

Section 7. Technical Appendix

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SOURCES OF DATA

Death and fetal-death statistics

Mortality statistics for 1982 are, as for all previous years except 1972, based on information from records of all deaths occurring in the United States. Fetal-death statistics for every year are based on all reports of fetal death received by the National Center for Health Statistics (NCHS).

The death-registration system and the fetal-death reporting system of the United States encompass the 50 States, the District of Columbia, New York City (which is independent of New York State for the purpose of death registration), Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands. In the statistical tabulations of this publication, *United States* refers only to the aggregate of the 50 States (including New York City) and the District of Columbia. Tabulations for Guam, Puerto Rico, and the Virgin Islands are shown separately in this volume. No data have ever been included for American Samoa or the Trust Territory of the Pacific Islands.

The Virgin Islands was admitted to the "registration area" for deaths in 1924; Puerto Rico, in 1932; and Guam, in 1970. Tabulations of death statistics for Puerto Rico and the Virgin Islands were regularly shown in the annual volumes of *Vital Statistics of the United States* from the year of their admission through 1971 except for the years 1967 through 1969, and tabulations for Guam were included for 1970 and 1971. Death statistics for Puerto Rico, the Virgin Islands, and Guam were not included in the 1972 volume but have been included in section 8 of the volumes for each of the years 1973-78 and in section 9 beginning with 1979. Information for 1972 for these three areas was published in the respective annual vital statistics reports of the Department of Health of the Commonwealth of Puerto Rico, the Department of Health of the Virgin Islands, and the Department of Public Health and Social Services of the Government of Guam.

Procedures used by NCHS to collect death statistics have changed over the years. Before 1971, tabulations of deaths and fetal deaths were based solely on information obtained by NCHS from copies of the original certificates. The information from these copies was edited, coded, and tabulated. For 1960-70, all mortality information taken from these records was transferred by NCHS to magnetic tape for computer processing.

Beginning with 1971, an increasing number of States have provided NCHS with computer tapes of data coded according to NCHS specifications and provided to NCHS through the Vital Statistics Cooperative Program. The year in which State-coded demographic data were first transmitted to NCHS is shown below for New York City, Puerto Rico, and each of the 46 States now furnishing demographic data.

1971

Florida

1972

Maine
Missouri
New HampshireRhode Island
Vermont

1973

Colorado
MichiganNew York (except)
New York City

1974

Illinois
Iowa
Kansas
MontanaNebraska
Oregon
South Carolina

1975

Louisiana
Maryland
North Carolina
OklahomaTennessee
Virginia
Wisconsin

1976

Alabama
Kentucky
MinnesotaNevada
Texas
West Virginia

1977

Alaska
Idaho
MassachusettsNew York City
Ohio
Puerto Rico

1978

Indiana
Utah

Washington

1979

Connecticut
Hawaii
MississippiNew Jersey
Pennsylvania
Wyoming

1980

Arkansas
New Mexico

South Dakota

1982

North Dakota

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For the remaining four States, the District of Columbia, the Virgin Islands, and Guam, mortality statistics for 1982 are based on information obtained directly by NCHS from copies of the original certificates received from the registration offices.

In 1974, States began coding medical (cause-of-death) data on computer tapes according to NCHS specifications. The year in which State-coded medical data were first transmitted to NCHS is shown below for the 15 States now furnishing such data.

1974	1980
Iowa	Colorado
Michigan	Kansas
	Massachusetts
	Mississippi
1975	New Hampshire
Louisiana	Pennsylvania
Nebraska	South Carolina
North Carolina	
Virginia	1981
Wisconsin	Maine

For 1980 and previous years except 1972, NCHS coded the medical information from copies of the original certificates received from the registration offices for all deaths occurring in those States that were not furnishing NCHS with medical data coded according to NCHS specifications. For 1981 and 1982, it was necessary to change these procedures because of a backlog in coding and processing that resulted from personnel and budgetary restrictions. To produce the mortality files on a timely basis with reduced resources, NCHS used State-coded underlying cause-of-death information supplied by 19 States for 50 percent of the records. These States were Alabama, Arizona, Arkansas, California, Florida, Georgia, Idaho, Illinois, Indiana, Kentucky, Montana, North Dakota, Ohio, Oklahoma, Rhode Island, Tennessee, Texas, Washington, and West Virginia. NCHS coded the medical information for the other 50 percent of the records for these States as well as for 100 percent of the records for the remaining 21 registration areas. The remaining 21 areas were Alaska, Connecticut, Delaware, District of Columbia, Hawaii, Maryland, Minnesota, Missouri, Nevada, New Jersey, New Mexico, New York State, New York City, Oregon, South Dakota, Utah, Vermont, Wyoming, Puerto Rico, Virgin Islands, and Guam.

Fetal-death data are obtained directly from copies of original reports of fetal deaths received by NCHS, except New York State (excluding New York City), which began submitting State-coded data in 1980. Fetal-death data are not published by NCHS for the Virgin Islands and Guam.

Mortality statistics for 1972 were based on information obtained from a 50-percent sample of death records instead of from all records as in other years. The sample resulted from personnel and budgetary restrictions. Sampling variation associated with the 50-percent sample is described below in the section on Estimates of errors arising from 50-percent sample for 1972.

Standard certificates and reports

The U.S. Standard Certificate of Death and the U.S. Standard Report of Fetal Death, issued by the Public Health Service, have served for many years as the principal means of attaining uniformity in the content of documents used to collect information on these events. They have been modified in each State to the extent required by the particular needs of the State or by special provisions of the State vital statistics law. However, the certificates or reports of most States conform closely in content and arrangement to the standards.

The first issue of the U.S. Standard Certificate of Death appeared in 1900. Since then, it has been revised periodically by the national vital statistics agency through consultation with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in such fields as public health, social welfare, demography, and insurance. This revision procedure has assured careful evaluation of each item in terms of its current and future usefulness for legal, medical and health, demographic, and research purposes. New items have been added when necessary, and old items have been modified to ensure better reporting, or in some cases have been dropped when their usefulness appeared to be limited.

New revisions of the U.S. Standard Certificate of Death and the U.S. Standard Report of Fetal Death were recommended for State use beginning January 1, 1978. The U.S. Standard Certificate of Death and the U.S. Standard Report of Fetal Death are shown in figures 7-A and 7-B. The certificate of death shown in figure 7-A is for use by a physician, a medical examiner, or a coroner. Two other forms of the U.S. Standard Certificate of Death are available; they are similar to the one shown except that the section on certification is designed for the physician's signature on one, and for the medical examiner's or coroner's signature on the other.

Among the changes in the new revision were the addition of (1) an item asking "If Hosp. or Inst., Indicate DOA, OP/Emer. Rm., Inpatient" and (2) an item "Was Decedent Ever in U.S. Armed Forces?" The latter item was previously on the certificate but was deleted during 1968 through 1977. An item on whether autopsy findings were considered for determining cause of death was dropped.

HISTORY

The first death statistics published by the Federal Government concerned events in 1850 and were based on statistics collected during the decennial census of that year. In 1880 a national "registration area" was created for deaths. Originally consisting of two States (Massachusetts and New Jersey), the District of Columbia, and several large cities having efficient systems for death registrations, the death-registration area continued to expand until 1933, when it included the entire United States for the first time. Tables

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FIGURE 7-A.

(PHYSICIAN, MEDICAL EXAMINER OR CORONER)
U.S. STANDARD
CERTIFICATE OF DEATH

Form Approved
OMB No. 68R 1901

LOCAL FILE NUMBER STATE FILE NUMBER

1. DECEDENT—NAME FIRST MIDDLE LAST		2. SEX		3. DATE OF DEATH (Mo Day Yr)	
4. RACE—(e.g., White, Black, American Indian, etc.) (Specify)		5a. AGE—Last Birthday (Yrs)		6. DATE OF BIRTH (Mo Day Yr)	
7a. CITY, TOWN OR LOCATION OF DEATH		7b. HOSPITAL OR OTHER INSTITUTION—Name (If not in either give street and number)		7c. IF HOSP OR INST Indicate DOA OP/Emer Rm, Inpatient (Specify)	
8. STATE OF BIRTH (If not in U.S.A., name country)		9. CITIZEN OF WHAT COUNTRY		10. MARRIED, NEVER MARRIED, WIDOWED, DIVORCED (Specify)	
11. SURVIVING SPOUSE (If wife give maiden name)		12. WAS DECEDENT EVER IN U.S. ARMED FORCES? (Specify Yrs or Yrs)		13. SOCIAL SECURITY NUMBER	
14a. USUAL OCCUPATION (Give kind of work done during most of working life, even if retired)		14b. KIND OF BUSINESS OR INDUSTRY		15. RESIDENCE—STATE COUNTY CITY, TOWN OR LOCATION STREET AND NUMBER INSIDE CITY LIMITS (Specify Yrs or Yrs)	
16. FATHER—NAME FIRST MIDDLE LAST		17. MOTHER—MAIDEN NAME FIRST MIDDLE LAST		18. INFORMANT—NAME (Type or Print) MAILING ADDRESS STREET OR R F D NO CITY OR TOWN STATE ZIP	
19a. BURIAL, CREMATION, REMOVAL, OTHER (Specify)		19b. CEMETERY OR CREMATORY—NAME		19c. LOCATION CITY OR TOWN STATE	
20a. FUNERAL SERVICE LICENSEE Or Person Acting As Such (Signature)		20b. NAME OF FACILITY		20c. ADDRESS OF FACILITY	
21a. To the best of my knowledge, death occurred at the time, date and place and due to the cause(s) stated (Signature and Title)		21b. DATE SIGNED (Mo., Day, Yr.)		21c. HOUR OF DEATH	
21d. NAME OF ATTENDING PHYSICIAN IF OTHER THAN CERTIFIER (Type or Print)		22a. On the basis of examination and/or investigation, in my opinion death occurred at the time, date and place and due to the cause(s) stated (Signature and Title)		22b. DATE SIGNED (Mo Day Yr)	
21e. M		22c. PRONOUNCED DEAD (Mo., Day, Yr.)		22d. PRONOUNCED DEAD (Hour)	
21f. M		22e. ON		22f. AT	
21g. M		22g. M		22h. M	
23. NAME AND ADDRESS OF CERTIFIER (PHYSICIAN, MEDICAL EXAMINER OR CORONER) (Type or Print)		24a. REGISTRAR (Signature)		24b. DATE RECEIVED BY REGISTRAR (Mo Day Yr)	
25. IMMEDIATE CAUSE [ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c)]		26. AUTOPSY (Specify Yrs or Yrs)		27. WAS CASE REFERRED TO MEDICAL EXAMINER OR CORONER (Specify Yrs or Yrs)	
PART I (a) DUE TO, OR AS A CONSEQUENCE OF		Interval between onset and death		Interval between onset and death	
(b) DUE TO, OR AS A CONSEQUENCE OF		Interval between onset and death		Interval between onset and death	
(c) DUE TO, OR AS A CONSEQUENCE OF		Interval between onset and death		Interval between onset and death	
PART II OTHER SIGNIFICANT CONDITIONS—Conditions contributing to death but not related to cause given in PART I (a)		28a. ACC, SUICIDE, HOM, UNDET, OR PENDING INVEST (Specify)		28b. DATE OF INJURY (Mo Day Yr)	
28c. HOUR OF INJURY		28d. DESCRIBE HOW INJURY OCCURRED		28e. INJURY AT WORK (Specify Yrs or Yrs)	
28f. PLACE OF INJURY -At home, farm, street, factory office building etc (Specify)		28g. LOCATION STREET OR R F D NO CITY OR TOWN STATE		28h. M	
28i. M		28j. M		28k. M	

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that show data for death-registration States include the District of Columbia for all years; registration cities in nonregistration States are not included. For more details on the history of the death-registration area see the Technical Appendix in *Vital Statistics of the United States, 1979*, Volume II, Mortality, Part A, section 7, pages 3–4, and the section “History and Organization of the Vital Statistics System,” chapter 1, *Vital Statistics of the United States, 1950*, Volume 1, pages 2–19.

Statistics on fetal deaths were first published for the birth-registration area in 1918, and then every year beginning with 1922.

CLASSIFICATION OF DATA

The principal value of vital statistics data is realized through the presentation of rates, which are computed by relating the vital events of a class to the population of a similarly defined class. Vital statistics and population statistics must therefore be classified according to similarly defined systems and tabulated in comparable groups. Even when the variables common to both, such as geographic area, age, sex, and race, have been similarly classified and tabulated, differences between the enumeration method of obtaining population data and the registration method of

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FIGURE 7-B.

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U. S. STANDARD
REPORT OF FETAL DEATH

STATE FILE NUMBER

TYPE OR PRINT IN PERMANENT INK SEE HANDBOOK FOR INSTRUCTIONS	1a. HOSPITAL—NAME (If not in hospital, give street and number)			1b. CITY, TOWN OR LOCATION OF DELIVERY			1c. COUNTY OF DELIVERY		
	2a. DATE OF DELIVERY (Month, Day, Year)			2b. HOUR OF DELIVERY			3. SEX OF FETUS		
MOTHER	5a. MOTHER—MAIDEN NAME FIRST MIDDLE LAST			5b. AGE (At time of this delivery)			6a. RESIDENCE—STATE		
	6c. CITY, TOWN OR LOCATION			6d. STREET AND NUMBER			6e. INSIDE CITY LIMITS (Specify yes or no)		
	7. RACE—(e.g., White, Black, American Indian, etc.) (Specify)			8. EDUCATION (Specify only highest grade completed) (Elementary or Secondary (0-12) | College (1-4 or 5+))			9. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)		
	12a. MONTH OF PREGNANCY PRENATAL CARE BEGAN (First, second, etc. (Specify))			12b. PRENATAL VISITS—Total number (If none so state)			13a. THIS BIRTH—Single, twin, triplet, etc. (Specify)		
FATHER	14a. FATHER—NAME FIRST MIDDLE LAST			14b. AGE (At time of this delivery)			14c. RACE—(e.g., White, Black, American Indian, etc.) (Specify)		
	14d. EDUCATION (Specify only highest grade completed) (Elementary or Secondary (0-12) | College (1-4 or 5+))			10. IS MOTHER MARRIED? (Specify yes or no)			11. PREGNANCY HISTORY (Complete each section)		
						11a. LIVE BIRTHS (11a. Now living | 11b. Now dead)			
						11c. OTHER TERMINATIONS (11c. Before 20 weeks | 11d. After 20 weeks)			
						11e. DATE OF LAST LIVE BIRTH (Month Year)			
						11f. DATE OF LAST OTHER TERMINATION (as indicated in d or e above) (Month Year)			
CAUSE OF FETAL DEATH	15. PART I IMMEDIATE CAUSE (ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c))								
	(a) Fetal or maternal condition directly causing fetal death								
	(b) Fetal and/or maternal conditions, if any giving rise to the immediate cause (a), stating the underlying cause last								
PART II OTHER SIGNIFICANT CONDITIONS OF FETUS OR MOTHER Conditions contributing to fetal death but not related to cause given in (a)									
16. FETUS DIED BEFORE LABOR, DURING LABOR OR DELIVERY, UNKNOWN (Specify)			17. PHYSICIAN'S ESTIMATE OF GESTATION			18. AUTOPSY (Specify yes or no)			
19. MULTIPLE BIRTHS (Enter State File Number for maters) LIVE BIRTH(S)			20. COMPLICATIONS OF LABOR AND/OR DELIVERY			21. FETAL DEATH(S)			
21. CONCURRENT ILLNESSES OR CONDITIONS AFFECTING THE PREGNANCY (Describe or write none)			22. CONGENITAL MALFORMATIONS OR ANOMALIES OF FETUS (Describe or write none)						
23. NAME OF PHYSICIAN OR ATTENDANT (Type or print)			24. NAME OF PERSON COMPLETING REPORT (Type or print)			TITLE			

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obtaining vital statistics data may result in significant discrepancies.

The general rules used in the classification of geographic and personal items for deaths and fetal deaths are set forth in two NCHS instruction manuals.^{1,2}

A discussion of the classification of certain important items is presented below.

Classification by occurrence and residence

Tabulations for the United States and specified geographic areas in this report are by place of residence unless

stated as by place of occurrence. Before 1970, resident mortality statistics for the United States included all deaths occurring in the United States, with deaths of "nonresidents of the United States" assigned to place of death. "Deaths of nonresidents of the United States" refers to deaths that occur in the United States of nonresident aliens, nationals residing abroad, and residents of Puerto Rico, the Virgin Islands, Guam, and other territories of the United States. Beginning with 1970, deaths of nonresidents of the United States are not included in tables by place of residence.

Tables by place of occurrence, on the other hand, include deaths of both residents and nonresidents of the United States. Consequently, for each year beginning with

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1970, the total number of deaths in the United States by place of occurrence was somewhat greater than the total by place of residence. For 1982 this difference amounted to 3,160 deaths. Mortality statistics by place of occurrence are shown in tables 1-10, 1-18, 1-19, 1-28, 1-29, 3-1, 3-8, 8-1, and 8-7.

Before 1970, except for 1964 and 1965, deaths of non-residents of the United States occurring in the United States were treated as deaths of residents of the exact place of occurrence, which in most instances was an urban area. In 1964 and 1965, deaths of nonresidents of the United States occurring in the United States were allocated as deaths of residents of the balance of the county in which they occurred.

Residence error—Results of a 1960 study showed that the classification of residence information on the death certificates corresponded closely to the residence classification of the census records for the decedents whose records were matched.³

A comparison of the results of this study of deaths with those for a previous matched record study of births⁴ showed that the quality of residence data had considerably improved between 1950 and 1960. Both studies found that events in urban areas were overstated by the NCHS classification in comparison with the U.S. Bureau of the Census classification. The magnitude of the difference was substantially less for deaths in 1960 than it was for births in 1950.

The improvement is attributed to an item added in 1956 to the U.S. Standard Certificates of Birth and of Death, asking if residence was inside or outside city limits. This new item aided in properly allocating the residence of persons living near cities but outside the corporate limits.

Geographic classification

The rules followed in the classification of geographic areas for deaths and fetal deaths are contained in the two instruction manuals referred to previously.^{1,2}

The geographic codes assigned by the National Center for Health Statistics during data reduction of source information on birth, death, and fetal-death records are given in another instruction manual.⁵ For 1982, geographic codes have been modified to reflect results of the 1980 census. For 1980-81, codes are based on results of the 1970 census.

Standard metropolitan statistical areas—The standard metropolitan statistical areas (SMSA's) used in this report are those established by the U.S. Office of Management and Budget from final 1980 census population counts⁶ and used by the U.S. Bureau of the Census, except in the New England States.

Except in the New England States, an SMSA is a county or a group of contiguous counties containing a city of 50,000 inhabitants or more or an urbanized area of 50,000 with a total metropolitan population of at least 100,000. In addition to the county or counties containing such a city or urbanized area, contiguous counties are included in an SMSA if, according to specified criteria, they are essentially metro-

politan in character and are socially and economically integrated with the central city or urbanized area.⁷

In the New England States the U.S. Office of Management and Budget uses towns and cities rather than counties as geographic components of SMSA's. The National Center for Health Statistics cannot, however, use the SMSA classification for these States because its data are not coded to identify all towns. Instead, NCHS uses New England County Metropolitan Areas (NECMA's). These areas, established by the U.S. Office of Management and Budget, are made up of county units.^{7,8}

Metropolitan and nonmetropolitan counties—Independent cities and counties included in SMSA's or in NECMA's are included in data for metropolitan counties; all other counties are classified as nonmetropolitan.

Population-size groups—Vital statistics data for cities and certain other urban places in 1982 are classified according to the population enumerated in the 1980 Census of Population. Data are available for individual cities and other urban places of 10,000 or more population. Data for the remaining areas not separately identified are shown in the tables under the heading "balance of area" or "balance of county." For the years 1970-81, classification of areas was determined by the population enumerated in the 1970 Census of Population. For 1982, as a result of changes in the enumerated population between 1970 and 1980, some urban places identified in previous reports are no longer included, and a number of other urban places have been added.

Urban places other than incorporated cities for which vital statistics data are shown in this report include the following:

- Each town in New England, New York, and Wisconsin, and each township in Michigan, New Jersey, and Pennsylvania that had no incorporated municipality as a subdivision and had either 25,000 inhabitants or more, or a population of 10,000 to 25,000 and a density of 1,000 persons or more per square mile.
- Each county in States other than those indicated above that had no incorporated municipality within its boundary and had a density of 1,000 persons or more per square mile. (Arlington County, Virginia, is the only county classified as urban under this rule.)
- Each place in Hawaii with 10,000 or more population, as there are no incorporated cities in the State.

Before 1964, places were classified as "urban" or "rural." The Technical Appendixes for earlier years discuss the previous classification system.

State or country of birth

Mortality statistics by State or country of birth (table 1-32) became available beginning with 1979. State or country

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of birth of a decedent is assigned to 1 of the 50 States or the District of Columbia; or to Puerto Rico, the Virgin Islands, or Guam—if specified on the death certificate. The place of birth is also tabulated for Canada, Cuba, Mexico, and for the Remainder of the World. Deaths for which information on State or country of birth was unknown, not stated, or not classifiable accounted for a small proportion of all deaths in 1982, about 0.6 percent.

Early mortality reports published by the U.S. Bureau of the Census contained tables showing nativity of parents as well as nativity of decedent. Publication of these tables was discontinued in 1933. Mortality data showing nativity of decedent were again published in annual reports for 1939–41 and for 1950.

Age

The age recorded on the death record is the age at last birthday. With respect to the computation of death rates, the age classification used by the U.S. Bureau of the Census is also based on the age of the person in completed years.

For computation of age-specific and age-adjusted death rates, deaths with age not stated are excluded. For life table computation, deaths with age not stated are distributed proportionately.

Race

For vital statistics in the United States in 1982, deaths are classified by race—white, black, Indian, Chinese, Japanese, Filipino, Other Asian or Pacific Islander, and other races. Mortality data for Filipino and Other Asian or Pacific Islander were shown for the first time in 1979.

The white category includes, in addition to persons reported as white, those reported as Mexican, Puerto Rican, Cuban, and all other Caucasians. The Indian category includes American, Alaskan, Canadian, Eskimo, and Aleut. If the racial entry on the death certificate indicates a mixture of Hawaiian and any other race, the entry is coded to Hawaiian. If the race is given as a mixture of white and any other race, the entry is coded to the appropriate other race. If a mixture of races other than white is given (except Hawaiian), the entry is coded to the first race listed. This procedure for coding the first race listed has been in use since 1969. Before 1969, if the entry for race was a mixture of black and any other race except Hawaiian, the entry was coded to black.

Most of the tables in this report, however, do not show data for this detailed classification by race. In about half of all the tables the divisions are white, all other (including black), and black separately. In other tables by race, where the main purpose is to isolate the major groups, the classifications are simply white and all other.

Race not stated—For 1982 the number of death records for which race was not stated was 1,305, or less than 0.1 percent of the total deaths. Death records with race entry

not stated are assigned to a racial designation as follows: If the preceding record is coded white, the code assignment is made to white; if the code is other than white, the assignment is made to black. Before 1964 all records with race not stated were assigned to white except records of residents of New Jersey for 1962–64.

New Jersey, 1962–64—New Jersey omitted the race item from its certificates of live birth, death, and fetal death in use in the beginning of 1962. The item was restored during the latter part of 1962. However, the certificate revision without the race item was used for most of 1962 as well as 1963. Therefore figures by race for 1962 and 1963 exclude New Jersey. For 1964, 6.8 percent of the death records in use for residents of New Jersey did not contain the race item.

Adjustments made in vital statistics to take into account the omission of the race item in New Jersey for part of the certificates filed during 1962 through 1964 are described in the Technical Appendix of *Vital Statistics of the United States* for each of those data years.

Marital status

Mortality statistics by marital status (table 1–31) became available in 1979 for the first time since 1961. (Previously they had been published only in the annual reports for the years 1949–51 and 1959–61.) Several reports analyzing mortality by marital status have been published, including the special study based on 1959–61 data.⁹ Reference to earlier reports may be found in the appendix of part B of the 1959–61 special study.

Mortality statistics by marital status are tabulated separately for never married, married, widowed, and divorced. Certificates in which the marriage is specified as being annulled are classified as never married. Where marital status is specified as separated or common-law marriage, it is classified as married. Of the 1,914,195 resident deaths 15 years of age and over in 1982, 8,571 certificates (0.4) had marital status not stated.

Place of death and status of decedent

Mortality statistics by place of death were published in 1979 for the first time since 1958 (tables 1–28 and 1–29). In addition, mortality data were also available for the first time in 1979 for the status of decedent when death occurred in a hospital or medical center (table 1–28). These data were obtained from the following two items that appear on the U.S. Standard Certificate of Death:

- Item 7c. Hospital or Other Institution—Name (If not in either, give street and number)
- Item 7d. If Hosp. or Inst. Indicate DOA, OP/Emer. Rm., Inpatient (Specify)

All of the States and the District of Columbia have item 7c (or its equivalent) on the death certificate. For 46 States

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in the Vital Statistics Cooperative Program, NCHS accepts the State definition, classification, or codes for hospitals, medical centers, or other institutions. For the remaining four States not in the Program, and the District of Columbia, NCHS classifies and codes to a hospital or medical center according to whether the terms "hospital" or "medical center" are entered as part of the name in item 7c or its equivalent. If the terms "hospital" or "medical center" are not entered as part of the name, the entry is coded to one of the following according to the information entered in item 7c on the certificate: (1) other institutions, (2) all other reported entries, or (3) unknown, not stated.

Table 1-28 shows mortality data for the total of the following 42 States (including New York City) that have item 7d or its equivalent on their death certificates:

Alaska	Nevada
Arizona	New Hampshire
Arkansas	New Jersey
Colorado	New Mexico
Connecticut	New York
Florida	North Carolina
Georgia	North Dakota
Hawaii	Ohio
Idaho	Oregon
Illinois	Pennsylvania
Indiana	Rhode Island
Iowa	South Carolina
Kansas	South Dakota
Kentucky	Tennessee
Louisiana	Utah
Maine	Vermont
Michigan	Virginia
Mississippi	Washington
Missouri	West Virginia
Montana	Wisconsin
Nebraska	Wyoming

Effective with data for 1980, the coding of place of death and status of decedent was changed. A new coding category was added: "Dead on arrival—hospital, clinic, medical center name not given." Deaths coded to this category are tabulated in table 1-28 as "Dead on arrival" and in table 1-29 as "Not in hospital or medical center." Had the 1979 coding categories been used, these deaths would have been tabulated as "Place unknown."

Mortality by month and date of death

Deaths by month have been regularly tabulated and published in the annual report for each year beginning with data year 1900. For 1982, deaths by month are shown in tables 1-19, 1-20, 1-23, 1-30, 2-12, 2-13, 2-14, and 3-9.

Date of death was first published for data year 1972. In addition, unpublished data for selected causes by date of death for 1962 are available from NCHS.

Number of deaths by date of death in this report are

shown in table 1-30 for the total number of deaths and for the number of deaths for the following three causes, for which the greatest interest in date of occurrence of death has been expressed: Motor vehicle accidents, Suicide, and Homicide and legal intervention.

These data show the frequency distribution of deaths for the selected causes by day of week. They also make it possible to identify holidays with peak numbers of deaths from specified causes.

Report of autopsy

Before 1972, the last year for which autopsy data were tabulated was 1958. For 1972-82, all registration areas requested information on the death certificate as to whether autopsies were performed. For 1982, autopsies were reported on 272,431 death certificates, 13.8 percent of the total (table 1-27).

Information as to whether the autopsy findings were used in determining the causes of death were tabulated for 1972-73 for all but nine registration areas and from 1974-77 for all but eight registration areas. The item "autopsy findings used" was deleted from the 1978 U.S. Standard Certificate of Death.

For six of the cause-of-death categories shown in table 1-27, autopsies were reported as performed for 50 percent or more of all deaths (Whooping cough; Meningococcal infection; Pregnancy with abortive outcome; Other complications of pregnancy, childbirth, and the puerperium; Homicide and legal intervention; and All other external causes).

There were six other categories for which 40 percent or more of the death certificates reported autopsies. Autopsies were reported for only 8.6 percent of the Major cardiovascular diseases. Among all causes other than major cardiovascular diseases, autopsies were reported for 18.8 percent of all deaths.

Cause of death

Cause-of-death classification—Since 1949, cause-of-death statistics have been based on the underlying cause of death, which is defined as "(a) the disease or injury which initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury."¹⁰

For a given death the underlying cause is selected from an array of conditions given in the cause-of-death section on the death certificate. These conditions are translated into medical codes through use of the classification structure and selection and modification rules contained in the applicable revision of the *International Classification of Diseases (ICD)* published by the World Health Organization (WHO). Selection rules provide guidance for systematically identifying the underlying cause of death in terms of the format of reported conditions and their causal relationship. Modification rules are intended to improve the usefulness

of mortality statistics by giving preference to certain classification categories over others and/or to consolidate two or more conditions on the certificate into a single classification category.

As a statistical datum, the underlying cause of death is a simple, one-dimensional statistic; it is conceptually easy to understand and a well accepted measure of mortality. It identifies the initiating cause of death and is therefore most useful to public health officials in developing measures to prevent the start of the chain of events leading to death. The rules for coding underlying causes of death are included with the ICD as a means of standardizing classification, which contributes toward uniformity in mortality medical statistics among countries.

Beginning with data year 1979 the cause-of-death statistics published by the National Center for Health Statistics have been classified according to the Ninth Revision of the *International Classification of Diseases (ICD-9)*.¹⁰ In addition to specifying that the Classification be used, WHO also recommends how the data should be tabulated in order to promote international comparability. The recommended system for tabulating data in the Ninth Revision allows countries to construct their own mortality and morbidity tabulation lists from the rubrics of the WHO Basic Tabulation List as long as rubrics from the WHO mortality and morbidity lists, respectively, are included. This tabulation system for the Ninth Revision is more flexible than that of the Eighth Revision in which specific lists were recommended for tabulating mortality and morbidity data.

The Basic Tabulation List (BTL) recommended under the Ninth Revision consists of 57 two-digit rubrics that add to the "all causes" total. Within each two-digit rubric, up to 9 three-digit rubrics numbered from 0 to 8 are identified, but these do not add to the total of the two-digit rubric. The residual of each two-digit rubric, the difference between the two-digit total and the sum of its three-digit rubrics, is given the number 9. The WHO Mortality List, a subset of the titles contained in the BTL, consists of 50 rubrics, which are a minimum for the national display of mortality data. The two-digit rubrics of the BTL 01 through 46 provide for the tabulation of nonviolent deaths to ICD categories 001-799. Rubrics relating to chapter 17 (nature-of-injury causes 47 through 56) are not used by NCHS for selecting underlying cause of death; rather, preference is given to rubrics E47 through E56. The 57th two-digit rubric VO is the Supplementary Classification of Factors Influencing Health Status and Contact with Health Services and is not appropriate for the tabulation of mortality data.

Five lists of causes have been developed for tabulation and publication of mortality data by NCHS in this report: The Each-Cause List, List of 282 Selected Causes, List of 72 Selected Causes, List of 61 Selected Causes of Infant Death, and List of 34 Selected Causes. These lists were designed to be as comparable as possible to the NCHS lists more recently in use under the Eighth Revision. However, complete comparability could not always be achieved.

The Each-Cause List is made up of each three-digit category of the WHO Detailed List and each four-digit

subcategory to which deaths may be validly assigned. The list is used for tabulation for the entire United States. The published each-cause table does not show the four-digit subcategories provided for Motor vehicle accidents (E810-E825); however, these subcategories, which identify persons injured, are shown in the accident tables of this report (section 5). These are not shown in the each-cause table.

The List of 282 Selected Causes of Death is constructed from BTL rubrics 01-46 and E47-E56. Each of the 56 BTL titles can be obtained either directly or by combining titles in the List. At the three-digit level, however, the BTL is modified more extensively. For some causes more detail was desired, and new three-digit rubrics have been added to the list. Where less detail was needed, three-digit rubrics were combined. Moreover, each of the 50 rubrics of the WHO Mortality List can be obtained from the List of 282 Selected Causes of Death. The List is used in tables published for the United States and each State.

The List of 72 Selected Causes of Death was constructed by combining titles in the List of 282 Selected Causes of Death. It is used in tables published for the United States and each State, and for standard metropolitan statistical areas.

The List of 61 Selected Causes of Infant Death shows more detailed titles for Congenital anomalies and Certain conditions originating in the perinatal period than any other list except the Each-Cause List.

The List of 34 Selected Causes of Death was created by combining titles in the List of 72 Selected Causes. A table using this list is published to show detailed geographic areas.

Effect of list revisions—The International Lists, in use in this country since 1900, have been revised approximately every 10 years so that the disease classification may be consistent with advances in medical science and with changes in diagnostic practice. Each revision of the International Lists has produced some break in comparability of cause-of-death statistics. Cause-of-death statistics beginning with 1979 are classified by NCHS according to the ICD-9.¹⁰ For a discussion of each of the classifications used with death statistics since 1900, see the Technical Appendix in *Vital Statistics of the United States, 1979, Volume II, Mortality, Part A, section 7, pages 9-14.*

A dual coding study was undertaken between the Ninth and the Eighth Revisions to measure the extent of discontinuity in cause-of-death statistics resulting from introducing the new Revision. An initial study has been published for the list of 72 causes and the list of 10 infant causes, both of which appear in the *Monthly Vital Statistics Report*.¹¹ The 72-cause list is also a basic list used in this volume. Comparability studies were also undertaken between the Eighth and Seventh, Seventh and Sixth, and Sixth and Fifth Revisions. For additional information about these studies, again see the 1979 Technical Appendix.

Coding in 1982—The National Center for Health Statistics prepares for its cause-of-death coding clerks an instruction manual that contains decisions and interpretations that

apply each year. These manuals are revised annually, chiefly to bring coding procedures into alignment with new developments in reporting practices and in medical opinions as to the etiology and causal relationship of diseases and to eliminate inconsistencies in coding procedures.¹² The rules for coding the 1982 mortality data essentially remained the same as the previous year except for the modifications explained below.

AIDS—During the processing of the 1981 and 1982 mortality files, the code assignment for acquired immune deficiency syndrome (AIDS) was changed from ICD No. 279.3 to ICD No. 279.1, both subcategories of Disorders involving the immune mechanism (ICD No. 279). Beginning with the implementation of ICD-9 in 1979, AIDS had been assigned to Unspecified immunity deficiency (ICD No. 279.3) because it was not included as an entry in the index to ICD-9. In early 1983, the World Health Organization assigned AIDS to Deficiency of cell-mediated immunity (ICD No. 297.1). This change resulted in approximately 75 percent of the AIDS deaths being assigned to ICD No. 279.3 and about 25 percent to ICD No. 279.1 in the 1982 mortality file. For 1981 data, approximately 90 percent of all AIDS deaths were assigned to ICD No. 279.3 and about 10 percent to ICD No. 279.1.

Acute poliomyelitis—Effective with data for 1981, NCHS changed the procedures for coding poliomyelitis based on the results of comparisons between counts of deaths from NCHS and from the Centers for Disease Control (CDC). Whereas NCHS reported four deaths in 1979 and six deaths in 1980 from Acute poliomyelitis (ICD No. 045), CDC reported none. These differences are believed to be attributable to the NCHS interpretation of terminology used by physicians on the death certificate. These coding procedures are documented in an NCHS instruction manual.¹³

Definition of child—For 1982 data the definition of “child, childhood” was changed from less than 12 years of age to less than 18 years of age in keeping with the criteria of the National Center on Child Abuse and Neglect. This change affects the classification of deaths to a number of categories, including Child battering and other maltreatment (ICD No. E967).

Child battering and maltreatment—In addition to implementing the change in the definition of “child, childhood” effective with 1982 data, NCHS also provided specific guidelines for coding deaths to the category Child battering and other maltreatment (ICD No. E967). Deaths of children under 18 years of age were coded to E967 when the cause of death met at least one of the following three criteria:

- Abuse, beating, battering, or other maltreatment was reported, whether or not “homicide” was stated.
- Homicide was stated plus an injury or injuries that indicated more than one episode of injury; for example, a current injury coupled with an old or healed injury which is consistent with a history of child abuse.
- Homicide was stated plus multiple injuries consistent with an assumption of a beating or battering if

assault by a peer, intruder, or someone unknown to the child could not be reasonably inferred from the reported information.

No specific coding guidelines had previously been given by either the World Health Organization or NCHS for coding deaths to E967.

Medical certification—The use of a standard classification list, although essential for State, regional, and international comparison, does not assure strict comparability of the tabulated figures. A high degree of comparability between areas could be attained only if all records of cause of death were reported with equal accuracy and completeness. The medical certification of cause of death can be made only by a qualified person, usually a physician, a medical examiner, or a coroner. Therefore, the reliability and accuracy of cause-of-death statistics are, to a large extent, governed by the ability of the certifier to make the proper diagnosis and by the care with which he or she completes the death certificate.

A number of studies have been undertaken on the quality of medical certification on the death certificate. In general, these have been for relatively small samples and for limited geographic areas. A bibliography, prepared by NCHS, covering 128 references over a period of 23 years indicates that no definitive conclusions have been reached about the quality of medical certification on the death certificate.¹⁴ No country has a well defined program for systematically assessing the quality of medical certifications reported on death certificates or for measuring the error effects on the levels and trends of cause-of-death statistics.

One index of the quality of reporting causes of death is the proportion of death certificates coded to the Ninth Revision ICD-9 Nos. 780-796, 798-799, which are the rubrics for Symptoms, signs, and other ill-defined conditions. While there are cases for which it is not possible to determine the causes of death, this proportion indicates the care and consideration given to the certification by the medical certifier. It may also be used as a rough measure of the specificity of the medical diagnoses made by the certifier in various areas and, to a small degree, the extent to which autopsies are performed and their findings used in determining the underlying cause of death entered on the death certificate. In 1982, 1.4 percent of all reported deaths in the United States were assigned to ill-defined or unknown causes. However, this percentage varied among the States, from 0.3 percent for New Hampshire to 5.9 percent for Mississippi.

Automated selection of underlying cause of death—Beginning with data year 1968, NCHS began using a computer system for assigning the underlying cause of death. It has been used every year since to select the underlying cause of death. The system is called “Automated Classification of Medical Entities” (ACME).

The ACME system applies the same rules for selecting the underlying cause as applied by a nosologist; however, under this system, the computer consistently applies the same criteria, thus eliminating intercoder variation in this step of the process.

The ACME computer program requires the coding of all conditions shown on the medical certification. These codes are matched automatically against decision tables that consistently select the underlying cause of death for each record according to international rules. The decision tables provide not only a comprehensive relationship between the conditions classifiable by ICD when applying the rules of selection and modification, but also decisions used when the underlying cause of death is assigned by ACME.

Decision tables were developed by NCHS staff on the basis of their experience in coding underlying causes of death under the earlier manual coding system and as a result of periodic independent validations. These tables are periodically updated to reflect additional new information on the relationship among medical conditions. For 1982, the content of these tables was revised to incorporate entries previously omitted and to make corrections identified during coding and other record processing. These changes are identified in the appropriate 1982 instruction manual¹⁵ with an asterisk in the margin beside the code(s).

Cause-of-death ranking—Cause-of-death ranking (except for infants) is based on the List of 72 Selected Causes of Death. Cause-of-death ranking for infants is based on the List of 61 Selected Causes of Infant Death. The group titles Major cardiovascular diseases and Symptoms, signs, and ill-defined conditions are not ranked from the List of 72 Selected Causes, and Certain conditions originating in the perinatal period and Symptoms, signs, and ill-defined conditions are not ranked from the List of 61 Selected Causes of Infant Death. In addition, category titles that begin with the words “Other” or “All other” are not ranked to determine the leading causes of death. When one of the titles that represents a subtotal is ranked (such as Tuberculosis), its component parts (in this case, Tuberculosis of respiratory system and Other tuberculosis) are not ranked.

Maternal deaths

Maternal deaths are those for which the certifying physician has designated a maternal condition as the underlying cause of death. Maternal conditions are those assigned to Complications of pregnancy, childbirth, and the puerperium (ICD-9 Nos. 630-676). In the Ninth Revision, WHO for the first time defined a maternal death as follows:

A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.¹⁰

Under the Eighth Revision, maternal deaths were assigned to category title “Complications of pregnancy, childbirth, and the puerperium” (ICDA-8 Nos. 630-678). Although WHO did not define maternal mortality, there was an NCHS classification rule that limited a maternal death to a death within a year after termination of pregnancy from any

“maternal cause,” that is, any cause within the range of ICDA-8 Nos. 630-678. This rule applied only if a duration of time for the condition was given. If no duration was specified and the underlying cause of death was a maternal condition, then the duration was assumed to be within a year and the death was coded by NCHS as a maternal death. The change from an under-1-year limitation on duration used in the Eighth Revision to an under-42-days limitation used in the Ninth Revision is not expected to have much effect on the comparability of maternal mortality statistics. However, comparability is affected by the following classification change. Under the Ninth Revision, maternal causes have been expanded to include Indirect obstetric causes (ICD-9 Nos. 647-648). These causes include infective and parasitic conditions and other current conditions in the mother that are classifiable elsewhere but which complicate pregnancy, childbirth, and the puerperium, such as Syphilis, Tuberculosis, Diabetes mellitus, Drug dependence, and Congenital cardiovascular disorders.

Maternal mortality rates are computed on the basis of the number of live births. The maternal mortality rate indicates the likelihood that a pregnant woman will die from maternal causes. The number of live births used in the denominator is an approximation of the population of pregnant women who are at risk of a maternal death.

Infant deaths

An infant death is defined as death under 1 year of age. The term excludes fetal deaths. Infant deaths are usually divided into two categories according to age, neonatal and postneonatal. Neonatal deaths are those that occur during the first 27 days of life, and postneonatal deaths are those that occur between 28 days and 1 year of age. It has generally been believed that different factors influencing the child's survival predominate in these two periods: Factors associated with prenatal development, heredity, and the birth process were considered dominant in the neonatal period, and environmental factors, such as nutrition, hygiene, and accidents, were considered more important in the postneonatal period. Recently, however, the distinction between these two periods has blurred due in part to advances in neonatology, which have enabled more very small, premature infants to survive the neonatal period.

Indices of infant mortality are designed to show the likelihood that live births with certain characteristics will survive the first year of life, or, conversely, will die during the first year of life. For infant mortality, the “population at risk” is approximated by live births that occur in a calendar year. Infant, neonatal, and postneonatal mortality rates in section 2 and table 8-2 are computed on the basis of the number of live births. In section 1 all infant death rates are based on the estimated population under 1 year of age.

Causes of death for infants are tabulated according to a list of causes that is different from the list of causes for the population of all ages. (See section on effect of list revisions.)

Infant and neonatal mortality for Wyoming, 1981—The 1981 data on infant and neonatal mortality shown for Wyoming in tables 2–8 and 2–9 are incorrect because of NCHS processing errors. The correct numbers for Wyoming are 124 infant deaths and 76 neonatal deaths; the corresponding infant mortality rates are 11.2 and 7.0 deaths under 1 year of age per 1,000 live births.

Fetal deaths

In May 1950 the World Health Organization recommended the following definition of fetal death be adopted for international use:

Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.¹⁶

The term “fetal death” was defined on an all-inclusive basis to end confusion arising from use of such terms as stillbirth, abortion, and miscarriage.

Shortly thereafter, this definition of fetal death was adopted by the National Center for Health Statistics as the nationally recommended standard. Currently all registration areas except Puerto Rico have definitions similar to the standard definition.¹⁷ Puerto Rico has no formal definition.

As another step toward increasing the comparability of data on fetal deaths for different countries, the World Health Organization recommended that for statistical purposes fetal deaths be classified as early, intermediate, and late. These groups are defined as follows:

Less than 20 completed weeks of gestation (early fetal deaths)	Group I
20 completed weeks of gestation but less than 28 (intermediate fetal deaths)	Group II
28 completed weeks of gestation and over (late fetal deaths)	Group III
Gestation period not classifiable in groups I, II, and III.	Group IV

Note that in table 3–13, group IV consists of fetal deaths with gestation not stated but presumed to be 20 weeks or more gestation.

Until 1939 the nationally recommended procedure for registration of a fetal death required the filing of both a live-birth and a death certificate. In 1939 a separate Standard Certificate of Stillbirth (fetal death) was created to replace the former procedure. This was revised in 1949, 1955, 1956, and 1968. In 1978 the Standard Certificate of Fetal

Death was replaced by the Standard Report of Fetal Death (figure 7–B).

The 1977 revision of the *Model State Vital Statistics Act and Model State Vital Statistics Regulations*¹⁸ recommended that spontaneous fetal deaths of 20 weeks or more gestation, or a weight of 350 grams or more, and all induced terminations of pregnancy regardless of gestational age be reported and further that they be reported on separate forms. These forms are to be considered legally required statistical reports rather than legal documents.

Beginning with 1970 fetal deaths, procedures were implemented that attempted to separate reports of spontaneous fetal deaths from those of induced terminations of pregnancy. These procedures were implemented because the health implications are different for spontaneous fetal deaths and induced terminations of pregnancy. These procedures are still in use.

Comparability and completeness of data—Registration area requirements for reporting fetal deaths vary. Most of these areas require reporting fetal deaths of gestations of 20 weeks or more. Table 3–1 shows the minimum period of gestation required by each State for fetal-death reporting. There is substantial evidence that not all fetal deaths for which reporting is required are reported.¹⁹

For registration areas not requiring the reporting of fetal deaths of all periods of gestation, underreporting is more likely to occur in the earlier gestational periods. This is illustrated by the fact that for most areas requiring reporting of fetal deaths of 20 weeks or more, the total number reported for 20–23 weeks is lower than the numbers reported for 24–27 and 28–31 weeks. For areas requiring the reporting of all fetal deaths, however, the opposite is generally true.

Another type of reporting problem arises from the inconsistent application of the definition of fetal death by individual registration areas. For example, some live-born infants who die shortly after birth, particularly those born prematurely who die before the umbilical cord is severed or while the placenta is still attached, may be erroneously reported as fetal deaths.

To maximize the comparability of data by year and by State, most of the tables in section 3 are based on fetal deaths occurring at gestations of 20 weeks or more. These tables also include fetal deaths of not stated gestation for those States requiring reporting at 20 weeks or more only. Beginning with 1969, fetal deaths of not stated gestation were excluded for States requiring reporting of all products of conception except for those with a stated birth weight of 500 grams or more. In 1982 this rule was applied to the following States: Colorado, Georgia, Hawaii, New York (including New York City), Rhode Island, and Virginia. Each year there are some exceptions to this procedure. Arkansas was one such exception in 1982, requiring the reporting of fetal deaths of all periods of gestation; however, all fetal deaths of not stated gestation were assumed to be of 20 weeks or more gestation.

The data in table 3–3 include only fetal deaths to residents of those areas in the United States that report all

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periods of gestation. The areas are Colorado, Georgia, Hawaii, New York, Rhode Island, and Virginia. Although Arkansas reports all periods of gestation, it is excluded from this table because of a noncomparable reporting practice explained below. This reporting practice results in undercounts of fetal deaths of less than 28 weeks gestation.

Arkansas—Arkansas has been using two reporting forms for fetal deaths: A confidential Spontaneous Abortion form and a Fetal Death Certificate. Beginning with data year 1981, Arkansas specified that fetal deaths of less than 28 weeks gestation or weighing less than 1,000 grams could be reported on the Spontaneous Abortion form rather than on their report of fetal death. Although the National Center for Health Statistics receives their reports of fetal death, it does not receive their confidential abortion reports. Accordingly, counts of fetal deaths of gestational age 20 to 27 weeks declined sharply from 100 in 1980 to 39 in 1981 and fell further to 7 in 1982. This reporting practice results in non-comparability of fetal death data for fetal deaths under 28 weeks gestation between Arkansas and other reporting areas.

District of Columbia—Beginning in 1981, the District of Columbia changed its reporting requirements for spontaneous fetal deaths from “passed the fifth month of uterogestation” to “20 completed weeks or more or a weight of 500 grams or more.”

Kentucky—Beginning in 1981, Kentucky changed its reporting requirements for spontaneous fetal deaths from “20 weeks gestation or more” to “a weight of 350 grams or more or a gestational age of 20 weeks or more.”

Maine—Beginning with data year 1978, Maine changed its reporting requirements for spontaneous fetal deaths from “all periods of gestation” to “20 weeks or more.” This change affects the tabulation of fetal deaths with not stated gestational age. Data for 1978–82 include all fetal deaths of not stated gestational age.

New Mexico—Beginning in 1980, New Mexico changed its reporting requirements for spontaneous fetal deaths from “20 completed weeks” to “500 grams or more.”

South Dakota—Beginning in 1979, South Dakota changed its reporting requirements for spontaneous fetal deaths from “20 weeks or more gestation” to a weight of “more than 500 grams.”

Tennessee—Beginning in 1979, Tennessee changed its reporting requirements for spontaneous fetal deaths from “20 weeks or more gestation” to “500 grams or more, or, in the absence of weight, of 22 completed weeks’ gestation or more.”

Period of gestation—The period of gestation is the number of completed weeks elapsed between the first day of the last normal menstrual period and the date of delivery. The first day of the last normal menstrual period (LMP) is used as the initial date as it can be more accurately determined than the date of conception, which usually occurs 2 weeks after LMP. Data on period of gestation are computed from information on “date of delivery” and “date last normal menses began.” If “date last normal menses began” is not on the record or the calculated gestation falls beyond a duration considered biologically plausible, “gestation in weeks” or “Physician’s estimate of gestation” is used. When

the period of gestation is reported in months on the report, it is allocated to gestational intervals in weeks as follows:

- 1–3 months to under 16 weeks
- 4 months to 16–19 weeks
- 5 months to 20–23 weeks
- 6 months to 24–27 weeks
- 7 months to 28–31 weeks
- 8 months to 32–35 weeks
- 9 months to 40 weeks
- 10 months and over to 43 weeks and over

The areas reporting LMP in 1982 are shown in table A.

Birth weight—Of the 55 registration areas (including the 50 States, the District of Columbia, New York City, Puerto Rico, the Virgin Islands, and Guam), 27 do not specify how weight should be given; 15 specify that weight should be given in pounds and ounces; 5 specify grams; and the remaining 8 areas specify weight should be given either in pounds and ounces or in grams (see table A). Data on fetal deaths for the Virgin Islands and Guam are not published by NCHS.

In the tabulation and presentation of these data, the metric system (grams) has been used to facilitate comparison with other data published in the United States and internationally. The equivalents of the gram intervals in pounds and ounces are as follows:

Less than 350 grams =	0 lb 12 oz or less
350– 499 grams =	0 lb 13 oz– 1 lb 1 oz
500– 999 grams =	1 lb 2 oz– 2 lb 3 oz
1,000–1,499 grams =	2 lb 4 oz– 3 lb 4 oz
1,500–1,999 grams =	3 lb 5 oz– 4 lb 6 oz
2,000–2,499 grams =	4 lb 7 oz– 5 lb 8 oz
2,500–2,999 grams =	5 lb 9 oz– 6 lb 9 oz
3,000–3,499 grams =	6 lb 10 oz– 7 lb 11 oz
3,500–3,999 grams =	7 lb 12 oz– 8 lb 13 oz
4,000–4,499 grams =	8 lb 14 oz– 9 lb 14 oz
4,500–4,999 grams =	9 lb 15 oz–11 lb 0 oz
5,000 grams or more =	11 lb 1 oz or more

With the introduction of the Ninth Revision, International Classification of Diseases, the birth-weight classification intervals for perinatal mortality statistics were shifted downward by 1 gram, as shown above. Previously, the intervals were, for example, 1,001–1,500; 1,501–2,000; etc.

Race—The race of the fetus is ordinarily classified based on the race of the parents. If the parents are of different races, the following rules apply. (1) When only one parent is white, the fetus is assigned the other parent’s race. (2) When neither parent is white, the fetus is assigned the father’s race with one exception: If the mother is Hawaiian or Part-Hawaiian, the fetus is classified as Hawaiian.

When the race of one parent is missing or ill defined, the race of the other determines that of the fetus. When race of both parents is missing, the race of the fetus is allocated to the specific race of the fetus on the preceding record.

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Table A. Areas reporting selected items on the fetal death record: Each reporting area, 1982

Area	All periods of gestation	Date last normal menstrual period began (LMP)	Birth weight			Pregnancy history	Marital status
			Pounds and ounces	Grams	Either pounds and ounces or grams		
Alabama		X				X	X
Alaska		X	X				X
Arizona		X				X	X
Arkansas	X ¹						
California		X		X		X ²	
Colorado	X	X					X
Connecticut			X				
Delaware			X				X
District of Columbia		X	X				X
Florida		X					X
Georgia	X	X			X	X	X
Hawaii	X	X		X		X	X
Idaho		X	X			X	X
Illinois		X	X				X
Indiana		X	X			X	X
Iowa		X				X	X
Kansas		X				X	X
Kentucky		X				X	X
Louisiana		X	X				X
Maine		X				X	X
Maryland		X			X		
Massachusetts		X				X	X
Michigan		X				X	
Minnesota		X					X
Mississippi		X			X	X	X
Missouri		X				X	X
Montana		X				X	
Nebraska		X				X	X
Nevada		X				X	X
New Hampshire		X				X	X
New Jersey		X	X				X
New Mexico				X		X	X
New York	X	X			X	X	
New York City	X	X			X	X	
North Carolina		X	X				X
North Dakota		X			X	X	X
Ohio		X		X		X	
Oklahoma		X	X				X
Oregon		X				X	X
Pennsylvania		X	X				X
Rhode Island	X	X	X			X	X
South Carolina		X				X	X
South Dakota						X	X
Tennessee		X				X	X
Texas		X			X		
Utah		X				X	X
Vermont		X					
Virginia	X	X		X			X
Washington		X				X ²	X
West Virginia		X	X				X
Wisconsin		X			X	X	X
Wyoming		X				X	X
Puerto Rico			X				X
Virgin Islands	X	X					X
Guam		X				X	X

¹Requires the reporting of all periods of gestation; however, those under 28 weeks are not transmitted to NCHS.
²Specifies not to include induced terminations.

Total-birth order—Total-birth order refers to the sum of the live births and other terminations (including both spontaneous fetal deaths and induced terminations of pregnancy) that a woman has had including the fetal death being recorded. For example, if a woman has previously given birth to two live babies and to one born dead, the next fetal death to occur is counted as number four in total-birth order.

In the 1978 revision of the Standard Report of Fetal Death, total-birth order is calculated from four items on pregnancy history: Number of previous live births, now living; number of previous live births, now dead; number of other terminations before 20 weeks; and number of other terminations after 20 weeks.

All registration areas use the two standard items pertaining to the number of previous live births. Thirty-one areas use the two standard items pertaining to the number of “other terminations” before and after 20 weeks gestation, 5 report “other terminations” of 20 weeks or more, 15 do not differentiate “other terminations” by gestational age, and 4 areas use other criteria for differentiating spontaneous and induced terminations. Total-birth order for all areas is calculated from the sum of available information. Thus, information on total-birth order may not be completely comparable among the registration areas.

Marital status—Table 3-4 shows fetal deaths and fetal-death ratios by mother’s marital status. Excluded from this table are 11 States and New York City that did not report mother’s marital status on the fetal death report in 1982 as shown in table A. Because live births comprise the denominator of the ratio, marital status must also be reported for mothers of live births. Starting in 1980, marital status of the mother of the live birth was inferred for States that did not report it on the birth certificate.

There are no quantitative data on the characteristics of unmarried women who may misreport their marital status or who fail to register fetal deaths. Underreporting may be greater for the unmarried group than for the married group.

Age of mother—The fetal-death report asks for the mother’s “age (at time of delivery),” and the ages are edited in NCHS for upper and lower limits. When mothers are reported to be under 10 years of age or 50 years and over, the age of the mother is considered not stated and is assigned as follows: Age on all fetal-death records with age of mother not stated is allocated according to the age appearing on the record previously processed for a mother of identical race and having the same total-birth order (total of live births and other terminations).

Perinatal mortality

Perinatal definitions—Beginning with data year 1979, perinatal mortality data for the United States and each State have been published in section 4. The World Health Organization in the Ninth Revision of the International Classification of Diseases (ICD-9) recommended that “national

perinatal statistics should include all fetuses and infants delivered weighing at least 500 grams (or when birth weight is unavailable, the corresponding gestational age (22 weeks) or body length (25 cm crown-heel)), whether alive or dead. . . .” It was further recommended that “countries should present, solely for international comparisons, ‘standard perinatal statistics’ in which both the numerator and denominator of all rates are restricted to fetuses and infants weighing 1,000 grams or more (or, where birth weight is unavailable, the corresponding gestational age (28 weeks) or body length (35 cm crown-heel)).” Because birth weight and gestational age are not reported on the death certificate in the United States, NCHS was unable to recommend adopting these definitions. Three definitions of perinatal mortality are currently used by NCHS: Perinatal Definition I, generally used for international comparisons, which includes fetal deaths of 28 weeks or more gestation and infant deaths of less than 7 days; Perinatal Definition II, which includes fetal deaths of 20 weeks or more gestation and infant deaths of less than 28 days; and Perinatal Definition III, which includes fetal deaths of 20 weeks or more gestation and infant deaths of less than 7 days.

Variations in fetal death reporting requirements and practices have implications for comparing perinatal rates among States. Because reporting is generally poorer near the lower limit of the reporting requirement, States that require reporting of all products of pregnancy regardless of gestation are likely to have more complete reporting of fetal deaths of 20 weeks or more than are other States. The larger number of fetal deaths reported by these “all periods” States may result in higher perinatal rates compared to States whose reporting is less complete. Accordingly, reporting completeness may account, in part, for differences among the State perinatal rates, particularly differences for definitions II and III, which use data for fetal deaths of 20–27 weeks.

Not stated—Fetal deaths with gestational age not stated are presumed to be of 20 weeks gestation or more if (1) the State requires reporting of all fetal deaths of gestational age 20 weeks or more or (2) the fetus weighed 500 grams or more, in those States requiring reporting of all fetal deaths regardless of gestational age. For Definition I, fetal deaths with gestation not stated but presumed to be 20 weeks or more are allocated to the category 28 weeks or more, according to the proportion of fetal deaths with stated gestational age that falls into that category. For Definitions II and III, fetal deaths with presumed gestation of 20 weeks or more are included with those of stated gestation of 20 weeks or more.

For all three definitions, following the distribution of gestation not stated described above, fetal deaths with not-stated sex are allocated within gestational age groups on the basis of the distribution of stated cases. Perinatal deaths with not stated sex and gestational age are allocated separately for geographic areas. Accordingly, the sum of perinatal deaths for the areas according to Definition I may not equal the total number of perinatal deaths for the United States.

QUALITY OF DATA

Completeness of registration

All States have adopted laws that require the registration of births and deaths, and the reporting of fetal deaths. It is believed that over 99 percent of the births and deaths occurring in this country are registered.

Reporting requirements for fetal deaths vary somewhat from State to State (see "Comparability and completeness of data"). Overall reporting completeness is not as good for fetal deaths as for births and deaths, but it is believed to be relatively complete for fetal deaths of 28 weeks gestation or more. National statistical data on fetal deaths include only those fetal deaths with stated or presumed gestation of 20 weeks or more.

Massachusetts data

The 1964 statistics for deaths exclude approximately 6,000 events registered in Massachusetts, primarily to residents of that State. Microfilm copies of these records were not received by NCHS. Figures for the United States and the New England Division are also somewhat affected.

Quality control procedures

Demographic items on the death certificate—As previously indicated, for 1982 the mortality data for these items were obtained from two sources: (1) Microfilm images of the original certificates furnished by four States, the District of Columbia, and the Virgin Islands, and photocopies from Guam; and (2) records on data tape furnished by the remaining 46 States, New York City, and Puerto Rico. For the four States, the District of Columbia, the Virgin Islands, and Guam that sent only copies of the original certificates, the demographic items were coded for 100 percent of the death certificates. The demographic coding for a 10-percent sample of the certificates was independently verified.

As part of the quality control procedures for mortality data each registration area has to go through a calibration period during which it must achieve the specified error tolerance level of 2 percent per item for 3 consecutive months, based on NCHS independent verification of a 50-percent sample of that area's records. Once the area has achieved the required error tolerance level, a sample of 250 records per month is used to monitor quality of coding.

All of the areas had achieved the specified tolerance error before 1982; accordingly, for these areas the demographic items on about 250 records per area per month were independently verified by NCHS. These areas include New York City, Puerto Rico, and the 46 States that furnished data on computer tape to NCHS. The estimated average error rate for all demographic items in the entire 1982 mortality file was 0.25 percent.

These verification procedures involve controlling two types of error (coding and entering into the data record tape) at the same time, and the error rates are a combined measure of both types. While it may be assumed that the entering errors are randomly distributed across all items on the record, this assumption cannot be made as readily for coding errors. Although systematic errors in coding infrequent events may escape detection during sample verification, it is probable that some of these errors were detected during the initial period when 50 percent of the file was being verified, thus providing an opportunity to retrain the coders.

Medical items on the death certificate—As for demographic data, mortality medical data are also subject to quality control procedures which control for errors of both coding and data entry. Each of the 15 registration areas that furnished NCHS with coded medical information according to NCHS specifications first had to qualify for sample verification. During an initial calibration period, the area had to achieve a specified error tolerance level of less than 5 percent for coding all medical items for 3 consecutive months, based on independent verification by NCHS, for all records. After the area has achieved the required error tolerance level, a sample of 250 records per month is used to monitor quality of medical coding. For these 15 States, the average coding error rate in 1982 was just over 3 percent.

In 1982, as described previously, NCHS used State-coded underlying cause-of-death information for 50 percent of deaths occurring in 19 States. For these areas, the 50-percent sample of even-numbered records coded by NCHS was used for quality control over the States' coding. The estimated average error rate for the underlying cause data for these areas was 5 percent. For the 21 registration areas that were coded entirely by NCHS, a 1-percent sample of the records was independently coded for quality control purposes. The estimated average error rate for these areas was about 3 percent.

The ACME system for selecting the underlying cause of death through computer application contributes to the quality control of medical items on the death certificate (see the section on automated selection of underlying cause of death).

Demographic items on the report of fetal death—For 1982, all data on fetal deaths were coded under contract by the U.S. Bureau of the Census except New York State (excluding New York City), which submitted State-coded data. Coding and entering information on data tapes were verified on a 100-percent basis because of the relatively small number of records involved.

Other control procedures—After coding and entering on data tape are completed, record counts are balanced against control totals for each shipment of records from a registration area. Editing procedures ensure that records with inconsistent or impossible codes are modified. Inconsistent codes are those, for example, where there is contradiction between cause of death and age or sex of the decedent. Records so identified during the computer-editing process are either corrected by reference to the source

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record or adjusted by arbitrary code assignment.²⁰ All subsequent operations in tabulating and in preparing tables are verified during the computer processing or by statistical clerks.

Estimates of errors arising from 50-percent sample for 1972

Death statistics for 1972 in this report (excluding fetal-death statistics) are based on a 50-percent sample of all deaths occurring in the 50 States and the District of Columbia.

A description of the sample design and a table of the percent errors of the estimated numbers of deaths by size of estimate and total deaths in the area are shown in the Technical Appendix of *Vital Statistics of the United States, 1972, Volume II, Mortality, Part A*.

COMPUTATION OF RATES AND OTHER MEASURES

Population bases

The death rates shown in this report are computed on the basis of population statistics prepared by the U.S. Bureau of the Census. Rates for 1940, 1950, 1960, 1970, and 1980 are based on the population enumerated as of April 1 in the censuses of those years. Rates for all other years are based on the estimated midyear (July 1) population for the respective years. Death rates for the United States, individual States, and SMSA's are based on the total resident populations of the respective areas. Except as noted these populations exclude the Armed Forces abroad but include the Armed Forces stationed in each area.

The resident populations of the birth- and death-registration States for 1900-32 and of the United States for

1900-82 are shown in table 7-1. In addition, the population including Armed Forces abroad is shown for the United States. Table B shows the sources for these populations.

Population estimates for 1982—The 1982 population of the United States estimated by age, race, and sex is shown in table 7-2. The population for each State by broad age groups is shown in table 7-3. Population data by race for 1982 are consistent with the modified 1980 population by race.

Population estimates for 1981—The 1981 population of the United States estimated by age, race, and sex and the population for each State by age are shown in tables 7-2 and 7-3, respectively, of *Vital Statistics of the United States, 1981, Volume II*. Population data by race for 1981 are consistent with the modified 1980 population by race.

Populations for 1980—The 1980 population of the United States by age, race, and sex and the population for each State by age are shown in tables 7-2 and 7-3, respectively, of *Vital Statistics of the United States, 1980, Volume II*. The figures by race have been modified as described below.

The racial counts in the 1980 census were affected by changes in racial reporting practices, particularly by the Hispanic population, and in coding and classifying racial groups in the 1980 census. One particular change created a major inconsistency between the 1980 census data and historical data series, including censuses and vital statistics. About 40 percent of the Hispanic population counted in 1980, over 5.8 million persons, did not mark one of the specified races listed on the census questionnaire but instead marked the "Other" category. In the 1980 census, coding procedures were modified for persons who marked "Other" race and wrote in a national origin designation of a Latin American country or a specific Hispanic origin group in response to the question on race. These persons remained in the "Other" racial category in 1980 census data; in previous censuses and in vital statistics, such responses had almost always been coded to the "White" category.

Table B. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900-1932, and United States, 1900-1982

Year	Source
1982 -----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 949, May 1984.</i>
1981 -----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 929, May 1983.</i>
1980 -----	U.S. Bureau of the Census, <i>U.S. Census of Population: 1980, Number of Inhabitants, PC80-1-A1, United States Summary, 1983.</i>
1971-79 ----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 917, July 1982.</i>
1970 -----	U.S. Bureau of the Census, <i>U.S. Census of Population: 1970, Number of Inhabitants, Final Report PC(1)-A1, United States Summary, 1971.</i>
1961-69 ----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 519, April 1974.</i>
1960 -----	U.S. Bureau of the Census, <i>U.S. Census of Population: 1960, Number of Inhabitants, PC(1)-A1, United States Summary, 1964.</i>
1951-59 ----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 310, June 30, 1965.</i>
1940-50 ----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 499, May 1973.</i>
1930-39 ----	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 499, May 1973, and National Office of Vital Statistics, Vital Statistics Rates in the United States, 1900-1940. 1947.</i>
1920-29 ----	National Office of Vital Statistics, <i>Vital Statistics Rates in the United States, 1900-1940. 1947.</i>
1917-19 ----	Same as for 1930-39.
1900-16 ----	Same as for 1920-29.

To maintain comparability, the "Other" racial category in the 1980 census has been reallocated to be consistent with previous procedures. Persons who marked the "Other" racial category and reported any Spanish origin on the Spanish origin question (5,840,648 persons) were distributed to white and black races in proportion to the distribution of persons of Hispanic origin who reported their race to be white or black. This was done for each age-sex group. As a result of this procedure, 5,705,155 persons were added to the white population and 135,493 persons to the black population. Persons who marked the "Other" racial category and reported that they were not of Spanish origin (916,338 persons) were distributed as follows: 20 percent in each age-sex group were added to the "Asian and Pacific Islander" category (183,268 persons), and 80 percent were added to the "White" category (733,070 persons). The count of American Indians, Eskimos, and Aleuts was not affected by these procedures. Unpublished tabulations of these modified census counts were obtained from the U.S. Bureau of the Census and used to compute the 1980 rates.

Population estimates for 1971-79—Death rates in this volume for 1971-79 are revised, based on revised population estimates that are consistent with the 1980 census levels. The 1980 census counted approximately 5.5 million more persons than had previously been estimated for April 1, 1980.²¹ The revised estimates for the United States by age, race, and sex are published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 917. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census. The revised estimates for Puerto Rico, the Virgin Islands, and Guam are published in *Current Population Reports*, Series P-25, Number 919.

Population estimates for 1961-69—Death rates in this volume for 1961-69 are based on revised estimates of the population and thus may differ slightly from rates published before 1976. The rates shown in tables 1-1 and 1-2, the life table values in table 6-5, and the population estimates in table 7-1 for each year in the period 1961-69 have been revised to reflect modified population bases, as published in the U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 519. The data shown in table 1-10 for 1961-69 have not been revised.

Rates and ratios based on live births—Infant and maternal mortality rates, and fetal death and perinatal mortality ratios, are computed on the basis of the number of live births. Fetal death and perinatal mortality rates are computed on the basis of the number of live births and fetal deaths. Counts of live births are published annually in *Vital Statistics of the United States, Volume I, Natality*.

New Jersey—As previously indicated, data by race are not available for New Jersey for 1962 and 1963. Therefore for 1962 and 1963 the National Center for Health Statistics estimated a population by age, race, and sex excluding New Jersey for rates shown by race. The methodology used to estimate the revised population excluding New Jersey is discussed in the Technical Appendixes of the 1962 and 1963 reports.

Net census undercount

Death rates may be subject to errors in the numerator (deaths) and in the denominator (population). For deaths, errors may result from underregistration and from misreporting of the demographic characteristics reported on the death certificate.²²

Population estimates are affected by undercounts or overcounts in the decennial census. The net census undercount is caused by miscounting, by misreporting, and by misclassification of demographic characteristics. However, death rates in this volume are computed with population estimates that are not adjusted for net census undercount. Death rates based on populations adjusted for net census undercount may be more accurate than rates based on the unadjusted populations. The U.S. Bureau of the Census has conducted extensive research to evaluate the completeness of coverage of the U.S. population (including undercount and misstatement of age, race, and sex) in the last four decennial censuses—1950, 1960, 1970, and 1980. These studies provide estimates of the national population that was not enumerated in the respective censuses, by age, race, and sex.²³⁻²⁵ The reports for 1980²⁵ include estimates of net census undercount based on alternative methodological assumptions for age, race, and sex subgroups of the national population and consistent with modified race estimates.

These studies indicate that there is differential coverage in the census among the population subgroups; that is, some age, race, and sex groups are more completely enumerated than others. To the extent that these estimates are valid, that the net undercounts are substantial, and that they vary among subgroups and geographic areas, net census undercounts can have important consequences for vital statistics measures.²⁵

The impact of net census undercounts on vital statistics measures can affect: (1) effects on levels of the observed rates, (2) differences among groups, and (3) levels and group differences shown by summary measures, such as age-adjusted rates and life expectancy.

If adjustments were to be made for net census undercount, the size of denominators would be generally increased and the rates would be smaller than without an adjustment. Adjusted rates for 1980 can be computed by multiplying the reported rates by ratios of the census-level population to the population adjusted for the estimated net census undercount (table 7-4). A ratio of less than 1.0 indicates a net census undercount and would result in a corresponding decrease in the death rate. A ratio greater than 1.0 indicates a net census overcount and would result in an increase in the death rate.

Age-adjusted death rates

Age-adjusted death rates shown in this report are computed by using the distribution in 10-year age intervals of the enumerated population of the United States in 1940 as the standard population. Each figure represents the rate

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that would have existed if the age-specific rates of the particular year prevailed in a population whose age distribution was the same as that of the United States in 1940. The rates for the total population and for each race-sex group were adjusted using the same standard population. It is important not to compare age-adjusted death rates with crude rates. The standard 1940 population, on the basis of one million total population, is as follows:

Age	Number
All ages	1,000,000
Under 1 year.	15,343
1-4 years	64,718
5-14 years.	170,355
15-24 years.	181,677
25-34 years.	162,066
35-44 years.	139,237
45-54 years.	117,811
55-64 years.	80,294
65-74 years.	48,426
75-84 years.	17,303
85 years and over.	2,770

Life tables

U.S. abridged life tables are constructed by reference to a standard table.²⁶ Life tables for the decennial period 1969-71 are used as the standard life tables in constructing the 1970-79 abridged life tables. Life table values for 1980-82 were constructed using the 1969-71 decennial life tables as the standard because the 1979-81 decennial life tables were not yet available. Life table values for 1970-73 appearing in this publication have been revised. Abridged life tables appearing in *Vital Statistics of the United States* for 1970-73 were constructed using the 1959-61 decennial life tables as the standard tables, as the 1969-71 decennial life tables were not yet available. In addition, life table values for 1951-59, 1961-69, and 1971-79 appearing in this publication are based on revised intercensal estimates of the populations for those years. As such, these life table values may differ from the life table values for those years published in previous volumes.

There has been an increasing interest in data on average length of life (e_0) for single calendar years before the initiation of the annual abridged life table series for selected race-sex groups in 1945. The figures in table 6-5 for the race and sex groups for the following years were estimated to meet these needs.²⁷

Years	Race and sex groups
1900-45	Total
1900-47	Male
1900-47	Female
1900-50	White
1900-44	White, male
1900-44	White, female
1900-50	All other
1900-44	All other, male
1900-44	All other, female

The geographic areas covered in life tables before 1929-31 were limited to the death-registration States. Life tables for 1919-21 were constructed using mortality data from the 1920 death-registration States—34 States and the District of Columbia. For 1900-1902 and 1909-11, life tables were constructed using mortality data from the 1900 death-registration States—10 States and the District of Columbia. The tables for the period 1929-31 through 1958 cover the conterminous United States. U.S. life tables also include data for Alaska beginning in 1959 and for Hawaii beginning in 1960. Decennial life table values for the period 1959-61 were derived from data that include both Alaska and Hawaii for each year.

Random variation in numbers of deaths, death rates, and mortality rates and ratios

Deaths and population-based rates—Except for 1972, the numbers of deaths reported for a community represent complete counts of such events. As such, they are not subject to sampling error, although they are subject to errors in the registration process. However, when the figures are used for analytical purposes, such as the comparison of rates over a time period or for different areas, the number of events that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances.²⁸ The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

In general, distributions of vital events may be assumed to follow the binomial distribution. Estimates of standard error and tests of significance under this assumption are described in most standard statistics texts. When the number of events is large, the standard error, expressed as a percent of the number or rate, is usually small.

When the number of events is small (perhaps less than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the conditions described by the figures. This is particularly true for infant mortality rates, cause-specific death rates, and death rates for counties. Events of a rare nature may be assumed to follow a Poisson probability distribution. For this distribution, a simple approximation may be used to estimate the error, as follows.

If N is the number of registered deaths in the population and R is the corresponding rate, the chances are 19 in 20 that

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

If the rate R corresponding to N events is compared with the rate S corresponding to M events, the difference be-

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tween the two rates may be regarded as statistically significant, if it exceeds

$$2\sqrt{\frac{R^2}{N} + \frac{S^2}{M}}$$

For example, if the observed death rate for Community A were 10.0 per 1,000 population and if this rate were based on 20 recorded deaths, then the chances are 19 in 20 that the "true" death rate for that community lies between 5.5 and 14.5 per 1,000 population. If the death rate for Community A of 10.0 per 1,000 population were being compared with a rate of 20.0 per 1,000 population for Community B, which is based on 10 recorded deaths, then the difference between the rates for the two communities is 10.0. This difference is less than twice the standard error of the difference

$$2\sqrt{\frac{(10.0)^2}{20} + \frac{(20.0)^2}{10}}$$

of the two rates, which is computed to be 13.4. From this, it is concluded that the difference between the rates for the two communities is not statistically significant.

SYMBOLS USED IN TABLES

Data not available -----	----
Category not applicable-----	...
Quantity zero -----	-
Quantity more than 0 but less than 0.05 -----	0.0
Figure does not meet standards of reliability or precision -----	*

REFERENCES

- ¹National Center for Health Statistics: Vital statistics, classification and coding instructions for fetal death records. *NCHS Instruction Manual*, Part 3b. Public Health Service. Hyattsville, Md. Published annually.
- ²National Center for Health Statistics: Vital statistics, demographic classification and coding instructions for death records. *NCHS Instruction Manual*, Part 4. Public Health Service. Hyattsville, Md. Published annually.
- ³National Center for Health Statistics, M. A. McCarthy: Comparison of the classification of place of residence on death certificates and matching census records, United States, May–August 1960. *Vital and Health Statistics*. Series 2, No. 30. PHS Pub. No. 1000. Public Health Service. Washington. U.S. Government Printing Office, Jan. 1969.
- ⁴National Vital Statistics Division: Matched record comparison of birth certificate and census information, United States, 1950. *Vital Statistics—Special Reports*. Vol. 47, No. 12. Public Health Service. Washington, D.C., Mar. 1962.
- ⁵National Center for Health Statistics: Vital statistics, vital records geographic classification, 1982. *NCHS Instruction Manual*, Part 8. Public Health Service. Hyattsville, Md., June 1985.
- ⁶U.S. Office of Management and Budget: Standard metropolitan statistical areas and standard consolidated areas. *Statistical Reporter*. Washington. U.S. Government Printing Office, Oct. 1981, pp. 1–20.
- ⁷U.S. Office of Management and Budget: 36 new standard metropolitan statistical areas. *Statistical Reporter*. Washington. U.S. Government Printing Office, July 1981, p. 420.
- ⁸U.S. Office of Management and Budget: *Standard Metropolitan Statistical Areas*, rev. ed. Washington. U.S. Government Printing Office, 1975, pp. 89–90.
- ⁹National Center for Health Statistics, A. J. Klebba: Mortality from selected causes by marital status, United States, Parts A & B. *Vital and Health Statistics*. Series 20, No. 8a; Series 20, No. 8b. PHS Pub. No. 1000. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1970.
- ¹⁰World Health Organization: *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death*, Based on the Recommendations of the Ninth Revision Conference, 1975. Geneva. World Health Organization, 1977.
- ¹¹National Center for Health Statistics: Estimates of selected comparability ratios based on dual coding of 1976 death certificates by the Eighth and Ninth Revisions of the International Classification of Diseases. *Monthly Vital Statistics Report*. Vol. 28, No. 11 Supp. DHEW Pub. No. (PHS) 80–1120. Public Health Service. Hyattsville, Md., Feb. 29, 1980.
- ¹²National Center for Health Statistics: Vital statistics, instructions for classifying the underlying cause of death, 1982. *NCHS Instruction Manual*, Part 2a. Public Health Service. Hyattsville, Md., Sept. 1981.
- ¹³National Center for Health Statistics: Vital statistics, instructions for classifying multiple causes of death, 1984. *NCHS Instruction Manual*, Part 2b. Public Health Service. Hyattsville, Md., Sept. 1983.
- ¹⁴National Center for Health Statistics, A. Gittelsohn and P. N. Royston: Annotated bibliography of cause-of-death validation studies, 1958–80. *Vital and Health Statistics*. Series 2, No. 89. DHHS Pub. No. (PHS) 82–1363. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1982.
- ¹⁵National Center for Health Statistics: Vital statistics, decision tables for classifying underlying causes of death, 1982. *NCHS Instruction Manual*, Part 2c. Public Health Service. Hyattsville, Md., Feb. 1982.
- ¹⁶National Office of Vital Statistics: *International Recommendations on Definitions of Live Birth and Fetal Death*. PHS Pub. No. 39. Public Health Service. Washington. U.S. Government Printing Office, Oct. 1950.
- ¹⁷For definitions used by the States and registration areas, see National Center for Health Statistics, *State Definitions and Reporting Requirements for Live Births, Fetal Deaths, and Induced Terminations of Pregnancy*. DHHS Pub. No. (PHS) 81–1119. Public Health Service. Washington. U.S. Government Printing Office, May 1981.
- ¹⁸National Center for Health Statistics: *Model State Vital Statistics Act and Model State Vital Statistics Regulations*. DHEW Pub. No. (PHS) 78–1115. Public Health Service. Washington. U.S. Government Printing Office, May 1978.
- ¹⁹Unpublished fetal mortality data contained in a thesis for Harvard School of Public Health, Apr. 1962, by Carl L. Erhardt, Sc.D., Director, Bureau of Records and Statistics, Department of Health, New York, N.Y.
- ²⁰National Center for Health Statistics: Vital statistics, computer edits for mortality data, effective 1979. *NCHS Instruction Manual*, Part 11. Public Health Service. Hyattsville, Md., Nov. 1979.
- ²¹U.S. Bureau of the Census. Coverage of the national population in the 1980 census by age, sex, and race. Preliminary estimates by demographic analysis. *Current Population Reports*. Series P–23, No. 115. Washington. U.S. Government Printing Office, Feb. 1982.
- ²²National Center for Health Statistics, T. Z. Hambricht: Comparability of age on the death certificate and matching census records, United States, May–August 1960. *Vital and Health Statistics*. Series 2, No. 29. PHS Pub. No. 1000. Public Health Service. Washington. U.S. Government Printing Office, June 1968.

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²³U.S. Bureau of the Census: Developmental estimates of the coverage of the population of States in the 1970 census—demographic analysis. *Current Population Reports*. Series P-23, No. 65. Washington. U.S. Government Printing Office, Dec. 1977.

²⁴U.S. Bureau of the Census: Estimates of coverage of the population by sex, race, and age—demographic analysis. *1970 Census of Population and Housing* PHC(E)-4. Washington. U.S. Government Printing Office, 1974.

²⁵U.S. Bureau of the Census: Estimates of the population of the United States, by age, sex, and race: 1980 to 1984. *Current Population Reports*. Series P-25, No. 965. Washington. U.S. Government Printing Office, Mar. 1985.

²⁶National Center for Health Statistics, M. G. Sirken: Comparison of two methods of constructing abridged life tables by reference to a "standard" table. *Vital and Health Statistics*. Series 2, No. 4. PHS Pub. No. 1000. Public Health Service. Washington. U.S. Government Printing Office, Mar. 1966.

²⁷For estimating procedure see National Office of Vital Statistics, T. N. E. Greville and G. A. Carlson: Estimated average length of life in the death-registration States. *Vital Statistics—Special Reports*. Vol. 33, No. 9. Public Health Service. Washington, D.C., 1951.

²⁸National Office of Vital Statistics, C. L. Chiang: Standard error of the age-adjusted death rate. *Vital Statistics—Special Reports* Vol. 47, No. 9. Public Health Service. Washington, D.C., Aug. 1961.

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Table 7-1. Population of Birth- and Death-Registration States, 1900-1932, and United States, 1900-1982

[Population enumerated as of April 1 for 1940, 1950, 1960, 1970, and 1980 and estimated as of July 1 for all other years]

Year	United States ¹		Year	United States ¹		Birth-registration States		Death-registration States	
	Population including Armed Forces abroad	Population residing in area		Population including Armed Forces abroad	Population residing in area	Number of States ²	Population residing in area	Number of States ²	Population residing in area
1982	232,309,000	231,786,000							
1981	229,849,000	229,348,000	1940	131,820,000	131,669,275	...	..	..	...
1980	227,061,000	226,545,805	1939	131,028,000	130,879,718	...	...	...	..
1979	225,055,000	224,567,000	1938	129,969,000	129,824,939	...	...	...	..
1978	222,585,000	222,095,000	1937	128,961,000	128,824,829	...	...	...	...
1977	220,239,000	219,760,000	1936	128,181,000	128,053,160	...	...	...	..
1976	218,035,000	217,563,000	1935	127,362,000	127,250,232	...	..	...	...
1975	215,973,000	215,465,000	1934	126,485,000	126,373,773	...	..	...	...
1974	213,854,000	213,342,000	1933	125,690,000	125,578,763	...	..	...	...
1973	211,909,000	211,357,000	1932	124,949,000	124,840,471	47	118,903,899	47	118,903,899
1972	209,896,000	209,284,000	1931	124,149,000	124,039,648	46	117,455,229	47	118,148,987
1971	207,661,000	206,827,000	1930	123,188,000	123,076,741	46	116,544,946	47	117,238,278
1970	204,270,000	203,211,926	1929	---	121,769,939	46	115,317,450	46	115,317,450
1969	202,677,000	201,385,000	1928	---	120,501,115	44	113,636,160	44	113,636,160
1968	200,706,000	199,399,000	1927	---	119,038,062	40	104,320,830	42	107,084,532
1967	198,712,000	197,457,000	1926	---	117,399,225	35	90,400,590	41	103,822,683
1966	196,560,000	195,576,000	1925	---	115,831,983	33	88,294,564	40	102,031,555
1965	194,303,000	193,526,000	1924	---	114,113,463	33	87,000,295	39	99,318,098
1964	191,889,000	191,141,000	1923	---	111,949,945	30	81,072,123	38	96,788,197
1963	189,242,000	188,483,000	1922	---	110,054,778	30	79,560,746	37	92,702,901
1962	186,538,000	185,771,000	1921	---	108,541,489	27	70,807,090	34	87,814,447
1961	183,691,000	182,992,000	1920	---	106,466,420	23	63,597,307	34	86,079,263
1960	179,933,000	179,323,175	1919	105,063,000	104,512,110	22	61,212,076	33	83,157,982
1959	177,264,000	176,513,000	1918	104,550,000	103,202,801	20	55,153,782	30	79,008,412
1958	174,141,000	173,320,000	1917	103,414,000	103,265,913	20	55,197,952	27	70,234,775
1957	171,274,000	170,371,000	1916	---	101,965,984	11	32,944,013	26	66,971,177
1956	168,221,000	167,306,000	1915	---	100,549,013	10	31,096,697	24	61,894,847
1955	165,275,000	164,308,000	1914	---	99,117,567	...	...	24	60,963,309
1954	162,391,000	161,164,000	1913	---	97,226,814	...	...	23	58,156,740
1953	159,565,000	158,242,000	1912	---	95,331,300	...	...	22	54,847,700
1952	156,954,000	155,687,000	1911	---	93,867,814	...	...	22	53,929,644
1951	154,287,000	153,310,000	1910	---	92,406,536	...	...	20	47,470,437
1950	151,132,000	150,697,361	1909	---	90,491,525	...	...	18	44,223,513
1949	149,188,000	148,665,000	1908	---	88,708,976	...	...	17	38,634,759
1948	146,631,000	146,093,000	1907	---	87,000,271	...	...	15	34,552,837
1947	144,126,000	143,446,000	1906	---	85,436,556	...	...	15	33,782,288
1946	141,389,000	140,054,000	1905	---	83,819,666	...	...	10	21,767,980
1945	139,928,000	132,481,000	1904	---	82,164,974	...	...	10	21,332,076
1944	138,397,000	132,885,000	1903	---	80,632,152	...	...	10	20,943,222
1943	136,739,000	134,245,000	1902	---	79,160,196	...	...	10	20,582,907
1942	134,860,000	133,920,000	1901	---	77,585,128	...	...	10	20,237,453
1941	133,402,000	133,121,000	1900	---	76,094,134	...	...	10	19,965,446

¹ Alaska included beginning 1959 and Hawaiï, 1960.

² The District of Columbia is not included in "Number of States," but it is represented in all data shown for each year.

SOURCE: Published and unpublished data from the U.S. Bureau of the Census; see text.

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Table 7-2. Estimated Population of the United States, by 5-Year Age Groups, Race, and Sex: July 1, 1982

[Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States. Due to rounding to the nearest thousand, detailed figures may not add to totals]

Age	All races			White			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
All ages	231,786,000	112,632,000	119,153,000	198,077,000	96,582,000	101,495,000	33,709,000	16,050,000	17,659,000	27,652,000	13,079,000	14,573,000
Under 1 year	3,642,000	1,884,000	1,778,000	2,912,000	1,494,000	1,418,000	730,000	370,000	361,000	593,000	299,000	293,000
1-4 years	13,735,000	7,025,000	6,710,000	11,166,000	5,729,000	5,437,000	2,570,000	1,296,000	1,273,000	2,104,000	1,060,000	1,043,000
5-9 years	15,973,000	8,169,000	7,804,000	13,046,000	6,690,000	6,356,000	2,928,000	1,479,000	1,448,000	2,401,000	1,212,000	1,190,000
10-14 years	18,037,000	9,220,000	8,817,000	14,856,000	7,614,000	7,242,000	3,181,000	1,606,000	1,574,000	2,651,000	1,334,000	1,317,000
15-19 years	19,814,000	10,095,000	9,720,000	16,380,000	8,382,000	8,017,000	3,435,000	1,732,000	1,702,000	2,908,000	1,459,000	1,449,000
20-24 years	21,760,000	10,929,000	10,831,000	18,278,000	9,225,000	9,054,000	3,482,000	1,704,000	1,777,000	2,905,000	1,411,000	1,493,000
25-29 years	20,699,000	10,323,000	10,377,000	17,541,000	8,825,000	8,716,000	3,158,000	1,497,000	1,661,000	2,548,000	1,203,000	1,345,000
30-34 years	18,680,000	9,255,000	9,425,000	15,926,000	7,972,000	7,954,000	2,754,000	1,283,000	1,471,000	2,155,000	1,000,000	1,155,000
35-39 years	15,658,000	7,712,000	7,946,000	13,587,000	6,758,000	6,829,000	2,071,000	954,000	1,117,000	1,610,000	735,000	875,000
40-44 years	12,458,000	6,102,000	6,354,000	10,764,000	5,324,000	5,440,000	1,691,000	778,000	814,000	1,335,000	603,000	732,000
45-49 years	11,055,000	5,373,000	5,682,000	9,592,000	4,708,000	4,884,000	1,463,000	665,000	797,000	1,178,000	529,000	648,000
50-54 years	11,337,000	5,456,000	5,881,000	9,989,000	4,855,000	5,134,000	1,348,000	601,000	747,000	1,104,000	491,000	613,000
55-59 years	11,531,000	5,432,000	6,098,000	10,255,000	4,866,000	5,389,000	1,276,000	567,000	709,000	1,063,000	470,000	593,000
60-64 years	10,582,000	4,897,000	5,686,000	9,502,000	4,418,000	5,084,000	1,080,000	479,000	601,000	912,000	401,000	511,000
65-69 years	8,947,000	3,987,000	4,959,000	8,061,000	3,609,000	4,452,000	886,000	379,000	507,000	755,000	319,000	436,000
70-74 years	7,198,000	3,021,000	4,177,000	6,487,000	2,722,000	3,765,000	711,000	299,000	412,000	612,000	250,000	362,000
75-79 years	5,105,000	1,966,000	3,138,000	4,625,000	1,774,000	2,851,000	479,000	192,000	287,000	414,000	161,000	254,000
80-84 years	3,141,000	1,084,000	2,057,000	2,872,000	982,000	1,889,000	269,000	101,000	168,000	231,000	85,000	146,000
85 years and over ..	2,437,000	723,000	1,714,000	2,240,000	657,000	1,583,000	198,000	66,000	131,000	171,000	56,000	115,000

SOURCE: U.S. Bureau of the Census: "Current Population Reports," Series P-25, No. 949.

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Table 7-3. Estimated Population, by Age, for the United States, Each Division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1982

[Figures include Armed Forces stationed in each area, and exclude Armed Forces stationed outside the United States. Due to rounding to the nearest thousand, detailed figures may not add to totals]

Division and State	Total	Under 5 years	5-19 years	20-44 years	45-64 years	65 years and over
United States¹	231,786,000	17,377,000	53,825,000	89,253,000	44,505,000	26,826,000
Geographic divisions:						
New England	12,433,000	786,000	2,801,000	4,777,000	2,481,000	1,588,000
Maine	948,000	68,000	221,000	376,000	219,000	147,000
New Hampshire	948,000	68,000	221,000	376,000	219,000	147,000
Vermont	520,000	38,000	125,000	205,000	91,000	61,000
Massachusetts	5,750,000	351,000	1,279,000	2,228,000	1,140,000	752,000
Rhode Island	953,000	59,000	207,000	357,000	197,000	132,000
Connecticut	3,126,000	191,000	697,000	1,192,000	658,000	387,000
Middle Atlantic	17,567,000	1,162,000	3,839,000	6,602,000	3,660,000	2,203,000
New York	7,427,000	476,000	1,676,000	2,775,000	1,598,000	902,000
Pennsylvania	11,879,000	774,000	2,627,000	4,318,000	2,555,000	1,605,000
East North Central	10,772,000	805,000	2,552,000	4,056,000	2,134,000	1,225,000
Ohio	5,482,000	420,000	1,333,000	2,079,000	1,037,000	613,000
Indiana	11,466,000	880,000	2,670,000	4,395,000	2,210,000	1,311,000
Illinois	9,116,000	684,000	2,237,000	3,521,000	1,711,000	962,000
Michigan	4,745,000	360,000	1,126,000	1,794,000	873,000	590,000
Wisconsin	4,193,000	329,000	968,000	1,605,000	731,000	500,000
Minnesota	2,906,000	228,000	672,000	1,062,000	546,000	400,000
Missouri	4,942,000	370,000	1,130,000	1,821,000	955,000	666,000
North Dakota	672,000	59,000	158,000	253,000	118,000	84,000
South Dakota	694,000	62,000	167,000	245,000	127,000	94,000
Nebraska	1,589,000	130,000	369,000	589,000	290,000	211,000
Kansas	2,408,000	194,000	541,000	904,000	454,000	315,000
South Atlantic	600,000	43,000	140,000	295,000	120,000	63,000
Delaware	4,270,000	289,000	988,000	1,728,000	844,000	422,000
Maryland	626,000	39,000	123,000	271,000	120,000	74,000
District of Columbia	5,485,000	380,000	1,266,000	2,253,000	1,048,000	538,000
Virginia	1,961,000	144,000	465,000	714,000	391,000	247,000
West Virginia	6,019,000	416,000	1,428,000	2,360,000	1,167,000	648,000
North Carolina	3,227,000	251,000	807,000	1,272,000	587,000	310,000
South Carolina	5,648,000	438,000	1,410,000	2,241,000	1,010,000	549,000
Georgia	10,466,000	656,000	2,117,000	3,651,000	2,231,000	1,812,000
Florida	3,692,000	285,000	900,000	1,400,000	682,000	425,000
Kentucky	4,656,000	332,000	1,095,000	1,788,000	899,000	543,000
Tennessee	3,941,000	301,000	970,000	1,462,000	747,000	461,000
Mississippi	2,569,000	224,000	676,000	921,000	449,000	299,000
West South Central	2,307,000	178,000	555,000	815,000	435,000	324,000
Arkansas	4,383,000	394,000	1,122,000	1,686,000	762,000	419,000
Louisiana	3,226,000	264,000	751,000	1,214,000	609,000	389,000
Oklahoma	15,329,000	1,338,000	3,777,000	6,073,000	2,701,000	1,441,000
Texas	805,000	69,000	180,000	310,000	146,000	90,000
Montana	877,000	98,000	250,000	365,000	162,000	101,000
Idaho	509,000	51,000	123,000	212,000	83,000	39,000
Wyoming	3,071,000	246,000	703,000	1,356,000	523,000	263,000
Colorado	1,357,000	127,000	351,000	525,000	239,000	126,000
New Mexico	2,892,000	242,000	677,000	1,104,000	528,000	341,000
Arizona	1,571,000	206,000	441,000	584,000	222,000	116,000
Utah	876,000	66,000	192,000	366,000	176,000	77,000
Nevada	4,276,000	334,000	964,000	1,744,000	772,000	462,000
Washington	2,668,000	208,000	595,000	1,062,000	480,000	324,000
Oregon	24,697,000	1,914,000	5,440,000	10,136,000	4,653,000	2,554,000
California	444,000	47,000	113,000	210,000	61,000	13,000
Alaska	997,000	84,000	231,000	415,000	182,000	85,000
Hawaii	3,261,000	---	---	---	---	---
Puerto Rico	101,500	---	---	---	---	---
Virgin Islands	110,600	---	---	---	---	---
Guam						

¹ Excludes Puerto Rico, Virgin Islands, and Guam.

SOURCE: U.S. Bureau of the Census "Current Population Reports," Series P-25, Nos 951 and 943, and unpublished data.

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Table 7-4. Ratio of Census-Level Population to Population Adjusted for Estimated Net Census Undercount, by Age, Sex, and Race: April 1, 1980

Age	All races			White			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
All ages	0 99117	0 98215	0 99988	0 99598	0 98881	1 00293	0 96279	0 94253	0 98205	0 94584	0 91890	0 97157
Under 5 years	0 98194	0 98131	0 98259	1 00003	0 99965	1 00042	0 90693	0 90416	0 90976	0 90738	0 90437	0 91047
Under 1 year	1 00247	1 00150	1 00348	1 02367	1 02361	1 02374	9 1638	9 1065	9 2227	9 2268	9 1677	9 2875
5-9 years	98667	98620	98716	99705	99685	99727	94158	93931	94390	94124	93878	94375
10-14 years	1 00467	1 00518	1 00415	1 00712	1 00767	1 00655	99310	99320	99299	98578	98546	98611
15-19 years	1 00917	1 00696	1 00942	1 00676	1 00516	1 00844	1 01533	1 01633	1 01432	1 00420	1 00281	1 00559
20-24 years	99697	98761	1 00668	1 00039	99236	1 00877	97861	96137	99569	95039	92333	97749
25-29 years	98398	98943	99893	98847	97672	1 00069	95880	92691	98942	92635	88155	97049
30-34 years	99075	97389	1 00791	99637	98275	1 01042	95682	91794	99345	92141	86678	97464
35-39 years	97216	95353	99097	98153	96726	99607	91485	86664	96079	88283	81899	94479
40-44 years	98433	96458	1 00408	99332	97844	1 00831	92986	87826	97910	89915	83339	96233
45-49 years	97882	95996	99735	98906	97510	1 00290	91319	85973	98292	89304	82795	95475
50-54 years	98555	96780	1 00252	99097	97783	1 00363	94585	89198	99461	92531	86197	98375
55-59 years	99049	97310	1 00657	99264	97655	1 00762	97255	94340	99812	95518	91946	98651
60-64 years	99219	98178	1 00134	99204	98272	1 00028	99359	97310	1 01066	97948	95581	99909
65-69 years	1 01551	1 00761	1 02192	1 01020	1 00341	1 01573	1 06516	1 04761	1 07899	1 06229	1 04038	1 07921
70-74 years	1 00700	1 00593	1 00777	1 00380	1 00268	1 00461	1 03857	1 03742	1 03942	1 02862	1 02498	1 03123
75-79 years	1 00487	1 00834	1 00270	1 00032	1 00228	99911	1 05184	1 06844	1 04082	1 03181	1 05085	1 01979
80-84 years	96209	97642	95463	96680	97981	96010	90982	94160	89133	88141	92196	85876
85 years and over	95635	98147	94576	95748	97875	94860	94353	1 01003	91273	91336	97760	88429

SOURCE: U.S. Bureau of the Census: Estimates of the population of the United States, by age, sex, and race: 1980 to 1984. "Current Population Reports," Series P-25, No. 965, Washington, U.S. Government Printing Office, March 1985