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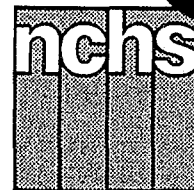
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Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

Firearm Mortality Among Children, Youth, and Young Adults 1–34 Years of Age, Trends and Current Status: United States, 1985–90

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Introduction

A previous report released by the National Center for Health Statistics (NCHS) documented the level of firearm mortality among children, youth, and young adults 1–34 years of age from 1979 through 1988 (1). The purpose of this report is to revise the 1985–88 data using newly available intercensal population estimates and to update the report with data through 1990. Emphases are on race and sex differences in homicide and suicide associated with firearms among males 15–34 years of age. This report will be limited to data for the period 1985 through 1990 because it was during the second half of the decade that firearm mortality increased for the younger population (1).

Methods

Firearm death rates for 1985–89 are based upon intercensal rather than the postcensal population estimates used in the previous report. Both sets of estimates were provided by the Bureau of the Census. Intercensal population estimates are preferred to postcensal estimates

because they are consistent with the 1980 and 1990 decennial Census enumerations, and thus, form a continuous series over the decade (2). The relative difference between the two estimates, the error of closure, is equivalent to the relative difference in death rates based on the two estimates. The error of closure was larger for persons 18–24 years of age than for any other age group. However, the error of closure was not so large that death rates for either the black or the white populations ages 1–34 were significantly affected. Death rates for 1990 are based on postcensal estimates of the July 1, 1990, population.

In previous reports on firearm mortality (1,3), the definitions of firearm homicide excluded legal intervention by firearm. In this report, as in others (4,5), the definition has been amended to include those deaths. The inclusion of these deaths results in an increase in the overall firearm death rate and the firearm homicide rate with a concomitant decrease in the nonfirearm homicide rate—all by relatively small amounts (see appendix table I). For example, adding in deaths coded to legal

intervention by a firearm to other firearm homicides among black and white males 20–24 years of age increased their respective firearm homicide rates by 1 percent and 3 percent.

Current status

In 1990, 19,722 persons 1–34 years of age died as a result of a firearm injury. This represented 17.6 percent of all deaths at those ages. Among young children 10–14 years of age, 560 died from a firearm injury, accounting for 1 out of every 8 deaths. Among teenagers 15–19 years and young adults 20–24 years, 1 of every 4 deaths were by firearm, and for adults 25–34 years, 1 of 6 deaths were by firearm (figure 1).

Within these age groups, variation by race and sex in the percentage of all deaths due to firearms is large. For example, 60 percent of deaths among black teenage males 15–19 years old resulted from a firearm injury compared with 23 percent of deaths among white teenage males. Among females 15–19 years old, 22 percent of deaths among black females



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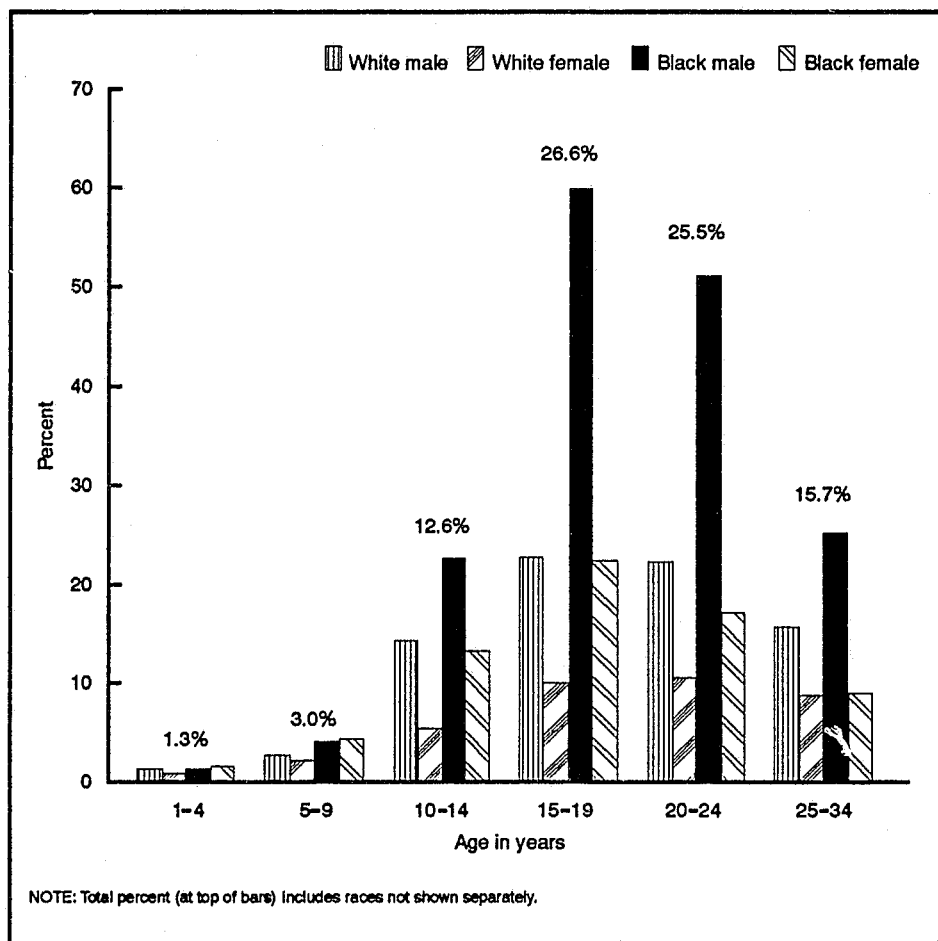


Figure 1. Percent of deaths due to firearms for persons 1–34 years of age, by age, race, and sex: United States, 1990

resulted from firearms compared with 10 percent of deaths among white females. By ages 25–34, the proportion of deaths due to firearms decreased for each race-sex group. Firearms were the cause of death for 25 percent of deaths among black males, 16 percent among white males, and 9 percent among black and white females in this age group (figure 1).

Another way to look at the differential impact of firearm mortality on the population is to focus on violent deaths (homicides and suicides) that result from firearms. The majority of homicides among teenagers and young adults 15–34 years of age resulted from the use of firearms. In 1990, 82 percent of homicides among teenagers 15–19 years of age were associated with firearms (91 and 77 percent among black and white males, respectively); at 20–24 years of age, 76 percent of homicides were from firearms (87 and 71 percent among black and white

males, respectively); and at 25–34 years of age, 69 percent of homicides (75 and 72 percent among black and white males, respectively) were caused by firearms. Proportions of homicides due to firearms among females were lower than among males for both races and in each age group (table 1).

The age-specific proportions of suicides resulting from firearms were lower than the proportions of homicides, averaging 58–67 percent of suicides at 15–19 years of age through 25–34 years of age. Differences by race were smaller than for homicide, and proportions for females were also lower than for males (table 1).

Analysis of firearm death rates by age, race, and sex, as well as by manner of death facilitates the assessment of relative levels of risk associated with firearm fatalities across demographic categories as well as over time. Firearm death rates rise until the young adult years and then

decline. In 1990, the firearm death rate per 100,000 increased from 0.6–0.7 per 100,000 population at ages 1–4 and 5–9 years, to 3.3 at ages 10–14, to 23.5 at ages 15–19, peaking at 28.1 at ages 20–24 years and declining to 21.8 at ages 25–34 years (figure 2). Firearm death rates for 1990 are shown in table 2 and numbers of firearm deaths are shown in table 3.

Firearm death rates vary by race and sex within age groups. For the younger children, those 1–9 years of age, rates for black children were higher than for white children. Because the firearm death rates at those ages are based on small numbers of deaths (fewer than 50 for each race-sex group), relative differences by sex are often not significant. At ages 10–14 years, firearm death rates are highest for black males; 10.2 per 100,000, which is more than twice the rates for white males and black females and 10 times the rate for white females. At ages 15–19 and 20–24 years, firearm death rates were also highest for black males, 119.9 and 157.6 per 100,000, respectively. The age-specific rates for these black males were 5 times the respective rates by age for white males and 10 to 11 times the age-specific rates for black females. At ages 25–34 years the firearm death rate for black males, 108.5 per 100,000, was 4 times the rate for white males and 7 times the rate for black females. The firearm death rates for white females 15–19 through 25–34 years were lower (about 5 per 100,000) than for any other race-sex group.

Race and sex differences in firearm mortality vary by manner of death as well. For young children ages 1–4 and 5–9 years firearm homicide rates among black children were higher than rates for white children, while there were no significant race differences in unintentional firearm mortality. For these young children, race and sex specific death rates for both firearm homicide and unintentional firearm mortality were generally less than 1 per 100,000.

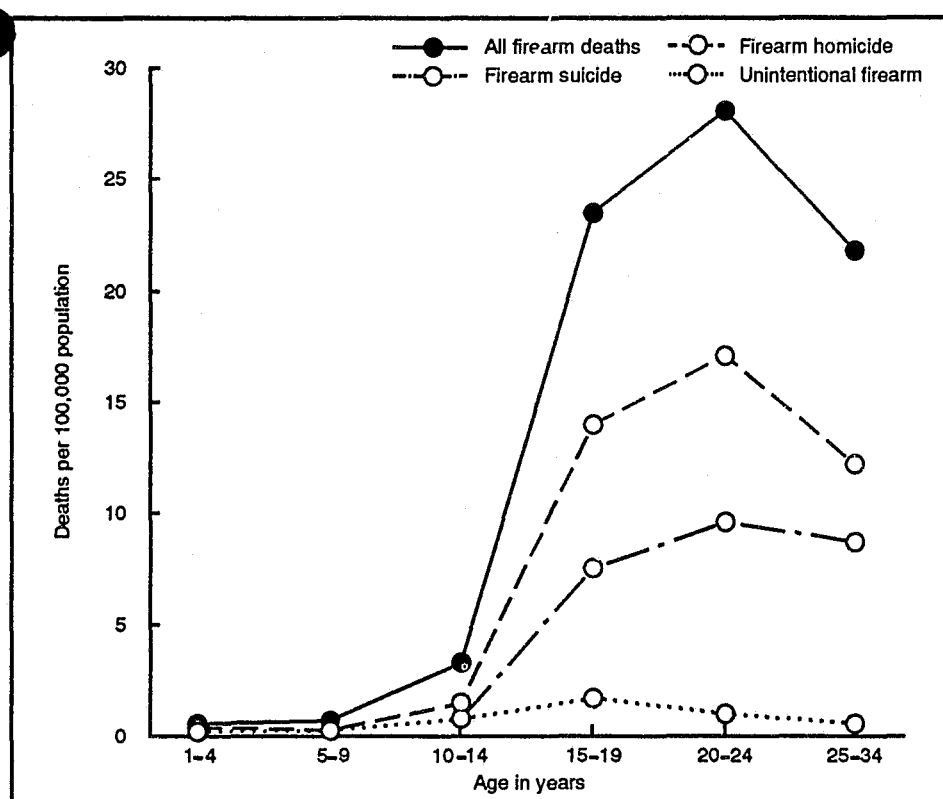


Figure 2. Firearm death rates by manner of death and age, for persons aged 1–34 years: United States, 1990

At ages 10–14 years, there were significant differences in the firearm homicide rates by race as well as by sex. The firearm homicide rate for black males 10–14 years of age was more than 5 times the rate for white males (6.9 compared with 1.3 deaths per 100,000) and the rate for black females was close to 8 times the rate for white females (3.1 compared with 0.4 per 100,000). Differences in firearm homicide by sex were smaller, with rates for white and black males 2 to 3 times those for females. While there were no differences by race in firearm suicide or unintentional firearm mortality at 10–14 years, those rates were higher for males than for females (table 4).

Firearm homicide for black males 15–19 years of age was 11 times the rate among white males, 105.3 compared with 9.7 per 100,000 population. The rate for black females was five times the rate for white females, 10.4 compared with 2.0 per 100,000. Thus, the firearm homicide rate for white males was about 5 times that for white females and the rate for black males about 10

times that for black females. Firearm homicide rates for both white and black males and females ages 20–24 years were about 1.2 to 1.3 times the respective rates at ages 15–19 years. Mortality race and sex ratios at 20–24 years were generally similar to those at ages 15–19 years (table 4).

Among males ages 25–34 years, race differences in firearm homicide rates were smaller than for persons 20–24 years of age. The rate for black males was 9 times the rate for white males (94.4 compared with 10.8 per 100,000). Firearm homicide rates for males were 5 to 7 times those for females (table 4).

Firearm suicide, unlike homicide, was higher for white males than for black males at ages 15–19 through 25–34 years, although race differences were considerably smaller than for firearm homicide. For example, the firearm suicide rate for white males 15–19 years was 1.5 times the rate for black males, 13.5 compared with 8.8 per 100,000 population. With increasing age, the race ratio decreased. Sex differences for both white and black persons in firearm

suicide rates were much larger than race differences, with rates for white and black males 5 to 10 times the rates for females at ages 15–19 through 25–34 years (table 4).

Trends (tables 2 and 3)

Consistent with earlier patterns (1), there was virtually no change from 1985 to 1990 in the overall firearm death rate among young children 1–4 or 5–9 years of age. For children ages 10–14 years, however, the firearm death rate increased 18 percent from 1985 to 1990, reaching a rate of 3.3 deaths per 100,000. Among black males 10–14 years, the firearm death rate more than doubled from 1985 to 1990. Increases were largest for firearm homicide; the rate rose from 3.0 to 6.9 per 100,000. There was also an increase in the rate for black females in this age group; the firearm death rate in 1990 was more than twice what it was in 1986 and 1987 (3.7 compared with 1.4 to 1.7 per 100,000). Again, increases were largest for firearm homicide.

The total firearm death rate among teenagers 15–19 years of age increased 77 percent from 1985 through 1990, to 23.5 deaths per 100,000, its highest level to date. Firearm death rates increased for all four race-sex groups, with the largest increases noted for black males. The firearm death rate for black males 15–19 years of age more than doubled, rising from 46.5 per 100,000 in 1985 to 119.9 per 100,000 in 1990 (figure 3). From 1985 through 1990, the black teenage male firearm homicide rate nearly tripled, rising to 105.3 per 100,000 (figure 4). At the same time, the firearm homicide rate for white males and black females doubled, rising to 9.7 and 10.4 per 100,000, respectively. While the firearm suicide rate among black teenage males was less than a tenth the magnitude of the firearm homicide rate, it increased 63 percent from 1985 to 1990 to 8.8 per 100,000. A far smaller increase (25 percent) was noted for the firearm suicide rate for white teenage males (figure 4). Among black females 15–19 years old, the firearm homicide rate doubled

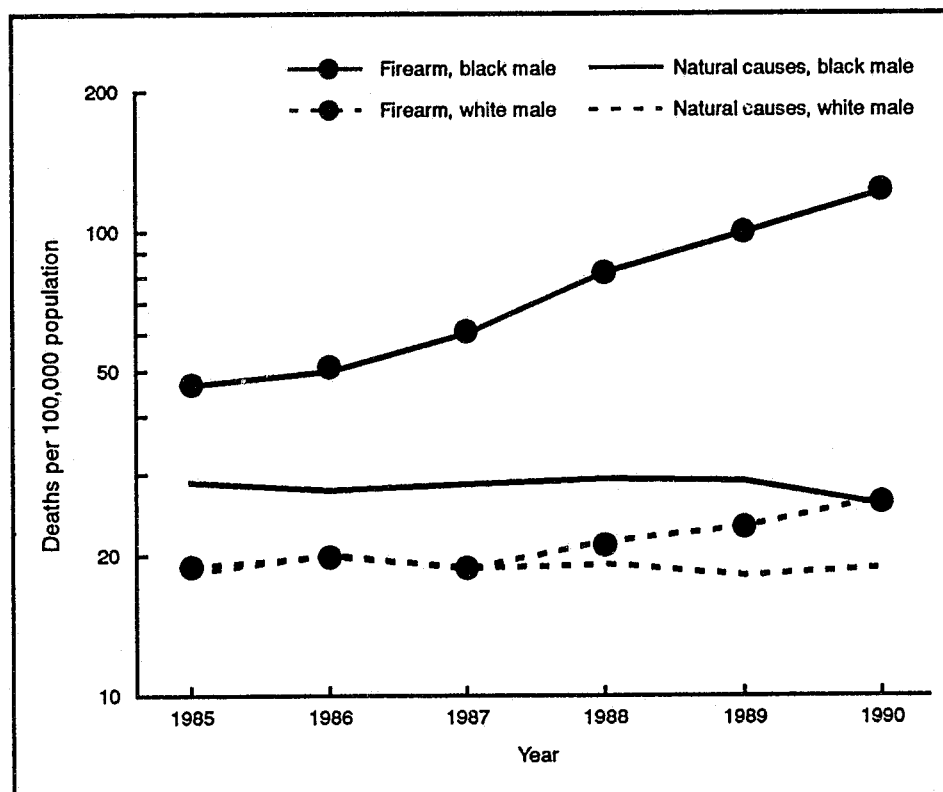


Figure 3. Deaths rates for natural causes and firearm injuries, for males aged 15-19 years: United States, 1985-90

from 1985 to 1990, reaching 10.4 per 100,000.

Among males 15-19 years of age, the nonfirearm homicide rate averaged 9 to 11 per 100,000 for black teenagers and 2 to 3 per 100,000 for white teenagers during the period 1985-90. It is interesting that although the nonfirearm homicide rate increased from 1989 to 1990 for both white and black males, the firearm homicide rates for white and black males were still 3 and 10 times the respective nonfirearm homicide rates. Nonfirearm suicide rates likewise showed little change during 1985-90 with rates averaging 6 per 100,000 for white male teenagers and 3 per 100,000 for black male teenagers (figure 4). Rates for females were also unchanged.

It was previously reported (1) that 1988 was the first year in which the firearm death rate for teenagers (15-19 years) exceeded the death rate associated with natural causes of death. That trend has continued; in 1990, among all teenagers 15-19 years, there were 39 percent more deaths from firearms than from

natural causes of death. Driving that trend has been the rising rate for firearm mortality among white teenage males 15-19 years. For white teenage males 15-19 years, the natural cause death rate remained relatively unchanged at 18 to 19 per 100,000 and the firearm death rate increased from 21.4 per 100,000 in 1988 to 26.5 per 100,000 in 1990 (figure 3). Thus, the ratio of firearm to natural causes mortality among white teenage males 15-19 years increased from 1.1:1 in 1988 to 1.3:1 in 1989 to 1.4:1 in 1990. Among black males, that trend has also continued. From 1988 to 1990, the natural cause death rate declined 12 percent while the firearm death rate increased 48 percent. Whereas in 1988, the firearm death rate among black teenage males was 2.8 times the natural cause death rate, by 1990 the firearm death rate was 4.7 times the rate for natural causes.

The firearm death rate among persons 20-24 years of age was 36 percent higher in 1990 than in 1985; virtually all of the increase was a result of increases in firearm homicide among black males (figure

5). The firearm homicide rate more than doubled in this group reaching 140.7 per 100,000, its highest level ever. (The previous high was in 1972.) Among white males ages 20-24 years, increases in firearm mortality were far more modest, with the firearm homicide rate in 1990 32 percent higher than what it was in 1985. Increases in firearm suicide were also minimal (figure 5). Among white females ages 20-24 years, the firearm death rate hovered around 5 per 100,000 for 1985 through 1990. For black females, the firearm death rate increased from 1985 to 1990 (although it was unchanged from 1989 to 1990) as a result of an increase in the firearm homicide rate.

The firearm homicide rate for white males 20-24 years remained about twice the nonfirearm homicide rate. Similar to the recent trend among those 15-19 years, the nonfirearm rate for those 20-24 years increased from 1989 to 1990. The nonfirearm homicide rate for black males was unchanged from 1985 to 1990 at about 22-23 per 100,000. The firearm suicide rate for white males remained close to twice the nonfirearm suicide rate (figure 5).

By ages 25-34 years, the upward trend in age-specific firearm mortality slowed considerably. The firearm death rate in 1990 was only 13 percent higher than in 1985, with the largest increase again noted in firearm homicide among black males (a 40 percent increase from 1985 to 1990). There was relatively little change in the nonfirearm homicide and nonfirearm suicide rates (figure 6).

Discussion

Sixty percent of all deaths among persons 1-34 years of age resulted from unintentional and intentional injuries in 1990, and about 30 percent of those external deaths were from firearms. To compile the standard cause-of-death rankings for persons 1 year of age and older, NCHS uses the "List of 72 Selected Causes of Death and HIV Infection" (6). However, this ranking system is not particularly

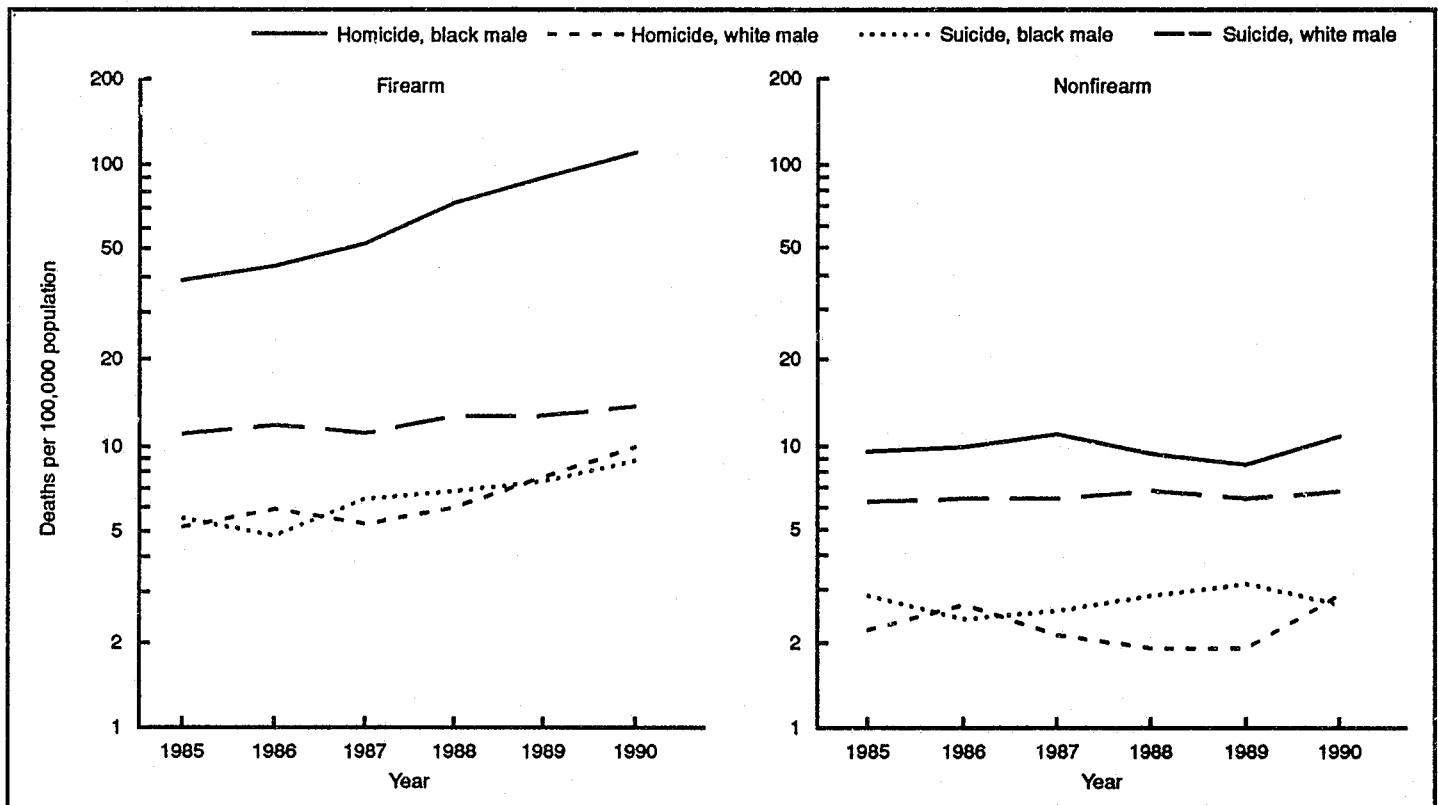


Figure 4. Homicide and suicide rates by firearm status for white and black males, aged 15-19 years: United States, 1985-90

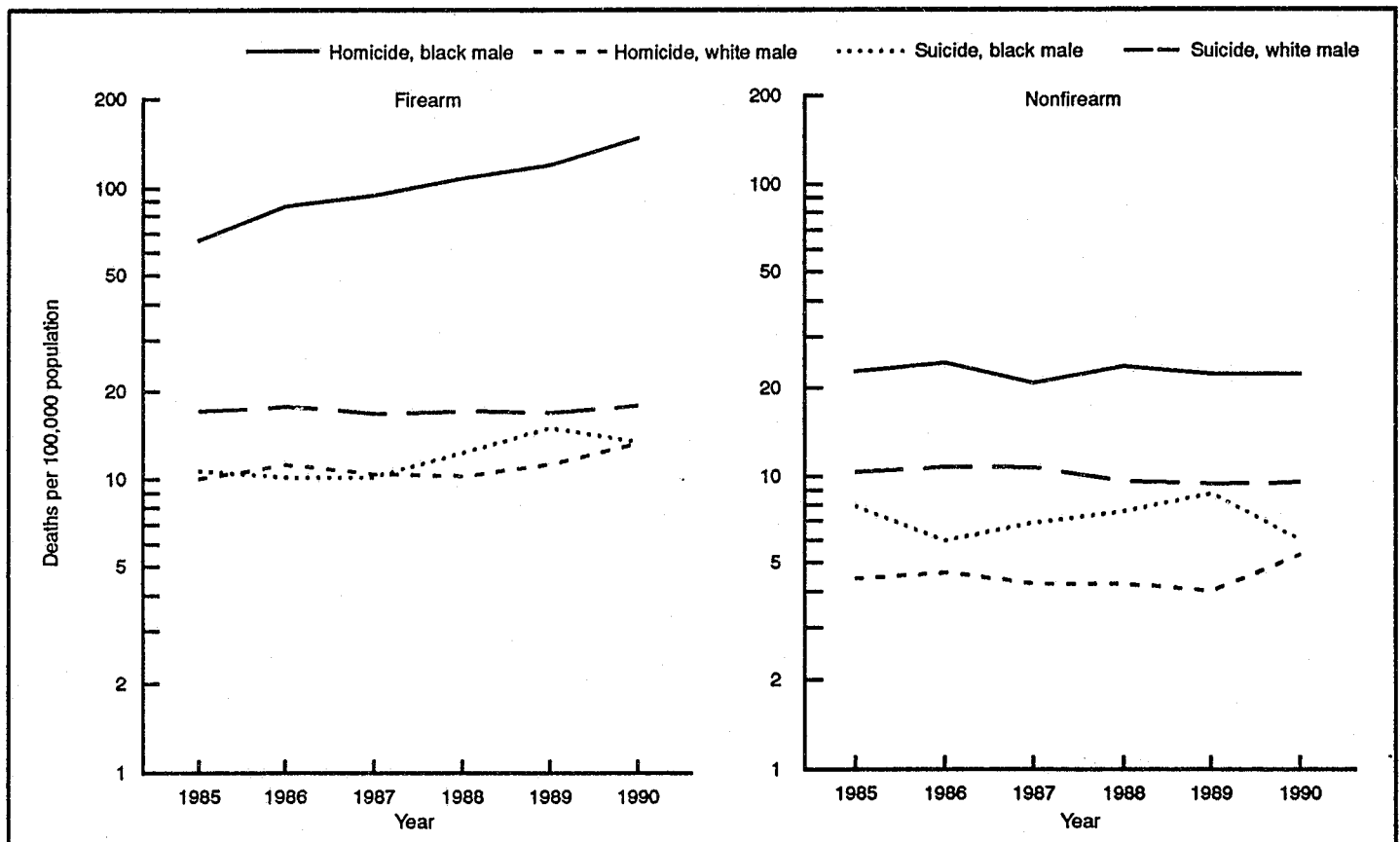


Figure 5. Homicide and suicide rates by firearm status for white and black males, aged 20-24 years: United States, 1985-90

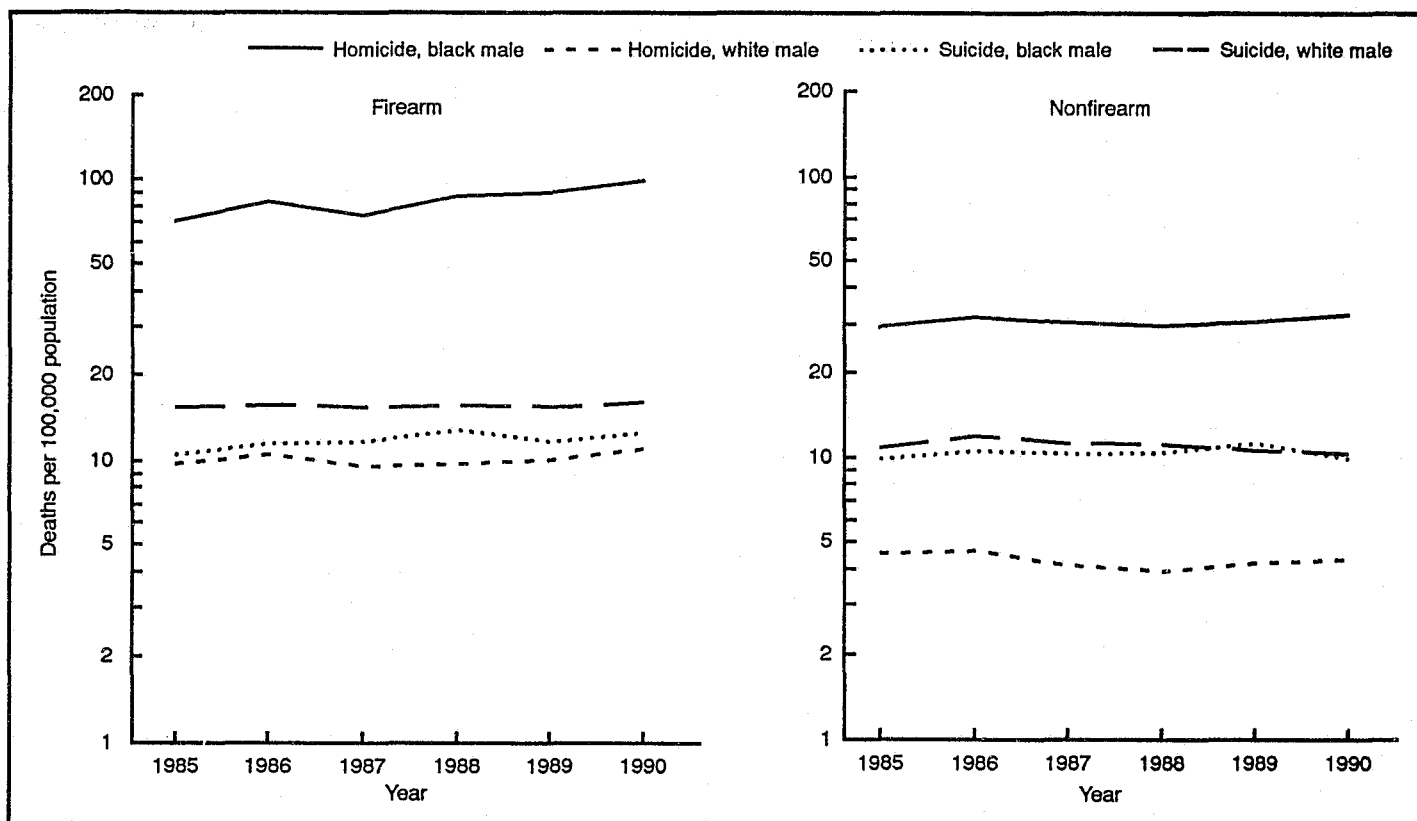


Figure 6. Homicide and suicide rates by firearm status for white and black males, aged 25–34 years: United States, 1985–90

appropriate for persons 1–34 years of age because it does not itemize specific causes of unintentional injuries, such as firearm injuries, motor vehicle injuries, fires and burns, and drowning. (They are counted in the “List of 72...” within the category “accidents and adverse effects”.) Neither does the “List of 72” ranking specify intentional injury firearm deaths (which are counted in the categories homicide and suicide). In order to put firearms as a cause of death into perspective, causes of death for children, teenagers, and young adults have been reordered in an alternative ranking scheme that includes detailed causes of injury.

Based on this new ranking, firearms are the second leading cause of death (after motor vehicle injury fatalities) for children 10–14 years of age, teenagers 15–19 years of age, and young adults 20–24 years and 25–34 years of age. For persons 15–19 and 20–24 years of age, firearm homicide as an individual category of death was second only to motor vehicle deaths. For persons 25–34

years of age, there were 11 percent more deaths from firearms than from HIV infection (table 5).

Among black males, firearm injuries were the leading cause of death among children 10–14 through adults 25–34 years of age. For children 10–14 years, firearms were responsible for 30 percent more deaths than motor vehicle injuries. For black males 15–19 through 20–24 years, firearm homicide was the single leading cause of death, with more than 3 times the number of motor vehicle deaths. Firearm homicide was also the leading cause of death at ages 25–34 years, with 12 percent more deaths than from HIV infection. (Data available upon request.)

The firearm homicide rates among young persons 15–19 and 20–24 years continue to increase and the rates of increase have recently worsened for white males. For young black males 15–19 and 20–24 years of age, the average annual increases in firearm homicide of 20 percent and 15 percent, respectively, observed from 1985 to 1988 remained

unchanged through 1988 to 1990. For white males 15–19 years, the firearm homicide rate increased an average of 4 percent per year from 1985 through 1988 and remained unchanged for those 20–24 years, whereas the firearm homicide rate increased at average annual rates of 24 percent and 12 percent for white males 15–19 and 20–24 years, respectively, from 1988 through 1990. Not only is progress not being made in reducing the rate of increase in firearm homicide for these young black males, but attention must also be paid to increasing firearm homicide rates among young white males.

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Table 1. Percent of homicides and suicides resulting from firearms by age, race, and sex for persons 10-34 years of age: United States, 1990

Age	Total	White		Black	
		Male	Female	Male	Female
Percent of all homicides due to firearms					
10-14 years	72.5	80.3	45.2	85.2	66.1
15-19 years	81.7	76.7	54.8	90.9	67.0
20-24 years	75.9	70.8	50.6	86.7	56.0
25-34 years	69.1	71.8	54.5	75.4	50.1
Percent of all suicides due to firearms					
10-14 years	55.0	53.7	56.1	71.4	62.5
15-19 years	67.3	69.4	57.3	76.4	65.4
20-24 years	63.4	65.2	54.2	69.2	51.4
25-34 years	57.6	61.1	48.9	55.9	38.0

Note: Total includes races not shown separately.

Table 2. Death rates due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1–34 years of age: United States, 1985–90

Age, race, and sex	1985	1986	1987	1988	1989	1990
1–4 years of age						
Firearm deaths per 100,000 population						
Total	0.7	0.6	0.5	0.6	0.7	0.6
White male	0.6	0.5	0.5	0.6	0.7	0.6
White female	0.5	0.4	0.3	0.4	0.4	0.3
Black male	2.2	1.9	1.6	1.8	1.7	1.2
Black female	0.9	0.9	0.8	0.9	1.2	1.1
5–9 years of age						
Total	0.7	0.6	0.7	0.7	0.8	0.7
White male	0.9	0.7	0.9	0.7	0.8	0.6
White female	0.4	0.3	0.4	0.4	0.4	0.4
Black male	0.9	1.2	1.6	2.0	1.6	1.5
Black female	1.3	1.3	0.6	0.9	0.9	1.2
10–14 years of age						
Total	2.8	2.7	3.0	3.2	3.3	3.3
White male	4.5	4.4	4.3	4.2	4.6	4.2
White female	1.0	1.0	1.1	1.1	1.0	1.0
Black male	4.8	4.9	7.1	8.1	9.4	10.2
Black female	0.7	1.7	1.4	3.7	2.4	3.7
15–19 years of age						
Total	13.3	14.4	14.5	17.5	19.8	23.5
White male	18.4	20.1	18.7	21.4	23.1	26.5
White female	3.5	3.7	3.3	3.7	4.1	4.6
Black male	46.5	49.7	59.8	80.9	98.2	119.9
Black female	6.1	7.9	9.1	8.5	9.7	12.2
20–24 years of age						
Total	20.6	22.9	22.6	23.5	25.1	28.1
White male	29.1	30.6	28.7	29.0	29.7	32.5
White female	5.2	5.7	5.2	4.5	4.6	4.9
Black male	76.1	94.7	103.4	117.8	133.2	157.6
Black female	10.2	12.0	13.9	13.8	15.4	14.4
25–34 years of age						
Total	19.3	20.4	19.4	20.4	20.4	21.8
White male	26.3	27.0	25.8	26.0	26.2	27.8
White female	5.7	5.5	5.6	5.5	5.2	5.5
Black male	79.8	93.1	84.8	97.1	98.8	108.5
Black female	12.8	13.8	14.0	14.7	13.2	14.6
1–4 years of age						
Firearm homicides per 100,000 population						
Total	0.4	0.4	0.3	0.3	0.5	0.4
White male	0.3	0.2	0.2	0.3	0.4	0.4
White female	0.2	0.2	0.2	0.2	0.3	0.2
Black male	1.1	1.4	0.8	1.1	1.0	0.8
Black female	0.7	0.6	0.7	0.6	0.8	0.9
5–9 years of age						
Total	0.3	0.3	0.3	0.4	0.4	0.3
White male	0.4	0.3	0.4	0.3	0.3	0.2
White female	0.2	0.1	0.2	0.3	0.4	0.3
Black male	0.5	0.6	0.7	1.2	1.0	1.0
Black female	1.0	0.8	0.4	0.7	0.7	0.9

Table 2. Death rates due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1-34 years of age: United States, 1985-90—Con.

Age, race, and sex	1985	1986	1987	1988	1989	1990
Firearm homicides per 100,000 population						
10-14 years of age						
Total	0.8	0.9	1.1	1.1	1.4	1.5
White male	0.9	1.0	0.8	0.9	1.2	1.3
White female	0.4	0.4	0.4	0.4	0.4	0.4
Black male	3.0	3.4	5.3	4.7	6.8	6.9
Black female	0.6	1.0	1.1	2.6	1.8	3.1
15-19 years of age						
Total	5.8	6.8	7.0	9.0	11.1	14.0
White male	5.0	5.8	5.2	6.0	7.5	9.7
White female	1.2	1.5	1.2	1.3	1.7	2.0
Black male	37.4	42.2	50.1	69.2	85.5	105.3
Black female	5.0	6.6	7.3	7.2	8.7	10.4
20-24 years of age						
Total	9.9	12.1	12.4	13.2	14.5	17.1
White male	9.8	11.0	10.2	10.1	11.1	12.9
White female	2.2	2.4	2.3	2.3	2.2	2.3
Black male	63.1	82.5	90.4	102.5	113.7	140.7
Black female	8.8	10.6	12.1	11.8	13.1	12.4
25-34 years of age						
Total	9.8	10.8	10.0	11.0	11.2	12.2
White male	9.5	10.2	9.3	9.5	9.8	10.8
White female	2.5	2.3	2.4	2.4	2.3	2.4
Black male	67.3	79.4	71.2	82.4	85.3	94.4
Black female	10.7	11.6	11.8	12.7	11.7	12.7
Firearm suicides per 100,000 population						
10-14 years of age						
Total	0.8	0.9	0.9	0.8	0.8	0.8
White male	1.5	1.5	1.7	1.2	1.4	1.2
White female	0.4	0.4	0.4	0.4	0.3	0.5
Black male	0.5	0.8	0.5	0.7	0.8	1.1
Black female	0.0	0.2	0.1	0.4	0.2	0.4
15-19 years of age						
Total	6.0	6.1	6.0	6.8	6.8	7.5
White male	10.8	11.6	10.9	12.4	12.5	13.5
White female	2.0	1.8	1.9	2.2	2.1	2.3
Black male	5.4	4.7	6.4	6.8	7.3	8.8
Black female	0.7	1.0	1.3	0.9	0.7	1.3
20-24 years of age						
Total	9.2	9.4	8.9	8.9	9.2	9.6
White male	16.8	17.2	16.3	16.6	16.5	17.5
White female	2.7	2.9	2.5	1.9	2.2	2.4
Black male	10.5	9.9	10.0	12.0	14.6	13.2
Black female	1.4	1.0	1.1	1.5	1.8	1.3
25-34 years of age						
Total	8.4	8.6	8.5	8.6	8.4	8.7
White male	15.0	15.2	15.0	15.2	15.0	15.6
White female	2.9	2.9	2.8	2.8	2.7	2.9
Black male	10.2	11.3	11.5	12.4	11.5	12.2
Black female	1.5	1.7	1.7	1.5	1.3	1.4

Table 2. Death rates due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1–34 years of age: United States, 1985–90—Con.

Age, race, and sex	1985	1986	1987	1988	1989	1990
Unintentional firearm deaths per 100,000 population						
1–4 years of age						
Total	0.3	0.2	0.3	0.3	0.3	0.2
White male	0.3	0.2	0.3	0.3	0.2	0.3
White female	0.2	0.1	0.1	0.1	0.2	0.1
Black male	1.0	0.5	0.7	0.7	0.7	0.4
Black female	0.2	0.4	0.1	0.3	0.4	0.3
5–9 years of age						
Total	0.3	0.3	0.4	0.3	0.3	0.3
White male	0.5	0.4	0.5	0.4	0.5	0.5
White female	0.2	0.1	0.2	0.1	0.1	0.1
Black male	0.3	0.6	0.8	0.8	0.5	0.5
Black female	0.3	0.5	0.2	0.1	0.2	0.3
10–14 years of age						
Total	1.0	0.9	0.9	1.1	1.0	0.8
White male	2.0	1.7	1.6	1.8	1.8	1.5
White female	0.2	0.2	0.2	0.3	0.2	0.1
Black male	1.2	0.6	1.2	2.2	1.8	1.9
Black female	0.1	0.4	0.2	0.6	0.3	0.2
15–19 years of age						
Total	1.3	1.3	1.2	1.4	1.6	1.7
White male	2.1	2.2	2.1	2.5	2.6	2.9
White female	0.2	0.3	0.1	0.2	0.3	0.2
Black male	3.3	2.2	2.9	3.5	4.6	4.9
Black female	0.4	0.2	0.4	0.4	0.3	0.4
20–24 years of age						
Total	1.1	1.0	1.1	1.0	1.2	1.0
White male	1.9	1.7	1.7	1.8	1.7	1.6
White female	0.2	0.2	0.2	0.1	0.2	0.2
Black male	1.9	2.0	2.7	2.4	4.2	2.7
Black female	0.1	0.3	0.3	0.4	0.2	0.6
25–34 years of age						
Total	0.8	0.7	0.7	0.6	0.6	0.6
White male	1.3	1.2	1.1	1.0	1.0	1.1
White female	0.2	0.2	0.2	0.2	0.1	0.2
Black male	1.8	1.7	1.5	1.6	1.7	1.4
Black female	0.4	0.3	0.4	0.3	0.1	0.3
Nonfirearm homicides per 100,000 population						
1–4 years of age						
Total	2.1	2.3	2.0	2.3	2.2	2.2
White male	1.6	1.7	1.6	1.9	1.5	1.4
White female	1.4	1.2	1.3	1.4	1.3	1.2
Black male	5.4	8.1	4.1	6.5	7.0	6.7
Black female	5.6	6.3	6.6	5.7	6.5	6.3
5–9 years of age						
Total	0.7	0.5	0.5	0.6	0.6	0.5
White male	0.3	0.2	0.3	0.5	0.3	0.3
White female	0.5	0.3	0.4	0.5	0.4	0.4
Black male	1.9	1.4	1.3	1.6	1.6	1.1
Black female	1.4	1.9	1.2	1.2	1.6	1.6

Table 2. Death rates due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1–34 years of age: United States, 1985–90—Con.

Age, race, and sex	1985	1986	1987	1988	1989	1990
10–14 years of age						
Nonfirearm homicides per 100,000 population						
Total	0.6	0.6	0.6	0.6	0.6	0.6
White male	0.5	0.2	0.2	0.4	0.3	0.3
White female	0.6	0.6	0.5	0.4	0.6	0.5
Black male	1.1	1.3	1.7	1.3	0.8	1.2
Black female	1.1	1.1	1.4	1.9	2.0	1.6
15–19 years of age						
Total	2.8	3.1	2.8	2.6	2.4	3.1
White male	2.2	2.7	2.1	1.9	1.9	2.9
White female	1.5	1.9	1.8	1.7	1.5	1.6
Black male	9.3	9.7	10.6	9.1	8.4	10.5
Black female	5.3	5.6	4.8	4.5	3.1	5.1
20–24 years of age						
Total	5.0	5.5	5.0	5.3	5.0	5.4
White male	4.4	4.6	4.2	4.2	4.0	5.3
White female	2.1	2.7	2.3	2.4	2.2	2.2
Black male	22.1	23.6	20.3	23.1	21.7	21.6
Black female	9.1	9.5	11.2	11.4	9.7	9.7
25–34 years of age						
Total	5.1	5.5	5.2	5.3	5.3	5.5
White male	4.5	4.6	4.1	3.9	4.2	4.3
White female	1.9	2.1	2.2	2.1	2.0	2.0
Black male	28.3	30.2	29.4	28.5	29.5	30.8
Black female	9.3	10.5	10.9	13.1	11.9	12.6
10–14 years of age						
Nonfirearm suicides per 100,000 population						
Total	0.8	0.7	0.6	0.7	0.6	0.7
White male	1.1	0.9	0.9	0.9	0.8	1.1
White female	0.5	0.4	0.3	0.4	0.4	0.4
Black male	0.8	0.8	1.2	0.6	0.9	0.4
Black female	0.4	0.2	0.2	0.6	0.5	0.2
15–19 years of age						
Total	3.9	4.0	4.1	4.3	4.2	3.6
White male	6.2	6.4	6.4	6.8	6.4	5.9
White female	2.1	2.2	2.5	2.5	2.4	1.7
Black male	2.9	2.4	2.6	2.9	3.2	2.7
Black female	0.9	1.1	1.4	1.3	1.6	0.7
20–24 years of age						
Total	6.2	6.2	6.1	5.7	5.6	5.5
White male	10.1	10.5	10.4	9.4	9.2	9.3
White female	2.5	2.4	2.2	2.4	2.0	2.0
Black male	7.7	5.9	6.8	7.4	8.5	5.9
Black female	1.1	1.4	1.3	1.4	1.6	1.3
25–34 years of age						
Total	6.9	7.3	7.1	7.0	6.8	6.4
White male	10.6	11.6	11.0	10.9	10.4	10.0
White female	3.5	3.4	3.6	3.4	3.3	3.1
Black male	9.6	10.3	10.0	10.2	11.0	9.6
Black female	1.5	2.2	2.3	2.3	2.5	2.3

Notes: Some of these death rates are based on small numbers of deaths (less than 20). This is especially true for rates among children 1–4 and 5–9 years. See table 3 for numbers of deaths on which all rates are based. Total includes races not shown separately.

Table 3. Deaths due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1-34 years of age: United States, 1985-90

Age, race, and sex	1985	1986	1987	1988	1989	1990
1-4 years of age						
	All firearm deaths					
Total	96	82	77	91	105	87
White male	35	27	29	37	41	38
White female	26	21	19	20	25	19
Black male	24	20	17	20	19	14
Black female	9	10	8	10	13	13
5-9 years of age						
Total	120	110	126	124	138	121
White male	61	52	64	53	62	48
White female	28	20	28	25	30	28
Black male	11	16	22	27	22	21
Black female	16	17	8	12	12	16
10-14 years of age						
Total	470	453	485	524	557	560
White male	319	297	290	287	321	298
White female	70	64	72	72	66	69
Black male	63	63	90	104	123	136
Black female	9	21	18	46	30	48
15-19 years of age						
Total	2,498	2,717	2,720	3,242	3,597	4,173
White male	1,445	1,581	1,458	1,642	1,732	1,936
White female	263	279	243	273	292	319
Black male	643	690	833	1,126	1,351	1,640
Black female	84	108	125	116	131	163
20-24 years of age						
Total	4,380	4,748	4,561	4,616	4,838	5,369
White male	2,615	2,675	2,430	2,387	2,396	2,600
White female	458	479	426	353	352	377
Black male	1,055	1,307	1,404	1,569	1,746	2,045
Black female	151	175	199	194	212	195
25-34 years of age						
Total	8,050	8,654	8,326	8,801	8,818	9,412
White male	4,654	4,851	4,665	4,728	4,752	5,026
White female	1,002	971	989	980	925	976
Black male	1,909	2,284	2,126	2,476	2,548	2,815
Black female	347	382	395	420	381	423
1-4 years of age						
	Firearm homicides					
Total	53	51	41	50	67	56
White male	19	13	12	17	27	22
White female	13	14	12	12	15	13
Black male	12	15	9	12	11	9
Black female	7	6	7	7	9	10
5-9 years of age						
Total	58	52	55	71	77	63
White male	25	21	26	20	22	13
White female	15	10	12	20	25	20
Black male	6	8	10	16	14	14
Black female	12	10	5	10	9	12
10-14 years of age						
Total	141	152	174	183	229	258
White male	63	67	56	59	80	94
White female	26	29	28	25	27	28
Black male	40	43	67	60	89	92
Black female	8	12	14	32	23	41

Table 3. Deaths due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1–34 years of age: United States, 1985–90—Con.

Age, race, and sex	1985	1986	1987	1988	1989	1990
15–19 years of age						
Firearm homicides						
Total	1,087	1,274	1,312	1,657	2,011	2,484
White male	393	458	402	461	561	707
White female	88	109	87	97	123	136
Black male	517	586	697	963	1,176	1,441
Black female	69	91	100	98	117	140
20–24 years of age						
Total	2,107	2,510	2,497	2,595	2,786	3,274
White male	884	962	863	829	891	1,029
White female	189	207	189	182	166	173
Black male	874	1,138	1,227	1,365	1,491	1,826
Black female	129	154	173	166	180	168
25–34 years of age						
Total	4,081	4,591	4,302	4,725	4,835	5,280
White male	1,689	1,829	1,685	1,733	1,782	1,956
White female	433	406	433	426	402	419
Black male	1,608	1,948	1,786	2,101	2,201	2,450
Black female	291	321	332	365	337	368
10–14 years of age						
Firearm suicides						
Total	139	141	151	125	138	142
White male	103	102	114	84	99	87
White female	28	23	27	23	22	32
Black male	6	10	6	9	11	15
Black female	0	3	1	5	3	5
15–19 years of age						
Total	1,117	1,151	1,129	1,261	1,241	1,332
White male	850	911	850	954	941	987
White female	150	138	141	163	147	160
Black male	74	65	89	95	100	120
Black female	9	14	18	13	10	17
20–24 years of age						
Total	1,964	1,946	1,793	1,754	1,775	1,833
White male	1,511	1,506	1,386	1,370	1,331	1,399
White female	234	244	206	154	171	181
Black male	146	136	136	160	192	171
Black female	20	14	16	21	25	18
25–34 years of age						
Total	3,509	3,627	3,629	3,706	3,632	3,773
White male	2,654	2,723	2,713	2,766	2,732	2,825
White female	511	514	507	497	481	517
Black male	245	276	288	315	296	317
Black female	40	46	49	44	38	41
1–4 years of age						
Unintentional firearm deaths						
Total	41	31	36	41	38	31
White male	15	14	17	20	14	16
White female	13	7	7	8	10	6
Black male	11	5	8	8	8	5
Black female	2	4	1	3	4	3

Table 3. Deaths due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1–34 years of age: United States, 1985–90—Con.

Age, race, and sex	1985	1986	1987	1988	1989	1990
5–9 years of age						
			Unintentional firearm deaths			
Total	58	57	66	51	59	56
White male	33	30	35	32	39	34
White female	13	10	16	4	5	7
Black male	4	8	11	11	7	7
Black female	4	7	2	2	3	4
10–14 years of age						
Total	177	143	144	185	172	146
White male	145	115	111	123	127	108
White female	12	12	12	22	14	7
Black male	16	8	15	28	23	26
Black female	1	5	3	8	4	2
15–19 years of age						
Total	241	238	220	266	294	305
White male	166	176	160	194	195	212
White female	17	25	11	11	20	14
Black male	45	30	41	48	63	67
Black female	5	3	5	5	4	6
20–24 years of age						
Total	238	205	213	200	222	195
White male	175	148	148	146	133	129
White female	21	17	16	8	14	15
Black male	27	27	37	32	55	35
Black female	2	4	5	5	3	8
25–34 years of age						
Total	339	299	291	264	274	279
White male	232	213	196	175	190	194
White female	39	28	36	29	26	27
Black male	44	42	38	41	43	37
Black female	12	7	10	8	3	10
1–4 years of age						
			Nonfirearm homicides			
Total	295	331	293	331	326	322
White male	92	102	95	114	88	87
White female	80	65	76	78	72	68
Black male	58	87	44	72	80	79
Black female	59	66	70	61	72	72
5–9 years of age						
Total	109	82	86	108	104	93
White male	24	17	21	36	23	24
White female	31	20	27	32	27	31
Black male	24	18	18	22	22	15
Black female	18	24	16	16	21	21
10–14 years of age						
Total	109	93	92	97	100	98
White male	38	17	15	27	21	23
White female	37	42	35	28	40	34
Black male	15	17	22	16	11	16
Black female	14	14	17	24	25	21
15–19 years of age						
Total	515	588	526	478	431	558
White male	174	212	161	145	143	215
White female	113	140	131	121	109	112
Black male	128	135	147	126	116	144
Black female	73	77	66	61	42	69

Table 3. Deaths due to firearms and nonfirearms by manner of death (homicide, suicide, and unintentional injury), by age, race, and sex for persons 1-34 years of age: United States, 1985-90—Con.

Age, race, and sex	1985	1986	1987	1988	1989	1990
20-24 years of age						
			Nonfirearm homicides			
Total	1,063	1,150	1,019	1,041	957	1,038
White male	399	402	360	349	326	424
White female	187	226	191	189	170	169
Black male	306	325	275	308	285	281
Black female	134	138	160	160	134	132
25-34 years of age						
Total	2,109	2,313	2,244	2,267	2,300	2,363
White male	789	835	744	713	761	768
White female	334	374	398	377	355	350
Black male	677	740	736	726	762	800
Black female	251	291	308	375	344	366
10-14 years of age						
			Nonfirearm suicides			
Total	136	109	99	112	98	116
White male	77	64	59	62	52	75
White female	35	23	18	26	23	25
Black male	11	10	15	8	12	6
Black female	5	2	3	7	6	3
15-19 years of age						
Total	732	745	773	798	768	647
White male	489	503	502	519	483	435
White female	154	164	186	183	172	119
Black male	40	34	36	41	44	37
Black female	12	15	19	18	21	9
20-24 years of age						
Total	1,308	1,278	1,229	1,116	1,086	1,057
White male	903	921	879	775	743	748
White female	218	204	178	190	154	153
Black male	107	81	93	98	111	76
Black female	16	21	18	19	22	17
25-34 years of age						
Total	2,867	3,084	3,026	3,004	2,933	2,777
White male	1,881	2,084	1,997	1,980	1,890	1,800
White female	613	598	633	601	594	541
Black male	230	253	251	259	283	250
Black female	41	60	64	67	72	67

NOTE: Total includes races not shown separately. All firearm deaths include those for which the intent was unknown.

Table 4. Firearm mortality race and sex ratios, by manner of death for persons 1–34 years of age: United States, 1990

Manner of death	Race ratio (black/white)		Sex ratio (male/female)	
	Male	Female	White	Black
All firearm deaths:				
1–4 years	*1.9	*3.4	*1.9	*1.1
5–9 years	2.4	*3.0	1.6	*1.3
10–14 years	2.4	3.6	4.1	2.8
15–19 years	4.5	2.6	5.7	9.9
20–24 years	4.9	2.9	6.6	10.9
25–34 years	3.9	2.6	5.1	7.5
Firearm homicide:				
1–4 years	*2.1	*3.9	*1.6	*0.9
5–9 years	*5.8	*3.2	*0.6	*1.1
10–14 years	5.2	7.5	3.2	2.2
15–19 years	10.9	5.3	4.9	10.1
20–24 years	10.9	5.5	5.7	11.3
25–34 years	8.7	5.4	4.6	7.5
Firearm suicide:				
10–14 years	*0.9	*0.8	2.6	*2.9
15–19 years	0.7	*0.5	5.8	*6.9
20–24 years	0.8	*0.6	7.4	*9.9
25–34 years	0.8	0.5	5.4	8.7
Unintentional firearm:				
1–4 years	*1.6	*2.5	*2.5	*1.6
5–9 years	*1.1	*3.0	*4.6	*1.7
10–14 years	1.3	*1.5	*14.6	*12.7
15–19 years	1.7	*2.2	*14.3	*10.9
20–24 years	1.7	*3.0	*8.2	*4.6
25–34 years	1.3	*2.3	7.1	*4.1

NOTE: Ratios are asterisked (*) if either the numerator or the denominator of the ratio is based on 20 or fewer deaths. See table 2 for rates and table 3 for numbers of deaths.

Table 5. Selected causes of death among persons 1–34 years of age, by age: United States, 1990

Cause of death	Age					
	1–4 years	5–9 years	10–14 years	15–19 years	20–24 years	25–34 years
Deaths per 100,000 population						
All external causes	20.0	10.8	14.7	71.6	84.0	71.4
Motor vehicle injuries	6.2	5.4	6.3	33.3	35.0	23.6
Drowning	3.8	1.4	1.5	2.7	2.2	2.0
Fires and burns	3.7	1.3	0.5	0.6	1.0	1.1
Firearms	0.6	0.7	3.3	23.5	28.1	21.8
Homicide	0.4	0.3	1.5	14.0	17.1	12.2
Suicide . . . . .	...	...	0.8	7.5	9.6	8.7
Unintentional	0.2	0.3	0.8	1.7	1.0	0.6
Nonfirearm homicide	2.2	0.5	0.6	3.1	5.4	5.5
Nonfirearm suicide . . . . .	...	...	0.7	3.6	5.5	6.4
All natural causes	26.6	11.3	11.1	16.9	25.9	67.9
Congenital anomalies	6.0	1.6	1.1	1.3	1.4	1.1
Malignant neoplasms	3.5	3.1	3.1	4.3	5.5	12.6
HIV infection	0.8	0.4	0.1	0.3	2.6	19.7
Deaths						
All external causes	2,975	1,951	2,528	12,707	16,067	30,790
Motor vehicle injuries	928	970	1,089	5,918	6,689	10,170
Drowning	564	248	260	478	430	867
Fires and burns	554	226	91	114	183	470
Firearms	87	121	560	4,173	5,369	9,412
Homicide	56	63	258	2,484	3,274	5,280
Suicide . . . . .	...	...	142	1,332	1,833	3,773
Unintentional	31	56	146	305	195	279
Nonfirearm homicide	322	93	98	558	1,038	2,363
Nonfirearm suicide . . . . .	...	...	116	647	1,057	2,777
All natural causes	3,956	2,044	1,913	3,004	4,955	29,301
Congenital anomalies	896	286	182	224	267	473
Malignant neoplasms	513	569	525	759	1,060	5,427
HIV infection	123	64	20	48	493	8,483

Technical notes

Nature and sources of data

Data shown in this report are based on information from all death certificates filed in the 50 States and the District of Columbia.

Mortality statistics are based on information coded by the National Center for Health Statistics (NCHS) from copies of the original death certificates received from the State registration offices and on State-coded data provided to NCHS through the Vital Statistics Cooperative Program.

Data for the United States refer to events occurring within the United States.

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with the World Health Organization regulations, which specify that member nations classify causes of death by the current *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death* (7). In this report, causes of death for 1985-90 were classified according to the Ninth Revision of the ICD (ICD-9).

Homicides are classified according to ICD-9 Nos. E960-E969 (Homicide and injury purposely inflicted by other persons) and Nos. E970-E978 (Legal intervention). Homicides caused by firearm are classified under ICD-9, Nos. E965.0-E965.4 (Assault by firearms) and E970 (Legal intervention by firearm). Suicides are classified according to ICD-9 Nos. E950-E959 (Suicide and self-inflicted injury). Suicides caused by firearms are classified under ICD-9 Nos. E955.0-E955.4. Unintentional firearm deaths are classified under ICD-9, No. E922 (Unintentional injury caused by firearm missile). Injury deaths by firearms, undetermined whether unintentionally or purposely inflicted are classified under ICD-9, Nos. E985.0-E985.4.

Table 1. Deaths due to legal intervention by a firearm among persons 15-34 years of age, by sex and race: United States, 1985 and 1990

Age	Total	Male		Female	
		White	Black	White	Black
1985		Deaths			
15-19 years	23	11	11	0	1
20-24 years	54	32	19	0	0
25-34 years	87	52	32	0	0
1990					
15-19 years	22	12	10	0	0
20-24 years	57	28	22	1	0
25-34 years	114	68	39	4	2

Note: Total includes races not shown separately.

Random variation

Although the mortality data in this report are not subject to sampling error, they may be affected by random variation in the number of deaths involved. When the number of events is small (perhaps less than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the data. Such infrequent events may be assumed to follow a Poisson probability distribution. For this distribution, a simple approximation may be used to estimate the confidence interval, as follows:

If N is the number of registered deaths in the population and R is the corresponding rate, the chances are 19 in 20 (approximate 95-percent confidence interval) that

1. $N - 2\sqrt{N}$ and $N + 2\sqrt{N}$
covers the "true" number of events.
2. $R - 2\frac{R}{\sqrt{N}}$ and $R + 2\frac{R}{\sqrt{N}}$
covers the "true" rate.

If the rate R_1 corresponding to N_1 events is compared with the rate R_2 corresponding to N_2 events, the difference between the two rates may

be regarded as statistically significant if it exceeds

$$2\sqrt{\frac{R_1^2}{N_1} + \frac{R_2^2}{N_2}}$$

Additional information on random variation may be found in the Technical Appendix of *Vital Statistics of the United States, 1987*, Volume II, Mortality, Part A.

Rates of change

Annual rates of change are represented by the slope of a least squares regression line through the logarithm of the annual rates.

Symbols

- Data not available
 - . . . Category not applicable
 - Quantity zero
 - 0.0 Quantity more than zero but less than 0.05
 - Z Quantity more than zero but less than 500 where numbers are rounded to thousands
 - * Figure does not meet standard of reliability or precision
-

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