VITAL & HEALTH STATISTICS

Trends and Current Status in Childhood Mortality

United States, 1900–85

Mortality statistics for children 1–19 years of age by race, sex, and cause of death are analyzed focusing on differences in external and natural causes. General trends from 1900–68 as well as trends in leading causes of death for 1968–85 are examined. Geographic variation by cause of death and cross-national comparisons are also presented.

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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 standards of reliability or precision (see Technical notes)
#	Figure suppressed to comply with confidentiality requirements

Trends and Current Status in Childhood Mortality

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Introduction

This report examines the mortality experience of the population aged 1–19 years. Compared with studies of infant mortality and of mortality among the elderly, this area has received little detailed analysis. This report will focus on the following issues:

- The large declines in childhood death rates in the United States during the last half of the 20th century;
- The vast number and proportion of deaths that are attributed to injuries and violence;
- The large race and sex differences especially with respect to injury mortality;
- Geographic variation in external causes of death; and
- Cross-national comparisons highlighting the relatively high U.S. mortality rates due to injury and violence.

In 1985 there were an estimated 66.7 million children aged 1–19 years in the United States, nearly 7 million fewer than in 1970 but 19 million more than in 1950 (table A). Children comprised 28 percent of the population in 1985, lower than the 36 percent in 1960 and 1970. Although there were fewer children in 1985 than in 1980, the number of 1–4-year-olds increased by 1.5 million between 1980 and 1985, a reflection primarily of fertility trends.

Table A. Number of children 1–19 years of age and percent of total population: United States, selected years, 1933–85

Age	*1933*	*1950*	*1960*	*1970*	*1980*	*1985*
			Numbers in thousands			
Total, all ages	125,579	150,697	179,323	203,212	226,546	238,741
1–19 years	44,953	47,953	64,893	73,484	68,925	66,743
1–4 years	8,679	13,017	16,209	13,669	12,815	14,268
5–9 years	12,292	13,200	18,692	19,956	16,700	16,822
10–14 years	12,068	11,119	16,773	20,789	18,242	17,101
15–19 years	11,914	10,617	13,219	19,070	21,168	18,552
			Percent of total population			
1–19 years	35.8	31.8	36.2	36.2	30.4	28.0
1–4 years	6.9	8.6	9.0	6.7	5.7	6.0
5–9 years	9.8	8.8	10.4	9.8	7.4	7.0
10–14 years	9.6	7.4	9.4	10.2	8.1	7.2
15–19 years	9.5	7.0	7.4	9.4	9.3	7.8

Data sources and notes

All of the U.S. mortality data used in this report are from death certificates collected by the National Center for Health Statistics (NCHS) or its predecessor agencies within the U.S. Bureau of the Census. All of the U.S. death rates shown in this report are based on deaths published in the annual vital statistics volumes for the individual years and revised population estimates as provided by the U.S. Bureau of the Census. Deaths for the period 1900–32 are from the death-registration States for the relevant year (U.S. Bureau of the Census, 1906, 1923, 1934, 1935; and Linder and Grove, 1947). In 1933 death registration was completed; hence all data for that year on are for the entire United States. Age-, sex-, and cause-specific deaths for 1933 through 1959 are similarly from the annual vital statistics volumes of NCHS and revised populations are from the U.S. Bureau of the Census. The population data can be found in *Vital Statistics Rates in the United States, 1940–60* (NCHS, 1968). Death rates for 1960–85 are likewise based on revised populations estimated by the U.S. Bureau of the Census. Death rates for census years are based on the April 1 census counts (as provided to NCHS by the U.S. Bureau of the Census). The population estimates for 1960 through 1985 are included in U.S. Bureau of the Census reports (1974, 1982, 1985, 1987a). Prior to 1968 the race-specific death rates are reported for white persons and for all other persons. For the years 1968–85 the rates are for white and for black persons; the total for all persons also includes other races, which are not shown separately.

Throughout the report the terms "external" and "natural" causes of death are used. External causes are all "E" code causes as defined in the International Classification of Diseases (ICD), and natural causes include all disease categories. The term "injuries" is used interchangeably with "accidents." Both exclude violence (homicide[1] and suicide), injuries of undetermined intent (E980-E989), and injuries resulting from war (E990–E999).

[1]In the list of 72 selected causes of death, the complete ICD name is "homicide and legal intervention" (E960–E978). For convenience, in this report, the category is referred to as "homicide" for the following reasons: There were no deaths in 1985 attributed to legal intervention (E970–E978) among children 1–4 and 5–9; there were only three deaths since 1976 among 10–14-year-olds; and only 1 percent of the deaths among those 15–19 was attributed to legal intervention (compared with 6 percent in 1968).

Race and sex differentials were measured in two ways. First, mortality sex ratios (male-to-female relative risks) were calculated for age-race groups and for cause of death. Similarly, mortality race ratios (black-to-white relative risks) were calculated for age-sex groups and cause of death. Although the cause-specific mortality ratios are informative, they do not illustrate the extent to which overall mortality among black persons or among males can be reduced by eliminating the excess mortality for a cause. In order to do this, "excess" was calculated as the race or sex difference in death rates for a particular cause as a percent of the corresponding difference in the all-causes death rates.

Annual rates of change were calculated by fitting a regression line to the logarithm of the death rates for every year. The slope of the line is the estimate of the annual rate of change of the death rates.

The U.S. geographic data are from the Compressed Mortality file. Because these data are precoded by age, it was not possible to separate those aged 15–19 from those aged 20–24 (NCHS, 1988). Therefore, death rates could not be mapped for 15–19-year-olds. Data for the years 1981–85 were combined in order to maximize the number of States with stable numbers of deaths. Furthermore, only death rates for white children were mapped because there were too few States with sufficient numbers of deaths among children of other races. Finally, rates were calculated only for those States that had a minimum of 25 expected white deaths. ("Expected deaths" are the number of deaths that would have occurred in a State if that State had the same death rate as the United States rate for 1981–85.) The rates were categorized into four groups, with approximately one-fourth of the States included in each.

The cross-national data are from a number of sources, primarily publications of the World Health Organization (Marcusson and Oehmisch, 1977; Taket, 1986; World Health Organization, 1986) and the French publication *Mortalité des Jeunes* (Kaminski, Bouvier-Colle, and Blondel, 1984). Supplemental sources include each individual country's annual reports of vital statistics, for rates not available in the above references; special tabulations of the World Health Organization, for the 1985 cause-, age-, and sex-specific death rates; and the Australia Bureau of Statistics, for 1970 and 1980 data.

Death rates by single year of age

When age-specific death rates are grouped in 5-year age intervals (4 years at ages 1–4) as they are usually presented, the pattern for the four childhood age groups (1–4, 5–9, 10–14, and 15–19) is J-shaped. To get a clearer picture of the death rates by age for ages 1–19, graphs (by race and sex) are presented by single year-of-age for 1984–85. In the graph for all causes of death (figure 1), rates are high at age 1 and then fall rather sharply to about age 4 when they plateau until about age 11. A rather steep increase begins at that age and lasts until about age 18. For white young adults, the rates plateau; for black young adults, the rate increase continues (data not shown).

These patterns vary by cause of death. For example, for natural causes of death, after the sharp decline from ages 1

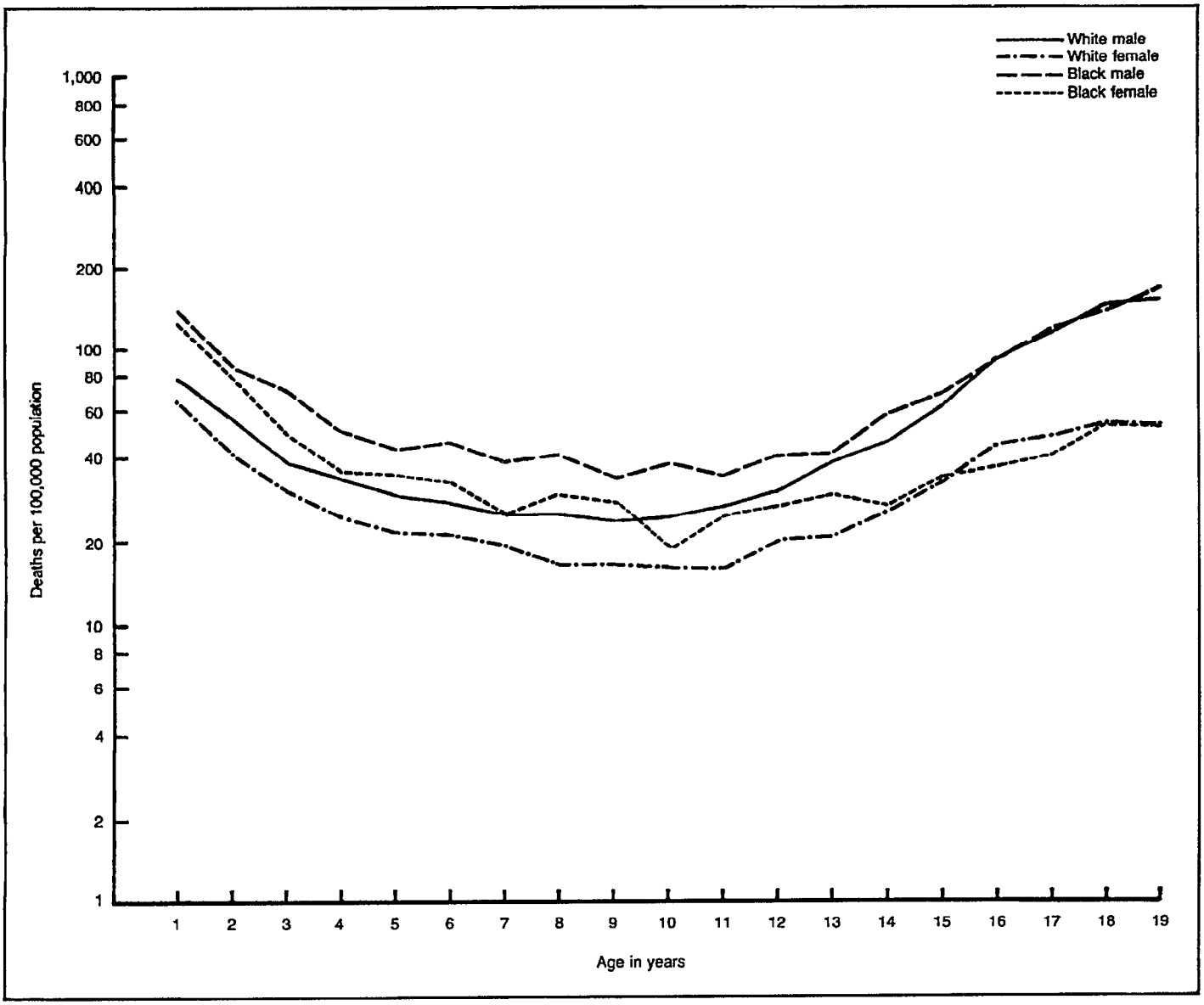


Figure 1. Death rates for all causes of death among children 1–19 years of age, by single year of age, race, and sex: United States, 1984–85

through 3 the death rates among white males are relatively flat from ages 4 to 15 and among white females through age 19 (figure 2). The increase in the death rates after age 13 is steeper among black than white youths. In all four race-sex groups, the external-cause death rates decline rapidly from ages 1 to 6 (figure 3). There follows a steep rise from ages 11 through 19 among males. At ages 13 through 19, the external-cause death rates are similar for white and black males. Among white females there is a sharp increase from ages 11 to 16, but the rates remain steady from ages 16 through 19. The external-cause death rate is higher for black than for white females under age 14, but the increase among black females is slower than among white females after age 10. From ages 14 through 19 the external-cause death rate is lower for black females than for white females.

Despite these differences in death rates by single year of age, data in the standard (5-year) age groupings are used in this report in order to compare these results with those reported in the literature and because data prior to 1968 are not available by single year of age.

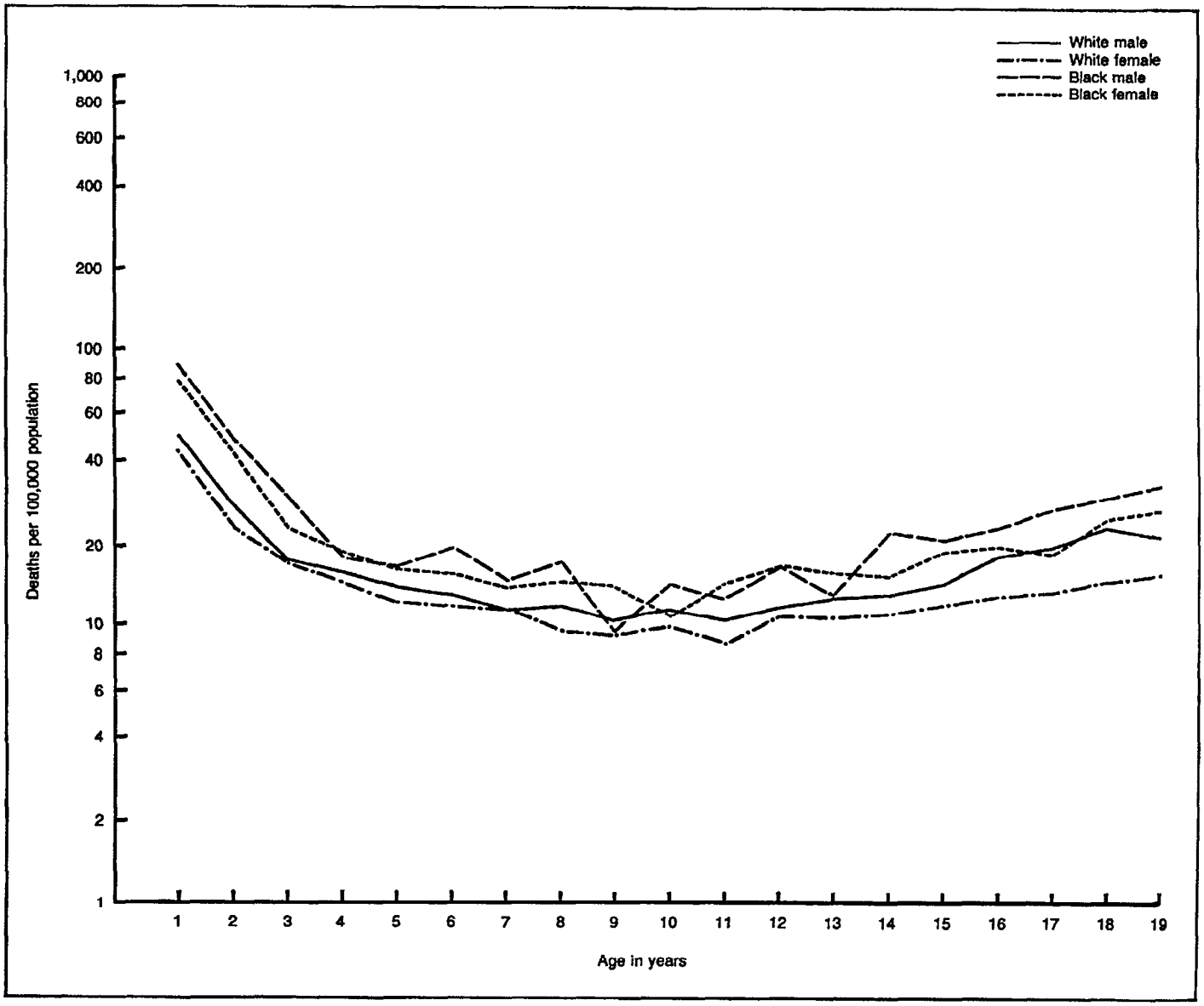


Figure 2. Death rates for natural causes of death among children 1–19 years of age, by single year of age, race, and sex: United States, 1984–85

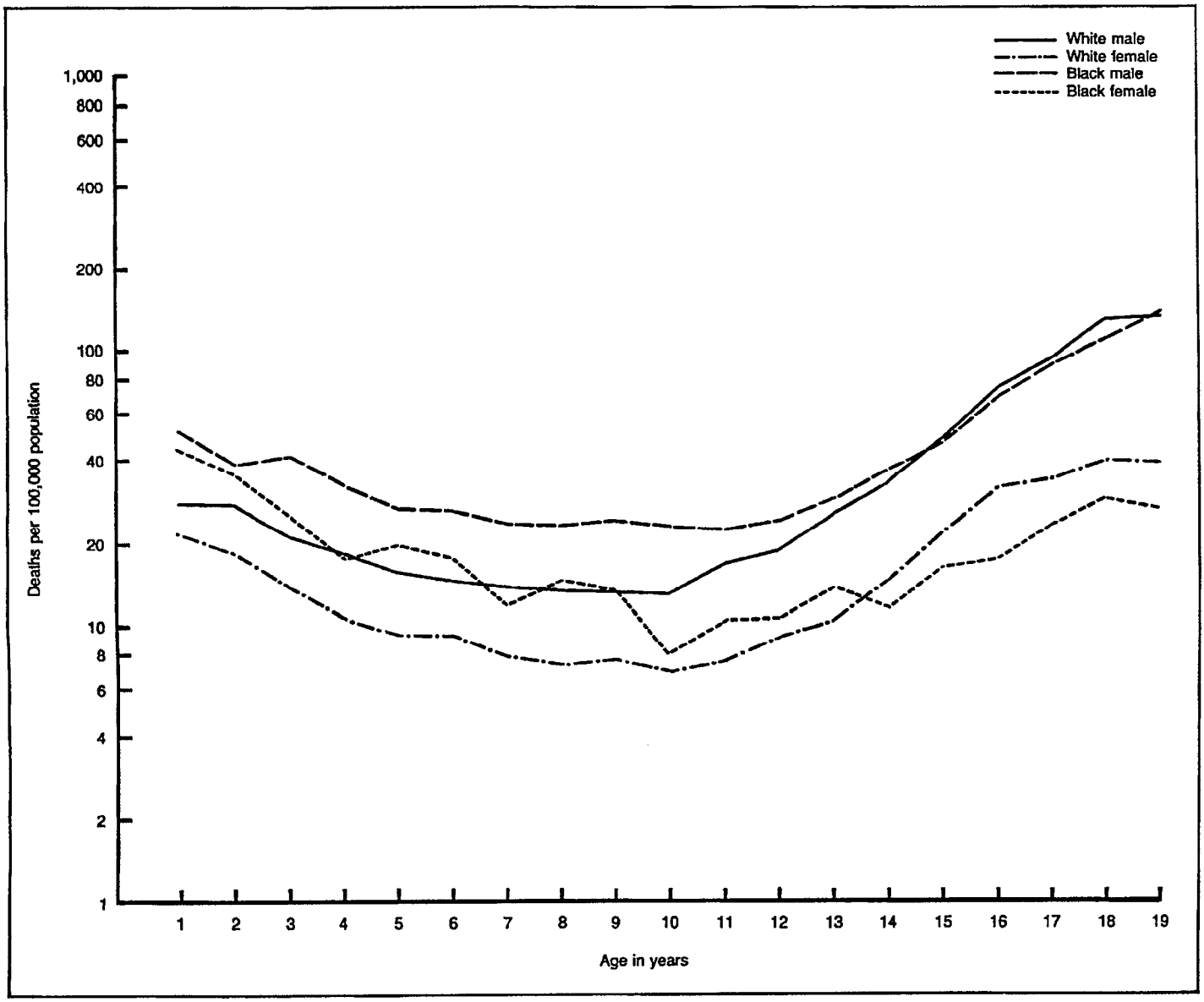


Figure 3. Death rates for external causes of death among children 1–19 years of age, by single year of age, race, and sex: United States, 1984–85

Trends

To put the changes in childhood mortality into perspective, age-specific death rates for all ages were compared from 1900 through 1985. Decreases occurred across all age groups, but the largest declines occurred among children (table B). From 1900–33 death rates for children in the age groups 1–4, 5–9, 10–14, and 15–19 years declined by 76 percent, 66 percent, 53 percent, and 54 percent, respectively. Similar percentage declines were observed also for the 1933–50 period. From 1950–70 and from 1970–85 declines of 25 to 50 percent were noted for children aged 1–14 years. Death rates for teenagers 15–19 years of age showed no change from 1950–70 and a 27–percent decline between 1970–85.

At the beginning of the 20th century, death rates for the United States were based on mortality in the death-registration States which in 1900 included 26 percent of the U.S. population. By 1932, 47 States and the District of Columbia were included in the death-registration States. From 1900 through 1932 death rates for children aged 1–4 decreased 77 percent from 19.8 to 4.6 per 1,000 population (table C). Total declines were similar for males and females, with a mortality sex ratio (male to female) averaging about 1.1 for the period. At ages 5–9 the death rates declined from 4.7 per 1,000 population in 1900 to 1.7 in 1932, with a slightly larger decline for females than for males (67 versus 62 percent). The mortality sex ratio increased from about 1.0 in 1900 to 1.2 in 1932. At ages 10–14 death rates were halved to 1.4 in 1932, again with death rates for females decreasing more than for males (58 versus 45 percent). The sex ratio increased from less than 1 to 1.2. Death rates for teenagers in 1900 were similar to rates for 5–9-year-olds (4.8 per 1,000 population). Death rates for teenage males and females fell by about 50 percent over the three decades with the sex ratio averaging about 1.1.

Table C. Age-specific death rates among children 1–19 years of age, by sex, and mortality sex ratios: Death-registration States, selected years, 1900–32

Age and year	*Total*	*Male*	*Female*	*Sex ratio*[1]
	Deaths per 1,000 population			
1–4 years				
1900	19.8	20.5	19.1	1.07
1910	14.0	14.6	13.4	1.09
1920	9.9	10.3	9.5	1.08
1930	5.6	6.0	5.2	1.15
1932	4.6	4.9	4.4	1.11
5–9 years				
1900	4.7	4.7	4.6	1.02
1910	3.5	3.6	3.4	1.06
1920	3.0	3.1	2.8	1.11
1930	1.9	2.1	1.7	1.24
1932	1.7	1.8	1.5	1.20
10–14 years				
1900	3.0	2.9	3.1	0.94
1910	2.4	2.4	2.3	1.04
1920	2.3	2.4	2.1	1.14
1930	1.5	1.7	1.4	1.21
1932	1.4	1.6	1.3	1.23
15–19 years				
1900	4.8	4.9	4.8	1.02
1910	3.7	3.9	3.5	1.11
1920	4.0	4.1	3.9	1.05
1930	2.8	2.9	2.6	1.12
1932	2.4	2.5	2.2	1.14

[1]Ratio of male death rate to female death rate.

Table B. Death rates and percent change in death rates by age: Death-registration States, 1900, and United States, selected years, 1933–85

Age	*1900*	*1933*	*1950*	*1960*	*1970*	*1980*	*1985*	*1900–33*	*1933–50*	*1950–70*	*1970–85*
	Deaths per 1,000 population							Percent change			
Under 1 year	162.4	61.3	33.0	27.0	21.4	12.9	10.7	–62.3	–46.2	–35.2	–50.0
1–4 years	19.8	4.7	1.4	1.1	0.8	0.6	0.5	–76.3	–70.2	–42.9	–37.5
5–9 years	4.7	1.6	0.6	0.5	0.4	0.3	0.2	–66.0	–62.5	–33.3	–50.0
10–14 years	3.0	1.4	0.6	0.4	0.4	0.3	0.3	–53.3	–57.1	–33.3	–25.0
15–19 years	4.8	2.2	1.1	0.9	1.1	1.0	0.8	–54.2	–50.0	–	–27.3
20–24 years	6.8	3.3	1.5	1.2	1.5	1.3	1.1	–51.5	–54.5	–	–26.7
25–34 years	8.2	4.1	1.8	1.5	1.6	1.4	1.2	–50.0	–56.1	–11.1	–25.0
35–44 years	10.2	6.2	3.6	3.0	3.1	2.3	2.1	–39.2	–41.9	–13.9	–32.3
45–54 years	15.0	11.4	8.5	7.6	7.3	5.8	5.2	–24.0	–25.4	–14.1	–28.8
55–64 years	27.2	23.2	19.0	17.4	16.6	13.5	12.8	–14.7	–18.1	–12.6	–22.9
65–74 years	56.4	49.0	41.0	38.2	35.8	29.9	28.4	–13.1	–16.3	–12.7	–20.7
75–84 years	123.3	111.3	93.3	87.5	80.0	66.9	64.5	–9.7	–16.2	–14.3	–19.4
85 years and over	260.9	222.3	202.0	198.6	175.4	159.8	154.8	–14.8	–9.1	–13.2	–11.7

Table D. Percent distribution of deaths among children 1–19 years of age by cause of death, according to age: Death-registration States, 1900, 1932, and United States, 1950

Age and year	Cause of death			
	Total	Natural	External (injury and violence)	Ill-defined
	Percent distribution			
1–4 years				
1900	100.0	93.0	3.8	3.2
1932	100.0	84.5	12.9	2.6
1950	100.0	73.2	26.8	–
5–9 years				
1900	100.0	89.9	8.6	1.6
1932	100.0	77.0	21.4	1.6
1950	100.0	62.3	37.7	–
10–19 years				
1900	100.0	87.4	11.2	1.4
1932	100.0	75.1	23.7	1.2
1950	100.0	52.6	47.4	–

In the death-registration States of 1900, natural causes of death accounted for about 90 percent of the childhood deaths at ages 1–19 (table D). Among children ages 1–4, diphtheria, pneumonia, diarrhea and enteritis each accounted for more than 10 percent of deaths, as did diphtheria at ages 5–9, and tuberculosis at ages 10–14. (These proportions are based on childhood mortality data from New York, Massachusetts, and Indiana which in 1900 accounted for two-thirds of the childhood deaths in the 10 death-registration States and the District of Columbia.)

By 1932, external causes accounted for 13, 21, and 24 percent of all deaths at ages 1–4, 5–9, and 10–19, respectively (table D).

In 1933 death registration was completed for all States. The trend of mortality during the years 1933–50 was one of generally rapid decline for most race-sex-age groups, especially children. The decline in diseases of infectious origin has been attributed to the introduction of the sulfonamides and antibiotic therapy (NCHS, 1964). From 1933 through 1950 death rates fell by 70 percent at ages 1–4, by 63 percent at ages 5–9, by 57 percent at ages 10–14, and by 50 percent at ages 15–19 (table E). During this period the age-specific sex mortality ratios increased, generally as a result of greater reductions in death rates for females, while the race mortality ratios increased for the 1–9-year-olds and decreased for the 10–19-year-olds. Average annual declines in race-, sex-, and age-specific death rates for children of 5 to 8 percent for the years 1937–55 have been noted (NCHS, 1964). The one exception was among white male teenagers for whom the annual decline was only about 2 percent.

For both males and females in each of the four age groups, the natural-cause death rates declined by 65–75 percent between 1933 and 1950 (table F). The external-cause death rates declined more slowly— by 33–39 percent for children aged 1–9; 31 percent for males and 24 percent for females aged 10–14; and 17 percent for females aged 15–19. There was only a 1-percent decline in external-cause mortality among males aged 15–19. (During the early 1940's this rate had risen by as much as 25 percent, only to fall back to its mid-1930's level by 1950.) Furthermore, natural causes accounted for 87 to 93 percent of the mortality decline for children aged 1–14 and for 98 percent of the decline for those aged 15–19.

By 1950 external causes of death were responsible for vastly increased proportions of death, ranging from 27 percent of all deaths at ages 1–4 to 47 percent at ages 10–19 (table D). Motor vehicle injuries were the leading external cause of death for each age group. The leading natural causes at ages 1–4 were pneumonia, malignant neoplasms, and congenital malformations; at ages 5–9, malignant neoplasms; at ages 10–14, malignant neoplasms and cardiovascular diseases; and at ages 15–19, cardiovascular disease, malignant neoplasms, and tuberculosis (NCHS, 1953).

The early part of the 1950's was the end of about 15 years of rapid mortality decline across nearly all age groups (NCHS, 1964). The years 1955–67 are characterized by a marked deceleration in the rate of mortality decline. Aver-

Table E. Death rates and mortality ratios among children 1–19 years of age, by age, sex, and race: United States, 1933 and 1950

Age and year	Sex			Sex ratio[1]	Race		Race ratio[2]
	Total	Male	Female		White	All other	
	Deaths per 1,000 population				Deaths per 1,000 population		
1–4 years							
1933	4.7	5.0	4.4	1.1	4.4	7.0	1.6
1950	1.4	1.5	1.3	1.2	1.2	2.5	2.1
5–9 years							
1933	1.6	1.8	1.5	1.2	1.6	2.1	1.3
1950	0.6	0.7	0.5	1.4	0.6	0.9	1.5
10–14 years							
1933	1.4	1.6	1.2	1.3	1.3	2.3	1.8
1950	0.6	0.7	0.4	1.8	0.5	0.8	1.6
15–19 years							
1933	2.2	2.4	2.0	1.2	1.9	4.9	2.6
1950	1.1	1.4	0.8	1.8	1.0	2.0	2.0

[1]Ratio of male death rate to female death rate.
[2]Ratio of all other death rate to white death rate.

Table F. Natural and external cause-of-death rates and percent change among children 1–19 years of age, by age and sex: United States, 1933 and 1950

Age and sex	Natural causes		Percent change	External causes		Percent change
	1933	1950		1933	1950	
	Deaths per 100,000 population			Deaths per 100,000 population		
1–4 years						
Both sexes	400.7	102.0	–74.5	58.4	37.4	–36.0
Male	424.1	108.6	–74.4	64.7	43.1	–33.4
Female	376.8	95.1	–74.8	52.0	31.6	–39.2
5–9 years						
Both sexes	122.6	38.5	–68.6	36.0	23.3	–35.3
Male	126.0	40.6	–67.8	46.8	30.4	–35.0
Female	119.0	36.3	–69.5	24.9	15.9	–36.1
10–14 years						
Both sexes	102.9	34.5	–66.5	33.1	23.6	–28.7
Male	103.4	35.9	–65.3	50.1	34.8	–30.5
Female	102.3	33.0	–67.7	15.6	11.9	–23.7
15–19 years						
Both sexes	162.6	53.0	–67.4	58.3	55.6	–4.6
Male	150.4	52.3	–65.2	89.3	88.4	–1.0
Female	174.8	53.8	–69.2	27.4	22.7	–17.2

age annual declines of 1 to 2 percent were observed for all children aged 1–4, 5–9, and 10–14 and for other-than-white females 15–19 years old (table G). For the other three race-sex categories of teenagers, there was essentially no change in the death rates. As a result, it was only among other-than-white teenagers that there was a change in the mortality sex ratio during these years; the ratio increased from 1.8 to 2.4. In addition, the female race ratio (other-than-white versus white) among 15–19-year-olds declined from 1.7 to 1.5, again because of the decrease in the death rate for other-than-white females coupled with the unchanged death rate for white females.

Table G. Average annual percent change in death rates among children 1–19 years of age, by race, sex, and age: United States, 1955–67

Age	Total	White		All other	
		Male	Female	Male	Female
1–4 years	–1.8	–1.8	–2.2	–1.8	–2.2
5–9 years	–1.3	–1.6	–1.2	–1.0	–1.9
10–14 years	–1.4	–1.4	–1.4	–1.7	–1.5
15–19 years	0.2	0.2	–0.1	0.6	–1.3

External causes of death continued to increase as a proportion of all deaths in each of the race-sex-age groups during the 1955–67 period. By 1967 external factors were the cause of 39 percent of deaths at ages 1–4, 47 percent at 5–9, 51 percent at 10–14, and 71 percent at ages 15–19 (table H). In most of the race-sex-age groups, the external-cause death rate either increased or decreased by less than 10 percent. The largest increases were among teenagers. The natural-cause death rate decreased by 20 to 35 percent across all groups (table J).

From 1968–78 the death rates decreased more than during the previous period, by average annual rates of 2–3 percent (table K and table 1). Unlike the 1955–67 time period when there was little difference between the rate of mortality change for white children and that for all other children, these next years were ones of more rapid declines among black than white children, especially for those aged 10–14 and 15–19. For example, among teenagers, death rates fell by an annual average rate of 1 percent among white teenagers compared with 5 to 6 percent among black teenagers. As a result the mortality race ratio decreased

Table H. Percent of all deaths from external causes among children 1–19 years of age, by age, race, and sex: United States, 1955 and 1967

Race and sex	1–4 years		5–9 years		10–14 years		15–19 years	
	1955	1967	1955	1967	1955	1967	1955	1967
	Percent							
Total	29.2	38.9	39.6	47.1	46.2	51.1	61.2	71.3
White male	30.3	41.0	43.9	50.4	55.1	58.2	70.6	78.2
White female	26.7	35.3	31.8	38.2	31.4	37.5	45.6	58.6
All other male	29.4	40.6	46.3	58.4	54.7	61.3	62.9	73.6
All other female	32.3	38.5	40.9	45.6	27.6	38.4	28.7	42.8

Table J. Natural and external cause-of-death rates and percent change among children 1–19 years of age, by age, race, and sex: United States, 1955 and 1967

Age, race, and sex	Natural cause		Percent change	External cause		Percent change
	1955	1967		1955	1967	
	Deaths per 100,000 population			Deaths per 100,000 population		
1–4 years						
Total	80.3	54.6	–32.0	33.1	34.8	5.1
White male	76.4	51.5	–32.6	33.2	35.8	7.8
White female	66.2	44.6	–32.6	24.1	24.3	0.8
All other male	149.8	98.9	–34.0	62.3	67.5	8.3
All other female	125.8	81.3	–35.3	59.9	51.0	–14.9
5–9 years						
Total	30.6	22.7	–25.8	20.1	20.2	0.5
White male	32.2	23.0	–28.6	24.6	23.4	–4.5
White female	26.6	20.7	–22.2	12.4	12.8	3.2
All other male	41.4	28.3	–31.6	35.7	39.7	11.2
All other female	36.1	26.7	–26.0	25.0	22.4	–10.4
10–14 years						
Total	25.0	19.8	–20.8	21.5	20.7	–3.7
White male	25.3	20.3	–19.8	31.0	28.3	–8.7
White female	21.8	17.5	–19.7	10.0	10.5	5.0
All other male	34.2	25.1	–26.6	41.3	39.7	–3.9
All other female	35.2	24.7	–29.8	13.4	15.4	14.9
15–19 years						
Total	37.8	29.3	–22.5	59.5	72.8	22.4
White male	38.8	30.3	–21.9	93.2	108.9	16.8
White female	29.3	22.6	–22.9	24.6	32.0	30.1
All other male	62.5	49.6	–20.6	106.1	138.6	30.6
All other female	65.0	45.5	–30.0	26.2	34.1	30.2

Table K. Average annual percent change in death rates among children 1–19 years of age, by age, race, and sex: United States, 1968–78 and 1979–85

Year and age	Total	White		Black	
		Male	Female	Male	Female
1968–78					
1–4 years	–3.2	–2.5	–3.3	–4.2	–4.3
5–9 years	–3.4	–3.4	–3.5	–3.1	–3.9
10–14 years	–2.3	–1.9	–2.3	–3.8	–4.5
15–19 years	–1.5	–0.6	–1.0	–6.2	–5.4
1979–85					
1–4 years	–4.1	–4.1	–4.1	–4.2	–4.3
5–9 years	–4.1	–4.5	–4.2	–4.7	–2.0
10–14 years	–2.3	–2.6	–2.3	–1.5	–1.9
15–19 years	–3.8	–4.5	–2.6	–2.4	–2.3

sharply in this age group. The black versus white ratio for teenagers in 1968 was 1.5; by 1978 it was 0.9.

In general, the years 1979 through 1985 can be described as ones of more rapid mortality decline among white children and slower decline among black children (table K). Death rates for 1–4-year-olds declined at annual rates of 4 percent for all four race-sex groups. Among those 5–9 years old, declines were much slower for black females than for the other race-sex groups (2 versus 4–5 percent). As a result, at ages 5–9 the mortality sex ratio for black children declined, and the mortality race ratio for females increased. At ages 10–14 annual declines in death rates averaged 2 percent for all four groups.

Among teenagers, the death rate for white males decreased at a much greater annual rate than the other three race-sex groups (4.5 versus 2–3 percent). Therefore, the mortality sex ratio for white teenagers declined and the mortality race ratio for males increased.

From 1968 through 1978 the natural-cause death rates for children in each age group decreased at average annual rates of 4 percent versus annual declines of 1 to 2 percent in the external-cause death rates (table L). However, from 1979-85 annual rates of decline were larger for external than for natural causes for children aged 1–4, 5–9, and 15–19. Thus, between the period 1968–78 and the period 1979–85, declines in death rates from external causes accelerated while declines in death rates from natural causes generally slowed.

Table L. Average annual percent change in natural and external cause-of-death rates among children 1–19 years of age, by race, sex, and age: United States, 1968–78 and 1979–85

Age and cause of death	Total		White male		White female		Black male		Black female	
	1968–78	1979–85	1968–78	1979–85	1968–78	1979–85	1968–78	1979–85	1968–78	1979–85
1–4 years										
Natural causes	–4.4	–3.5	–3.6	–4.0	–4.3	–3.2	–6.0	–3.2	–5.9	–3.1
External causes	–1.5	–4.9	–1.2	–4.2	–1.7	–5.4	–2.1	–5.4	–2.3	–5.7
5–9 years										
Natural causes	–4.4	–3.3	–4.5	–4.0	–4.5	–3.8	–3.7	–0.4	–4.1	–0.7
External causes	–2.4	–4.9	–2.5	–5.0	–2.0	–4.7	–2.7	–6.9	–3.7	–3.2
10–14 years										
Natural causes	–3.6	–2.5	–3.1	–3.1	–3.8	–2.6	–3.8	–0.7	–5.4	–1.8
External causes	–1.4	–2.3	–1.1	–2.3	–0.3	–2.0	–3.7	–1.9	–3.3	–2.0
15–19 years										
Natural causes	–4.1	–1.7	–3.2	–2.0	–4.1	–1.9	–6.4	–0.7	–7.0	–0.9
External causes	0.6	–4.4	0.1	–5.0	0.6	–3.0	–6.1	–2.9	–3.6	–3.5

Trends in leading causes of death, 1968–85

In 1964, Moriyama observed that the "future course of mortality" for children aged 1–4 years is "highly dependent upon what happens to the death rate for injuries from accidents and other violence, and the [then] rising mortality rates for malignant neoplasms and congenital malformations" (NCHS, 1964). Moriyama likewise believed that deaths from injuries and violence would also determine the future course of mortality for children aged 5–14 and for adolescents and young adults aged 15–24.

The years 1978 and 1979 separate the eighth and ninth revisions of the International Classification of Diseases (ICD). For the major causes of childhood death there was no break in comparability. However, there are comparability problems for some of the detailed injury categories and for pneumonia (NCHS, 1980).

The causes of death in the following discussion are based on the underlying cause of death. Trends since 1968 in the leading causes of childhood mortality are examined. With only one exception—pneumonia—the causes that claimed the most lives in 1968 were the same as in 1985. Whereas in 1968 pneumonia was the leading natural cause of death among young black children aged 1–4 and one of the three leading natural causes for white children aged 1–4, by 1985 the death rate for pneumonia had decreased substantially.

Cause-of-death rankings for children are based on the "List of 72 Selected Causes of Death" with one exception. Rather than rank the category "all other accidents and adverse effects" (Ninth revision ICD codes E800–E807, E826–E949), the two largest components of this category—in terms of number of childhood deaths—are ranked. They are drownings (E910) and fire and flames (E890–E899). For the 1983–85 period, these two causes accounted for half of the deaths at ages 1–19 in the "all other accidents" category. Therefore, when the text cites leading causes of childhood death, the causes are as follows:

Motor vehicle injuries
Fire and flames
Drownings
Homicide
Suicide
Malignant neoplasms
Congenital anomalies

External causes (ICD codes E800–E999)

Between 1968 and 1985 the external-cause death rate for children aged 1–4, 5–9, 10–14, and 15–19 years decreased by 34 percent, 40 percent, 25 percent, and 19 percent, respectively (table 2). Overall, the decline in mortality from external causes accounted for about one-third to one-half of the total decline in death rates for all children, with the highest proportions associated with teenage mortality.

Motor vehicle injuries

This section is based on data presented in figure 4 and table 3.

During the years 1968–85 the motor vehicle injury death rates for each of the four age groups declined. Between 1968 and 1973 motor vehicle injury mortality was virtually unchanged in all four age groups. Only among black teenagers was there any noticeable decline during these years. However, large declines have taken place since the late 1970's. Trends for 1–4- and 5–9-year-olds in the four race-sex groups have been downward, with the steepest recent declines (since 1979) averaging 7–8 percent per year among 1–4-year-old white females and among 5–9-year-old black males. In these two age groups, death rates for black males have been and continue to be higher than for each of the other race-sex groups. Among the 5–9-year-olds the rates for black and white males are converging (as a result of greater declines for black males). Rates for white females are the lowest, with the female race difference at ages 5–9 also narrowing.

At ages 10–14 race and sex differences have become larger and there have been reversals in the rankings. For most of the 1968–85 period, death rates for white males have been the highest and they have declined relatively slowly. Death rates for white males have been about twice as high as rates for white females. From 1968 through 1981 the motor vehicle death rate for white males fluctuated between 11 and 14 per 100,000. Since that time the rate has averaged around 10. Among black males the rate was halved between 1968 and 1982 and since then the rate has increased. Death rates for white females have been higher than for black females and there has been almost no change

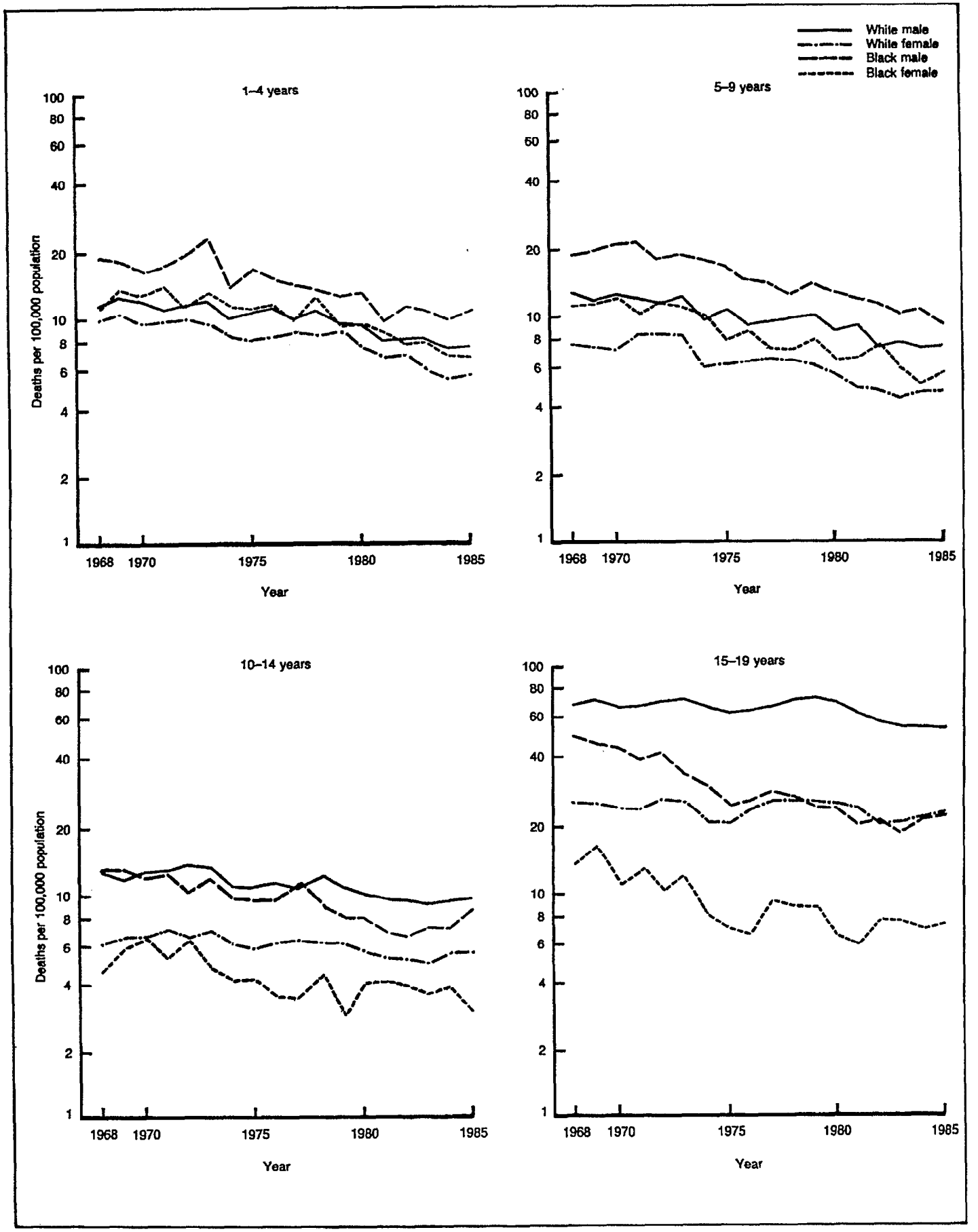


Figure 4. Death rates for motor vehicle injuries among children 1–19 years of age, by age, race, and sex: United States, 1968–85

in the rate for white females since 1968. The rate for black females fell considerably during the 1970's. Since 1980 it has fluctuated at 3–4 per 100,000 population, the lowest of any age-race-sex group.

At ages 15–19 motor vehicle death rates have been and continue to be highest for white males. Between 1968 and 1980 the rates for white males were unchanged, but during the subsequent 5 years, the rates declined an average of 5 percent per year. Rates for white females have shown little change since 1968. On the other hand, rates for black males were halved to 25 per 100,000 population from 1968 to 1975, with the decline since then relatively slow. Since 1981 black males and white females have had similar rates. Black females have consistently had the lowest rates, dropping quickly as did the black male death rates and then tapering off for the most recent few years.

Fire and flames

This section is based on data presented in figure 5 and table 4.

Fires have claimed the lives of more young black children than any other cause of death. In 1968 and in 1985, fires were the first and second leading causes of death among black children ages 1–4 and 5–9, respectively. From 1968 to the early 1980's the rates of decline in fire death rates for black males and females have been similar, with death rates for black males slightly higher than rates for females ages 1–4. Since the early 1980's, there has been a more rapid decline among males than females. From 1981 to 1985 the rate for black males ages 1–4 declined from 17 to 11 ages per 100,000. Death rates for white children ages 1–4 have been virtually unchanged since 1968 and continue to be considerably lower than those for black children; black children have been three to four times as likely as white children to die as a result of a fire. At ages 5–9 the death rates for all four race-sex groups declined very slowly since 1968.

At ages 10–14 and 15–19 fires are the cause of relatively few deaths. Between 1968 and 1985 the age-specific death rates from fires were very low and remained unchanged, fluctuating between 0.9 and 1.1 for ages 10–14 and 0.7 and 1.0 for ages 15–19 (data not shown).

Drowning

This section is based on data presented in figure 6 and table 5.

Death rates from drowning have declined more rapidly since the late 1970's than during the earlier years. Drowning has been the second leading external cause of death among white males aged 1–4 since 1968.

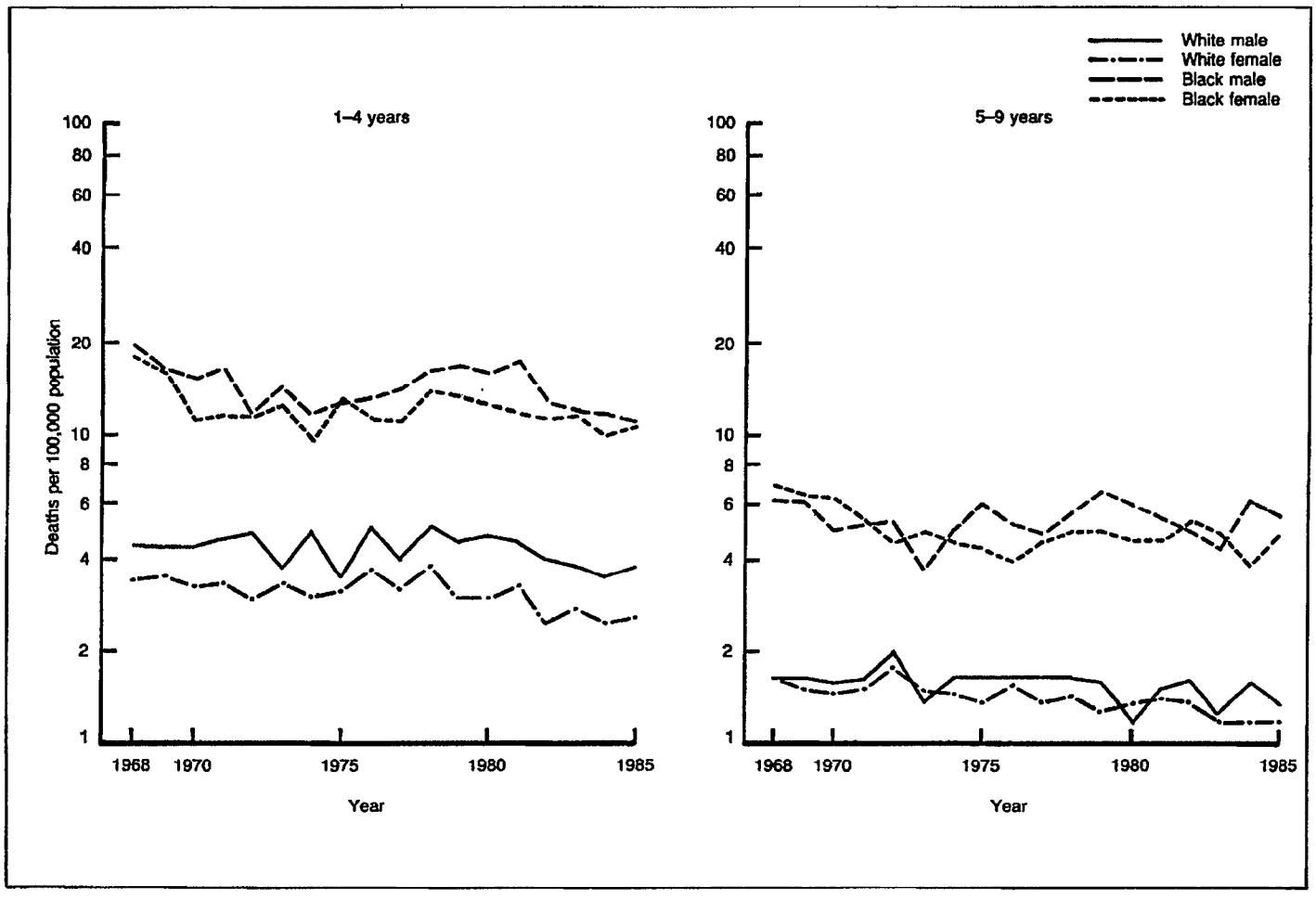


Figure 5. Death rates due to fires among children 1–9 years of age, by age, race, and sex: United States, 1968–85

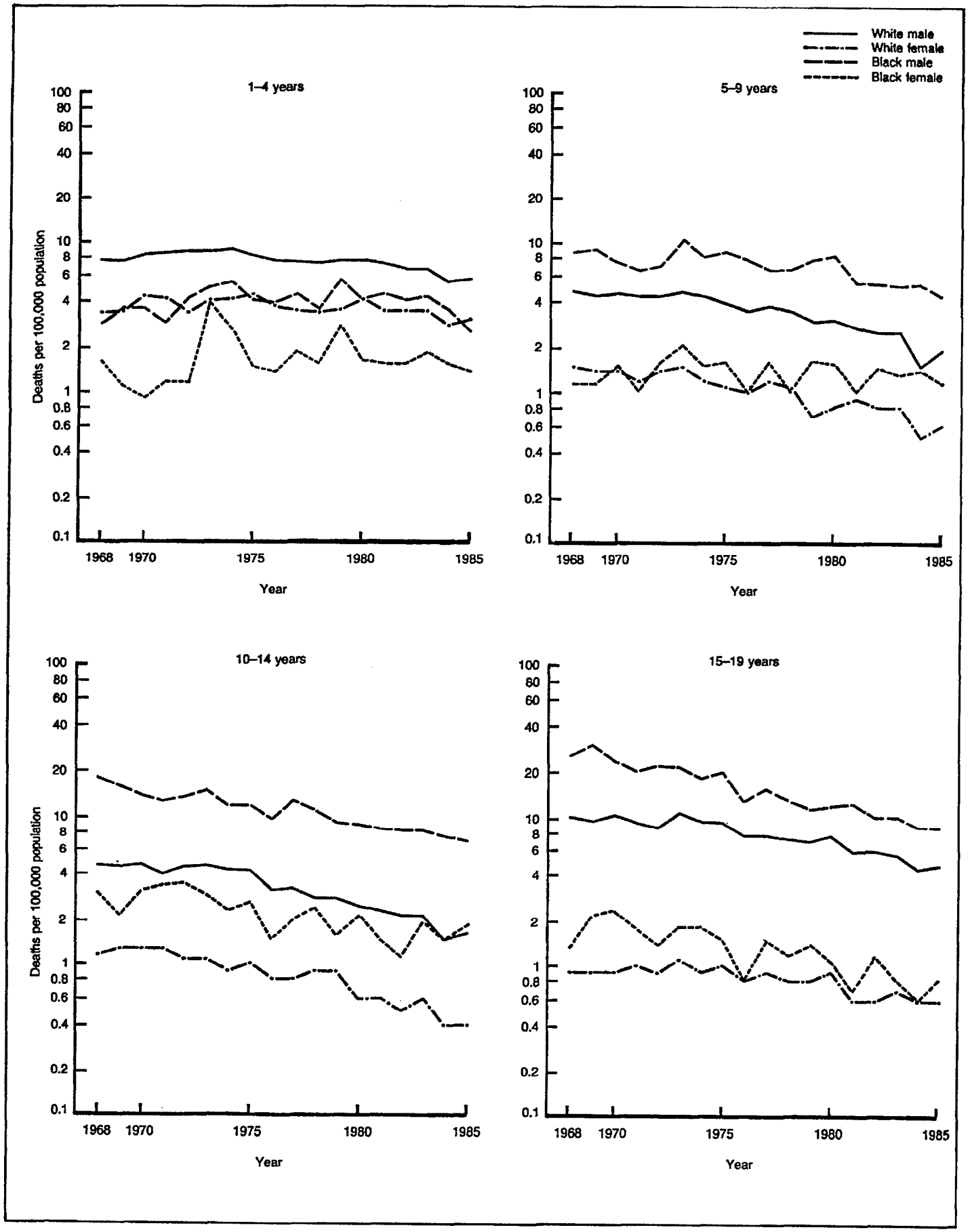


Figure 6. Death rates for drowning among children 1–19 years of age, by age, race, and sex: United States, 1968–85

At ages 1–4 the drowning death rate has continuously been highest among white males, about twice as high as the rate for black males (the group with the next highest rate in that age group). Rates for black males peaked in the late 1970's but declined to the same level in 1985 as in 1968 while rates for white males peaked in the early 1970's and have declined since then. The lowest rates for drowning among 1–4-year-olds throughout 1968–85 were for black females. After fluctuating for a number of years, the death rate has, since 1980, been relatively constant at less than 2 per 100,000 population.

The mortality sex ratio has averaged about 2.0 for white and black children for the 1968–85 period. There is some evidence of a decline during the most recent few years as a result of the rate for males falling faster than the rate for females.

At ages 5–9 a different race-sex pattern in the trends emerges. Overall, the rate for black males had declined, albeit not continually. From 1968 to 1980 the rate fluctuated generally between 7 and 8 per 100,000 population. In 1981, the rate dropped to 5 and has been falling slowly since. The decline for white males has been most pronounced since the late 1970's. Although death rates for white and black females ages 5–9 were similar during the late 1960's, death rates for black females fluctuated for almost the entire period while death rates for white females have slowly declined.

From 1968 to 1983 drowning was the leading cause of death for black males aged 10–14. Even though death rates have decreased at an average of 4 percent per year since 1968, they are still at least 3–4 times higher than the death rate for black females and white males. From 1968 to 1983 drowning was the third leading cause of death among white males 10–14 years old. From 1968 to 1973 the rate was relatively constant (4.5–4.7), but by 1985 the death rate had decreased to 1.7. Death rates for white males were 3 to 4 times higher than those for white females from 1968 through 1985.

Although drowning is not now a leading cause of death among teenagers, sex differences in drowning mortality remain extremely large; since 1970, death rates for males have been about 8 to 10 times higher than for females, with differences larger for black for than white teenagers. Death rates have decreased for both white and black males. During the late 1960's through the mid-1970's average annual declines for white males were relatively slow compared with those for black males (3 versus 7 percent). As a result the mortality race ratio narrowed somewhat. From the mid-1970's to 1985 the annual rate of decline increased for white males, while it continued for black males at about its earlier pace.

Homicide

This section is based on death rates for homicide presented in table 6 and in figure 7.

Death rates attributed to homicide increased between 1968 and 1985, with most of the increase occurring by the early 1980's. Homicide has been and is the leading cause of death for black teenagers, both male and female. Since 1978 it has been the third leading cause of death for white male teenagers. Among black males aged 10–14 homicide has continued to rank third or fourth.

For young black children the homicide death rates nearly doubled between the late 1960's and late 1970's and have fluctuated since then. Race differences in this age group have been and continue to be very large; the rate for black children ages 1–4 remains about three to five times the rate for white children during the entire period. The death rate for white children increased from 1 to 2 per 100,000 population from 1968-73 and has remained around that level since then. At ages 5–9 race differences have remained nearly as large as among the younger children although the rates are much lower.

At ages 10–14 homicide mortality has increased for white children. The rates, however, remain relatively low—less than 1.5 per 100,000 population. Since 1968, race differences among males have narrowed considerably as a result of the increases since 1968 in death rates for white males coupled with relatively little change among black males.

For black male teenagers the homicide rate decreased from 65 to 39 per 100,000 population from 1970 to 1978 at an average rate of 6.5 percent per year. From 1978 to 1979 the rate jumped back up to 47, followed by annual declines from 1980 through 1984, but back in 1985 to the 1978 level. It is too soon to know if the 18-percent increase in the death rate from 1984 to 1985 is the beginning of a new trend or merely a 1-year aberration in a continuing decline.

Homicide became the leading cause of death for black females 15–19 years old in 1971. Since then, the rates have been three to five times higher than the rates for white females. From 1968 to 1975 the death rate for black females increased by 50 percent from 10 to 15 per 100,000 population. After falling back to earlier levels, the rate has been stable, mostly between 10 and 11.

For white males the picture has been different. In 1968 homicide was the fifth leading cause of death at a rate of 5.0. By 1980 the homicide rate had risen to 11 deaths per 100,000 population, becoming the third leading cause (bypassing malignant neoplasms and drowning). During the next 5 years the rate dropped 36 percent to 7 (still the third leading cause of death). Sex differences have not been as large among white as among black teenagers; however, the rates are still two to three times higher for white males than females. The trend of homicide mortality for white females has been similar to the trend for males.

Suicide

Death rates for suicide are presented in figure 8 and in table 7.

Suicide rates have been and continue to be much higher for white than for black teenagers, and for males than for females. Since 1968 teenage suicide mortality has been increasing for three of the four race-sex groups. Only among black females (for whom the rates are lowest) has there been any recent evidence of a decline. The highest

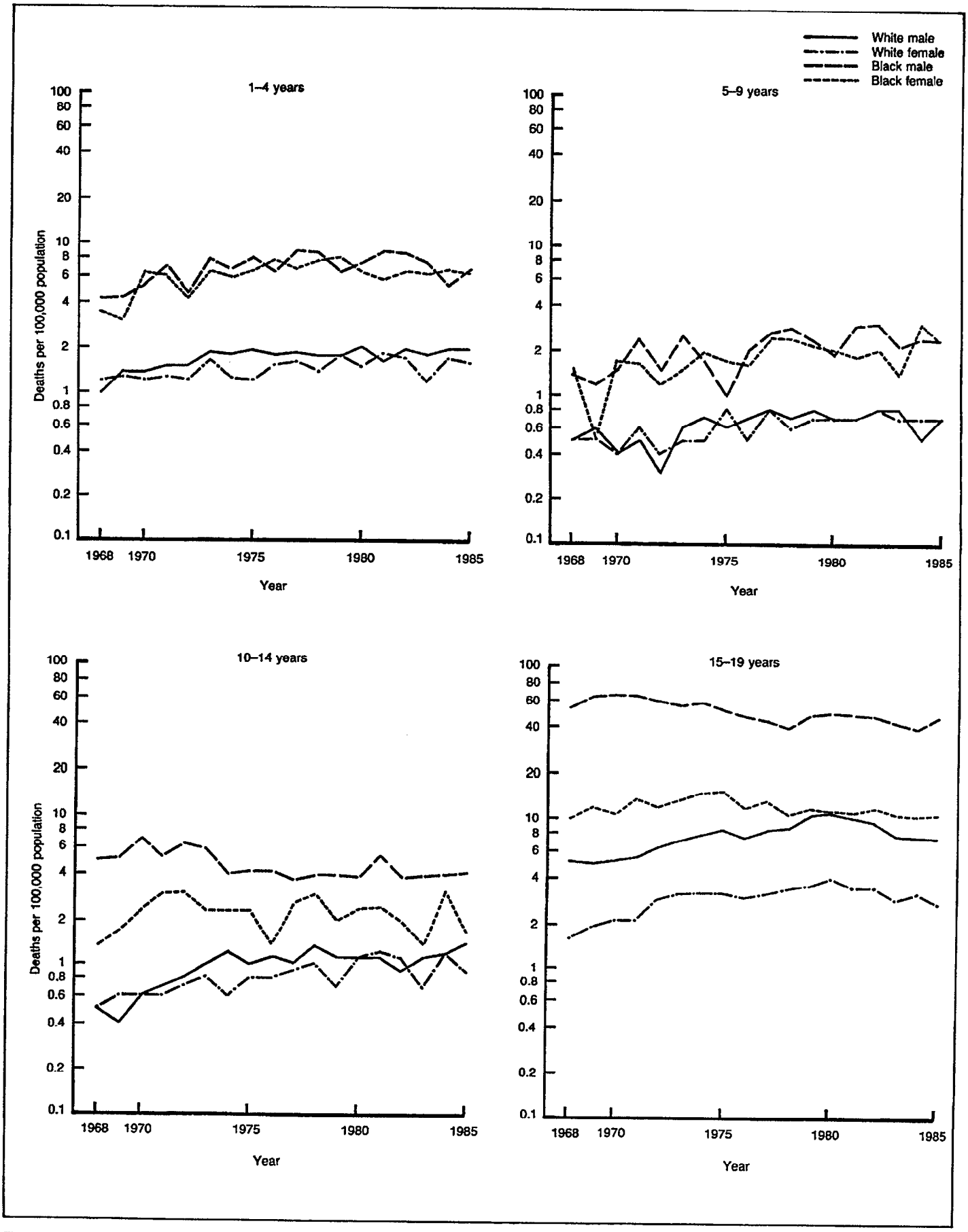


Figure 7. Death rates for homicide among children 1–19 years of age, by age, race, and sex: United States, 1968–85

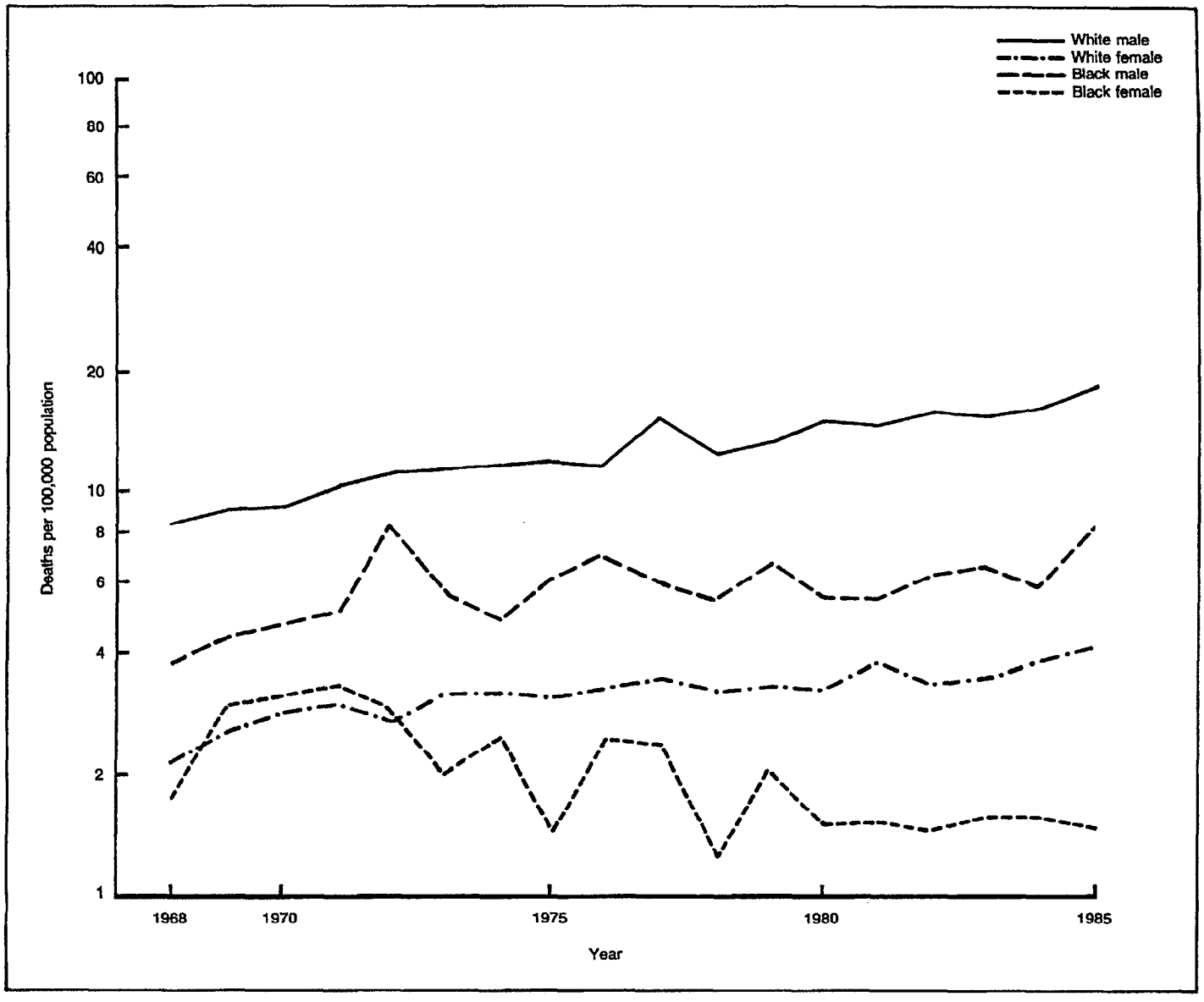


Figure 8. Death rates for suicide among teenagers 15–19 years of age, by race and sex: United States, 1968–85

rates continue to be for white males. Between 1968 and 1977 suicide increased by an average of nearly 6 percent per year to 15 per 100,000 population. The rate remained relatively stable for another 6 years but has risen in the most recent years (1984 and 1985).

Suicide mortality for black males remains half as high as for white males. Since 1968 the rate has doubled from 4 to 8 per 100,000 population. Similarly, white female suicide is half as high as for black males and its rate also has doubled, from 2 to 4.

Although suicide rates are relatively low for those aged 10–14, they have nonetheless increased since 1968, with the highest rates among white males. From 1979 to 1985 the suicide rate for white males doubled to 2.5 per 100,000 population.

Natural causes

Since 1968, the leading natural causes of childhood death have been malignant neoplasms and congenital anomalies. However, in 1985 these two causes accounted for only 37 percent of all childhood deaths from natural causes. The remaining deaths are spread across a wide variety of diseases, many of which include heart disease.

In general, declines in natural-cause death rates slowed down during the 1980's relative to the late 1960's and the 1970's (table 8). This is the opposite of the trends in external causes of death (table 2).

Malignant neoplasms and leukemia

Data for malignant neoplasms are shown in figure 9 and table 9. Table 10 contains data for leukemia.

Malignant neoplasms were the second leading cause of death (after motor vehicle injuries) and the leading natural cause of death among 5–9- and 10–14-year-olds in 1968 as well as in 1985. Since 1968 cancer death rates have been relatively similar across the four age groups. Furthermore, cancer mortality has declined in all age-race-sex groups.

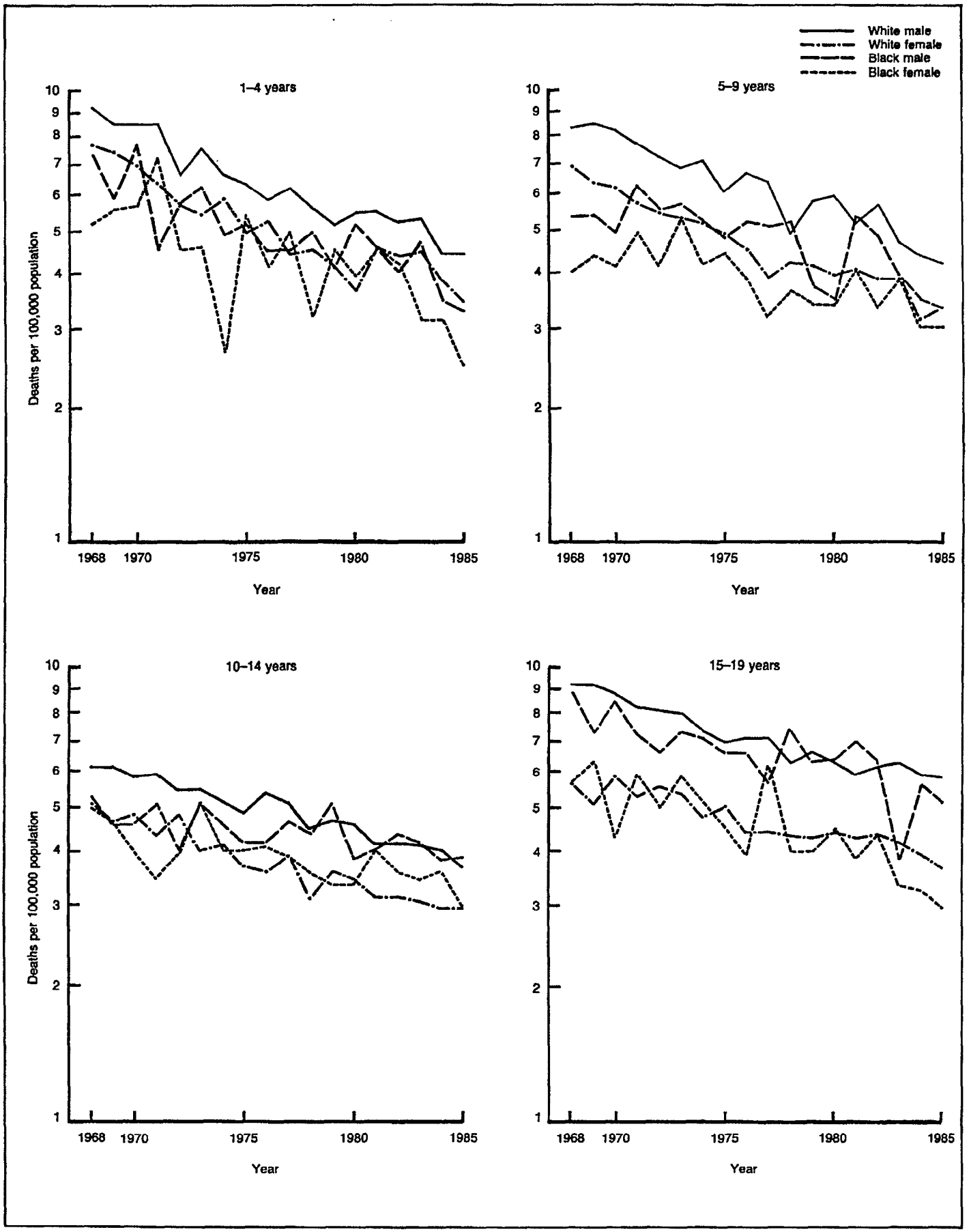


Figure 9. Death rates for malignant neoplasms among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Among children aged 1–4 malignant neoplasms were the second leading natural cause of death (after congenital anomalies). Between 1968 and 1976 the death rate declined by 35 percent to 5 per 100,000 population. It remained around that level for another 7 years before declining again to a rate of 4. Death rates for white males have continuously been the highest in this age group. The death rate fell from 9 to 4 per 100,000 population from 1968 to 1985 with annual rates of decline faster during the earlier than the later part of the period. Similar trends were observed for white females. Death rates for young black children have also declined, but the pace, especially for females, has been much more variable.

At ages 5–9 and 10–14, death rates have also generally been higher for white males than for the other groups. Declines were also faster and smoother for white than for black children. Race and sex differences among the 5–9-year-olds were smaller in 1985 than in 1968 while remaining fairly constant at ages 10–14. At ages 15–19 sex differences were larger than race differences and had been so since 1968. Death rates for males were about 1.5–2 times higher than for females.

Leukemia is the leading cause of childhood cancer mortality. Similar to malignant neoplasms, death rates have declined across all age-race-sex groups. For white children ages 1–4 and 5–9, large declines occurred by the early 1970's; the decline continued so that by the mid-1980's the leukemia death rate was about one-third of its level in 1968. For black children ages 1–4 and 5–9, the rates were lower to start with and the decline was slower.

Congenital anomalies

See figure 10 and table 11 for death rates for congenital anomalies.

Congenital anomalies were the leading natural cause of death among children ages 1–4 in 1985 as well as in 1968, accounting for 11 percent of deaths in both years. About half of the deaths result from congenital anomalies of the heart. From the late 1960's to the mid-to-late 1970's, the congenital anomalies death rates for 1–4-year-olds declined slowly, at less than 2 percent per year. In general, rates for the four race-sex groups have been fairly similar, with sex and race mortality ratios among the lowest for the leading causes of death. The rate of decline increased during the latter part of the 1970's and into the 1980's, 4–5 percent per year for white children and 7–8 percent per year for black children. The death rate for children ages 5–9 has been continuously lower than the rate for younger children. Larger declines occurred during the late 1960's - mid 1970's than during the more recent years.

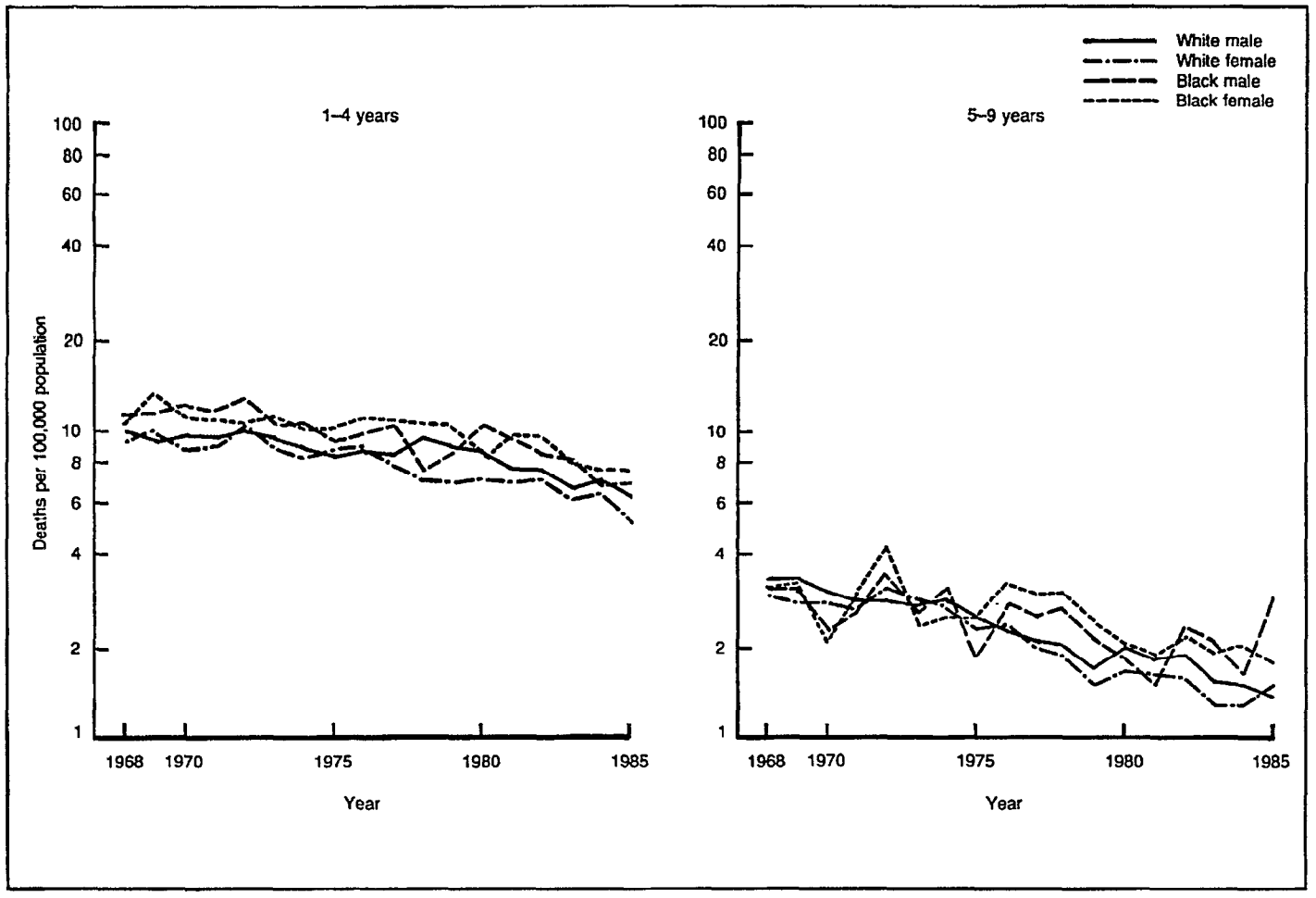


Figure 10. Death rates for congenital anomalies among children 1–9 years of age, by age, race, and sex: United States, 1968–85

Current status, 1983–85

The following tables are the basis of the information for 1983–85 presented in this section:

- Table M sets forth the death rates, and table N, the mortality sex and race ratios, for the leading causes of death in each of the four age groups.
- Table O shows death rates, sex ratios, and race ratios for type of motor vehicle injury, among children ages 1–9 years.
- Table P presents the percent of excess deaths attributable to specific causes of death in each of the four age groups.

Table M. Death rates for leading causes of death among children 1–19 years of age, by race, sex, and age: United States, 1983–85

Age and cause of death	*Total*	*Male*	*Female*	*White*	*Black*	*White male*	*White female*	*Black male*	*Black female*
				Deaths per 100,000 population					
1–4 years									
All causes	53.1	59.4	46.4	47.9	81.4	53.8	41.7	90.3	72.2
External causes	23.4	27.6	18.9	20.8	37.3	24.9	16.6	42.7	31.8
Motor vehicle injuries	7.2	8.3	6.0	6.8	8.9	7.8	5.7	10.5	7.2
Homicide	2.4	2.5	2.3	1.7	6.3	1.8	1.5	6.2	6.4
Drowning	4.2	5.5	2.9	4.6	2.6	5.9	3.1	3.5	1.6
Fire and flames	4.4	4.9	3.8	3.1	11.4	3.6	2.6	11.9	10.8
Natural causes	29.7	31.8	27.5	27.1	44.0	28.9	25.2	47.6	40.4
Malignant neoplasms	4.1	4.6	3.7	4.3	3.4	4.7	3.9	3.8	2.9
Congenital anomalies	6.4	6.6	6.1	6.3	7.0	6.5	6.1	7.2	6.7
5–9 years									
All causes	25.5	29.5	21.3	23.6	35.6	27.5	19.6	40.5	30.5
External causes	13.1	16.4	9.6	11.6	20.4	14.7	8.4	25.0	15.6
Motor vehicle injuries	6.3	7.8	4.7	6.0	7.7	7.4	4.5	9.8	5.6
Homicide	0.9	0.9	1.0	0.7	2.3	0.7	0.7	2.3	2.3
Drowning	1.6	2.4	0.8	1.3	3.1	1.9	0.7	4.8	1.3
Fire and flames	1.8	1.9	1.6	1.2	4.8	1.4	1.1	5.3	4.4
Natural causes	12.4	13.1	11.7	12.0	15.2	12.7	11.2	15.5	14.9
Malignant neoplasms	3.8	4.2	3.3	3.9	3.4	4.4	3.4	3.6	3.3
Congenital anomalies	1.5	1.6	1.5	1.4	2.0	1.5	1.4	2.2	1.9
10–14 years									
All causes	27.7	34.5	20.7	26.8	34.1	33.4	19.8	42.5	25.5
External causes	16.1	22.1	9.8	15.7	18.9	21.5	9.6	26.7	10.9
Motor vehicle injuries	7.1	9.0	5.0	7.5	5.5	9.4	5.4	7.7	3.2
Homicide	1.4	1.7	1.1	1.1	3.1	1.2	0.9	4.0	2.1
Suicide	1.3	1.9	0.7	1.4	0.8	2.1	0.7	1.1	0.6
Drowning	1.7	2.7	0.7	1.1	4.7	1.8	0.5	7.6	1.7
Fire and flames	0.9	0.9	0.8	0.7	1.9	0.8	0.6	1.8	2.0
Natural causes	11.7	12.4	10.9	11.1	15.3	11.9	10.2	15.9	14.7
Malignant neoplasms	3.5	3.9	3.1	3.5	3.7	4.0	3.0	4.0	3.4
Congenital anomalies	1.3	1.3	1.2	1.3	1.3	1.3	1.2	1.4	1.3
15–19 years									
All causes	81.3	115.0	46.3	81.7	80.9	115.5	46.6	116.0	45.6
External causes	63.1	94.1	31.0	64.6	56.4	95.5	32.5	89.3	23.2
Motor vehicle injuries	33.9	47.8	19.5	37.8	13.9	53.1	21.9	20.7	7.2
Homicide	8.5	12.8	4.1	5.2	26.6	7.5	2.9	42.8	10.3
Suicide	9.2	14.7	3.5	10.0	4.3	16.0	3.8	6.9	1.7
Drowning	3.2	5.6	0.6	2.8	5.0	4.9	0.6	9.3	0.7
Fire and flames	0.8	1.0	0.6	0.7	1.2	0.9	0.5	1.3	1.2
Natural causes	18.2	20.9	15.3	17.1	24.5	20.1	14.1	26.6	22.5
Malignant neoplasms	4.8	5.8	3.8	5.0	4.0	6.0	3.9	4.8	3.3
Congenital anomalies	1.3	1.5	1.1	1.3	1.6	1.5	1.1	2.0	1.1

Table N. Sex and race mortality ratios for leading causes of death among children 1–19 years of age, by age: United States, 1983–85

Age and cause of death	Sex ratio[1]	White sex ratio	Black sex ratio	Race ratio[2]	Male race ratio	Female race ratio
1–4 years						
All causes	1.28	1.29	1.25	1.70	1.66	1.73
External causes	1.46	1.50	1.34	1.79	1.71	1.92
Motor vehicle injuries	1.39	1.37	1.45	1.31	1.35	1.27
Homicide	1.09	1.20	0.97	3.78	3.42	4.24
Drowning	1.90	1.90	2.14	0.56	0.59	0.52
Fire and flames	1.28	1.39	1.11	3.63	3.29	4.13
Natural causes	1.16	1.15	1.18	1.62	1.64	1.60
Malignant neoplasms	1.24	1.20	1.33	0.78	0.82	0.74
Congenital anomalies	1.07	1.07	1.06	1.11	1.11	1.11
5–9 years						
All causes	1.39	1.40	1.33	1.51	1.48	1.56
External causes	1.71	1.76	1.60	1.75	1.70	1.86
Motor vehicle injuries	1.65	1.62	1.75	1.29	1.33	1.23
Homicide	0.97	0.96	1.00	3.37	3.43	3.30
Drowning	3.06	2.95	3.69	2.35	2.49	1.99
Fire and flames	1.21	1.23	1.21	3.90	3.88	3.95
Natural causes	1.12	1.13	1.04	1.27	1.22	1.33
Malignant neoplasms	1.27	1.30	1.11	0.88	0.82	0.96
Congenital anomalies	1.11	1.10	1.17	1.40	1.44	1.36
10–14 years						
All causes	1.67	1.68	1.67	1.27	1.27	1.29
External causes	2.26	2.24	2.45	1.20	1.24	1.13
Motor vehicle injuries	1.80	1.75	2.42	0.73	0.81	0.59
Homicide	1.49	1.33	1.92	2.78	3.21	2.22
Suicide	2.79	3.12	1.68	0.60	0.50	0.94
Drowning	3.98	3.81	4.42	4.07	4.22	3.64
Fire and flames	1.07	1.18	0.91	2.70	2.39	3.09
Natural causes	1.14	1.16	1.08	1.38	1.34	1.43
Malignant neoplasms	1.29	1.31	1.18	1.05	1.01	1.11
Congenital anomalies	1.04	1.06	1.01	1.06	1.04	1.09
15–19 years						
All causes	2.48	2.48	2.54	0.99	1.00	0.98
External causes	3.04	2.94	3.85	0.87	0.94	0.71
Motor vehicle injuries	2.45	2.42	2.88	0.37	0.39	0.33
Homicide	3.12	2.55	4.15	5.08	5.74	3.53
Suicide	4.21	4.23	4.13	0.43	0.43	0.44
Drowning	8.83	7.72	13.05	1.78	1.89	1.12
Fire and flames	1.66	1.96	1.05	1.77	1.38	2.58
Natural causes	1.36	1.42	1.19	1.43	1.33	1.59
Malignant neoplasms	1.53	1.54	1.49	0.81	0.81	0.83
Congenital anomalies	1.38	1.31	1.86	1.22	1.40	0.99

[1]Ratio of male death rate to female death rate.
[2]Ratio of black death rate to white death rate.

Table O. Death rates and mortality ratios for motor vehicle injuries among children 1–9 years of age, by age, person injured, race, and sex: United States, 1983–85

Age and person injured	Total	White		Black		Sex ratio[1]		Race ratio[2]	
		Male	Female	Male	Female	White	Black	Male	Female
		Deaths per 100,000 population							
1–4 years									
All motor vehicle injuries	7.2	7.8	5.7	10.5	7.2	1.4	1.5	1.3	1.3
Pedestrian or pedal cyclist[3]	3.9	4.3	2.7	7.0	4.3	1.6	1.6	1.6	1.6
Passenger[4]	2.5	2.7	2.4	2.6	2.1	1.1	1.2	1.0	0.9
5–9 years									
All motor vehicle injuries	6.3	7.4	4.5	9.8	5.6	1.6	1.8	1.3	1.2
Pedestrian or pedal cyclist[3]	3.7	4.4	2.1	7.6	4.1	2.1	1.9	1.7	2.0
Passenger[4]	1.7	1.9	1.8	1.3	1.2	1.1	1.1	0.7	0.7

[1]Ratio of male death rate to female death rate.
[2]Ratio of black death rate to white death rate.
[3]Based on the 4th digit ICD code .6 and .7 for use with E810–E825.
[4]Based on the 4th digit ICD code .1 for use with E810–E825.

Table P. Percent of excess deaths attributable to specific causes of death among children 1–19 years of age, by cause of death, age, race, and sex: United States, 1983–85

Cause of death	Male excess		Black excess		Male excess		Black excess	
	White	Black	Male	Female	White	Black	Male	Female
	Percent							
	1–4 years				5–9 years			
External causes	68.6	60.2	48.8	49.8	79.7	94.0	79.2	66.1
Motor vehicle injuries	17.4	18.2	7.4	4.9	36.7	42.0	18.5	10.1
Pedestrian or pedal cyclist	13.2	14.9	7.4	5.2	29.1	35.0	24.6	18.3
Passenger	2.5	2.8	(1)	(1)	1.3	1.0	(1)	(1)
Fire and flames	8.3	6.1	22.7	26.9	3.8	9.0	30.0	30.3
Drowning	23.1	10.5	–	–	15.2	35.0	22.3	5.5
Homicide	2.5	(1)	12.1	16.1	–	–	12.3	14.7
Natural causes	30.6	39.8	51.2	49.8	19.0	6.0	21.5	33.9
Malignant neoplasms	6.6	5.0	(1)	(1)	12.7	3.0	(1)	(1)
Congenital anomalies	3.3	2.8	1.9	2.0	1.3	3.0	5.4	4.6
Heart disease	0.8	1.1	7.1	8.2	(1)	2.0	4.6	2.8
	10–14 years				15–19 years[2]			
External causes	87.5	92.9	57.1	22.8	91.4	93.9	...	...
Motor vehicle injuries	29.4	26.5	(1)	(1)	45.3	19.2	...	...
Pedestrian or pedal cyclist	14.7	20.0	8.8	(1)	5.4	4.0	...	...
Passenger	–	3.5	(1)	(1)	4.6	3.7	...	...
Driver	7.4	*	*	*	24.7	8.1	...	
Drowning	9.6	34.7	63.7	21.1	6.2	12.2	...	...
Homicide	2.2	11.2	30.8	21.1	6.7	46.2	...	...
Suicide	10.3	2.9	(1)	(1)	17.7	7.4	...	...
Natural causes	12.5	7.1	44.0	78.9	8.7	5.8	...	...
Malignant neoplasms	7.4	3.5	–	7.0	3.0	2.1	...	...
Heart disease	–	–	8.8	14.0	1.2	3.1	...	...

[1]Rates for females or for white children were higher than for males or black children.
[2]Because the total death rates for white and black males and for white and black females are the same, the calculation of excess black mortality is not applicable.

NOTES: Excess was calculated as the difference in the sex or race cause-specific death rates as a percent of the corresponding difference in the all-causes sex- or race-specific death rates. Percents for external and natural causes may not add to 100.0 because of rounding.

For an explanation of the calculation of ratios and excess mortality, see "Data sources and notes."

Ages 1–4 years

During 1983 through 1985, the death rate for children aged 1–4 years was 53.1 per 100,000 population, twice as high as the death rates at ages 5–9 and 10–14 years but only two-thirds of the death rate for teenagers 15–19 years. The mortality sex ratio at ages 1–4 was nearly 1.3, regardless of race, and the mortality race ratio was 1.7, also regardless of sex.

The mortality sex ratio was higher for external than for natural causes (1.5 versus 1.2) and highest of all for deaths due to drowning (1.9). The mortality race ratio was somewhat larger for external than for natural causes (1.8 versus 1.6). The largest race ratios were for homicides and for fires (3.8 and 3.6). However, for congenital anomalies, the leading natural cause of death in each race-sex group, race and sex differences were minimal.

The leading cause of death for 1–4-year-old white males was motor vehicle injuries. For white females, the death rate from congenital anomalies was slightly higher than that from motor vehicle injuries (6.1 versus 5.7); and for black males and females mortality from fires was also higher than that from motor vehicle injuries (11.9 versus 10.5 for males and 10.8 versus 7.2 for females).

One-half (54 percent) of all motor vehicle injury fatalities among children ages 1–4 occurred as a result of their being struck and killed by a motor vehicle while they were pedestrians or pedal cyclists. Sex and race ratios for motor vehicle injury death rates associated with pedestrians were considerably greater than for death rates associated with passengers. The sex ratio for pedestrian fatalities was 1.6 for white and black 1–4-year-olds compared with 1.1 to 1.2 for passenger fatalities. Similarly the race ratio for pedestrian fatalities was 1.6 compared with 0.9 to 1.0 for passenger fatalities.

Drowning is the only external cause of death in this age group for which the death rates were higher for white than for black children. Death rates for drownings are highest, however, among white children at ages 1–2; by age 4 rates for white males and black males are similar.

For 1–4-year-olds, 60–70 percent of excess deaths among males were due to external causes. Motor vehicle fatalities accounted for about 18 percent of the excess male deaths for white and for black 1–4-year-olds (most of which is associated with pedestrian-related fatalities), and drowning accounted for 23 percent of excess male deaths among white 1–4-year-olds.

External causes accounted for close to half of the excess black deaths among males and females aged 1–4. Fires accounted for the greatest proportion of excess black

deaths for both sexes (23 percent for males and 27 percent for females). Homicide also accounted for a sizable proportion of excess black deaths (12 percent for males and 16 percent for females).

Ages 5–9 years

The 1983–85 death rate for 5–9-year-olds was 25.5 per 100,000 population—lowest of the four age groups. The mortality sex ratio was about 1.4, mostly a result of sex differences in external causes of death. Similarly, the mortality race ratio was about 1.5 with racial differences also much larger for external causes than for natural causes.

External causes accounted for 51 percent of all deaths, yielding a sex ratio of 1.7; sex differences were larger for white than for black children (1.8 versus 1.6). Similarly, the race ratio was 1.8, with larger differences among females than males (1.9 versus 1.7).

Motor vehicle injuries, responsible for 25 percent of all deaths of white children and 22 percent of black children, were the leading cause of death in all four race-sex groups. . Nearly three-fifths of the deaths from motor vehicle injuries were pedestrian related (that is, the child was killed as a result of being struck by a motor vehicle). Fires and drownings were also among the leading causes of death, with death rates from fire for black children four times higher than for white children, and drownings three times higher for boys than for girls.

Malignant neoplasms were the leading natural cause of death at a rate of 3.8 per 100,000 population, with little difference in the death rate across race and sex. Both sex and race ratios for natural causes of death are considerably lower than for external causes.

At ages 5–9 the excess mortality was much more concentrated among external causes of death than among natural causes. External causes accounted for 80 percent of excess male deaths among white and 94 percent among black 5–9-year-olds. About one-third of the male excess for white and black children was associated with pedestrian-related motor vehicle fatalities, with drowning accounting for another third of the excess male mortality among black children.

Excess black mortality was also substantial for external causes of death (79 and 66 percent among males and females, respectively). The largest portions of the excess were associated with pedestrian-related motor vehicle mortality and fires for males and females and with drowning for males.

Ages 10–14 years

The death rate for 1983–85 among children aged 10–14 years was 27.7. This total rate is very similar to the rate for 5–9-year-olds, but the race-, sex-, and cause-specific rates are different in the two age groups. The sex ratio for 10–14-year-olds was nearly 1.7 regardless of race, and the race ratio was close to 1.3 regardless of sex.

The mortality sex ratio for external causes of death, however, was 2.2 for white and 2.5 for black 10–14-year-olds. Motor vehicle injuries were the leading cause of death for three of the four race-sex groups; among black females the death rate for malignant neoplasms was slightly higher. Furthermore, the rate for drowning among black males was nearly as high as the motor vehicle death rate. The motor vehicle death rate was nearly twice as high for white males as for white females and more than twice as high for black males as for black females. Homicide also ranks relatively high as a cause of death among black 10–14-year-olds—4.0 for males and 2.1 for females, on nearly 10 percent of the deaths.

In this age group, external causes account for about 90 percent of the excess male mortality among white and black youths. Motor vehicle fatalities contribute sizable proportions of the excess for both white and black adolescents; drowning among black males is the leading cause of the male excess. Excess black mortality in this age group is largely associated with drowning and homicide.

Natural causes of death account for just over a third of the deaths among males and more than half of the female deaths. As in the younger age group, malignant neoplasms were the leading natural cause of death. Sex and race differences in mortality from malignant neoplasms were relatively small.

Ages 15–19 years

The 1983–85 death rate for teenagers 15–19 years was 81.3, nearly three times as high as that for 10–14-year-olds. The mortality sex ratio was 2.5 regardless of race. This is the only age group in which the all-causes death rates are the same for white and for black persons. However, there are substantial racial differences in the cause of death.

The leading causes of teenage death are motor vehicle injuries for white males and females and homicide for black males and females. Among white 15–19-year-olds, 46 percent of all deaths are from motor vehicle injuries; among black teenagers 33 percent of the deaths result from homicide and another 17 percent from motor vehicle injuries. Suicide ranks as the second leading cause of death among white teenagers and fourth among black teenagers.

Death rates for external causes were three times higher for males than for females. More than 90 percent of excess male mortality is from external causes of death. One-quarter of the excess among white teenage males is associated with driver-related motor vehicle fatalities and nearly another fifth with suicide. Close to half (46 percent) of the excess among black teenage males results from homicides and another fifth from motor vehicle fatalities.

Homicide was five times higher among black than white teenagers. Drowning was nearly twice as high among black as white males, but there was little racial difference among females. On the other hand, death rates were two to three times higher among white than black teenagers for motor vehicle injuries and suicide.

Death rates from natural causes were much lower than from external causes, and sex differences in natural causes of death were small relative to external causes. Malignant neoplasms were the leading natural cause of death for all four race-sex groups.

Geographic variation, 1981–85

Death rates for white children aged 1–4, 5–9, and 10–14 years were mapped for external and natural causes of death for the period 1981–85 (figures 11–13). (Rates for teenagers 15–19 years could not be mapped because the data are precoded for ages 15–24. See "Data sources and notes" for methods used.) In general, death rates are highest in the South and West and lowest in the Northeast.

At ages 1–4 most of the States that were ranked high for external causes of death were similarly ranked for natural causes (figure 11). The majority of these States were in the South and West. Further, New Hampshire, Connecticut, New Jersey, and Virginia were ranked in the lowest quartile for both natural and external causes. Table Q shows which States were ranked at the opposite ends of the distribution. The extreme cases include New York (lowest for external and highest for natural) and Wyoming, Nevada, and Vermont (lowest for natural and highest for external).

At ages 5–9 there is a large concentration of States in the northern and central areas of the United States with very low natural-cause mortality (figure 12). Many of these States had relatively high external-cause mortality. Minnesota and Pennsylvania are the only States with rates in the lowest quartile for natural and external causes; Arizona, Oklahoma, Arkansas, Mississippi, Georgia, and South Carolina were ranked in the highest quartile for both natural and external causes. Furthermore, there were a number of States that had death rates high for one set of causes and low for the other set (table Q). Virginia and Ohio were in the lowest quartile for external causes and in the highest for natural causes; Oregon, Montana, and South Dakota were in the lowest quartile for natural causes and the highest for external causes.

One noticeable difference between the maps for children aged 5–9 (figure 12) and those aged 10–14 (figure 13) is that three of the States with the lowest natural-cause mortality at ages 5–9—Montana, North Dakota, and South Dakota—were ranked in the highest quartile at ages 10–14. Five States—Idaho, New Mexico, Oklahoma, Tennessee, and Alabama—were ranked in the highest quartile for both sets of causes; Minnesota, Wisconsin, Virginia, Connecticut, and Rhode Island were ranked in the lowest for both external and natural causes. Again, see table Q for States with rates at the opposite ends of the distribution, notably South Dakota and Oregon.

Table Q. States ranked at different ends of the quartile distribution for external and for natural causes of death among white children 1–14 years of age, by age: Specific States, 1981–85

Age	*Q1 Ext and Q4 Nat*	*Q1 Ext and Q3 Nat*	*Q2 Ext and Q4 Nat*	*Q1 Nat and Q4 Ext*	*Q1 Nat and Q3 Ext*	*Q2 Nat and Q4 Ext*
1–4 years	New York	Ohio	Nebraska	Wyoming Nevada Vermont	Iowa Alabama Washington	
5–9 years	Virginia Ohio	New York Illinois	California	Oregon Montana South Dakota	Maine Louisiana Nebraska	Wyoming
10–14 years	South Dakota	New York New Jersey	California North Dakota	Oregon	Washington Colorado West Virginia	Arkansas Louisiana Mississippi North Carolina

NOTE: Ext = external causes of death; Nat = natural causes of death.
Values of Q1–Q4 are approximate measures of:
Q1 = percentiles 1–25
Q2 = percentiles 26–50
Q3 = percentiles 51–75
Q4 = percentiles 76–100

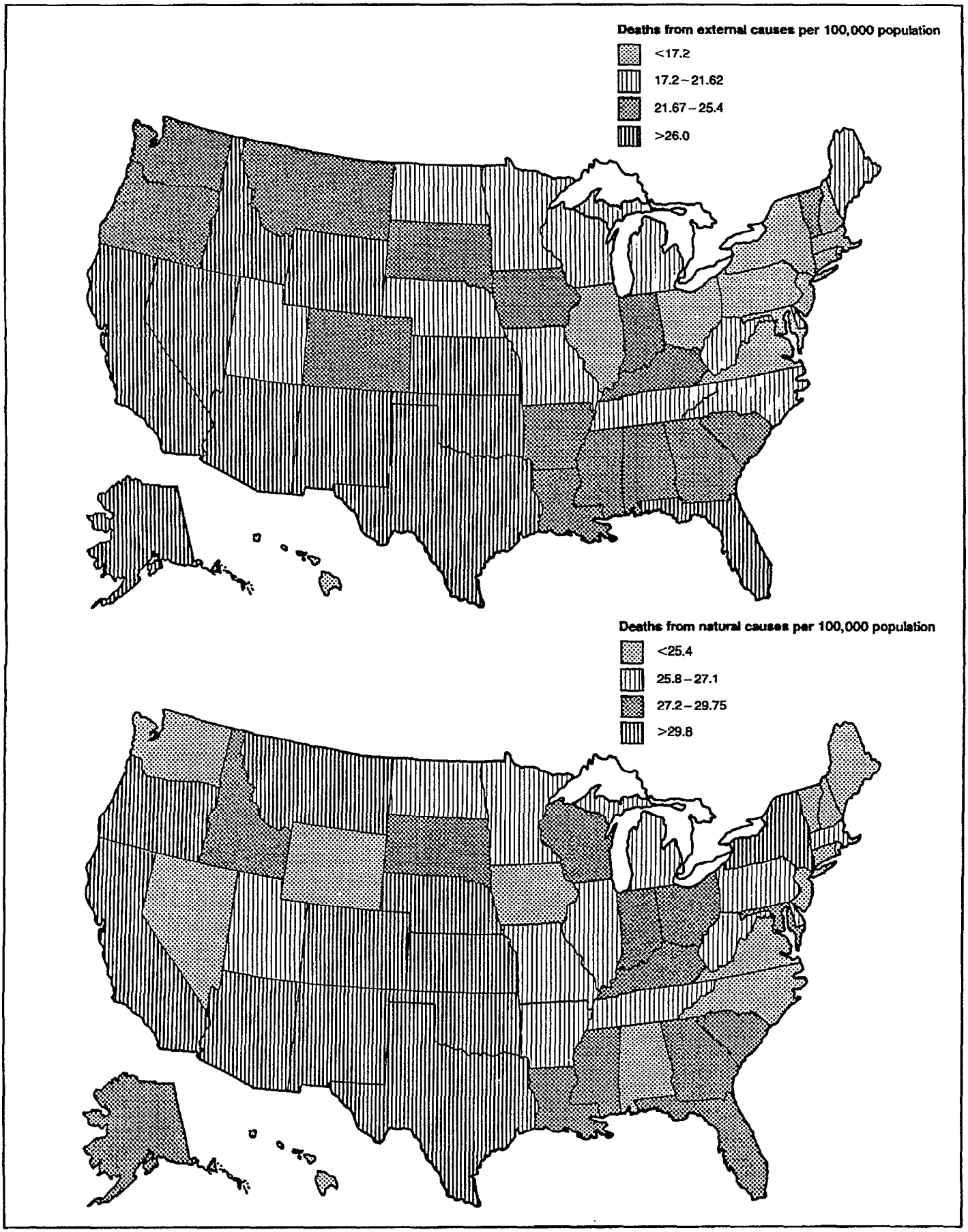


Figure 11. Death rates for external and natural causes of death among white children 1–4 years of age, by State: United States, 1981–85

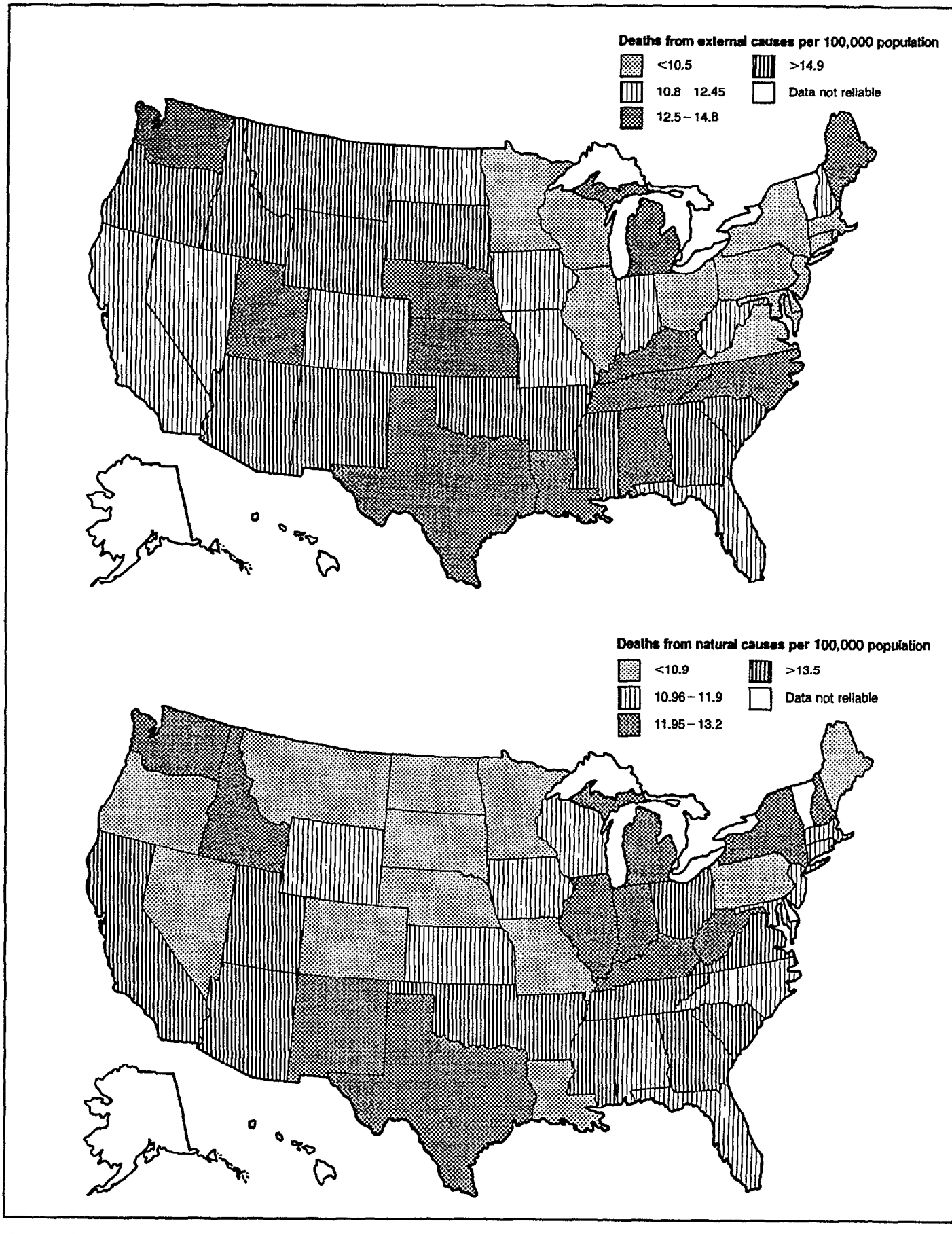


Figure 12. Death rates for external and natural causes of death among white children 5–9 years of age, by State: United States, 1981–85

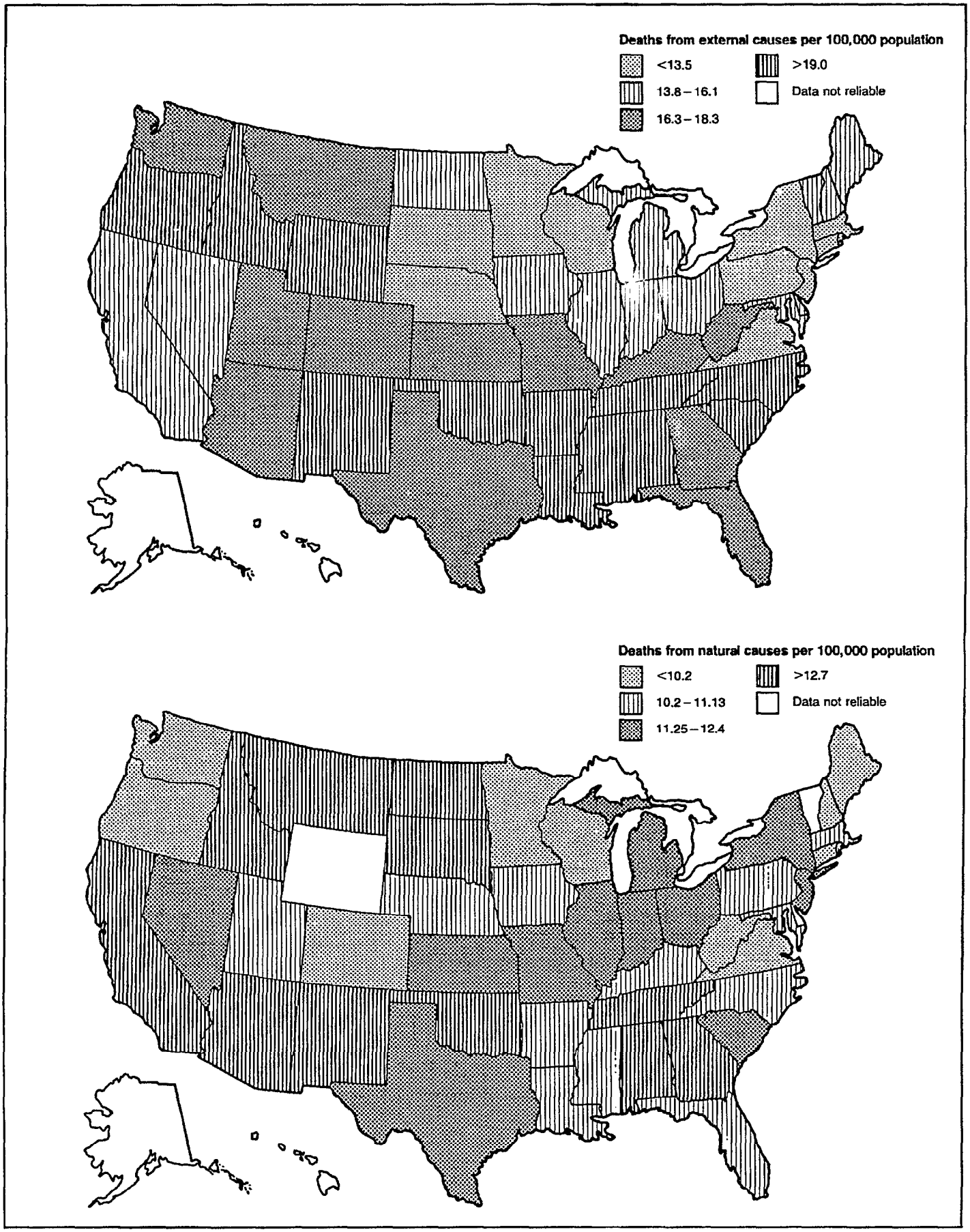


Figure 13. Death rates for external and natural causes of death among white children 10–14 years of age, by State: United States, 1981–85

Cross-national comparisons

In this section U.S. death rates for children ages 1–19 years are compared with rates in eight countries—the Federal Republic of Germany (GFR), France, The Netherlands, England and Wales, Sweden, Canada, Australia, and Japan.

In 1985, the all-cause, sex-specific death rates were higher in the United States than in nearly all of the other countries (table R). At ages 1–4 the U.S. death rate for males was nearly twice as high as in Sweden and 1.2 to 1.3 times higher than in the GFR, France, The Netherlands, England and Wales, and Canada. Death rates in Japan and Australia were similar to those in the United States. Among females aged 1–4, the U.S. rate was 1.6 times higher than in Sweden and 1.2 times higher than in The Netherlands and Canada. Death rates for females in the remaining countries differed from the U.S. rate by less than 10 percent.

At ages 5–9 the U.S. death rate for males was 1.3 to 1.4 times higher than in The Netherlands, England and Wales, and Sweden. For females the U.S. rate was twice the Swedish rate, 1.6 times the rate in The Netherlands, and 1.4 times as high as in Japan. Death rates in Australia (for males) and in France (for males and females) were similar to the U.S. rates.

U.S. death rates at ages 10–14 were also disproportionately high: For males, twice as high as in Sweden, 1.8 times as high as in Japan, and 1.5–1.6 times as high as in the GFR and The Netherlands; and for females, 1.5–1.6 times as high as in The Netherlands and Japan, and 1.3–1.4 times as high as in Australia and Sweden. Death rates in Canada (for males and females) were most similar to the U.S. rates.

Teenage mortality was considerably higher in the United States, with differences of 1.5 to 2.0 among males and females in Japan, England and Wales, Sweden, and The Netherlands. Death rates in Canada and Australia were most similar to those in the United States (table R).

Injuries

Injuries are a leading cause of childhood death in most industrialized countries of the world as well as the United States. The causes of fatal injuries in European countries and other developed nations were similar to those in the United States—motor vehicle injuries and drownings (Taket, 1986). However, injury death rates were higher in the United States than in most of the eight comparison countries. Canada and Australia were the two countries with injury death rates similar to those in the United States. At ages 1–4 years the lowest injury mortality rates for males and females were in Sweden; at ages 5–9, in Sweden for males and in The Netherlands for females; at ages 10–14, in Japan for both sexes; and at 15–19, in The Netherlands for males and in Japan for females (table S). Generally, with some exceptions, the U.S. death rates were 1.5–2.0 times as high as the rates in the five European countries and up to 1.5 times as high as in the other three countries.

The mortality sex ratio for injuries generally increased with age; at ages 1–4 the ratio averaged about 1.5. By ages 15–19 the average ratio was close to 3.0 except for Japan, where mortality for teenage males was six times higher than for females (42.5 versus 7.1).

Table R. Death rates for all causes of death among children 1–19 years of age, by country, age, and sex: United States and selected countries, 1985

Country	1–4 years		5–9 years		10–14 years		15–19 years	
	Male	Female	Male	Female	Male	Female	Male	Female
	Deaths per 100,000 population							
United States	58.1	44.5	28.2	21.2	34.9	20.5	114.7	46.5
Federal Republic of Germany	46.7	42.2	24.4	22.1	22.7	16.6	83.4	33.9
France	49.4	41.3	28.3	21.1	29.6	18.5	89.3	39.3
The Netherlands	45.5	37.5	21.1	13.6	22.2	13.9	60.2	24.9
England and Wales	49.8	40.8	21.6	18.1	28.9	18.7	67.6	28.2
Sweden	30.0	28.4	19.6	10.5	17.2	15.1	61.6	30.8
Canada	47.8	37.3	26.4	18.7	31.2	20.3	101.7	42.1
Japan	55.7	41.6	26.6	15.3	19.9	13.1	69.8	23.7
Australia	56.6	45.0	29.6	19.9	28.7	16.0	111.5	41.7

SOURCE: Special tabulations provided by the World Health Organization.

Table S. Death rates for injuries among children 1–19 years of age, by country, age, and sex: United States and selected countries, 1985

Country	1–4 years		5–9 years		10–14 years		15–19 years	
	Male	Female	Male	Female	Male	Female	Male	Female
	Deaths per 100,000 population							
United States	24.1	15.8	14.9	8.7	18.4	7.8	64.1	23.6
Federal Republic of Germany	15.1	11.3	12.2	8.7	9.2	4.5	48.4	15.1
France	16.2	10.2	12.0	7.7	13.0	5.9	49.9	18.7
The Netherlands	12.9	7.0	9.4	3.0	7.2	4.8	27.6	9.0
England and Wales	12.2	6.9	8.4	4.4	13.9	5.3	35.6	9.9
Sweden	6.7	3.3	6.8	4.2	7.0	4.1	35.0	13.7
Canada	19.3	12.3	14.7	8.6	16.6	8.3	55.7	21.1
Japan	21.0	12.1	12.5	4.4	6.0	2.1	42.5	7.1
Australia	24.3	18.4	15.5	7.7	13.1	5.0	67.1	21.3

SOURCE: Special tabulations provided by the World Health Organization.

Trends in injury mortality for the period 1955–59 to 1968–71 can generally be characterized as a relatively slow decline or an actual increase among children ages 1–4, 5–9, and 10–14 (table 12). Cross-country variation was large with respect to the amount of change. Between 1968–71 and 1985, on the other hand, injury mortality decreased considerably more than during the earlier period, and changes were fairly similar for males and females. Among teenagers, from 1971 to 1985, injury mortality decreased more for males than for females. Across all ages, the percent decrease in the United States was less than in most other countries.

Violence

Suicide rates among 15–19-year-old males varied widely in 1985, from a low of 4.3 per 100,000 population in England and Wales to 18.4 in Canada. The U.S. rate was 16.0. Among females the rates were much lower, ranging from 1.1 in England and Wales to 5.3 in Sweden, with the U.S. rate at 3.7 (table T).

Homicide rates among 15–19-year-olds reveal a very different picture. In each of the European countries and in Japan the death rate was less than 1 per 100,000 population (except for females in GFR where it was 1.4). In Canada and Australia the rates were about four times higher, nearly 3 among males and 1.6 among females. In the United States the rate was 13.2 for males, nearly five times higher than the rate in Canada and Australia and about 20 times higher than in the European countries. The excess homicide mortality in the United States is not solely attributable to the high death rate among black males. The homicide rate for U.S. white males ages 15–19 (7.3) is 3–24 times higher than the rates in the other countries. The cross-national differences were smaller among females, but the U.S. rates were by far the highest (table T).

Table T. Death rates for homicide and for suicide among teenagers 15–19 years of age, by country, sex, and race in the United States: United States and selected countries, 1985

Country	Homicide		Suicide	
	Male	Female	Male	Female
	Deaths per 100,000 population			
United States	13.2	3.9	16.0	3.7
White	7.3	2.7	17.3	4.1
Black	46.4	10.3	8.2	1.5
Federal Republic of Germany	0.6	1.4	13.3	4.1
France	0.8	0.1	9.1	2.6
The Netherlands	0.6	0.2	5.7	1.3
England and Wales	0.5	0.3	4.3	1.1
Sweden	0.7	0.4	9.0	5.3
Canada	2.6	1.6	18.4	3.6
Japan	0.3	0.3	6.8	3.3
Australia	2.7	1.6	16.6	3.6

SOURCE: Special tabulations provided by the World Health Organization.

Natural causes

The leading natural causes of death among children in these industrialized countries were malignant neoplasms and congenital anomalies. Overall, natural-cause mortality showed much less cross-national variation than did injury mortality; natural-cause death rates in the United States were similar to rates across the eight comparison countries. For age groups 1–4, 5–9, and 10–14 years, an average factor of 1.5 separated the highest and lowest death rates (except for females ages 5–9 years where it was much higher as a result of the extremely low death rate in Sweden) (table U). At ages 15–19 years differences between the highest and lowest rates were larger.

At ages 1–4, 5–9, and 10–14 years the sex ratio for natural causes ranged with very few exceptions from 1.0 to 1.2. Among teenagers the average ratio was 1.5 to 1.6. The U.S. sex ratio was slightly lower than the average because of the relatively low natural-cause death rate for teenage males.

Between 1960 and 1985 natural-cause mortality declined across all of the countries compared (table 13). Without exception, death rates for natural causes in 1960 were highest in Japan for each age and sex group, but by 1985 Japanese death rates had reached the same levels as in the other countries. At ages 1–4 and 5–9 years natural-cause death rates in most countries fell an average of 50–70 percent during this time. The decline in the United States was not atypical. Natural-cause mortality among males was consistently low in Sweden. At ages 10–14 years the average total percent change was smaller than for the younger children, about 40–50 percent from 1960 to 1985. Among teenagers, there was more variation in the amount of the mortality decline, ranging from a low of 25 percent among males and 28 percent among females in The Netherlands to declines of 67 percent and 74 percent for males and females in Japan.

Table U. Death rates for natural causes of death among children 1–19 years of age, by country, age, and sex: United States and selected countries, 1985

Country	1–4 years		5–9 years		10–14 years		15–19 years	
	Male	Female	Male	Female	Male	Female	Male	Female
	Deaths per 100,000 population							
United States	30.9	25.9	12.2	11.4	12.1	10.6	20.4	14.9
Federal Republic of Germany	30.6	29.3	11.3	12.7	10.7	10.4	19.8	13.0
France	31.0	28.7	15.1	12.4	13.2	11.5	26.4	16.9
The Netherlands	31.8	29.6	11.7	10.4	13.7	8.7	26.1	13.9
England and Wales	35.9	32.1	12.5	13.0	13.9	12.9	24.1	15.3
Sweden	23.3	24.6	12.4	5.5	10.2	9.9	14.9	10.0
Canada	26.8	23.9	11.1	9.5	12.0	10.7	23.8	15.2
Japan	32.3	27.6	12.8	10.1	12.0	10.2	19.0	12.6
Australia	30.9	25.5	13.9	11.3	14.0	10.0	24.1	15.0

SOURCE: Special tabulations provided by the World Health Organization.

Summary and discussion

Substantial decreases in overall childhood mortality have been observed during this century. In fact, mortality declines in childhood have been larger than among other population groups. Despite the successes that have been achieved, there have been and there still remain appreciable age, race, and sex differences in the amount of the mortality decline and in the current status of childhood mortality.

Since 1950 mortality has declined an average of close to 60 percent among children ages 1–4, 5–9, and 10–14 years (figure 14). For teenagers, mortality decline has been relatively slow, having decreased only 25 percent during the 35 years. Race and sex differences in total mortality decline were minimal for children ages 1–4 and 5–9. However, for children aged 10–14 years the death rate for black females decreased 62 percent versus only 50 percent for white males. Among teenagers, variation in the percentage decline was largest. Rates for white males declined by only 13 percent compared with 75 percent for black females—the largest overall decline of any of the age-race-sex groups.

The vast proportion of deaths caused by injuries distinguishes childhood mortality from mortality in all other demographic groups. Nearly half of all deaths are due to injuries with an additional 14 percent attributed to violence. Three out of ten deaths among children 1–19 years old are caused by motor vehicle injuries, a proportion far greater than for any other single cause of death.

External causes of death accounted for about two-thirds of the sex difference in total death rates among children ages 1–4 years, for more than three-fourths of the difference among children ages 5–9 years, and for about 90 percent of the difference among children ages 10–14 years and 15–19 years. Furthermore, external causes accounted for half of the race difference in total death rates for children ages 1–4 years and three-fourths for those ages 5–9 years. At ages 10–14 years, mortality associated with drowning and homicide accounts for most of the overall black excess mortality among males.

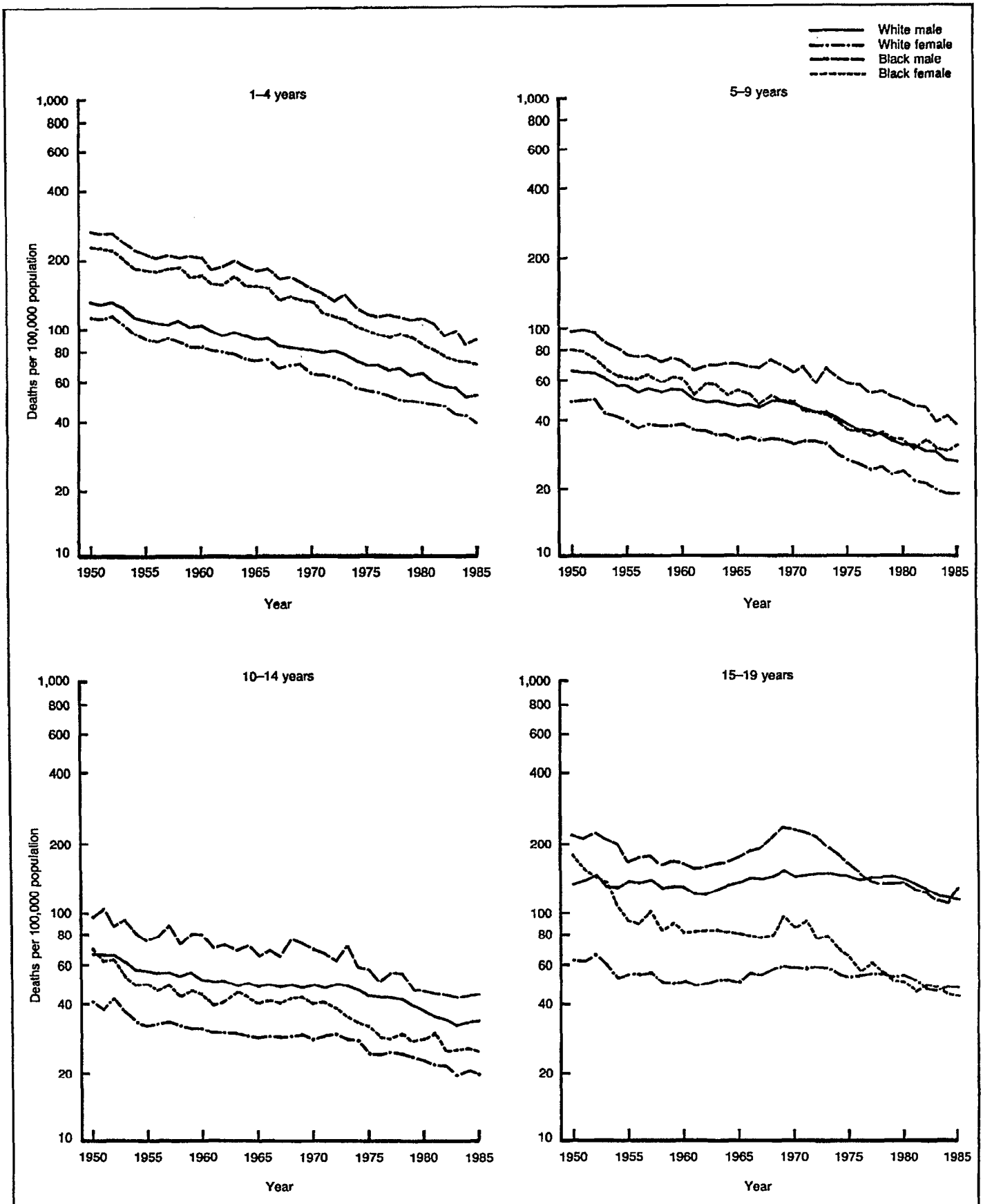
Among teenagers (15–19 years), the total death rates for white and black males are similar, as are the rates for white and black females. This similarity is unique to this age group. However, there were extremely large racial differences in homicide (with the rate for black teenagers five times that for white teenagers) and in motor vehicle mortality (with the rate for white teenagers nearly three times that for black teenagers).

Racial differences in motor vehicle mortality may be an indication of differences in risk exposure. Among young-children ages 1–4 and 5–9 years, the passenger-related, motor-vehicle death rate is higher for white children than for black children. At ages 10–14 and 15–19 years the total motor vehicle death rate is also higher for white than for black youths. One explanation may be that fewer black children than white children are "exposed to the risk" of being in a motor vehicle. Data from the 1980 census indicate no motor vehicle for 33 percent of black-occupied housing units compared with 10 percent of white-occupied housing units (U.S. Bureau of the Census, 1983). If it were possible to adjust the motor vehicle death rates for exposure to risk (that is, miles driven), it is possible that the rates for black children would be higher than those for white children.

The higher death rate for drowning among white than black 1–4-year-olds may also be related to differences in exposure to risk. Most of the drownings occurred as a result of a swimming accident, even among black children. It is possible that young white children swim more frequently than young black children, so that their exposure to risk of drownings may be higher.

There are substantial racial differences in socioeconomic status. For example, in 1985, 43 percent of black children under age 18 were living in families with incomes below the poverty level compared with 16 percent of white children (U.S. Bureau of the Census, 1987b). Thus, racial differences in mortality probably reflect socioeconomic differentials. Unfortunately, it is difficult to investigate socioeconomic differentials in mortality because U.S. death certificates do not contain socioeconomic information about the child.

Based on retrospective data from the 1975 Current Population Survey, Mare (Mare 1982) found substantial socioeconomic differentials in all-cause childhood mortality. He had no cause-of-death data available but hypothesized that injury mortality is a major determinant of socioeconomic differentials in overall childhood mortality, "suggesting that differences in access to safe recreational areas, in exposure to hazardous driving conditions, and, for the younger children, in parental vigilance are important sources of child mortality variation among socioeconomic groups." Fox (Fox, 1977) also concluded from cause-specific data in England and Wales that the "inadequacies of supervision and education and the environmental



NOTE: From 1950 to 1967, rates are for white and all other children. From 1968 to 1985, rates are for white and black children.

Figure 14. Death rates for all causes of death among children 1–19 years of age, by age, race, and sex: United States, 1950–85

hazards confronting" children in the lowest social class are clearly demonstrated by their significantly higher death rates from accidents.

Natural causes of death comprise 37 percent of all childhood deaths, with proportions ranging from 56 percent among preschoolers to a low of 22 percent among teenagers. The two leading natural causes—malignant neoplasms and congenital anomalies—account for about 37 percent of the natural-cause deaths.

Death rates for the leading causes of cancer mortality among children have decreased since 1950, and even more so since the early 1970's. Decreases in child cancer mortality are believed to be due entirely to advances made in treatment of many forms of childhood cancer (National Cancer Institute, 1988). During the time of declining mortality, the incidence of cancer in white children has remained relatively steady. From 1973–74 to 1984–85 the National Cancer Institute reported a 7-percent increase in incidence of all cancers among white children under the age of 15; at the same time, there was a 34-percent decrease in mortality. For acute lymphocytic leukemia, the leading cause of childhood cancer, incidence increased by 14 percent coupled with a 44-percent decrease in mortality. Furthermore, the 5-year relative survival rates have increased markedly since 1960–63 for nearly every form of childhood tumor; in the years from 1974–76 to 1979–84 survival improved for white children under age 15 from 55 percent to 63 percent for all sites (National Cancer Institute, 1988).

The large-scale declines in cancer mortality observed in the United States were also evident on a cross-national basis. Among males and females aged 1–14 years, the cancer death rate fell 30–40 percent during the period 1970–74 to 1984–85 (Kaminski, Bouvier-Colle, and Blondel, 1984; Marcusson and Oehmisch, 1977; West, 1984).

The large declines over the past decades in childhood mortality from both natural and external causes are even more notable in view of adverse changes in the socioeconomic conditions of children. For example, there has been a marked increase in the proportion of children under 18 years old living in single-parent families, from 7 percent in 1960 to 18 percent in 1985 among white children and from 22 percent to 54 percent among black children (U.S. Bureau of the Census, 1986). Furthermore, the proportion of children under age 18 living in families with incomes below the poverty level has risen among white children (from 10.5 percent in 1970 to 16 percent in 1985) and has remained consistently high for black children (41 percent to 43 percent) (U.S. Bureau of the Census, 1987b). Had mortality rates increased during these years, it is likely that these adverse changes in socioeconomic conditions would have been pointed to as contributing factors.

Even though trends in childhood mortality have shown large improvements over the past few decades, the fact remains that childhood death rates in the United States are considerably higher than in other industrialized countries. Virtually all of the excess mortality among children in the United States is attributable to injury and violence. Injury prevention in childhood has been targeted by the Public Health Service as a priority concern (NCHS, 1986). Given the far lower death rates observed elsewhere in the world, the goals for reducing mortality from injuries and violence are certainly achievable.

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Table 1. Death rates for all causes of death among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	83.6	85.9	70.4	167.2	136.1	44.5	48.7	34.3	72.6	51.2	41.6	48.9	28.3	76.2	41.6	108.1	145.9	57.0	218.3	81.9
1969	88.0	84.0	71.0	160.5	131.7	44.0	48.7	33.7	70.8	48.7	41.3	47.8	29.2	73.4	41.7	113.5	152.2	58.2	236.6	95.0
1970	84.5	83.6	66.1	150.5	129.4	42.1	47.5	32.0	65.1	47.6	40.6	48.5	27.9	69.0	40.1	110.3	147.1	57.8	230.9	86.2
1971	82.3	81.6	66.0	143.8	116.9	42.0	45.6	33.0	69.6	45.3	39.9	46.8	28.3	66.5	40.3	110.3	147.6	57.4	220.1	92.1
1972	80.4	81.9	63.4	133.8	111.9	40.8	44.7	33.0	58.5	44.6	40.4	48.5	28.6	61.3	38.6	110.4	150.5	58.0	211.3	77.6
1973	79.0	79.2	62.1	141.4	110.8	41.1	44.6	32.3	68.8	43.8	40.3	48.2	27.9	70.8	35.7	111.0	155.3	57.5	190.1	79.1
1974	73.3	74.5	57.8	122.7	101.3	37.2	41.4	28.2	62.0	40.0	38.3	46.6	27.1	58.4	33.6	104.8	148.5	53.4	179.9	69.3
1975	69.9	70.1	56.2	115.2	97.0	35.2	38.7	27.0	57.3	37.4	35.3	42.8	24.2	56.9	31.6	100.2	142.6	51.9	164.7	64.6
1976	68.8	70.5	54.8	113.6	92.2	34.1	37.4	26.3	56.7	36.7	34.2	42.2	23.9	50.4	28.8	95.7	136.1	52.0	144.7	56.1
1977	67.6	68.1	53.7	114.8	91.3	33.3	37.4	25.0	53.3	35.3	34.6	41.8	24.6	55.4	28.2	99.8	143.3	54.4	140.0	60.5
1978	67.9	69.9	52.0	114.0	95.0	32.7	35.3	25.6	53.6	35.9	33.7	41.0	23.3	54.1	29.2	98.9	144.0	54.4	130.6	54.8
1979	64.2	64.2	50.4	108.1	91.9	31.1	34.1	23.7	51.9	34.8	31.8	38.9	22.8	46.8	27.2	98.8	145.3	52.9	132.7	51.7
1980	63.9	66.1	49.3	110.5	84.4	30.4	32.5	24.1	49.7	33.6	30.8	37.4	21.9	45.4	27.7	97.9	142.7	53.7	134.5	50.3
1981	60.2	60.5	47.7	105.3	81.6	29.1	32.4	22.4	46.8	30.7	29.6	35.7	20.9	43.8	29.4	90.7	130.9	51.1	125.3	45.9
1982	57.6	58.2	47.0	93.4	76.4	28.3	30.8	21.8	46.0	33.5	28.3	34.0	20.6	43.0	25.6	86.0	124.7	46.3	122.1	48.0
1983	55.9	57.3	43.9	96.8	73.6	26.5	29.2	20.4	39.8	30.5	27.2	32.7	19.2	42.0	25.7	81.6	117.2	45.9	112.5	47.9
1984	51.9	51.8	41.6	85.2	72.2	25.1	27.2	19.2	42.1	29.8	28.2	33.6	20.7	42.6	25.9	81.0	115.6	47.0	110.9	44.7
1985	51.4	52.4	39.7	89.0	70.8	24.8	26.0	19.2	39.6	31.3	27.9	33.8	19.7	43.0	25.0	81.2	113.7	47.0	124.7	44.3

Table 2. Death rates for all external causes of death among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	35.1	34.4	25.7	69.6	53.8	21.7	25.0	14.2	42.7	25.3	22.1	29.6	11.0	49.0	15.0	78.1	114.7	34.1	166.7	34.9
1969	35.6	35.9	26.0	66.4	54.3	20.9	24.1	13.1	43.9	24.1	22.0	28.5	12.0	46.8	16.8	82.8	120.1	35.6	179.4	45.0
1970	34.6	36.1	24.7	63.7	52.0	20.9	24.5	12.8	42.2	25.7	22.5	30.0	11.9	45.1	16.9	80.1	116.1	35.1	175.9	37.6
1971	34.6	35.3	25.0	67.2	51.1	21.4	24.4	14.0	44.1	23.2	22.1	28.5	12.5	43.9	18.2	80.0	115.5	35.6	164.2	43.4
1972	34.6	37.5	24.0	62.6	46.9	21.3	24.2	14.7	38.8	23.3	23.1	30.6	13.0	41.0	18.4	82.3	120.4	37.2	161.3	37.3
1973	35.2	36.5	25.0	68.2	50.8	21.4	24.6	13.8	44.3	23.0	23.5	31.1	13.3	47.0	14.7	83.7	125.5	38.0	143.3	38.5
1974	32.4	35.1	22.9	56.0	44.9	18.6	21.8	11.5	38.8	21.0	21.3	28.9	11.8	36.9	13.9	78.2	118.8	34.1	134.6	34.4
1975	31.4	32.5	22.4	58.6	46.0	18.3	21.1	11.7	37.8	18.6	20.8	28.1	11.4	37.0	13.1	75.6	115.6	33.2	124.7	32.9
1976	31.1	32.8	22.4	55.2	43.9	17.6	20.0	11.4	36.3	18.9	19.5	26.5	11.3	32.4	10.9	74.0	111.9	36.1	109.1	27.9
1977	30.6	31.4	22.7	57.3	40.3	17.9	20.3	12.1	34.7	18.7	20.1	26.5	11.6	37.6	13.2	78.1	118.9	38.0	109.2	32.5
1978	31.7	32.8	22.2	57.6	47.8	17.6	20.2	11.7	33.1	18.3	20.0	26.8	11.6	34.2	13.7	77.6	120.1	38.3	99.4	27.9
1979	29.7	30.2	21.7	54.9	42.8	17.1	19.3	10.6	37.2	19.3	18.6	25.0	11.2	30.5	11.1	79.4	123.3	38.2	104.6	29.9
1980	29.1	30.7	21.0	53.1	39.6	15.7	17.3	10.5	33.0	17.4	17.7	23.8	10.3	28.3	12.4	78.2	121.3	38.0	105.6	25.5
1981	26.8	27.7	19.4	52.2	36.3	15.1	17.5	9.6	29.3	16.7	17.1	22.8	9.9	28.9	11.8	71.7	110.2	35.9	99.0	22.7
1982	25.7	27.0	18.8	46.9	33.7	14.3	15.9	9.4	28.3	18.4	16.0	21.3	9.7	26.2	10.7	66.7	103.2	31.5	93.9	25.1
1983	24.6	26.3	17.5	45.7	34.1	13.5	15.7	8.5	24.4	15.7	15.5	20.9	9.1	25.7	11.0	62.6	96.0	31.2	87.1	24.0
1984	22.6	23.9	15.8	41.2	31.3	12.8	14.3	8.3	26.3	14.7	16.2	21.3	10.0	27.0	11.7	63.2	96.0	33.1	85.0	22.7
1985	23.0	24.5	16.4	41.1	30.1	13.0	14.2	8.4	24.3	16.4	16.5	22.3	9.7	27.3	9.9	63.5	94.4	33.3	96.1	22.8

NOTE: ICDA 8th revision and ICD 9th revision codes are E800–E999.

Table 3. Death rates for motor vehicle injuries among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	11.5	11.5	9.9	18.5	11.0	10.9	12.8	7.6	19.2	11.4	9.2	12.5	6.1	13.0	4.6	45.0	68.6	25.0	49.8	13.6
1969	12.2	12.7	10.3	18.4	13.5	10.6	12.1	7.4	19.7	11.5	9.2	11.7	6.5	13.0	5.8	46.7	72.2	25.1	45.5	16.8
1970	11.5	12.2	9.6	16.9	12.6	10.8	12.6	7.1	20.5	12.3	9.6	12.6	6.6	11.9	6.4	43.6	67.1	24.4	43.4	11.1
1971	11.2	11.1	9.7	17.5	14.6	11.1	12.4	8.2	21.0	10.6	10.0	13.1	7.1	12.5	5.4	43.3	66.9	24.3	38.3	12.9
1972	11.6	11.7	9.8	19.2	11.4	10.9	12.0	8.3	17.7	12.0	10.5	13.8	7.6	10.5	6.4	45.6	70.8	25.5	41.0	10.1
1973	12.2	12.6	9.5	22.6	13.4	11.0	12.4	8.1	18.8	11.2	10.1	13.6	7.0	11.8	4.8	45.1	71.0	25.2	34.0	12.2
1974	9.9	10.1	8.4	14.1	11.6	8.7	9.6	6.0	17.6	9.9	8.5	11.2	6.2	9.8	4.1	40.0	65.2	21.0	29.7	8.2
1975	10.2	10.8	8.0	16.4	11.2	9.0	10.4	6.2	16.8	7.8	8.3	10.9	5.8	9.6	4.2	37.9	61.7	20.6	24.6	7.1
1976	10.3	11.1	8.3	15.1	11.8	8.4	9.2	6.4	14.9	8.6	8.4	11.3	6.2	9.5	3.6	40.6	64.6	23.6	25.9	6.7
1977	9.9	10.0	8.7	14.5	9.9	8.5	9.4	6.5	14.6	7.4	8.5	10.8	6.4	10.9	3.5	42.3	66.4	25.1	27.8	9.2
1978	10.4	10.7	8.4	14.0	13.2	8.4	9.7	6.4	13.0	7.1	8.9	12.3	6.2	9.0	4.3	44.2	70.8	25.9	26.4	8.8
1979	9.8	9.7	8.9	13.1	9.5	8.5	10.0	6.0	14.6	7.8	8.2	11.1	6.1	7.9	2.8	44.6	72.1	25.7	24.5	8.7
1980	9.2	9.5	7.7	13.7	9.5	7.6	8.7	5.7	13.3	6.4	8.1	10.9	5.7	7.9	4.0	43.0	69.1	25.6	24.4	6.7
1981	7.8	8.1	6.8	9.7	8.7	7.4	9.0	4.9	11.9	6.6	7.6	10.7	5.3	6.9	4.0	39.0	62.3	24.3	20.5	5.9
1982	7.9	8.2	7.0	11.1	7.8	6.5	7.3	4.8	10.9	7.5	7.0	9.5	5.2	6.5	3.9	35.0	56.5	20.7	20.9	7.7
1983	7.5	8.3	6.0	10.9	8.0	6.4	7.7	4.3	10.0	6.1	6.8	9.1	5.0	7.2	2.7	33.2	53.0	20.9	18.9	7.1
1984	6.9	7.5	5.4	9.8	6.9	6.2	7.2	4.6	10.2	5.0	7.1	9.5	5.5	7.2	3.9	34.6	54.4	22.1	21.2	7.0
1985	7.1	7.6	5.7	10.7	6.8	6.3	7.3	4.7	9.2	5.7	7.3	9.7	5.6	8.7	3.0	33.9	51.9	22.8	21.9	7.5

NOTE: ICDA 8th revision codes for 1968–78 are E810–E823; ICD 9th revision codes for 1979–85 are E810–E825.

Table 4. Death rates for fire and flames among children 1–9 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population									
1968	6.2	4.4	3.4	19.4	18.2	2.4	1.7	1.7	6.2	6.9
1969	5.9	4.3	3.5	17.8	16.5	2.3	1.7	1.5	6.1	6.4
1970	5.2	4.3	3.2	15.3	12.1	2.0	1.6	1.4	4.8	6.3
1971	5.5	4.5	3.3	17.1	12.4	2.1	1.7	1.5	5.1	5.2
1972	5.1	4.7	2.9	12.7	12.4	2.3	2.0	1.8	5.2	4.5
1973	5.0	3.7	3.3	14.8	12.9	1.8	1.3	1.5	3.7	4.8
1974	4.9	4.6	3.0	12.1	9.5	2.0	1.7	1.4	4.9	4.5
1975	4.8	3.4	3.1	13.2	13.3	2.0	1.7	1.3	5.9	4.3
1976	5.4	4.9	3.6	13.4	11.2	2.1	1.7	1.6	5.2	3.9
1977	4.9	3.9	3.2	14.0	11.1	2.0	1.7	1.3	4.8	4.5
1978	6.0	5.0	3.7	16.0	14.0	2.1	1.7	1.4	5.6	4.9
1979	5.5	4.4	2.9	16.6	13.8	2.1	1.6	1.2	6.5	4.9
1980	5.3	4.6	2.9	15.6	13.0	1.8	1.1	1.3	5.8	4.6
1981	5.5	4.4	3.3	17.2	12.2	1.9	1.5	1.4	5.3	4.6
1982	4.6	3.9	2.5	13.6	11.3	2.0	1.7	1.3	4.8	5.2
1983	4.6	3.7	2.7	12.6	11.9	1.6	1.2	1.1	4.2	4.8
1984	4.3	3.5	2.5	12.1	9.8	1.9	1.6	1.1	6.2	3.7
1985	4.3	3.7	2.6	11.1	10.7	1.8	1.3	1.1	5.5	4.7

NOTE: ICDA 8th revision codes for 1968–78 and ICD 9th revision codes for 1979–85 are E890–E899.

Table 5. Death rates for drowning among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	5.2	7.6	3.4	2.8	1.7	3.4	4.7	1.5	8.7	1.2	4.0	4.7	1.2	17.9	3.0	6.6	10.2	0.9	25.7	1.3
1969	5.1	7.5	3.5	3.6	1.1	3.2	4.3	1.4	9.0	1.2	3.8	4.5	1.3	16.1	2.2	6.7	9.6	0.9	29.6	2.1
1970	5.7	8.1	4.3	3.6	0.9	3.2	4.5	1.4	7.4	1.5	3.8	4.7	1.3	14.0	3.1	6.8	10.6	0.9	24.1	2.2
1971	5.7	8.5	4.1	2.9	1.2	2.9	4.3	1.2	6.6	1.0	3.4	4.0	1.3	12.9	3.4	6.1	9.5	1.0	20.3	1.8
1972	5.7	8.8	3.4	4.2	1.2	3.1	4.3	1.4	6.9	1.7	3.6	4.5	1.1	13.7	3.5	5.9	8.9	0.9	21.8	1.4
1973	6.2	8.8	4.0	4.9	3.8	3.6	4.6	1.5	10.7	2.1	3.8	4.7	1.1	15.1	3.0	7.0	11.2	1.1	21.6	1.8
1974	6.2	9.0	4.1	5.3	2.7	3.0	4.3	1.2	8.0	1.6	3.3	4.3	0.9	12.2	2.3	5.9	9.6	0.9	18.1	1.8
1975	5.7	8.1	4.4	4.0	1.5	2.8	3.8	1.1	8.7	1.7	3.3	4.2	1.0	12.2	2.6	6.1	9.5	1.0	19.7	1.5
1976	5.1	7.5	3.7	3.8	1.4	2.6	3.5	1.0	7.7	1.0	2.6	3.1	0.8	9.8	1.5	4.7	7.8	0.8	13.0	0.8
1977	5.1	7.4	3.5	4.4	1.9	2.8	3.7	1.2	6.7	1.7	2.8	3.2	0.8	12.8	2.0	5.0	7.8	0.9	15.9	1.5
1978	5.0	7.3	3.4	3.6	1.6	2.6	3.5	1.1	6.7	1.0	2.6	2.8	0.9	11.6	2.4	4.6	7.3	0.8	13.7	1.2
1979	5.4	7.5	3.5	5.6	2.8	2.3	2.9	0.7	7.6	1.7	2.4	2.8	0.9	9.4	1.6	4.4	7.1	0.8	11.8	1.4
1980	5.4	7.5	4.1	4.1	1.7	2.4	3.0	0.8	8.1	1.6	2.2	2.5	0.6	9.0	2.2	4.8	7.8	0.9	12.4	1.1
1981	5.0	7.1	3.5	4.5	1.6	2.1	2.7	0.9	5.3	1.0	2.0	2.3	0.6	8.3	1.5	3.8	5.9	0.6	12.6	0.7
1982	4.7	6.7	3.5	4.0	1.6	2.0	2.5	0.8	5.2	1.5	1.9	2.2	0.5	8.2	1.1	3.7	6.0	0.6	10.1	1.2
1983	4.7	6.7	3.5	4.2	1.8	2.0	2.5	0.8	5.0	1.3	1.9	2.2	0.6	8.2	1.9	3.5	5.6	0.7	10.1	0.8
1984	3.9	5.4	2.8	3.6	1.6	1.4	1.5	0.5	5.1	1.4	1.5	1.5	0.4	7.5	1.5	2.9	4.5	0.6	8.9	0.6
1985	4.1	5.7	3.1	2.6	1.4	1.5	1.8	0.6	4.4	1.2	1.6	1.7	0.4	6.9	1.8	3.0	4.7	0.6	8.8	0.8

NOTE: ICDA 8th revision code for 1968–78 and ICD 9th revision code for 1979–85 is E910.

Table 6. Death rates for homicide among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	1.5	1.0	1.2	4.2	3.5	0.6	0.5	0.5	1.4	1.5	0.8	0.5	0.5	4.9	1.3	6.9	5.0	1.6	53.7	9.9
1969	1.7	1.4	1.3	4.3	3.0	0.6	0.6	0.5	1.2	0.5	0.9	0.4	0.6	5.0	1.7	7.7	4.9	1.9	63.6	11.7
1970	1.9	1.4	1.2	5.1	6.3	0.6	0.4	0.4	1.5	1.7	1.2	0.6	0.6	6.8	2.3	8.1	5.2	2.1	65.2	10.6
1971	2.2	1.5	1.3	7.0	6.0	0.8	0.5	0.6	2.4	1.6	1.1	0.7	0.6	5.1	3.0	8.4	5.5	2.1	65.1	13.9
1972	1.8	1.5	1.2	4.6	4.3	0.5	0.3	0.4	1.5	1.2	1.3	0.8	0.7	6.2	3.1	8.7	6.3	2.8	59.5	12.2
1973	2.5	1.8	1.6	7.7	6.5	0.8	0.6	0.5	2.5	1.5	1.4	1.0	0.8	5.9	2.3	9.0	7.0	3.1	55.2	13.9
1974	2.2	1.7	1.3	6.6	5.9	0.8	0.7	0.5	1.7	1.9	1.3	1.2	0.6	4.0	2.3	9.6	7.7	3.2	57.2	15.0
1975	2.4	1.9	1.2	7.9	6.6	0.8	0.6	0.8	1.0	1.7	1.2	1.0	0.8	4.1	2.3	9.5	8.1	3.2	51.4	15.3
1976	2.4	1.7	1.5	6.3	7.6	0.8	0.7	0.5	2.0	1.6	1.2	1.1	0.8	4.1	1.4	8.5	7.4	3.0	45.9	11.2
1977	2.7	1.8	1.6	8.8	6.7	1.1	0.8	0.8	2.6	2.4	1.3	1.0	0.9	3.7	2.7	8.8	8.2	3.1	43.0	13.2
1978	2.5	1.7	1.4	8.7	7.6	1.0	0.7	0.6	2.8	2.4	1.5	1.3	1.0	4.0	3.0	8.7	8.6	3.4	38.9	10.8
1979	2.5	1.7	1.7	6.3	7.7	1.0	0.8	0.7	2.3	2.1	1.2	1.1	0.7	4.0	2.0	10.3	10.5	3.6	46.8	12.1
1980	2.5	2.0	1.5	7.2	6.4	0.9	0.7	0.7	1.9	2.0	1.4	1.1	1.1	3.9	2.4	10.6	10.9	3.9	48.8	11.0
1981	2.6	1.6	1.8	8.9	5.7	1.0	0.7	0.7	2.9	1.8	1.6	1.1	1.2	5.3	2.6	10.2	10.0	3.5	48.2	10.8
1982	2.7	1.9	1.7	8.7	6.4	1.0	0.8	0.8	3.0	2.0	1.3	0.9	1.1	3.8	2.0	9.8	9.2	3.5	47.1	11.2
1983	2.3	1.7	1.2	7.2	6.2	0.9	0.8	0.7	2.1	1.4	1.2	1.1	0.7	3.9	1.4	8.5	7.6	2.9	42.7	10.5
1984	2.4	1.9	1.7	5.0	6.7	0.9	0.5	0.7	2.4	3.0	1.6	1.2	1.2	4.0	3.2	8.3	7.5	3.2	39.3	10.1
1985	2.4	1.9	1.6	6.5	6.3	1.0	0.7	0.7	2.3	2.3	1.5	1.4	0.9	4.1	1.7	8.6	7.3	2.7	46.4	10.3

NOTE: ICDA 8th revision codes for 1968–78 and ICD 9th revision codes for 1979–85 are E860–E978.

Table 7. Death rates for suicide among children 10–19 years of age, by age, race, and sex: United States, 1968–85

Year	10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population									
1968	0.6	1.0	0.2	0.4	0.1	5.0	8.3	2.2	3.8	1.8
1969	0.6	1.0	0.4	0.2	0.4	5.6	8.9	2.6	4.4	3.0
1970	0.6	1.1	0.3	0.3	0.4	5.9	9.4	2.9	4.7	2.9
1971	0.7	1.0	0.3	0.8	0.2	6.5	10.3	3.0	5.0	3.4
1972	0.6	0.9	0.4	0.0	0.3	6.8	11.0	2.7	8.1	3.0
1973	0.7	1.2	0.4	0.5	0.1	6.9	11.3	3.2	5.7	2.1
1974	0.9	1.5	0.4	0.8	0.3	7.1	11.7	3.2	4.9	2.5
1975	0.8	1.4	0.4	0.2	0.3	7.5	12.9	3.1	6.1	1.5
1976	0.8	1.3	0.3	0.4	0.6	7.2	11.8	3.3	7.0	2.5
1977	1.0	1.8	0.3	0.6	0.4	8.7	15.1	3.5	6.0	2.4
1978	0.8	1.3	0.4	0.5	0.4	7.9	13.6	3.3	5.5	1.3
1979	0.8	1.2	0.6	0.3	0.2	8.4	14.3	3.4	6.7	2.1
1980	0.8	1.4	0.3	0.5	0.1	8.5	15.0	3.3	5.6	1.6
1981	0.9	1.4	0.6	0.3	0.2	8.7	14.9	3.8	5.5	1.6
1982	1.1	1.7	0.5	1.5	0.2	8.7	15.5	3.4	6.2	1.5
1983	1.1	1.7	0.4	0.9	1.1	8.7	15.1	3.5	6.5	1.7
1984	1.3	2.1	0.6	1.0	0.4	9.0	15.8	3.8	5.9	1.7
1985	1.6	2.5	0.9	1.3	0.4	10.0	17.3	4.1	8.2	1.5

NOTE: ICDA 8th revision codes for 1968–78 and ICD 9th revision codes for 1979–85 are E950–E959.

Table 8. Death rates for all natural causes of death among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	54.5	51.5	44.6	97.6	82.2	22.8	23.7	20.1	29.9	25.8	19.5	19.4	17.3	27.2	26.6	30.0	31.3	23.0	51.6	47.0
1969	52.5	48.0	45.0	94.1	77.5	23.1	24.6	20.5	26.9	24.6	19.3	19.3	17.2	26.6	24.9	30.7	32.2	22.5	57.2	50.0
1970	49.9	47.5	41.4	86.8	77.4	21.2	22.9	19.2	22.9	21.9	18.1	18.5	16.0	23.9	23.2	30.2	31.0	22.8	55.0	48.6
1971	47.7	46.3	41.0	76.6	65.8	20.6	21.2	19.0	25.5	22.2	17.9	18.4	15.8	22.6	22.1	30.3	32.1	21.8	55.9	48.7
1972	45.8	44.4	39.4	71.2	65.0	19.5	20.5	18.3	19.8	21.2	17.3	18.0	15.6	20.3	20.1	28.0	30.1	20.8	50.0	40.2
1973	43.8	42.7	37.1	73.3	60.0	19.7	20.1	18.4	24.6	20.8	16.8	17.1	14.6	23.8	21.0	27.2	29.8	19.5	46.8	40.6
1974	40.9	39.5	34.9	66.6	56.5	18.6	19.7	16.7	23.2	19.0	17.0	17.7	15.2	21.4	19.7	26.6	29.6	19.3	45.2	34.9
1975	38.5	37.7	33.8	56.6	51.0	16.9	17.6	15.4	19.5	18.8	14.6	14.7	12.8	19.9	18.5	24.6	27.0	18.7	40.0	31.7
1976	37.7	37.6	32.4	58.3	48.3	16.6	17.4	14.9	20.4	17.8	14.7	15.7	12.6	18.0	17.9	21.7	24.2	15.9	35.6	28.3
1977	37.0	36.7	31.1	57.5	51.0	15.4	17.1	12.9	18.7	16.6	14.5	15.3	13.0	17.8	15.0	21.7	24.4	16.5	30.8	28.1
1978	36.2	37.1	29.8	56.4	47.2	15.1	15.0	13.9	20.5	17.6	13.7	14.3	11.8	19.9	15.5	21.3	23.9	16.1	31.2	26.9
1979	34.4	34.0	28.8	53.2	49.0	14.0	14.8	13.0	14.7	15.5	13.2	13.9	11.6	16.3	16.0	19.4	22.1	14.8	28.1	21.8
1980	34.8	35.4	28.3	57.4	44.8	14.6	15.2	13.6	16.6	16.2	13.1	13.6	11.5	17.0	15.3	19.7	21.4	15.7	29.0	24.8
1981	33.5	32.8	28.3	53.1	45.3	14.0	14.9	12.8	17.5	14.0	12.6	12.9	11.0	14.9	17.5	19.0	20.6	15.2	26.3	23.2
1982	31.9	31.3	28.2	46.5	42.8	13.9	14.9	12.4	17.7	15.1	12.3	12.8	11.0	16.7	14.9	19.3	21.5	14.7	28.2	22.9
1983	31.3	31.1	26.4	51.1	39.4	13.0	13.5	11.9	15.4	14.7	11.6	11.8	10.1	16.3	14.7	19.0	21.2	14.7	25.4	23.8
1984	29.3	28.0	25.8	43.9	41.0	12.4	12.9	11.0	15.8	15.1	12.0	12.3	10.7	15.6	14.2	17.8	19.6	13.8	25.9	21.9
1985	28.5	27.9	23.3	47.9	40.7	11.8	11.7	10.8	15.3	14.9	11.4	11.5	9.9	15.8	15.1	17.7	19.2	13.6	28.5	21.6

NOTE: ICDA 8th revision codes for 1968–78 and ICD 9th revision codes for 1979–85 are 001–799.

Table 9. Death rates for malignant neoplasms among children 1–19 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years					10–14 years					15–19 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population																			
1968	8.0	9.1	7.7	7.3	5.1	7.2	8.3	6.9	5.3	4.0	5.5	6.1	5.1	5.3	5.0	7.4	9.3	5.7	8.9	5.7
1969	7.6	8.5	7.4	5.8	5.5	7.0	8.5	6.3	5.4	4.3	5.3	6.1	4.7	4.6	4.7	7.2	9.3	5.1	7.3	6.3
1970	7.5	8.5	6.9	7.6	5.7	6.8	8.2	6.1	4.9	4.1	5.2	5.8	4.8	4.6	4.0	7.3	8.9	5.9	8.5	4.3
1971	7.1	8.5	6.3	4.5	7.1	6.6	7.7	5.7	6.2	4.9	5.0	5.9	4.3	5.2	3.5	6.8	8.3	5.3	7.3	5.9
1972	5.9	6.6	5.7	5.7	4.5	6.0	7.1	5.4	5.5	4.1	4.9	5.5	4.7	4.0	3.9	6.7	8.2	5.6	6.7	5.0
1973	6.3	7.5	5.4	6.2	4.6	6.0	6.8	5.3	5.7	5.3	4.8	5.5	4.0	5.1	5.1	6.7	8.1	5.4	7.3	5.9
1974	5.8	6.6	5.8	4.8	2.7	5.8	7.0	5.1	5.2	4.2	4.6	5.2	4.1	4.6	4.0	6.1	7.4	4.8	7.1	5.2
1975	5.5	6.3	4.9	5.1	5.3	5.3	6.0	4.8	4.7	4.4	4.3	4.9	3.7	4.2	4.0	5.9	7.0	5.0	6.7	4.5
1976	5.2	5.8	5.2	4.5	4.1	5.4	6.6	4.5	5.2	3.8	4.4	5.4	3.6	4.2	4.1	5.7	7.2	4.4	6.7	3.9
1977	5.1	6.1	4.4	4.5	4.9	5.0	6.3	3.8	5.0	3.2	4.4	5.1	3.9	4.7	3.9	5.8	7.2	4.4	5.7	6.2
1978	4.8	5.6	4.5	4.9	3.2	4.5	4.9	4.2	5.2	3.6	3.8	4.5	3.1	4.4	3.6	5.4	6.3	4.3	7.5	4.0
1979	4.6	5.1	4.2	4.1	4.5	4.7	5.7	4.1	3.7	3.4	4.1	4.7	3.6	5.1	3.4	5.3	6.6	4.2	6.3	4.0
1980	4.5	5.4	3.6	5.1	3.9	4.7	5.9	3.9	3.5	3.4	3.9	4.6	3.5	3.8	3.4	5.4	6.3	4.4	6.4	4.5
1981	4.9	5.5	4.5	4.5	4.5	4.5	5.1	4.0	5.3	4.0	3.7	4.2	3.2	4.0	4.0	5.1	5.9	4.2	7.0	3.8
1982	4.6	5.2	4.3	4.0	4.2	4.6	5.7	3.8	4.8	3.3	3.7	4.2	3.2	4.3	3.6	5.3	6.1	4.3	6.4	4.3
1983	4.7	5.3	4.4	4.7	3.1	4.1	4.6	3.8	3.9	3.8	3.6	4.1	3.1	4.2	3.5	5.0	6.3	4.1	3.8	3.4
1984	4.0	4.4	3.8	3.5	3.1	3.6	4.3	3.1	3.5	3.0	3.5	4.0	3.0	3.8	3.6	4.8	5.9	3.9	5.6	3.3
1985	3.8	4.4	3.5	3.3	2.5	3.6	4.2	3.3	3.3	3.0	3.4	3.7	3.0	3.9	3.0	4.6	5.8	3.7	5.2	3.0

NOTE: ICDA 8th revision codes for 1968–78 are 140–209; ICD 9th revision codes for 1979—85 are 140–208.

Table 10. Death rates for leukemia among children 1–9 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population									
1968	3.8	4.3	3.8	2.5	1.5	3.7	4.4	3.6	2.7	1.4
1969	3.6	4.4	3.4	1.6	2.3	3.7	4.3	3.6	2.4	1.2
1970	3.6	4.2	3.5	2.4	1.9	3.4	4.0	3.4	1.6	1.6
1971	3.4	4.0	3.1	2.1	2.9	3.6	4.4	3.2	2.9	1.9
1972	2.4	2.6	2.5	2.2	1.4	3.1	4.0	2.7	2.5	1.4
1973	2.4	3.0	1.9	2.0	1.4	3.1	3.8	2.9	2.6	1.1
1974	2.1	2.5	2.0	1.7	0.9	2.9	3.5	2.8	2.0	1.1
1975	2.3	2.7	2.2	1.8	2.0	2.6	3.1	2.5	1.7	1.7
1976	2.0	2.1	1.9	2.0	1.3	2.7	3.5	2.3	1.9	1.6
1977	1.8	2.1	1.6	1.6	1.3	2.5	3.2	2.1	1.6	1.3
1978	1.8	2.1	1.7	1.5	1.0	2.2	2.4	2.1	1.9	1.4
1979	1.7	1.9	1.5	1.4	1.6	2.1	2.8	1.8	1.2	1.0
1980	1.5	1.6	1.3	1.6	1.2	2.1	3.0	1.6	1.2	1.1
1981	1.7	1.8	1.7	1.8	1.9	2.0	2.4	1.6	2.2	1.3
1982	1.5	1.6	1.3	1.2	1.8	1.9	2.4	1.6	1.8	1.2
1983	1.7	2.1	1.4	1.5	1.1	1.7	2.0	1.5	1.4	1.3
1984	1.2	1.3	1.2	1.1	1.1	1.4	1.7	1.3	1.4	0.9
1985	1.3	1.5	1.1	1.6	0.3	1.5	1.8	1.3	1.4	1.0

NOTE: ICDA 8th revision codes for 1968–78 are 204–207; ICD 9th revision codes for 1979–85 are 204–208.

Table 11. Death rates for congenital anomalies among children 1–9 years of age, by age, race, and sex: United States, 1968–85

Year	1–4 years					5–9 years				
	Total	White male	White female	Black male	Black female	Total	White male	White female	Black male	Black female
	Deaths per 100,000 population									
1968	9.8	9.9	9.3	11.7	10.7	3.1	3.3	2.9	3.0	3.0
1969	10.2	9.3	10.3	11.8	14.1	3.1	3.4	2.8	3.0	3.2
1970	9.7	9.4	9.2	12.7	11.7	2.8	3.0	2.8	2.3	2.1
1971	9.5	9.6	9.1	11.0	11.0	2.7	2.8	2.7	2.6	2.9
1972	10.3	9.7	10.6	12.9	10.2	3.0	2.8	3.0	3.3	4.1
1973	9.5	9.6	9.2	10.2	11.0	2.7	2.7	2.8	2.6	2.3
1974	8.9	8.8	8.5	11.0	10.3	2.7	2.8	2.7	3.0	2.5
1975	8.8	8.3	9.0	9.6	10.3	2.4	2.5	2.4	1.8	2.5
1976	8.9	8.4	8.9	9.9	11.4	2.4	2.3	2.4	2.7	3.1
1977	8.7	8.4	8.3	10.6	11.3	2.1	2.1	2.0	2.5	2.9
1978	8.3	9.1	7.3	7.3	10.7	2.0	2.0	1.9	2.6	2.9
1979	8.1	8.6	7.2	8.7	10.4	1.7	1.7	1.5	2.1	2.4
1980	8.0	8.2	7.4	10.6	8.5	1.8	2.0	1.7	1.8	2.0
1981	7.6	7.5	7.1	9.3	9.9	1.8	1.8	1.9	1.5	1.8
1982	7.5	7.4	7.1	8.2	9.9	1.8	1.9	1.6	2.3	2.2
1983	6.5	6.5	6.2	8.1	7.0	1.5	1.6	1.3	2.1	1.9
1984	6.7	6.8	6.5	6.5	6.7	1.5	1.5	1.3	1.6	2.0
1985	5.9	6.0	5.4	6.9	6.6	1.6	1.4	1.5	2.9	1.7

NOTE: ICDA 8th revisoln codes for 1968–78 and ICD 9th revision codes for 1979–85 are 740–759.

Table 12. Death rates for injuries among children 1–19 years of age, by age, country, and sex: United States and selected countries, selected years, 1955–85

Age and country	Male				Female			
	1955–59	1968–71	1981	1985	1955–59	1968–71	1981	1985
	Deaths per 100,000 population							
1–4 years								
United States	35.3	37.0	28.0	24.1	27.0	26.7	18.9	15.8
Federal Republic of Germany	49.3	37.5	23.2	15.1	31.0	25.3	16.7	11.3
France	30.8	30.3	22.0	16.2	20.3	21.1	15.2	10.2
The Netherlands	46.2	40.1	21.2	12.9	26.4	23.0	12.7	7.0
England and Wales	23.3	24.0	12.0	12.2	16.6	14.6	8.2	6.9
Sweden	36.5	18.8	[1]11.5	6.7	16.5	11.3	[1]6.8	3.3
Canada	50.2	41.1	[2]30.8	19.3	35.7	27.6	[2]23.5	12.3
Japan	89.1	55.5	27.4	21.0	60.7	34.4	16.0	12.1
Australia	45.0	35.9	[1]30.5	24.3	29.0	27.0	[1]24.2	18.4
5–9 years								
United States	24.8	26.0	18.0	14.9	13.4	14.3	9.8	8.7
Federal Republic of Germany	32.7	35.0	18.9	12.2	14.6	18.1	10.0	8.7
France	14.7	21.2	16.7	12.0	8.5	12.2	10.0	7.7
The Netherlands	32.5	32.7	11.8	9.4	12.9	13.7	7.2	3.0
England and Wales	18.2	18.0	10.5	8.4	8.2	7.6	4.8	4.4
Sweden	33.1	21.1	7.9	6.8	9.9	11.1	4.4	4.2
Canada	40.4	34.3	[2]28.3	14.7	20.0	18.1	[2]14.1	8.6
Japan	42.6	30.2	15.5	12.5	15.7	12.5	5.6	4.4
Australia	26.1	24.4	[1]16.4	15.5	11.9	12.6	[1]9.4	7.7
10–14 years								
United States	30.3	28.7	20.3	18.4	9.9	11.3	8.1	7.8
Federal Republic of Germany	22.7	23.8	12.3	9.2	7.3	10.8	7.3	4.5
France	17.5	21.3	14.5	13.0	6.4	10.7	8.1	5.9
The Netherlands	19.3	20.1	12.0	7.2	7.7	11.1	5.2	4.8
England and Wales	15.8	15.7	12.2	13.9	5.1	6.0	5.2	5.3
Sweden	21.6	15.0	9.5	7.0	7.0	7.8	3.3	4.1
Canada	36.4	30.7	[2]24.8	16.6	12.8	13.8	[2]12.4	8.3
Japan	19.4	13.8	6.9	6.0	7.9	4.7	2.2	2.1
Australia	25.5	23.3	[1]21.2	13.1	9.0	8.9	[1]10.1	5.0
15–19 years								
United States	...	[3]96.3	77.2	64.1	...	[3]29.0	25.2	23.6
Federal Republic of Germany	---	[3]105.0	69.7	48.4	---	[3]28.6	21.8	15.1
France	---	[3]86.2	69.5	49.9	---	[3]27.2	25.4	18.7
The Netherlands	---	[3]69.1	36.9	27.6	---	[3]20.1	11.2	9.0
England and Wales	---	[3]53.9	50.0	35.6	---	[3]15.1	10.8	9.9
Sweden	---	[3]60.8	34.6	35.0	---	[3]17.5	12.6	13.7
Canada	---	[3]93.6	[2]90.6	55.7	---	[3]30.6	[2]23.5	21.1
Japan	---	[3]67.3	41.7	42.5	---	[3]8.1	7.7	7.1
Australia	---	[3]114.7	[1]94.9	67.1	---	[3]37.1	[1]24.1	21.3

[1]1980.
[2]1978.
[3]1971 only.

NOTE: Because the Marcusson and Oehmisch (1977) article did not present data for 15–19-year-olds, the U.S. rate is excluded as well.

SOURCES: Marcusson and Oehmisch, 1977; Taket, 1986 and personal communication for 1971 data for 15–19-year-olds; World Health Organization data for 1985.

Table 13. Death rates for natural causes of death among children 1–19 years of age, by age, country, and sex: United States and selected countries, selected years, 1960–85

Age and country	Male				Female			
	1960	1970	1980	1985	1960	1970	1980	1985
1–4 years	Deaths per 100,000 population							
United States	82.9	53.0	38.5	30.9	70.5	46.5	30.9	25.9
Federal Republic of Germany	98.8	69.0	39.7	30.6	86.2	57.9	31.2	29.3
France	100.5	57.4	38.2	31.0	86.3	47.1	35.9	28.7
The Netherlands	80.6	54.0	38.7	31.8	74.4	46.5	39.1	29.6
England and Wales	71.3	55.3	39.2	35.9	64.2	48.7	36.7	32.1
Sweden	57.8	40.2	24.4	23.3	63.3	25.5	27.3	24.6
Canada	80.9	52.5	36.9	26.8	74.3	48.5	31.0	23.9
Japan	180.3	64.1	39.3	32.3	167.2	54.8	34.7	27.6
Australia	77.6	67.5	33.9	30.9	76.8	52.8	23.5	25.5
5–9 years								
United States	31.0	22.9	15.4	12.2	26.6	19.5	14.0	11.4
Federal Republic of Germany	[1]31.1	[2]25.6	16.8	11.3	[1]24.9	[2]20.8	12.4	12.7
France	27.2	24.9	22.2	15.1	25.0	20.6	16.1	12.4
The Netherlands	30.1	[3]21.3	19.0	11.7	27.4	[3]17.7	13.3	10.4
England and Wales	31.9	[4]21.8	18.8	12.5	24.9	[4]20.4	15.8	13.0
Sweden	23.2	16.7	13.7	12.4	20.0	23.0	9.9	5.5
Canada	28.9	23.4	17.1	11.1	24.3	20.5	13.4	9.5
Japan	58.8	25.5	16.4	12.8	58.9	22.5	13.2	10.1
Australia	28.7	24.0	15.0	13.9	25.2	20.0	13.0	11.3
10–14 years								
United States	24.8	19.2	13.9	12.1	23.4	16.9	12.1	10.6
Federal Republic of Germany	[1]24.6	[2]20.2	14.4	10.7	[1]21.0	[2]17.2	11.6	10.4
France	23.3	20.1	17.3	13.2	18.8	15.0	12.8	11.5
The Netherlands	20.7	[3]19.3	14.2	13.7	17.5	[3]16.2	10.7	8.7
England and Wales	22.4	20.0	16.2	13.9	19.5	17.8	14.1	12.9
Sweden	21.8	17.2	11.4	10.2	18.9	12.8	10.9	9.9
Canada	21.9	19.5	13.9	12.0	21.2	17.0	13.7	10.7
Japan	37.8	24.7	14.5	12.0	35.2	20.0	10.9	10.2
Australia	24.9	18.0	12.0	14.0	23.0	19.0	11.0	10.0
15–19 years								
United States	37.4	34.0	22.4	20.4	30.2	26.2	16.9	14.9
Federal Republic of Germany	[1]40.3	[2]31.0	25.3	19.8	[1]31.1	[2]23.6	16.6	13.0
France	33.7	30.9	28.7	26.4	23.5	21.2	19.4	16.9
The Netherlands	34.8	[3]27.6	23.7	26.1	19.3	[3]19.4	17.8	13.9
England and Wales	32.9	32.3	25.1	24.1	24.3	19.7	18.1	15.3
Sweden	31.1	28.7	16.5	14.9	24.5	15.9	12.2	10.0
Canada	37.9	24.4	20.9	23.8	26.5	19.9	13.4	15.2
Japan	56.8	36.8	21.8	19.0	48.2	28.8	14.1	12.6
Australia	36.8	31.0	22.0	24.1	26.3	23.0	14.0	15.0

[1]Deaths for 1961 and population for 1962.
[2]Population is for 1971.
[3]1971.
[4]Great Britain.

SOURCES: Kaminski, Bouvier-Colle, and Blondel, 1984; World Health Organization, 1988 personal communication and selected individual country vital statistics reports.

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