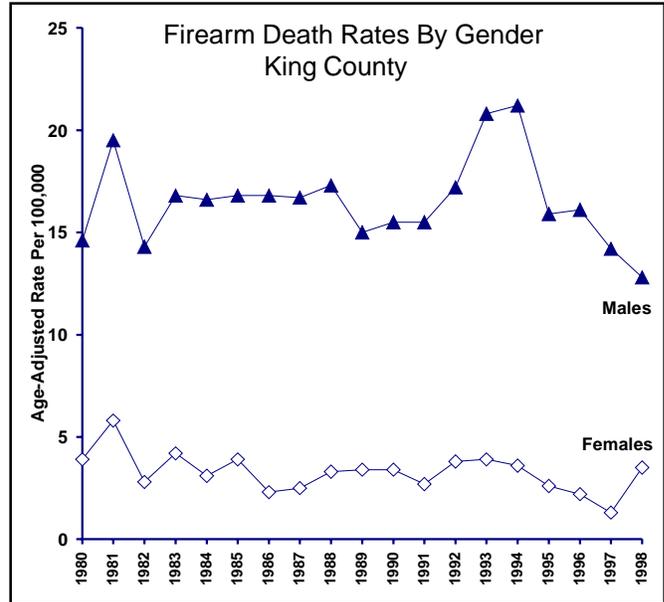


* Firearm injuries are classified by the intent with which they are inflicted. Intentional firearm injuries are those that are deliberately inflicted such as suicide attempts and assaults/homicides. Unintentional firearm injuries are accidental. In some situations it can not be determined whether an injury was intentional or unintentional. These are classified as undetermined intent. Firearm injuries that are classified as legal intervention are those attributed to law enforcement activities. In this analysis undetermined and legal intervention injuries are grouped under the heading "other".

Demographic Differences in Firearm Deaths

Firearm death rates vary by gender.

- Males account for 84% of all firearm victims. The death rate for males is on average five times the female rate.
- The increase in firearm deaths in 1993 and 1994 was due to an increase in male victims. Deaths among females did not increase during this time.

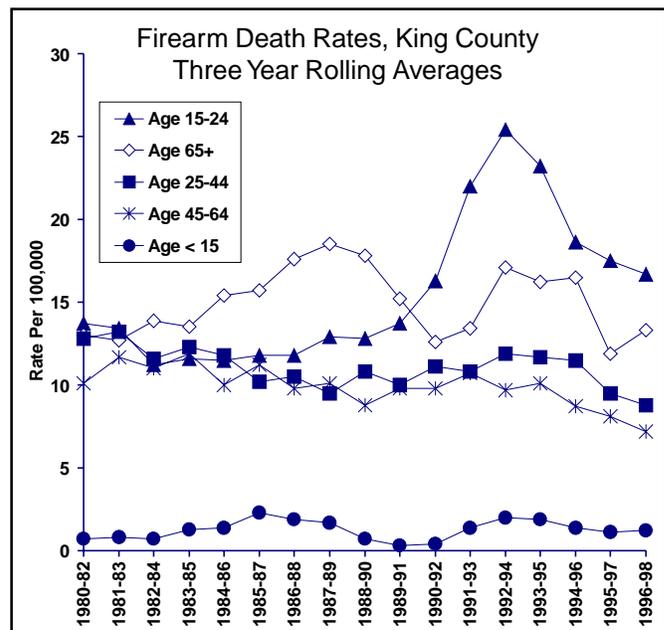


Firearm death rates vary by age.

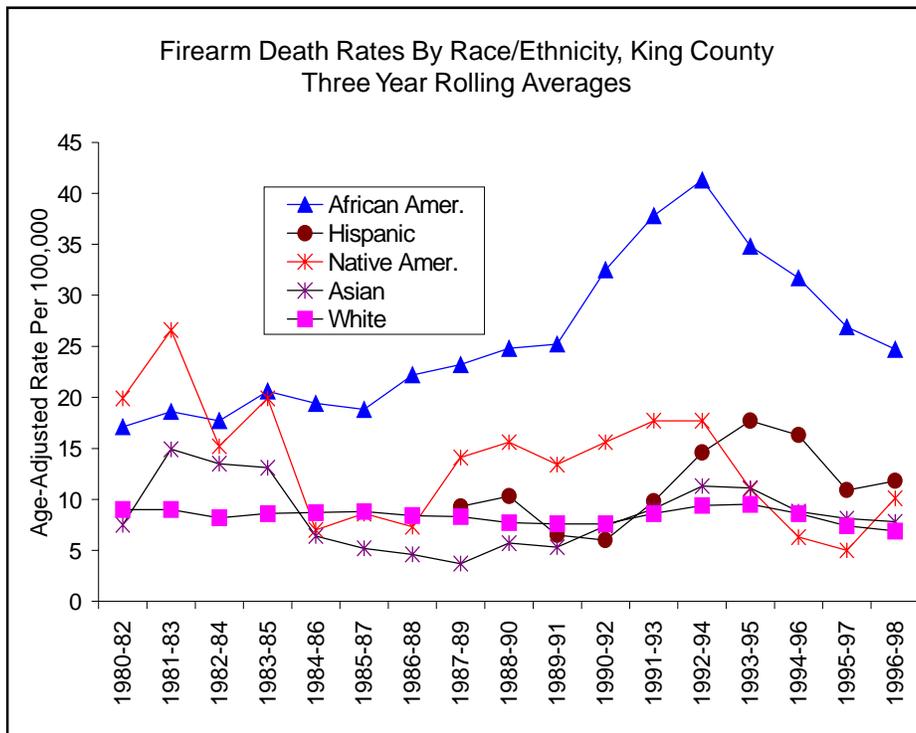
- Older teens, young adults and those age 75 years and over have higher firearm death rates. Firearm homicides are responsible for the higher rates among the young; firearm suicides raise the rate among elders.
- In the decade from 1989 through 1998, firearms killed 1,525 King County residents. Thirty-seven of these victims were children under age 15 years; 155 were teens age 15 through 19 years; 204 were young adults age 20 through 24 years. Two hundred fifty three were seniors age 65 years and over.

Age-specific firearm death trends.

- The increase in firearm deaths during 1993 and 1994 was seen among victims age 15 through 24 years. This age group has experienced the greatest decline since 1994.
- Prior to the 1990s, victims age 65 years and over usually had the highest firearm death rate. This group now has the second highest rate in King County.



Race/Ethnicity Specific Firearm Death Trends



- African Americans have the highest firearm death rate among King County residents. The African American firearm death rate is 3.6 times the White rate in 1996-1998.
- The African American firearm death rate increased 64% from 1989-91 to 1992-94 and has since declined 40%.
- The firearm death rate among Asians increased 113% between 1989-91 and 1992-94 and has since declined 31%.
- Hispanics experienced the largest percent increase in the firearm death rate, rising 172% between 1989-91 and 1993-95. The rate has since declined 33%.

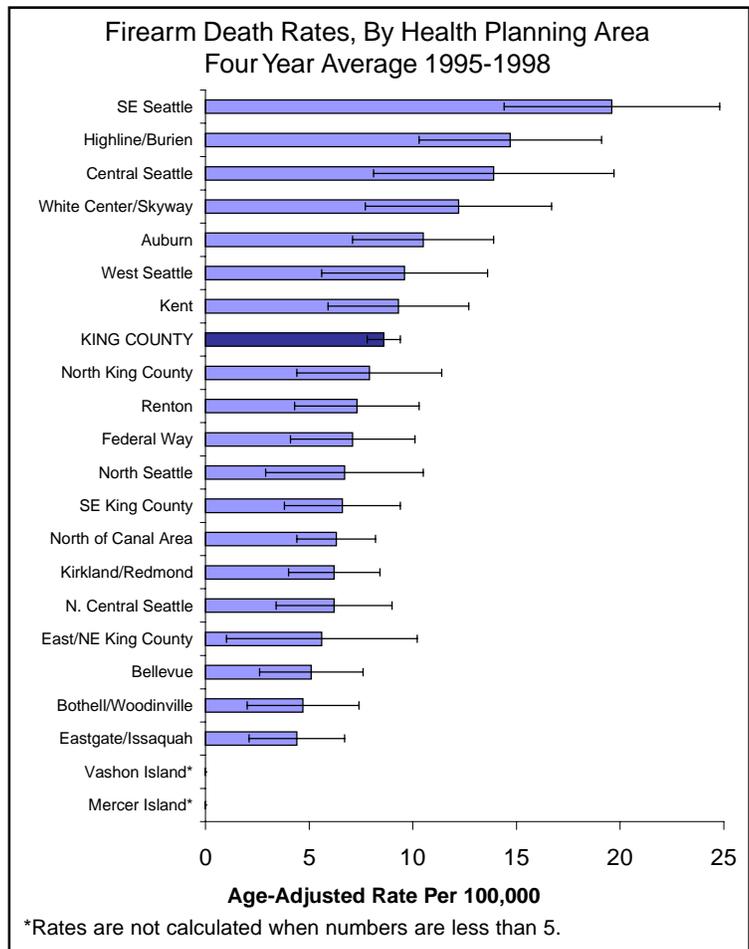
Notes on Presenting Data by Race/Ethnicity

Epidemiologic analyses frequently examine differences in health outcomes by demographic characteristics such as age, gender, and race/ethnicity. In recent years, the presentation of data broken down by race/ethnicity has been questioned by researchers and communities. There is concern that readers may incorrectly assume that differences between groups are biologically-based and that the racial categories used are not necessarily reflective of individuals' self-identification. It has also been argued that the continued use of race/ethnicity may reinforce negative stereotypes, introduce false assumptions, and discredit and stigmatize communities of color.

Most researchers believe that race/ethnicity is a marker for complex social, economic, and political factors that are important influences on community and individual health. Most communities of color in this country have experienced social and economic discrimination, and other forms of racism, which can negatively affect the health of those communities. We continue to examine and present data by race/ethnicity because we believe that it is important to understand which racial/ethnic groups are disproportionately affected by significant health issues. We hope this understanding will lead to strategies that address these issues, as well as the social and economic inequities which underlie them.

Firearm Deaths by Geographic Location

- The risk of firearm death is greatest among residents of the Southeast Seattle Health Planning Area. This rate is significantly higher than the King County rate and is significantly higher than all but 3 of the other 20 Health Planning Areas.
- Eastgate/Issaquah, Bothell/Woodinville, and Bellevue Health Planning Areas have firearm death rates significantly lower than the King County rate overall.



Data Sources and Technical Notes

Deaths: Death data were provided by the Washington State Department of Health, Center for Health Statistics.

Hospitalizations: Hospitalization data were provided by the Washington State Department of Health, Office of Hospital and Patient Data Systems.

Population: Rates were calculated with population figures from the Department of Social and Health Services, Washington State Adjusted Population Estimates, April, 1999.

Rate per 100,000: The total number of deaths from firearms occurring within a population during a specified time period (usually a year), divided by the population and multiplied by 100,000.

Age-Adjusted Rate: A rate that is mathematically adjusted to standardize the age composition of the population. This adjustment removes the effect of age when comparing two populations with different age compositions. By convention, the rate is adjusted to the age distribution of the 1940 U.S. population.

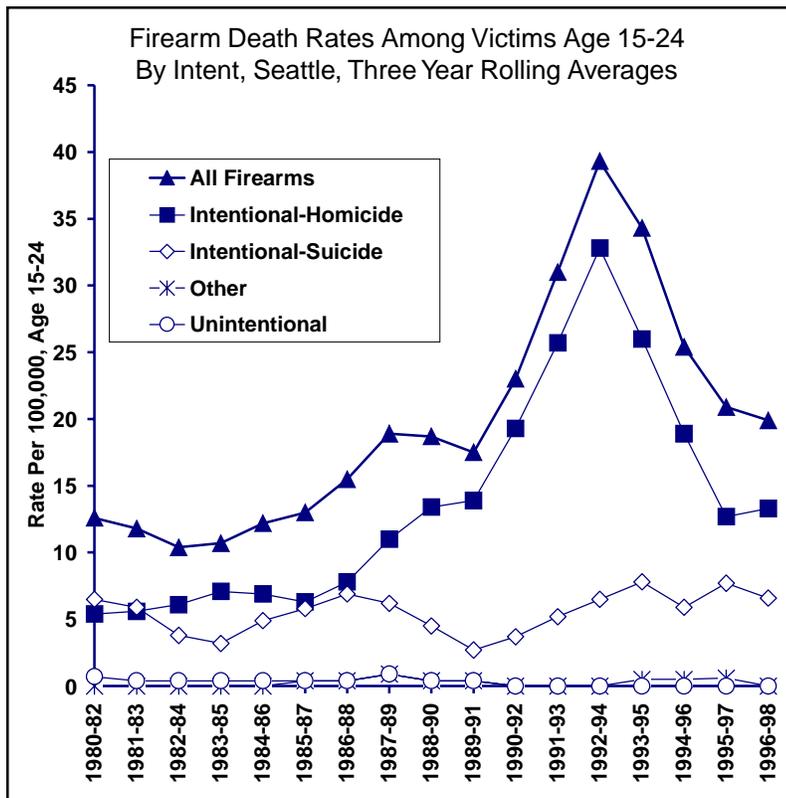
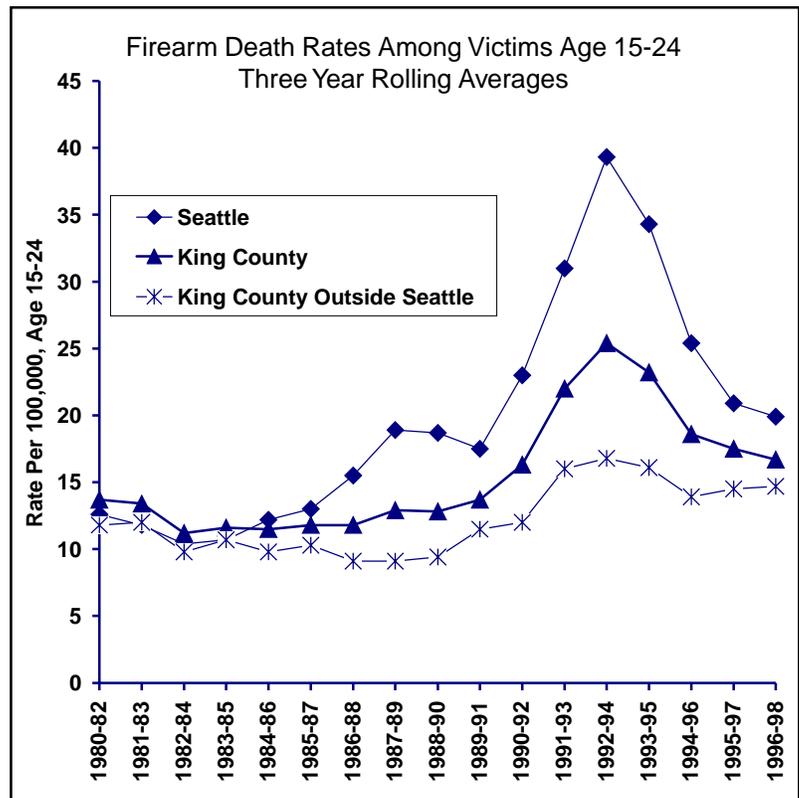
Rolling Averages: For small populations, slight changes in the number of events can cause large fluctuations in rates making year-to-year changes difficult to interpret. To help stabilize the rate and observe the overall time trend, the rates are aggregated into "rolled" averages in three-year intervals across the total observed period.

Calculating Race/Ethnicity - Specific Rates: Race-specific rates are based on annual estimates of the number of King County residents in each racial and ethnic group. Demographers estimate the population for years between census counts using data regarding births, deaths, housing starts, school enrollment, population mobility, and sample population counts. The 2000 census may result in changes to these population estimates that may change rates and trends shown here.

A Closer Look At Those With Greatest Risk

Victims Age 15 – 24

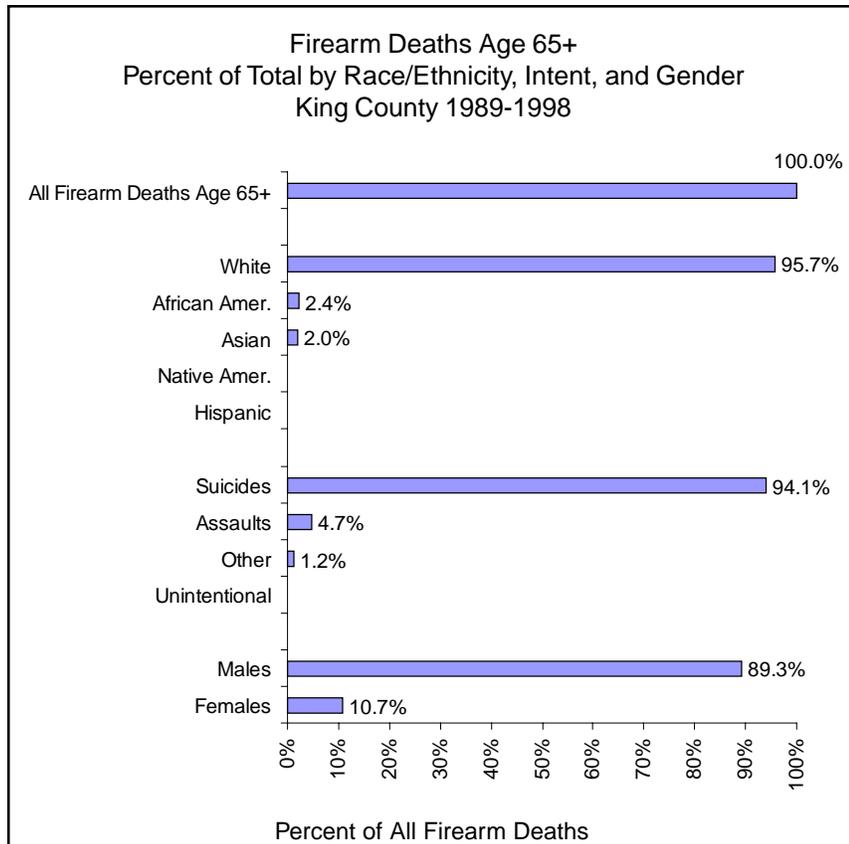
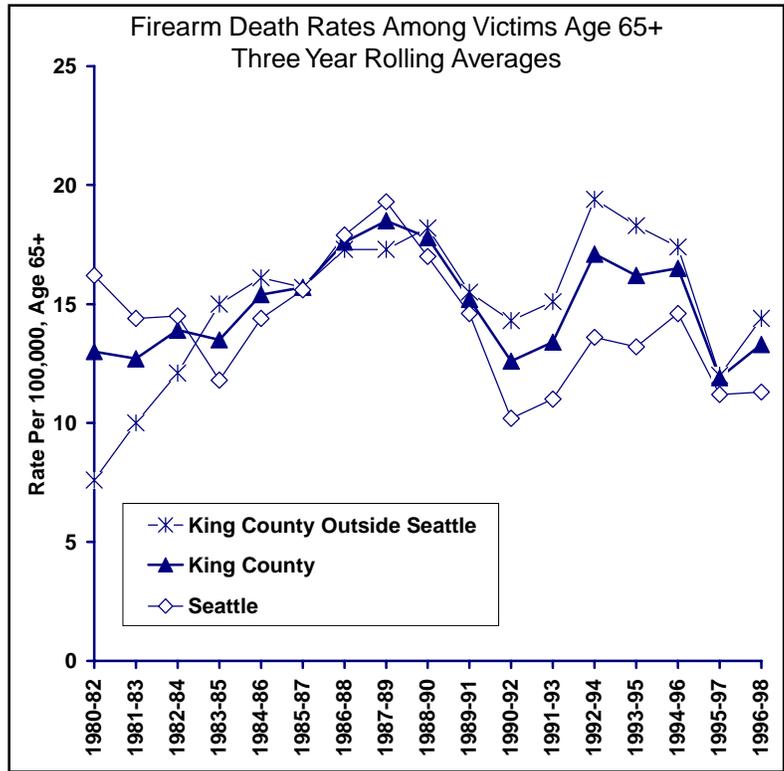
- Firearms are the second leading cause of death among all causes for 15 – 24 year olds in King County and the leading cause of death among 15 - 24 year olds residing in Seattle.
- The increase and post-1994 decline in the firearm death rate among 15-24 year olds was seen primarily among Seattle residents.
- The rates for both Seattle and King County outside Seattle residents 15-24 years old remain higher now than before 1992.



- The increase in firearm deaths among Seattle's 15-24 year olds was due to an increase in firearm homicides.
- A decline in firearm homicides since 1994 is driving the decline in firearm deaths in this age group.
- The firearm death rate for youth age 15 - 24 years residing in Southeast Seattle is significantly higher than all other areas of King County (data not shown). During the period 1989-1998, 79 youth from this area were killed by firearms.

Victims Age 65 +

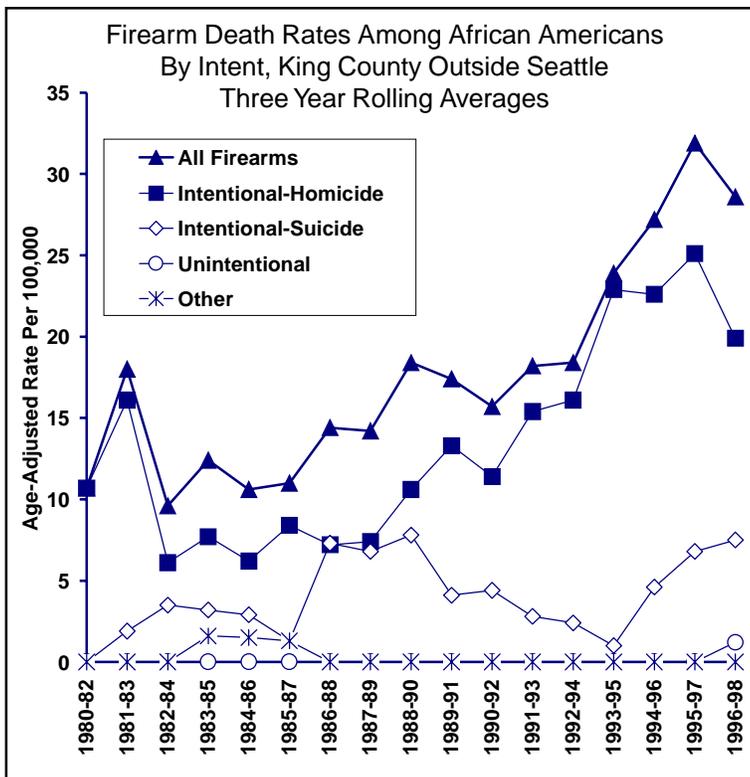
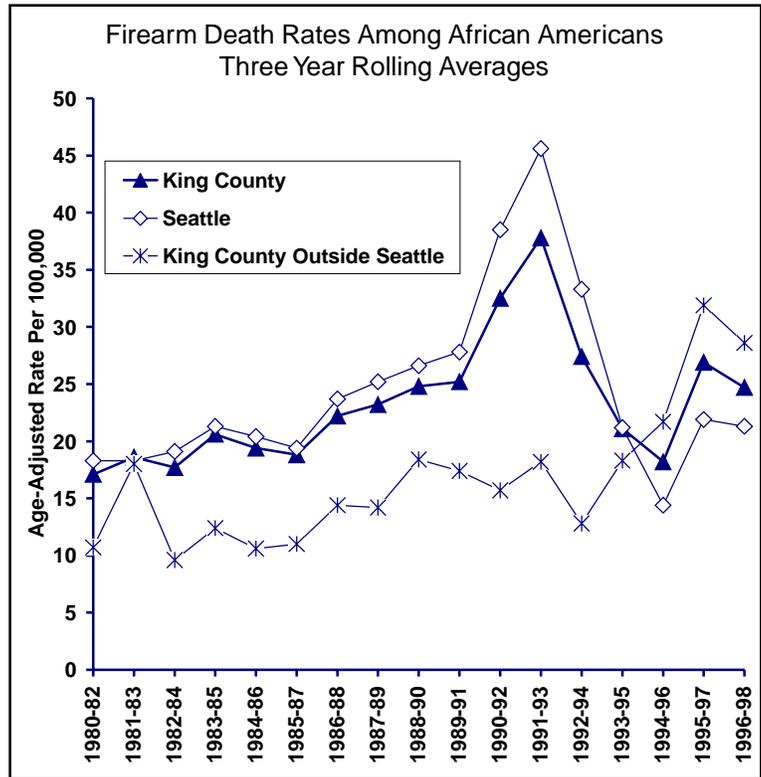
- On average 25 King County residents age 65 years and over are killed by a firearm each year. This age group now has the second highest firearm death rate in King County.
- Between 1984 and 1990, those age 65 years and over had the highest firearm death rate in King County.



- Firearm deaths among victims age 65 years and over are primarily suicides. Ninety-four percent of firearm deaths in this age group are suicides.
- Eighty-four percent of firearm deaths in this age group are white male suicides (data not shown).

African American Victims

- The trend in firearm deaths among African Americans who reside in King County outside Seattle does not follow the same pattern as for those who reside in Seattle.
- Firearm death rates among King County African Americans living outside Seattle have been rising since 1990. The number of deaths each year have been small enough so that the increase is not statistically significant, but the trend is of concern. Numbers of deaths each year from 1990 through 1998 are: 6, 4, 3, 8, 5, 7, 11, 10, and 6.
- The firearm death rate for African Americans in King County residing outside Seattle is now higher than for those in Seattle, although the number of Seattle deaths is greater. The number of deaths among Seattle African American residents each year from 1990 through 1998 are: 12, 19, 28, 24, 27, 11, 13, 12, and 10.

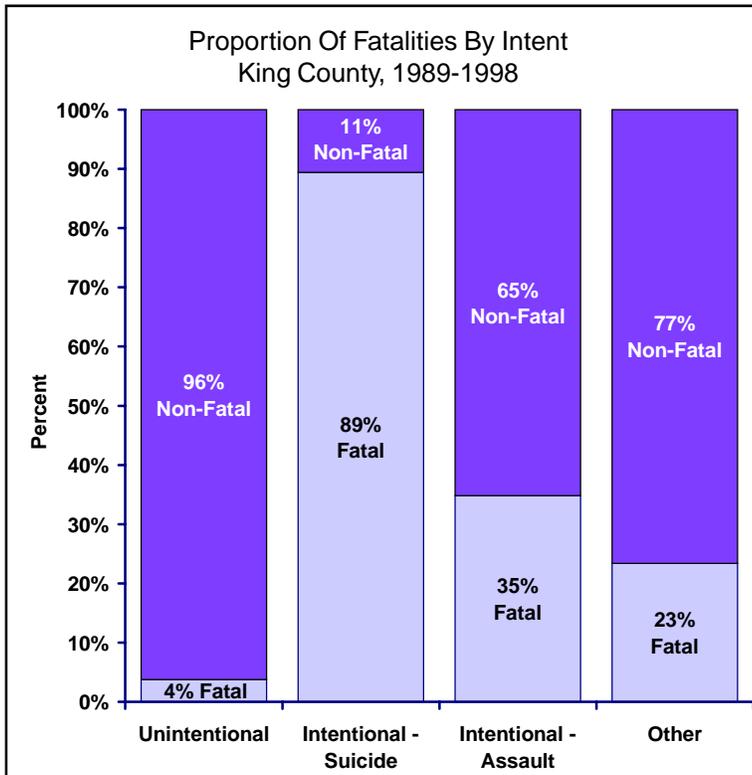
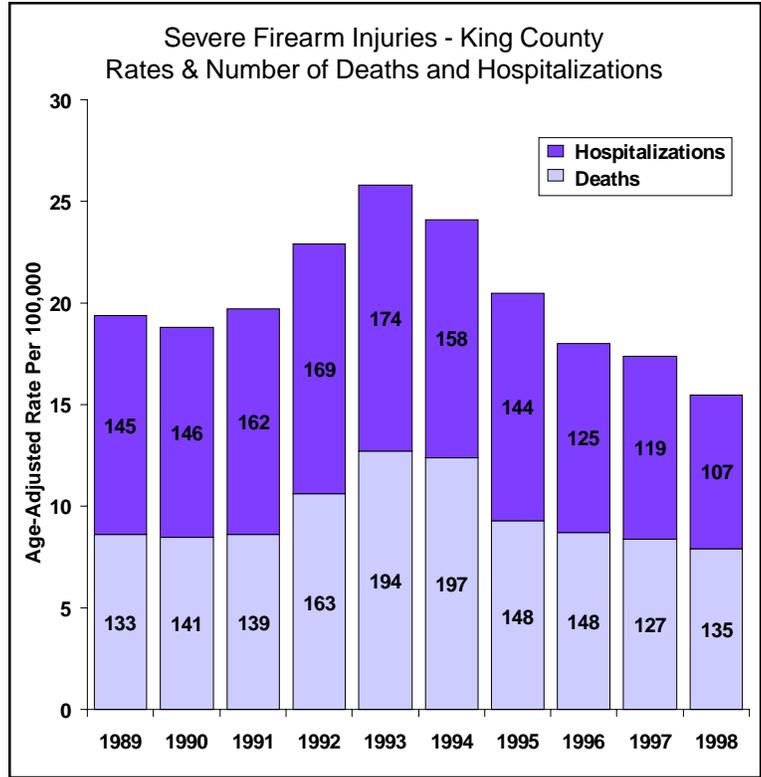


- The increase in firearm deaths among African Americans in King County outside Seattle is due to an increase in firearm homicides.

Severe Firearm Injuries* King County, 1989 - 1998

Half of Severe Firearm Injuries are Non-Fatal

- During the period 1989-1998, 2974 King County residents suffered severe firearm injuries; 1525 (51%) were fatal and 1449 (49%) were non-fatal.
- Severe firearm injury rates have been declining since 1993. By 1998, the rate had declined by 40% to 16 per 100,000.



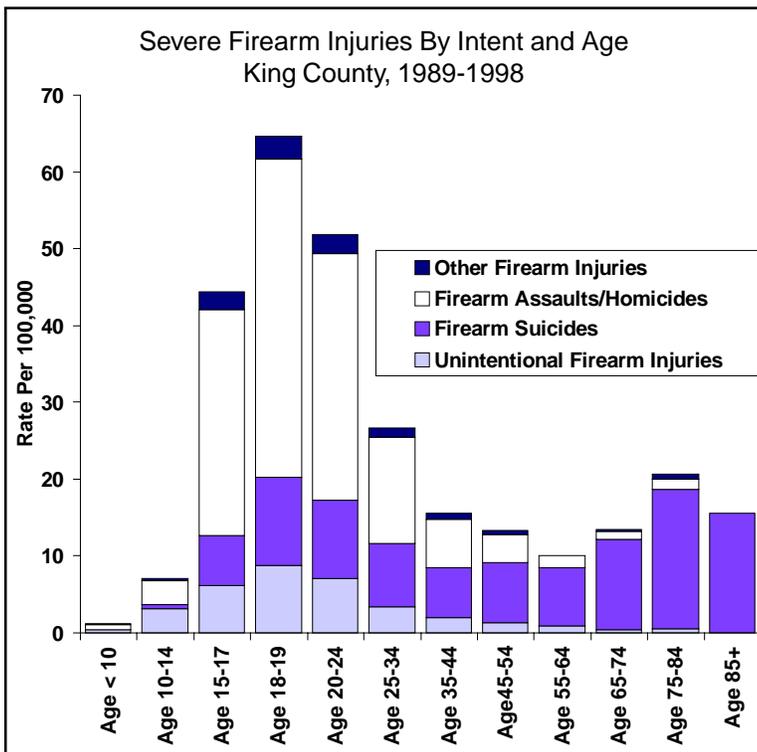
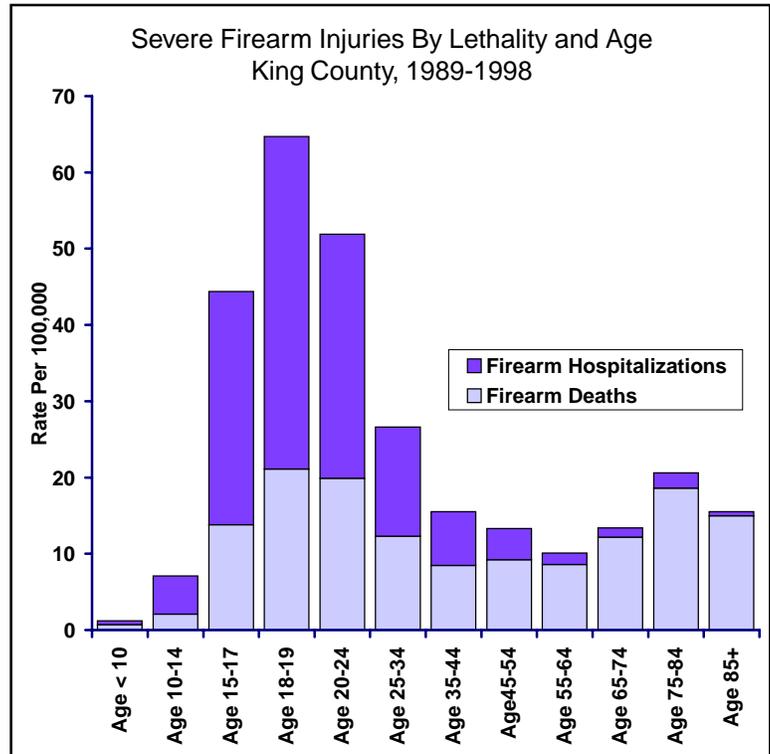
Lethality Varies by Intent

- The lethality of a severe firearm injury depends upon the intent with which the injury was inflicted. Most unintentional firearm injuries are not fatal; only 4% of these injuries result in death.
- Intentional firearm injuries are fatal 59% of the time, although this varies by category of intent. Severe firearm injuries that are classified as suicide attempts are fatal 89% of the time. Severe firearm injuries resulting from an assault are fatal 35% of the time.
- Available data do not provide information about non-fatal firearm injuries that may have resulted in permanent disability.

* Severe firearm injuries are those that result in the death or hospitalization of the victim.

Lethality and Intent Vary by Age

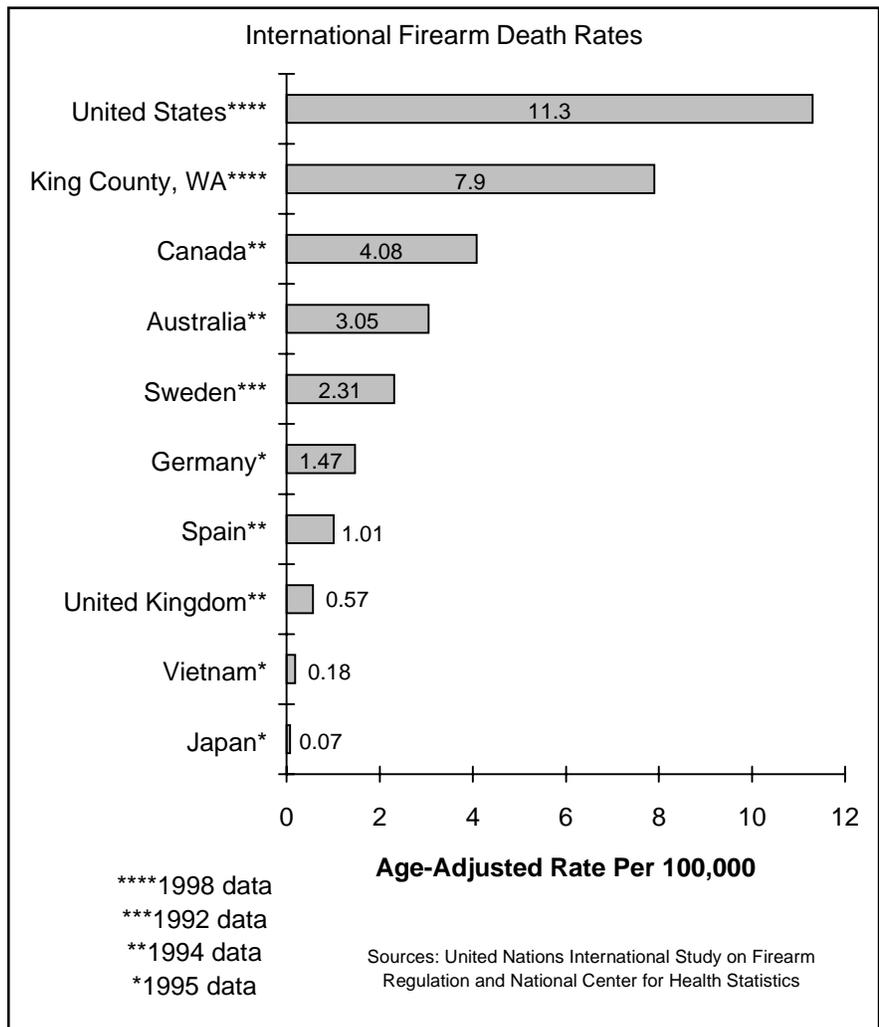
- For victims over age 35 years, most severe firearm injuries are fatal. Victims under age 10 years are also more likely to die from a severe firearm injury. The majority of severe firearm injuries among victims age 10 through 34 years are non-fatal.
- Severe firearm injury rates are highest among youth. Victims age 18-19 years have the highest rate, 65 per 100,000, followed by victims age 20-24 years and age 15-17 years.



- Severe firearm injuries resulting from assaults disproportionately effect youth. Of the 1018 severe firearm injuries to victims age 15 to 24 years, 63% are assault related, 18% are suicide related, and 14% are unintentional.
- Among those age 14 years and under, 50% of severe firearm injuries are assault related and 40% are unintentional. This age group has the highest proportion of unintentionally inflicted severe firearm injuries.
- Ninety percent of severe firearm injuries to those age 65 years and older are suicide related. All injuries to the oldest group, age 85+ years, are suicide related.

Risk and Relative Perspective

Almost one quarter (23%) of King County households have firearms. The degree of accessibility to those firearms by household members and visitors varies. While most households are storing firearms safely, an estimated 32,964 households store firearms loaded and 75,999 households do not lock up their firearms. A small proportion of King County households, 3%, store firearms both unlocked and loaded. This proportion represents 19,257 households. (1998 Behavioral Risk Factor Survey, Washington State Department of Health)



- The US firearm death rate, while declining in recent years, remains high relative to other industrialized countries. In 1998, 30,708 people died as a result of a firearm injury in the US. Less than 3%, 866, of these fatal injuries were unintentionally inflicted. Firearm homicides accounted for 11,798 deaths and firearm suicides accounted for 17,424 deaths. (National Center for Health Statistics)

Public Health Surveillance of Firearm Injuries

Comprehensive monitoring of firearm injuries in King County would require data regarding all injuries from those that are so minor that medical care is not sought to those that are so severe that the victim does not survive. Currently only data regarding fatal firearm injuries and those severe enough to require a hospital admission are available. These data allow surveillance of only the most severe injuries while information about less severe injuries is unknown. This situation however will soon improve.

The WA State Department of Health's Injury Prevention Program has been developing and testing a statewide Gunshot-Wound Surveillance System. Information about firearm injuries from additional sources such as hospital emergency rooms and the Trauma Registry will be combined with current data to allow more complete assessment of firearm injuries. Preliminary data from this system, which is not available for this document, indicate that the existing assessment process may underestimate firearm injuries by 16%.

Recommendations

Deaths from injuries can be prevented. Targeted prevention efforts have resulted in significant declines in injury deaths, particularly motor vehicle deaths. Although there have been recent improvements in the firearm death rate, the decline in deaths from other causes of injury has been greater. As a result, firearm injuries continue to be an important public health issue.

The section below highlights steps that can be taken at both the individual and community levels to prevent firearm injuries and deaths.

What can be done to prevent firearm injuries and deaths?

1. Considerations for firearm ownership.

Evaluations of the circumstances under which firearm deaths occur show that there are risks in owning a firearm:

- In King County there were 43 firearm suicides, criminal homicides, or unintentional deaths involving a gun kept in the home for every 1 case of homicide for self-protection. Firearm deaths that occurred in King County homes involved friends or acquaintances 12 times as often as strangers.¹
- Two-thirds of firearm deaths that occurred in King County occurred inside a home or other residential dwelling. Over half of these incidents occurred in the residence in which the firearm involved was kept.¹
- Firearms kept in the home are associated with an increase in the risk of a homicide occurring in the home, especially by a family member or intimate acquaintance.²
- A study in California found that in the first week after the purchase of a handgun, the rate of suicide by means of firearms among purchasers was 57 times as high as the adjusted rate in the general population. The increase in the risk of suicide by firearm among purchasers persists for at least six years. This study showed that women are at a high risk for suicide and homicide after recently purchasing a handgun.³
- Seattle and Vancouver BC are nearly identical cities in terms of population demographics but have one fundamental difference; access to firearms, especially handguns. When compared to Vancouver BC, Seattle had a fivefold higher risk of handgun homicide and a nearly six times higher risk of suicide using a handgun.⁴

¹ Kellerman AL, Reay DT. *Protection or Peril? An Analysis of Firearm-Related Deaths in the Home*. New Engl J Med 1986; 314: 1557-1560.

² Kellerman AL, Rivara FP, et al. *Gun Ownership as a Risk Factor for Homicide in the Home*. New Engl J Med 1993; 329: 1084-1091.

³ Wintemute GJ, Parham CA, Beumont JJ, Wright M, Drake C. *Mortality Among Recent Purchasers of Handguns*, New Engl J Med; 341: 1583-1610.

⁴ Sloan JH, et al. *Handgun regulations, crime, assaults, and homicide. A tale of two cities*. New Engl J Med. 1988 Nov 10;319(19):1256-62.

2. If choosing to own a firearm, what protective measures should be considered to prevent unintentional shootings or impulsive actions by family members or visitors?

Studies have demonstrated the importance of safe storage of firearms:

- A local study of youths up to age 17 who sought medical treatment at Harborview Medical Center, found that in 70% of the firearm suicides and suicide attempts, the victim used a weapon that belonged to a parent. Eighty-four percent of these weapons had been stored in the home of the victim.⁵
- Another study looked at unintentional firearm deaths in twelve states that had passed safe storage legislation. Unintentional firearm deaths dropped by 23% for children under 15 years of age after safe storage laws were passed.⁶

In King County there is a firearm in 1 of every 4 homes, suggesting that your child may have a friend whose parent keeps a firearm in their home. It is important to ask if firearms are present and how they are stored in any home where your child spends time.

Safe storage options:

- Lock Box --** Small safe designed to store a handgun. Push button keypad opens the box and provides quick access. Can be bolted to the wall or floor to prevent theft.
- Gun Safe --** Used to store long guns and rifles.
- Trigger Lock --** Two-piece lock that fits over the trigger guard so the trigger cannot be pulled. A push-button keypad, combination, or key opens the lock.
- Chamber Lock --** A device that blocks the chamber to prevent a cartridge from being fired. Chamber locks are inserted in or through the magazine well or chamber, or are inserted through the gun barrel and chamber to block a cartridge from moving into position. A combination lock or key opens the lock.

⁵ Grossman DC, et al. *Self-inflicted and unintentional firearm injuries among children and adolescents: the source of the firearm*. Arch Pediatr Adolesc Med. 1999 Aug;153(8):875-8.

⁶ Cummings P, Grossman D, Rivara FP, Koepsell T. *State Gun Safe Storage Laws and Child Mortality Due to Firearms*. JAMA. 1997 Oct 1;278(13):1084-6.

FOR MORE INFORMATION ON SAFE STORAGE OR TO REQUEST A
COUPON FOR A DISCOUNT ON A LOCK BOX OR OTHER DEVICES
CALL **1-800-LOKITUP (565-4887)**.

3. Potential public policies to reduce firearm injuries and deaths.

Require a permit or a license to purchase a handgun - In Washington, DC, licensing was associated with a prompt decline in firearm homicides and suicides. No such decline was observed for homicides and suicides in which firearms were not used, and no decline was seen in adjacent metropolitan areas. Data suggest that an average of 47 deaths each year have been prevented since enacting this legislation.⁷

Prevent access to a firearm by a child – Child Access Prevention Laws, or safe storage laws, make it a crime for an adult to store or leave a loaded firearm where it is accessible by children. As shown in the previous section, unintentional firearm deaths dropped by 23% for children under 15 years of age after safe storage laws were passed.⁶

Limit handgun purchases to one per month - This policy has been shown to effectively disrupt the illegal interstate transfer of handguns. 'Bulk' handgun purchases have been documented to be the source of guns used in crimes committed in states other than where the handguns were purchased. Four states have adopted a one handgun a month policy. When enacted in Virginia, there was a 61% decrease in handguns recovered in New York crimes that were purchased in Virginia, a 67% decrease in guns recovered in Massachusetts that were purchased in Virginia, and a 38% decrease in guns recovered in New Jersey that were purchased in Virginia. In Maryland, handgun sales dropped 25% during the first year the state enacted its one gun a month law. In addition, the number of Maryland multiple-sale guns turning up at crime scenes in Washington, DC dropped from 23 to zero and in Baltimore dropped from 26 to 4.⁸

⁷ Loftin C, McDowall D, Wiersema B, Cottey TJ. *Effects of restrictive licensing of handguns on homicide and suicide in the District of Columbia.* N Engl J Med. 1991 Dec 5;325(23):1615-20.

⁸ Weil DS, Knox RC. *Effects of limiting handgun purchases on interstate transfer of firearms.* JAMA. 1996 Jun 12;275(22):1759-61.

4. Washington State in relation to the above policies:

In 1993 the Washington State Legislature preempted local cities and counties from enacting firearm laws with the exception of prohibiting new gun shops within close proximity to schools. With this preemption in place, cities and counties are not able to implement firearm policies at the local level. Firearm injury prevention policies must be enacted by the State. In Washington there is:

- No permit or license required for handguns
- No Child Access Prevention (safe storage) law
- No limit on the number of handguns that can be purchased at one time

Public Health Data Watch monitors trends in key health indicators for King County. It is produced several times a year by the Epidemiology, Planning, and Evaluation Unit (EPE) of Public Health -- Seattle & King County with assistance from other staff of Public Health. This issue was produced with the assistance of the Violence and Injury Prevention Unit.

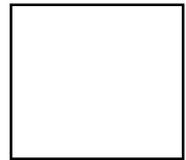
For additional copies of this Data Watch, please contact:

Public Health -- Seattle & King County
Epidemiology, Planning, and Evaluation Unit
Wells Fargo Center, Suite 1200
999 Third Avenue
Seattle, WA 98104

Phone: (206) 296-6817
Fax: (206) 205-5314
Email: data.request@metrokc.gov

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Public Health Data Watch



Public Health - Seattle & King County
Epidemiology, Planning and Evaluation Unit
999 Third Avenue, Suite 1200
Seattle, WA 98104-4039

In King County:

- 137 residents die from a firearm injury in an average year.
- 97% of firearm injuries resulting in death are intentionally inflicted: suicides and homicides.
- Only 1% of firearm deaths are unintentional.
- Youth and the elderly are most often the victims of firearm deaths; youth are at increased risk of firearm homicide and those over 65 years are at increased risk for firearm suicide.
- There is an increased risk of firearm death, especially firearm homicide, among African Americans.
- Males have a higher risk for firearm death in every category of intent.

Firearm Deaths By Intent King County, Ten Year Total, 1989-1998

