Surveillance for Fatal and Nonfatal

Firearm-Related Injuries —

United States, 1993–1998

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*Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CIO	Centers/Institute/Offices
EPO	Epidemiology Program Office
IHPO	International Health Program Office
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCEH	National Center for Environmental Health
NCEHIC	National Center for Environmental Health and Injury Control
NCHSTP	National Center for HIV, STD, and TB Prevention
NCID	National Center for Infectious Diseases
NCIPC	National Center for Injury Prevention and Control
NCPS	National Center for Prevention Services
NIOSH	National Institute for Occupational Safety and Health
NIP	National Immunization Program

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Surveillance for Fatal and Nonfatal Firearm-Related Injuries — United States, 1993–1998

Karen E. Gotsch[1]
Joseph L. Annest, Ph.D.[1]
James A. Mercy, Ph.D.[2]
George W. Ryan, Ph.D.[1]
[1]*Office of Statistics and Programming*
[2]*Division of Violence Prevention*
National Center for Injury Prevention and Control

Abstract

Problem/Condition: Firearm-related injuries are the second leading cause of injury-related death in the United States.

Reporting Period: January 1993–December 1998.

Description of the Systems: Data presented in this report regarding nonfatal injuries are from the National Electronic Injury Surveillance System of the U.S. Consumer Product Safety Commission. National estimates of nonfatal firearm-related injuries were derived using weighted data for patients treated in a nationally representative, stratified probability sample of U.S. hospital emergency departments (EDs). Death data presented in this report are from CDC's National Vital Statistics System, which includes information from all death certificates filed in the 50 states and the District of Columbia. Population data for calculating rates were obtained from the U.S. Bureau of the Census.

Results: During 1993–1998, an estimated average of 115,000 firearm-related injuries (including 35,200 fatal and 79,400 nonfatal injuries) occurred annually in the United States. Males were seven times more likely to die or be treated in a hospital ED for a gunshot wound than females. The proportion of firearm-related injuries that resulted in death increased from younger to older age groups. Approximately 68% of firearm-related injuries for teenagers and young adults aged 15–24 years were from interpersonal violence, and 78% of firearm-related injuries among older persons aged ≥65 years were from intentionally self-inflicted gunshot wounds. Black males aged 20–24 years had the highest average annual fatal (166.7/100,000 population) and nonfatal (689.4/100,000 population) firearm-related injury rates during the 6-year period. Although 51.4% of intentionally self-inflicted nonfatal wounds were to the head or neck, 71.8% of unintentional and 45.8% of assault-related nonfatal wounds were to the extremities. During the 6-year period, estimates are that quarterly fatal firearm-related injury rates declined 29.3%, and quarterly nonfatal firearm-related injury rates declined 46.9%. Firearm-related injury rates declined for intentionally self-inflicted, assault, and unintentional causes.

Interpretation: Data in this report regarding trends in firearm-related injury rates during 1993–1998 indicate that both mortality and morbidity from gunshot wounds declined substantially in the United States. However, firearm-related injury continues to be a public health concern accounting for approximately 31,000 deaths and 64,500 nonfatal injuries treated in hospital EDs in 1998.

Public Health Action: A state-based, national reporting system is needed to track the incidence, detailed circumstances, characteristics of the shooter and injured person, and long-term consequences of fatal and nonfatal firearm-related injuries. These data would be useful for the design, implementation, and evaluation of prevention programs aimed at reducing the burden of firearm-related injuries in the United States.

INTRODUCTION

Since 1993, firearm-related injuries and deaths have been declining steadily (*1–3*). However, in 1998, firearm-related injuries remained the second leading cause of injury death in the United States (*3*), accounting for approximately 31,000 deaths. The majority of these fatal and nonfatal firearm-related injuries result from interpersonal violence and intentionally self-inflicted gunshot wounds, but approximately 15,000 unintentional gunshot wounds are treated in U.S. hospital emergency departments (EDs) each year (*4*). Although firearm-related injuries represent <0.5% of injuries treated in hospital EDs, they have an increased potential of death and hospitalization compared with other causes of injury (*5–7*). In 1994, treatment of gunshot injuries in the United States was estimated at $2.3 billion in lifetime medical costs, of which $1.1 billion was paid by the federal government (*8*). These factors emphasize the importance of firearm-related injuries as a public health concern.

This report presents national data to characterize fatal and nonfatal firearm-related injuries occurring in the United States during 1993–1998 to supplement previous reports on long-term trends in firearm-related mortality rates (*9,10*). Data regarding firearm-related deaths from the National Center for Health Statistics' National Vital Statistics System (NVSS) are presented beside data regarding nonfatal firearm-related injuries treated in U.S. hospital EDs from the U.S. Consumer Product Safety Commission's National Electronic Injury Surveillance System (NEISS). These data collectively demonstrate that all segments of the U.S. population are affected by firearm-related injuries and that injury- and violence-prevention efforts are needed to reduce further the burden of these injuries on society.

METHODS

A firearm-related injury was defined as a gunshot wound or penetrating injury from a weapon that uses a powder charge to fire a projectile. This definition includes gunshot injuries sustained from handguns, rifles, and shotguns but excludes gunshot wounds from air-powered BB and pellet guns.

National estimates of nonfatal firearm-related injuries were calculated using data collected during 1993–1998 from NEISS of the U.S. Consumer Product Safety Commission (CPSC). NEISS is a stratified probability sample of hospitals in the United States that have ≥6 beds and provide 24-hour emergency care (*11,12*). Through an interagency agreement between CPSC and CDC, information regarding all patients with gun-related injuries treated in NEISS hospital EDs has been collected since June 1992 (*13,14*). Nonfatal firearm-related gunshot cases represent those persons who were alive when discharged from the ED. The majority of deaths from firearm-related injuries occur at the scene, in route to the ED, or in the ED before hospitalization (*6,13*). Each eligible nonfatal case was assigned a sample weight. Sample weights were summed to provide national estimates of nonfatal firearm-related injuries.

The sampling frame of NEISS remained the same for 1993–1996, and NEISS consisted of 91 U.S. hospital EDs randomly selected within each of four stratum (i.e., very large, large, medium, and small*) on the basis of the number of ED visits annually. In 1997, the sampling frame of NEISS was updated; a stratum was added for children's hospitals; and the number of NEISS hospitals was increased to 101 (*15*). During an 8-month overlap in 1997, gunshot cases were collected from both the old and new NEISS samples. Analysis of weighted data indicated that differences in the national estimates of firearm-related injuries based on these two samples were minimal (i.e., <1%) (CDC, unpublished data). These minimal differences indicate that trend analysis involving estimates of quarterly nonfatal rates during 1993–1998 were not substantially affected by the updated NEISS sample. Therefore, no statistical adjustments were made to account for the change in the sampling frame.

Fatal firearm-related injuries were from NVSS of CDC's National Center for Health Statistics. NVSS provides a complete enumeration of all deaths in the United States (*3*). For this report, all deaths of residents of the United States with an International Classification of Diseases, 9th Revision (ICD-9) underlying cause of death codes of E922.0-E922.9, E955.0-E955.4, E965.0-E965.4, E985.0-E985.4, or E970 were included (*16*). Population estimates are from the U.S. Bureau of the Census.

To derive average annual estimates of nonfatal firearm-related injuries, weighted data for each year during 1993–1998 were summed and divided by 6. To calculate the average annual rates, the estimates were summed for the 6 years, then divided by the sum of the population estimates for the same period and multiplied by 100,000. Similar calculations were made to derive average annual number of deaths and average annual mortality rates.

To examine trends in nonfatal firearm-related rates by intent, the weighted cases with undetermined intent (i.e., 14.0% of nonfatal firearm-related injuries during the 6-year period) were allocated to one of three known intent categories: unintentional, assault/legal intervention, or intentionally self-inflicted injury. Weighted cases with undetermined intent were allocated within each quarter of each year on the basis of the weighted distribution of cases with known intent for each respective quarter. This method of allocation accounted for the quarterly variation in the percentage of weighted cases with undetermined intent (range: 7.1%–19.2%) and also for the seasonal variation observed among the cases with known intent. Although the percentage of firearm-related deaths with undetermined intent was minimal (i.e., 1.2% of deaths during the 6-year period), these cases were allocated in the same manner as the nonfatal estimates to maintain consistency. Linear regression was used to predict the percentage decline in fatal and nonfatal firearm-related injury rates presented in this report. The 95% confidence intervals calculated for these percentage declines accounted for the sample weights and stratified survey design.

Race and ethnicity for nonfatal firearm-related cases from NEISS were obtained from ED records. The majority of cases were reported as either white, black, Hispanic, American Indian, or Asian. Nonfatal cases reported as white Hispanic were classified as Hispanic, and those reported as black Hispanic were classified as black.[†]

Very large is defined as >42,298 ED visits/year; *large*, as 25,896–42,298 ED visits/year; *medium*, as 15,731–25,895 ED visits/year; and *small*, as <15,731 ED visits/year.

[†] On the ED record, frequently, only one entry is available for race or ethnicity, not for both. The classification scheme used in this report assumed that most white Hispanics were likely to be recorded on the ED record as Hispanic and most black Hispanics were likely to be recorded as black.

Race/ethnicity categories for firearm-related deaths from NVSS were combined in a similar manner. For example, deaths specified as black Hispanic (i.e., 462 deaths or 0.2% of firearm-related deaths during the 6-year period) were classified as black. Numbers and rates of nonfatal and fatal firearm-related injuries are presented for the mutually exclusive categories of white non-Hispanic, black, Hispanic, and other or unknown categories.

National estimates in the tables, figures, and text of this report are presented without 95% confidence intervals for brevity. However, unstable estimates are noted if the coefficient of variation (CV) was >28%. Generalized relative standard error tables and formulas for both fatal and nonfatal firearm-related injuries are provided for data users to calculate 95% confidence intervals for specified point estimates (Appendix).

RESULTS

Fatal and Nonfatal Firearm-Related Injuries, Overall and by Race/Ethnicity, Sex, and Disposition

During 1993–1998, an estimated average of 115,000 firearm-related injuries occurred annually. Of these, approximately 30% resulted in death. This lethality rate is substantially higher than all causes of injury combined where <1% of cases were fatal (Figure 1).

Both fatal and nonfatal firearm-related injury rates were highest among persons aged 15–24 years; black males in that age group had the highest risk (Figures 2,3; Tables 1–3). Fatal and nonfatal firearm-related injury rates for Hispanics were generally less than those for blacks, but higher than those for white, non-Hispanics (Figure 3; Tables 1–3). The firearm-related death rate for males was six times higher than that for females; the nonfatal firearm-related injury rate for males was eight times higher than that for females (Tables 1–3). The proportion of persons who died from firearm-related injuries increased with age (Figure 4). Of those who survived a gunshot wound and who were treated in a hospital ED, approximately 55% were hospitalized or transferred, and the other 45% were treated and released (Tables 2–4).

Fatal and Nonfatal Firearm-Related Injuries, by Intent of Injury

The proportion of persons with firearm-related injuries who died from intentionally self-inflicted gunshot wounds increased with age (Figure 5). For persons of all ages, the firearm-related suicide rate was four times higher than the nonfatal, self-inflicted injury rate (Table 5). Firearm-related suicide rates were highest among persons aged ≥65 years (Figure 6).

A majority of firearm-related injuries for persons aged 15–44 years were caused by interpersonal violence (Figure 5). For persons in this age group, for every firearm-related homicide, 3–4 persons with nonfatal firearm-related injuries were treated in U.S. hospital EDs (Table 5). Assault-related fatal and nonfatal firearm-related injury rates were highest among persons aged 15–24 years (Figure 7; Table 5).

Although unintentional injury accounts for <4% of firearm-related deaths, it accounts for 17% of nonfatal firearm-related injuries treated in U.S. hospital EDs. Unintentional fatal and nonfatal firearm-related injury rates are highest among persons aged 15–24

years and decrease consistently with age (Figure 8; Table 5). For persons aged ≤14 years, unintentional injury accounts for approximately 40% of nonfatal firearm-related injuries where the intent of the injury had been determined (Figure 5).

Nonfatal Firearm-Related Injuries, by Injury Characteristics and Circumstances of the Incident

Intentionally self-inflicted nonfatal injuries predominantly involved gunshot wounds to the head or neck (Figure 9; Table 6). In contrast, for firearm-related assaults and those of undetermined intent, approximately 15% were gunshot wounds to the head or neck, and >30% were gunshot wounds to the leg or foot. For unintentional nonfatal injuries, >70% were gunshot wounds to the legs or arms (Figure 9; Table 6). Additionally, >70% of unintentional nonfatal injuries were self-inflicted (Table 6). Other characteristics of overall nonfatal firearm-related injuries, in all intent categories, were

- 20% were reported to occur in the home;

- approximately 2% were reported as job-related;

- 18% were reported to be self-inflicted;

- 35% were reported to involve a handgun

- approximately 60% were transported to the ED by ambulance or other emergency medical services; and

- a majority of injured persons aged ≥18 years were never married (Table 7).

Temporal Trends in Fatal and Nonfatal Firearm-Related Injuries

Based on linear regression analysis of quarterly rates, both fatal and nonfatal firearm-related injury rates declined significantly during 1993–1998. The fatality rate declined 29%, and the nonfatal rate declined 47% during this period (p < 0.01) (Figure 10). The extent of the decline in fatal and nonfatal rates varied by intent of injury. For firearm-related deaths, the suicide rate dropped approximately 15%, compared with 42% for the homicide rate and 47% for the unintentional rate (Figures 11–13).* For nonfatal firearm-related injuries, the suicide attempt rate declined 48%, compared with 49% for the assault rate and 37% for the unintentional rate (Figures 11–13).

DISCUSSION

In this report, data from two national data systems, NVSS and NEISS, were used to provide a comprehensive 6-year representation of fatal and nonfatal firearm-related injuries in the United States. These data demonstrate that firearm-related injury rates steadily declined during 1993–1998, including unintentional, assault-related and intentionally self-inflicted injuries. Although firearm-related injuries among teenagers and young adults were predominantly associated with interpersonal violence, a majority of

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*Semiannual rates, rather than quarterly rates, were used for trend analysis of firearm-related suicides and suicide attempts because of the limited number of nonfatal firearm-related suicide attempts.

firearm-related injuries among older adults were intentionally self-inflicted. Nonfatal injuries that were intentionally self-inflicted predominantly involved wounds to the head or neck compared with other types of injury that were most often to the extremities. These self-inflicted gunshot wounds potentially represent more life-threatening injuries with long-term sequelae (*6*). Although black males aged 15–24 years had the highest fatal and nonfatal rates, firearm-related injuries occurred among all segments of the U.S. population as defined by race/ethnicity, age, and sex.

Although fatal and nonfatal firearm-related injury rates have dropped substantially during 1993–1998, firearm-related injury continues to be a public health concern. In 1998, approximately 31,000 U.S. residents died from gunshot wounds, and another 64,000 were treated for nonfatal wounds in U.S. hospital EDs. In 1998, firearm-related injuries were the second leading cause of injury death in the United States after motor-vehicle–related deaths (*3*). Firearms were associated with 65.9% of homicides and 57.0% of suicides among U.S. residents. Although the percentage of firearm-related deaths that were unintentional was limited (i.e., <4% of deaths), approximately one fifth of nonfatal firearm-related injuries treated in U.S. hospital EDs were unintentional.

Certain limitations are associated with using NEISS data to examine nonfatal firearm-related injuries in the United States. NEISS only provides national estimates and does not allow for estimating by region, state, or local jurisdictions. NEISS data are based solely on information provided in the ED record and are not linked to criminal justice, police, or other data sources to supplement or verify information regarding the intent of injury. Also, information regarding locale where the injury occurred, victim-offender relationship, and type of firearm involved was missing for approximately half of the NEISS cases. Limitations occur also in using NVSS data to examine fatal firearm-related injuries. NVSS data are based on information recorded on death certificates. Data on victim-offender relationship are rarely recorded. Space is provided on the death certificate to record locale where the injury occurred and type of firearm used, but these items might not be recorded.

Public health efforts through surveillance, research, and prevention programs need to be expanded to further reduce firearm-related injuries. Efforts are under way to improve the availability of surveillance data on firearm-related injuries. CDC is collaborating with other public health organizations and federal agencies to implement the National Violent Death Reporting System, which will include information on all homicides and suicides, as well as all firearm-related deaths of known and undetermined intent. Only basic national- and state-level data are available regarding firearm-related deaths and injuries on which to base policies and practice. The benefits of a state-based, national reporting system to track the incidence and characteristics of a health condition have been well-established in other areas (e.g., infectious diseases and motor-vehicle safety). As a result, the Institute of Medicine has recommended a national data system for homicides and suicides that would provide objective data with which to monitor trends and evaluate the effectiveness of prevention programs and policies (*17*). Additionally, with funding from five private foundations, the Harvard Injury Control Research Center (HICRC) has launched the National Firearm Injury Statistics System (NFISS). HICRC is collaborating with the Medical College of Wisconsin, state and local grantees (i.e., Connecticut, Maine, Maryland, Michigan, Utah, and Wisconsin; and locally in Allegheny County [Pennsylvania], metropolitan Atlanta [Georgia], and San Francisco [California]); and others to design and pilot firearm-related injury-reporting systems at the state and local levels. NFISS builds on a model developed by the Medical College of Wisconsin and draws from four major reporting sources: death certificates, coroner/medical examiner reports,

police supplementary homicide reports (and, in certain jurisdictions, incident reports), and crime laboratory data. NFISS collaborators have developed uniform data elements for fatal firearm-related injuries, which are detailed in a manual, and the software architecture for the system (*18*).

The overall percentage decline in fatal and nonfatal firearm-related injury rates in the U.S. population during 1993–1998 is consistent with a 27% decrease in violent crime during the same time period (*19*). Since 1950, unintentional fatal firearm-related injury rates have declined. NEISS data also indicate a decline since 1993 in the rate of nonfatal unintentional firearm-related injuries treated in hospital EDs. The majority of these non-fatal injuries occurred among males aged 15–44 years, were self-inflicted, and were associated with hunting, target shooting, and routine gun handling (i.e., cleaning, loading, or unloading a gun) (*4*). Additional investigations should focus on factors that might have contributed to the decrease (e.g., gun safety courses and information campaigns, the proportion of the population that uses guns for recreational purposes, and legislation).

Certain factors might have contributed to the decrease in both fatal and nonfatal assaultive firearm-related injury rates. Possible contributors include improvements in economic conditions; aging of the population; decline of the cocaine market; changes in legislation, sentencing guidelines, and law-enforcement practices; and improvements associated with violence prevention programs (*20*). However, the importance and relative contribution of each of these factors have not been determined, and the reasons are not known for the declines in firearm-related suicide and suicide attempt rates.

Research to understand the trends in firearm-related homicides and injuries from assaults has focused on the role of the lethality of firearms, demographic changes, economic factors, imprisonment, and drug markets (*20*). Each of these factors might have played a role in the increases in firearm-related homicides occurring before 1993 and the declines, documented in this report, since that time (*20*). Research is needed to understand factors that contribute to racial and ethnic disparities in fatal and nonfatal firearm-related injuries and to identify prevention efforts to reduce these disparities. Evaluations of policies and programs that have the potential to further decrease these injuries are needed (*21*).

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FIGURE 1. Injury pyramids* for firearm-related injury versus all causes of injury
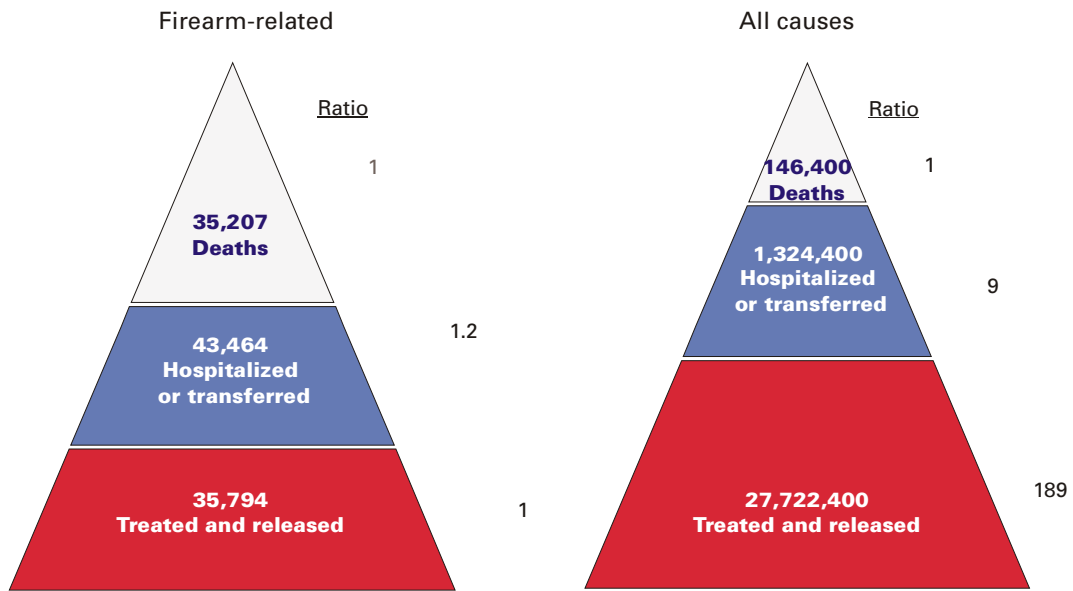
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm injury Surveillance Study for firearm-related nonfatal estimates; CDC's National Electronic Injury Surveillance System All Injury Pilot Study for nonfatal estimates for all causes.

* Pyramids represent average annual numbers for 1993–1998 for firearm-related injuries; annual numbers for 1997 for all causes.

FIGURE 2. **Fatal and nonfatal firearm-related injury rates, by age — United States, 1993–1998**
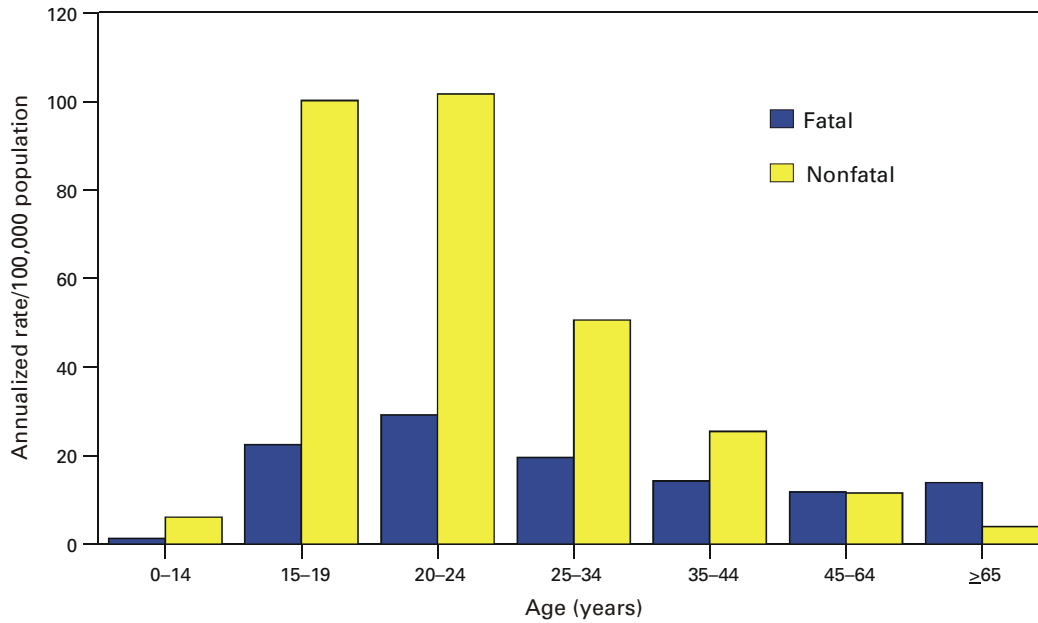
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

**FIGURE 3. Fatal and nonfatal firearm-related injury rates, by sex and race/ethnicity —
United States, 1993–1998**
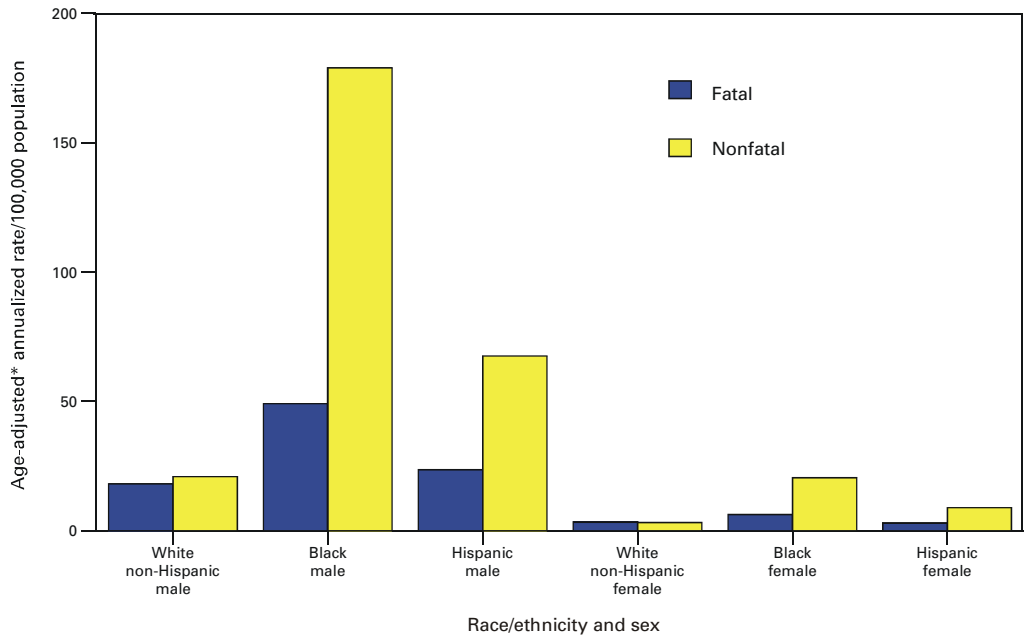
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths;
CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for popu-
lation estimates.

* Age-adjusted to the year 2000 standard U.S. population.

FIGURE 4. Distribution of firearm-related injuries by hospital emergency department discharge disposition or death, by age — United States, 1993–1998
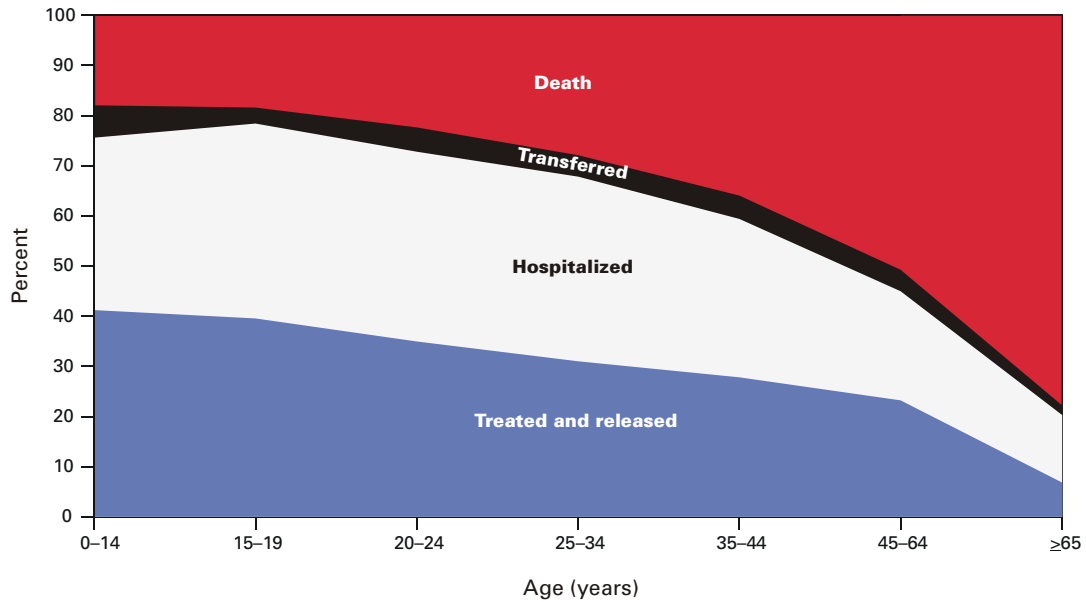
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for persons who were hospitalized, transferred, or treated and released.

FIGURE 5. **Distribution of fatal and nonfatal firearm-related injuries, by intent of injury —
United States, 1993–1998**
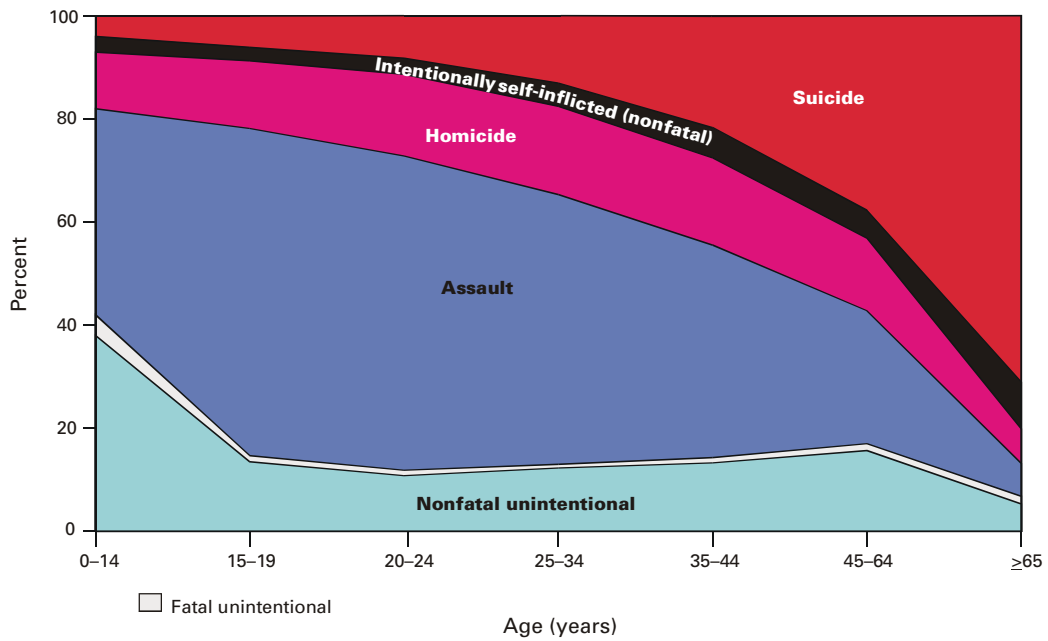
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths;
CDC's Firearm Injury Surveillance Study for nonfatal injuries.

FIGURE 6. Intentionally self-inflicted fatal and nonfatal firearm-related injury rates, by age* — United States, 1993–1998
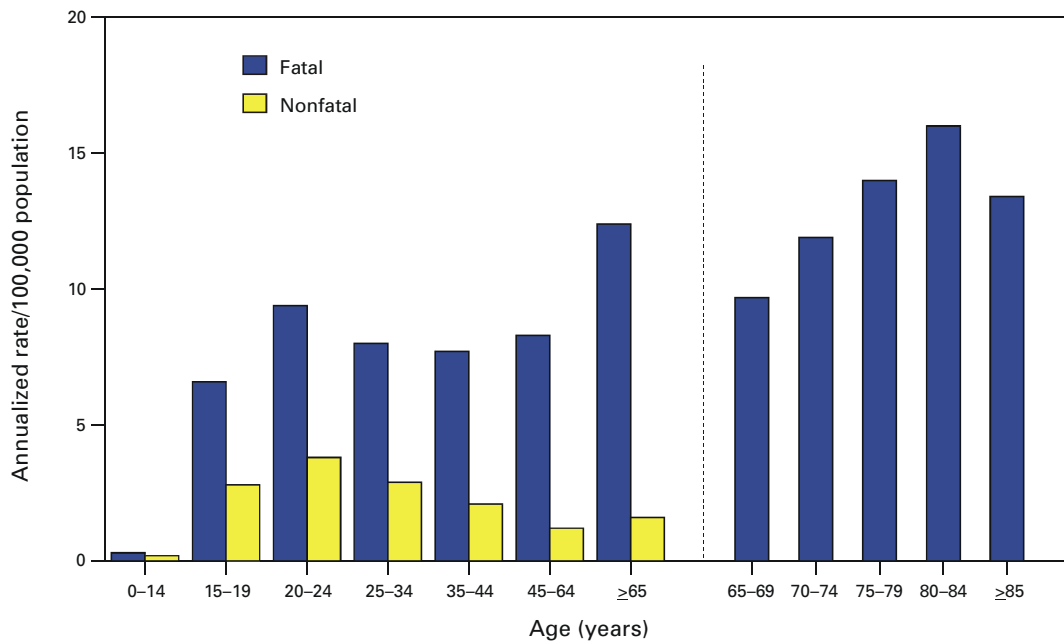
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

* Nonfatal rates not presented for older age groups because of small numbers.

FIGURE 7. Assaultive fatal and nonfatal firearm-related injury rates, by age — United States, 1993–1998
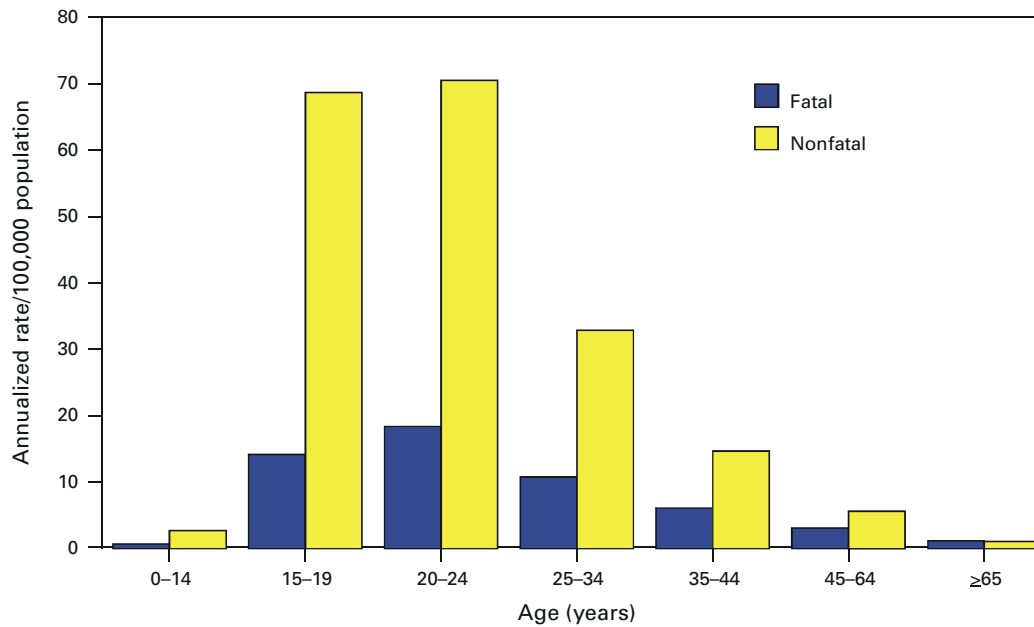
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

FIGURE 8. Unintentional fatal and nonfatal firearm-related injury rates, by age — United States, 1993–1998
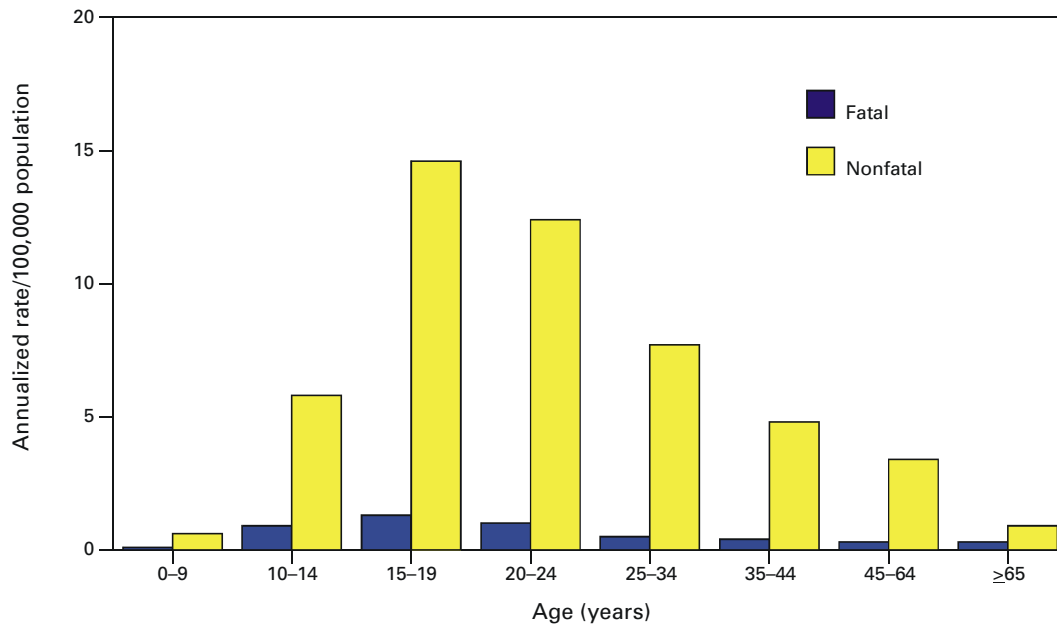
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

FIGURE 9. Primary body part affected from nonfatal gunshot wounds, by intent of injury — United States, 1993–1998

Unintentional

Arm/hand
26%

Leg/foot
46%

Head/neck
12%

Lower
trunk
8%

Upper
trunk
7%

Other/not stated
1%

Assault

Arm/hand
13%

Leg/foot
33%

Head/neck
14%

Lower trunk
16%

Upper trunk
21%

Other/not stated
3%

Intentionally self-inflicted

Head/neck
51%

Arm/hand 3%

Leg/foot 4%

Other/not stated 1%

Lower
trunk
15%

Upper
trunk
26%

Undetermined

Arm/hand
15%

Leg/foot
35%

Head/neck
16%

Lower trunk
14%

Upper trunk
20%

Data sources: CDC's Firearm Injury Surveillance Study.

FIGURE 10. Trends in quarterly fatal and nonfatal firearm-related injury rates — United States, 1993–1998
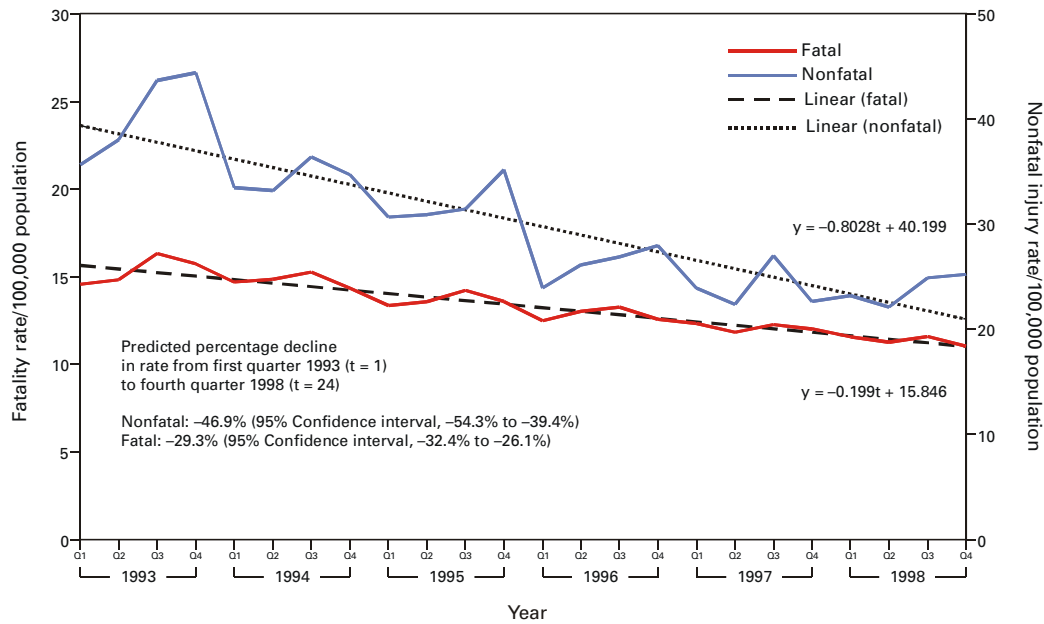
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

FIGURES 11. Trends in semi-annual fatal and nonfatal intentionally self-inflicted* firearm-related injury rates — United States, 1993–1998
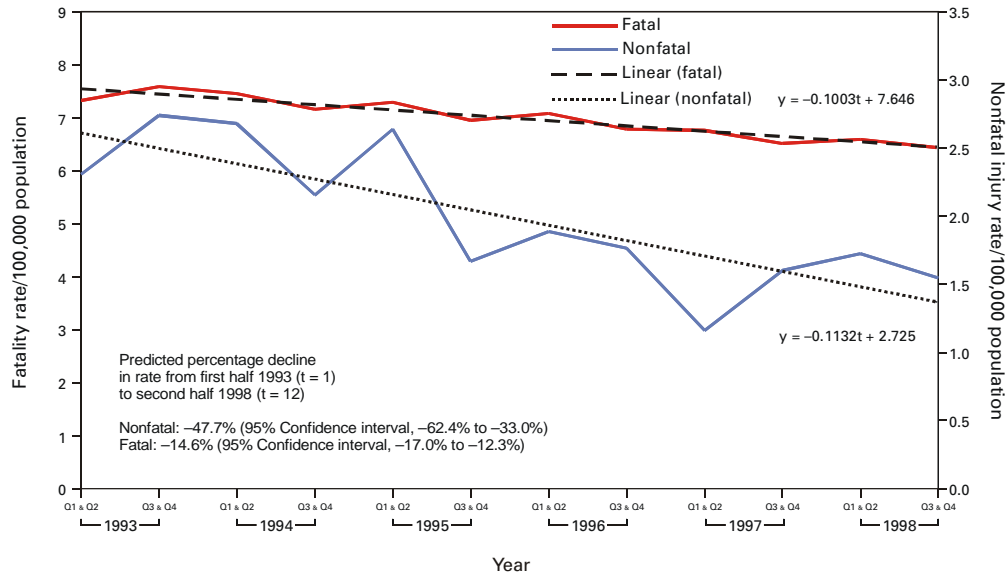
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

* Cases of undertermined intent were allocated to the intentionally self-inflicted category on the basis of the distribution of cases with known intent. See methods section for details.

FIGURE 12. Trends in quarterly fatal and nonfatal assaultive* firearm-related injury rates — United States, 1993–1998
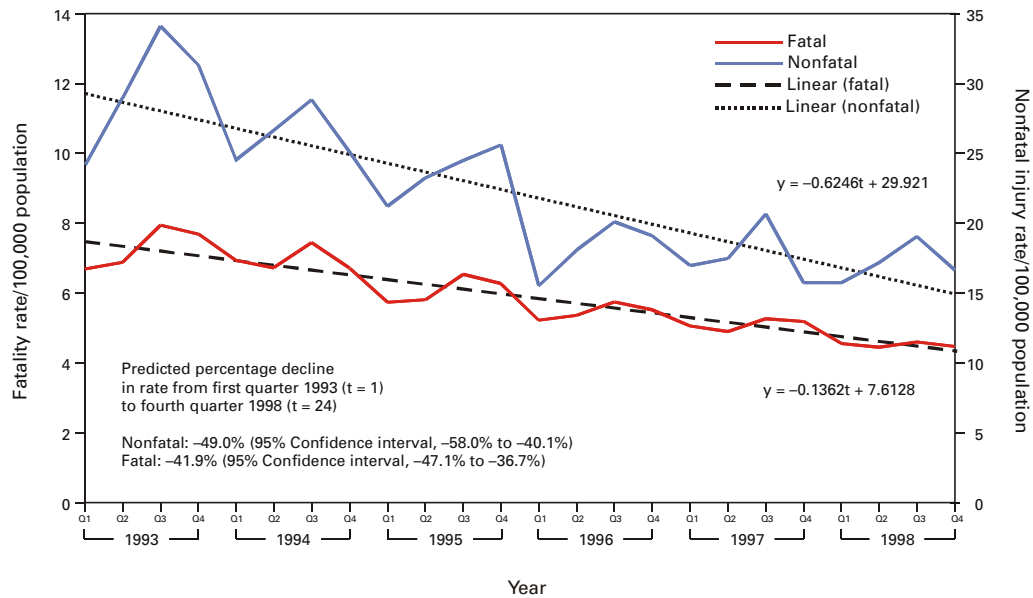
Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.

* Cases of undertermined intent were allocated to the assaultive category on the basis of the distribution of cases with known intent. See methods section for details.

FIGURE 13. Trends in quarterly fatal and nonfatal unintentional* firearm-related injury rates — United States, 1993–1998

Predicted percentage decline in rate from first quarter 1993 (t = 1) to fourth quarter 1998 (t = 24)

Nonfatal: −37.4% (95% Confidence interval, −55.6% to −19.1%)
Fatal: −46.6% (95% Confidence interval, −59.1% to −34.4%)

$y = -0.1211t + 7.5744$

$y = -0.012t + 0.6047$

Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for nonfatal injuries; U.S. Bureau of Census for population estimates.
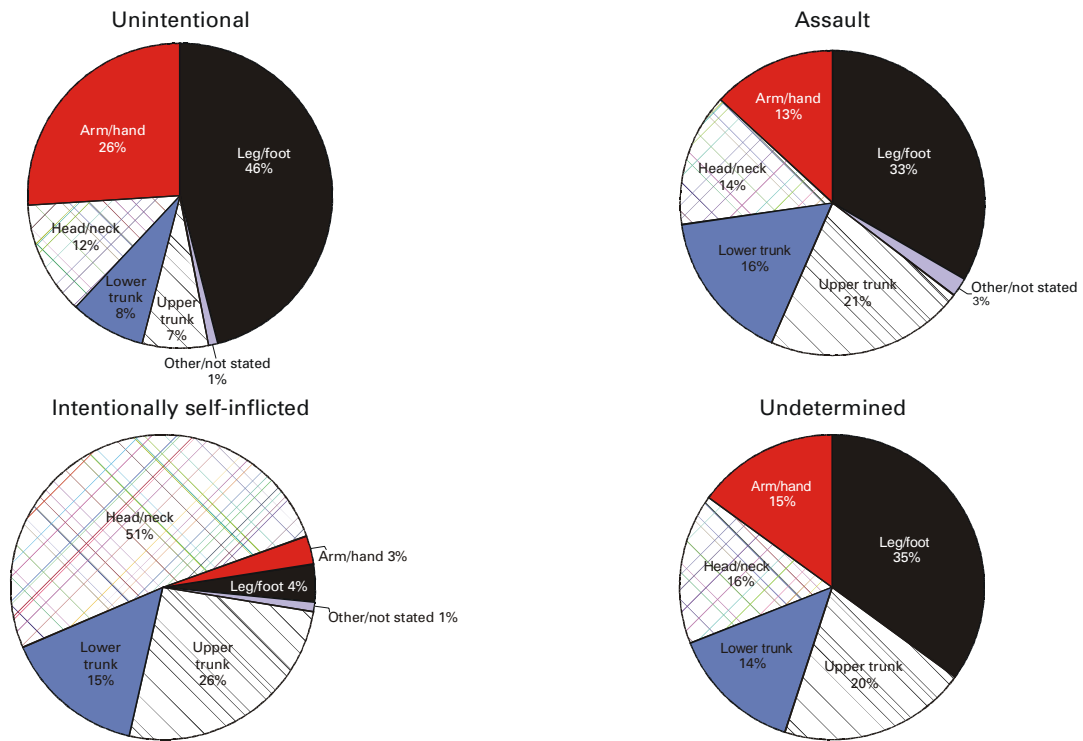
* Cases of undertermined intent were allocated to the unintentional category on the basis of the distribution of cases with known intent. See methods section for details.

TABLE 1. Average annual numbers of fatal and nonfatal firearm-related injuries and annualized rate/100,000 population, by race/ethnicity, age, and sex — United States, 1993–1998

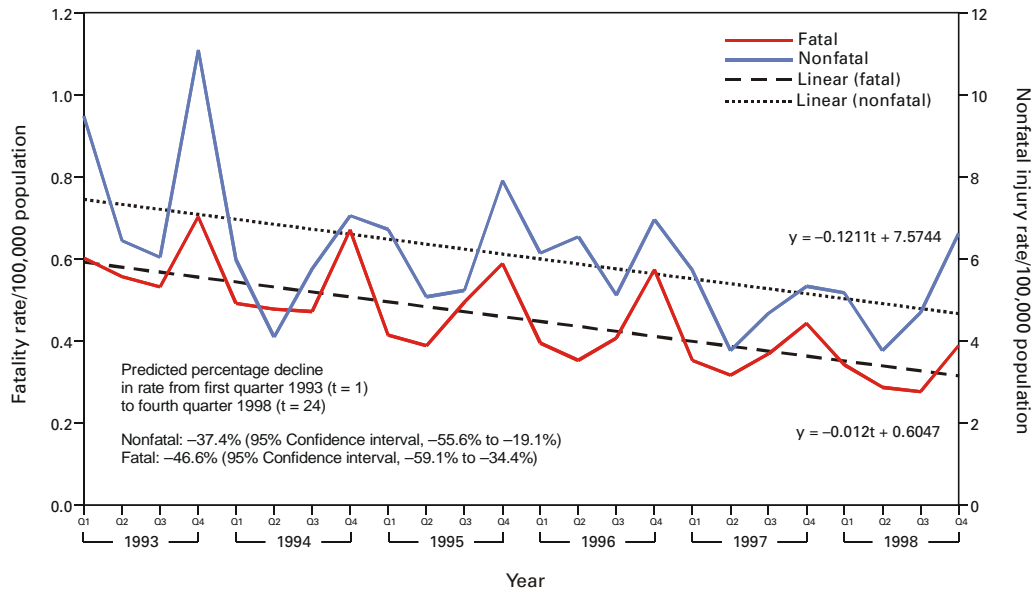|	All Races*				White, non-Hispanic				Black				Hispanic			
	Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal	
	Number[†]	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Both sexes																
All ages	**35,207**	**13.3**	**79,384**	**30.1**	**20,592**	**10.7**	**23,266**	**12.0**	**9,616**	**28.9**	**36,464**	**109.5**	**3,763**	**14.5**	**12,179**	**46.7**
0–14 yrs	770	1.3	3,519	6.1	373	1.0	1,237	3.3	244	2.7	1,300	14.6	112	1.4	539	6.8
15–19 yrs	4,152	22.5	18,481	100.2	1,389	11.3	3,533	28.4	1,835	64.2	9,077	317.6	750	32.4	4,032	173.4
20–24 yrs	5,248	29.2	18,265	101.7	1,829	15.2	3,784	31.2	2,371	89.7	9,744	368.5	862	37.4	3,152	136.2
25–34 yrs	7,908	19.6	20,428	50.6	3,800	13.5	6,175	21.8	2,748	50.7	9,660	178.3	1,065	22.7	2,724	57.8
35–44 yrs	6,120	14.3	10,924	25.5	3,982	12.6	4,381	13.7	1,380	26.4	4,333	82.8	537	14.2	1,219	32.2
45–64 yrs	6,286	11.8	6,116	11.5	4,974	11.9	3,128	7.4	780	14.2	1,900	34.6	329	9.2	483	13.5
≥65 yrs	4,694	13.9	1,334	4.0	4,240	14.9	985	3.4	252	9.2	236[¶]	8.6[¶]	102	6.9	25[¶]	1.7[¶]
Unknown	29	—	319	—	4	—	43	—	7	—	215	—	5	—	6	—
Age-adjusted[§]	—	13.2	—	29.4	—	10.4	—	12.1	—	26.7	—	97.0	—	13.4	—	39.3
Males																
All ages	**30,097**	**23.4**	**70,135**	**54.4**	**17,248**	**18.4**	**20,151**	**21.3**	**8,459**	**53.6**	**32,508**	**205.8**	**3,370**	**25.6**	**10,867**	**82.3**
0–14 yrs	564	1.9	2,795	9.5	276	1.4	1,038	5.3	178	3.9	954	21.1	81	2.0	407	10.1
15–19 yrs	3,683	38.8	16,544	174.4	1,176	18.6	3,073	48.0	1,668	115.0	8,225	567.2	686	56.9	3,582	296.0
20–24 yrs	4,711	51.6	16,780	183.7	1,579	25.8	3,461	56.0	2,173	166.7	8,986	689.4	798	65.8	2,861	235.4
25–34 yrs	6,737	33.5	17,992	89.5	3,125	22.3	5,302	37.4	2,406	93.9	8,510	332.1	963	39.1	2,514	101.9
35–44 yrs	4,993	23.5	9,441	44.5	3,200	20.2	3,810	23.8	1,158	47.4	3,725	152.4	460	23.9	1,081	56.1
45–64 yrs	5,215	20.3	5,255	20.4	4,107	20.1	2,639	12.8	663	27.1	1,718	70.3	286	16.7	394	22.9
≥65 yrs	4,169	30.2	1,052	7.6	3,782	32.4	789	6.7	208	19.5	183[¶]	17.1[¶]	90	14.5	22[¶]	3.5[¶]
Unknown	25	—	277	—	4	—	40	—	6	—	206	—	5	—	6	—
Age-adjusted	—	23.3	—	51.7	—	18.2	—	21.0	—	49.1	—	178.9	—	23.6	—	67.6
Females																
All ages	**5,110**	**3.8**	**9,243**	**6.8**	**3,345**	**3.4**	**3,115**	**3.1**	**1,157**	**6.6**	**3,954**	**22.6**	**393**	**3.1**	**1,312**	**10.2**
0–14 yrs	205	0.7	723	2.6	97	0.5	200[¶]	1.1[¶]	66	1.5	346	7.9	31	0.8	132[¶]	3.4[¶]
15–19 yrs	469	5.2	1,937	21.6	213	3.6	460	7.6	168	11.9	852	60.5	64	5.8	450	40.4
20–24 yrs	537	6.1	1,486	16.8	251	4.2	323	5.4	198	14.7	758	56.5	64	5.9	291	26.5
25–34 yrs	1,171	5.8	2,436	12.0	675	4.8	873	6.2	342	12.0	1,150	40.3	102	4.6	210[¶]	9.4[¶]
35–44 yrs	1,127	5.2	1,480	6.9	782	4.9	571	3.6	222	8.0	604	21.7	77	4.2	137[¶]	7.4[¶]
45–64 yrs	1,072	3.9	861	3.1	868	4.1	489	2.3	117	3.9	182[¶]	6.0[¶]	43	2.3	90[¶]	4.8[¶]
≥65 yrs	526	2.6	282[¶]	1.4[¶]	458	2.7	196[¶]	1.2[¶]	43	2.6	52[¶]	3.1[¶]	12[¶]	1.4[¶]	3[¶]	0.3[¶]
Unknown	4	—	39	—	1	—	3	—	2	—	9	—	0	—	0	—
Age-adjusted	—	3.8	—	6.8	—	3.4	—	3.2	—	6.3	—	20.5	—	3.0	—	9.0

Data Sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries; and U.S. Bureau of Census for population estimates.

* All races includes other or unknown race/ethnicity.

[†] Numbers might not sum to totals because of rounding.

[§] Age-adjusted to the year 2000 standard U.S. population.

[¶] Estimates might be unstable because the coefficient of variation is >28%.

TABLE 2. Numbers and percentages of fatal and nonfatal firearm-related injuries, by year, age, sex, race/ethnicity, intent of injury, and hospital emergency department (ED) disposition — United States, 1993–1998

	1993				1994				1995			
	Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal	
	Number*	%[†]	Number	%	Number	%	Number	%	Number	%	Number	%
Age												
0–14 yrs	957	2.4	4,786	4.6	872	2.3	4,120	4.6	853	2.4	3,382	4.0
15–19 yrs	4,794	12.1	24,177	23.2	4,961	12.9	19,968	22.3	4,432	12.3	20,446	24.3
20–24 yrs	6,410	16.2	24,770	23.8	6,095	15.8	21,557	24.1	5,346	14.9	19,306	22.9
25–34 yrs	9,391	23.7	26,835	25.7	9,074	23.6	23,098	25.8	8,225	22.9	22,060	26.2
35–44 yrs	6,526	16.5	14,895	14.3	6,519	16.9	12,275	13.7	6,120	17.0	11,196	13.3
≥45 yrs	11,483	29.0	8,011	7.7	10,954	28.4	8,306	9.3	10,951	30.5	7,747	9.2
Unknown	34	0.1	767	0.7	30	0.1	308	0.3	30	0.1	51	0.1
Sex												
Male	33,711	85.1	91,672	87.9	33,021	85.8	79,352	88.5	30,724	85.4	75,168	89.3
Female	5,884	14.9	12,552	12.0	5,484	14.2	10,280	11.5	5,233	14.6	9,020	10.7
Unknown	—	—	17	0.0	—	—	—	—	—	—	—	—
Race/ethnicity												
White, non-Hispanic	21,960	55.5	28,608	27.4	21,549	56.0	27,644	30.8	20,764	57.7	26,456	31.4
Black	11,763	29.7	51,633	49.5	11,223	29.1	41,494	46.3	9,643	26.8	35,921	42.7
Hispanic	4,300	10.9	14,064	13.5	4,302	11.2	12,967	14.5	4,108	11.4	14,222	16.9
Other/Unknown	1,572	4.0	9,936	9.5	1,431	3.7	7,527	8.4	1,442	4.0	7,589	9.0
Intent[§]												
Unintentional	1,543	3.9	21,311	20.4	1,374	3.6	14,903	16.6	1,239	3.4	16,389	19.5
Assault/legal intervention	18,839	47.6	76,429	73.3	18,110	47.0	68,439	76.4	16,010	44.5	62,145	73.8
Intentionally self-inflicted	19,213	48.5	6,501	6.2	19,021	49.4	6,290	7.0	18,708	52.0	5,654	6.7
Disposition at ED discharge												
Treated and released	—	—	44,682	42.9	—	—	37,478	41.8	—	—	37,604	44.7
Transferred	—	—	5,303	5.1	—	—	4,666	5.2	—	—	5,052	6.0
Hospitalized	—	—	54,171	52.0	—	—	47,376	52.9	—	—	41,362	49.1
Unknown	—	—	85	0.1	—	—	112	0.1	—	—	170	0.2
Total	**39,595**	**100.0**	**104,241**	**100.0**	**38,505**	**100.0**	**89,632**	**100.0**	**35,957**	**100.0**	**84,188**	**100.0**

Data Sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries; and U.S. Bureau of Census for population estimates.

* Numbers might not sum to totals because of rounding.

[†] Percentages might not sum to 100.0 because of rounding.

[§] Cases of undetermined intent were allocated to categories of known intent on the basis of the distribution of cases with known intent. See methods section for details.

TABLE 2. (*Continued*) Numbers and percentages of fatal and nonfatal firearm-related injuries, by year, age, sex, race/ethnicity, intent of injury, and hospital emergency department (ED) disposition — United States, 1993–1998

	1996 Fatal		1996 Nonfatal		1997 Fatal		1997 Nonfatal		1998 Fatal		1998 Nonfatal	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Age												
0–14 yrs	693	2.0	3,827	5.5	630	1.9	2,514	3.9	612	2.0	2,482	3.8
15–19 yrs	3,950	11.6	16,769	24.1	3,593	11.1	15,495	24.1	3,180	10.4	14,029	21.8
20–24 yrs	4,816	14.1	15,027	21.6	4,580	14.1	14,730	22.9	4,240	13.8	14,201	22.0
25–34 yrs	7,403	21.7	17,502	25.2	7,045	21.7	16,510	25.7	6,309	20.5	16,561	25.7
35–44 yrs	6,064	17.8	9,616	13.8	5,802	17.9	7,990	12.4	5,690	18.5	9,569	14.8
≥45 yrs	11,086	32.6	6,728	9.7	10,759	33.2	6,835	10.6	10,651	34.7	7,072	11.0
Unknown	28	0.1	85	0.1	27	0.1	133	0.2	26	0.1	570	0.9
Sex												
Male	29,183	85.7	61,431	88.3	27,756	85.6	57,004	88.8	26,189	85.3	56,185	87.1
Female	4,857	14.3	8,123	11.7	4,680	14.4	7,203	11.2	4,519	14.7	8,280	12.8
Unknown	—	—	—	—	—	—	—	—	—	—	19	0.0
Race/ethnicity												
White, non-Hispanic	20,004	58.8	21,687	31.2	19,912	61.4	17,016	26.5	19,365	63.1	18,183	28.2
Black	9,175	27.0	29,816	42.9	8,389	25.9	29,717	46.3	7,503	24.4	30,205	46.8
Hispanic	3,561	10.5	9,999	14.4	3,265	10.1	11,440	17.8	3,042	9.9	10,382	16.1
Other/Unknown	1,300	3.8	8,052	11.6	870	2.7	6,034	9.4	798	2.6	5,714	8.9
Intent§												
Unintentional	1,148	3.4	16,420	23.6	992	3.1	13,055	20.3	875	2.8	13,698	21.2
Assault/legal intervention	14,503	42.6	48,294	69.4	13,677	42.2	47,453	73.9	12,228	39.8	46,365	71.9
Intentionally self-inflicted	18,389	54.0	4,840	7.0	17,767	54.8	3,699	5.8	17,605	57.3	4,421	6.9
Disposition at ED discharge												
Treated and released	—	—	31,028	44.6	—	—	31,628	49.3	—	—	32,346	50.2
Transferred	—	—	4,295	6.2	—	—	4,933	7.7	—	—	4,436	6.9
Hospitalized	—	—	34,097	49.0	—	—	27,393	42.7	—	—	27,702	43.0
Unknown	—	—	134	0.2	—	—	253	0.4	—	—	—	—
Total	34,040	100.0	69,554	100.0	32,436	100.0	64,207	100.0	30,708	100.0	64,484	100.0

Data Sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries; and U.S. Bureau of Census for population estimates.

* Numbers might not sum to totals because of rounding.

† Percentages might not sum to 100.0 because of rounding.

§ Cases of undetermined intent were allocated to categories of known intent on the basis of the distribution of cases with known intent. See methods section for details.

TABLE 3. Rates/100,000 population of fatal and nonfatal firearm-related injuries, by year, age, sex, race/ethnicity, intent of injury, and emergency department (ED) disposition — United States, 1993–1998

	1993		1994		1995		1996		1997		1998	
	Fatal	**Nonfatal**	**Fatal**	**Nonfatal**	**Fatal**	**Nonfatal**	**Fatal**	**Nonfatal**	**Fatal**	**Nonfatal**	**Fatal**	**Nonfatal**
Age												
0–14 yrs	1.7	8.5	1.5	7.2	1.5	5.9	1.2	6.6	1.1	4.3	1.1	4.3
15–19 yrs	27.6	139.2	28.0	112.6	24.4	112.3	21.1	89.7	18.8	81.0	16.3	71.8
20–24 yrs	34.1	131.9	33.2	117.3	29.7	107.4	27.5	85.8	26.2	84.3	24.0	80.3
25–34 yrs	22.5	64.2	22.0	56.0	20.2	54.2	18.4	43.5	17.8	41.8	16.3	42.7
35–44 yrs	16.0	36.5	15.6	29.4	14.4	26.3	14.0	22.2	13.2	18.2	12.8	21.5
≥45 yrs	13.9	9.7	13.0	9.9	12.8	9.0	12.6	7.7	12.0	7.6	11.6	7.7
Age-adjusted*	15.1	38.7	14.6	33.3	13.6	31.3	12.8	25.8	12.1	23.6	11.3	23.4
Sex												
Male	26.8	72.9	26.0	62.5	24.0	58.6	22.5	47.4	21.2	43.6	19.8	42.5
Female	4.5	9.5	4.1	7.7	3.9	6.7	3.6	6.0	3.4	5.3	3.3	6.0
Race/ethnicity												
White, non-Hispanic	11.6	14.9	11.3	14.4	10.9	13.7	10.5	11.2	10.2	8.7	9.9	9.3
Black	36.6	160.5	34.4	127.1	29.1	108.5	27.4	89.0	24.7	87.5	21.8	87.7
Hispanic	18.1	59.1	17.5	52.5	16.1	55.6	13.5	37.7	11.9	41.6	10.7	36.4
Intent†												
Unintentional	0.6	8.3	0.5	5.7	0.5	6.2	0.4	6.2	0.4	4.9	0.3	5.1
Assault/legal intervention	7.3	29.7	7.0	26.3	6.1	23.7	5.5	18.2	5.1	17.7	4.5	17.2
Intentionally self-inflicted	7.5	2.5	7.3	2.4	7.1	2.2	6.9	1.8	6.6	1.4	6.5	1.6
Disposition at ED discharge												
Treated and released	—	17.3	—	14.4	—	14.3	—	11.7	—	11.8	—	12.0
Transferred	—	2.1	—	1.8	—	1.9	—	1.6	—	1.8	—	1.6
Hospitalized	—	21.0	—	18.2	—	15.7	—	12.9	—	10.2	—	10.2
Total	**15.4**	**40.4**	**14.8**	**34.4**	**13.7**	**32.0**	**12.8**	**26.2**	**12.1**	**24.0**	**11.4**	**23.9**

Data Sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries; and U.S. Bureau of Census for population estimates.

* Age-adjusted to the year 2000 standard U.S. population.

† Cases of undetermined intent were allocated to categories of known intent on the basis of the distribution of cases with known intent. See methods section for details.

TABLE 4. Average annual numbers of nonfatal firearm-related injuries treated in hospital emergency departments (EDs) and annualized rates/100,000 population, by disposition at ED discharge, age, sex, and race/ethnicity — United States, 1993–1998

	Treated and released		Hospitalized		Transferred or hospitalized	
	Number*	Rate	Number	Rate	Number	Rate
Both sexes						
All ages	**35,794**	**13.6**	**38,684**	**14.7**	**43,464**	**16.5**
0–14 yrs	1,764	3.1	1,473	2.6	1,749	3.0
15–19 yrs	8,932	48.4	8,785	47.6	9,515	51.6
20–24 yrs	8,220	45.7	8,891	49.5	10,034	55.8
25–34 yrs	8,765	21.7	10,427	25.8	11,619	28.8
35–44 yrs	4,738	11.1	5,373	12.5	6,177	14.4
45–64 yrs	2,869	5.4	2,703	5.1	3,225	6.1
≥65 yrs	410	1.2	811	2.4	924	2.7
Unknown	97	—	222	—	222	—
Age-adjusted†	—	13.3	—	14.2	—	16.0
Males						
All ages	**31,471**	**24.4**	**34,469**	**26.7**	**38,548**	**29.9**
0–14 yrs	1,456	4.9	1,105	3.8	1,340	4.6
15–19 yrs	7,958	83.9	7,911	83.4	8,552	90.2
20–24 yrs	7,542	82.6	8,213	89.9	9,226	101.0
25–34 yrs	7,573	37.7	9,346	46.5	10,374	51.6
35–44 yrs	4,064	19.1	4,684	22.1	5,371	25.3
45–64 yrs	2,480	9.7	2,359	9.2	2,753	10.7
≥65 yrs	322	2.3	650	4.7	730	5.3
Unknown	75	—	202	—	202	—
Age-adjusted	—	23.3	—	25.3	—	28.4
Females						
All ages	**4,324**	**3.2**	**4,208**	**3.1**	**4,911**	**3.6**
0–14 yrs	309	1.1	367	1.3	409	1.5
15–19 yrs	974	10.9	874	9.8	963	10.7
20–24 yrs	677	7.7	678	7.7	808	9.2
25–34 yrs	1,192	5.9	1,081	5.3	1,245	6.1
35–44 yrs	675	3.1	686	3.2	803	3.7
45–64 yrs	389	1.4	344	1.3	472	1.7
≥65 yrs	88§	0.4§	161§	0.8§	194§	1.0§
Unknown	22	—	17	—	17	—
Age-adjusted	—	3.2	—	3.1	—	3.6
Both sexes						
White, non-Hispanic	10,622	5.5	10,341	5.3	12,596	6.5
Black	16,694	50.1	18,191	54.6	19,737	59.3
Hispanic	4,873	18.7	7,001	26.8	7,283	27.9
Other/unknown	3,605	—	3,152	—	3,848	—
Males						
White, non-Hispanic	9,394	9.9	8,803	9.3	10,716	11.3
Black	14,568	92.2	16,609	105.1	17,911	113.4
Hispanic	4,305	32.6	6,266	47.5	6,538	49.5
Other/unknown	3,205	—	2,792	—	3,383	—
Females						
White, non-Hispanic	1,229	1.2	1,538	1.6	1,880	1.9
Black	2,127	12.1	1,579	9.0	1,824	10.4
Hispanic	568	4.4	734	5.7	744	5.8
Other/unknown	401	—	357	—	463	—

Data sources: CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries and U.S. Bureau of Census for population estimates.
* Numbers might not sum to totals because of rounding.
† Age-adjusted to the year 2000 standard population.
§ Estimates might be unstable because the coefficient of variation is >28%.

TABLE 5. Average annual numbers of fatal and nonfatal firearm-related injuries and annualized rates/100,000 population, by intent of injury, age, sex and, race/ethnicity — United States, 1993–1998

	Unintentional				Assault/legal intervention				Intentionally self-inflicted				Undetermined intent			
	Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal	
	Number*	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Both sexes																
All ages	1,181	0.4	13,688	5.2	15,371	5.8	50,067	19.0	18,227	6.9	4,513	1.7	429	0.2	11,117	4.2
0–14 yrs	162	0.3	1,459	2.5	420	0.7	1,535	2.7	167	0.3	102†	0.2†	21	0.0	423	0.7
15–19 yrs	242	1.3	2,689	14.6	2,617	14.2	12,684	68.7	1,214	6.6	512	2.8	79	0.4	2,596	14.1
20–24 yrs	178	1.0	2,234	12.4	3,307	18.4	12,660	70.5	1,694	9.4	685	3.8	69	0.4	2,686	15.0
25–34 yrs	201	0.5	3,129	7.7	4,376	10.8	13,287	32.9	3,243	8.0	1,155	2.9	88	0.2	2,857	7.1
35–44 yrs	156	0.4	2,040	4.8	2,597	6.1	6,308	14.7	3,301	7.7	898	2.1	67	0.2	1,678	3.9
45–64 yrs	153	0.3	1,821	3.4	1,640	3.1	3,004	5.6	4,427	8.3	625	1.2	66	0.1	667	1.3
≥65 yrs	89	0.3	310	0.9	393	1.2	379	1.1	4,176	12.4	533	1.6	37	0.1	113†	0.3†
Unknown	0	—	7	—	21	—	211	—	6	—	3	—	2	—	98	—
Males																
All ages	1,033	0.8	12,141	9.4	12,902	10.0	44,233	34.3	15,806	12.3	3,734	2.9	357	0.3	10,028	7.8
0–14 yrs	137	0.5	1,238	4.2	282	1.0	1,128	3.8	128	0.4	92†	0.3†	18†	0.1†	337	1.1
15–19 yrs	226	2.4	2,414	25.5	2,328	24.5	11,295	119.1	1,057	11.1	421	4.4	72	0.8	2,414	25.5
20–24 yrs	163	1.8	2,081	22.8	2,964	32.4	11,560	126.5	1,525	16.7	632	6.9	60	0.7	2,507	27.4
25–34 yrs	172	0.9	2,737	13.6	3,706	18.4	11,809	58.7	2,789	13.9	939	4.7	72	0.4	2,507	12.5
35–44 yrs	128	0.6	1,746	8.2	2,071	9.8	5,434	25.6	2,744	12.9	788	3.7	50	0.2	1,473	6.9
45–64 yrs	130	0.5	1,627	6.3	1,293	5.0	2,571	10.0	3,741	14.6	458	1.8	51	0.2	600	2.3
≥65 yrs	77	0.6	291	2.1	242	1.8	253†	1.8†	3,817	27.7	404	2.9	32	0.2	104†	0.8†
Unknown	0	—	7	—	18	—	184	—	6	—	0	—	1	—	87	—
Females																
All ages	148	0.1	1,547	1.1	2,468	1.8	5,830	4.3	2,422	1.8	780	0.6	72	0.1	1,086	0.8
0–14 yrs	25	0.1	221†	0.8†	138	0.5	407	1.4	39	0.1	10†	0.0†	3†	0.0†	86†	0.3†
15–19 yrs	16†	0.2†	275†	3.1†	290	3.2	1,389	15.5	157	1.8	91†	1.0†	7†	0.1†	182†	2.0†
20–24 yrs	15†	0.2†	152†	1.7†	344	3.9	1,100	12.5	169	1.9	53†	0.6†	9†	0.1†	180†	2.0†
25–34 yrs	29	0.1	392	1.9	670	3.3	1,478	7.3	454	2.2	216†	1.1†	17†	0.1†	350	1.7
35–44 yrs	27	0.1	294	1.4	526	2.4	871	4.0	557	2.6	111†	0.5†	17†	0.1†	205†	0.9†
45–64 yrs	23	0.1	194†	0.7†	347	1.3	433	1.6	687	2.5	167†	0.6†	15†	0.1†	67†	0.2†
≥65 yrs	12†	0.1†	19†	0.1†	151	0.8	125†	0.6†	359	1.8	130†	0.7†	5†	0.0†	9†	0.0†
Unknown	0	—	0	—	3	—	28	—	1	—	3	—	0	—	8	—

Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries; and U.S. Bureau of Census for population estimates.

*Numbers might not sum to totals because of rounding.

†Estimates might be unstable because the coefficient of variation is >28%.

Both Sexes

TABLE 5. (*Continued*) Average annual numbers of fatal and nonfatal firearm-related injuries and annualized rates/100,000 population, by intent of injury, age, sex and, race/ethnicity — United States, 1993–1998

	Unintentional				Assault/legal intervention				Intentionally self-inflicted				Undetermined intent			
	Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal		Fatal		Nonfatal	
	Number*	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
White,																
non-Hispanic	782	0.4	8,542	4.4	4,118	2.1	9,065	4.7	15,417	8.0	3,420	1.8	276	0.1	2,239	1.2
Black	252	0.8	2,363	7.1	7,984	24.0	27,341	82.1	1,284	3.9	346	1.0	96	0.3	6,414	19.3
Hispanic	103	0.4	1,144	4.4	2,699	10.4	9,681	37.1	921	3.5	351	1.3	41	0.2	1,004	3.8
Other/Unknown	44	—	1,640	—	569	—	3,980	—	606	—	396	—	17	—	1,460	—
Male																
White,																
non-Hispanic	678	0.7	7,654	8.1	3,016	3.2	7,662	8.1	13,329	14.2	2,807	3.0	225	0.2	2,028	2.1
Black	224	1.4	2,046	12.9	7,017	44.4	24,393	154.4	1,135	7.2	291	1.8	84	0.5	5,779	36.6
Hispanic	93	0.7	1,010	7.7	2,415	18.3	8,643	65.5	827	6.3	298	2.3	35	0.3	915	6.9
Other/Unknown	38	—	1,431	—	455	—	3,535	—	515	—	338	—	13	—	1,306	—
Female																
White,																
non-Hispanic	104	0.1	887	0.9	1,103	1.1	1,403	1.4	2,088	2.1	613	0.6	51	0.1	212[†]	0.2[†]
Black	28	0.2	317	1.8	968	5.5	2,945	16.8	149	0.9	55[†]	0.3[†]	12[†]	0.1[†]	636	3.6
Hispanic	10[†]	0.1[†]	133[†]	1.0[†]	284	2.2	1,038	8.0	93	0.7	52[†]	0.4[†]	6[†]	0.0[†]	88[†]	0.7[†]
Other/Unknown	6	—	209	—	114	—	445	—	91	—	59	—	4	—	151	—

Data sources: National Vital Statistics System, National Center for Health Statistics for deaths; CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries; and U.S. Bureau of Census for population estimates.

* Numbers might not sum to totals because of rounding.

† Estimates might be unstable because the coefficient of variation is >28%.

TABLE 6. Average annual numbers and percentages of nonfatal firearm-related injuries treated in hospital emergency departments (EDs), by intent of injury and selected characteristics of the injured person and injury incident — United States, 1993–1998

	Unintentional		Assault/legal intervention		Intentionally self-inflicted		Undetermined intent	
	Number*	%[†]	Number	%	Number	%	Number	%
Locale where injury occurred								
Home/apartment	6,110	44.6	6,763	13.5	2,481	55.0	995	9.0
Street/highway	402	2.9	11,460	22.9	89[§]	2.0	624	5.6
School/recreation area	594	4.3	587	1.2	33[§]	0.7	72[§]	0.6
Farm	305	2.2	22[§]	0.0	0[§]	0.0	35[§]	0.3
Other property	1,163	8.5	5,870	11.7	144[§]	3.2	451	4.1
Not stated	5,114	37.4	25,365	50.7	1,766	39.1	8,941	80.4
Injured on the job?								
No	12,542	91.6	43,805	87.5	4,213	93.3	8,258	74.3
Yes	343	2.5	1,173	2.3	7[§]	0.2	74[§]	0.7
Unknown	803	5.9	5,088	10.2	293	6.5	2,786	25.1
Who caused injury?								
Self	9,839	71.9	—	—	4,513	100.0	336	3.0
Stranger	93[§]	0.7	10,743	21.5	—	—	206[§]	1.9
Friend/acquaintance	1,514	11.1	3,628	7.2	—	—	177[§]	1.6
Spouse/ex-spouse	105[§]	0.8	564	1.1	—	—	45[§]	0.4
Other relative	653	4.8	706	1.4	—	—	93[§]	0.8
Other/did not see	259[§]	1.9	6,546	13.1	—	—	255[§]	2.3
Not stated	1,225	9.0	27,880	55.7	—	—	10,006	90.0
Type of firearm								
Handgun	7,283	53.2	16,727	33.4	2,132	47.2	1,988	17.9
Shotgun	2,089	15.3	2,836	5.7	374	8.3	585	5.3
Rifle	1,879	13.7	879	1.8	534	11.8	213[§]	1.9
Not stated	2,437	17.8	29,625	59.2	1,474	32.7	8,331	74.9
Primary body part injured								
Head/neck	1,619	11.8	7,226	14.4	2,318	51.4	1,817	16.3
Upper trunk	934	6.8	10,672	21.3	1,156	25.6	2,157	19.4
Lower trunk	1,131	8.3	7,888	15.8	659	14.6	1,607	14.5
Arm/hand	3,584	26.2	6,649	13.3	142[§]	3.2	1,672	15.0
Leg/foot	6,239	45.6	16,306	32.6	170[§]	3.8	3,803	34.2
Other	144[§]	1.1	1,061	2.1	60[§]	1.3	18[§]	0.2
Not stated	38	0.3	265	0.5	9	0.2	43	0.4

Data sources: CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries.
* Numbers might not sum to totals because of rounding.
[†] Percentages might not sum to 100.0 because of rounding.
[§] Estimates might be unstable because the coefficient of variation is >28%.

TABLE 6. (*Continued*) Average annual numbers and percentages of nonfatal firearm-related injuries treated in hospital emergency departments (EDs), by intent of injury and selected characteristics of the injured person and injury incident — United States, 1993–1998

	Unintentional		Assault/legal intervention		Intentionally self-inflicted		Undetermined intent	
	Number*	%[†]	Number	%	Number	%	Number	%
Mode of transport to ED								
Emergency medical services/ambulance	4,774	34.9	32,497	64.9	3,172	70.3	6,216	55.9
Private vehicle	6,248	45.6	9,176	18.3	197[§]	4.4	2,332	21.0
Walk-in	735	5.4	2,766	5.5	52[§]	1.1	565	5.1
Police	104[§]	0.8	1,599	3.2	83[§]	1.8	514	4.6
Air transport	511	3.7	1,377	2.8	848	18.8	324	2.9
Other	71[§]	0.5	191[§]	0.4	6[§]	0.1	17[§]	0.2
Not stated	1,245	9.1	2,460	4.9	156	3.5	1,149	10.3
Disposition at ED discharge								
Treated and released	8,300	60.6	21,778	43.5	589	13.1	5,128	46.1
Transferred	1,317	9.6	1,949	3.9	836	18.5	679	6.1
Hospitalized	4,053	29.6	26,254	52.4	3,083	68.3	5,294	47.6
Unknown	18	0.1	86	0.2	6	0.1	16	0.1
Marital status (Persons aged >18 yrs)	**10,731**	**100.0**	**42,098**	**100.0**	**4,176**	**100.0**	**9,283**	**100.0**
Never married	4,072	38.0	26,540	63.0	1,369	32.8	4,889	52.7
Married	3,602	33.6	5,075	12.1	1,298	31.1	926	10.0
Divorce/separated	657	6.1	1,223	2.9	362	8.7	126[§]	1.4
Other	126[§]	1.2	249[§]	0.6	224[§]	5.4	66[§]	0.7
Not stated	2,273	21.2	9,011	21.4	924	22.1	3,277	35.3
Total	**13,688**	**100.0**	**50,067**	**100.0**	**4,513**	**100.0**	**11,117**	**100.0**

Data sources: CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries.
* Numbers might not sum to totals because of rounding.
[†] Percentages might not sum to 100.0 because of rounding.
[§] Estimates might be unstable because the coefficient of variation is >28%.

TABLE 7. Average annual numbers and percentages of nonfatal firearm-related injuries treated in hospital emergency departments (EDs), by age and selected characteristics of the injured person and injury incident — United States, 1993–1998

	All ages*		0–14 yrs		15–19 yrs		20–24 yrs		25–34 yrs		35–44 yrs		>45 yrs	
	Number[†]	%[§]	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Locale where injury occurred														
Home/apartment	16,348	20.6	1,466	41.7	2,913	15.8	2,746	15.0	3,848	18.8	2,618	24.0	2,725	36.6
Street/highway	12,575	15.8	407	11.6	3,786	20.5	3,275	17.9	3,066	15.0	1,433	13.1	590	7.9
School/recreation area	1,287	1.6	80[¶]	2.3	275[¶]	1.5	327	1.8	206[¶]	1.0	212[¶]	1.9	186[¶]	2.5
Farm	361	0.5	35[¶]	1.0	56[¶]	0.3	42[¶]	0.2	97[¶]	0.5	34[¶]	0.3	97[¶]	1.3
Other property	7,627	9.6	194[¶]	5.5	1,571	8.5	1,910	10.5	2,172	10.6	1,094	10.0	684	9.2
Not stated	41,187	51.9	1,336	38.0	9,880	53.5	9,965	54.6	11,039	54.0	5,535	50.7	3,168	42.5
Injured on the job?														
No	68,817	86.7	3,388	96.3	16,577	89.7	15,869	86.9	17,364	85.0	9,093	83.2	6,294	84.5
Yes	1,598	2.0	0[¶]	0.0	29[¶]	0.2	154[¶]	0.8	703	3.4	378	3.5	333	4.5
Unknown	8,969	11.3	131	3.7	1,875	10.1	2,243	12.3	2,360	11.6	1,452	13.3	823	11.1
Who caused injury?														
Self	14,687	18.5	846	24.0	2,430	13.1	2,487	13.6	3,562	17.4	2,527	23.1	2,831	38.0
Stranger	11,042	13.9	438	12.4	2,551	13.8	2,891	15.8	2,819	13.8	1,428	13.1	911	12.2
Friend/acquaintance	5,319	6.7	441	12.5	1,115	6.0	1,145	6.3	1,524	7.5	724	6.6	361	4.8
Spouse/ex-spouse	714	0.9	0[¶]	0.0	9[¶]	0.0	94[¶]	0.5	216[¶]	1.1	170[¶]	1.6	223[¶]	3.0
Other relative	1,452	1.8	317	9.0	249[¶]	1.3	176[¶]	1.0	326	1.6	186[¶]	1.7	198[¶]	2.7
Other/did not see	7,060	8.9	323	9.2	2,262	12.2	1,665	9.1	1,518	7.4	806	7.4	466	6.2
Not stated	39,111	49.3	1,154	32.8	9,865	53.4	9,809	53.7	10,463	51.2	5,082	46.5	2,460	33.0
Type of firearm														
Handgun	28,130	35.4	1,255	35.7	6,228	33.7	6,309	34.5	7,467	36.6	3,955	36.2	2,898	38.9
Shotgun	5,884	7.4	514	14.6	1,050	5.7	1,082	5.9	1,399	6.8	1,010	9.2	828	11.1
Rifle	3,505	4.4	300	8.5	721	3.9	540	3.0	889	4.3	490	4.5	564	7.6
Not stated	41,867	52.7	1,450	41.2	10,481	56.7	10,333	56.6	10,674	52.3	5,469	50.1	3,160	42.4
Primary body part injured														
Head/neck	12,979	16.3	755	21.5	2,562	13.9	2,604	14.3	3,339	16.3	1,945	17.8	1,703	22.9
Upper trunk	14,919	18.8	421	12.0	3,226	17.5	3,661	20.0	3,906	19.1	2,144	19.6	1,479	19.9
Lower trunk	11,284	14.2	372	10.6	2,618	14.2	2,603	14.3	3,231	15.8	1,478	13.5	917	12.3
Arm/hand	12,048	15.2	683	19.4	2,742	14.8	2,984	16.3	2,859	14.0	1,491	13.6	1,267	17.0
Leg/foot	26,518	33.4	1,253	35.6	6,988	37.8	6,061	33.2	6,646	32.5	3,610	33.0	1,920	25.8
Other	1,283	1.6	36[¶]	1.0	272[¶]	1.5	258[¶]	1.4	347	1.7	213[¶]	1.9	133[¶]	1.8
Not stated	354	0.4	0	0.0	73	0.4	95	0.5	99	0.5	43	0.4	31	0.4

Data sources: CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries.

* *All ages* includes unknown age.

[†] Numbers might not sum to totals because of rounding.

[§] Percentages might not sum to 100.0 because of rounding.

[¶] Estimates might be unstable because the coefficient of variation is >28%.

TABLE 7. (*Continued*) **Average annual numbers and percentages of nonfatal firearm-related injuries treated in hospital emergency departments (EDs), by age and selected characteristics of the injured person and injury incident — United States, 1993–1998**

	All ages*		0–14 yrs		15–19 yrs		20–24 yrs		25–34 yrs		35–44 yrs		>45 yrs	
	Number†	%§	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Mode of transport to ED														
Emergency medical services/ambulance	46,660	58.8	1,849	52.6	10,590	57.3	10,612	58.1	12,386	60.6	6,690	61.2	4,360	58.5
Private vehicle	17,952	22.6	921	26.2	4,632	25.1	4,230	23.2	4,321	21.2	2,146	19.6	1,696	22.8
Walk-in	4,118	5.2	146¶	4.1	1,031	5.6	1,200	6.6	1,053	5.2	464	4.2	220¶	3.0
Police	2,300	2.9	141¶	4.0	546	3.0	457	2.5	645	3.2	309	2.8	148¶	2.0
Air transport	3,059	3.9	238¶	6.8	580	3.1	462	2.5	805	3.9	493	4.5	476	6.4
Other	284	0.4	0¶	0.0	85¶	0.5	77¶	0.4	18¶	0.1	52¶	0.5	52¶	0.7
Not stated	5,011	6.3	224	6.4	1,017	5.5	1,227	6.7	1,201	5.9	770	7.1	498	6.7
Marital Status (Persons aged >18 yrs)	66,288	100.0	—	—	9,222	100.0	18,265	100.0	20,428	100.0	10,924	100.0	7,450	100.0
Never married	36,871	55.6	—	—	7,306	79.2	12,508	68.5	10,907	53.4	4,446	40.7	1,705	22.9
Married	10,900	16.4	—	—	154¶	1.7	1,345	7.4	3,518	17.2	2,850	26.1	3,032	40.7
Divorce/separated	2,368	3.6	—	—	3¶	0.0	260¶	1.4	718	3.5	908	8.3	479	6.4
Other	664	1.0	—	—	0¶	0.0	87¶	0.5	150¶	0.7	104¶	1.0	323	4.3
Not stated	15,485	23.4	—	—	1,759	19.1	4,065	22.3	5,135	25.1	2,615	23.9	1,912	25.7
Total	79,384	100.0	3,519	100.0	18,481	100.0	18,265	100.0	20,428	100.0	10,924	100.0	7,450	100.0

Data sources: CDC's Firearm Injury Surveillance Study for estimates of nonfatal injuries.

* *All ages* includes unknown age.
† Numbers might not sum to totals because of rounding.
§ Percentages might not sum to 100.0 because of rounding.
¶ Estimates might be unstable because the coefficient of variation is >28%.

Appendix

Standard Error Tables and Formulas for Fatal and Nonfatal Firearm-Related Injuries

TABLE 1A. Generalized coefficients of variation (CVs),* standard errors (SEs),[†] and 95% confidence intervals (CIs)[§] for national numbers of fatal firearm-related injuries

The generalized formula is based on the assumption that deaths are infrequent events that follow a Poisson probability distribution. The National Vital Statistics System provides a complete census of all deaths among U.S. residents; therefore, deaths are not subject to sampling error, but they can be affected by random error. The generalized SE is a measure of random variability for death counts.[¶]

Number of deaths	CVs	SEs	95% CIs
25	0.200	5	(15– 35)
50	0.141	7	(36– 64)
100	0.100	10	(80– 120)
250	0.063	16	(219– 281)
500	0.045	23	(455– 545)
1,000	0.032	32	(937– 1,063)
2,500	0.020	50	(2,402– 2,598)
5,000	0.014	70	(4,863– 5,137)
10,000	0.010	100	(9,804–10,196)
20,000	0.007	140	(19,726–20,274)
40,000	0.005	200	(39,608–40,392)

* CV = SQRT(1/number of deaths); for average annual deaths, multiply the average times six and use that as the number of deaths.

[†] SE = CV $\times$ (number of deaths).

[§] 95% CI = number of deaths ± 1.96 (SE).

[¶] **Source:** Murphy SL. Deaths: final data for 1998. Natl Vital Stat Rep 2000;48(11):1–105.

TABLE 2A. Generalized coefficients of variation (CVs),* standard errors (SEs),[†] and 95% confidence intervals (CIs)[§] for national estimates of nonfatal firearm-related injuries.

Method for Computing Generalized SE Formula

Computer simulation was used to compute estimates of the variances of total numbers of nonfatal firearm-related injuries treated in hospital emergency departments. For numbers of injuries ranging from 1,000 to 100,000, a total of 1,000 samples of weighted cases was selected at random. Then, a variance estimation program consisting of a SAS[¶] macro accounting for the stratified and complex sample survey design of National Electronic Injury Surveillance System was used to calculate the variance of the total number of injuries in each sample.[**] The average of the 1,000 variances for each number of injuries was obtained and its square root computed, which is the estimated standard error of the number of injuries. The CV, or relative sampling error, was then computed as the ratio of the standard error to the number of injuries. The CVs and numbers of injuries from the computer simulations were used to obtain a regression equation to predict the CV on the basis of the reciprocal of the square root of the number of injuries. This function was used because of its simplicity and because it provided a fit to the data. The regression equation was used to obtain the CVs contained in this table.

Estimated number of injuries	CVs	SEs	95% CIs
1,000	0.309	309	(394– 1,606)
1,500	0.286	429	(659– 2,341)
1,700	0.280	476	(767– 2,633)
3,000	0.256	768	(1,495– 4,505)
5,000	0.240	1,200	(2,648– 7,352)
10,000	0.223	2,230	(5,629– 14,371)
25,000	0.209	5,225	(14,759– 35,241)
50,000	0.201	10,050	(30,302– 69,698)
75,000	0.198	14,850	(45,894–104,106)
100,000	0.196	19,600	(61,584–138,416)

* CV = 0.183694 + 3.971602 × (1/SQRT [number of injuries]), where the number of injuries is the weighted national estimate of the number of nonfatal firearm injuries. For average annual estimates, multiply the average times six and use that as the number of injuries.

[†] SE = CV × (national estimate).

[§] 95% CI = national estimate ± 1.96 (SE).

[¶] SAS is a computer software for data access, management, analysis, and presentation; for additional information, contact SAS Institute, Inc., SAS Campus Drive, Cary, NC 27513.

[**]**Source:** Brick M, Smith H. Statistical approaches to reduce error sources in estimates from the National Electronic Injury Surveillance System (NEISS): Task 2 report. Rockville, MD: Westat, Inc., 1992;5–9.

State and Territorial Epidemiologists and Laboratory Directors

State and Territorial Epidemiologists and Laboratory Directors are acknowledged for their contributions to *CDC Surveillance Summaries*. The epidemiologists and the laboratory directors listed below were in the positions shown as of February 2001.

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American Samoa	Joseph Tufa, DSM, MPH	Joseph Tufa, DSM, MPH
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Marshall Islands	Tom D. Kijiner	—
Northern Mariana Islands	Jose L. Chong, MD	Joseph K.P. Villagomez
Palau	—	—
Puerto Rico	Carmen C. Deseda, MD, MPH	José Luis Miranda Arroyo, MD
Virgin Islands	Jose Poblete, MD (Acting)	Norbert Mantor, PhD

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