Annual Summary of Vital Statistics—2001

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Annual Summary of Vital Statistics—2001

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ABSTRACT. The number of births, the crude birth rate (14.5 in 2001), and the fertility rate (67.2 in 2001) all declined slightly (by 1% or less) from 2000 to 2001. Fertility rates were highest for Hispanic women (107.4), followed by Native American (70.7), Asian or Pacific Islander (69.4), black (69.3), and non-Hispanic white women (58.0). During the early to mid 1990s, fertility declined for non-Hispanic white, black, and American Indian women. Rates for these population groups have changed relatively little since 1995; however, fertility has increased for Asian or Pacific Islander and Hispanic women.

The birth rate for teen mothers continued to fall, dropping 5% from 2000 to 2001 to 45.9 births per 1000 females aged 15 to 19 years, another record low. The teen birth rate has fallen 26% since 1991; declines were more rapid (35%) for younger teens aged 15 to 17 years than for older teens aged 18 to 19 years (20%). The proportion of all births to unmarried women remained about the same at one-third. Smoking during pregnancy continued to decline; smoking rates were highest among teen mothers.

The use of timely prenatal care increased slightly to 83.4% in 2001. From 1990 to 2001, the use of timely prenatal care increased by 6% (to 88.5%) for non-Hispanic white women, by 23% (to 74.5%) for black women, and by 26% (to 75.7%) for Hispanic women. The number and rate of twin births continued to rise, but the triplet/+ birth rate declined for the second year in a row. For the first year in almost a decade, the preterm birth rate declined (to 11.6%); however, the low birth weight rate was unchanged at 7.6%. The total cesarean delivery rate jumped 7% from 2000 to 2001 to 24.4% of all births, the highest level reported since these data became available on birth certificates (1989). The primary cesarean rate rose 5%, whereas the rate of vaginal birth after a previous cesarean delivery tumbled 20%.

In 2001, the provisional infant mortality rate was 6.9 per 1000 live births, the same as in 2000. Racial differences in infant mortality remain a major public health concern, with the rate for infants of black mothers 2.5 times those for infants of non-Hispanic white or Hispanic mothers. In 2000, 66% of all infant deaths occurred among the 7.6% of infants born low birth weight. Among all states, Maine and Massachusetts had the lowest infant mortality rates. The United States continues to rank poorly in international comparisons of infant mortality.

The provisional death rate in 2001 was 8.7 deaths per 1000 population, the same as the 2000 final rate. In 2000, unintentional injuries and homicide remained the leading and second-leading causes of death for children 1 to 19 years of age, although the death rate for homicide decreased by 10% from 1999 to 2000. Among unintentional injuries to children, two-thirds were motor vehicle-related; among homicides, two-thirds were firearm-related. *Pediatrics* 2002;110:1037–1052; *birth, birth weight-specific mortality, death, infant mortality, low birth weight, mortality, multiple births, vital statistics, International Classification of Diseases, 10th Revision, year 2001 population.*

ABBREVIATIONS. CDC, Centers for Disease Control and Prevention; NCHS, National Center for Health Statistics; IMR, infant mortality rate; NMR, neonatal mortality rate; PNMR, postneonatal mortality rate; TFR, total fertility rate; LBW, low birth weight; VBAC, vaginal births after previous cesarean; VLBW, very low birth weight.

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This article is a long-standing feature in *Pediatrics*. This year we have included a new section on preterm birth, thus providing additional detail about an important measure of infant health, and a section on deaths on September 11, 2001. We have also included, for the first time since 1999,[1] state-by-state comparisons of neonatal mortality rates for 500- to 1499-g infants, to provide an indicator of the effectiveness of neonatal care. In addition,

we have included a special section focusing on the impact of the 2000 census on vital statistics data.

For birth data, the most current information (2001) was based on preliminary data, whereas more detailed analyses were based on final data (2000). For mortality data, the 2001 preliminary data were not available at the time of manuscript preparation, so 2001 provisional data were used. However, because the 2001 provisional data contain considerably less detail, most of the analysis of mortality data uses 2000 final data. For childhood deaths, we have expanded our previous analysis of 2000 mortality data[2] to include information on childhood firearm and motor vehicle injuries. However, we have not repeated information on infant and general mortality for 2000 for leading causes of death shown previously,[2] although we expect to include these data again in next year's article.

METHODS

The data presented in this report were obtained from vital statistics records—birth certificates, fetal death reports, and death certificates for residents of the United States. Data for 2000 and earlier years are final and include all records. Birth data for 2001 are preliminary and are based on over 96% of births reported to the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). Mortality data for 2001 are provisional and are based on counts of death certificates reported to NCHS by state health departments. More complete descriptions of vital statistics data systems are available elsewhere.[3–6] Preliminary birth and provisional mortality estimates for 2001 may differ from the final data for 2001 that will include all records, but differences are usually small.

Current vital statistics patterns and recent trends through 2001 are presented in this report by state of residence, age, race, and Hispanic origin, as well as other birth and death characteristics. More detailed data are available in the final birth files for 2000 than in the preliminary files for 2001, so some of the detailed analyses of birth patterns focus on the 2000 data.

Hispanic origin and race are collected as separate items in vital records. Persons of Hispanic origin may be of any race, although most births and infant deaths of Hispanic origin (97%) are to white women. Because there are often important differences in childbearing patterns between non-Hispanic white and Hispanic women, all tables which present data by race include data separately for non-Hispanic white and Hispanic women.

The mother's marital status for birth data, underlying cause of death for deaths, and birth weight for infant deaths have the following special considerations. Mother's marital status was reported directly on the birth certificates or through the electronic birth registration process in all but 2 states (Michigan and New York) in 2000 and 2001. Details about the reporting of marital status in those 2 states and methods of edits and imputations applied to other items on the birth certificate are presented in NCHS publications.[3,5,7]

Cause of death statistics in this report are based solely on the underlying cause of death. The underlying cause of death is defined as "(a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury." From 1999 to the present, cause of death data in the United States have been classified according to the *International Classification of Diseases, 10th Revision*.[8] From 1979–1998, cause of death data in the United States were classified according to the *International Classification of Diseases, Ninth Revision*.[9]

Infant mortality refers to the death of an infant under 1 year of age. Infant mortality rates (IMRs) were computed by dividing the total number of infant deaths in each calendar year by the total number of live births in the same year.[4,6,10] Neonatal mortality rates (NMRs) are shown for infants dying between 0 and 27 days of age, and postneonatal mortality rates (PNMRs) are shown for infants dying between 28 days and 1 year of age. Perinatal mortality rates include fetal deaths at 28+ weeks of gestation and infant deaths at <7 days of age. Fetal mortality rates are shown for fetal deaths at 20+ weeks of gestation. Fetal and perinatal mortality rates were computed by dividing the number of fetal or perinatal deaths by the number of live births plus fetal deaths. IMRs, NMRs, PNMRs, and fetal and perinatal mortality rates are all shown per 1000 births (births plus fetal deaths for fetal and perinatal mortality rates).

The latest infant mortality statistics by birth weight were obtained from the 2000 period linked birth-infant death data set.[10] In this data set, the death certificate was linked with the corresponding birth certificate for each infant who died in the United States in 2000. The purpose of this linkage is to use additional variables available from the birth certificate, such as birth weight, to better interpret infant mortality patterns. Numbers of infant deaths were weighted to compensate for the 1% to 2% of infant deaths for whom the matching birth certificate could not be identified.[10] The weighting procedure results in the same overall IMR as that based on unlinked mortality data; however, small differences may exist because of geographic coverage differences, additional quality control, and weighting.[10]

Population denominators for the calculation of birth, death, and fertility rates are estimates of the US population as of July 1 of each year, produced by the US Census Bureau.[11,12] All population denominators for this article for years since 1990 (including 2000 and 2001) are estimates based on the 1990 census. NCHS/CDC will recalculate the population-based rates for the 1990s and 2000 when population estimates from the 2000 census and intercensal estimates become available. Because of differences between postcensal estimated and census counts, it is expected that rates based on the 2000 census will differ from those based on the 1990 census-based estimates. Rates for Hispanics in particular are believed to be overstated by approximately 8% to 10%.[3]

International data on births, birth rates, and infant mortality rates were obtained from United Nations sources including the *1998 Demographic Yearbook*,[13] and the *Population and Vital Statistics Reports, Statistical Papers,* with the most recent data as of January 1, 2001,[14] and January 1, 2002.[15] If there was a discrepancy between figures for the *1998 Demographic Yearbook* and the later reports, the later report was used. Data on IMRs were not available for 1999 for 5 countries, although for 2 of these countries, provisional data were available for 2000.

NATURAL INCREASE

As a result of natural increase (the excess of births over deaths), ~1.6 million persons were added to the population in 2000 (Table 1).[5,6] The rate of natural increase was 5.8 persons per 1000 population in 2001 (based on preliminary and provisional data), compared with 6.0 in 2000.

BIRTHS

The number of births in the United States decreased slightly in 2001 to 4 040 121 (preliminary data), down <1% compared with the final total for 2000 (Table 1).[5] The birth rate in 2001 was 14.5 births per 1000 population, down 1% from the rate for 2000 (14.7). The fertility rate, defined as the number of births per 1000 women aged 15 to 44 years, also decreased slightly to 67.2 in 2001, compared with 67.5 in 2000. Following declines from 1991–1997, the fertility rate had increased from 1998 to 2000.[3]

Racial and Ethnic Composition

Fertility rates vary among race and ethnicity groups, although the disparity has narrowed in recent years for most groups. The rate for Hispanic women (107.4 births per 1000 aged 15–44 years in preliminary 2001 data) remains the highest.[5] Rates in 2001 were considerably lower for black (69.3), Native American (70.7), and Asian or Pacific Islander women (69.4), and substantially lower for non-His-

TABLE 1. Vital Statistics of the United States, 1915–2001 (Selected Years)

Item	Number			Rate*						
	2001	2000	1999	2001	2000	1999	1990	1980	1950	1915†
Live births	4 040 121	4 058 814	3 959 417	14.5	14.7	14.5	16.7	15.9	24.1	29.5
Fertility rate				67.2	67.5	65.9	70.9	68.4	106.2	125.0
Deaths	2 419 000	2 403 351	2 391 399	8.7	8.7	8.8	8.6	8.8	9.6	13.2
Age-adjusted rate				—	8.7	8.8	9.4	10.4	14.5	21.7
Natural increase	1 621 121	1 655 463	1 568 018	5.8	6.0	5.8	8.1	7.1	14.5	16.3
Infant mortality	27 600	28 035	27 937	6.9	6.9	7.1	9.2	12.6	29.2	99.9
Population base (in thousands)				277 740	275 265	272 691	248 710	226 546	150 697	100 546

* Rates per 1000 population except for fertility, which is per 1000 women aged 15 to 44 years and infant mortality, which is per 1000 live births.
† Birth rate adjusted to include states not in registration area (10 states and the District of Columbia when started in 1915). Death rate is for death registration area. Infant mortality rate is for birth registration area.
—Data not available.
Notes: Birth data for 2001 are preliminary: mortality and infant mortality data for 2001 are provisional. All data for 2000 and earlier years are final. Populations are as of July 1 for 1999, 2000, and 2001, and as of April 1 in 1950, 1980, and 1990. Population for 1915 is the midyear estimate based on the April 15, 1910 census.
Source: CDC/NCHS, National Vital Statistics System and the US Census Bureau.

panic white women (58.0, tabular data not shown). Between 2000 and 2001, fertility rates declined for non-Hispanic white, black, Native American, and Asian or Pacific Islander women, but rose for Hispanic women. In 2001, 21% of all births in the United States were to Hispanic women, compared with 14% in 1989 when national data became available for this group.

Among populations of Hispanic origin for which fertility rates can be reliably computed, Mexican American women continue to have the highest fertility, with a rate of 115.1 per 1000 in 2000 (Table 2), and the highest age-specific birth rates among women under age 30. In contrast, Asian or Pacific Islander women have the highest rates among women age 30 and older.[3]

Trends in Age-Specific Birth Rates

Teen Childbearing

The birth rate for teenagers dropped 26% between 1991, when it reached a 20-year high (62.1 per 1000 aged 15–19), and 2001 (45.9). The 2001 rate (preliminary data) was 5% lower than in 2000 (48.5), and is the lowest rate in >6 decades for which comparable data have been available.[5,16] The number of births to teenagers declined in 2001, entirely as a result of the declining birth rate; in fact, the number of female teenagers has increased steadily since 1993.[11,12]

Teen birth rates declined for all age, race, and Hispanic origin groups from 2000 to 2001 (Table 3). The rate for the youngest teens, aged 10 to 14 years, was 0.8 per 1000; the number of births in this age group in 2001 (7791) was the fewest since 1965. In 2001, teen birth rates ranged from 20.5 for Asian or Pacific Islander teens to 92.4 for Hispanic teens. Teen birth rates declined during the 1990s for all race and Hispanic origin groups (Fig 1; Table 3),[3,5,16] although the rate for Hispanic teens has declined only since the mid 1990s. On the other hand, the rate for black teenagers in 2001 was lower than in any year since 1960 when data for black women first became available.[17] The reduction in the birth rate for black teens aged 15 to 17 is most striking, as this rate declined 46% from 1991 to 2001.[3,16]

TABLE 2. Live Births, Age-Specific Birth Rates,* and TFRs by Race and Hispanic Origin of Mother: United States, Final, 2000

	Live Births	Age-Specific Birth Rate by Age of Mother*								TFR†
		15–44‡	15–17	18–19	20–24	25–29	30–34	35–39	40–44	
Total	4 058 814	67.5	27.4	79.2	112.3	121.4	94.1	40.4	7.9	2130.0
White	3 194 005	66.5	23.6	72.7	107.9	124.3	97.4	40.7	7.8	2113.5
Black	622 598	71.7	50.4	121.3	144.2	105.3	67.5	32.2	7.2	2193.0
Native American§	41 668	71.4	39.6	113.1	135.6	106.9	68.3	32.5	7.3	2100.5
Asian/Pacific Islander	200 543	70.7	11.5	37.0	72.0	125.8	120.8	60.4	12.7	2072.5
All Hispanic	815 868	105.9	60.0	143.6	184.6	170.8	109.0	48.7	11.6	3108.0
Mexican	581 915	115.1	65.0	154.5	197.9	175.4	112.4	50.7	12.2	3265.5
Puerto Rican	58 124	84.3	63.2	143.1	181.3	121.3	74.2	34.1	6.7	2584.0
Cuban	13 429	57.3	16.5	42.2	74.2	138.9	84.1	42.0	8.5	1871.0
Central and South American and other	162 400	94.3	47.0	118.0	154.5	180.2	117.7	50.2	12.4	2969.5
Non-Hispanic white	2 362 968	58.5	15.8	56.8	89.6	*112.8*	94.0	39.0	7.2	1879.0

* Rates per 1000 women in age-specific group.
† Sum of age-specific birth rates times 5 divided by 1000 (includes rates for ages 10–14 and 45–49 years, not shown separately).
‡ Relates the number of births to women of all ages to women aged 15 to 44 years.
§ Includes births to Aleuts and Eskimos.
Note: Race and Hispanic origin are reported separately on birth certificates. Persons of Hispanic origin may be of any race. In this table, Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Populations are from the US Census Bureau and are based on the 1990 Census. See section on Impact of the 2000 Census on vital statistics rates.
Source: CDC/NCHS, National Vital Statistics System, natality.

TABLE 3. Birth Rates* for Teens, by Age, Race, and Hispanic Origin: United States, Final, Selected Years, 1990–2000 and Preliminary 2001

Age and Race and Hispanic Origin of Mother	2001	2000	1999	1991	1990‡	Percent Change 1991–2001
15–19 y						
All races†	45.9	48.5	49.6	62.1	59.9	−26
White, total	41.7	43.6	44.6	52.8	50.8	−21
White, non-Hispanic	30.2	32.5	34.0	43.4	42.5	−30
Black, total	73.1	79.4	81.0	115.5	112.8	−37
Hispanic	92.4	94.4	93.4	106.7	100.3	−13
15–17 y						
All races†	25.3	27.4	28.7	38.7	37.5	−35
White, total	21.9	23.6	24.8	30.7	29.5	−29
White, non-Hispanic	14.2	15.8	17.1	23.6	23.2	−40
Black, total	45.6	50.4	52.0	84.1	82.3	−46
Hispanic	56.9	60.0	61.3	70.6	65.9	−19
18–19 y						
All races†	75.8	79.2	80.3	94.4	88.6	−20
White, total	70.1	72.7	73.5	83.5	78.0	−16
White, non-Hispanic	53.4	56.8	58.9	70.5	66.6	−24
Black, total	113.0	121.3	122.8	158.6	152.9	−29
Hispanic	143.1	143.6	139.4	158.5	147.7	−10

* Rates per 1000 women in specified group.
† Includes races other than white and black.
‡ Excludes data for New Hampshire and Oklahoma, which did not report Hispanic origin.
Note: Race and Hispanic origin are reported separately on birth certificates. Persons of Hispanic origin may be of any race. In this table, Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Populations are from the US Census Bureau and are based on the 1990 Census. See section on Impact of the 2000 Census on vital statistics rates.
Source: CDC/NCHS, National Vital Statistics System, natality.

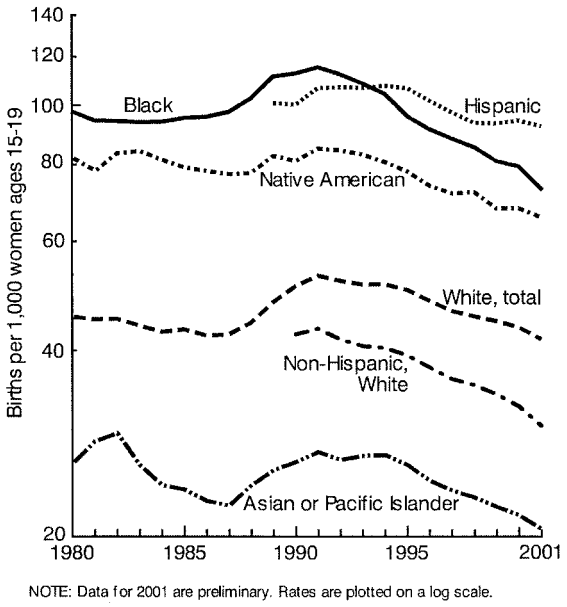

Fig 1. Birth rate for teens 15 to 19 years of age by race and Hispanic origin: United States, 1980–2001.

Among teenagers, an estimated 55% of pregnancies ended in live birth, 29% in induced abortion, and 15% in fetal loss in 1997, the most recent year for which abortion statistics are available.[18] During the 1990–1997 period, teenage birth rates fell 13%, while abortion rates fell much more, by nearly a third. Patterns by age, race, and ethnicity are similar to those for live births: pregnancy rates declined much more for younger than for older teenagers and much more for white and black teenagers than for Hispanics.

During the late 1990s, the declines in teenage birth rates were driven by reductions in first birth rates, which account for nearly 4 in 5 teen births. Rates for repeat teen births have stabilized since 1996 after falling in the early 1990s.[16] Repeat births account for only 21% of all teen births, but are of particular concern; as a teenager with 2 or more children is at greater risk for a host of difficulties.[5,19]

Childbearing for Women 20 Years of Age and Older

From 2000 to 2001, the birth rates for women 20 to 24 years of age decreased 2% to 110.2, while the rate for 25- to 29-year-olds increased <1% to 121.8 (preliminary data). Rates for women in these age groups have been relatively stable over the last 2 decades.[3]

Birth rates for women in their thirties continued to increase in 2001, to their highest levels in at least 30 years, to 95.6 per 1000 aged 30 to 34 and 41.4 per 1000 aged 35 to 39 years. Birth rates also rose for women in their forties, reaching 8.1 per 1000 women aged 40 to 44 years in 2001, and more than doubling since 1981 (3.8). The steady upward trend in the rates for women in their thirties and forties reflects in large part the ongoing tendency for many women to make up for previously postponed childbearing.[3,20]

The total fertility rate (TFR) is an estimate of the number of births that a hypothetical group of 1000 women would have if they experienced, throughout their childbearing years, the age-specific birth rates observed in a given year. Because it is computed from age-specific birth rates, the TFR is age-adjusted; it is not affected by changes over time in age composition. In 2001, the TFR was 2121.5, slightly lower that the 30-year high of 2130.0 in 2000. The TFR varies significantly among racial and ethnic origin groups (Table 2). From 2000 to 2001, TFRs declined by 1% for non-Hispanic white (1867.0) and Native

American (2072.0) mothers; by 2% for Asian or Pacific Islander mothers (2038.0); and by 3% for black mothers (2119.0). In contrast, the TFR for Hispanic women increased 2% to 3156.5 in 2001—the highest TFR reported for this group since national data became available in 1989.

Unmarried Mothers

The number of births to unmarried women increased very slightly from 1 347 043 in 2000 to 1 350 154 in 2001 (preliminary data).[3,5] This increase was entirely attributable to a 1% rise in the number of unmarried women of childbearing age.[5] The birth rate for unmarried women declined modestly to 44.9 births per 1000 unmarried women aged 15 to 44 years in 2001 compared with 45.2 in 2000. The birth rate has remained below the peak reached in 1994 (46.9). In 2001, 33.4% of all births were to unmarried women, slightly higher than in 2000 (33.2%). This proportion has changed little since 1994.[21] It increased for non-Hispanic white women (22.5%), and declined slightly for black (68.3%) and Hispanic (42.4%) women.

The number of nonmarital births to teenagers declined from 2000 to 2001. Declines were substantial for teenagers under 15 years (down 9%) and aged 15 to 17 years (down 7%). The number also fell (by 3%) for 18- to 19-year-olds. Despite these reductions, the proportions of nonmarital births among teenagers rose slightly in 2001 because total births to teenagers declined even more than births to unmarried teenagers. Birth rates for unmarried teenagers, available through 2000, describe the risk that an unmarried teenager will give birth. This rate declined by 15% overall between 1994 and 2000.[3]

Smoking During Pregnancy

Smoking during pregnancy has declined steadily since 1989, the first year this information was reported on the birth certificate. In 2000 (latest year for which data are available), 12.2% of women reported smoking during pregnancy, which was 37% lower than in 1989 (19.5%).[3,22] Tobacco use during pregnancy is a risk factor for a variety of adverse outcomes, including low birth weight (LBW), intrauterine growth retardation, and infant mortality, as well as negative consequences for child health.[3,10,23–26]

The percentage of mothers who smoked during pregnancy was highest for non-Hispanic white women (15.6%), moderate for black women (9.1%), and lowest for Hispanic women (3.5%; Table 4). Teen smoking during pregnancy decreased from 18.1% to

TABLE 4. Percentage of Births With Selected Characteristics, by Race and Hispanic Origin of Mother: United States, Final 1990, 2000, Preliminary 2001

	All Races*			White, Total			Non-Hispanic White			Black, Total			Hispanic		
	2001	2000	1990	2001	2000	1990	2001	2000	1990†	2001	2000	1990	2001	2000	1990†
Mother															
<20 y of age	11.3	11.8	12.8	10.2	10.6	10.9	8.3	8.7	9.6	18.9	19.7	23.1	15.6	16.2	16.8
Unmarried	33.4	33.2	28.0	27.6	27.1	20.4	22.5	22.1	16.9	68.3	68.5	66.5	42.4	42.7	36.7
<12 completed y of school‡	—	16.4	17.6	—	16.7	17.1	—	8.1	15.2	—	16.9	19.6	—	44.4	53.9
16 or more completed y of school‡	—	28.0	20.1	—	29.4	21.7	—	35.5	22.5	—	14.6	9.4	—	9.1	5.1
Smoker§	—	12.2	18.4	—	13.2	19.4	—	15.6	20.9	—	9.1	15.9	—	3.5	6.7
Diabetes during pregnancy	—	2.9	2.1	—	2.8	2.2	—	2.8	2.3	—	2.7	1.8	—	2.8	2.4
Pregnancy-associated hypertension	—	3.9	2.7	—	3.9	2.8	—	4.3	3.1	—	4.2	2.7	—	2.8	2.3
Health care utilization															
First trimester prenatal care	83.4	83.2	75.8	85.2	85.0	79.2	88.5	88.5	83.3	74.5	74.3	60.6	75.7	74.4	60.2
Midwife-attended births	—	7.8	3.9	—	7.8	3.9	—	7.2	3.2	—	7.3	4.5	—	9.6	6.2
Cesarean delivery rate	24.4	22.9	22.7	24.2	22.8	23.0	24.5	23.1	23.4	25.8	24.3	22.1	23.5	22.1	21.2
Infant															
Birth weight															
VLBW‖	1.4	1.4	1.3	1.2	1.1	1.0	1.2	1.1	0.9	3.0	3.1	2.9	1.1	1.1	1.0
LBW‖	7.6	7.6	7.0	6.7	6.5	5.7	6.7	6.6	5.6	12.9	13.0	13.3	6.5	6.4	6.1
Preterm birth¶	—	11.6	10.6	—	10.6	8.9	—	10.4	8.5	—	17.3	18.8	—	11.2	11.0
Multiple births per 1000 total births															
Live births in twin deliveries (not percent)	—	29.3	22.6	—	29.2	22.1	—	32.2	22.9	—	33.1	26.5	—	20.2	18.0
Live births in higher-order multiple deliveries (not percent)	—	1.8	0.7	—	2.1	0.8	—	2.5	0.9	—	0.8	0.5	—	0.8	0.4

* Includes races other than white and black.
† Excludes data for New Hampshire and Oklahoma, which did not report Hispanic origin.
‡ Includes mothers 20 years of age and older. For 1990, excludes data for New York (exclusive of New York City) and Washington which did not report educational attainment of mother.
§ For 2000, excludes data for California, for 1999 excludes data for California and South Dakota, and for 1990 excludes data for California, Indiana, New York, Oklahoma, and South Dakota which did not report tobacco use during pregnancy.
‖ VLBW is birth weight of <1500 g (3 lb, 4 oz), and LBW is birth weight of <2500 g (5 lb, 8 oz).
¶ Born before 37 completed weeks of gestation.
Note: Race and Hispanic origin are reported separately on birth certificates. Persons of Hispanic origin may be of any race. In this table, Hispanic women are classified only by place of origin; non-Hispanic women are classified by race.
Source: CDC/NCHS, National Vital Statistics System, natality.

17.8% from 1999 to 2000, a reversal of their generally upward trend since 1994. Still, pregnant teens have higher smoking rates than any other age group, and teen smoking remains a major public health problem. Variations by race and Hispanic origin were particularly marked for teen smokers. Fully 30.2% of non-Hispanic white teens aged 15 to 19 years smoked during pregnancy, compared with only 4.3% of Hispanic teens. Smoking during pregnancy by black teenagers, historically relatively rare, has risen from 5.0% to 7.2% since 1994.[3,22]

Prenatal Care

The percentage of women who began prenatal care in their first trimester of pregnancy increased slightly from 83.2% in 2000 to 83.4% in 2001 (Table 4). This percentage has increased by 10% since 1990 (75.8%). Timely receipt of prenatal care is 1 area where efforts to reduce racial disparities in health have been partially successful, although disparities still exist. From 1990 to 2001, the percentage of women with first trimester care increased by 6% (from 83.3% to 88.5%) for non-Hispanic white women, but by 23% for black women (from 60.6% to 74.5%), and by 26% for Hispanic women (from 60.2% to 75.7%).

The benefits of prenatal care are difficult to measure, but timely and appropriate prenatal care may promote better birth outcomes by providing early risk assessment to manage preexisting medical conditions, and by offering health behavior advice such as smoking cessation and nutrition counseling.[27–29] The proportion of women beginning care late in pregnancy (during the third trimester), or with no care at all, declined to 3.8% (preliminary data) in 2001, compared with 6.1% in 1990.

Cesarean Delivery

The cesarean delivery rate increased sharply, by 7%, from 22.9% of all births in 2000 to 24.4% of births in 2001 (Table 4).[3,5,30] The cesarean delivery rate declined steadily between 1989 and 1996, but has since climbed 17% in 5 years (Fig 2). The current level is the highest reported since these data have been available from birth certificates (1989). The rise is attributable to both an increase in the primary cesarean rate (first cesareans per 100 live births to women who had no previous cesarean; 16.9% in 2001) and a sharp decline in the rate of vaginal births after previous cesarean (VBAC) delivery. The VBAC rate fell 20% from 20.6% per 100 women with a previous cesarean delivery in 2000 to 16.5% in 2001. It had risen 50% from 1989–1996, but has fallen 72% since the 1996 high.

A recent study showed that cesarean rates rose for all racial, ethnic, and age groups between 1996 and 1999.[30] From 2000 to 2001, they increased 6% among non-Hispanic white (24.5%), black (25.8%), and Hispanic (23.5%) women. In 2000 as in previous years, cesarean rates increased steadily with advancing maternal age and were more than twice as high for mothers aged 40 to 54 years (36.1%) than for mothers under age 20 (15.7%).[3] The recent decline in the VBAC rate may reflect renewed controversy over the safety of VBAC compared with elective repeat cesareans.[31,32]

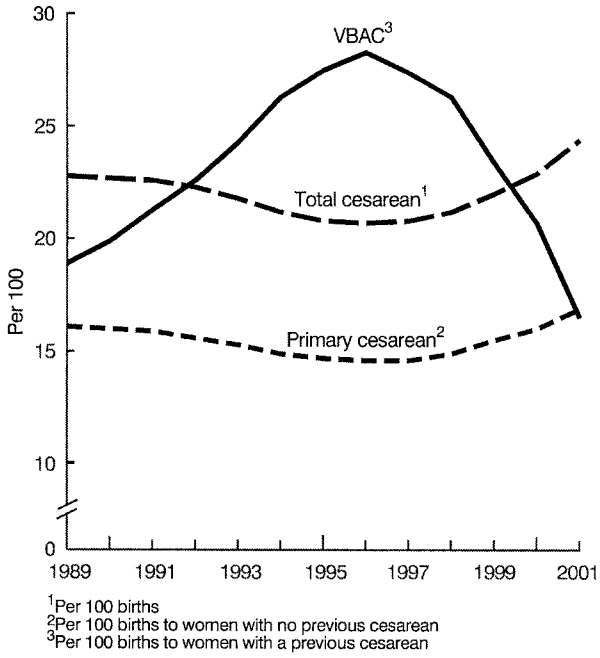

Fig 2. Total and primary cesarean rate and VBAC rate: United States, 1989–2001.

Multiple Births

The twin birth rate continued its upward climb in 2000, increasing by 1% to 29.3 twin births per 1000 total births (Table 4). The twin birth rate has risen by 55% since 1980 (18.9). In contrast, the higher order multiple birth rate decreased 9% from 193.5 per 100 000 live births in 1998 to 180.5 in 2000, reversing a long-term trend. Before 1998, the higher order multiple birth rate had more than doubled since 1991 (81.4) and quadrupled since 1980 (37.0).[3,33] Twins, triplets, and other higher order multiples accounted for 3.1% of all births in 2000.

The increase in multiple births, especially higher order multiples, has been associated with 2 related trends—older age at childbearing and increased use of ovulation-inducing drugs and assisted reproductive technologies, such as in vitro fertilization.[3,33,34] The rise in multiple births has been especially steep among births to women in the oldest childbearing ages; for example, nearly 1 in 5 (18.2%) births to women aged 45 to 54 years in 2000 was part of a multiple delivery compared with 1 in 50 in 1990 (tabular data not shown).[3]

Multiple births, regardless of how conceived, tend to be high-risk births. About half of all twins and the great majority of triplets are born preterm or LBW. This higher risk, coupled with the escalating multiple birth rate, has had a large influence on overall national and state measures of infant health.[3,33]

Preterm Birth

The preterm birth rate declined from 11.8% in 1999 to 11.6% for 2000 (the latest year for which data are available), the first decline in this measure since 1992. The percentage of births born preterm (<37 com-

pleted weeks of gestation) has risen fairly steadily over the last 2 decades, from 9.4% in 1981, and 10.6% in 1990. The very preterm birth rate (<32 completed weeks of gestation) was 1.93% for 2000, virtually unchanged from that reported in 1990 (1.92%), but up from 1.81% in 1981. Preterm births have higher morbidity and mortality rates, when compared with term births.[35,36] The causes of preterm delivery, which can result from spontaneous preterm labor, premature rupture of the membranes, or medical interventions such as induction of labor are not fully understood, and until progress is made in this regard, substantial reduction in the preterm birth rate seems unlikely.[3,35–37]

From 1999 to 2000, the percentage of preterm births decreased from 10.5% to 10.4% for non-Hispanic white births, from 17.5% to 17.3% for black births, and from 11.4% to 11.2% for Hispanic births. This is the first decline in the preterm rate for non-Hispanic white births in more than a decade; rates had been rising steadily, from 8.5% in 1990. Although still substantially higher than for non-Hispanic white women, the preterm birth rate for black mothers has been trending slowly downward since peaking at 18.9% in 1991. The percent preterm for Hispanic women has been relatively stable since 1990 when it was 11.0%.

Birth Weight

The rate of LBW (<2500 g) was unchanged from 1998 to 2001 at 7.6%, up from 7.5% in 1997.[3,5] From 1984 to 1998, the percentage of LBW births increased fairly steadily from the low of 6.7% reported in 1984. The rate of very low birth weight (VLBW; births weighing <1500 g) was 1.43% in 2001, unchanged from 2000. VLBW had risen moderately during the 1980s and 1990s (from 1.15% in 1980 to 1.45% in 1999).[3] When compared with heavier infants (2500+ g), the risk of infant death in 2000 was 6 times higher for infants weighing 1500 to 2499 g (15.8), and 98 times higher for infants born with weights of 1500 g or less (244.3).[10]

TABLE 5. IMR, NMR, PNMR, Perinatal Mortality Rate and Fetal Mortality Rate by Race: Final 1980, 1999, and 2000

	2000	1999	1980	Percent Change, 1980–2000
IMR*†	6.9	7.1	12.6	−45.2
White, total	5.7	5.8	10.9	−47.7
White, non-Hispanic	5.7	5.8	—	—
Black, total	14.1	14.6	22.2	−36.5
Hispanic	5.6	5.8	—	—
Black:white ratio	2.5	2.5	2.0	
NMR*†	4.6	4.7	8.5	−45.9
White, total	3.8	3.9	7.4	−48.6
White, non-Hispanic	3.8	3.9	—	—
Black, total	9.4	9.8	14.6	−35.6
Hispanic	3.7	3.9	—	—
Black:white ratio	2.5	2.5	2.0	
PNMR*†	2.3	2.3	4.1	−43.9
White, total	1.9	1.9	3.5	−45.7
White, non-Hispanic	1.9	1.9	—	—
Black, total	4.7	4.8	7.6	−38.2
Hispanic	1.9	1.9	—	—
Black:white ratio	2.5	2.5	2.2	
Perinatal mortality rate*‖	7.0	7.1	13.2	−47.0
White, total	5.9	6.1	11.8	−50.0
White, non-Hispanic‡	6.7	5.8	—	—
Black, total	12.7	12.9	21.3	−39.0
Hispanic‡	6.0	6.2	—	—
Black:white ratio	2.2	2.1	1.8	
Fetal mortality rate*§	6.6	6.7	9.1	−27.5
White, total	5.6	5.7	8.1	−30.9
White, non-Hispanic‡	5.0	5.3	—	—
Black, total	12.4	12.6	14.7	−15.6
Hispanic‡	5.7	5.8	—	—
Black:white ratio	2.2	2.2	1.8	

* Includes races other than white and black.
† Rate per 1000 live births.
‡ In 1999, Oklahoma did not report Hispanic origin for fetal deaths.
§ Number of fetal deaths at ≥20 weeks of gestation per 1000 live births plus fetal deaths.
‖ Number of fetal deaths at ≥28 weeks of gestation plus number of infant deaths at <7 days of age per 1000 live births plus fetal deaths at ≥28 weeks of gestation.
—Data not available.
Note: Race and Hispanic origin are reported separately on vital records. Persons of Hispanic origin may be of any race. In this table, Hispanic persons are classified only by place of origin; non-Hispanic persons are classified by race. IMRs, NMRs, and PNMRs by race from unlinked data may differ slightly from those based on the linked file (Table 6).
Source: CDC/NCHS, National Vital Statistics System, natality, mortality (unlinked file), and fetal death files.

Between 2000 and 2001, the LBW rate declined slightly for black births (from 13.0% to 12.9%) and increased slightly for non-Hispanic white (from 6.6% to 6.7%) and Hispanic (from 6.4% to 6.5%) births. LBW among black births has declined from a high of 13.6% reported for 1991, but remains higher than levels reported during the early and mid-1980s (12.6% to 12.8%).

LBW rates tend to be highest for the youngest (<15 years) and the oldest mothers (ages 45+), but much of the LBW risk for the latter age group is attributable to their higher multiple birth rates. For 2000, 55% of all LBW infants to women aged 45+ were born in a multiple delivery, compared with 8% of infants to mothers < 15 years of age. When singleton births are examined, women 45 years and over were substantially less likely than their youngest counterparts to bear a LBW child.[3]

INFANT MORTALITY

In 2001, the provisional infant mortality rate was 6.9, the same as the final 2000 rate (Table 1). The NMR was 4.6 per 1000 live births in 2000 (latest year this rate is available), 2% less than the rate of 4.7 in 1999, while the PNMR was 2.3 per 1000 live births in both 1999 and 2000. Infant mortality in the United States has declined by >45% since 1980 (Table 5; Fig 3).

Racial differences in the IMR remain a major national concern.[38–40] The mortality rate for infants of black mothers (14.1) was 2.5 times the rate for infants of non-Hispanic white mothers (5.7; Table 5). Data from the 2000 linked birth/infant death data provides more accurate IMRs for detailed race and ethnic groups.[10] Compared with non-Hispanic white mothers, IMRs were higher for American Indian (8.3) and Puerto Rican (8.2) mothers, but were lower for Asian and Pacific Islander (4.9) mothers.[10] IMRs for Hispanic women were similar to those for non-Hispanic white women. IMRs were higher for infants whose mothers were teenagers or 40 years of age or older, did not complete high school, were unmarried, began prenatal care after the first trimester of pregnancy, or smoked during pregnancy. IMRs were also higher for male infants, multiple births, and infants born preterm or LBW.

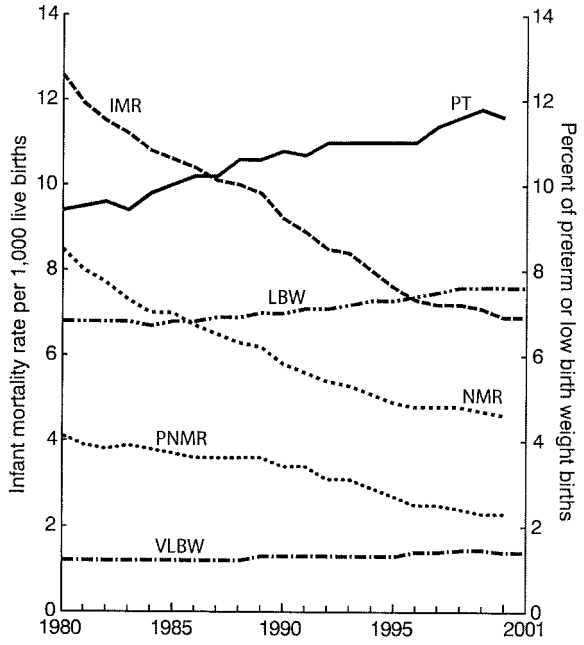

Fig 3. Infant, neonatal, and postneonatal mortality, LBW and VLBW, and preterm delivery, United States, 1980–2001. IMR indicates infant deaths per 1000 live births; NMR indicates neonatal deaths per 1000 live births; PNMR indicates postneonatal deaths per 1000 live births; LBW, percent low birth weight (<2500 g); VLBW, percent very low birth weight (<1500 g); PT, percent preterm (<37 weeks of gestation).

Birth Weight-Specific Infant Mortality

Birth weight is one of the most important predictors of infant mortality. The IMR for a given population can be partitioned into 2 key components: the birth weight distribution and birth weight-specific mortality rates (the mortality rate for infants at a given weight). The IMR can decrease when either the percentage of LBW births decreases or birth weight-specific mortality rates decrease. The percentage of LBW births increased from 1984 to 1998, but has stabilized since then (Fig 3). Thus, all of the decline in the IMR since 1980 has been attributable to declines in birth weight-specific IMRs, which have been attributed primarily to improvements in obstetric and neonatal care.[39] The United States has been unsuccessful in reducing the number of preterm and LBW deliveries, although prevention efforts have the potential to save many more infant lives and reduce subsequent morbidity than do additional improvements in neonatal care.

In 2000, 66% of all infant deaths occurred to the 7.6% of infants born LBW, and 52% of all infant deaths to the 1.4% of infants born VLBW.[10] About 85% of all infants born weighing <500 g die within the first year of life, with 98% of them dying within the first few days of life (Table 6). An infant's chances of survival increase rapidly thereafter with increasing birth weight. At birth weights of 1250 to 1499 g, ~95 of 100 infants now survive the first year of life. IMRs are lowest for infants weighing 3500 to 4499 g, with small increases among the heaviest infants.

IMRs are higher for infants of black mothers than for infants of non-Hispanic white or Hispanic mothers, according to linked birth and infant death file data. However, within detailed birth weight categories of <1250 g, IMRs are slightly lower for infants born to black mothers compared with infants born to non-Hispanic white mothers, although the differences were statistically significant only for the 750 to 999 g category. Among infants of black mothers, the proportion of births at extremely LBWs is much higher, thus accounting for much of the overall disparity. At birth weights of >2500 g, IMRs are consistently and significantly higher for infants of black than for infants of non-Hispanic white or Hispanic mothers. In fact, the largest relative difference in birth weight-specific IMRs among infants of Hispanic, non-Hispanic white, and black mothers is for infants weighing 2500+ g (2.1, 2.3, and 3.9, respectively). Thus, much of the excess mortality for black

TABLE 6. IMR and NMR by Birth Weight and Race of Mother, 2000 Linked File, and Percent Change in Birth Weight-Specific IMR, 1995–2000 Linked Files: United States

Birth Weight (g)	IMR‡				NMR§				% Change in IMR 1995–2000
	All Races*	Non-Hispanic White	Black	Hispanic	All Races*	Non-Hispanic White	Black	Hispanic	
Total	6.9	5.7	13.5	5.6	4.6	3.8	9.1	3.8	−9.2
<2500	59.4	52.8	75.8	56.1	48.5	43.6	60.4	45.9	−8.0
<1500	244.3	229.5	266.9	235.6	214.5	204.8	228.6	206.9	−9.0
<500	846.1	859.8	836.9	822.1	828.3	842.3	817.5	805.7	−6.4
500–749	476.3	492.2	458.4	477.9	415.7	439.2	382.9	424.9	−9.8
750–999	155.8	159.0	141.6	163.4	118.3	126.8	96.1	127.6	−14.4
1000–1249	77.3	80.8	71.7	75.5	54.1	60.7	42.1	53.5	−9.6
1250–1499	45.6	43.2	44.8	49.2	33.0	34.0	29.1	32.6	−16.5
1500–1999	28.3	26.9	27.9	32.8	18.5	18.3	15.1	24.1	−14.8
2000–2499	11.7	12.0	11.7	11.6	6.3	6.9	5.0	6.2	−13.3
≥2500	2.5	2.3	3.9	2.1	0.9	0.9	1.2	0.8	−16.7
2500–2999	4.6	4.6	5.6	3.8	1.9	2.0	1.9	1.9	−14.8
3000–3499	2.4	2.3	3.6	1.9	0.8	0.8	1.1	0.7	−17.2
3500–3999	1.7	1.5	2.8	1.5	0.6	0.5	0.8	0.5	−15.0
4000–4499	1.5	1.4	2.4	1.2	0.5	0.5	0.9	0.4	−16.7
≥4500	2.5	2.1	4.7	2.0	1.3	1.1	†	†	−10.7

* Includes races other than white and black.
† Figure does not meet standards of reliability or precision.
‡ IMR are infant deaths during a year per 1000 live births in specified group.
§ NMR are deaths of infants 0 to 27 days of age per 1000 live births in specified group.
Note: IMRs and NMRs by race from the linked file differ slightly from those based on unlinked data because the linked file uses the self-reported race of mother from the birth certificate, whereas the unlinked data uses the race of child as reported by the funeral director on the death certificate. Race and Hispanic origin are reported separately on birth certificates. Persons of Hispanic origin may be of any race. In this table, Hispanic women are classified only by place of origin; non-Hispanic women are classified by race.
Source: NCHS, 1995 and 2000 Period Linked Birth/Infant Death Data Sets.

infants can be explained by 2 factors: 1) A higher incidence of LBW, VLBW, and preterm births among infants of black mothers; and 2) higher IMRs for black infants weighing 2500+ g.

IMRs for Hispanic mothers were significantly higher than those for non-Hispanic white mothers for infants at birth weights of 1500 to 1999 g, but were significantly lower at birth weights of 2500 to 2999 g and 3000 to 3499 g. Differences between the Hispanic and non-Hispanic white populations were not statistically significant for the other specific birth weight categories.

IMRs declined significantly from 1995 to 2000 for all birth weight categories except for 4500+ g. IMRs declined most rapidly (by 13%–17%) for infants with birth weights of 750 to 999 g and 1250 to 4499 g. In contrast, mortality rates for infants born at <500 g declined by only 6% from 1995 to 2000, reflecting the limited success of intensive efforts made to save these very tiny infants. The few infants who do survive at these VLBWs are at great risk of suffering lifetime disabilities such as blindness, mental retardation, and neurologic disorders, necessitating increased levels of medical and parental care.[41,42]

Geographic Variation

Table 7 presents information on state variations in LBW and IMR for 2000 (the latest year for which complete data are available for both LBW and IMR). Alaska, Oregon, Washington State (5.6% each), and American Samoa (2.7%) had the lowest percent of LBW births, while Louisiana (10.3%), Mississippi (10.7%), the District of Columbia (11.9%), and Puerto Rico (10.8%) had the highest. Maine and Massachusetts had the lowest IMRs in 2000 (4.9 and 4.6 per 1000, respectively), and the District of Columbia (12.0), Mississippi (10.7), and the Virgin Islands (13.4) had the highest. Although both LBW and IMR were highest for the District of Columbia, it is more appropriate to compare these data with those for other large US cities because of the high concentrations of high-risk women in these areas. Variations by state in LBW and IMR reflect compositional differences by race, ethnicity, and socioeconomic status in the population in addition to other factors (prenatal, quality of care, and postnatal influences on infants) that are associated with LBW or IMR.

NMRs for infants with birth weights of 500 to 1499 g are presented in Table 8. Because of small annual numbers of neonatal deaths at 500 to 1499 g in some states, data are presented for a 3-year time period (1998–2000), and confidence intervals are provided to aid in the interpretation of differences. California, Massachusetts, and Utah had significantly lower rates than the national average, while Hawaii, Illinois, Oklahoma, Puerto Rico and the Virgin Islands had significantly higher rates.

It is possible to compare the statistics presented here to get an idea of the reasons for the level of infant mortality in a particular state. For example, the percent LBW would tend to reflect prenatal factors such as maternal health conditions and the effectiveness of their management during prenatal care. In contrast, the NMR for 500 to 1499 g infants may provide insight into the effectiveness of neonatal intensive care. For example, the high IMR for the District of Columbia relates primarily to the high percentage of LBW births, particularly for black mothers who constitute the majority of mothers in the Dis-

TABLE 7. Percent LBW and IMR by Race of Mother, United States and Each State, 2000

State of Residence	Percent LBW§					IMR‡				
	All Races†	White, Total	Non-Hispanic White	Black	Hispanic	All Races	White, Total	Non-Hispanic White	Black	Hispanic
United States¶	7.6	6.5	6.6	13.0	6.4	6.9	5.7	5.7	14.1	5.6
Alabama	9.7	7.7	7.8	14.0	6.5	9.4	6.6	6.6	15.4	*
Alaska	5.6	4.9	4.8	11.7	5.4	6.8	5.8	5.9	*	*
Arizona	7.0	6.8	7.0	12.8	6.7	6.7	6.2	5.8	17.6	6.8
Arkansas	8.6	7.2	7.3	13.7	5.9	8.4	7.0	7.4	13.7	*
California	6.2	5.6	5.7	11.6	5.6	5.4	5.1	4.9	12.9	5.3
Colorado	8.4	8.0	8.0	14.8	8.1	6.2	5.6	5.6	19.5	5.5
Connecticut	7.4	6.8	6.4	12.0	8.6	6.6	5.6	4.9	14.4	8.8
Delaware	8.6	7.1	7.2	13.2	6.5	9.2	7.9	7.4	14.8	*
District of Columbia	11.9	7.4	6.8	14.0	8.3	12.0	*	*	16.1	*
Florida	8.0	6.6	6.6	12.3	6.5	7.0	5.4	5.5	12.6	4.9
Georgia	8.6	6.6	6.7	12.7	5.6	8.5	5.9	6.1	13.9	5.0
Hawaii	7.5	5.3	5.0	10.4	7.3	8.1	6.5	*	*	11.3
Idaho	6.7	6.7	6.5	*	7.5	7.5	7.5	7.1	*	10.0
Illinois	7.9	6.4	6.5	14.1	6.2	8.5	6.6	6.2	17.1	7.5
Indiana	7.4	6.7	6.9	12.6	5.3	7.8	6.9	7.0	15.8	5.3
Iowa	6.1	5.9	5.9	11.7	5.5	6.5	6.0	5.9	21.1	*
Kansas	6.9	6.5	6.6	12.2	5.9	6.8	6.4	6.3	12.2	6.9
Kentucky	8.2	7.7	7.7	13.7	7.3	7.2	6.7	6.5	12.7	*
Louisiana	10.3	7.4	7.4	14.3	7.3	9.0	5.9	6.0	13.3	*
Maine	6.0	6.0	6.0	*	*	4.9	4.8	4.7	*	*
Maryland	8.6	6.4	6.4	12.8	6.4	7.6	4.8	5.0	13.2	*
Massachusetts	7.1	6.7	6.4	10.7	8.4	4.6	4.0	3.7	9.9	5.1
Michigan	7.9	6.4	6.3	14.5	6.3	8.2	6.0	6.3	18.2	6.6
Minnesota	6.1	5.7	5.8	11.0	5.8	5.6	4.8	4.8	14.6	7.8
Mississippi	10.7	7.9	8.0	14.0	7.4	10.7	6.8	6.7	15.3	*
Missouri	7.6	6.6	6.6	13.2	6.4	7.2	5.9	5.8	14.7	10.1
Montana	6.2	6.1	6.1	*	7.9	6.1	5.5	5.5	*	*
Nebraska	6.8	6.4	6.4	13.0	6.7	7.3	6.4	6.4	20.3	*
Nevada	7.2	6.7	7.1	12.9	6.1	6.5	6.0	5.6	12.7	6.9
New Hampshire	6.3	6.3	6.1	*	*	5.7	5.5	5.9	*	*
New Jersey	7.7	6.5	6.2	12.8	7.3	6.3	5.0	4.3	13.6	6.5
New Mexico	8.0	8.2	8.1	13.1	8.2	6.6	6.3	4.2	*	7.6
New York	7.7	6.7	6.5	11.4	7.3	6.4	5.4	5.8	10.9	4.1
North Carolina	8.8	7.1	7.3	13.6	6.1	8.6	6.3	6.6	15.7	4.6
North Dakota	6.4	6.5	6.3	*	*	8.1	7.5	7.3	*	*
Ohio	7.9	7.0	7.0	13.1	7.4	7.6	6.3	6.3	15.4	7.5
Oklahoma	7.5	6.9	7.1	13.1	6.3	8.5	7.9	8.0	16.9	8.0
Oregon	5.6	5.4	5.3	11.0	5.7	5.6	5.5	5.4	*	6.8
Pennsylvania	7.7	6.7	6.6	13.5	8.9	7.1	5.8	5.7	15.7	8.3
Rhode Island	7.2	6.5	6.4	13.1	6.5	6.3	5.9	4.0	*	*
South Carolina	9.7	7.2	7.2	14.2	7.4	8.7	5.4	5.6	14.8	*
South Dakota	6.2	5.9	5.9	*	*	5.5	4.3	4.3	*	*
Tennessee	9.2	7.8	7.8	14.6	6.6	9.1	6.8	6.8	18.0	*
Texas	7.4	6.7	6.5	12.7	6.8	5.7	5.1	4.8	11.4	5.3
Utah	6.6	6.5	6.4	12.5	7.8	5.2	5.1	4.9	*	6.2
Vermont	6.1	6.0	5.9	*	*	6.0	6.1	6.3	*	*
Virginia	7.9	6.5	6.5	12.6	6.3	6.9	5.4	5.4	12.4	5.6
Washington	5.6	5.2	5.2	10.6	5.4	5.2	4.9	4.9	9.4	6.2
West Virginia	8.3	8.1	8.1	15.4	*	7.6	7.4	7.4	*	*
Wisconsin	6.5	5.8	5.7	13.3	6.6	6.6	5.5	5.6	17.2	*
Wyoming	8.3	8.3	8.2	*	8.6	6.7	6.5	6.2	*	*
Puerto Rico	10.8	10.7	—	12.1	—	9.7	10.2	—	*	—
Virgin Islands	9.1	8.8	*	9.2	9.8	13.4	*	*	*	*
Guam	7.6	*	*	*	*	5.8	*	*	*	*
American Samoa	2.7	*	—	*	—	*	*	—	*	—
Northern Marianas	8.9	*	—	*	—	*	*	—	*	—

* Figure does not meet standards of reliability or precision (defined as <20 deaths in the numerator).
† Includes races other than white and black.
‡ Infant deaths under 1 year of age per 1000 live births.
§ Percentage of births <2500 g (5 lb, 8 oz).
¶ Total excludes data for the territories.
—Data not available.
Note: Race and Hispanic origin are reported separately on birth certificates. Persons of Hispanic origin may be of any race. In this table, Hispanic women are classified only by place of origin; non-Hispanic women are classified by race.
Source: CDC/NCHS, 2000 National Vital Statistics System, mortality (unlinked file) and natality.

trict. In contrast, the NMR for 500- to 1499-g births is not significantly different from the national average. The comparatively low IMR for Massachusetts seems to be a product of both a lower NMR for 500- to 1499-g infants, and a slightly lower percentage of LBW births. The higher NMRs for 500- to 1499-g

TABLE 8. NMR for Infants Born Weighing 500 to 1499 g by Race and Hispanic Origin of Mother: United States and Each State, 1998–2000 Linked Files

	All Races*		Non-Hispanic White		Black		Hispanic	
	Rate†	95% CI‡	Rate†	95% CI‡	Rate†	95% CI‡	Rate†	95% CI‡
United States§	141.6	(139.6–143.6)	140.2	(137.3–143.0)	138.6	(135.1–142.0)	148.7	(143.5–153.9)
Alabama	136.8	(123.4–150.2)	138.2	(118.1–158.4)	135.6	(117.2–153.9)	‖	
Alaska	133.6	(92.5–186.7)	‖		‖		‖	
Arizona	158.3	(141.4–175.2)	163.5	(137.8–189.1)	131.9	(81.7–201.7)	164.7	(136.5–192.8)
Arkansas	137.8	(118.6–156.9)	152.5	(126.0–178.9)	115.8	(89.0–148.2)	‖	
California	133.1	(127.1–139.1)	128.7	(117.9–139.5)	114.6	(100.8–128.3)	145.5	(135.9–155.0)
Colorado	142.8	(125.8–159.7)	127.8	(107.3–148.3)	169.0	(115.6–238.5)	172.6	(137.7–213.7)
Connecticut	123.4	(106.3–140.4)	117.2	(93.5–140.9)	115.9	(86.6–152.0)	137.5	(98.7–186.6)
Delaware	170.7	(134.3–214.0)	158.4	(109.0–222.4)	179.9	(124.6–251.4)	‖	
District of Columbia	142.1	(112.0–177.9)	‖		136.9	(105.7–174.5)	‖	
Florida	137.8	(129.4–146.2)	138.4	(125.3–151.6)	133.3	(120.4–146.2)	144.1	(122.9–165.3)
Georgia	152.7	(142.1–163.3)	148.5	(131.4–165.6)	153.7	(139.5–167.9)	147.7	(102.8–205.4)
Hawaii	184.7	(146.7–222.7)	‖		‖		‖	
Idaho	165.9	(131.1–207.0)	151.9	(115.6–195.9)	‖		‖	
Illinois	156.5	(147.0–165.9)	155.7	(141.3–170.1)	145.9	(131.3–160.6)	179.6	(153.6–205.5)
Indiana	152.1	(137.7–166.5)	151.6	(134.8–168.5)	148.4	(117.9–179.0)	158.6	(94.0–250.7)
Iowa	133.0	(111.2–154.7)	135.0	(111.0–159.1)	‖		‖	
Kansas	144.3	(123.1–165.5)	149.1	(123.7–174.5)	118.6	(75.2–178.0)	149.5	(87.1–239.4)
Kentucky	132.4	(116.6–148.1)	136.8	(118.9–154.7)	124.7	(91.0–166.9)	‖	
Louisiana	130.5	(118.1–142.9)	151.8	(127.9–175.8)	122.0	(107.2–136.7)	‖	
Maine	140.6	(103.3–187.0)	138.7	(100.8–186.2)	‖		‖	
Maryland	131.8	(119.3–144.4)	131.3	(109.8–152.8)	133.0	(116.6–149.4)	161.5	(97.2–252.1)
Massachusetts	125.0	(111.4–138.6)	123.3	(106.4–140.2)	129.6	(100.1–165.2)	134.9	(99.8–178.3)
Michigan	152.8	(141.8–163.7)	144.8	(129.9–159.7)	158.7	(140.4–176.9)	165.8	(110.2–239.7)
Minnesota	137.8	(120.1–155.4)	134.5	(114.2–154.7)	125.5	(84.6–179.1)	‖	
Mississippi	141.2	(125.4–157.0)	109.6	(87.0–136.2)	156.9	(136.1–177.6)	‖	
Missouri	141.4	(126.8–156.0)	137.9	(119.9–156.0)	145.1	(119.1–171.0)	‖	
Montana	128.5	(90.5–177.1)	102.0	(64.7–153.1)	‖		‖	
Nebraska	152.2	(123.3–181.1)	142.8	(112.5–178.7)	‖		‖	
Nevada	143.5	(118.4–168.5)	120.7	(89.9–158.7)	‖		174.1	(124.4–237.1)
New Hampshire	126.8	(95.0–165.8)	118.1	(84.8–160.2)	‖		‖	
New Jersey	138.8	(127.9–149.6)	122.0	(106.3–137.7)	147.6	(129.2–166.0)	152.3	(124.6–180.0)
New Mexico	172.1	(143.2–201.0)	177.1	(131.8–232.8)	‖		171.4	(132.8–217.7)
New York	140.8	(133.2–148.4)	132.9	(120.5–145.2)	143.3	(131.1–155.5)	142.0	(124.8–159.2)
North Carolina	151.6	(140.8–162.4)	147.2	(131.6–162.7)	151.6	(135.6–167.6)	175.9	(129.7–233.2)
North Dakota	161.9	(111.4–227.4)	152.9	(98.9–225.7)	‖		‖	
Ohio	151.0	(140.5–161.5)	154.7	(141.8–167.7)	137.4	(118.9–155.8)	218.2	(142.5–319.7)
Oklahoma	174.2	(152.8–195.6)	192.9	(165.1–220.7)	131.7	(92.7–181.5)	‖	
Oregon	142.4	(119.2–165.7)	146.5	(118.8–174.2)	‖		130.2	(82.5–195.3)
Pennsylvania	142.8	(132.5–153.1)	139.3	(126.5–152.0)	147.0	(127.7–166.3)	154.8	(112.9–207.1)
Rhode Island	116.2	(87.3–151.6)	101.6	(65.8–150.0)	‖		‖	
South Carolina	151.5	(136.3–166.7)	145.7	(122.1–169.3)	155.3	(135.0–175.7)	‖	
South Dakota	153.9	(108.9–211.3)	140.9	(91.2–208.0)	‖		‖	
Tennessee	141.7	(128.3–155.1)	143.4	(125.4–161.4)	132.9	(112.6–153.3)	‖	
Texas	133.1	(126.4–139.8)	139.0	(127.3–150.7)	117.7	(105.1–130.4)	138.2	(127.1–149.3)
Utah	110.2	(91.4–128.9)	111.9	(90.9–133.0)	‖		‖	
Vermont	163.1	(110.1–232.9)	170.3	(114.1–244.6)	‖		‖	
Virginia	136.8	(124.9–148.8)	133.6	(116.7–150.4)	140.7	(121.9–159.4)	135.0	(89.0–196.4)
Washington	127.1	(111.2–143.0)	126.8	(106.8–146.7)	96.6	(58.2–150.9)	116.0	(77.7–166.6)
West Virginia	140.6	(113.1–168.2)	143.5	(114.3–172.7)	‖		‖	
Wisconsin	141.5	(124.8–158.3)	139.1	(119.1–159.1)	127.4	(95.7–166.3)	194.2	(121.7–294.0)
Wyoming	178.8	(116.8–262.0)	178.4	(113.1–267.6)	‖		‖	
Puerto Rico	298.0	(272.6–323.4)	295.0¶	(268.7–321.3)	333.3	(242.2–447.5)	—	
Virgin Islands	289.7	(185.6–431.1)	‖		291.7	(182.8–441.6)	295.5	(180.5–456.3)
Guam	‖		‖		‖		‖	

* Includes races other than white and black.
† Rates are per 1000 live births weighing 500 to 1499 g.
‡ 95% confidence interval.
§ Excludes data for the territories.
‖ Figure does not meet standards of reliability or precision (based on <20 deaths in the numerator).
¶ Puerto Rico does not report data on Hispanic origin, so this rate is for white (not non-Hispanic white) mothers.
—Data not available.
Note: Race and Hispanic origin are reported separately on birth certificates. Persons of Hispanic origin may be of any race. In this table, Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Data for American Samoa and Northern Marianas are not available from the 1998–2000 Linked Birth/Infant Death Data Sets.
Source: NCHS, 1998–2000 Linked Birth/Infant Death Data Sets.

infants in Puerto Rico and the Virgin Islands have persisted for a number of years, and may reflect differences between the United States and these areas in neonatal and perinatal care, as well as a variety of social factors such as poverty and access to care.[43,44]

INTERNATIONAL COMPARISONS

Table 9 compares IMRs for the United States with IMRs for other developed countries for 1997, 1998, and 1999, along with the number of births and birth rates for 1999. Countries with a population of at least 2.5 million, and with an IMR less than the US rate in 1 of the 3 years are included in the table. (Spain and Italy are not included because IMR data were available for only 1 of the 3 years). Cuba was added this year because its 1999 IMR was less than the US rate.

As in previous years, the IMR for the US is higher in 1999 than for the other 23 countries in the table. A major reason for the higher rate is the higher percentage of LBW infants born in the United States relative to other developed countries. The lack of progress in reducing this percentage indicates that improvements in IMR relative to other developed countries are unlikely in the near future. Reporting variations among countries, particularly in the reporting of VLBW infants dying soon after birth, may also explain some of the differences in rates, although the magnitude of resulting differences is unknown.[45–47] These smallest infants account for a significant proportion of infant deaths in the US and other countries, so variations in reporting of these events as live births or stillbirths have the potential to significantly impact overall infant mortality rates.

TABLE 9. Number of Live Births and Birth Rates for 1999 and IMR for 1997, 1998, and 1999 for Countries of >250 000 Population and With IMR Equal to or Less than the United States Rate for 1997, 1998, or 1999

	Number of Births In 1999	Birth Rate 1999	IMR		
			1999	1998	1997
Hong Kong	51 453	7.5	3.1	3.2	3.9
Japan	1 175 000*	9.3*	3.2*†	3.6	3.7
Sweden	88 173*	10.0*	3.4*	—	3.7
Singapore	43 193*	11.1*	3.5*	4.2*	3.8
Norway	59 191*	13.3*	3.9	4.0	4.1
Finland	57 648	11.2	—	4.2	3.9
Denmark	66 232	12.4	4.2	4.7	5.3
Austria	77 381*	9.5*	4.4*	4.9	4.7
France	744 100*	12.6*	4.4*	4.8*	4.8
Germany	770 744	9.4	4.5	4.6	4.9
Switzerland	78 408	11.0	4.6	—	4.5
Czech Republic	89 471	8.7	4.6	5.2*	5.9
Netherlands	200 445	12.7	5.2	5.2	5.2
Canada	331 050*†	10.8	—	5.3	5.5
Belgium	115 864‡	11.3	—	5.5	6.1
Greece	116 038*	10.9*	5.5*	6.1*	6.4
Ireland	53 354	14.2	5.5	6.2*	6.2
Australia	246 573*	13.0*	5.6*	5.0	5.3
Portugal	116 038	11.6	5.6	8.4*	6.4
Israel	131 936	21.5	5.8	5.7	6.0
United Kingdom	700 100*	11.9*	5.8*	—	5.9
New Zealand	56 605†	14.8	6.1†	5.5	6.5
Cuba	150 871	13.5	6.4	—	7.2
United States	3 959 417	14.5	7.1	7.2	7.2

* Provisional data.
† 2000 data, no 1999 data.
‡ 1998 data, no 1997 data.
Sources: United Nations. 1998 Demographic Yearbook, Population and Vital Statistics Report, Statistical Papers, Series A Vol. L11, No. 1, Jan. 2000. Population and Vital Statistics Report, Statistical Papers, Series A, Vol. L111, No. 1, Jan. 2001. Population and Vital Statistics Report, Statistical Papers, series A, Vol. LIV, No. 1, January, 2002

DEATHS

Provisional Mortality Data for 2001 and Final Data for 2000

In 2001, as in 2000, there were ~2.4 million deaths in the United States. The crude death rate remained unchanged from 2000 to 2001 at 8.7 deaths per 1000 population (Table 1).[6] Data for 2001 are provisional, whereas data for 2000 are final. The age-adjusted death rate for 2000 was 872.0 deaths per 100 000 US standard population, a record low for the nation.[4] Age-adjusted death rates are better indicators of the risk of mortality over time than crude (unadjusted) death rates because they control for variations in the age composition of the population.

September 11, 2001 Deaths

With a deep sense of sadness, we report on the progress of the filing of death certificates associated with the events of September 11, 2001. As of September 3, 2002, a total number of 2948 death certificates (provisional data) had been issued that were associated with the acts of terrorism involving hijacked planes in New York City, Virginia, and Pennsylvania. This number represents over 96% of the estimated deaths that resulted from the attacks (Table 10). About two thirds of the death certificates in New York City were issued as a result of a court order in the absence of a body. Additional information on deaths associated with the attack on the World Trade Center can be found in a special issue of the *Mortality and Morbidity Weekly Report* that commemorates the events of September 11, 2001.[48]

Expectation of Life

The estimated expectation of life at birth for a given year represents the average number of years that a hypothetical group of infants would be expected to live if, through their lifetime, they were to experience the age-specific death rates prevailing during the year of their birth. In 2000, the expectation of life at birth reached a record high of 76.9 years, an increase of 0.2 years from the previous year.[4] In 2000, life expectancy at birth was 80.0 years for white females, 74.9 years for black females, 74.8 years for white males, and 68.2 years for black males.

TABLE 10. Estimated Deaths From Acts of Terrorism: New York City, Pennsylvania, and Virginia—September 11, 2001

Area	Estimated Total Deaths	Death Certificates Issued	Estimated Certificates Not Yet Filed
All areas	3062	2948	114
New York City	2829	2726*	103*
Pennsylvania	44	44	0
Virginia	189	178	11

* Three victims injured in the attacks died after September 11, 2001, in states other than New York. Death certificates for these decedents were issued, 1 each, by the states of Massachusetts, Missouri, and New Jersey.[48]
Notes: Figures for deaths are by area of occurrence, in contrast with other data from the National Vital Statistics System that are usually reported by area of residence. Counts based on reports as of September 11, 2002. Data shown are subject to change as death certificates are filed, corrected, and amended.

Deaths Among Children (With Special Focus on Motor Vehicle Accidents and Injuries From Firearm Discharge)

In 2000, 25 955 children and adolescents who were between the ages of 1 and 19 died in the United States (667 less deaths than were reported in 1999; Table 11).[4] The death rate for children and adolescents between the ages 1 and 19 decreased 3% in 2000 (from 35.8–34.7 per 100 000 population).

Analysis of final mortality data for 2000 for children and teenagers mostly confirm what had been previously reported using preliminary data.[1,49] Unintentional injuries and homicide remained the leading and second leading causes of death for the age group (same as 1999). A significant decrease (10%) in the death rate for homicide was observed between 1999 and 2000, the seventh consecutive yearly decrease. The modest declines in death rates for unintentional injuries and for congenital malformations, deformations, and chromosomal abnormalities (of 1% and 6%, respectively) were not significant. Within the category of unintentional injuries, the death rate for motor vehicle accidents did not change significantly from 1999 to 2000. Within the category of homicide, the rate for homicides involving discharge of a firearm decreased between 1999 and 2000 for children and adolescents aged 1 to 19 years. The death rate for cancer remained constant since 1999, and the small increase in the rate for suicide was not significant.

The ranking of leading causes of death varied between the age groups under 19 years (with the exception of unintentional injuries, which is consistently the leading cause across all age groups). Homicide was the fourth leading cause of death for all age groups below 15 years, yet it was the second leading cause of death among 15- to 19-year-olds. An inverse trend was seen for congenital malformations, which was the second leading cause of death for children aged 1 to 4 years but dropped in importance with age as cancer, homicide, and suicide became more prominent. The proportion of deaths from unintentional injuries that involve motor vehicle accidents increased with age: from 36% of all accidental deaths for children aged 1 to 4 years, to 78% of accidental deaths to adolescents aged 15 to 19 years. The proportion of deaths from unintentional firearm injuries increased for each age group to 10 to 14 years (3% of accident deaths); then dropped again for adolescents aged 15 to 19 years. The proportion of homicides caused by discharge of a firearm increased dramatically for each age group: from 8% of homicides for children aged 1 to 4 years, to 81% of homicides for the age group 15 to 19 years.

IMPACT OF THE 2000 CENSUS ON VITAL STATISTICS RATES

As noted in the "Methods" section, the vital statistics rates presented in this report have been calculated using populations estimated on the basis of the 1990 census. This was done because comparable population figures by age, sex, race, and ethnicity based on the 2000 census were not yet available at the time this report was prepared. However, sufficient data from the 2000 census have been released to indicate that there will be significant changes in population counts for the total population as well as specific subgroups and that these changes will produce significant shifts in vital rates. In this section we will discuss the 2 most important sources of change.

The first source of change comes from the fact that the April 1, 2000, census counted ~6.2 million (2.2%) more people than had been estimated for July 1, 2000, based on extrapolations from the 1990 census (compare 281 421 906 with 275 264 999).[50–52] The April 1, 2000, census count of the Hispanic population (35 305 818) was 8.8% higher than the 1990-based estimate for July 1, 2000 (32 463 770), thus accounting for a sizable portion of the total increment. As a result, when revised, the vital rates for the total population, and especially those for the Hispanic population, will be generally lower than those currently being published (and included in this article). Moreover, the differences between the census count and the 1990-based estimate vary by age. For example, for Hispanic women aged 15 to 44 years, the census count is ~9.5% higher than the 1990-based estimate.

The second source of change primarily affects vital rates calculated by race and derives from the fact that the April 1, 2000, census implemented the "Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity," promulgated by the US Office of Management and Budget in October 1997.[53] The 2000 census allowed respondents to "Mark one or more races to indicate what this person considers himself/herself to be," while vital records for the most part still collect only a single race designation for each respondent, following the old standard promulgated in 1977. This is generally only the first race mentioned if >1 race is reported—a method adopted decades ago and now built in to all electronic vital record systems, with the exception of California, which revised its systems for 2000 vital records. This has produced a degree of incompatibility between census data and vital statistics data, because (except for California) the Office of Management and Budget's Revised Standards have not yet been implemented in the States' vital records.

To see the importance of the difference between these 2 methods of collecting race information, consider the following results from the 2000 census, based on findings derived from the Public Law 94–171 (Redistricting) file shown in Table 12. In this table, people who reported only 1 race (ie, "Alone"), together with those who reported that same specified race plus 1 or more other races (ie, "In combination"), are combined to create the category "Alone or in combination." The last column shows the increase that the "In combination" number represents as a percent of the "Alone" number. For example, the "In combination" number for Native Hawaiian and Other Pacific Islander is more than double the number reporting Native Hawaiian and Other Pacific Islander alone. Under the old standard, the number of people who would have reported a single race would presumably lie between the "Alone" number

TABLE 11. Deaths and Death Rates for the 5 Leading Causes of Childhood Death in Specified Age Groups: United States, 1999–2000

Age, Causes of Death, and *ICD-10* Codes	Rank*	2000			1999			Percent Change
		Number	Percent	Rate†	Number	Percent	Rate†	1999–2000
Total: 1–19 y								
All causes	—	25 955	100.0	34.7	26 622	100.0	35.8	−3.1
Accidents (unintentional injuries) (V01-X59, Y85-Y86)	1	11 560	44.5	15.5	11 677	43.9	15.7	−1.3
Motor vehicle accidents (V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2)	—	7674	29.6	10.3	7619	28.6	10.2	1.0
Accidental discharge of firearms (W32–W34)	—	192	0.7	0.3	214	0.8	0.3	0.0
Assault (homicide) (X85-Y09, Y87.1)	2	2641	10.2	3.5	2901	10.9	3.9	−10.3
Assault (homicide) by discharge of firearms (X93-95)	—	1764	6.8	2.4	1982	7.4	2.7	−11.1
Malignant neoplasms (C00–C97)	3	2179	8.4	2.9	2175	8.2	2.9	0.0
Intentional self-harm (suicide) (X60–X84, 87.0)	4	1928	7.4	2.6	1859	7.0	2.5	4.0
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	—	1007	3.9	1.3	1078	4.0	1.4	−7.1
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	5	1119	4.3	1.5	1199	4.5	1.6	−6.3
1–4 y								
All causes	—	4979	100.0	32.9	5249	100.0	34.7	−5.2
Accidents (unintentional injuries) (V01–X59, Y85–Y86)	1	1826	36.7	12.1	1898	36.2	12.6	−4.0
Motor vehicle accidents (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	—	651	13.1	4.3	650	12.4	4.3	0.0
Accidental discharge of firearms (W32–W34)	—	18	0.4	§	12	0.2	§	0.0
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	2	495	9.9	3.3	549	10.5	3.6	−8.3
Malignant neoplasms (C00–C97)	3	420	8.4	2.8	418	8.0	2.8	0.0
Assault (homicide) (X85–Y09, Y87.1)	4	356	7.2	2.3	376	7.2	2.5	−8.0
Assault (homicide) by discharge of firearms (X93–X95)	—	28	0.6	0.2	50	1.0	0.3	−33.3
Diseases of heart (I00–I09, I11, I13, I20–I51)	5	181	3.6	1.2	183	3.5	1.2	0.0
5–9 y								
All causes	—	3253	100.0	16.4	3474	100.0	17.4	−5.7
Accidents (unintentional injuries) (V01–X59, Y85–Y86)	1	1391	42.8	7.0	1459	42.0	7.3	−4.1
Motor vehicle accidents (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	—	780	24.0	3.9	802	23.1	4.0	−2.5
Accidental discharge of firearms (W32–W34)	—	18	0.6	§	19	0.5	§	0.0
Malignant neoplasms (C00–C97)	2	489	15.0	2.5	509	14.7	2.6	−3.8
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	3	198	6.1	1.0	207	6.0	1.0	0.0
Assault (homicide) (X85–Y09, Y87.1)	4	140	4.3	0.7	186	5.4	0.9	−22.2
Assault (homicide) by discharge of firearms (X93–X95)	—	50	1.5	0.3	61	1.8	0.3	0.0
Diseases of heart (I00–I09, I11, I13, I20–I51)	5	106	3.3	0.5	116	3.3	0.6	−16.7
10–14 y								
All causes	—	4160	100.0	20.9	4121	100.0	21.1	−0.9
Accidents (unintentional injuries) (V01–X59, Y85–Y86)	1	1588	38.2	8.0	1632	39.6	8.3	−3.6
Motor vehicle accidents (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	—	992	23.8	5.0	969	23.5	5.0	0.0
Accidental discharge of firearms (W32–W34)	—	49	1.2	0.2	57	1.4	0.3	−33.3
Malignant neoplasms (C00–C97)	2	525	12.6	2.6	503	12.2	2.6	0.0
Intentional self-harm (suicide) (X60–X84, Y87.0)	3	300	7.2	1.5	242	5.9	1.2	25.0
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	—	110	2.6	0.6	103	2.5	0.5	20.0
Assault (homicide) (X85–Y09, Y87.1)	4	231	5.6	1.2	246	6.0	1.3	−7.7
Assault (homicide) by discharge of firearms (X93–X95)	—	137	3.3	0.7	163	4.0	0.8	−12.5
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	5	201	4.8	1.0	221	5.4	1.1	−9.1
15–19 y								
All causes	—	13 563	100.0	68.2	13 778	100.0	69.8	−2.3
Accidents (unintentional injuries) (V01–X59, Y85–Y86)	1	6755	49.8	34.0	6688	48.5	33.9	0.3
Motor vehicle accidents (V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3–V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2)	—	5251	38.7	26.4	5198	37.7	26.3	0.4
Accidental discharge of firearms (W32–W34)	—	107	0.8	0.5	126	0.9	0.6	−16.7
Assault (homicide) (X85–Y09, Y87.1)	2	1914	14.1	9.6	2093	15.2	10.6	−9.4
Assault (homicide) by discharge of firearms (X93–X95)	—	1549	11.4	7.8	1708	12.4	8.6	−9.3
Intentional self-harm (suicide) (X60–X84, Y87.0)	3	1621	12.0	8.2	1615	11.7	8.2	0.0
Intentional self-harm (suicide) by discharge of firearms (X72–X74)	—	897	6.6	4.5	975	7.1	4.9	−8.2
Malignant neoplasms (C00–C97)	4	745	5.5	3.7	745	5.4	3.8	−2.6
Diseases of heart (I00–I09, I11, I13, I20–I51)	5	403	3.0	2.0	463	3.4	2.3	−13.0

* Rank based on 2000 data. Ranking is shown for 5 leading causes for specified age groups. For an explanation of ranking procedures, see Technical Appendix in Vital Statistics of the United States, Vol II, Mortality Part A (published annually).
† Rate per 100 000 population in specified group.
§ Figure does not meet standards of reliability or precision (defined as <20 deaths in the numerator).
Source: CDC/NCHS, National Vital Statistics System, mortality, 1999–2000.

TABLE 12. Persons Reporting a Specified Race Alone or in Combination With 1 or More Other Race Categories: United States 2000 Census

Specified Race	Alone or in Combination	Alone	In Combination	Percent Increase, "In Combination" Over "Alone"
White	216 930 975	211 460 626	5 470 349	2.6
Black or African American	36 419 434	34 658 190	1 761 244	5.1
American Indian and Alaska Native	4 119 301	2 475 956	1 643 345	66.4
Asian	11 898 828	10 242 998	1 655 830	16.2
Native Hawaiian and Other Pacific Islander	874 414	398 835	475 579	119.2

Source: US Census Bureau. *The Two or More Races Population: 2000.* Census 2000 Brief, Nov. 2001

and the "Alone or in combination" number. Clearly, a birth or death rate for one of these race groups would vary considerably depending on which count ("Alone" or "Alone or in combination" or something in between) were used as a denominator.

Implementation of the Revised Standards for vital records requires changes in data collection and processing procedures at the State and federal levels of government, as well as within hospitals, clinics, coroner/medical examiner offices, and funeral homes. This will take considerable resources and at least several years to accomplish, and not all registration systems will be able to implement the Revised Standards at the same time or with complete coverage at the start. Until there is a complete conversion of vital registration and statistics systems, there will continue to be a degree of incompatibility between Census Bureau population estimates and vital statistics data by race.

As an interim effort to produce vital rates from numerators and denominators using a consistent race definition, NCHS is working with the Census Bureau to produce population estimates (referred to as a "bridge") based on a race concept that is reasonably compatible with that used in vital records for 2000, to facilitate trend analysis of vital rates. Specifically, NCHS has developed an algorithm for the Bureau to use in converting multiple-race totals to single-race totals for the 4 basic race categories specified in the 1977 race standard. This work is ongoing at this time and will be thoroughly evaluated for validity as it becomes available. The goal of bridging is to aid in the transition to the new standard. Bridged denominators will only be used until sufficient numbers of states begin collecting multiple race data to enable the production of rates based on multiple-race data.

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